Overview

This Report presents the Panel's observations and findings on claims of Bank non-compliance with its operational policies and procedures, and associated harm, with respect to the *South Africa: Eskom Investment Support Project*. The Request for Inspection was submitted by representatives of community members living in the Project area through two South African non-governmental organizations. The Project includes a 4,800 MW coal-fired power plant near Lephalale in Waterberg District, Limpopo Province, and associated infrastructure and investments, as well as a component for the development of renewable energy generation sources. The World Bank loan amounts to US$ 3.75 billion and was approved in April 2010. In carrying out its investigation, the Panel has been conscious of several important features of this Project.

Firstly, the Project, and in particular the Medupi Power Plant, has been viewed by many as controversial. Key aspects of the debate, in South Africa as well as internationally, relate to difficult political and technical choices with respect to energy generation in South Africa, and the use of coal in the context of climate change. The Panel notes the key importance of meeting South Africa's power needs, as well as policy provisions to address potentially negative impacts in support of sustainability and poverty reduction. The main focus of the investigation has been on alleged potential harm in the local impact area from Medupi and its associated activities, although the Panel also examined issues of harm raised in the Request relating to national and global impacts, in line with the relevant policy framework.

Secondly, the Project is implemented under the World Bank policy *Piloting the Use of Borrower/Country Systems* in lieu of the Bank's regular safeguard policies. This is the first Panel investigation of a project applying this policy. The investigation process entailed making a distinction between system level and project level analyses – i.e. between Management's analysis of South African country systems and those of the borrower, Eskom, pertaining to environmental and social safeguards, and Management's review of the safeguard documents prepared specifically for the Medupi Power Plant, and compliance with applicable policy requirements at the project level. The Panel's findings do not alter the overall conclusion that South African environmental and social safeguard systems are broadly equivalent to the objectives and operational principles of Borrower/Country Systems policy, but point towards gaps that were not identified or addressed.

Thirdly, the Medupi Power Plant was already under construction when the Bank was approached for financing consideration. This implies that the Bank had limited leverage and opportunity to influence project design. The purpose of the Bank's Country System analysis and project appraisal included examining for the Board whether the project as designed would comply with Bank operational policies. In this context, the Panel commends Management for addressing the need for additional technology to reduce sulfur dioxide emission, and for stimulating investment in renewable energy.

The Panel's findings, however, confirm that the Medupi Power Plant represents four major challenges with respect to potential project-induced harm: significant water consumption raising issues of both scarcity and pollution in the local area; emission of gases and particulates causing increased health problems in the local area; added burden on the limited institutional and financial capacity of local authorities that have to cope with rapid industrialization of the area, especially as related to public and social infrastructure and environmental management; and emissions of greenhouse gases by the Medupi Power Plant. The Panel focused its investigation on issues of compliance and harm of relevance to these challenges, and its findings are summarized in the Executive Summary and Table of Findings.

Executive Summary

Background

The Request. In April 2010 the Inspection Panel received a Request for Inspection (the "Request") related to the South Africa: Eskom Investment Support Project (the "Project" or "EISP"). The Request was submitted by representatives of community members living in the Project area (the "Requesters") through groundWork and Earthlife Africa, two non-governmental organizations based in South Africa. The Requesters claim that World Bank Management has not properly followed its operational policies and procedures in connection with the Project, and that such non-compliance will cause or contribute to significant harms to people and the environment.

The Project. The Project's development objective is to support South Africa in enhancing its power supply and energy security in a sustainable and efficient manner for both its economic growth objectives and long-term carbon mitigation strategy. The Project includes the 4,800 MW Medupi coal-fired power plant at Lephalale (hereafter, "Medupi") and associated infrastructure and investments, as well as a component for the development of renewable energy generation sources, the Majuba Rail project, and energy efficiency sector investments and technical assistance. The construction of Medupi had already commenced by the time the World Bank was approached for financing consideration. Eskom Holdings Limited is the Borrower of the loan and the Government of South Africa is the Guarantor.

Key Claims Presented to the Panel. The Request identifies harms that the Requesters believe would be caused by the Bank's lack of compliance with its operational policies and procedures. The Request contains 13 claims on issues of potential material adverse effects that were linked to the Project and covered by provisions of Bank policy. These claims allege harm related to increased health problems, decreased water availability, exacerbation of the effects of climate change, and cultural and livelihoods changes.

According to the Request, these will arise from emission of particulates and greenhouse gases, water uses, expanded mining operations, land development and influx of labor, as well as strains on the national economy. In addition, the Request claims that the application of the Bank's policy on Borrower/Country Systems is not warranted in the context of the Project, and that there has been inadequate attention to key issues of cumulative impacts and Project alternatives.

Management Response. Management believes that extensive due diligence has been carried out during the Project preparation process and that, through such due diligence, the requirements of Bank policies and procedures, including those applicable to the matters raised in the Request, have been met. Moreover, Management believes that the Requesters' rights or interests have not been, nor will they be, directly and adversely affected.

Investigation Framework

Relevant Bank Policies. This Report presents the results of the Panel's investigation on each of the issues of harm raised in the Request for Inspection that relate to specific violations of Bank policy. The Panel's investigation focused on whether the Bank complied with its own policies and procedures in the design, appraisal, and implementation of the Project, and if instances of noncompliance were found, whether they caused, or were likely to cause, the harm or potential harm alleged by the Requesters and the people they represent. The main policy relevant to this investigation was OP/BP 4.00 on Piloting the Use of Borrower/Country Systems. Other relevant policies include OP 1.00 on Poverty Reduction, OMS 2.20 on Project Appraisal, OP/BP 10.00 on Investment Lending, OP/BP 10.04 on Economic Evaluation of Investment Operations, and OP/BP 13.05 on Supervision.

Compliance Analysis at Two Levels. The Panel notes that this is the first time the Inspection Panel has investigated a Project under the Bank's policy on Piloting the Use of Borrower/Country Systems, which relies on the country and borrower's legal and institutional frameworks. The Report notes in some length the development and importance of the country systems approach.

In accordance with this policy framework, the Panel's investigation focused its compliance analysis at two levels: the "System Level", which relates to Management's assessments of the "equivalence" and "acceptability" under Bank policy of the country and the borrower's environmental and social safeguard systems; and the "Project Level", which relates to Management's compliance with relevant provisions of OP/BP 4.00 as well as other Bank operational policies (non-safeguard policies) that apply to the Project directly.

Investigation Outcomes. The Panel notes the key importance of meeting South Africa's power needs, and the significance of having the Project carried out under the Bank's policy on Piloting the Use of Borrower/Country Systems. The Panel hopes that this investigation provides observations for corporate learning on how to deal with the considerable methodological and other challenges inherent in attaining compliance with this policy, and that it addresses issues of environmental and livelihoods impacts that require further attention and thus may contribute to improving the Project's overall development effectiveness.

Questions not Investigated. The Panel notes that the Request raises several overarching questions, on which there are divergent and hotly debated views. While the Panel has an explicit mandate to investigate whether the Bank complied with its operational policies and procedures with respect to this Project, it does not have a mandate to assess Board decisions or examine its judgment regarding the objectives of the Project to meet South Africa's energy needs. Nor can the Panel analyze whether the Project meets the requirements of Bank strategy documents such as *Development and Climate Change* (World Bank, 2008) as this is not an operational policy of the Bank.

Compliance Analysis at the System Level

The Requesters question the adequacy of Management's application of OP/BP 4.00, citing inconsistencies between South African law and Bank safeguard policies and contend that the country has a "*problematic*" track record of enforcing the laws it has in place. The Panel examined whether Bank Management complied with the system level requirements of this policy, including in particular the requirements to assess the "equivalence" and "acceptability" of a country's and borrower's environmental and social safeguard system under its provisions.

Assessment of Equivalence. On the question of "equivalence", the Panel reviewed Bank Management's assessment, through its Safeguards Diagnostic Review (SDR), of whether the applicable legal and institutional framework in South Africa was designed to achieve the objectives and adhere to the applicable operational principles set out in Table A1 of OP 4.00. The Panel noted the comprehensive legal and institutional framework for environmental and social safeguards within South Africa, and found that aside from the shortcomings noted below, Bank Management generally did good quality work in developing the SDR for the Project as required by OP 4.00, especially given the complex nature of this task.

The SDR did not, however, adequately address certain gaps in the legal framework pertaining to analysis of cumulative impacts and environmental management planning that were present at the time that the Project was under development. Although the legislative framework had changed by the time the SDR was being carried out and addressed these gaps substantially, the SDR failed to notice that these gaps were reflected in environmental and social safeguard documents prepared for Medupi and accepted by the Bank. Also, the SDR failed adequately to address the lack of provision in South African law to use an Independent Advisory Panel for the Environmental Impact Assessment for this type of project, and did not provide an adequate analysis of equivalence in respect to laws related to water use and mining activities, which are of relevance to this Project and the claims of the Requesters.

In addition, the SDR identified a few additional "*minor*" ambiguities or gaps in the legal framework, but added that "*it would appear from the analysis of Eskom's policies and procedures that all these gaps in the legal framework [...] are fully addressed and internalized in Eskom's policies and practices*", with the exception of some aspects of involuntary resettlement. The Panel noted the institutional strength of Eskom, but questioned this degree of reliance on self-regulation in determining equivalence.

Assessment of Acceptability. On the question of "acceptability", the Panel examined Management's assessment of the institutional practices, track record and capacity of the Borrower and the Country's relevant institutions, as required by OP/BP 4.00. Of most importance in this regard, the Panel found that there was an inadequate assessment of the capacity and implementation practices in particular of provincial and local level government institutions responsible for regulatory oversight and monitoring and enforcing environmental and social standards. The SDR did not suggest feasible actions to address these important issues, other than essentially rely on the capacity, track record and expected self-regulation of Eskom. While acknowledging the Borrower's institutional capabilities and track record, the Panel found that this was not a sufficient response under relevant policy.

The Panel also noted a concern in terms of the Bank's reliance on the Medupi Environmental Impact Assessment (EIA) as an input for its SDR analysis. Having found the Borrower's system acceptable at the system level, partially on this basis, Management's ability to critique the same EIA objectively when it is the subject of appraisal at project level may be affected. The Panel's analysis in fact shows that the Environmental Impact Report (EIR) prepared for Medupi, and accepted by Management, had certain shortcomings as compared with the relevant policy framework that were not identified or addressed.

Non-compliance and Harm. The Panel noted core elements of the country system in South African law, including its National Environmental Management Act (NEMA) principles, which correspond to, and in some cases may go beyond, the provisions of Bank policy principles in safeguarding against issues of social and environmental harm. In the Panel's view, nonetheless there are instances of non-compliance by Management that are significant in the context of this Project. While they would not alter the overall conclusion that South African systems are broadly equivalent to the objectives and operational principles of OP/BP 4.00, they point towards gaps that were not identified and addressed. In addition, and of particular importance, the Panel observed that weakness in Management's analysis of the capacity of local government institutions to manage and monitor environmental harms may become a critical factor in terms of addressing/mitigating the local level harms raised in the Request and further outlined below. While the implications of these instances of non-compliance are difficult to predict, the Panel noted that the potential impacts of a project of the size and scale of EISP are significant, and the existence of adequate capacity to identify and address these impacts is likely to be a crucial factor in the Project's overall health, environment and development outcomes.

Compliance Analysis at the Project Level

In its assessment of Management's compliance with Bank policies, the Panel focused on those claims related to the Project's impacts on air, water and climate as well as on other project-level claims of a social and economic nature, including the Project's impacts on local livelihoods and public infrastructure services. In addition, the Panel examined the two claims that relate to Project impacts at a national level, in terms of energy access by the poor and the national economy of South Africa.

The policy framework for social and environmental safeguard aspects at the project level is set forth in OP/BP 4.00, including Table A1, as applied through key elements of the borrower/country system adjudged to be equivalent, and any agreed-upon gap-filling measures. OP/BP 4.00 also provides that the Bank is responsible for appraising and supervising pilot projects that use country systems, and for confirming, as part of due diligence, that project environmental and social safeguard documents are acceptable to the Bank. Other relevant policies for the analysis at the Project level are OP 1.00 on Poverty Reduction, OMS 2.20 on Project Appraisal, OP 10.00 on Investment Lending, OP/BP 10.04 on Economic Evaluation of Investment Operations, and OP/BP 13.05 on Supervision.

What follows is a summary of the main points of analysis and findings of the Panel on each of the claims relating to non-compliance and harm at the Project level, organized on a claim-by-claim basis.

Water Availability and Quality. The Requesters fear that the Medupi Power Plant and its sulfur scrubbers for pollution abatement will put additional strain on existing water sources in an area already suffering from water scarcity. In addition, the Requesters claim that the directly related expansion of coal mining at the Grootegeluk Mine will have negative environmental impacts, especially with respect to acid mine drainage. These impacts on water resources are of particular importance given that the region is marked by water scarcity, and may result not only from the Project itself but also from the coal, water, and sand needed for the construction and/or operation of Medupi. The Panel was of the view that the additional scale of the water augmentation project that will supply water to Medupi, the expansion of the operations of the Grootegeluk Mine, and the additional river-bed sand excavation from the Mokolo River for Medupi are associated with the Project, which is important for the proper application of relevant Bank policy.

The Panel noted that the focus of Management in relation to water resources appears to have been on ensuring that Medupi had a reliable source of water supply. Insufficient attention was given in Project documents to the potential impacts that the use of water by the plant might have on other users, and to the evaluation of the potential significance of Project impacts on quantity and quality of surface and groundwater resources. The Panel also noted that Medupi is being constructed when the full spectrum of likely impacts on water resources has not been reliably identified or assessed.

In short, the Panel found that the inadequate consideration of the Project's direct, indirect and cumulative impacts on availability and quality of surface and ground water resources is not consistent with OP/BP 4.00. This is of particular concern in light of the scarcity of water resources in the region, the associated risks and the competing demands for those resources. The Panel further found that the Project's consideration of the impacts of Medupi on water resources was not based on a risk-averse approach, as required under the terms of OP/BP 4.00 and South Africa's national environmental management principles. The Panel found that these instances of non-compliance have likely weakened the ability of the Project to take effective steps to minimize or avoid these risks, and provide measures to compensate for harms that cannot be avoided.

The Panel noted that the expansion of the Grootegeluk Mine to supply coal to Medupi will result in cumulative impacts of potential significance linked to increased water use on river systems, and on surface water and groundwater quality. The Panel's view was that Management should have taken a broader look at expansion of coal mining to supply Medupi, given that it entails associated and cumulative impacts of relevance and that the expansion of the Grootegeluk Mine will increase water use and risks of water pollution, particularly with regard to acid mine drainage in the longer term. The Panel found that these cumulative impacts of the Project were not properly assessed, as required by OP 4.00.

Emission of Particulates, Air Quality and Health Problems. The Requesters claim that the expected emissions from the Medupi Power Plant will cause health impacts, and that local communities are seriously concerned about the potential impacts from emissions of sulfur dioxide, nitric oxide, heavy metals and particulates. The Requesters are concerned that Medupi will add to the background levels of these pollutants already emitted by the nearby Matimba coal-fired power plant, the Grootegeluk Coal Mine, and other polluting activities such as brickworks in the Lephalale area and other planned industrial development in the vicinity.

The Panel found significant shortcomings in Management's due diligence assessment of air quality issues and the development of responsive mitigation measures to address risks of serious harm. This is not consistent with the provisions of OP/BP 4.00. In terms of cumulative impacts, the Panel found that an analysis of the cumulative effects of the Grootegeluk mine, Medupi and Matimba on air quality in the local airshed was carried out as part of the related EIA and Environmental Management Program Report (EMPR), consistently with OP/BP 4.00, but that due consideration should have been given to probable future projects in the area (e.g. additional coal mines and coal-fired power stations) in determining the appropriate level of mitigation measures for the Project. The Panel considered that these shortcomings in policy compliance have important implications for residents in the vicinity of Medupi and in the region, and likely reduced the ability of Management to assess and respond to the significant potential negative air quality impacts of Medupi in an integrated and effective manner

The Panel noted the important role of Management in ensuring the installation of technology to remove emission of SO_2 (i.e. flue gas desulphurization – FGD), though the planned installment of FGD is three years after start of the plant and may be further delayed in light of, *inter alia*, risks posed by water scarcity. The Panel also noted that Management is supporting a study of cumulative impacts in the context of a broader ongoing regional environmental and social assessment, with important potential to help manage cumulative impacts from prospective activities, though it does not have a direct bearing on mitigation measures currently planned for Medupi.

Greenhouse Gas Emission and Exacerbation of Climate Change. The Requesters raise concerns about the potential impacts of the Project on greenhouse gas (GHG) emissions from Medupi and thus on global climate change. They claim that the new coal-fired power plant will make it more difficult for South Africa to meet its GHG reduction commitments, and that the climate change impacts of the Project have not been adequately considered and addressed as required by Bank policy. The Panel noted that Bank operational policy does not contain explicit climate change targets, especially relating to GHG emissions, though it does set forth various requirements to identify and address potential adverse transboundary and global impacts of a project, including those relating to climate change. The Panel also noted that South Africa does not have a specific obligation to reduce GHG emissions under an international environmental agreement within the meaning of the relevant operational principle of OP 4.00. In this context, an issue of policy compliance by Management on this point does not arise.

The Panel examined whether Bank Management acted consistently with other relevant policy requirements on this matter, in light of the claims in the Request. In this context, the Panel examined whether the Project's assessment adequately considered and adopted technology and policy measures to control and mitigate GHG emissions in line with Bank Policy. The Panel found that steps have been taken to adhere to this policy framework, including for example the Majuba Rail project and other energy efficiency measures. The Panel noted, however, that the magnitude of emissions from Medupi far outweighs emissions avoided through Project mitigation measures, and found that the description of the net results of mitigation efforts under the Project failed to adequately demonstrate that the Project is directly addressing its own externalities. The Panel's related analysis of whether the Project adequately considered alternatives to coal is summarized below.

Finally, the Panel reviewed whether Management's assessment of Project documents accurately assessed the potential impacts and risks arising from the Project in respect to climate change, in light of Bank operational policies and in support of informed decision-making by the Board of Executive Directors. The Panel noted, in this regard, the statement by Management early in the PAD that "*[T]he present project, as well as the longer-term partnership envisaged between the government of South Africa and the World Bank will enable the country to achieve a low carbon trajectory.*" The Panel considers that this broad statement early in the PAD may convey an overly optimistic view of the Project on this matter, given that Medupi will emit significant levels of GHG emissions.

Influx of Laborers, Land Development and Local Impacts. The Requesters claim that the Project will have adverse effects on local communities and overwhelm local services due to the influx of people and workers for the construction of the plant, and add to the effects of other new activities and development linked to Medupi. The Panel considered that the issue of impacts of Medupi on the local municipality and public services for which the Municipality is responsible is serious, and potentially detrimental to the rights and interests of the Requesters. As indicated in the Medupi EIA, substantial new investments will be needed in access roads, water, sanitation, housing, health care and schools. Similarly, the EMPR for the expansion of the Grootegeluk Mine notes the anticipated pressure on local services due to incoming workers at the mine. During its field visits, the Panel saw indications of serious stress upon local infrastructure services, including water and sewage systems, and heard many related concerns including those about security and spread of diseases – HIV/AIDS in particular.

Although these issues were identified by Management, the Panel found that the Medupi EIA accepted by the Bank did not include adequate mitigatory measures commensurate with its conclusion that impacts on public infrastructure and services were of "*high significance*", as required by OP/BP 4.00 and relevant NEMA principles. Rather, there was a reliance largely on consultation with local authorities to find workable solutions. Furthermore, the cumulative impacts of both Medupi and expansion of the Grootegeluk Mine on public infrastructure services were not addressed. The Panel found that Management's acceptance of the Medupi EIA with these shortcomings was not consistent with OP/BP 4.00.

Cross-Cutting Issue -- Inadequate Analysis of Project Externalities. In carrying out its compliance analysis on the above project level issues, the Panel identified that the economic analysis of the Project prepared by the Bank did not adequately address the environmental and health-related externalities of Medupi. The Panel notes that the analysis included CO_2 emissions as a global externality and certain opportunity costs of water use by Medupi. Comparable attention, however, was not paid to other important externalities, such as the economic estimates of the costs of potential harm from air quality degradation in the Medupi area and of the anticipated increase in water scarcity in an already stressed water system incorporating the additional water requirements for expansion of the operations of the Grootegeluk mine. The Project economic analysis should have explicitly addressed and estimated the costs of potential damages to human health and to animal habitat from increased SO_2 emissions in periods without FGD in place.

Impacts on Local Livelihoods and Poverty. The Requesters claim that Medupi will have detrimental impacts on the livelihoods of people living in and around Lephalale because the industrial activity and pollution will negatively affect agriculture, livestock rearing, and ecotourism. The Panel noted and commended the various efforts to enhance recruitment of people resident in the area as well as supporting Lephalale municipality in the rehabilitation and upgrading of public infrastructure, but noted that such actions and commitments were not derived from Management's assessment of impacts. Rather, they required commensurate mitigatory measures in line with South Africa's NEMA principles, which include a "polluter pays" approach and require environmental justice and special attention to vulnerable parties.

The Panel found that links between Medupi and issues of poverty in the impact area of the power plant were not addressed in the Project's PAD, and featured only indirectly in the Medupi EIA accepted by Management. Social and livelihoods impacts are dealt with in the PAD primarily in terms of resettlement, and these documents are largely silent on other socioeconomic impacts and their mitigation or compensation in the Lephalale area. The Panel considers that Management did not adequately consider issues relating to poverty reduction at the local level in Lephalale in its appraisal of the Project, which is not consistent with the spirit of OP 1.00 to "*increase opportunity*" and "*enhance empowerment*" and "*strengthen security*". Properly addressing these issues might have resulted in a more proactive approach towards conditions that affect or benefit the livelihoods of the poor and vulnerable. The Panel notes that the Waterberg District is among the most disadvantaged areas in South Africa with high levels of poverty.

Impacts on Cultural Heritage and Practices. The Requesters claim that cultural practices in the area could be negatively impacted by the destruction of grave sites during construction of the Medupi plant, and by changes in the availability of sources of traditional medicinal plants as a result of the Project. The Panel noted that grave sites were identified and addressed in the Medupi EIR as part of the heritage study, that Eskom has made good-faith efforts to identify any grave sites that may be affected by the construction, and that the Bank was assured that if any oversight had been made, Eskom would respond to any grievances in accordance with the provisions of the South African National Heritage Resources Act.

The Panel also found that potential impacts on the availability of plants were not raised or assessed in the EIR accepted by Management, which mentions only that the establishment of construction camps may lead to degradation of surrounding natural areas in part through collection of medicinal plants, suggesting that there are such plants of value being collected in the local area. The consequences of this oversight in terms of access to medicinal plants, however, are likely to be less significant given the distance of the Medupi site from human settlements and the availability of similar habitats in the area.

Impacts on Energy Access by the Poor. The Requesters claim that the Bank provides no evidence for its argument that the Project will enable Eskom to provide electricity to the 20% of South African population that presently has no access to electricity, and that the Project will mainly benefit large industries. The Panel noted that the Project does not have as a direct objective the increase of electricity access by the poor, which is a matter of price and expanding distribution. The Panel notes that this Project is unlikely to diminish electricity access to the poor, and may enhance access by adding more electricity to the national grid. The Panel did not find an issue of compliance with Bank policy with respect to this claim.

Impacts on the National Economy of South Africa. The Requesters claim that repayment of the Bank loan will require more exports and higher tariffs to compensate for any future currency devaluation, noting that South Africa regularly experiences currency crashes. The Panel however was of the view that a loan of US$ 3.75 billion phased over the remaining construction period of the Project, to be repaid over 25 years including a 10-year grace period, is unlikely to have any sustained impact on the exchange rate, and that the foreign source of the loan should not have any significant bearing on its implications for the exchange rate. The Panel did not find an issue of compliance with Bank policy with respect to this claim.

Inadequate Consideration of Alternatives. The Requesters claim that the World Bank did not adequately consider alternatives to coal. The Panel noted that the policy requirement to ensure that there is a complete and balanced review of design alternatives – a cornerstone of good EIA practice – was considerably more difficult in the present case, given that Eskom had already begun construction of Medupi before the Bank agreed to provide financial assistance, that an analysis of alternatives had already been carried out by the Borrower, and that a project alternative had been selected for implementation. While the Bank could, and in some instances did, have an influence on alternative designs of certain project features such as those to ameliorate air pollution, for most types of design alternatives the decisions had already been made and could not be reversed.

The Panel found that Management acted consistently with Bank policy in including an extensive analysis in the PAD on the issue of viable alternatives to the Project to reduce GHG emissions in light of Project objectives, which was additional to the information provided in the Medupi EIR. However, it noted that this analysis focused only on electricity production cost and the externality of GHG emissions, whereas Bank policy, and corresponding provisions of South African law, requires a broader focus on whether there are other feasible alternatives available that could meet project objectives and reduce or avoid significant externalities and impacts. Overall, the Panel found that Management did not ensure that Project documentation adequately included a complete and balanced review of design alternatives to promote informed Board decision-making. The Panel further found that, since the economic analysis did not adequately consider all relevant externalities (in particular with regard to water and air), there was an inadequate consideration of risks in the analysis of alternatives, which is not in non-compliance with OMS 2.20. In addition, the Panel noted that the figures used in the PAD on the costs of CO_2, though well accepted at the time, may have under-estimated these costs, a concern that becomes greater when emissions are looked at in a cumulative context and in light of the long-term nature of the relevant investments.

Systemic Issues and Contributions to Corporate Learning

The Panel's investigation revealed systemic issues relevant to Bank compliance in the context of this Project. As a contribution to corporate learning, the Report discusses three sets of systemic issues: the Bank's policy on Borrower/Country systems; policy compliance in relation to associated activities; and assessing impacts on water resources.

Panel Findings

The complete Panel findings are presented in the Table of Findings below.

Table of Findings

ISSUE	PANEL'S FINDINGS
	Compliance Analysis at the System Level
Assessment of Equivalence **Claim:** proposals to fill "gaps" do not include changes to South African laws and regulations, but reflect only changes that should be made at Eskom with this specific project, and do not appear to be mandatory, long-term improvements to Eskom's "system." **Management Response:** following the due diligence undertaken by Bank staff as mandated by OP 4.00, the gaps and ambiguities 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.	**General Conclusions** The Panel notes that the preparation of an SDR is a challenging and complex task and recognizes the significant work by staff to carry out this assignment. The SDR contains a detailed review of the Guarantor's and the Borrower's legal and regulatory framework and practices. The Panel finds that, in most respects, Management's analysis of equivalence complies with OP/BP 4.00. The Panel, however, found certain shortcomings in the SDR analysis, which raise issues of compliance as they relate to the claims in the Request. **Shortcomings in the Analysis of Equivalence** Relevant Legal Framework. The Panel finds that the SDR did not adequately recognize the gap between Bank Policy requirements and prevailing national legislation with respect to assessing cumulative impacts and environmental management planning in the EIA process at the time that the Medupi EIA was prepared, as required by Table A1 of OP/BP 4.00. Assessment of Applicable Laws. The Panel finds that the SDR does not provide an adequate analysis of equivalence in respect to laws related to water use and mining activities which are of relevance to this Project and the claims of the Requesters. The Panel further finds that the SDR does not adequately assess the lack of provision in South African law to use an independent advisory panel during preparation and implementation of projects that are "*highly risky or contentious or that involve serious and multi-dimensional environmental and/or social concerns,*" which is an operational principle set forth in Table A1 of OP 4.00 (para. A.8). In these respects, the SDR analysis falls short of the requirements of OP/BP 4.00.
Assessment of Acceptability **Claim:** 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. **Management Response:** enforcement of environmental and social laws in South Africa is challenging. However, Eskom has a strong record of compliance with safeguards. 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 and DEA has substantially expanded its enforcement capacity.	**Assessment of Institutional Capacity** The Panel finds that the analysis of acceptability in the SDR did not adequately address the institutional capacity of key regulatory institutions involved in environmental monitoring and management related to EISP, particularly at the provincial and local levels. The focus was mostly on Eskom and DEAT. This does not comply with OP/BP 4.00. **Implementation Practices and the Project EIA** The Panel finds that the SDR does not adequately reflect concerns relating to implementation practices and track record in regard to the EIA process, nor suggest feasible actions to address them, other than relying essentially on the capacity and practices of the Borrower. This is not consistent with OP/BP 4.00. **Gap Filling** Due to certain shortcomings in its analysis of institutional capacity and implementation practices, the Panel finds that Management did not have an adequate basis to properly identify gap-filling measures to help address issues of capacity within competent environmental authorities at certain tiers of government to, inter alia, review EIAs, draft robust authorizations, and monitor and enforce compliance. This is not consistent with OP 4.00.

Compliance Analysis at the Project Level	
Decreased Water Availability and Quality **Claim**: Project creates risks of harm to both water availability and quality, due to the consumptive use of water by Medupi and risks of water contamination as a result of its construction and operation. **Management Response**: Medupi's water needs, as well as those of an expanded Grootegeluk Mine, will be met by the Department of Water Affairs (DWA) through the implementation of the first two phases of the Mokolo-Crocodile (West) Water Augmentation Project (MCWAP), 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 Panel finds that there has been inadequate consideration of the Project's direct, indirect and cumulative impacts on availability and quality of surface and ground water resources. This is not consistent with OP/BP 4.00. This shortcoming is of particular concern due to the scarcity of water resources in the region, the associated risks and in light of competing demands for those resources. The construction and operation of the Medupi plant entails significant risks of adverse impacts on the availability and quality of surface and ground water resources in the area. The Panel finds that the instances of non-compliance noted above have likely weakened the ability of the Project to take effective steps to minimize or avoid these risks, and provide measures to compensate for harms that cannot be avoided. The Panel finds that the Project's consideration of the impacts of Medupi on water resources was not based on a risk-averse approach, as required under the terms of OP/BP 4.00 and the NEMA s2 principles. Such an approach is not evident in the PAD or the Medupi EIR, the SDR, or the MCWAP documentation accepted by Management. The Panel's view is that Management should have taken a broader look at expansion of coal mining to supply the Medupi Power Plant, given that it entails associated and cumulative impacts of relevance and that the expansion of the Grootegeluk Mine will increase water use and risks of water pollution, particularly with regard to Acid Mine Drainage in the longer term. The Panel finds that this is a combined cumulative impact of the Project that was not properly assessed, as required by OP 4.00.
Emission of particulates, air quality and health impacts **Claim:** expected "significant" emissions from the coal-fired Medupi Power Plant will cause health impacts, because of emissions of sulfur dioxide (SO_2), nitric oxide (NO_x), heavy metals (e.g. mercury) and particulates that Medupi, once operational, will add to the background levels of these pollutants. **Management Response**: there will be no significant incremental impact of air emissions from the Medupi Power Plant on human health from particulate matter, mercury and other heavy metal emissions, and sulfur dioxide, and that the human health risks of not immediately installing abatement technology are acceptable.	The Panel finds significant shortcomings in Management's due diligence assessment of air quality issues and of the development of responsive mitigation measures to address risks of serious harm. This is not consistent with the provisions of OP/BP 4.00. The Panel further finds that an analysis of the cumulative effects of the Grootegeluk mine, Medupi and Matimba on air quality in the local airshed was carried out as part of the related EIA and EMPR for expansion of the Grootegeluk Mine. The Panel finds that this is largely consistent with OP/BP 4.00. However, the Panel is of the view that due consideration should have been given to probable future projects in the area (e.g. additional coal mines and coal-fired power stations), in determining the appropriate level of mitigation measures for the project. The Panel finds that it is likely that these shortcomings in meeting relevant policy requirements have reduced the ability of the Project to assess and respond to the significant potential negative air quality impacts of Medupi in an integrated and effective manner. The Panel notes that Management is supporting a study of cumulative impacts in the context of a broader Regional Environmental and Social Assessment which is ongoing. The Panel notes the importance of these initiatives and their potential to help manage cumulative impacts at a regional scale.

Greenhouse gas emissions and Exacerbation of climate change **Claim:** potential impacts of the Project on the global problem of climate change, due to large-scale greenhouse gas emissions from the Medupi coal-fired power plant financed under the Project. Impacts not adequately considered **Management Response:** GoSA's commitment to climate change mitigation is signaled by a number of national and international commitments to pursue a low carbon growth path EISP allows South Africa to meet its urgent energy security needs through the 4,800 MW Medupi Power Plant and at the same time "supports interventions to mitigate climate change	**Technology and policy measures to control and mitigate emissions.** The Panel finds that steps have been taken to adhere to the Bank's policy framework, including selection by Eskom of super-critical technology, financing of the Majuba Rail Project, and financing of renewables as part of the Project. The Panel considers that these efforts constitute an important recognition of other options available to provide electricity and reduce negative externalities in the context of the critical need for power to support development in South Africa. Nevertheless, the magnitude of emissions from Medupi far outweighs emissions avoided in these measures. The Panel notes that the description of the net results of mitigation efforts under the Project fails to demonstrate adequately that the Project is directly addressing its own externalities. **Alternatives to the Project to reduce GHG emissions.** The Panel finds that Management acted consistently with Bank policy in preparing an extensive analysis in the PAD on the issue of GHG externalities, and notes that this analysis is additional to the information provided in the Medupi EIR. The Panel notes, however, that this is not a complete analysis of alternatives, as it focuses only on electricity production cost and the externality of GHG emissions. The Panel notes that Bank policy, and corresponding provisions of South African law, does not focus narrowly on "least cost", as referred to in the PAD, but on whether there are other *feasible* alternatives available that could meet project objectives and reduce or avoid significant externalities and impacts.
Influx of laborers, land development and local impacts **Claim:** concerns about social and environmental effects of labor migration to the area in relation to the Medupi project. **Management Response:** the expanded workforce will put pressure on housing and municipal infrastructure and services, and that increases in sexually transmitted diseases and social conflict can occur but amended EMPR contains measures to address these impacts	The Panel's assessment is that the issue of impacts of the Medupi Power Plant on the local municipality and public services for which the Municipality is responsible is serious, and potentially detrimental to the rights and interests of the Requesters. The Panel finds that the EIA accepted by Management did not adequately identify mitigatory measures commensurate with its conclusion of impacts of "*high significance*" on public infrastructure and services, as required by OP/BP 4.00 and relevant NEMA principles. Management's acceptance of the EIA with this shortcoming is not consistent with OP/BP 4.00.

Impacts on local livelihoods and poverty **Claim:** Medupi Power Plant will have "detrimental" impacts on the livelihoods of people living in and around Lephalale because the industrial activity and pollution will negatively affect agriculture, livestock rearing, and ecotourism. **Management Response:** none of the issues the Requesters raise related to livelihoods can be considered potential detrimental impacts Environmental Impact Report (EIR) for EISP "adequately" identifies and addresses the impacts of the Medupi Power Plant on livelihoods and that Management is confident that mitigation measures are in place to avoid or minimize such impacts.	**Commercial Farming and Ecotourism** The Panel finds that the assessment of possible impacts on tourism in the EIR accepted by Management is not comprehensive and certain conclusions are not backed by empirical analysis. In this sense, the Panel finds that Management's assessment of these aspects of the EIR is not fully consistent with OP 4.00, Table A1's requirement that the country system should call for "*appropriate studies [to be]undertaken proportional to potential risks and to direct, and as relevant, indirect, cumulative, and associated impacts.*" On the other hand, the Panel notes that though the Medupi investment will contribute to further urbanization and a change of the sense of place, the net effect of this factor on ecotourism and commercial agriculture is difficult to predict. **Local Poverty Reduction** The Panel finds that links between the Medupi Power Plant and issues of poverty in the impact area of the plant are not addressed in the Project's PAD or SDR, and feature only indirectly in the EIR accepted by Management. Social and livelihoods impacts are dealt with in the PAD and SDR primarily in terms of resettlement. These documents are largely silent on other socioeconomic impacts and their mitigation or compensation in the Lephalale area. This is not consistent with provisions on poverty reduction of OP 10.00. Properly addressing this issue might have resulted in a more proactive approach to address conditions that affect or benefit the livelihoods of poor and vulnerable communities.
Cross-cutting Issues: Analysis of Project Externalities	**Air Quality** The Panel considers that the economic analysis should and could have included calculations of potential harm from air quality degradation in the area of the Medupi Power Plant. Thus, the Panel finds the economic analysis to be non-compliant with OMS 2.20 and OP 10.04. **Water Resources** The Panel finds that the failure to cost the 2 Mm3 of water per year required for expansion of the Grootegeluk Mine does not comply with OMS 2.20 requirement that economic evaluations identify, quantify and value all costs and benefits likely to be involved in the project. The Panel also finds that the approach to analyzing risks in the economic analysis is consistent with OP 10.04. **Economic Analysis of Alternatives** The Panel determined that the economic analysis contains an inadequate consideration of risks --in particular, with regard to water and air externalities--associated with the choice of alternatives. The economic analysis includes extensive testing of the sensitivity of the choice of alternatives to CO_2 values but does not test for the sensitivity of alternatives to domestic and transboundary externalities associated with water availability and quality nor air quality degradation. The Panel finds that this omission constitutes non-compliance with OMS 2.20. As a result, the Board did not receive important information for decision-making.
Impacts on cultural heritage and practices **Claim:** cultural practices in the area could be negatively impacted by the "destruction" of grave sites during construction of the Medupi plant and changes in the availability of sources of traditional medicinal plants as a result of the Project. **Management Response:** the conservation of cultural resources	**Grave sites** The Panel notes that grave sites were identified and addressed in the Medupi EIR as part of the heritage study. Furthermore, it is the Panel's assessment that Eskom has made good-faith efforts to identify any grave sites that may be affected by the construction. The Bank has been assured that if any oversight has been made, Eskom would respond to any grievances in accordance with the provisions of the South African National Heritage Resources Act.

is a key issue treated in the Record of Decision (RoD) for the EISP and that it is satisfied South Africa has the necessary regulations and Eskom the institutional capacity to implement the Project while conserving the natural habitat and physical cultural resources in the area. The plant communities on the Project site were found to be characteristic of the surrounding bushveld, and that clearing of the site would not significantly reduce the availability of plants with medicinal uses associated with cultural practices in the area	
Impacts on Energy Access for the Poor **Claim:** Bank provides no evidence for its argument that the Project will enable Eskom to provide electricity to the 20% of South African population that presently has no access to electricity. Project will mainly benefit large industries. **Management Response:** South Africa and Eskom have increased overall access to electricity from 34% to 81% since 1994 and though the Project does not finance new connections, the Government has made provision for connecting the remaining 19% of households, the majority of whom are poor, by 2014	The Panel notes that this Project is unlikely to diminish electricity access to the poor, and may enhance access by adding more electricity to the national grid. The Panel did not find an issue of compliance with Bank policy with respect to this claim.
Impacts on the National Economy **Claim:** repayment of the World Bank will require more exports and higher tariffs to compensate for any future currency devaluation. **Management Response:** the loan will not put undue stress on the country's foreign exchange situation because the payment on the principal amount will be no more than 0.1% of the country's total exports in any given year the IBRD loan is the cheapest and longest-maturity loan available to Eskom from any financial source, totaling 9% of Eskom's total	A loan of US$ 3.75 billion phased over Project implementation, and to be repaid in 25 years including a 10 year grace period, is unlikely to have any sustained impact on the exchange rate. The Panel did not find an issue of compliance with Bank policy with respect to this claim.

liability when the Project is commissioned in 2012	
Inadequate consideration of alternatives **Claim:** the Project did not adequately consider "alternatives to coal." **Management Response** there are no immediate domestic alternatives to coal for ensuring electricity supply, because Coal is the major and only low-cost source for power generation.	**Alternatives to coal** The Panel notes that no systematic comparative analyses of emission abatement options and associated impacts, including infrastructure or services required to provide the required materials and manage and dispose of wastes, were undertaken to inform the choice of wet FGD. The Panel finds that the absence of such an analysis is inconsistent with the requirements of OP/BP 4.00 that appropriate studies be undertaken proportional to potential risks. This is also out of keeping with the requirements of OP/BP 4.00 and OMS 2.20 that feasible or worthwhile alternatives be assessed in a manner that would allow identification of the "best practicable environmental option" or optimal option, and/or enable the findings of that assessment to influence decision making on the project design and its implementation. The Panel commends the initiatives by Management to carry out an additional GHG analysis, provide support for the renewable energy and other energy efficiency components, but finds that Management did not ensure that Project documentation adequately considered feasible alternatives, as required by Bank policy, to promote informed decision-making by the Board.