

**BANK MANAGEMENT RESPONSE TO
REQUEST FOR INSPECTION PANEL REVIEW OF THE
REPUBLIC OF SOUTH AFRICA ESKOM INVESTMENT SUPPORT PROJECT
(IBRD Loan No. 78620)**

Management has reviewed the Request for Inspection of the Republic of South Africa Eskom Investment Support Project (IBRD Loan No. 78620), received by the Inspection Panel on April 6, 2010 and registered on April 7, 2010 (RQ10/03). Management has prepared the following response.

May 25, 2010

CONTENTS

Abbreviations and Acronyms	iii
Executive Summary	iv
I. INTRODUCTION.....	1
II. THE REQUEST.....	1
III. COUNTRY CONTEXT AND PROJECT BACKGROUND.....	2
IV. SPECIAL ISSUES	7
V. MANAGEMENT'S RESPONSE.....	20

ANNEXES

Annex 1. Claims and Responses

MAPS

IBRD 37886 South Africa – Eskom Investment Support Project, Request for Inspection
(project area)

IBRD 37853 South Africa – Eskom Investment Support Project, Request for Inspection
(detail)

ABBREVIATIONS AND ACRONYMS

CCS	Carbon capture and storage
CO ₂	Carbon dioxide
CSP	Concentrating Solar Power
CTF	Clean Technology Fund
DEA	Department of Environmental Affairs
DoE	Department of Energy
DWA	Department of Water Affairs
DSM	Demand Side Management
EC	European Commission
ECO	Environmental Control Officer
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EISP	Eskom Investment Support Project
EMC	Environmental Management Committee
EMI	Environmental Monitoring Inspectors
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EMPR	Environmental Management Programme Report
ESMAP	Energy Sector Management Assistance Program
FBE	Free Basic Electricity
FGD	Flue Gas Desulphurization
GDP	Gross Domestic Product
GEF	Global Environment Facility
GoSA	Government of South Africa
GWh	Gigawatt hour
Ha	Hectare
I&APs	Interested & Affected Parties
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDC	Interest During Construction
IPN	Inspection Panel
Km	kilometer
LTMS	Long-Term Mitigation Scenarios
MCWAP	Mokolo and Crocodile (West) Water Augmentation Project
MW	Megawatt
Nedlac	National Economic Development and Labour Council
NEMA	National Environmental Management Act
NGDB	National Groundwater Data Base
NGO	Nongovernmental organization
NHRA	National Heritage Resources Act
NO _x	Nitrous oxides
OECD	Organization for Economic Cooperation and Development
PAD	Project Appraisal Document
ROD	Record of Decision
SAPP	Southern Africa Power Pool
SAHRA	South African Heritage Resources Agency
SDR	Safeguard Diagnostic Review
SO ₂	Sulfur dioxide
SPA	Special Pricing Arrangement
SSA	Sub-Saharan Africa
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization

EXECUTIVE SUMMARY

The Inspection Panel registered a Request for Inspection concerning the Republic of South Africa: Eskom Investment Support Project (the Project) on April 7, 2010. The Request, submitted by two non-governmental organizations on behalf of the representatives of the community members located near Lephalale, claims that the communities have a number of concerns about the direct impact of the Medupi coal-fired power plant (a component supported by the Project) and its associated facilities as well as broader social concerns.

The Project, approved by the IBRD Board of Directors on April 8, 2010, supports Eskom Holdings, a government enterprise, with financial and technical assistance to enhance its power supply and energy security in an efficient and sustainable manner so as to support both economic growth objectives and South Africa's long-term carbon mitigation strategy. The Project, which will be implemented by Eskom, comprises the following components: the Medupi coal-fired power plant (4,800 MW, based on supercritical technology); the 100 MW Sere Wind Power Project and 100 MW Upington Concentrating Solar Power (CSP) Project (the biggest grid-connected plant in any developing country, the biggest CSP with storage to date, and the largest central receiver-type solar power project in Africa); the Majuba Rail project (conversion of coal transportation from road to rail); and sector investments and technical assistance to support lowering Eskom's carbon intensity through energy efficiency and renewable energy.

Project Background

The Project will support the Government's poverty alleviation efforts by avoiding electricity shortfalls in the medium term. Such shortfalls would slow down growth, cause significant job losses, and adversely affect the poor. Delays in returning affected enterprises to full operation would increase unemployment and heighten social inequalities. In addition, lack of electricity supply would reverse the significant gains the country has made in access expansion and associated social and economic benefits, including improved water supply, institutional facilities such as rural schools and hospitals as well as increased industrial and commercial activities in rural areas. A further slowing of the electrification program, along with the power shortages, would seriously impact the Government's goal of universal access to electricity.

The Project provides critical financing to Eskom (guaranteed by the Republic of South Africa) for sustaining South Africa's and the region's continued economic development by ensuring adequate electricity supply and additionally helping implement low-carbon, climate-responsible energy initiatives. South Africa's commitment to reducing its carbon emissions and scaling up its renewable energy sources and energy efficiency is impressive, as reaffirmed recently by the Government's association with the Copenhagen Accord, and its ambitious emission reduction targets of 34 percent below "Business as Usual" by 2020 and 42 percent by 2025.

Management Response

As noted above, the Requesters have expressed a number of concerns about the Project. Management's response to their key concerns is as follows: the first concern is about the health impacts of emissions from Medupi. **The final Environment Impact Report (EIR) prepared by Eskom concludes that the human health risks resulting from exposure to particulates and SO₂ is low.** The Bank has reviewed the extensive environmental, social and health analysis

undertaken by Eskom as part of the Environmental Impact Assessment (EIA) process and noted that it is based on robust air quality modeling, an appropriate baseline and parameters as inputs to the models, and conservative thresholds (e.g., ambient air quality criteria). In this regard, the Bank was impressed by the fact that the South African ambient air quality criteria for SO₂ are more stringent than comparable California criteria for human health risk. These criteria were used in the EIR.

The second concern relates to water scarcity. Medupi's water requirement will be met by the Department of Water Affairs (DWA) through the implementation of the first two phases of the Mokolo and Crocodile (West) Water Augmentation Project (MCWAP). **MCWAP is an outgrowth of a Catchment Management Strategy formulated by the DWA, to meet the projected water needs of public supply, agriculture, power and industry in the Lephalale area, over a 25-year planning horizon.** Both phases of MCWAP are being implemented concurrently and the DWA expects them to be fully operational in 2015, well before Medupi.

The third concern covers the detrimental impacts that the construction of Medupi could have on people's livelihoods. **The Bank reviewed the EIR and came to the conclusion that it has adequately identified and addressed the Project-related impacts on people's livelihoods and on the environment in the Project area during the construction and operation of the Medupi plant, and appropriate measures have been put in place to avoid or mitigate them.** Moreover, the Record of Decision requires a monitoring system that includes representation of local communities.

The fourth concern focuses on the potential impacts of coal mining. **Neither the Bank nor the Department of Environmental Affairs (DEA) considered coal supply to be an associated project that should be considered in the EIR for the Medupi plant, because no new mine is expected to be developed.** As Medupi's demand for coal is to be met by expanding the output from within the concession area of the Grooteegeluk Colliery that has operated since 1981, Government regulations do not require a full EIR. Instead, the operating company's obligation is to obtain approval of an Amendment to its Environmental Management Program, which it has done. The Bank has reviewed the report and considers the impact analysis and management measures adequate for the expansion of the mine production within the already approved area of operation.

The fifth concern is about the adequacy of South African safeguard systems. In determining the eligibility of South Africa to use its environmental safeguard systems for the purpose of the Project, the Bank considered a wide range of criteria, as mandated by the Bank's Operational Policy 4.00, conducted an upstream analysis, in cooperation with Eskom, the DEA and other stakeholders, and followed a consultation process involving a broad range of stakeholder in the country, on the outcomes of its analysis, which took the form of a Safeguard Diagnostic Review (SDR). **The SDR concluded that the Borrower has the enabling legal and regulatory framework and the institutional capacity to: (a) conduct environmental assessment; (b) avoid, minimize, mitigate and compensate for adverse environmental and social impacts resulting from the construction and operation of thermal power plants and associated infrastructure, while conserving natural habitat and physical cultural resources; and (c) conduct land acquisition and related resettlement activities in accordance with South African legal requirements and international good practice as exemplified by Bank safeguard policies.**

The sixth concern is about whether the Project would generate sufficient benefits for the poor, and whether the poor are adequately protected from electricity tariff increases. This is an important dimension that required consideration. **Since 1994 South Africa and Eskom have increased access to electricity from 34 percent to 81 percent** but because investments in new large-scale power generation were limited, the power system experienced a severe supply shortage in 2007/08, which is likely to recur if installed capacity is not expanded immediately. Although the Project does not directly finance new connections, the sector review carried out during Project preparation found that the Government has made provision for connecting the remaining 19 percent of households, the majority of whom are poor, by 2014. Moreover, **to improve access, in 2003, the Government launched the Free Basic Electricity (FBE) policy that provides 50 kWh per month for free to poor households.** About 25 percent of households benefit from this policy. The poor are also sheltered from the full impact of the tariff increases (which, it is important to note, are being implemented by Eskom across the board and are not tied in any way to the Project) by the lifeline tariff based on cross-subsidies for consumers using less than 350 kWh/month of electricity. Management also considered that electricity generated from the Medupi plant would contribute to alleviating expected electricity shortages, thereby providing a substantial boost to growth and job creation, not only in the mining sector and large manufacturing plants but also in the small and medium enterprise sector, which holds significant potential for employment. With unemployment ranging from 25-32 percent (depending on the measure used), and hurting mostly the poorer segments, the potential employment dividend associated with the Project is relatively high. Moreover, given the substantial impact of the South African economy, including its power generating capacity, on the rest of the Southern African region, the positive spillover effects on the development of neighboring less developed countries is also expected to be significant.

Seventh, with respect to the Requesters' claims about South Africa's repayment obligations, **Management estimates that the expected annual repayment will be no more than 0.1 percent of South Africa's total annual exports and, thus, unlikely to put any pressure on the country's foreign exchange situation.** The IBRD loan is a dollar-based loan, with a grace period of 7 years and a maturity of 28.5 years. These terms make it the cheapest and the longest maturity loan available to Eskom from any source.

Management Response

The Bank began preparation of the Project with considerable deliberation, especially with respect to the use of country systems. The Project's safeguard documentation was ready; construction was underway and some aspects of safeguard implementation, especially for the Medupi project, had been undertaken at this time. Therefore, **in preparing the SDR, this unusual aspect of the timing of the Bank's engagement proved valuable in assessing the integrity and robustness of the DEA's environmental review and approval process and the acceptability of Eskom's corporate practices prior to the decision by the Government to seek Bank support for Eskom's investment program.**

Eskom carried out public consultation and information disclosure in an open and transparent manner as an integral part of the EIA process. In addition, the draft SDR, prepared and disclosed by the Bank in 2009, was discussed at a workshop in South Africa in December 2009. Comments received from agricultural and other interested stakeholders from the

Limpopo area were useful to the Bank in preparing and issuing the revised final SDR in March 2010.

The Board consideration of this Project took place in the context of an intense international dialogue on climate change, emissions reduction targets, and climate financing commitments. Component A of the Project, which provides support for the Medupi Power Plant, has been and will continue to be the object of scrutiny. Although the Bank has responded to critics promptly with consistent messages about the African energy crisis and the proposed support for investments in renewable energy (wind and solar plants) and energy efficiency within this Project, persuading the most vocal opponents of fossil fuel-based energy of the rationale for Bank involvement will require sustained communications and engagement. **The Bank's approval of this Project was based on a clear rationale for the investment, its strong development impact, and a long-term plan for partnering with South Africa on the future of its energy sector in the ambit of its low carbon strategy. It is hoped that critics would ultimately be persuaded by this rationale.**

In conclusion, Management believes that extensive due diligence has been carried out during the preparation process and, through such due diligence, the requirements of Bank guidelines, policies and procedures, including those applicable to the matters raised in the Request, have been met. As a result, **Management believes that the Requesters' rights or interests have not been, nor will they be, directly and adversely affected.** As noted, on March 18, 2010, Management met with several civil society representatives in Washington and through a videoconference with attendees in South Africa (the meeting included the two Requester representatives), during which some of the issues highlighted in the Request were raised and discussed. Management would like to reiterate its willingness to continue the dialogue with civil society throughout Project implementation and supervision.

I. INTRODUCTION

1. On April 7, 2010, the Inspection Panel registered a Request for Inspection, IPN Request RQ10/03 (hereafter referred to as “the Request”), concerning the Republic of South Africa Eskom Investment Support Project (EISP, or the Project) financed by the International Bank for Reconstruction and Development (IBRD, or the Bank).

2. **Structure of the Text.** The document contains the following sections: Section II presents the Request; Section III provides background information on the Country Context and on the Project; Section IV discusses special issues; and Section V provides Management’s response. Annex 1 presents the Requesters’ claims, together with Management’s detailed responses, in table format.

II. THE REQUEST

3. The Bank’s support for the Project is an IBRD Loan of US\$3.750 billion to Eskom Holdings Limited, a parastatal utility, which is guaranteed by the Republic of South Africa. In addition, a Clean Technology Fund (CTF) loan for Component B in the amount of US\$350 million is proposed: US\$250 million to be channeled through the Bank and US\$100 million through the African Development Bank. The Project was approved by the IBRD Board of Directors on April 8, 2010. The Project closing date is October 31, 2015. The European Investment Bank, African Development Bank, bilateral and commercial lenders have approved or are in the process of considering additional loans to finance the Project.

4. The Request was submitted by groundWork and Earthlife Africa, two nongovernmental organizations (NGOs) from South Africa, on behalf of the representatives of community members located near Lephalale in South Africa’s Limpopo Province. The Request states that these communities have a number of concerns about the direct impacts of the Medupi coal-fired power plant (to be supported under the Project) and its associated facilities, as well as broader societal concerns. The Medupi power plant, according to the Request, has been under construction since 2007. The Requesters have asked that their identities be kept confidential and that groundWork and Earthlife Africa act as their designated representatives¹.

5. The Request contains claims that, according to the Inspection Panel, may constitute, *inter alia*, non-compliance by the Bank in relation to the following Operational Policies and Procedures, taking into account that, according to the Project Appraisal Document (PAD), some of these policies are being addressed under the use of country systems:

- OP 1.00 Poverty Reduction
- OP/BP 4.00 Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank Supported Projects
- OP/BP 4.01 Environmental Assessment

¹ The Inspection Panel sent a letter to Management on May 21, 2010 which supplements the initial Request for Inspection. The issues raised in the letter overlap with the issues raised by the Requesters in the initial request and are addressed in the Management Response. Management will respond separately to that letter.

- OP/BP 4.04 Natural Habitats
- OP/BP 4.11 Physical Cultural Resources
- OP/BP 4.12 Involuntary Resettlement
- OP/BP 7.50 Projects on International Waterways
- OP/BP 10.04 Economic Evaluation of Investment Operations.

6. The Request was received and registered before Board consideration of the Project and, therefore, at the time the Request was prepared, the Project Appraisal Document (PAD) was not available in the public domain. The PAD, which contains detailed information that could answer many of the Requesters' technical queries, was publicly disclosed after April 8, 2010.

III. COUNTRY CONTEXT AND PROJECT BACKGROUND

Country and Sector Background

7. South Africa is Africa's largest economy and a regional economic powerhouse. Robust growth of the South African economy has proved instrumental in improving conditions in the Sub-Saharan Africa (SSA) region as a whole. The South African economy has gone from strength to strength since 1994 and, as a result, its GDP in 2008 was 42 percent higher than in 1999, and 62 percent higher than in 1994. South Africa has increased access to electricity at a very fast pace since 1994 – from 34 to 81 percent of the population. Availability of reliable power supply has been essential to propelling the economy. Electricity consumption increased by about 40 percent between 1994 and 2006 as a result of a 50 percent increase in real GDP, a mass electrification expansion program, rapid urbanization and industrial growth. Residential consumption of electricity, which constitutes 20 percent of total consumption, grew by 50 percent, as access to electricity multiplied and rising income levels and urbanization saw greater use of electricity in people's lives. The pressure of expanding demand on the power sector has been especially severe for South Africa because of the increasing needs of its fast growing economy.

8. Severe power shortages in late 2007 and early 2008, compounded by the global economic crisis, led to the country's first recession in 17 years. South Africa is now slowly emerging from this recession. The electricity shortages are expected to recur, however, and if unaddressed will limit the extent of the economic recovery and undermine future growth. Understandably, the Government of South Africa (GoSA) has made energy security a strategic national priority. The associated financing needs are massive, at a time when fiscal space is severely constrained because of the economic downturn, and tight credit conditions exist in both the international and domestic capital markets. Under pressure, the Bank was called upon to play its role as "lender of last resort".

9. While addressing its immediate energy security needs, South Africa has gone further than most other Middle Income Countries and also other countries in the G-20 to develop a credible low carbon strategy, based on Long Term Mitigation Scenarios (LTMS). Under a two-pronged approach, the GoSA has: (a) assigned the highest priority in the near term to improving generating capacity; and (b) adopted strategies to accelerate demand side management (DSM),

energy efficiency and investments in clean energy; and pursue regulatory and economic instruments to stabilize greenhouse gases over the medium term and eventually reduce emissions over the long term, as envisaged in its low carbon strategy.

10. Several national and international commitments have signaled the GoSA's commitment to pursuing a low carbon growth path. The major actions include: (a) ratification of the United Nations Framework Convention on Climate Change (UNFCCC) in August 1997, and accession to the Kyoto Protocol in July 2002; (b) adoption of a National Climate Change Response Strategy (2004), which outlined a broad range of principles and policy measures for mitigation and adaptation to climate change; (c) association with the Copenhagen Accord of 2009, which has led to South Africa's political commitment to implementing economy-wide emission targets for 2020; (d) issuance of the Regulations for Energy Efficiency; (e) recent issuance of new regulatory standards for ambient air quality and emissions of specific air pollutants from coal-fired power plants, which are supported by a robust and mandatory system for public disclosure and pro-active stakeholder consultation with respect to environmental and social impacts; (f) adoption of a National Energy Efficiency Strategy (2006), which set an ambitious national target for energy efficiency improvement of 12 percent by the year 2015; (g) establishment in April 2006 of a National Energy Efficiency Agency with the mandate to promote energy conservation; and (h) adoption of a 2005 White Paper on Renewable Energy, and setting a target for achieving 4 percent of electricity demand (about 10,000 GWh) from renewable sources by 2013.

11. South Africa's economic impact is felt beyond its borders, including the rest of SSA. South Africa accounts for nearly one-third of SSA's GDP, and two-thirds of southern Africa's GDP. Studies have shown that a one percent growth in South Africa's GDP is associated with a 0.4–0.9 percent growth in GDP for the rest of SSA, independent of common regional shocks. South Africa also dominates the regional electricity market through Eskom, its state-owned utility company, which generates 95 percent of electricity used in the country, and more than 60 percent of all electricity produced in SSA. Six countries in the southern Africa sub-region depend to varying extent on power supply from Eskom to meet their own domestic needs. The 2007/08 power crisis seriously affected the sub-regional countries and their economies.

12. The GoSA's policy response to the crisis reflects the fact that there are no immediate domestic alternatives to coal for ensuring electricity supply. Coal is the major and only low-cost source for power generation and is expected to dominate the resource mix over the next 10-15 years. Among alternatives, the greatest potential for large renewable projects is limited to concentrating solar power (CSP) and wind power. However, CSP technology is globally still in the early stages of development and cannot be relied on for the country's large base load needs. Comparable state-of-the-art solar power technologies with storage characteristics to mimic base load supply from coal are not mature enough. The largest such plant in operation globally has a capacity of only 20 MW. Although wind power is a commercially mature and proven renewable energy technology, it is not well-suited to meet the large base load requirements such as those faced by South Africa. New hydropower potential is largely non-existent in the country.

13. DSM will continue to play a key role in conserving energy, particularly in an energy intensive economy like South Africa. In order to moderate growth in demand, Eskom, together with the GoSA and the National Energy Regulator of South Africa (NERSA), has embarked on a DSM program that aims to save 3,000 MW of generation capacity by 2013, of which about 1,000 MW equivalent have already been achieved.

14. There is a severe shortage of generation capacity in the sub-region. Nine of the twelve countries in the Southern Africa Power Pool (SAPP) have been experiencing energy shortages, caused primarily by the shortfall in South Africa's generation capacity. Although large hydropower generation potential exists within SAPP, it cannot be developed in the near term and certainly not soon enough to mitigate the impending return of the power crisis in South Africa as it recovers from the recession.

15. The Project will support the Government's poverty alleviation efforts by avoiding electricity shortfalls in the medium term. Such shortfalls would slow down growth, cause significant job losses and severely impact the poor. Delays in returning affected enterprises to full operation would increase unemployment and heighten social inequalities. In addition, lack of electricity supply would reverse the significant gains the country has made in access expansion and the associated social and economic benefits, including improved water supply, institutional facilities such as rural schools and hospitals, as well as increased industrial and commercial activities in rural areas. A further slowing of the electrification program, along with the power shortages, would seriously impact GoSA goals of universal access to electricity.

16. It is important to note that since 1994 South Africa and Eskom have increased access to electricity from 34 percent to 81 percent, but because investments in new large-scale power generation were limited, the power system experienced a severe supply shortage in 2007/08, which is likely to recur if installed capacity is not expanded immediately. Although the Project does not directly finance new connections, the sector review carried out during Project preparation found that the Government has made provision for connecting the remaining 19 percent of households, the majority of whom are poor, by 2014. Moreover, to improve access, in 2003, the Government launched the Free Basic Electricity (FBE) policy that provides 50 kWh per month for free to poor households. About 25 percent of households benefit from this policy. The poor are also sheltered from the full impact of the tariff increases (which, it is important to note, are being implemented by Eskom across the board and are not tied in any way to the Project) by the lifeline tariff based on cross-subsidies for consumers utilizing less than 350 kWh/month. Even more fundamentally, electricity generated from the Medupi plant would contribute to alleviating expected electricity shortages, thereby providing a substantial boost to growth and job creation: not only in the mining sector and large manufacturing plants but also in the small and medium enterprise sector, which holds significant potential for employment. With unemployment ranging from 25 to 32 percent (depending on the measure used), and hurting mostly the poorer segments, the potential employment dividend associated with the Project is relatively high. Moreover, given the substantial impact of the South African economy, including its power generating capacity, on the rest of the Southern African region, the positive spillover effects on the development of neighboring less developed countries is also expected to be significant.

The Project

17. The Project Development Objective is to enable Eskom to enhance its power supply and energy security in an efficient and sustainable manner so as to support both economic growth objectives and South Africa's long-term carbon mitigation strategy.

18. The Project, to be implemented by Eskom, comprises the following components:

- (a) Component A includes the Medupi coal-fired power plant (4,800 MW, based on supercritical technology) and is expected to cost US\$12.047 billion,² of which IBRD will provide financing of about US\$3.04 billion. This loan will be provided against supply & install and civil construction contracts for: (i) the power plant; (ii) associated transmission lines; and (iii) Interest during Construction (IDC) on the Loan, payable to IBRD and other lenders to the Project.
- (b) Component B includes investments in renewable energy (100 MW Sere Wind Power project and 100 MW Upington CSP project). This component is estimated to cost US\$1.228 billion, of which IBRD will provide financing of about US\$260 million.³
- (c) Component C includes both sector investments and technical assistance to support lowering Eskom's carbon intensity through energy efficiency and development of renewable energy. The Majuba Rail project (shift in transportation mode from road to rail) and technical assistance for assessing the opportunities for coal-fired power plant efficiency improvements and for the development and implementation of domestic and cross border renewable energy projects are envisaged under this component. The component is estimated to cost US\$576.07 million of which about US\$440.77 million will be financed by IBRD.
- (d) As per the request from the Borrower, Eskom Holdings, an allocation for US\$9.375 million has been made to finance the Front End Fee associated with the IBRD Loan.

19. The Project comprises about US\$1.804 billion of low carbon renewable and energy efficiency investments, of which IBRD will finance US\$700 million (and CTF is proposed to finance US\$350 million). Table 1 provides an overview of the Project costs and financing plan.

² The estimate Project total cost is based on IDC directly related to debt that has been raised by Eskom for the Medupi power plant. Any Eskom funding costs for its contributions to the plant from the Balance Sheet have not been included and have been considered as Eskom equity to the Project.

³ It is proposed that CTF support will subsequently provide financing of about US\$350 million for Component B of the Project through AfDB and IBRD.

Table 1: Project Cost and Financing Plan (US\$ million)

Project Component	Costs (US\$)	Financing Plan (US\$ millions)		
		IBRD	CTF ⁴	Eskom & Other Lenders
Component A: Medupi Power Project & Associated Transmission Lines	12,047.64	3,039.86	0.00	9,007.78
Component B.1: Sere Wind Power Project	445.43	110.00	100.00	235.43
Component B.2: Upington Concentrating Solar Power	782.68	150.00	350.00	383.31
TOTAL - Component B: Renewable Energy Projects	1228.11	260.00	350.00	618.74
Component C.1: Majuba Rail Project	546.07	410.77	0.00	135.31
Component C.2: Technical Assistance for Efficiency Improvements of the Coal	20.00	20.00	0.00	0.00
Component C.3: Technical Assistance for Renewable and Energy Efficiency Projects	10.00	10.00	0.00	0.00
TOTAL - Component C	576.07	440.77	0.00	135.31
Total Baseline cost, incl. Contingencies	12,499.51	3,200.00	350.00	8,949.51
Front End Fee (IBRD) and Management Fee (CTF)	10.00	9.375	0.625	-
Interest During Construction	1362.31	550.00	0.00	812.31
Total Financing Required	13,861.82	3,750.00	350.00	9,761.82

20. The Bank's financing support to Eskom is critical for sustaining South Africa's and the region's continued economic development by ensuring adequate electricity supply. Without the Project, energy investments would face delays, thus reducing the availability of supply in the country and the sub-region. South Africa would not be able to embark on the aggressive implementation of its low carbon initiatives such as investments in renewable energy, energy efficiency and shift in transport modes without the Project. IBRD/CTF financing will bridge the financing gap of the Eskom Investment Program. The Bank is playing its role as "lender of last resort" amidst the financial crisis. Bank support also sends a signal to private financiers regarding the credibility of Eskom's Investment Program.

21. In addition to ensuring power supply security by the most expeditious means, the Project supports interventions to mitigate climate change. In this respect, it will support the GoSA in implementing high-impact elements of its low carbon strategy to achieve the mitigation scenario endorsed by the Cabinet in 2008. The CSP plant will be a flagship activity. To put the CSP project in context: the 100 MW plant will be the biggest grid-connected plant in any developing country, the biggest CSP with storage to date, and the largest central receiver-type solar power project in Africa. As the largest facility in the world, it will establish cost and performance benchmarks for the broader deployment of CSP technology in the country and potentially in the sub-region. The replication potential is significant. However, currently CSP has a levelized cost⁵ of electricity two to three times that of supercritical coal-fired power plants and very limited

⁴ The GoSA and Eskom Holdings are currently in advanced stages of discussions with IBRD and AfDB for CTF support to the Sere Wind Power Project and the Upington CSP.

⁵ The levelized cost takes into account the upfront capital cost as well as life cycle operations, maintenance and fuel costs.

operational experience at scale. The strong potential for scaling-up to utility-scale wind power faces major barriers such as high costs relative to coal-fired production, inability to provide base load power due to output intermittency, and incremental transmission costs to connect isolated wind power sites to the grid. The demonstration impact of the Eskom renewable energy plants will reduce the risks for subsequent Independent Power Producers who are interested in entering the sector, thanks to South Africa's attractive renewable energy feed-in tariffs, but are constrained by uncertainties related to cost and risks.

22. Bank support to the energy sector in South Africa will enable the continued development of local and regional renewable energy sources that could contribute significantly to the country's energy mix over time even though coal will remain dominant as a source of energy in the medium term. The Project will thus ensure that South Africa's success to date in leading the sub-region in developing a low carbon strategy and supporting the pro-poor energy sector is not derailed. Further, as a leader on the continent, South Africa will help demonstrate the feasibility of large scale renewable generation, thus driving the renewable industry and the private sector towards future investment in Africa.

IV. SPECIAL ISSUES

Use of Country Systems

23. While the Panel listed possible issues under OP 4.01, OP 4.04, OP 4.11 and OP 4.12 which govern relevant environmental and safeguard aspects, those policies are not applicable due to the application of the Board approved OP 4.00 on *Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects* to the Project.⁶ The Board adopted OP 4.00 in 2005 after extensive consideration and consultations, especially on the detailed wording of the Policy Objectives and Operational Principles specified in Table A1 of the OP. It was adopted as a pilot program to "improve overall understanding of implementation issues related to greater use of country systems." Following a series of briefings and reports to the Board, on January 31, 2008, the Board approved a three-year extension of the pilot program with the objective of scaling-up the application of OP 4.00. Under this program, the Bank has supported pilot projects in which lending operations are prepared using the borrowing country's systems in place of a range of the Bank's environmental and social safeguards. The use of country systems (UCS) enables the Bank to scale up development impact, increase country ownership, build and/or strengthen country institutional capacity and increase cost effectiveness. These benefits are among the key reasons that the Paris Declaration on Aid Effectiveness, as adopted on March 2, 2005, endorsed a commitment of donors to "use country systems and procedures to the maximum extent possible." This commitment was strongly reiterated in the Accra Agenda for Action in September 2008. Accordingly, UCS for environmental and social safeguards has been implemented by the Bank in Bhutan, Brazil,

⁶ The Request for Inspection mentions that there is an allegation of non compliance with OP 7.50, although the Requesters do not appear to make any allegations concerning riparian issues and Management would not wish to impute to the Requesters any allegation concerning relations with other sovereign States. Management would like to clarify that OP 7.50 is not subject to Use of Country Systems and as a result, compliance with that policy was not the subject of the Use of Country Systems analysis. However, Management would also like to note that the policy requirements were assessed and reviewed carefully during Project preparation and compliance with the policy was fully addressed in the PAD (Page 64 Para. 243).

Egypt, Ghana, India, Jamaica, Tunisia, Romania, and South Africa (for the Global Environment Facility funded iSimangaliso National Wetland Park Project). In sum, although the Notice of Registration by the Panel refers to specific Bank policies (e.g., OP 4.01, 4.04, etc.), in accordance with OP 4.00, Management is responding by analyzing the Requesters' claims with reference to the corresponding safeguard provisions set forth in Table A1 of OP 4.00.

24. OP/BP 4.00 describes how to apply UCS. Under OP 4.00, the Bank considers a Borrower's environmental and social safeguard system to be "equivalent" and "acceptable" to the Bank if the Borrower's system: (a) is designed to achieve the Objectives and adhere to the applicable Operational Principles set out in Table A1 of OP 4.00; and (b) has the required institutional capacity and an acceptable track record in implementation practices and past performance in similar projects. If the Bank concludes that the environmental and social safeguard systems of the country do not meet the Objectives and Operational Principles defined in OP 4.00 Table A1, the Bank will recommend to and agree with the Borrower on gap-filling measures to be implemented by the Borrower prior to project approval or, if such measures must be carried out during project implementation, they will be subject to a time-bound legal agreement between the Bank and the Borrower.

25. For the purpose of establishing the equivalence and acceptability of a country's environmental and social safeguard systems, OP 4.00 also requires the Bank team to prepare and disclose for public consultation a Safeguard Diagnostic Review (SDR). South Africa was previously selected as a UCS pilot country for environmental and social safeguards because it has an established legal and regulatory system and a favorable reputation for effective implementation of its systems governing environmental assessment and protection of natural habitats, protected areas, physical cultural resources and involuntary resettlement. This relatively strong system was evident in the SDR completed by the Bank for the iSimangaliso project, which examined South Africa's legal framework for four of the same safeguard policies addressed in the EISP, although in iSimangaliso, the safeguards were tested against their application to activities within a legally protected wetlands area.

26. The EISP was considered a candidate project to be implemented under OP 4.00 in large part because Eskom has demonstrated a substantial corporate commitment to fulfilling and going "beyond compliance" with a range of environmental and social and other legal and regulatory requirements, in addition to embracing a sustainability policy on both a corporate and project level. As evidence of this commitment, Eskom is seeking to align its projects and its practices with the requirements of the Equator Principles (i.e., the International Finance Corporation's Performance Standards) and with the Global Reporting Initiative (GRI); it also subscribes to the United Nations Global Compact.⁷ Accordingly, Eskom appeared a good candidate for the Bank to consider under OP 4.00. Therefore, during the project concept stage, the Bank team began preparing an SDR in late 2008 to determine whether EISP should be processed under OP 4.00.

27. The SDR for the EISP described the scope, methodology, and findings of the equivalence analysis and acceptability assessment carried out in South Africa by Bank staff. The SDR builds upon the previously adopted and disclosed SDR prepared for the iSimangaliso

⁷ www.unglobalcompact.org/ParticipantsAndStakeholders/search_participant.html?detail=ESKOM

project.⁸ The preparation of the SDR for the EISP involved: (a) a desk review of the South African environmental and social safeguard systems; (b) discussions with Eskom's safeguard specialists and consultants, including site visits and review of Eskom's track record on environmental management and protection; (c) review of the findings and conclusions of the draft SDR with Government officials from the competent departments and divisions, including the Department of Environmental Affairs (DEA), Department of Water Affairs (DWA), and the South African Heritage Resources Agency (SAHRA); and (d) discussions with a range of officials from other organizations and consultants who worked on environmental and social safeguards in South Africa. The draft SDR was discussed in stakeholders' consultation workshops held in South Africa and benefited from feedback from many of the stakeholders involved, including NGOs, private sector, consultants, academia and Government officials. The Borrower (in this case Eskom) and the Bank disclosed the draft SDR prior to the commencement of Bank appraisal of the EISP. The SDR identifies and proposes gap-filling measures designed to ensure that applicable South African safeguard systems, and Eskom's corporate practices for complying with the relevant South African regulations, meet the equivalence and acceptability criteria of OP 4.00 throughout the project cycle and are adapted to extend their benefits beyond the scope of the project to the extent possible.

28. To analyze the equivalence between the Objectives and Operational Principles defined in OP 4.00 Table A1 and South African systems, and to assess acceptability of those systems, the Bank team used the following approach. It: (a) identified and reviewed the relevant South African legal and regulatory requirements that are relevant to the EISP and compared them with the applicable Objectives and Operational Principles defined in OP 4.00 Table A1; (b) assessed Eskom's implementation practices, track record, and institutional capacity; (c) identified aspects of the systems that would need to be clarified and/or strengthened to satisfy the applicable Objectives and Operational Principles set out in Table A1 and the aspects of implementation that would need to be improved for acceptability, as well as the time needed to put them in place successfully; and (d) discussed and specified actions Eskom is required to take to achieve and maintain equivalence and acceptable implementation practices, track record, and capacity. The SDR included an equivalence analysis of the South African legal framework regarding four safeguard policies: Environmental Assessment, Natural Habitats, Physical Cultural Resources, and Involuntary Resettlement. A draft SDR was disclosed by the Bank and Eskom in early November 2009 and was the subject of a stakeholder consultation in December 2009. The workshop on the draft SDR included representatives of NGOs, industry, academicians, government agencies and agricultural and ecotourism interests from the Limpopo area.

29. The March 2010 SDR concluded that the South African systems are equivalent to the relevant Objectives and Operational Policies of OP 4.00 Table A1 with respect to the first three environmental safeguard policies. With respect to Involuntary Resettlement, the SDR identified two gaps in the South African regulatory framework, of which one was not found to be a gap in Eskom's practice as it regularly monitors and assesses the progress of its resettlement actions until completion. The remaining gap was filled by actions taken by Eskom prior to Project appraisal, i.e., disclosure of a Resettlement Policy Framework (see Item 11 in Annex 1).

⁸ The March 2009 SDR prepared for the iSimangaliso project concluded that the South African systems are fundamentally equivalent to the Objectives and Operational Policies of OP 4.00 Table A1 with respect to the three applicable environmental safeguard policies, and partially equivalent with respect to the policy on Involuntary Resettlement.

30. The Bank team reviewed the safeguard documents already disclosed on the Eskom website for additional investments likely to be included in the Bank's EISP, and will continue to review the safeguard documents, such as Environmental Impact Reports (EIRs), Environmental Management Plans (EMPs), and additional studies prepared or to be prepared by Eskom for other EISP components as they become available during supervision of EISP implementation. The Bank team also reviewed the final EIRs prepared by Eskom for the Sere Wind Power project in Western Cape Province, the CSP plant near Upington in Northern Cape Province, and the 67-km Majuba Rail line for coal transport in Mpumalanga Province, and came to the conclusion that the safeguard documents for these Eskom investments demonstrate comparable equivalence and acceptability with respect to Environmental Assessment, Natural Habitats, Physical Cultural Resources and Involuntary Resettlement. Finally, the Bank team made several site visits to document and review the actual implementation and outcomes of safeguard measures, plans, policies and processes.

31. The preparation of the SDR enabled the Bank to assess the integrity and robustness of DEA's environmental review and approval process and provided insights into Eskom's capacity, commitment, and capability to address environmental and social safeguard issues with respect to the Environmental Impact Assessment (EIA) process and involuntary resettlement-related activities. Overall, the Bank team was satisfied that South Africa has the enabling legal and regulatory framework and Eskom has the institutional capacity to: (a) conduct environmental assessment; (b) avoid, minimize, mitigate and compensate for adverse environmental and social impacts resulting from the construction and operation of thermal power plants and associated infrastructure, while conserving natural habitat and physical cultural resources; and (c) conduct land acquisition and related resettlement activities in accordance with South African legal requirements and international good practice as exemplified by Bank safeguard policies and associated guidance documents, including the gap filling measures put in place, as required by the Bank.

Consultation, Disclosure, and Transparency in South African EIA Process

32. The Bank team that prepared the SDR concluded that the public consultation and disclosure process was well documented not only for the Medupi power plant, but also for the wind farm, the CSP plant, and the Majuba Rail project. The Bank was impressed by the fact that public consultation and information disclosure was carried out in an open and transparent manner as an integral part of the EIA process,⁹ consistent with Bank requirements for the environmental assessment process as required in OP 4.00 Table A1. The required process is summarized below.

33. **The South African Process.** According to South African regulations, the EIA process begins with a formal application to commence the process, which includes preparation and public disclosure of a Background Information Document (BID) (a pre-feasibility Study Report in some cases). This initial disclosure also begins the process of encouraging Interested & Affected Parties (I&APs) to identify and register themselves, so that they can receive updates of information, notice of document disclosures and where these documents can be accessed (and when and where public meetings will be held). Documents for public review and comment,

⁹ South African regulations refer to an EIA Process, which produces an EIR. This distinction in South African regulatory terminology is maintained in this Management Response because the Project was prepared under OP 4.00 (Use of Borrower Systems).

beginning with the BID/pre-feasibility Study Report, are typically disclosed at local public libraries and municipal offices, as well as on the websites of the project proponent (Eskom in this case) and the independent consultant hired to prepare the documents. All notices are broadcast locally in local languages as appropriate, not just English and Afrikaans, in both electronic media and print format. Approximately 500 individuals, representing a broad range of interests, registered as I&AP for the Medupi EIA process, including representatives of one of the NGOs now representing the Requesters.

34. Key steps in the process after disclosure and consultation on the BID/pre-feasibility Study Report are: disclosure and consultations on Scoping Reports; disclosure and consultations on the draft Environmental Impact Report (EIR), including public hearings accessible to local communities; preparation of a Final EIR, which must include an “Issues Trail Report,” in which all the issues that were raised during the consultation and disclosure period are summarized, along with the responses; and disclosure of the Record of Decision (ROD, now Environmental Authorization). As part of the decision-making process, the DEA must satisfy itself that the consultation process has been compliant with the law and well documented. If there is an appeal of the ROD, the Minister’s findings on that appeal are also publicly disclosed.

35. Beyond the Project-specific required consultations, it is worthwhile noting that the Bank team ascertained the country’s track record in carrying out broad consultations and consensus building in key Project related activities across sectors, as embedded in the National Economic Development and Labour Council (Nedlac) law. Nedlac is the vehicle that government, labor, business and community organizations in South Africa often use to cooperate, through problem-solving and negotiations, on economic, labor and development issues, and related challenges facing the country. This Nedlac process was followed for the preparation of the Project.

36. **Within the EISP Components.** The EIA process, including key steps in public consultation and disclosure mandated by South African laws and regulations, was followed by Eskom for the EISP components before the Bank became involved. With respect to the Medupi project, key dates in the EIA process were as follows: Eskom issued a Draft Scoping Report in October 2005 and held two rounds of public consultation on the Scoping Report at three venues in the Medupi area between October 3 and November 11, 2005. These were supplemented by open houses and one-on-one consultations, as requested. Similar steps were taken for consultations on the Draft EIR. In March 2006, Eskom issued the Draft EIR. The Final EIR was disclosed in May 2006, and an Addendum was issued in June 2006. The process of consultation and disclosure is documented through the Issues Trail Reports, which were disclosed with the Final EIR, and included in the application for authorization of the Project. In the case of the Medupi project, for example, the majority of the key issues raised by the Requesters were among the approximately two dozen issues identified and responded to in the over 200 page Issues Trial Report filed as part of the Final EIR.

37. According to the South African EIA system, the requirement for transparency and access to information does not end with project approval by the DEA, but continues through the implementation phase. In the case of the Medupi power plant, for example, the ROD requires Eskom to establish an Environmental Management Committee (EMC) that includes representatives of local communities (Marapong and Lephalale) to oversee implementation of the project in compliance with the requirements of the ROD, environmental legislation, and specific mitigation measures stipulated in the approved EMPs. As described below, such an

EMC has been established for Medupi and is actively engaged in monitoring project implementation.

38. The steps of consultation and disclosure summarized above and detailed for the Medupi EIR were also followed in preparation of the EIRs for the other key components: the Sere Wind Power project (Final EIR dated 2008); the Upington CSP project (Final EIR dated 2007); the Majuba Rail project (Final EIR dated 2004); and the Phase 1 Transmission Lines for the Medupi project (Final EIR dated 2008). BIDs, Scoping Reports, and EIRs are all available on Eskom's website (www.eskom.co.za/eia).

39. **For Water Supply to Medupi Power Plant.** As explained in the PAD, the water requirements of Medupi's full operation, including operation of flue gas desulfurization (FGD) technology, will be met from the first two phases of the Mokolo and Crocodile (West) Water Augmentation Project (MCWAP), which is an outgrowth of a Catchment Management Strategy formulated by the DWA in 2004. This project was designed to meet the 25-year planning horizon that anticipates high and growing demand for water for public supply, irrigation, and industrial use in the Steenbokpan-Lephalale corridor in which Medupi is located. The EIA process is still underway for Phases 1 and 2 of the MCWAP, which are proceeding concurrently. Following the disclosure of the BID and the registration of I&APs, the draft Scoping Reports for both phases were disclosed by the DWA in November 2009. For Phase 2, a revised Scoping Report was prepared, analyzing additional alternatives that were identified as a result of public comment on the draft, and disclosed for public comment in January 2010. The revision and re-disclosure of the Phase 2 Scoping Report further demonstrates the robustness and responsiveness of the South African EIA process.

40. Subject to DEA review and approval of the Scoping Reports, the EIR Phase is expected to begin in mid-2010 for both Phases 1 and 2. As noted in the SDR, all key documents for public consultation and disclosure prepared by the DWA for the MCWAP, including the National Water Strategy (2004) and the Catchment Management Strategy (2004) in which the MCWAP was identified as a core activity, are available on the DWA's website (www.dwa.gov.za), as are the relevant safeguard documents for Phases 1 and 2 of the MCWAP. The Scoping Reports were subject to local disclosure and consultation in a transparent and public manner as required by South African environmental regulations and in a manner consistent with what would be expected in accordance with the Objectives and Operational Principles listed in OP 4.00 Table A1.

41. **For Coal Supply to Medupi Power Plant.** No new coal mines will be developed to supply fuel to Medupi. The plant site is adjacent to the Grootegeeluk Colliery, an open pit, back-cast mine operated since early 1981 by Exxaro and located on the southern end of the vast Waterberg coal bed. Exxaro, a private sector operator, has within its 6,528 hectare (ha) concession at the colliery an estimated 5,600 million metric tons (Mmt) of coal. The environmental impacts of operating within Exxaro's concession have already been assessed as part of the Environmental Authorization to operate, and the mine's Environmental Management Programme is updated from time to time. For example, prior to the decision to proceed with the Medupi project, Grootegeeluk's Environment Management Programme was updated in 1992 and again in 2004.

42. Grooteegeluk's current production level is approximately 18.6 Mmt/yr and requires the operation of six coal processing (beneficiation) lines. In order to meet the demand of the Medupi project, two additional beneficiation lines will need to be installed. When Medupi is fully operational, Grooteegeluk's production will increase by 44 percent to 33.2 Mmt/yr. At that rate of production, Exxaro conceivably could mine coal within its concession for about 168 years, approximately halving the mine's life at the current production level.

43. Neither the Bank nor the DEA considered coal supply to be an associated project that should be considered in the EIR for the Medupi plant, because no new mine will be developed. The expansion of production levels within Grooteegeluk's existing area of authorized operation requires only an amendment to its Environmental Management Programme Report (EMPR), because Environmental Authorization has already been granted for the mine to operate and the installation of the two additional beneficiation lines and the ensuing increase in production were expected by the responsible environmental authorities to have minimal or no environmental and social impacts beyond those already assessed and permitted. In accordance with South African environmental regulations, the Amendment to the EMPR was prepared, accompanied by an environmental and social assessment that examined both direct and indirect (off-site) impacts of the installation and operation of the two additional beneficiation lines, as discussed in the PAD. Thus, in 2006 the mine owner prepared an environmental document entitled "Amendment to the Grooteegeluk Mine Environmental Management Programme Report (EMPR): Matimba Brownfields Expansion Project." Scoping for this report was conducted with stakeholder participation in March 2006, including a public meeting, and the draft report was publicly disclosed for stakeholder consultations in July 2006. The Limpopo Department of Minerals and Energy issued its approval for the amendment to the EMPR in 2007. The Bank team reviewed the Amendment along with its accompanying environmental and social assessment, and came to the view that it is of good quality, consistent with the expected level of direct and indirect impacts. Local consultations on and disclosure of the Amended EMPR and its incorporated environmental and social assessments, as required by the South African environmental regulations, also is consistent with what would be expected in accordance with OP 4.00 Table A1.

Compliance with and Enforcement of South African Environmental Regulations

44. In 2001, the DEA initiated a process to develop appropriate authority structures to undertake pro-active environmental monitoring for purposes of assessing and enforcing compliance. This resulted in the issuance in 2003 of legislative authority under the National Environmental Management Act (NEMA), designating an Environmental Monitoring Inspectorate as the agency responsible for enforcing NEMA and other specific environmental management laws, together with subordinate legislation and regulations, and establishing a new Enforcement Directorate within the DEA. NEMA grants individual Environmental Monitoring Inspectors (EMIs) wide powers, including powers of inspection, investigation, administration and enforcement. In addition to these powers, EMIs (within their mandate) have the same powers as those assigned a police official under specified provisions of the Criminal Procedure Act. These provisions deal with search warrants, entering premises, seizure, forfeiture, and disposal of property connected with offences as well as powers relating to arrest, issuing written notices to appear in court, and issuing admission-of-guilt fines.

45. Compliance monitoring and enforcement are recognized by the DEA as an area for overall improvement. However, data from the DEA indicates that significant instances of non-compliance are concentrated in particular sectors, including artisanal mining and quarrying, municipal public services, property development and agricultural operations, and are usually small in scale. In contrast, the DEA informed the Bank team that the energy generation sector, and Eskom in particular, have been largely compliant. At the project level, the Bank team believes the establishment of an independent Environmental Control Officer (ECO) and an EMC are powerful tools in ensuring compliance and accountability in Eskom's management of environmental and social issues. The ROD for the Medupi project requires the appointment of an independent ECO, reporting to both Eskom and the DEA, with responsibility for:

- Monitoring on a daily basis of project compliance with the ROD, environmental legislation, and specific mitigation requirements stipulated in the EMPs;
- Ensuring that periodic performance audits are undertaken; and
- Submission to the DEA of a written environmental compliance report on a bi-monthly basis.

46. Employment of an ECO is mandatory until all rehabilitation measures, including those required in response to construction-related damage, are completed and the site is handed over to Eskom for operation. Establishment of an EMC is also required for the purpose of monitoring project compliance during construction, and must have at minimum the following composition:

- A chairperson;
- The ECO, who also reports to and is accountable to the EMC;
- Two representatives of the public, one community member from Marapong and one from Lephalale;
- An ecologist with direct project experience in the EIA process, or otherwise suitably qualified; and
- A senior site manager from the main contractor.

47. The EMC must meet on a bi-monthly basis and monitor and audit project compliance as noted above for the ECO. At the completion of construction, the role, responsibilities and constitution of the EMC are to be reconsidered and the committee re-established with new terms of reference for the operational phase of development. During Project preparation, the Bank team preparing the SDR met with the Medupi-site ECO, who briefed the team on the environmental management of the construction program.

Human Health Impacts of Medupi

48. In defining and assessing human health risk, the EIR, the DEA and the Bank team refer to the widely accepted definition that risk is a product of hazard and exposure. In the case of human health risk from air emissions, the measure of hazard is the concentration of pollutants in ambient air quality and exposure is the likelihood that people will be present, especially people with significant respiratory problems that make them more sensitive and vulnerable. It is important to note that threshold concentrations for people at risk are usually incorporated into

guidelines established by the World Health Organization (WHO) and national legislation for ambient air quality.

49. Eskom has undertaken extensive environmental, social and health analyses as part of the EIA process. The final EIR for the Medupi project includes a detailed analysis, based on state-of-the-art air quality modeling of human health effects, and concludes that risk of impacts on human health will be low (Final EIR: Section 9 and Appendices P, Q, R, S, T, U, and AF). The assessment of human health risks, presented in the final EIR, is based on robust air quality modeling, appropriate baseline and parameters as inputs to the models, and conservative thresholds (e.g., ambient air quality criteria) for analyzing human health risks, as is discussed below.

50. **Air Quality Modeling.** The CALPUFF dispersion modeling system, a state-of-the-art and widely used set of algorithms, was used in the EIR air quality impact analysis to predict both current and future ambient concentrations of pollutants. Of all the commercially available models, CALPUFF is considered to be best suited to large coal-fired power plants because of the manner in which upper air conditions are simulated. Its use in the EIR to also predict current ambient air quality is important as a validation tool, because it helps determine whether the approach to impact assessment is conservative, i.e., the predictions regarding future conditions are likely to represent a “worst case” scenario. The validation exercise suggest that the EIR likely over-predicts levels and impacts of future ambient concentrations because the predicted values (model results) for baseline (existing) conditions, using hourly levels of concentration as the most sensitive indicator, exceeded measured values (observations from recent air quality monitoring data) by a factor of at least six. Thus, the predictions of future ambient air quality conditions by the modeling exercise are conservative, i.e., the EIR presents a “worst case” scenario for assessing human health effects and compliance with air quality regulations.

51. **Parameters Used in Model Predictions.** With respect to air emissions from coal-fired power plants, the primary pollutants presenting risk to human health are particulates and, depending on the source of coal, mercury emissions. Levels of nitrous oxides (NO_x) and sulfur dioxide (SO_2) may also pose human health risks at high levels of concentration, but these two pollutants are normally of greater concern with respect to formation of acid rain in temperate or humid climates and incremental atmospheric impacts (ozone depletion with respect to NO_x and global cooling with respect to SO_2).

52. For the Medupi project, the EIR focused particularly on the modeling and subsequent human health risk analysis of SO_2 and mercury, because particulates are almost entirely removed by pollution abatement technology, as noted below. The model assumed no installation of SO_2 abatement measures at Medupi (i.e., the absence of FGD technology) and that all the mercury in the coal reported to the stack emissions. Medupi will commence operations using low NO_x burner technology (Final EIR: Section 1.2.3 and Section 9.2.1) and particulate control equipment (Final EIR: Section 2.5.4 and Section 9.2.1) with removal efficiencies of more than 99.9 percent, designed¹⁰ to produce particulate emissions levels less than 50 mg/Nm^3 . This is consistent with good international industry practice, and the cumulative impact of NO_x and particulates from Medupi on ambient air quality and human health, therefore, is low.

¹⁰ Guaranteed performance by the manufacturer of the equipment purchased by Eskom for Medupi.

53. Prevailing winds are from the northeast all year. Background levels of particulates upwind of the project site, i.e., in the populated areas of Marapong and Onverwacht, at times can be high. This often is seen in communities with vehicle traffic in relatively dry climates. The baseline SO₂ concentrations in the project area are affected primarily by the existing Matimba Power Station, brickworks at Hanglip, and use of coal in home heating systems in the nearby town of Marapong. As required by South African regulations, the air quality impact analysis examined the cumulative impact of adding Medupi's emissions to existing ambient air quality conditions; therefore, existing ambient air quality is a key input into the model, and the predictions of future conditions represent cumulative impacts.

54. **Ambient Air Quality Criteria.** A conservative (worst case) approach also was taken in the EIR in: (a) the selection of additional thresholds besides those provided for in South African ambient air quality regulations, as explained in the following paragraph; and (b) opting to interpret a single exceedence of any threshold beyond the fence line of the power plant as constituting "non-compliance," even though this is not how ambient air quality thresholds are normally used (see paragraph 65).

55. At the time the EIR was being prepared for the Medupi project (2005-2006), Schedule 2 of South Africa's Air Quality Act issued in 2004 was applicable, which set interim ambient air quality standards that were closely aligned with WHO guidelines for the protection of human health and with European Union Directives. This reference to WHO guidelines is consistent with the approach taken by the World Bank to ambient air quality in the Bank's 1998 *Pollution and Prevention Abatement Handbook*, which was also in effect at the time of the EIR analysis for the Medupi project.¹¹ In addition to using South African ambient air quality thresholds that were in effect at the time, the EIR chose to include as part of the modeling and analytical work the European Commission (EC) 1-hour criteria that are recognized as particularly stringent with respect to human health, especially for SO₂. The GoSA interim ambient standards did not include a 1-hour limit for SO₂, but in the EIR analysis the EC's 1-hour limit of 350 µg/Nm³ was applied. To put this EC criterion in perspective, California (USA) has defined a 1-hour threshold risk level of 660 µg/Nm³ for at-risk individuals; thus, the threshold used in the EIR analysis for 1-hour exposure is strongly precautionary for predicting impacts on human health.

56. For the analysis of human health risks of mercury in the emissions, summarized in the next section, the EIR (Appendix AF: Quantification of Mercury Emissions) used WHO guidelines for annual averages and State of California Reference Exposure Levels for highest hourly exposure and annual averages, as well as a DEA guideline issued in 2001 for annual averages.

57. **Current Conditions without Medupi.** As noted above, the EIR analysis of existing and future SO₂ levels in ambient air used as thresholds both South Africa's interim ambient air quality standards, equivalent to WHO guidelines, and a 1-hour limit for SO₂ of 350 µg/Nm³. Sampling data from various periods between 1991 and 2005 show that these precautionary limits were exceeded rarely even at monitoring stations directly downwind and within 4 km of the Matimba plant. The percentage of the hours sampled that exceeded the EC 1-hour standard in

¹¹ This same reference to WHO guidelines for ambient air quality remains in the Bank's 2007 update of the General Environmental Health and Safety Guideline, which came into effect after the Medupi EIR was completed and construction began.

sampling periods between 1989 and 2004 ranged from 0.02 to 0.23. An intensive 10-month Eskom sampling campaign in 2004/05 at ten stations surrounding Matimba included one station 8 km downwind of the plant, at which the EC hourly SO₂ limit was exceeded only once and the daily average was not exceeded at all. The daily average was exceeded only three times and at only one station, 3 km immediately west of the Matimba plant. Annual averages remained well below the guidelines at the ten stations.

58. Based on the actual monitoring data summarized above and the outcome of the modeling exercise of current conditions (i.e., the baseline), the EIR concludes that “little potential exists for... health risks due to sulfur dioxide levels” at present, even in the high-exposure areas downwind of the plant, where population density is low. The most populated locality nearby is the town of Marapong (population 17,000) which is near Matimba but to the northeast, hence normally upwind. There, although ambient concentrations are lower and limits are exceeded less frequently than at downwind stations, the health risk rises because a population of 17,000 will include a significant number of individuals with respiratory conditions (i.e., increase in exposure produces an increase in risk for detectable human health impacts). The report points out that the evaluation of risk in Marapong is based on short-term exceedence of health thresholds occurring on average only four times per year. Eskom established a continuous monitoring station in Marapong in January 2008, and quarterly monitoring reports show that through December 2009, the 1-hour limit for SO₂ in the then-proposed (and since adopted) new DEA standards was exceeded five times during those two years. Two of the exceedences occurred when the wind was from the northeast; the Matimba Plant could not have been the source of the SO₂ on those occasions.

59. **Model Predictions and Human Health Risk with Medupi.** The modeling and analyses undertaken by the EIR indicate that the cumulative impact of Medupi on ambient air quality poses no significant incremental health risk on local communities in regard to increased levels of exposure to mercury, particulates and SO₂. Part of the reason for this is the northeast winds, as noted earlier. Marapong and Onverwacht are located upwind, to the north and east of the project site. Downwind of the project site the land use is primarily large game farms with low density human population. Existing (baseline) data show that the highest SO₂ levels occur in the sparsely populated game farm area to the southwest. With significantly fewer people living downwind than upwind, it is expected that there would be significantly fewer at-risk individuals, and the likelihood of detectable human health effects would be low, unless the hazards (predicted concentrations) were unacceptably high.

60. Mercury levels in the coal from Grooteegeluk are low to begin with (0.000045 percent mercury). The cumulative mercury emissions of the Medupi and Matimba power plants are predicted to produce mercury concentrations in ambient air that are significantly lower than the most stringent guidelines for public exposure (EIR: Appendix AF, Table 7), approximately 10 times lower than WHO and State of California threshold guidelines. Thus, the human health risk is low.

61. Model predictions of particulate emissions downwind of the Medupi project site were found to comply with South African daily and annual standards, but exceed at times the stringent hourly EC threshold in the near vicinity downwind of the ash dumps. This risk, connected to dust generation at the ash dump rather than to stack emissions, has been addressed in the design of the ash disposal operation to avoid generation of fugitive dust. NO_x and particulate levels in

Medupi's stack emissions are significantly reduced by installation of emissions control equipment for these parameters. Thus, the human health risk from particulate emissions is low.

62. Operation of the six units of the Medupi plant without FGD is predicted to raise the number of times the daily concentration limit for SO₂ is exceeded in the maximum impact area downwind to 33 times per year, and to more than double the size of that area. The more stringent EC hourly limit could be exceeded 419 times in a year downwind (a frequency of less than 5 per cent). The additional area affected is likely to remain as sparsely populated game farms, and the risk of health effects therefore remains low. Moreover, due to the use of a highly precautionary model to project ambient impacts as a worst case scenario, the predicted concentrations are potentially as much as six-fold higher than what is likely to be found by monitoring data once Medupi is fully operational, and the frequency of exceedences also is likely to be much less than predicted. At Marapong, the dispersion model predicts exceedence of the EC hourly limit 35 times (frequency less than 1 percent) and of the daily limit 4 times per year. These numbers continue to be relatively low because the wind blows only infrequently from the southwest. Nevertheless, Eskom is building Medupi to be FGD ready and has made a commitment to install FGD with better than 90 percent removal efficiency, so that Medupi will not cause the ambient SO₂ standard to be exceeded.

63. The human health risks of not immediately installing FGD at Medupi have been examined rigorously as part of the EIA process, and have been found to be acceptable as explained in the PAD. The only reason for the delay in installing FGD, clearly described in the PAD, is due to the constraints on water supply until such time as the GoSA completes the second phase of the MCWAP, which will deliver a volume of water to the project area well in excess of the needs for FGD operations at Medupi. Air emissions and ambient air quality impacts were key issues identified in the ROD, along with groundwater protection, solid waste management, conservation of cultural resources and environmental management and monitoring.

64. The DEA took into account the baseline conditions and model predictions of cumulative impacts in its Environmental Authorization for Medupi issued September 21, 2006, by setting the following conditions:

- Eskom must initiate a program for the continuous monitoring of ambient concentrations of pollutants in the Marapong residential area as well as areas surrounding the power plant and existing Matimba Power Station. The program must also detail reporting procedures including, among others, the submission of quarterly reports to the department.
- Eskom must install, commission and operate any required SO₂ abatement measures that may be necessary to ensure compliance with any applicable emission or ambient air quality standards.
- Notwithstanding the measures referred to above, should the monitoring indicate non-compliance with ambient SO₂ standards, Eskom must install, commission and operate any required SO₂ abatement measures in respect of the Matimba Power Station as may be necessary to ensure compliance with any applicable emission or ambient air quality standards.

- Eskom must initiate a program of support for initiatives aimed at improving air quality in the Marapong residential area. This program must be included in the construction EMP and carried through to the operational EMP.

65. On December 24, 2009, the Minister of Water and Environmental Affairs issued final ambient air quality standards for South Africa, to take effect immediately. Unlike the interim standards, the final ones are expressed as a combination of limit values and frequencies of exceedence. For SO₂, a 1-hour limit value of 350 µg/Nm³ has been introduced, which was also used in the Medupi EIR, as well as a 10-minute standard (500 µg/Nm³); the other threshold values are unchanged from what was used in the EIR for the Medupi project. Consequently, the conclusions and predictions in the EIR remain valid and conservative. The frequencies of allowed exceedence (which were not considered in the EIR analysis) represent the maximum number of times a threshold value can be exceeded at a given sampling location in a calendar year without resulting in non-compliance with the standard. If these exceedence frequencies had been in effect at the time the EIR was written, its conclusions would have been that the baseline data showed virtually no instances of non-compliance with any of the standards, and the SO₂ concentrations predicted by the dispersion model would not result in non-compliance in Marapong. Similarly, the five exceedences measured in Marapong over 2008-09 are well within the tolerance for the 1-hour standard, and the SO₂ concentrations predicted by the dispersion model would also not result in non-compliance there. However, the predicted number of exceedences of the hourly and daily limits in the maximum impact area, downwind of Medupi, is greater than the permissible frequencies of exceedence in the final standards. That said, the risk for human health effects remains low, because: (a) the downwind area is expected to remain sparsely populated over the medium term, owing to lack of employment opportunities and water shortages; and (b) because the validation exercise shows that the model over-predicts future concentration levels and, therefore, the frequency of exceedences. Accordingly, the installation of FGD, as planned by Eskom and described below, is consistent with internationally recognized good practice.

66. Eskom's staged approach to FGD is consistent with the Environmental Authorization and, in fact, anticipates the response to "any required SO₂ abatement measures" by designing Medupi so that it can be retrofitted with wet FGD equipment, which is the most effective (and costly) technology used for SO₂ emissions control. Eskom proposes to install FGD on the Medupi units in a sequential manner, as each operating unit undergoes its generation outage for major maintenance (normally after six years of operation). This timetable, which follows normal industry practice of retrofitting existing plants with FGD, will be facilitated by the "FGD-ready" plant design and is reflected in a legal covenant in the Project Agreement with Eskom. Under this timetable, FGD installation is expected to begin in 2018 at the earliest and continue through 2021, at which time Medupi will be fully equipped with FGD.

67. As required by South African regulations, the EIR must examine cumulative impacts of the project on the existing environment (see paragraph 53). The DEA is responsible for considering and managing cumulative impacts at the strategic level. Therefore, in consideration of the broader cumulative effects of any future development that may occur in the affected airshed, the DEA intends to recommend to the Minister that the region around Medupi – the Waterberg airshed – be designated as a National Priority Area for Air Pollution Control. Normally, this occurs when an airshed is out of compliance with national ambient air quality standards, but in this case, the proposed action by the DEA would be pro-active and designed to

avoid the deterioration of ambient air quality that could otherwise occur if, as expected, there is further residential and industrial development (besides Medupi) that would increase emissions of air pollutants generally. In fact, the ROD issued by the DEA took into account the Department's views on cumulative effects at a more strategic level. The National Priority Area designation will result in expanded monitoring, more intensive scrutiny of development proposals, and the likelihood that future project developers will be required to install pollution control equipment sufficient for compliance with ambient standards, not merely the applicable emission standards. The expanded monitoring and more intensive scrutiny would also be relevant to the SO₂ abatement measures for both Medupi and Matimba power plants, as noted above regarding the Environmental Authorization for Medupi. Under the new emission standards that were adopted by the GoSA in April 2010, Medupi will be allowed to operate for five years as an existing plant with respect to emissions and ambient air quality, but then must install within the next three years pollution control equipment that brings the plant into line with the more stringent emissions limits for new power plants.

68. As a part of its overall approach to strategic and cumulative impact assessment, the DEA has also awarded a contract for the development of the Waterberg Environmental Management Framework (EMF), which will examine current conditions and long-term management options for biodiversity conservation, air quality, water supply, agricultural development, ecotourism and industrial and population growth. The preparation of the Waterberg EMF will be subject to extensive consultation between the DEA and stakeholders, as required by the existing legislation, and will inform the development of a Strategic Environmental Management Plan for the Waterberg District Municipality. Finally, the GoSA, the Government of Botswana and Eskom are collaborating with the Bank in developing a transboundary Regional Environmental and Social Assessment (RESA) that includes air quality monitoring and management as a key issue of concern. The RESA includes the Waterberg area. The Bank is expecting a final report on the first phase in mid-2010, which will include terms of reference for second phase. The Bank expects the second phase to be launched in late 2010).

V. MANAGEMENT'S RESPONSE

69. The Bank started the preparation of the Project with considerable deliberation, especially with respect to the Use of Country Systems given that the EIA process had been completed for the investments the Bank proposed to finance and construction of the Medupi project was already underway. In preparing the SDR, this unusual aspect of the timing of the Bank's engagement proved valuable in assessing the integrity and robustness of DEA's environmental review and approval process and the acceptability of Eskom's corporate practices prior to the decision by the GoSA to seek Bank support for Eskom's investment program. In the course of the deliberations on whether to process the Project under OP 4.00, the Bank also reviewed and analyzed in detail the public consultation and disclosure process mandated by South African laws and regulations, including the safeguard documents disclosed on Eskom's website. In assessing the robustness of the public consultation and disclosure aspects of the EIA process, the Bank benefitted from being able to observe the EIA process that was underway for the water supply system and the expansion of production at the nearby colliery that had been in operation for 30 years. In particular, the Bank was able to review the Issues and Trails Reports and minutes of public meetings to assess how effectively the concerns raised by I&APs and participants in public workshops had been addressed and taken in to consideration by the permitting authorities.

The draft SDR, prepared and disclosed by the Bank in 2009, was discussed at a workshop in South Africa in December 2009. Comments received from agricultural interests and other interested stakeholders from the Limpopo area were useful to the Bank in preparing and issuing the revised final SDR in March 2010.

70. The Board consideration of the Project took place in the context of an intense international dialogue on climate change, emissions reduction targets, and climate financing commitments. Component A of the Project, which provides support for the Medupi Power Plant, has been and will continue to be the object of scrutiny. Although the Bank has responded to critics promptly with consistent messages about the African energy crisis and the proposed support for investments in renewable energy (wind and solar plants) and energy efficiency within this Project, persuading the most vocal opponents of fossil fuel-based energy of the rationale for Bank involvement will require sustained communication and engagement. The Bank's approval was based on a clear rationale for the investment, its major development impact, and a long-term plan for partnering with South Africa on the future of its energy sector in the ambit of its low carbon strategy that would form the basis for such communications. The Bank's key messages convey the challenge of encouraging economic growth, expanding access to electricity for the poor, and mitigating the effects of climate change by reducing carbon emissions. Consistent, frequent media outreach and regular stakeholder consultations have been critical in Project preparation and will continue to be the focus of communication going forward on the Project.

71. As noted above, Eskom carried out public consultation and information disclosure in an open and transparent manner as an integral part of the EIA process much before the Bank's involvement. Further, Management conducted SDR consultations with civil society in December 2009. It was on March 18, 2010, when Management met with several civil society representatives in Washington and through a videoconference with attendees in South Africa, that the two Requester representatives raised some of the issues highlighted in the Request.

72. The Request was received and registered on April 7, 2010, a day before Board consideration of the Project. Therefore, at the time the Request was prepared, the PAD was not available in the public domain. Management believes the availability of detailed information provided in the PAD would answer many of the Requesters' technical queries in a comprehensive manner. In addition, Management would like to reiterate its willingness to continue the dialogue with civil society throughout Project implementation and supervision.

73. Management believes that extensive due diligence has been carried out during the preparation process and, through such due diligence, compliance with the Bank guidelines, policies and procedures, including those applicable to the matters raised in the Request, has been ensured. As a result, Management believes that the Requesters' rights or interests have not been, nor will they be, directly and adversely affected.

74. Management is also committed to providing robust implementation support to this Project, to closely monitor progress on each of the issues outlined above, as well as to monitor implementation by the Borrower of measures agreed upon as a basis for this Project's approval.

Annex 1. Claims and Responses

No.	Claim	OP/BP	Response
	Health Impacts		
1.	Communities have serious concerns about the potential health impacts of emissions from the Medupi plant, which are expected to be significant.	4.00	<p>Eskom has undertaken extensive environmental, social, and health analyses as part of the EIA process and the project has been approved by DEA consistent with national laws and regulations. The final EIR for the Medupi project includes a detailed analysis, based on state-of-the-art air quality modeling, of human health effects (see EIR Section 9 and Appendices P, Q, R, S, T, U, and AF), and concludes that the risk of impacts on human health will be low for reasons discussed in detail in paragraphs 48-50, and 54-62 of this Management Response.</p> <p>The modeling particularly focused on SO₂ and mercury emissions, taking into consideration the cumulative effect of Medupi emissions added to existing ambient air quality conditions. A conservative (worst case) approach was taken in the EIR to the air quality modeling studies, both in the selection of additional thresholds, as explained below, and in opting to interpret a single exceedence of any threshold beyond the fence line of the power plant as constituting "non-compliance" even though this is not how ambient air quality thresholds are normally used. In addition, the EIR chose to also include as part of the modeling and analytical work the EC 1-hour criteria that are recognized as stringent with respect to human health, especially for SO₂. The dispersion modeling over-predicts the ambient concentrations because the predicted values of the baseline scenario (existing conditions) using the more stringent hourly level exceeded measured (observed) values by a factor of at least six.</p>
2.	In particular, communities living in the vicinity of the Medupi plant will be exposed to increased levels of particulates and sulphur dioxide, which already exceed local and international air quality limits in the nearby towns of Marapong and Onverwacht, and could have significant public health impacts.	4.00	<p>As indicated in Item No. 1 above, the analyses and studies undertaken by the EIR indicate that the human health risks resulting from levels of exposure to particulates and SO₂ will be low. Part of the reason for this determination is the fact that prevailing winds in the project area are from the northeast year around. Marapong and Onverwacht are located upwind, to the north and east of the project site. Downwind of the project site the land use is primarily large game farms with low density human population (see paragraph 59 of this Management Report).</p> <p>As explained in the EIR (see paragraph 52 of this Management Response), Medupi will operate using particulate control equipment with removal efficiencies of more than 99.9 percent, designed to produce particulate emissions levels less than 50 mg/Nm³. The data indicate that background levels of particulate emissions upwind of the project site, i.e., in the populated areas of Marapong and Onverwacht, at times can be high. This often is seen in communities with vehicle traffic in relatively dry climates. Model predictions of particulate emissions downwind of the Medupi project site were found to comply with South African daily and annual standards, but exceed at times the stringent hourly EC threshold in the vicinity of the ash dumps. This risk, connected to dust generation at the ash dump rather than to stack emissions, has been addressed in the design of the ash disposal system.</p> <p>In the case of SO₂, the South African ambient air quality thresholds that were applicable and used in the air quality modeling were comparable to thresholds identified by the WHO. However, as in the case of particulates, the EIR included in the analysis an EC hourly value that is recognized as very stringent (see paragraph 55 of this Management Response). The analysis determined that the human health effects from SO₂ exposure would be low because hourly, daily, and annual ambient air quality thresholds for SO₂ are not exceeded upwind, including the frequency</p>

No.	Claim	OP/BP	Response
			threshold for the more stringent hourly level. In the maximum impact area downwind, a game farm area, where residential density is very low, exceedences of hourly and daily, but not annual, thresholds are predicted. The frequency of exceedences is predicted to be low, less than 5 percent. Moreover, due to the use of a highly precautionary model to project ambient impacts as a worst case scenario, the predicted concentrations are potentially as much as six-fold higher than what is likely to be found by monitoring data once Medupi is fully operational; the frequency of exceedences also is likely to be much less than predicted.
	Water Use		
3.	Medupi is located in a water scarce area and the water supply for residents of the area and agriculture, the main source of livelihoods, is not assured. The sulphur scrubbers that will be associated with Medupi are water-intensive and will add to the strain on water supplies.	4.00	<p>Eskom took water availability into account in plant design. The project is designed to minimize the consumption of water, especially in the design of the cooling and ash disposal systems. In the alternatives section of the Medupi EIR (Section 2.5), the comparison of water consumption in dry and wet cooling systems (0.2 liters versus 1.8 liters per kilowatt-hour) is the basis of Eskom's selection of dry cooling. Water consumption will begin at Medupi in 2012, increase to about 3 million cubic meters per year (Mm³/yr) by 2014, and reach 6 Mm³/yr by 2017, when all generating units are operating. Phased installation of FGD, over the period from 2018 to 2021, will gradually raise consumption to the anticipated full volume, 12 Mm³/yr. (If wet cooling had been selected instead, total water consumption would be approximately 60 Mm³/yr). The ash disposal system uses just enough water to prevent dust generation during deposition of the ash, and will include a leachate collection, treatment, and reclamation system.</p> <p>The DWA has formulated a Catchment Management Strategy to meet projected water needs with a 25-year planning horizon for public supply, agriculture, power generation, and industry in the Lephalale area. The DWA will implement the MCWAP as one aspect of that strategy. A preliminary activity of the MCWAP in 2011 is "debottlenecking" the transmission main from the Mokolo Reservoir, which also supplies the nearby Matimba Power Plant, so that it can provide water for the early operation of Medupi and additional public supply for Lephalale. Phase 1 of MCWAP involves construction of a new pipeline in the right of way of the present one, so that the combined delivery capacity of the two mains will be 53.4 Mm³/yr by 2013. The DWA is proceeding in parallel with Phase 2 of MCWAP – the transfer of 169.3 Mm³/yr through a new pipeline from the Crocodile River to the Lephalale area – and expects this infrastructure to be functioning in 2015, well before Medupi becomes fully operational or has any FGD installed. See also the response to Item No. 4, below.</p>
	Livelihood Impacts		
4.	Construction of Medupi could have detrimental impacts on peoples' livelihoods living in and around Lephalale. The industrial activity and pollution will adversely affect agriculture, livestock rearing, and eco-tourism.	4.00, 1.00	<p>Based on the analyses and studies for the EIR, Management believes that the impacts related to construction of Medupi should not be detrimental. However, should any impacts be detrimental, Management is confident that mitigation measures are in place to avoid or minimize such impacts. These measures include project-specific actions as well as actions being undertaken by the GoSA at a strategic planning and management level for the Waterberg District Municipality.</p> <p>Management notes that the EIR for Medupi has identified and addressed project-related impacts on peoples' livelihoods (Section 15) and on the environment (Sections 6-14) in the project area during the construction and operation of the project, and appropriate management measures</p>

No.	Claim	OP/BP	Response
			<p>have been put in place to avoid or mitigate them. Moreover, the ROD requires a monitoring system that includes representation of local communities (see paragraphs 46-47 of this Management Response).</p> <p>The GoSA has been and remains engaged in longer-term strategic planning in the project area. The GoSA has identified Limpopo Province and particularly the Waterberg District Municipality as an area in the country where industrial activity and population growth is both likely and desired. This was a major factor in the 2004 National Water Resource Strategy for identifying the Crocodile (West) River Basin as of paramount importance in developing a more specific Catchment Management Strategy. Based on a 25-year planning horizon, the MCWAP was designed to deliver more than 169 million m³ of water per year to the Steenbokpan-Lephalale Corridor by completion of the first two of four phases, in order to supply the expected future needs of industry, agriculture, and growth in population.</p> <p>In addition, as part of its overall approach to strategic and cumulative assessment, the DEA has awarded a contract for development of the Waterberg EMF, which will examine current conditions and long-term management options for biodiversity conservation, air quality, water supply, agricultural development, ecotourism, and industrial and population growth. The preparation of the Waterberg EMF will be subject to extensive consultation between DEA and stakeholders as required by existing legislation, and will inform the development of a Strategic Environmental Management Plan for the Waterberg District Municipality.</p> <p>Chapter 7 of the EIR for the Medupi project describes the baseline data on ecology and habitat for the project and surrounding areas. The Medupi project is located in mixed bushveld of the savannah biome, which is the largest biome in southern Africa, occupying one-third of South Africa. Most of the project area and its environs are occupied by large game farms and used for game hunting. Floristic species diversity is considered poor because of the managed aspect of the game farms. No legally protected areas will be directly affected by the Medupi project, and neither will UNESCO World Heritage Sites, Ramsar wetlands, or high conservation value forests. The nearest protected areas are components making up the Waterberg Biosphere Reserve. The southwestern end of this biosphere reserve is located about 40 km to the south of the Medupi project site, and arches to the east and north at increasing distances away, through the heart of the Waterberg range. Because prevailing winds are from the northeast, the Waterberg Biosphere Reserve is not within the Medupi airshed.</p>
	Cultural Impacts		
5.	Destruction of grave sites and availability of traditional medicines could have negative impacts on cultural practices in the area.	4.00	<p>The National Cultural History Museum was contracted as part of the EIA process for the Medupi project to survey the project area and conduct a heritage study in accordance with the requirements of South Africa's National Heritage Resources Act (NHRA). The study was reviewed by the SAHRA. The field survey of the Medupi site identified an informal cemetery with four graves located outside of the project site boundary and a single grave located within the perimeter of the project site. The EIR (Section 12 and Appendix D) recommended that the grave sites be avoided if at all possible but should the relocation of any of these graves become necessary, the descendants would be notified and permits would need to be obtained from SAHRA and local authorities. The grave site within the perimeter was exhumed and relocated in November 2007 in accordance with legal and regulatory requirements under Section 38(3) of the NHRA (Act 25 of 1999) and relevant provisions of the Environment</p>

No.	Claim	OP/BP	Response
			<p>Conservation Act (Act No 73 of 1989) which were found to be consistent with applicable Operational Principles described in OP 4.00 Table A1 in connection with Physical Cultural Resources.</p> <p>With respect to traditional medicines, approximately 47 plant families were identified during the ecological survey, of which only a few isolated individual plants were classified as rare, endangered or threatened species. The vegetation communities were characteristic of the surrounding "bushveld" area and the clearing of vegetation at the project site does not contribute to any significant reduction in the availability of "plants with potential medicinal uses associated with cultural practices in the area."</p>
	Upstream Impacts		
6.	<p>Medupi will require significant coal resources to operate, and we understand that the World Bank does not consider potential impacts from or conditions in the mines where the coal will be sourced in its project scope. We are concerned about environmental issues around the mines, in particular acid mine drainage, which is a serious issue in many coal and gold mining areas in South Africa presently.</p>	4.00	<p>While neither the Bank nor the DEA considered the coal supply to be an associated project that should be covered in the EIR for the Medupi plant, the potential impacts have been reviewed by the Bank. No new coal mines will be developed to supply fuel to Medupi. The plant site is adjacent to the Grootegeeluk Colliery, an open pit, back-cast mine operated since early 1981 by Exxaro. Grootegeeluk currently produces 18.6 million metric tons of coal per year (Mmt/yr). Grootegeeluk will expand production to meet the needs of Medupi – 14.6 Mmt/yr of thermal coal in full operation – under a long-term contract. Coal will be mined at an accelerated rate, but Grootegeeluk's reserves, 5,600 million tons within the authorized area of mining operations, will be sufficient for the lifetimes of both the Matimba and Medupi plants. Exxaro will add two new coal processing (beneficiation) units to the six already operating at the mine. Because neither mining nor the construction of the new processing units will occur outside the present permitted boundaries of mine operations, GoSA regulations do not require a full EIR. Instead, the company's obligation is to obtain approval of an amendment to its Environmental Management Program for Grootegeeluk from the Limpopo Department of Minerals and Energy (LDME). In 2006 the mine owner prepared "Amendment to the Grootegeeluk Mine Environmental Management Programme Report (EMPR): Matimba Brownfields Expansion Project" which includes an analysis of the potential impacts of the expanded operation. LDME issued its approval for the EMPR in 2007. According to the EMPR, the amended EMPR will be subject to compliance monitoring in accordance with its terms and applicable laws and regulations</p> <p>Bank experts visited the mine and reviewed the report and considered the impact analysis and management measures adequate for the expansion of mine production within the already-approved area of operations. The key environmental concerns identified are increased water use, traffic and traffic hazards, and possible exposure to dust on two nearby farms. The recommended amendments to the EMPR address all of these impacts.</p> <p>Groundwater quality analyses presented in the EIR for the Medupi project (Section 5.5.2, Section 6.4, Section 6.6) indicate that groundwater quality in the project area is naturally variable and generally high in salinity, with generally low groundwater gradients due to limited rainfall recharge. The data from which these conclusions are drawn in the EIR include groundwater monitoring and modeling at the Grootegeeluk Colliery and the existing Matimba power station located near the Medupi site as well as the national groundwater data base (NGDB). The NGDB and monitoring data show that the majority of boreholes in the project area have very low sustainable yields, which would be expected from both the semi-arid climate and the geology of the area. Thus, there is very little groundwater use in the project area because: yields are low, groundwater quality is</p>

No.	Claim	OP/BP	Response
			<p>variable and tends to be saline, and most of the inhabitants of the project area receive delivered (piped) water supply from the municipality, Eskom, or the Grootegeluk Colliery. Naturally high and variable salinities in groundwater are expected due to the combination of dry climate and long residence time of groundwater; this makes it difficult to distinguish natural variability in groundwater quality from pollution plumes caused by industrial activity.</p> <p>Extensive groundwater monitoring has been and continues to be carried out at the Grootegeluk Colliery, and is summarized in the environmental assessment section of the Amendment to the EMPR prepared in 2006. A cone of groundwater depression has formed around the pit due to pit dewatering, whereas groundwater mounding has occurred around points of artificial recharge by the operations, such as unlined water storage dams and around slimes dams on the northeast side of the pit. This pattern is consistent with conditions of very low rates of groundwater movement, but also has been used to the advantage of the mine by reclaiming water from the pit and from on-site boreholes, thereby reducing the volume of make-up water required.</p> <p>The data from monitoring wells and subsequent groundwater modeling show that a traceable plume of groundwater contamination, mostly from stormwater runoff from the stockyards, has the potential to slowly move to the southeast, but would be hampered by indirect flow paths along fractures and cracks and because of chemical reactions and ionic bonding. Concerns about acid mine drainage were raised by I&AP during the consultation process on the Amendment to the EMPR. Measures to avoid groundwater pollution were incorporated into the design of the two new beneficiation lines, i.e., lining and containment in areas where pollutants could come into contact with soil or groundwater resources. This will include lining of the stockyard footprint, which will remove a current source of contamination by stormwater runoff. In addition to these design measures to avoid future groundwater contamination and remediate an existing source, the risk of acid mine drainage is considered low because of the semi-arid conditions and because the coal is generally rich in oxides and low in sulfides (average total sulfur content in the coal is 1.1 percent, ranging up to 1.2 percent).</p>
7.	At the same time, a significant expansion of mining in the area could entail environmental and social impacts from an influx of labourers.	4.00	<p>The environmental assessment report submitted with the Amendment to the Grootegeluk Mine EMPR, cited in Item No. 6 above and reviewed by the Bank team, identifies expanded employment at the mine as a potential source of direct and indirect impacts. Approximately 1,000 temporary construction jobs and 350 operations jobs will benefit the local and regional economy. Potential negative impacts relate primarily to the influx of workers that will occur because not all of the necessary skills are available in the vicinity of the mine. The expanded workforce will put pressure on housing and municipal infrastructure and services. Increased incidence of HIV/AIDS and other sexually transmitted diseases and potential social conflicts can occur when there is an influx of workers and job-seekers. The amended EMPR contains measures to address these impacts, including:</p> <ul style="list-style-type: none"> • Training to improve local skill base and employability of local workforce; • HIV/AIDS awareness program among employees, contractors and communities; • Expanded social development program, in consultation with local communities and the municipality; • Establishment of a construction village to accommodate workers.

No.	Claim	OP/BP	Response
			In addition there will be continuous close consultation with Lephalale Municipality.
8.	Many of the mine workers receive paltry wages and face difficult working conditions, with resulting health problems.	NA	<p>Exxaro is a black-empowered private company listed on the Johannesburg Stock Exchange. The company's performance with respect to the Global Reporting Initiative (GRI) can be reviewed at the GRI website (www.globalreporting.org). The Exxaro 2009 Annual Report (www.exxaro.co.za) notes the following: "Those employed by the company receive substantially more than the minimum requirements stipulated by the Basic Conditions of Employment Act [of South Africa]. In all cases, minimum conditions of employment in Exxaro exceed the requirements of the act." According to the same annual report, Exxaro has used the GRI guidelines since 2004, including the standard of entry-level wage compared to local minimum wage. The Exxaro 2009 Annual Report self-declared that Exxaro's sustainability report merits a GRI B+ application level. The external auditor of the Exxaro 2009 report noted that "nothing has come to our attention that causes us to believe that Management's assertion that their sustainability reporting meets the requirements of the B+ application level of the [GRI] Guidelines is not fairly stated." See Ernst & Young Inc. report dated 17 March 2010, as attached to the Exxaro 2009 Annual Report.</p> <p>The Bank team visited the Grootegeluk Colliery during its review of the Medupi project and received a briefing on environmental and occupational health and safety aspects of this open pit mining operation.</p>
	Cumulative Impacts		
9.	The above concerns are compounded by the potential cumulative impacts of the planned and existing generation facilities including Matimba, the proposed Mmamabula plant in Botswana, the planned Sasol coal-to-liquid fuels plant, and other planned coal plants and mines.	4.00	<p>Within its legislative framework, cumulative impacts are addressed by the GoSA at both the project and strategic levels. Air quality modeling for the Medupi project takes into consideration the cumulative effect of Medupi's emissions on existing ambient air quality. See the responses to Items No 1 through 4, above.</p> <p>The DEA has recognized that ambient air quality in the area could deteriorate in the future if additional investments are made in the industrial, mining or power sector. Future development is expected to result in population growth. The DEA intends to recommend to the Minister that the region around Medupi, the Waterberg airshed, be declared as a National Priority Area for Air Pollution Control. The DEA is in the process of installing an air quality monitoring network and has awarded a contract for the development of an EMF for the Waterberg region, which is a long-term planning strategy for water and air quality management, biodiversity protection, mining development, and agricultural development. See response to Item No. 4 above.</p> <p>The GoSA, the Government of Botswana, and Eskom are collaborating with the World Bank in developing a transboundary Regional Environmental and Social Assessment (RESA) that includes air quality monitoring and management as a key issue of concern. The RESA includes the Waterberg area (see paragraph 68 of this Management Report).</p>
10.	Eskom's intention to build a transmission line of sufficient capacity to accommodate an eventual 20 GW total capacity from the Waterberg area argues for the inclusion of those planned facilities in the	4.00	The proposed transmission network to evacuate power from the Medupi power plant includes multiple 400kV transmission lines. The transmission lines to connect Medupi to the national grid are considered as associated projects for the purposes of environmental and social assessment and resettlement planning, whether or not they are financed by the Bank. The EIR for "Medupi Transmission Integration" has been prepared under country systems that have been found to be equivalent to those of the

No.	Claim	OP/BP	Response
	scope of the Bank's project as associated facilities and for those facilities to comply with Bank policies.		Bank and the EIR has been reviewed by Bank staff. The EIR identifies visual and landscape changes, risk of bird collisions with cables, and degradation of certain natural habitats as the most significant potential impacts of the transmission lines. The EIR proposes a preferred corridor to minimize these impacts and recommends mitigation measures that reduce most of the impacts to "low."
	Involuntary Resettlement		
11.	The route for the associated transmission lines for Medupi has not been determined, and there is potential for involuntary resettlement there. Resettlement could also take place around the wind, solar, and rail projects. The World Bank is ambiguous about whether South Africa's national legislation governing resettlement is equivalent to that of the World Bank's policy. In order to attain a fairer outcome for any displaced people, this issue should be examined.	4.00	<p>In undertaking due diligence under OP 4.00, the Bank team reviewed the South African legal requirements for resettlement and compensation. The SDR documents the laws and regulations that were reviewed and compared to the Bank's requirements under OP 4.00 Table A1. South Africa's requirements were found to be broadly consistent with the Objectives and Operational Principles defined in OP 4.00 Table A1, especially in the context of transparency in consultations with directly affected people, fairness of compensation, the widely-known availability of appeal mechanisms, and, particularly for the poor, a requirement for significant improvement in living quarters and opportunities for betterment in livelihood (economic rehabilitation). The two instances where South Africa's national legislation was found to differ from the Operational Principles of OP 4.00 were filled in an appropriate manner for the purpose of the EISP (see below).</p> <p>More specifically, under South African laws and regulations, compensation for land taking includes all costs needed for the affected landowners to re-establish an economic livelihood, including losses incurred during the transition period. South African law also guarantees that all people living on an acquired property, such as tenants, employees, or even squatters, are entitled to resettlement and assistance to improve their economic well-being. Under South Africa's regulations, the EIR for a project has a social impact section that describes any involuntary resettlement that may occur as a consequence of the relevant project. See, for example, the EIR for Medupi, in Appendix F, "Meeting with property owners," March 29, 2006; and Sections 15 and 16 of the EIR for Medupi, which respectively describe social impacts and recommend further consultation and negotiations with land owners for compensation of any impacts on their properties.</p> <p>As a matter of principle and policy, any selection of project site which may result in involuntary resettlement is avoided except where and when such avoidance is not possible or feasible. In addition, Eskom views the legal requirements that apply to land acquisition and resettlement as minimum requirements and strongly supports the principle of security of tenure. This involves negotiated solutions where people are given choices. Consultation takes place with all affected people and is geared toward a negotiated settlement. Eskom has issued a policy statement ("Status and Process of Land Acquisition and Resettlement for Eskom's Concentrating Solar Plant [CSP], Wind Energy Facility, Majuba Rail and Transmission Line Projects") that states: the "process of land acquisition commences in parallel with the EIA process."</p> <p>To obtain the required land or rights in land (i.e., servitude) Eskom negotiates with each landowner on each property that is required for the project so that Eskom is able to acquire the land and rights over the property. Negotiations are undertaken to ensure that landowner property rights as per the South African Constitution are respected.</p>

No.	Claim	OP/BP	Response
			<p>Eskom, as a State Owned Enterprise, must apply all legislation related to the acquisition of land and rights. In addition, Eskom has disclosed its "Procedures for the Involuntary Resettlement of Legal and Illegal Occupants on or from Eskom Procured Land," whose purpose is to "ensure that a sustainable resettlement plan be developed, contractually conducted and implemented through a meaningfully consultative process between the persons being displaced, government, Eskom and other identified role players. The resettlement plan and process followed must at minimum address the requirements as per applicable South African legislation in line with the Equator Principles where applicable to the South African environment and legislation."</p> <p>The resettlement-related policy and procedures mentioned below define clearly the requirements which Eskom imposes on itself to acquire land for the purpose of its projects. These mention the need for each involuntary resettlement instrument to include: "(a) a Project description, (b) Public Participation Process (PPP) in EIA, (c) A definition of the amount of Land required and to be acquired, (d) a Social assessment, (e) Audit (All social impacts identified in the EIA process will be closed out as determined in the Environmental Management Plan [EMP], and through the regular independent compliance audits carried out for each project. Review of the relocation process takes place once the relocation is complete. The relocation plan and negotiations with affected parties is initiated prior to construction; the implementation of the plan is implemented throughout the construction process), (f) Disclosure, (g) Engagements and communication for resettlement, (h) Data verification phase, (i) Negotiation phase (j) Implementation phase, (k) Close-out phase, (l) General Reporting, and (m) Grievance channels."</p> <p>For the EISP, Eskom is the direct implementing agency for the resettlement process and takes full responsibility for the land acquisition and resettlement process, but the Government is included in the process as an observer to ensure that the legal requirements are being met. For this purpose, the national Department of Land Affairs provides a field officer who then participates in all negotiations. In addition, provincial and local authorities participate directly in the resettlement process through representation in consultation fora. The Government plays a more direct role in circumstances where land claims exist for restitution on a property that Eskom is seeking to acquire for a project; in this instance the Government must first make a decision on the land claim before the land acquisition process can proceed. Eskom need for the land is considered as part of the Government's decision on whether the land is returned to the claimant or whether replacement land is made available.</p> <p>Involuntary resettlement is not expected for the wind or solar power projects (see the respective sections in the above-mentioned "Status and Process of Land Acquisition and Resettlement for Eskom's Concentrating Solar Plant [CSP], Wind Energy Facility, Majuba Rail and Transmission Line Projects"). This expectation was confirmed by the Bank team during the respective site visits.</p> <p>Concerning the route for the Majuba Rail project, the line is 67 km long and crosses the lands of 43 separate farm owners. Eskom has acquired the land for the entire route through a combination of rights-of-way and outright purchases – a total of approximately 330 ha. Twenty-one households with 152 residents are being resettled,</p>

No.	Claim	OP/BP	Response
			<p>mainly because of potential noise impacts that cannot be otherwise mitigated. On-farm relocation has been agreed in the case of 16 of those households. Land has been acquired for the other five families.</p> <p>As mentioned above, in conducting its due diligence and preparing the Equivalence Analysis under OP 4.00, the Bank team noted that South African legislation, and Eskom's practice to date, differ from Bank practice relating to the following: (a) the absence of a requirement for preparation and public disclosure of a stand-alone resettlement instrument prior to resettlement (However, and as explained above, the difference is not in the substance of the process or engagement with directly affected parties, but that in South Africa there is no requirement to systematically document and make public to a broader audience a report that describes how resettlement will occur, what rights and benefits are available, and what grievance and appeal procedures are available; instead this information is normally made available only to directly affected people.); and (b) there is no requirement to assess whether the objectives of the resettlement instrument have been achieved upon completion of the project, taking into account the baseline conditions and the results of resettlement monitoring. With respect to this second gap, the Bank team found that Eskom's practice is to monitor and assess the implementation and outcomes of its resettlement activities.</p> <p>As required under OP 4.00, these gaps between the GoSA and Bank resettlement requirements have been filled for EISP. On October 7, 2009, Eskom disclosed two documents that together constitute the resettlement instruments which apply to Eskom investments (see their description above).</p>
	Human Rights		
12.	<p>South Africa's actions related to the Eskom project violate the human rights of the communities, and are inconsistent with the South African Constitution and the African Charter on Human and Peoples' Rights. Article 24 of the Constitution states that "Everyone has the right to an environment that is not harmful to their health or well-being" and recognizing that the environment must be protected "for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development". As described above, actions by South Africa and Eskom are</p>		<p>This allegation claims that the Project violates human rights, in particular noting Article 24 of the South African constitution. It is not within the Bank's mandate to determine compliance of government actions with member government's legislation. This allegation can only be tested before a South African court that has jurisdiction to opine on the Constitution of South Africa. Also, it does not assert noncompliance with any applicable World Bank operational policy or procedure.</p> <p>However, Management would like to mention that when conducting the due diligence required under OP 4.00 for the purpose of analyzing South Africa's environmental safeguard system, Bank staff considered the relevant provisions of the legislation on environmental protection, including NEMA and its implementing regulations. These laws and regulations provide for the prevention of harmful impacts on the health of citizens and for compliance with and enforcement of international conventions and agreements in South Africa. The relevant provisions were carefully reviewed and assessed against applicable principles described in OP 4.00 Table A1, under which the EISP has been processed. For example, the Bank team was satisfied that the "National Environmental Management principles" defined in NEMA (Chapter 1 Section 2 "principles"), and the NEMA Air Quality Act (2004) recognize explicitly that their objectives are to promote sustainable development, protect the overall healthy environment in furtherance of the constitutional right of "everyone" to "an environment that is not harmful to their health and well-being."</p> <p>Further, the Bank team found that under all applicable provisions, the right to a healthy environment and the well-being of communities is to</p>

No.	Claim	OP/BP	Response
	harmful to the environment and health and well-being of local communities and these impacts outweigh the actual economic and social development impacts of the project.		<p>be implemented and enforced through legal and regulatory instruments including but not limited to the EIA Regulations under NEMA (see also discussion of allegation under Item No. 15 and discussion of the establishment of an expanded enforcement capacity and of an Environmental Monitoring Inspectorate). In fact, Bank staff have conducted a review of EIA Regulations, noting that they clearly provide that an EIR for a given project: (a) must assess any harm to the health and well-being of any affected community; and (b) define, adopt and implement appropriate measures to offset, reduce or mitigate any such harm from negative impacts. In reviewing the EIR for the Project, the Bank team determined that all harmful impacts, including potential impacts on the health and well-being of project affected peoples, are appropriately addressed.</p> <p>In conducting their due diligence and dialogue with Eskom and relevant Government agencies, Bank staff observed that Eskom took appropriate measures during the preparation of the EIR, including the carrying out of an informed and meaningful consultation process during the design and preparation of the Project with a view to: (a) sharing Project information with the affected communities; (b) determining Project needs and establishing communities' entitlement and compensation under relevant South African law; and (c) agreeing (with affected parties) on measures and a framework for mitigating adverse impacts. During the consultation process, opportunities were given to the affected communities to make their views known to Eskom's consultants preparing the EIR and Government. Information was disseminated and the consultation process including its content adequately documented in the EIR.</p>
	Country Systems		
13.	We are concerned that a country systems approach that relies largely on South African laws, policies and institutions to adequately monitor and implement its national environmental and social laws will be inadequate to protect peoples' health and well-being. For example, the Bank incorrectly determines that South African standards related to pollution prevention and abatement are equivalent to standards articulated in the World Bank's Pollution and Prevention Abatement Handbook.	4.00	<p>South Africa was selected as a pilot country in large part because it has an established legal and regulatory system and a favorable reputation for effective implementation of its systems governing environmental assessment and protection of natural habitats, protected areas, and physical cultural resources. This has already been demonstrated by the SDR completed by the Bank for the proposed GEF project in support of the Development, Empowerment, and Conservation of the iSimangaliso Wetland Park and Surrounding Region.</p> <p>Against that background, the EISP was considered a likely candidate as a pilot project because Eskom has demonstrated a substantial corporate commitment to fulfilling and going "beyond compliance" with legal and regulatory requirements and embracing a sustainability policy on both a corporate and project level. As described in detail in the SDR, Eskom subscribes to the United Nations Global Compact,¹ has obtained or is in the process of obtaining ISO 14000 certification for the Environmental Management System for each of its operational units, and seeks to align its projects and its practices with the requirements of the Equator Principles (i.e., the International Finance Corporation's Performance Standards) and with the GRI. Accordingly, Eskom appeared to be a good candidate for the Bank to consider under OP 4.00.</p> <p>In determining the eligibility of South Africa to use its environmental safeguard system for the purpose of a Bank-financed project, the Bank considered a wide range of criteria, as mandated by OP 4.00, and conducted: (a) upstream analysis in cooperation with Eskom and the DEA and other stakeholders; and (b) a consultation process on the outcomes</p>

¹ www.unglobalcompact.org/ParticipantsAndStakeholders/search_participant.html?detail=ESKOM

No.	Claim	OP/BP	Response
			<p>of its analysis, which took the form of an SDR. The consultation process took place in South Africa and involved government agencies, local NGOs, academia and other environmental specialists working in the private sector. In preparing the SDR, the Bank team carefully reviewed the relevant South African legislation including environmental regulations and standards and track records of the various agencies to be involved in the EISP, including, among others, DEA and Eskom.</p> <p>The SDR, including its findings and stakeholder comments and recommendations, along with other safeguard-related documents applicable to the EISP, have been disclosed and are accessible on the respective World Bank and Eskom websites. In dealing with any part of South Africa's applicable legislation, the Bank team consistently sought the views and informed opinions of the Borrower and relevant agencies. As part of its analysis, the SDR compared South Africa's standards on ambient air quality to the ambient air quality standards referenced in the World Bank Group General Environment, Health and Safety Guideline issued in April 2007, as well as the relevant guideline in the 1998 Pollution Prevention and Abatement Handbook, which was still in effect at the time the Medupi EIR was prepared and finalized. The ambient air quality standards that will apply to the Medupi project when it becomes operational were issued on December 24, 2009, and are more stringent than the WHO standards referenced in the Bank's guidelines with respect to particulates (PM₁₀), and SO₂, and are identical to the WHO standards for NO_x and ozone.</p> <p>As noted in the SDR with respect to emissions from thermal power plants, the South African standards, proposed in final form on July 24, 2009 (and adopted on April 1, 2010) are not quantitatively comparable to the guidelines referenced in the World Bank Group EHS for Thermal Power Plants, issued in December 2008, because they are framed in a 30 day compliance timeline, whereas the Bank's December 2008 guideline, issued after the completion of the EIR process for Medupi, is based on hourly, daily and annual averages. However, the Bank determined that the standards were equivalent because South African emission standards: apply the same principles as the Bank's guidelines in making a distinction between new and existing plants; require the application of good international industry practices ("best practical environmental option" per South African terminology); apply more stringent requirements for emissions to a degraded than to non-degraded airshed; and may use emission offsets to achieve airshed-wide reductions. In fact, a key element in determining equivalence was the fact that the South African standards are more stringent than the Bank's December 2008 guideline for Thermal Power Plants in requiring existing plants to meet the standards applicable to new plants within a given time frame. According to the new South African regulations, an existing plant must comply with emission standards for existing plants as contained in the regulations within 5 years of date of publication of the notice, and then with minimum emission standards applicable to new plants within 8 years of publication of the notice.</p>
14.	At the same time, proposals to fill "gaps" do not include changes to South African laws and regulations — these proposals reflect only changes that should be made at Eskom with this specific project, and do not appear to be [...] mandatory, long-term	4.00	As mentioned above in Item No. 13, following the due diligence undertaken by Bank staff as mandated by OP 4.00, the gaps identified in both the South African legal framework and in Eskom's policies for which Eskom could be held accountable by its stakeholders, were appropriately filled through measures agreed and implemented prior to Project appraisal. It is the Bank understanding that the implementation of these gap-filling measures is not limited to the EISP, nor is it limited to projects funded by the Bank; it is applicable to all projects undertaken by Eskom, regardless of source of funding. See also the response to Item No. 11.

No.	Claim	OP/BP	Response
	improvements to Eskom's "system."		
15.	Finally, we believe the Bank's analysis that South African institutions can adequately monitor and implement national laws and protect peoples' health and well-being is incorrect; South Africa has a problematic track record of actually abiding by and implementing its environmental and social obligations.	4.00	<p>Management acknowledges that enforcement of environmental and social laws in South Africa is challenging. However, with respect to the environmental and social safeguards triggered by the EISP, Eskom has a strong record of compliance as evidenced in its independently audited annual compliance reports.</p> <p>With respect to Medupi for example, Eskom is required by its Environmental Authorization to engage an EMC on site, consisting of independent technical experts and members of the local affected community, and headed by an ECO who reports directly to the DEA. This is a standard requirement for large infrastructure projects in South Africa and was applied to Medupi prior to and independent of any Bank involvement in the project. Bank safeguard staff who visited the Medupi site on several occasions during construction have met with the ECO and confirmed the EMC's active engagement in monitoring compliance with the environmental and social conditions applicable to the project.</p> <p>In addition, the Bank team has learned that the DEA has substantially expanded its enforcement capacity by the establishment of EMIs with the authority to enforce applicable provisions of the Criminal Procedure Act and an EMI Training Network. The DEA issues an annual public report on its enforcement actions and activities. The Court and administrative system also have many capable jurists and experts working towards better monitoring of compliance with and enforcement of environmental laws and regulations in South Africa, as evidenced by numerous Court decisions.</p>
	Legacy of World Bank involvement		
16.	The World Bank financed coal-fired power plants in South Africa during apartheid which provided electricity exclusively for large industry and white South Africans, while all of society had to repay the loans. The Bank's legacy in South Africa's energy sector should be examined as part of the project, including the issue of reparations.		<p>All available records indicate that from the 1950s to the 1960s, the Bank provided four loans to the energy sector of South Africa. There is no connection between any of those loans, all of which have been closed for almost forty years or more, and the Medupi project. The energy projects to which the Requesters refer have long been closed. The issues raised by the Requesters have no basis in Bank operational policies or procedures because none of the Bank's currently applicable policies and procedures were even in existence at the time of these loans. Further, there is neither a Bank policy nor applicable law that obligates an investigation of alleged claims for reparations. Management also notes that even if there were a basis in law or policy to lay a claim for reparations, such a claim would have to arise from the government that is a party to such transactions, and not the Requesters.</p> <p>In addition and for the sake of clarification, the examination of the loans at issue makes clear that they were to provide electricity for South Africa, without singling out any group of intended beneficiaries. There were no references in the loan agreements in question that the projects were to direct power to or away from any group.</p>

No.	Claim	OP/BP	Response
	Access for the Poor		
17.	<p>Contrary to World Bank's claims that it will be aimed at promoting access to energy for the poor, the project will mainly benefit big industrial users, not the poor people who suffer the most from power disruptions. The current consumption level of the poor in South Africa is extremely low compared to that of the largest corporations. South Africa provides the cheapest electricity supply in the world to its biggest industrial consumers. The poor pay many times more for their electricity than the export-oriented metals and mining industries.</p> <p>The World Bank claims that the project will allow Eskom to provide power to the remaining 20% of South Africans without electricity, but provides no evidence as to how that will be accomplished.</p>	1.00	<p>Since 1994, South Africa and Eskom have increased access to electricity from 34 percent to 81 percent but have made limited investments in new large-scale power generation. The South African energy system went through a severe crisis in 2007/08, which is likely to recur if capacity is not added immediately. The shortage of generating capacity will also have an adverse impact on the ability to supply existing customers and provide new connections. In addition, in 2003 the GoSA launched the Free Basic Electricity (FBE) policy that provides 50 kilowatt hours (kWh) of free electricity per month to poor families.</p> <p>The World Bank's due diligence for the Project examined South Africa's track record of residential electricity provision and whether/how South Africa protects the poorest households. Although the Project does not directly finance new connections, the GoSA has an annual budget for rural electrification and a program in place to connect the remaining 19 percent of households, the majority of whom are poor, by 2014. By helping to meet the demand/supply gap, the Medupi plant will play an important role in the country attaining 100 percent access to electricity. In addition to household needs, demand is also growing from commercial and small industrial developments as well as schools and health services in rural areas, all of which help improve the quality of life or employment opportunities for the poor if these sources of demand are also met.</p>
18.	<p>The National Energy Regulator, South Africa (NERSA) just approved a tariff increase of 25% every year for three years to help raise funds for Eskom's expansion programme. This will effectively double household bills and is unaffordable to most South Africans, who will have to severely restrict their electricity usage and face disconnection for non-payment.</p>	1.00	<p>South Africa has an independent regulator that determines tariff increases, taking into consideration a variety of factors and after broad consultations. The Bank has no role in this tariff setting process. It has reviewed the tariff structure, however, and believes that the announced tariff minimizes the impact on the poor.</p> <p>In 2003, Government launched the FBE policy (see Item No. 17 above). Fifty kWh per month is enough to run about 3 lights and a small appliance such as a TV or a refrigerator. Local governments determine who qualifies for free basic services under provincial criteria set for registering households and provide subsidies to this effect. In turn the local governments are reimbursed through the provincial budget process. Today FBE is provided to about 3 million households in South Africa (or 27 percent of household customers).</p> <p>The FBE system is supplemented by cross-subsidies from large customers to those households using less than 350 kWh/month. The tariffs for this category of customers are usually 25 percent lower than for customers who consume more than 350 kWh/month.</p> <p>South Africa has one of the lowest retail electricity tariffs in the world. While the average cumulative price increase of electricity sold by Eskom in FY11-FY13 will be 98 percent, the total cumulative price increase will be only 11 percent for clients consuming less than 50 kilowatt hours (kWh) of electricity per month (and not benefitting from the FBE), and 28 percent for clients consuming more than 50 but less than 350 kWh per month.</p> <p>South Africa's basic tariff structure is broadly consistent with that of most developing countries as well as the OECD countries, which charge households more for per-unit electricity consumption than large, high-</p>

No.	Claim	OP/BP	Response
			voltage industrial users. For example, in the United States, households pay 10 cents per kilowatt hour whereas industrial users pay 6 cents; in the United Kingdom, households pay 18 cents whereas industrial users pay 11 cents.
19.	Consumers will pay a disproportionate share of the costs for building this project, because the largest industrial users are exempt under the still-secret Special Pricing Agreements concluded in a nontransparent manner during the last days of apartheid in the early 1990s.	1.00	Management does not agree that poor and residential consumers will pay a disproportionate share of the costs for building this Project. Almost 95 percent of Eskom's sales are subject to regulation and thus provide revenues to Eskom over the long term for repayment of its debt. Special Pricing Arrangements (SPAs) or Power Purchase Agreements are common practice in both developing and developed countries, especially for large industrial consumers where electricity pricing is a large portion of the value chain. The long-term contracts for power supply represent only a small fraction of Eskom's total electricity sales and their impact on the company's financials is not significant. In the 2009 fiscal year SPAs accounted for only around 5 percent of all Eskom's electricity sales. The Government has publicly announced that it is taking steps to renegotiate these contracts to further reduce the number of remaining SPAs. It should be noted that tariff increases in these contracts are linked to changes in the commodity prices they produce – in recent years these have resulted in significant revenues to Eskom. See also Item No. 20.
	Impacts on the Economy		
20.	Repaying the \$3.75 billion loan will require more exports and higher tariffs to compensate for any devaluation of South African currency. South Africa regularly experiences currency crashes; five of these crashes since 1996 have each resulted in at least a 15% devaluation.	10.04	<p>The repayment obligations under the IBRD loan will not impose any pressure on the foreign exchange situation of the country as the expected annual principal repayment will be no more than 0.1 percent of South Africa's total exports in any given year.</p> <p>Overall management of foreign exchange resources is handled by the National Treasury, which to date has acted prudently in this regard. Because of current national debt levels, the Treasury and the Bank have assessed the impact of the loan from the Bank and find it to be consistent with a prudent debt policy. The loan will constitute approximately 9 percent of Eskom's projected total liabilities in FY12, when the Medupi plant is commissioned.</p> <p>The IBRD loan is a dollar based loan with a grace period of 7 years and a final maturity of 28.5 years. These terms make it the cheapest and longest maturity loan available to Eskom from any financial source. The 7 year grace period also allows Eskom to defer principal payments until year 8. In addition, Eskom may convert the loan to local currency, the Rand. Eskom will review the markets on an ongoing basis and it is expected that it will convert the loan (or a portion thereof) to local currency as and when this can reduce its foreign currency repayment obligations.</p>
	Alternatives		
21.	The Bank did not adequately consider alternatives to coal. In particular, the Bank did not consider the Demand Side Management alternative, especially the ending of Eskom's Special Pricing Agreements. Without considering renegotiating the contracts with the largest	4.00	The analyses of alternatives carried out by the GoSA and the Bank show that coal is the only technically and economically feasible option to meet the gap in power supply. In mid 2009, the Department of Energy (DoE), as the policy maker, commissioned an update of the Integrated Resource Plan for the electricity sector, which is akin to a generation expansion plan. Based on projected growth in demand, which takes into account impacts of electricity tariff increases and DSM programs, the referenced expansion plan shows that construction of coal-fired power plants is the least cost option for meeting the demand over the 20-year planning

No.	Claim	OP/BP	Response
	<p>industries that receive a significant share of South Africa's electricity at extremely low rates, the Bank did not properly exhaust non-coal options for addressing South Africa's electricity crisis.</p>		<p>horizon.</p> <p>In the economic analysis carried out by the Bank, the first question that was addressed was whether an expansion of base load capacity could be avoided by DSM and improved energy efficiency for which there is considerable potential in South Africa. The load forecast, accordingly, included assumptions for the continuation of the downward trend in electricity intensity and an aggressive DSM program that by 2019 would reduce the load by 15,562 GWh and 3,225 MW. The result of the economic analysis shows that, over the next decade, there is no alternative to proceeding with major additions to base load capacity, including Medupi, to meet South Africa's power needs.</p> <p>The second question that was addressed is identifying the least cost option for meeting the base load. In addition to the Medupi power plant, the analysis included the following options: nuclear, sited on the coast in Port Elizabeth and Capetown areas; wind, sited on the East and West coasts; open cycle combustion turbines, sited at load centers and, therefore, without transmission penalty; combined cycle, fuelled by imported liquid natural gas (coastal location), fuelled by heavy fuel oil, and coastal combined cycle fuelled by gasoline; CSP, sited in the Northern Cape and Northwest (with and without molten salt storage); underground coal gasification projects; large hydro (for which the only project of sufficient scale, even as a partial alternative, is the Inga III project in Democratic Republic of Congo). The analysis showed that Medupi is the least cost generation option for Eskom and Inga III is the second best option. Although the delivered cost of the latter appeared competitive, the geopolitical, financial and technical problems associated with it are formidable, and even under optimistic conditions the time frame for significant power flows to be available to Eskom is 2022, at the earliest.</p> <p>The least cost analysis also was carried out to internalize the externalities associated with burning coal by adding US\$29/ton of carbon dioxide (CO₂) emitted to the production costs, which is the lower end of the range for the estimated social cost of carbon in the Stern Review. The results of the analysis are the same with respect to Medupi – it remains the least cost option for meeting the demand over the short to medium term. Noteworthy in this regard is that none of the renewable options that were considered are at a stage of development and of a size to replace Medupi. In addition, they would require transmission of electricity over long distances with corresponding high energy losses, especially from Inga III. Hydro candidates closer to South Africa (Zambia and Mozambique) were not considered, as these were too small relative to the capacity required and are at an early stage of development.</p> <p>CSP, with heat storage, is a renewable source of energy with a potential in South Africa for providing large volumes of firm generating capacity, comparable to what is currently produced by coal-fired power plants. The technology, however, is at a development stage and still being piloted. Nevertheless, a large CSP component (100 MW) was included in the Project to demonstrate South Africa's role in leading the low carbon energy agenda for the sub-region, with scale-up potential in SAPP countries including Botswana and Namibia (with an estimated potential of over 20 GW).</p> <p>DSM and energy efficiency improvement (DSM/EE) play an important role in Eskom's planning. Without the incorporation of DSM, an additional power plant about the size of Medupi would be required over the next decade in South Africa, over and above the currently envisioned investments in new generation. Even under the lowest demand forecast, which assumes the implementation of an aggressive DSM program, an</p>

No.	Claim	OP/BP	Response
			<p>additional 15 GW of new capacity will be needed over the medium term.</p> <p>An important measure, which is already encouraging consumers to reduce demand, subsequent to approval of the Energy Pricing Policy of 2008, is the ongoing tariff increase. The Policy stipulates that tariffs will reach cost-reflective levels within 5 years. Since 2008 they have gone up by 68 percent cumulatively.</p> <p>Other DSM/EE actions include low cost high impact initiatives, such as replacement of incandescent light bulbs with compact fluorescent light bulbs, switching of water heating from electricity to solar (which forms part of the private sector CTF-financed program), industrial efficiency improvements and a scheme whereby consumers are given a financial incentive to reduce demand, while others who require additional supply above a pre-agreed ceiling get it at a premium.</p> <p>The GoSA is also putting in place improved electrical appliance standards and revising building codes to facilitate increased efficiency in cooling and heating (including mandatory installation of solar water heaters).</p> <p>The Bank has been providing technical support in DSM/EE under an ESMAF-funded Low Carbon Study, whose beneficiaries include Eskom, municipalities, the DoE, the Department of Public Works and the Regulator.</p> <p>Cumulatively, the initiatives in the electricity sector resulted in savings of about 675 MW by 2008 and the sector is on target to achieve 3,000 MW of such savings by 2013.</p> <p>Please see Item No. 19 for response related to the Special Pricing Arrangements.</p>
	Climate Change		
22.	<p>The proposed loan will compromise the World Bank's commitments on climate change, and make it more difficult for South Africa to meet its own greenhouse gas reduction commitments.</p> <p>World Bank support for the project would be in contravention of its own criteria for support to coal plants. This is supported by the Expert Panel report, which raises doubts about the World Bank supporting Medupi without adequately complementing with renewable energy development.</p>	4.00	<p>As was evident at the United Nations Framework Convention on Climate Change 15th Meeting, and in South Africa's follow up to that meeting, South Africa has taken an early and strong position on reducing its carbon emissions and has demonstrated determination to scale up renewable investments. The GoSA ratified the UNFCCC, signed the Kyoto Protocol, adopted a National Climate Change Response Strategy, issued Electricity Regulations for Energy Efficiency, recently issued new regulatory standards for ambient air quality and emissions of specific air pollutants from coal-fired power plants, and co-drafted and associated with the Copenhagen Accord, which has led to South Africa's political commitment to implement economy-wide emissions reduction targets for 2020.</p> <p>This strong commitment includes meeting urgent generation expansion while pursuing an aggressive program to enhance energy efficiency measures and introduce renewable energy and DSM. In 2008, South Africa's Cabinet endorsed LTMS to reduce carbon emissions and the proposed World Bank loan supports those plans. The intention is to ensure that carbon emissions peak during 2020-2025, plateau for a decade, and then begin declining thereafter.</p> <p>The Project, as well as the longer term partnership established between the GoSA and the Bank, will support South Africa's efforts to meet its low carbon targets. The Bank is ready to support future requests from the GoSA for projects and new technology to reduce greenhouse gas emissions.</p> <p>The project meets all six criteria of the Development and Climate Change: A Strategic Framework for the World Bank Group, as approved by the</p>

No.	Claim	OP/BP	Response
			<p>Board of Executive Directors and required for coal power projects. In accordance with these criteria, the Bank will only finance coal projects under exceptional circumstances and a high bar is set. The project meets the following six criteria:</p> <ul style="list-style-type: none"> • There is a demonstrated developmental impact; • There is assistance to identify and prepare low carbon projects; • Energy sources have been optimized by considering the possibility of meeting the country's needs through energy efficiency and conservation; • There has been full consideration of viable alternatives to the least-cost options (including environmental externalities), and when additional financing from donors for their incremental cost is not available; • The project uses the best appropriate available technology, to allow for high efficiency and, therefore, lower greenhouse gas emissions intensity; and • There is an approach to incorporate environmental externalities in project analysis. <p>An Expert Panel has reviewed the project design and technology mix of coal, wind, and solar. The panel's public report² confirmed that the Project meets the six criteria and that, because South Africa has announced goals to lower carbon intensity and eventually emissions, the World Bank Group should assist the GoSA in meeting those goals and establish a partnership with the GoSA to support the low carbon strategy. The CSP and statements by GoSA reaffirm South Africa's commitment to this partnership with the Bank.</p> <p>In the last fiscal year, FY09, the Bank Group financed more than US\$8.2 billion in energy projects or programs. For every dollar in energy financing in FY09:</p> <ul style="list-style-type: none"> • 40 cents went to renewable energy and energy efficiency (with about 3 cents going to making old plants more efficient and cleaner). Overall, this was a 24 percent increase from 2008, which itself was an 87 percent increase over the previous year. The Bank Group commitment is to grow its low carbon energy project financing to at least 50 percent of all energy financing by 2011. • 35 cents went to transmission, electrification and distribution facilities and to help governments build capacity in the energy sector. This includes creating regulatory agencies, promoting regional integration, public expenditure reviews, legislative support (e.g., drafting environmental laws for power plants) • 18 cents went to help countries develop their natural gas industry or to build new gas power plants. • 4 cents went to help countries develop their oil industry. • Less than 3 cents went to help countries mine for coal or build new coal power plants. <p>The proportion of coal-fired electricity (in MW) that the Bank Group is financing over the next three years compared to what all OECD countries</p>

² <http://www.environment.gov.za/hotissues/2008/lrms/A%20LTMS%20Scenarios%20for%20SA.pdf>;
<http://siteresources.worldbank.org/INTENERGY2/Resources/ExpertPanelFinalReport.pdf>





No.	Claim	OP/BP	Response
			<p>are projected to put on line via coal-fired power plants is 2.4 percent.</p> <p>Component B of the Project, the 100 MW Sere Wind Power and the 100 MW Upington CSP are the two biggest renewable energy projects in the World Bank's FY10 portfolio. IBRD is proposing to finance about US\$260 million for these renewable energy investments estimated to cost US\$1.228 billion.</p> <p>In terms of its impact on the energy portfolio of the Bank, it should be noted that the Project comprises over US\$1 billion of IBRD and CTF financing towards renewables and energy efficiency components. The pipeline of energy projects in Africa includes almost US\$300 million of International Development Association (IDA) investment in new geothermal capacity (Kenya) and US\$750 million for CSP projects in North Africa (Morocco and Egypt). In addition, there are over US\$2.0 billion in clean energy, energy efficiency and renewables components in projects under preparation/appraisal. So while the Project would skew the share of non-renewable energy projects for a year, the Bank portfolio is expected to regain a healthy share of renewable and energy efficiency projects over the next two or three years.</p>
23.	<p>Despite claims that the Medupi plant will use "cleaner coal technology" and will be "carbon capture and storage-ready", there is no certainty whether these measures will be sufficient to control the enormous amounts of pollutants.</p>	4.00	<p>Consistent with international standards for fossil fueled power plants, Medupi uses the best available and reliable technology that reduces emission levels of conventional pollutants to comply with international good practice and minimizes CO₂ emissions to levels below what would result from the use of conventional pulverized coal combustion technology.</p> <p>As described above (Items No. 2 and 3) Medupi will be equipped with highly efficient fabric filters to reduce particulate emissions, low-NO_x burners to control nitrogen dioxide and, eventually, FGD to reduce SO₂ emissions.</p> <p>With respect to CO₂, Medupi's boilers will use supercritical technology, which is a proven technology to improve the amount of energy extracted per ton of CO₂ produced. Medupi was not designed to be carbon capture and storage (CCS) ready because at the time it was designed (2004), CCS technology was not envisaged as a tool for achieving reductions in CO₂. Even today, globally, CCS is currently in early stages of development and has not yet reached the status of a commercially viable technology. There are currently no commercial scale CCS facilities in operation. Therefore, any further reduction of CO₂ emissions would be contingent on availability of new and proven technology.</p> <p>South African is following the progress being made in the developed world and estimates that the first project with CCS will be operational by 2020. In this context, support from the CCS Trust Fund of the Bank will help South Africa be ready for CCS operations as envisaged.</p>

SOUTH AFRICA

ESKOM INVESTMENT SUPPORT PROJECT (EISP) REQUEST FOR INSPECTION

PROJECT:

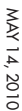
-  SITES
-  TRANSMISSION LINE CORRIDORS
-  COAL TRANSPORTION RAILWAY
-  NATIONAL ENERGY EFFICIENCY IMPROVEMENTS (*NATIONWIDE*)
-  ENVIRONMENTAL MANAGEMENT FRAMEWORK BY NATIONAL GOVERNMENT
-  CITIES AND TOWNS
-  PROVINCE CAPITALS
-  NATIONAL CAPITAL
-  RIVERS
-  MAIN ROADS
-  RAILROADS
-  PROVINCE BOUNDARIES
-  INTERNATIONAL BOUNDARIES

 SITES
 TRANSMISSION LINE CORRIDORS
 COAL TRANSPORTATION RAILWAY
 NATIONAL ENERGY EFFICIENCY IMPROVEMENTS (NATIONWIDE)

- CITIES AND TOWNS
- ⊙ PROVINCE CAPITALS
- ★ NATIONAL CAPITAL

—— MAIN ROADS

 PROVINCE BOUNDARIES



IBRD 37886

