IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-34860, IDA-3486A, JPN-25952)

ON A
CREDIT

IN THE AMOUNT OF SDR 13.5 MILLION
(US$19.2 MILLION EQUIVALENT)

TO THE
REPUBLIC OF MOZAMBIQUE

FOR A
MINERAL RESOURCES MANAGEMENT CAPACITY BUILDING PROJECT

December 20, 2007

Oil, Gas and Mining Policy Department (COCPO)
Sustainable Development Network
Angola, Malawi, Mozambique, Zambia, Zimbabwe (AFCS2)
Africa Region
CURRENCY EQUIVALENTS

(Exchange Rate Effective June 21, 2007)
Currency Unit = New Meticais (Mtn)
26.02 Mtn = US$1
US$1.51 = SDR 1

FISCAL YEAR
January 1 - December 31

ABBREVIATIONS AND ACRONYMS

AfDB African Development Bank
CAS Country Assistance Strategy
CASM Communities and Small-scale Mining
CGS Council for Geosciences of South Africa
CVRD Companhia Vale do Rio Doce
GDP Gross Domestic Product
GoM Government of Mozambique
DCA Development Credit Agreement
NGD National Directorate of Geology
DNM National Directorate of Mines
EITI Extractive Industries Transparency Initiative
EMIS Environmental Management Information System
ICR Implementation Completion and Results Report
IDA International Development Association
ISR Implementation Status Report
MDF Minerals Development Fund (*Fundo de Fomento Mineiro*)
MIS Minerals Information System
MICOA Ministry of Environmental Coordination
MIREM Ministry of Mineral Resources
M&E Monitoring and Evaluation
MTR Mid-term Review
NDF Nordic Development Fund
NGO Non Governmental Organization
PAD Project Appraisal Document
PDO Project Development Objective
PHRD Policy and Human Resources Development (Japanese Grant)
QEA Quality at Entry
QSA Quality of Supervision
SDR Special Drawing Rights
UCPM Mining Project Coordination Unit

Vice President: Obiageli Katryn Ezekwesili
Country Director: Michael Baxter
Sector Manager: Paulo De Sa
Project Team Leader: Charles Husband
ICR Team Leader: Charles Husband
COUNTRY
Project Name

CONTENTS

Data Sheet
  A. Basic Information
  B. Key Dates
  C. Ratings Summary
  D. Sector and Theme Codes
  E. Bank Staff
  F. Results Framework Analysis
  G. Ratings of Project Performance in ISRs
  H. Restructuring
  I. Disbursement Graph

1. Project Context, Development Objectives and Design................................. 11
2. Key Factors Affecting Implementation and Outcomes .................................. 18
3. Assessment of Outcomes ............................................................................. 23
4. Assessment of Risk to Development Outcome.............................................. 27
5. Assessment of Bank and Borrower Performance .......................................... 28
6. Lessons Learned........................................................................................... 30
7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners..... 31
Annex 1. Project Costs and Financing................................................................. 32
Annex 2. Outputs by Component....................................................................... 33
Annex 3. Economic and Financial Analysis....................................................... 36
Annex 5. Beneficiary Survey Results................................................................. 38
Annex 6. Stakeholder Workshop Report and Results......................................... 39
Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR .............. 40
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders.............. 51
Annex 9. List of Supporting Documents............................................................ 52
MAP
## A. Basic Information

<table>
<thead>
<tr>
<th>Country:</th>
<th>Mozambique</th>
<th>Project Name:</th>
<th>Mineral Resources Management Capacity Building Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project ID:</td>
<td>P001808</td>
<td>L/C/TF Number(s):</td>
<td>IDA-34860, IDA-3486A, JPN-25952</td>
</tr>
<tr>
<td>ICR Date:</td>
<td>12/20/2007</td>
<td>ICR Type:</td>
<td>Core ICR</td>
</tr>
<tr>
<td>Lending Instrument:</td>
<td>TAL</td>
<td>Borrower:</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>Original Total Commitment:</td>
<td>SDR 13.8M</td>
<td>Disbursed Amount:</td>
<td>SDR 13.5M</td>
</tr>
</tbody>
</table>

**Environmental Category:** C  
**Implementing Agencies:** Ministry of Mineral Resources – Mining Project Coordination Unit (UCPM)  
**Cofinancers and Other External Partners:** African Development Bank, Nordic Development Fund, Republic of South Africa

## B. Key Dates

<table>
<thead>
<tr>
<th>Process</th>
<th>Date</th>
<th>Process</th>
<th>Original Date</th>
<th>Revised/Actual Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal:</td>
<td>11/27/2000</td>
<td>Restructuring(s):</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Approval:</td>
<td>03/29/2001</td>
<td>Mid-term Review:</td>
<td>--</td>
<td>05/18/2004</td>
</tr>
<tr>
<td>Closing:</td>
<td></td>
<td></td>
<td>06/30/2006</td>
<td>06/30/2007</td>
</tr>
</tbody>
</table>

## C. Ratings Summary

### C.1 Performance Rating by ICR

| Outcomes: | Satisfactory |
| Risk to Development Outcome: | Moderate |
| Bank Performance: | Satisfactory |
| Borrower Performance: | Satisfactory |

### C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

<table>
<thead>
<tr>
<th>Bank</th>
<th>Ratings</th>
<th>Borrower</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality at Entry:</td>
<td>Satisfactory</td>
<td>Government:</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Quality of Supervision:</td>
<td>Satisfactory</td>
<td>Implementing Agency/Agencies:</td>
<td>Moderately Unsatisfactory</td>
</tr>
<tr>
<td>Overall Bank Performance:</td>
<td>Satisfactory</td>
<td>Overall Borrower Performance:</td>
<td>Moderately Satisfactory</td>
</tr>
</tbody>
</table>
C.3 Quality at Entry and Implementation Performance Indicators

<table>
<thead>
<tr>
<th>Implementation Performance</th>
<th>Indicators</th>
<th>QAG Assessments (if any)</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Problem Project at any time (Yes/No):</td>
<td>No</td>
<td>Quality at Entry (QEA):</td>
<td>None</td>
</tr>
<tr>
<td>Problem Project at any time (Yes/No):</td>
<td>No</td>
<td>Quality of Supervision (QSA):</td>
<td>None</td>
</tr>
<tr>
<td>DO rating before Closing/Inactive status:</td>
<td>Satisfactory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Sector and Theme Codes

<table>
<thead>
<tr>
<th>Sector Code (as % of total Bank financing)</th>
<th>Original</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central government administration</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>Mining and other extractive</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme Code (Primary/Secondary)</th>
<th>Original</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation and competition policy</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Other environment and natural resources management</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Environmental policies and institutions</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Other financial and private sector development</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
</tbody>
</table>

E. Bank Staff

<table>
<thead>
<tr>
<th>Positions</th>
<th>At ICR</th>
<th>At Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vice President:</td>
<td>Obiageli Katryn Ezekwesili</td>
<td>Callisto Madavo</td>
</tr>
<tr>
<td>Country Director:</td>
<td>Michael Baxter</td>
<td>Darius Mans</td>
</tr>
<tr>
<td>Sector Manager:</td>
<td>Paulo De Sa</td>
<td>James Bond</td>
</tr>
<tr>
<td>Project Team Leader:</td>
<td>Charles Husband</td>
<td>Paulo De Sa</td>
</tr>
<tr>
<td>ICR Team Leader:</td>
<td>Charles Husband</td>
<td>Charles Husband</td>
</tr>
<tr>
<td>ICR Primary Authors:</td>
<td>Sati Achath and Allison Berg</td>
<td></td>
</tr>
</tbody>
</table>

F. Results Framework Analysis

Project Development Objectives:

The overall objective of the Mineral Resources Management Capacity Building Project was to provide technical assistance to the Government of Mozambique for (a) institutional development and regulatory reform designed to encourage the expansion of private investment in mining in a socially and environmentally sound way; and (b) targeted interventions to alleviate poverty in areas of strong incidence of small-scale and artisanal mining. Specific Project objectives included (a) improving the legal and regulatory framework to help establish an enabling environment to promote private investment into mining, while ensuring real and sustainable contribution to economic growth; (b) building institutional
capacity to develop capabilities to effectively enforce laws and regulations, administer mining titles, and monitor the sustainable development of small-scale mining; (c) developing a data bank and geological maps to strengthen the government’s capacity to make essential geoscientific and natural resources information available to potential investors; (d) institutional strengthening to establish capacity in the country for environmental management and to develop the understanding of and the capacity to address social impacts from mining; and (e) identifying and adopting appropriate mechanisms to increase revenues and improve the quality of life in selected areas of strong concentration of artisanal miners, through the establishment of legal rights for their activity and the provision of extension services to improve the social, welfare, health, and environmental conditions of artisanal miners.

Revised Project Development Objective (PDO)

The PDO remained relevant and was not revised.

(a) PDO Indicators:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Baseline Value</th>
<th>Original Target Values (from approval documents)</th>
<th>Formally Revised Target Values</th>
<th>Actual Values Achieved at Completion Target Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator 1: Increase in number of private operators involved in mining</td>
<td>Number of private operators at Project start about 10</td>
<td>Number of private operators expected to increase to about 20-30 over the life of the Project</td>
<td>Not applicable</td>
<td>22 private operators at Project close, including commissioning of the MOMA sands ilmenite deposit in 2006, and the country’s largest mining investment: over US$100 million signing bonus by CVRD for the Moatize coal concession and subsequent approval of a US$2 billion mine development plan</td>
</tr>
<tr>
<td>Date achieved</td>
<td>03/29/2001</td>
<td>06/30/2006</td>
<td>--</td>
<td>06/30/2007</td>
</tr>
<tr>
<td>Comments (incl. % achievement)</td>
<td>100% achieved.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Indicator 2: Increase in average annual investment in mining | US$10 million at Project start | Expected increase in annual mining investment expenditures from US$10 million at Project start to US$40-50 million per year | Not applicable | US$90 million in annual average mining investment from 2002-2006 |
| Date achieved | 03/29/2001 | 06/30/2006 | -- | 06/30/2007 |
| Comments (incl. % achievement) | 100% achieved. |

| Indicator 3: Increase in average annual minerals exports | Mineral exports approximately US$5.1 million at Project start | Projected US$100-150 million from the 10 years following Project start | Not applicable | US$6.1 million in average annual mineral exports from 2002-2006, rising to over US$1 billion once Moatize is commissioned (expected in 2009) |
| Date achieved | 03/29/2001 | 03/30/2011 | -- | 06/30/2007 |
Data through 10th year following Project start not yet available, but with CVRD’s development of the Moatize coal concession and other investments, including Kenmare’s MOMA mineral sands deposit and BHP’s Corridor Sands deposit, the target is likely to be achieved.

(b) Intermediate Outcome/Output Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Baseline Value</th>
<th>Original Target Values (from approval documents)</th>
<th>Formally Revised Target Values</th>
<th>Actual Values Achieved at Completion Target Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator 1: Number of applications processed by the Mining Cadastre</td>
<td>Inefficient mining cadastre, major delays in processing new titles</td>
<td>No delays in processing of titles, 300 titles processed a year</td>
<td>Not applicable</td>
<td>Cadastre operating efficiently since its establishment in 2003 (central bureau established in Maputo and linked to four regional bureaus in Manica, Nampula, Tete, and Zambezi); 315 licenses processed in 2001, 305 in 2002, 590 in 2003, 785 in 2004, 978 in 2005, 866 in 2006</td>
</tr>
<tr>
<td>Date achieved</td>
<td>03/29/2001</td>
<td>06/30/2006</td>
<td>--</td>
<td>06/30/2007</td>
</tr>
<tr>
<td>Comments (incl. % achievement)</td>
<td>It is normal that applications for mineral licenses would fluctuate from year to year, but Mozambique’s capacity to process new licenses has clearly improved significantly. 100% achieved.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Indicator 2: New mining code passed and its regulations fully enacted | Outdated mining law and regulations | New mining code and its regulations fully enacted six months after Project effectiveness | Not applicable | 2002-2004: new Mining Law and environmental regulations adopted; 2005-2007: Mining Tax Law, Mining Fiscal Regimes Law, several regulations (health and safety, fiscal, environmental management for artisanal mining), and Model Mining Contract adopted |
Comments (incl. % achievement) | The Mining Law, Mining Tax Law, Mining Fiscal Law, Model Mining Contract, and regulations, although adopted with some delay, constitute international best practice and contribute to a modern enabling environment for mineral development. 100% achieved.

Indicator 3: Average number of days to treat environmental applications for exploration and mining permits

| Value (Quantitative or Qualitative) | Lack of capacity to process environmental applications efficiently | Not applicable | Not applicable | Systems in place for efficient process and to track data: takes from 5 to 35 days to process a request for environmental applications for exploration and mining permits |
| Date achieved | 03/29/2001 | -- | -- | 06/30/2007 |

Comments (incl. % achievement) | An Environmental and Social Auditing diagnostic was undertaken with Project support and, in follow-up to it (and other studies undertaken with Project support), an Environment Monitoring Unit was established under the Ministry’s National Directorate of Mines (DNM); an Environmental Management Information System (EMIS) was created and integrated into the mining licensing cadastre; and regular coordination between the Ministry responsible for mining (MIREM) and the Ministry responsible for environment (MICOA) were instituted. Environmental regulations were also adopted. While attention to environmental issues is now entrenched in the sector, continued attention and support for this agenda will be needed. 100% achieved.

Indicator 4: Number of linear kilometers covered by new geophysics airborne survey and number of geological maps published

| Value (Quantitative or Qualitative) | Outdated, limited geological information and geological maps | Complete coverage of areas with strong mineral potential with geophysics maps, complete coverage of areas with strong mineral potential with geological maps at 1:250,000 scale | Not applicable | Geophysics regional airborne survey covered 192,441 line kilometers (about 168,189 km2), and high density airborne survey covered 521,837 line km (about 136,218 km2). Several lots of maps were produced: Lot 1, 31 maps at 1:250,000 scale and 13 maps at 1:50,000 scale; Lot 2, 20 maps at 1:250,000 scale and 20 maps at 1:50,000 scale; Lot 3, 24 maps at 1:250,000 scale and 11 maps at 1:250,000; an updated 1:1,000,000 map is expected in March 2008. |
| Date achieved | 03/29/2001 | 06/30/2006 | -- | 06/30/2007 |

Comments (incl. % achievement) | All data was delivered to DNG in digital format and is available at the DNG Documentation Center—there has been strong demand by mining investors for the data. 100% achieved.

Indicator 5: Number of sites equipped and number of artisans trained under the ceramic and gold artisanal and small-scale mining pilots

| Value (Quantitative or Qualitative) | Approximately 50,000 small-scale and artisanal miners active in Mozambique, with | Not applicable | Not applicable | -Ceramic pilots: 12 sites in 4 Provinces equipped/kilns built and 50 people (incl. 20 women) trained; 900 people (60% women) benefiting from sites |

a clear need to improve awareness of how to improve technical and environmental performance and overall impacts of such activities on local communities

-Gold pilots: 6 sites/ associations in 3 Provinces equipped and 90 people trained (incl. at least 10 women)

<table>
<thead>
<tr>
<th>Date achieved</th>
<th>Comments (incl. % achievement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/29/2001</td>
<td>During implementation, the Project’s activities in the area of artisanal and small-scale mining focused increasingly on the establishment of artisanal ceramic and gold pilot sites, as models to improve the techniques and lives of artisanal and small-scale miners. Thus the above indicators were deemed more relevant to measuring the Project’s success. Due to procurement and contracting delays, the pilots are 90% complete as of December 2007.</td>
</tr>
<tr>
<td>06/30/2007</td>
<td></td>
</tr>
</tbody>
</table>

G. Ratings of Project Performance in ISRs

<table>
<thead>
<tr>
<th>No.</th>
<th>Date ISR Archived</th>
<th>DO</th>
<th>IP</th>
<th>Actual Disbursements (USD millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>06/27/2001</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>12/14/2001</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>0.24</td>
</tr>
<tr>
<td>3</td>
<td>04/30/2002</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>0.75</td>
</tr>
<tr>
<td>4</td>
<td>11/21/2002</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>1.42</td>
</tr>
<tr>
<td>5</td>
<td>06/13/2003</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>2.91</td>
</tr>
<tr>
<td>6</td>
<td>11/20/2003</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>5.08</td>
</tr>
<tr>
<td>7</td>
<td>03/09/2004</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>6.89</td>
</tr>
<tr>
<td>8</td>
<td>09/02/2004</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>9.96</td>
</tr>
<tr>
<td>9</td>
<td>06/30/2005</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>14.61</td>
</tr>
<tr>
<td>10</td>
<td>09/18/2005</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>15.07</td>
</tr>
<tr>
<td>11</td>
<td>06/29/2006</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>18.04</td>
</tr>
<tr>
<td>12</td>
<td>06/15/2007</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>19.03</td>
</tr>
<tr>
<td>13</td>
<td>06/26/2007</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>19.22</td>
</tr>
</tbody>
</table>

H. Restructuring (if any)

Not Applicable.
I. Disbursement Profile
1. Project Context, Development Objectives and Design

(this section is descriptive, taken from other documents, e.g., PAD/ISR, not evaluative)

1.1 Context at Appraisal
(brief summary of country and sector background, rationale for Bank assistance)

Country and Sector Background. The Government of Mozambique (GoM) was actively seeking to attract private and foreign investment to promote growth in the sector. The sector policy approved in February 1998 by the Council of Ministers clearly defined GoM’s role as a regulator, promoter, facilitator, and supervisor of mining activity, leaving the operational and implementation role to the private sector. Because of the country’s geological potential and GoM’s pragmatic approach to the implementation of the sector policy, investors had shown positive interest in exploration.

Although Mozambique had a favorable geological environment for mining, the impact of mining on the economy was very small: less than 0.25 percent of the Gross Domestic Product (GDP) and about 1.4 percent of exports (1997). The value of Mozambique’s mineral production rose from virtually nil in 1990 to around the US$7.0 million in 1998, of which about US$6.0 million came from industrial minerals and construction materials, and US$1.0 million from gold and gemstones. Most of the activity in gold and gemstones was taking place in the informal sector. The Ministry of Mineral Resources (MIREM) had estimated that about US$10 million worth of gold and US$30-40 million worth of semi-precious stones were illegally exported from Mozambique each year. Annual fiscal revenues arising directly from mining (including surface rental fees for exploration) represented about US$1 million.

The fiscal year 1999 joint MIREM/World Bank Mining Sector Policy Review identified four major constraints to the development of the sector (a) insufficient geological information available on the country; (b) a deficient legal and regulatory framework; (c) lack of capacity of government institutions in the sector; and (d) and lack of infrastructure. The conclusions of these reports were discussed in a Mining Policy Dialogue Seminar, Policy and Strategies for Mining Development in Mozambique: Attracting Foreign Investment into Mining, in Maputo in July 1999 and funded by a World Bank Institutional Development Fund Grant.

Four key issues requiring immediate action were identified during the seminar (a) introduce a new mining code to bring Mozambique into line with contemporary international mining legislation; (b) improve inter-ministerial coordination and build capacity for efficient and effective administration in the relevant government agencies; (c) collect, process, and make available the geoscientific data currently available in Mozambique; and (d) simplify and standardize procedures for granting mining titles, and create a separate unit for their administration. Other issues that were identified in the Mining Sector Policy Review included (a) prevailing barriers for mineral exploration by large mining companies had to be reduced so that Mozambique could attract the annual flow of US$50-100 million in exploration investments needed to develop the sector; (b) the focus of overall mining taxation should be shifted towards profit-related taxes and away from royalties; and (c) transparency and security for investors should be improved by the introduction of standard mining agreements with stability clauses and automatic incentives, reducing to the maximum extent possible the derogation to the common regime subject to case-by-case negotiation.

Rationale for Bank Assistance. The prevailing Country Assistance Strategy (CAS)\(^1\) at the time of Project approval was aligned with GoM’s program for poverty reduction, through the promotion of rapid, broad-based private-sector led growth. The Project supported this goal as it was aimed at promoting and

\(^{1}\) Document number IDA/R-2000-76 (IFC/R-2000-80), discussed 06/01/2000.
facilitating foreign as well as domestic investment into a high potential growth sector in Mozambique, through the creation of a business-friendly environment.

Since 1992, Mozambique was making good use of the Bank’s experience in macroeconomic and sector reform, particularly with respect to capacity building of public institutions, modernization of its legal and regulatory framework, and privatization of state-owned enterprises. Given its experience and established presence in the country, the Bank’s involvement was expected to facilitate the implementation of the Project in a timely and efficient manner and ensure that GoM maintained its focus on the objectives of the Project. The Bank had a competitive advantage in mining building on its experience as the leading provider of assistance to mining sector reforms in African and Latin American countries during the 1990s, contributing to an upsurge in mining activities on both continents. The Bank was the only donor capable of providing an integrated approach to the technical assistance to be given to GoM, which was targeted at institutional development and regulatory reform designed to encourage the expansion of private investment in mining in a socially and environmentally sound way.

The Bank’s intervention in the sector also leveraged substantial parallel financing: total Project cost was US$37.5 million, of which US$18 million was financed by the World Bank, and about US$18.5 million was financed by other donors. The Nordic Development Fund (NDF) provided a €12 million credit to fund geological and geoscientific activities under the program; the African Development Bank (AfDB) provided a US$3.3 million credit to finance geological and geochemical activities under the program; and the Government of South Africa provided a US$1.3 million grant for supervision of these activities, executed by the Council of Geosciences (CGS). The Bank assumed sole responsibility for the funding of the other Project components as well as for overall Project coordination.

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

The overall objective of the Mineral Resources Management Capacity Building Project was to provide technical assistance to the Government of Mozambique for (a) institutional development and regulatory reform designed to encourage the expansion of private investment in mining in a socially and environmentally sound way; and (b) targeted interventions to alleviate poverty in areas of strong incidence of small-scale and artisanal mining. Specific Project objectives included (a) improving the legal and regulatory framework to help establish an enabling environment to promote private investment into mining, while ensuring real and sustainable contribution to economic growth; (b) building institutional capacity to develop capabilities to effectively enforce laws and regulations, administer mining titles, and monitor the sustainable development of small-scale mining; (c) developing a data bank and geological maps to strengthen the government’s capacity to make essential geoscientific and natural resources information available to potential investors; (d) institutional strengthening to establish capacity in the country for environmental management and to develop the understanding of and the capacity to address social impacts from mining; and (e) identifying and adopting appropriate mechanisms to increase revenues and improve the quality of life in selected areas of strong concentration of artisanal miners, through the establishment of legal rights for their activity and the provision of extension services to improve the social, welfare, health, and environmental conditions of artisanal miners.

Key Indicators included:

(i) Increase private investment, exports, and fiscal revenues:

(a) Increase in the number of private operators involved in mining.
(b) Increase in average annual investments in mining.
(c) Increase in average annual minerals exports.
(d) Increase fiscal revenues from mining.
(ii) Set-up of a competitive legal and regulatory framework for mining:

(a) Number of investment agreements signed at the end of the Project.

(iii) Set-up of modern and efficient public mining institutions.

(a) Average number of days to issue a mining title.
(b) Number of staff trained by the Project.

(iv) Set the base for the creation of an environmental and social management framework for mining:

(a) Inter-ministerial coordination arrangements—namely with the Ministry of Environmental Coordination (MICOA) and the Ministry of Agriculture and Fisheries—for environmental management of the sector.
(b) Number of baseline studies and environmental audits available at the end of the Project.
(c) Average number of days to treat environmental applications for exploration and mining permits.
(d) Application of consultative processes by the mid-term review.

(v) Improve geological and mining information system:

(a) Number of linear kilometers covered by new geophysics airborne survey.
(b) Number of geological maps published.
(c) Number of geochemical analysis done.

(vi) Poverty alleviation in small-scale and artisanal mining areas:

(a) Number of artisanal miners legally registered.
(b) Increase in the declared production in legally-established artisanal mining areas.
(c) Decrease in the number of declared diseases among the affected population.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

The PDO was not revised.

1.4 Main Beneficiaries,
(original and revised, briefly describe the "primary target group" identified in the PAD and as captured in the PDO, as well as any other individuals and organizations expected to benefit from the project)

The main beneficiaries of the Project included:

- **Public Sector Mining Institutions.** The Ministry of Mineral Resources (MIREM) and its National Directorate of Mining (DNM) and National Directorate of Geology (DNG) benefited from a detailed institutional assessment, capacity building, and institutional reform activities under the Project. An Environmental Monitoring Unit was introduced in the DNM and capacity to oversee the development of the Moatize coal deposit strengthened. Enhanced sector information and monitoring systems, in the form of the mining cadastre, environmental management information system (EMIS), and minerals information system (MIS), were introduced and successfully commissioned, and the ability of the institutions to manage the sector improved. The Mine Development Fund was formally restructured.
under a new charter and quasi-independent management to encourage the development of the sector, preserve the independence of the mine cadastre, and support artisanal and small scale mining.

- **Private Sector Investors.** Private sector investors benefited from updated and expanded geological information on the country, a more efficient and rules-based exploration licensing system, and a more transparent and comprehensive legal, regulatory, and fiscal framework.

- **Artisanal and Small Scale Miners.** Artisanal and small scale miners benefited from formalization of their activities, through the formal allocation and demarcation of legal areas for artisanal and small scale mining. Formation of artisanal and small scale mining cooperatives was promoted to improve miners’ access to tools, services, and markets. Updated environmental, health, and safety regulations, including and HIV/AIDS strategy, were also introduced.

- **Central Government.** Through an improved legal, regulatory, and fiscal framework, and improved capacity to manage the mining sector, the central government benefited from increased revenues generated through the attraction of mining sector investments.

1.5 Original Components *(as approved)*

The Project consisted of five components:

**Component 1. Institutional Reform and Capacity Building of Public Mining Institutions** *(estimated cost: US$6.93 million)*

The component included (a) strengthening the policy making, regulatory, and sector management capabilities in MIREM; (b) rationalizing the role of the State from being an owner and operator of mining assets to a regulator and administrator by reducing State involvement in exploration and mining by allowing and promoting private sector participation; (c) finalizing the implementation of an enabling legal and regulatory framework aimed at promoting private mining enterprises; (d) restructuring and modernizing of DNM and DNG; based on the redefinition of their mandates and internal procedures, in order to transform them into a sector promotion tool providing a good base for the provision of sound geological information; (e) deconcentrating DNM and DNG away from Maputo into four inter-regional points; (f) establishing proper computer-based cadastre and mine-reporting systems as well as explicit criteria and non-discretionary procedures for the granting and foreclosing of mining rights; and (g) improving capacity at MIREM to attract private sector investment by allocating resources for promotional programs and institutional development.

Component 1 activities were grouped into five sub-components: (A.1) Modernization of the Legal and Regulatory Framework (US$0.5 million); (A.2) Institutional Reform and Capacity Building (US$5.03 million); (A.3) Mining Cadastre and Registry (US$0.77 million); (A.4) Investment Promotion (US$0.33 million); and (A.5) Intranet Network (US$0.3 million).

**Component 2. Development of the Country's Geological Infrastructure** *(estimated cost: US$18.61 million, including parallel financing)*

Component activities included to (a) complete the regional airborne geophysical coverage of the country, and finance a denser coverage over selected promising areas; (b) update and improve of the existing coverage of geological maps at 1:250,000 scale, and support the detailed coverage of selected areas of high mineral potential; (c) compile the existing geochemical survey data, including the re-analysis of existing samples and some complementary sampling; (d) strengthen the network of seismic stations to monitor the seismic activity of the country; (e) establish a modern, computerized MIS, to compile and
catalogue dispersed data, and modernize and improve DNG’s documentation center; (f) conduct an inventory of industrial minerals and construction materials in Mozambique in order to promote investment opportunities to the local private sector; and (g) strengthen the National Museum of Geology and DNG’s central laboratory.

Component 2 activities were grouped into 10 sub-components, all of which benefited from parallel financing by AfDB, NDF, and/or CGS: (B.1) Component Supervision (US$1.15 million); (B.2) Geophysics Airborne Survey (US$4.82 million); (B.3) Geological Mapping (US$8.19 million); (B.4) Geochemical Sampling (US$1.31 million); (B.5) Seismological Network (US$0.11 million); (B.6) Document Center (US$0.46 million); (B.7) Minerals Information System (US$0.76 million); (B.8) Industrial Minerals Survey (US$0.88 million); (B.9) Rehabilitation of the National Museum of Geology (US$0.43 million); and (B.10) Strengthening of DNG’s Central Laboratory (US$0.5 million).

Component 3. Environment Management System (estimated cost: US$2.35 million)

The component was to assist in the (a) preparation of an environmental and social sectoral assessment that would help identify the location of protected areas and areas of high value biodiversity that should be restricted to mining activities, as well of prospective locations for the development of mining operations where environmental baseline studies should be carried out; (b) definition of sector specific environmental regulations and standards, including the procedures for the rehabilitation of the area after mine closure; (c) implementation of adequate procedures and guidelines for the preparation of environmental impact studies in mining; (d) capacity building of MIREM’s Mining Environmental Management Unit to monitor and enforce environmental regulations; (e) preparation of socio-economic baseline studies over selected mining districts as a basis for development of methodology and capacity to assess and monitor social, cultural, and economic impacts of mining on local communities; (f) development of consultation and participatory procedures; and (g) establishment of environmental management system data basis for the environmental impacts of mining, with linkages with other relevant environment data banks in other ministries, namely MICOA’s area planning department. MIREM’s and MICOA’s capabilities to deal with sector environmental issues would be strengthened through the training of their staff, in order to ensure that mining operations are conducted in compliance with sound environmental practices.

Component 4. Sustainability of Small Scale and Artisanal Mining (estimated cost: US$2.20 million)

This component was to improve the general awareness of small-scale and artisanal miners on the ways to improve their technical and environmental performance and overall impacts of their activity on local communities. It aimed to (a) support an integrated management and technical assistance program to enhance technical yields, reduce serious adverse impacts on the environment, improve living conditions of artisanal miners, and increase tax revenues; (b) support DNM to design and deliver technical advice, geology information, and extension services to small-scale miners, including the establishment of a pilot training center for small scale miners; (c) build capacity within MIREM for the management of social issues in the sector, namely the preparation of a generic framework for potential resettlement and compensation, and alternatives for revenue sharing with local communities; and (d) health hazards campaign to improve health conditions within small scale and artisanal miners communities.

Component 5. Project Coordination and Management (estimated cost: US$1.91 million)

The Mining Project Coordination Unit (UCPM) was responsible for coordinating Project implementation and managing (a) procurement, including all contracting for works and purchases and the hiring of consultants; (b) Project monitoring, reporting, and evaluation; (c) the contractual relationship with the Bank; and (d) financial record keeping, management of the Special Account, and disbursements. At the
outset, UCPM staff consisted of a Project Coordinator, a Project Financial Officer, a Project Procurement Assistant, a Project Secretary, a Kitchen Servant/Maid, and a Driver. AfDB financed an Assistant Project Financial Officer, who acted as deputy to the Financial Officer UCPM, working closely with the Project Steering Committee\(^2\), was responsible for coordination among the different institutions of MIREM participating in the Project as well as other state and private institutional stakeholders in the Project’s objectives. UCPM was the direct link to the World Bank concerning Project implementation.

1.6 Revised Components

The Project components were not revised—Project components remained flexible enough over the Project’s six-year implementation period to accommodate changing circumstances, such as the unforeseen rise in mineral prices and the development of the Moatize coal deposit.

1.7 Other significant changes
(in design, scope and scale, implementation arrangements and schedule, and funding allocations)

While there were no changes in the Project’s design, there were changes to the Project’s schedule, category allocations, and procurement arrangements to accommodate evolving circumstances over the Project implementation period. These changes are described below.

**Project Schedule.** In February 2006, the closing date of the Project was extended by one year, from June 30, 2006 to June 30, 2007. The extension was sought for the following reasons:

- To allow for reinterpretation of the airborne geophysics and geological data gathered with Project support and its incorporation into regional mapping, and the production of an updated, flagship 1:1,000,000 map of Mozambique’s mineral resources. The production of a 1:1,000,000 map had not been planned under the Project, but given the availability of data and the utility of such an investment promotion tool, it was added. NDF approved an additional €359,000 to produce the map and additional training for DNG and DNM staff on the use and maintenance of the geological databases/MIS. While all other NDF-funded activities were completed by the extended Project closing date, GoM and NDF agreed on a delivery date of March 2008 for the 1:1,000,000 map.

- Implementation of AfDB-funded activities, which included the equipping of the geological laboratory and geochemical sampling, experienced start-up delays at the beginning of the Project owing to the crisis in Cote d’Ivoire and disruption of AfDB’s headquarters. Further delays in the delivery of equipment were experienced near the end of the Project, due to the refusal of select international suppliers to deliver the specialized equipment to Maputo without upfront payment. AfDB extended the closing date of its activities through December 31, 2007 to accommodate these delays.

- Completion of the outstanding World Bank-funded activities, including (a) the statutes for DNG; (b) final communications aspects of the regional mining cadastre and incorporation of an environmental management system (EMIS); (c) investment promotion strategy and training; (d) procurement for and completion of the small-scale mining gold and ceramics pilot projects; and (e) support to GoM in its response to CVRD regarding development of the Moatize coal concession, which emerged at short

\(^2\) The Steering Committee was composed of MIREM’s Director of Economy, the National Director of Geology, the National Director of Mines, and two advisers, one representative from MICOA (Head of Environment Impact Assessment Department), and the Supervisor of the Geologic Infrastructure component.
notice toward the end of the Project and which had potentially significant revenue and regional development impacts that were fully aligned and consistent with the Project objectives.

**Funding Reallocations.** During implementation, the Development Credit Agreement (DCA) was revised twice to reallocate funds among expenditure categories. The reallocations are shown in the table below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Original Allocation (SDR)</th>
<th>Reallocation July 2004 (SDR)</th>
<th>Reallocation Feb. 2006 (SDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Works</td>
<td>4,330,000</td>
<td>3,930,000</td>
<td>3,370,000</td>
</tr>
<tr>
<td>Goods (incl. vehicles/computers)</td>
<td>1,450,000</td>
<td>2,650,000</td>
<td>2,943,000</td>
</tr>
<tr>
<td>Consultant Services</td>
<td>5,120,000</td>
<td>5,520,000</td>
<td>5,588,700</td>
</tr>
<tr>
<td>Training/Workshops</td>
<td>930,000</td>
<td>730,000</td>
<td>940,000</td>
</tr>
<tr>
<td>Publications</td>
<td>120,000</td>
<td>120,000</td>
<td>69,000</td>
</tr>
<tr>
<td>Recurrent Costs and Audits</td>
<td>810,000</td>
<td>810,000</td>
<td>867,000</td>
</tr>
<tr>
<td>PPF Refinancing</td>
<td>22,300</td>
<td>22,300</td>
<td>22,300</td>
</tr>
<tr>
<td>Unallocated</td>
<td>1,017,700</td>
<td>17,700</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,800,000</strong></td>
<td><strong>13,800,000</strong></td>
<td><strong>13,800,000</strong></td>
</tr>
</tbody>
</table>

The first reallocation, in July 2004, aimed to redistribute funds to better meet Project needs identified during the Project mid-term review (MTR) in May 2004. This increased funds to the Consultant Services category to accommodate the appointment of regional consultants to help implement activities under the small-scale and artisanal mining component. The Goods category was increased to meet the increased demand from MIREM/DNG/DNM to equip regional offices, particularly for the mining cadastre and management of small-scale mining activities. Unallocated funds and funds from the Works and Training/Workshop categories were used for the reallocation—savings on Works were experienced due to better than expected performance of airborne geophysical surveys; savings on training were achieved by maximizing on-the-job versus overseas training.

The second reallocation, in February 2006, was a result of a careful review of actual and planned expenditures to that point, which revealed that the Project over-spent or would overspend in the categories of Training/Workshops and Goods, while spending on Works and on Publications was not as high as expected. In addition, budget overruns for Recurrent Costs—primarily resulting at the beginning of the Project for higher than expected operating costs of the DNM, DNG, and the Provincial Directorates—required modest additional funds. Project funds for recurrent costs for DNM, DNG, and the Provincial Directorates were phased out as a result of the MTR and progressively borne by GoM.

**Modification of Scale.** Due to early over-spending on operating costs and the provincial Directorates, certain non-critical activities were identified and deferred due to an expected lack of budget after taking into account beneficial movement in exchange rates (exact budget monitoring was extremely difficult because of the denomination of Credit proceeds in SDRs; the Project team was conservative in taking exchange rate fluctuations into account, to avoid overspending the Project budget). The main Bank-financed activity that was postponed was the completion of the intranet network. GoM, however, plans to allocate some of the surplus funds under AfDB financed component to complete the intranet network by end 2007.

**Change in Procurement Arrangements.** It became apparent during a post procurement review undertaken in 2006 that the cumulative value of local shopping exceeded aggregate ceilings for both Goods and Works provided for in the DCA. While excessive, it was to a large extent understandable since the procurement of goods represented small a large number of purchases (each under US$50,000) destined for several geographically diverse provincial beneficiaries and extending over a number of years (making it difficult to package the goods and works together). To rectify this situation, aggregate ceilings
in Schedule 3 of the DCA were deleted in favor of the adoption of the Procurement Guidelines of May 2004, which had been introduced subsequent to the Project’s approval. Strict adherence to an agreed procurement plan, developed by GoM and agreed by the Bank, was also introduced. All remaining contracts under the Project were subject to prior review by the Bank.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry
(including whether lessons of earlier operations were taken into account, risks and their mitigations identified, and adequacy of participatory processes, as applicable)

Lessons of Earlier Operations Taken into Account. During preparation lessons learned from ongoing projects in Mozambique and from other countries where the Bank had financed similar technical assistance operations in the mining sector (e.g., Burkina Faso, Ghana, Guinea, Madagascar, Mali, Mauritania, and Tanzania) were taken into account. Results of a Bank review on mining sector reform in Latin America were also instructive to the situation in Mozambique. Lessons included the following:

• Improving the enabling environment for mining increases the ability of a country to attract and retain appropriate private investment. Reform of the enabling environment should focus on improving sector performance and growth and the contribution of mining to the national economy; ensuring the sustainability of the mining industry; and ensuring that the host country gets a fair share from the benefits of the development of the sector.

• Enactment of the necessary legal, fiscal, and environmental policies, and the establishment of strong mining institutions to implement and administer them, have proven to be keys to success. Progress also depends on the continued development of institutional capabilities, in an environment of sensible macroeconomic policies to ensure the sustainability of progress achieved.

• Government ownership and emphasis on beneficiary participation in project preparation, intensive supervision, organization, and coordination in the field are critical for timely and effective implementation.

Participatory Processes. Small-scale and artisanal miners were involved in a policy dialogue seminar in Nampula (close to the northern provincial mining area) and were fully involved—either directly through the small-scale mining survey funded under a Project preparation PHRD Grant, or indirectly through their association—in Project preparation with respect to the small-scale mining component. The Project was discussed with mining companies and reflected their comments. The Project was also discussed directly with interested NGOs, mainly from the area of environment.

The Project’s scope was the result of more than two years of dialogue between MIREM and the Bank, and was based on MIREM’s planned and ongoing activities. GoM fully owned the Project, participating in Project preparation by helping to realize the seminars and workshops dealing with in-depth analysis of sector reforms to be supported by the Project. At the sector level, commitment was evident from GoM’s efforts before the Project to improve the legal and regulatory framework (with virtually no support from donors) and to attract private mining sector investment.

3  A Mining Strategy for Latin America and the Caribbean, World Bank, 1996.
**Risks and Risk Mitigation Measures.** The table below shows the risks and mitigation measures identified in the Project Appraisal Document (PAD) along with brief commentary on how the risks evolved during implementation.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Risk Rating</th>
<th>Mitigation Measure</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government continued commitment to reform</td>
<td>Modest</td>
<td>Government’s program for mining sector reform was on schedule and was confirmed and reinforced during the policy dialogue seminar held in Maputo in July 1999.</td>
<td>Risk successfully mitigated and GoM commitment to the Project remains strong.</td>
</tr>
<tr>
<td>Condensed timing to build up capacity to manage the sector by the central and provincial mining institutions</td>
<td>Substantial</td>
<td>Preparatory work was funded under a PHRD grant. The Project contemplated substantial amounts of capacity building and training, and assistance would be phased and prioritized so as not to overburden the relevant government departments; the international consultants engaged would work alongside local counterparts.</td>
<td>Training provided and capacity enhanced, but further capacity building needed. In addition, more time is needed to effect sensitive institutional reforms through labor attrition, training, and alignment of skills.</td>
</tr>
<tr>
<td>Reasonably stable world minerals market conditions and prices</td>
<td>Modest</td>
<td>Although the general trend in mineral prices would continue to be flat or down over the long term, it was expected that as a result of the Project potential investors would find promising targets that would allow them to position themselves favorably in the next minerals investment cycle.</td>
<td>In fact, the global trend in mineral prices experienced a substantial increase, which helped attract international investors to promising deposits in Mozambique.</td>
</tr>
<tr>
<td>Commitment to honor the provisions of the new Mining Code</td>
<td>Modest</td>
<td>Stability clauses in the new code, international arbitrage, guarantees, and insurance.</td>
<td>New Mining Law, Mining Tax Law, Mining Fiscal Regimes Law, several regulations (health and safety, fiscal, environmental management for artisanal mining), and Model Mining Contract adopted; enactment of the complete suite of legislation took longer than expected, but GoM is now beginning to apply it. CVRD agreements are largely compliant with the new legislative framework.</td>
</tr>
<tr>
<td>Continued staff ownership regarding Project objectives</td>
<td>Modest</td>
<td>Provision of necessary staff, resources and conditions to effectively implement the reform.</td>
<td>MIREM/DNM/DNG staff remained engaged in achievement of the Project objectives.</td>
</tr>
<tr>
<td>Political interference</td>
<td>Modest</td>
<td>Project implementation guidelines to be included in the General Agreement will aim at minimizing political interference.</td>
<td>The Project did not suffer from political interference.</td>
</tr>
</tbody>
</table>

**2.2 Implementation**
*(including any project changes/restructuring, mid-term review, Project at Risk status, and actions taken, as applicable)*
The Project was not restructured and was never at risk. Given the five—extended to six—year implementation period, the Project evolved somewhat overtime, in line with significant developments in the sector, but the PDO remained relevant and was largely successfully achieved. Initial slow disbursements under the Project were addressed, and the May 2004 MTR identified implementation issues and proposed remedial actions to ensure successful Project completion.

**Factors Affecting Project Implementation.** Implementation challenges and issues identified during the MTR included the need to (a) strengthen UCPM, namely to recruit an Administrative Coordinator and a Senior Procurement Specialist; (b) closely monitor Project costs, ensure timely contribution of counterpart funds, and reform procurement and financial management processes followed by UCPM; (c) review implementation arrangements of the artisanal and small scale mining pilot projects; (d) take into account the proposed restructuring of the Minerals Development Fund; and (e) consider MIREM’s request for assistance on restructuring CARBOMOC (the state-owned company previously operating in the Moatize concession area) for capacity building in anticipation of the development of the Moatize coking coal deposit. The MTR also focused on Project sustainability following closure, including (a) the ability of the legal and regulatory framework to promote sustainable private sector investment in the sector; (b) the sustainability of public mining sector institutions; (c) human resources sustainability; and (d) financial sustainability. Factors affecting Project implementation outside of and subject to GoM’s control are discussed below.

**Factors Outside of Government Control:**

- **Donor Responsiveness.** The World Bank changed the Task Team Leader (TTL) once, around the time of the Project MTR, with a relatively smooth transition. For a variety of reasons the AfDB TTLs were changed more frequently, leading to a lack of continuity and follow through. In contrast, activities funded by NDF moved relatively quickly and additional activities were able to be effectively reviewed and added (e.g., the 1:1,000,000 map) due to efficient implementation.

- **Lack of Qualified Local Suppliers.** Mozambique’s domestic mining industry—in terms of suppliers—remained relatively undeveloped over the course of the Project. Local suppliers who were able to service the Project often lacked the financial capacity to provide goods or works without an initial, upfront payment. This affected the pace of implementation, exacerbating some of the procurement and financial management problems discussed below.

- **Exchange Rate Fluctuations.** Given the multitude of activities under the Project, the Bank team together with the UCPM Financial Management Officer established a strong budget monitoring process for Project activities. However, denomination of the Credit in SDRs created difficulties in tracking exactly available Project funds due to exchange rate fluctuations against the U.S. Dollar. UCPM and the Bank team took a conservative approach to managing expenditures under the Project to avoid overspending Project resources and put GoM in a position of having to reimburse the Bank.

**Factors Subject to Government Control:**

- **Administration of Counterpart Funds.** Under the DCA, the World Bank paid 85 percent of contract value while GoM paid 15 percent to vendors. While GoM met its counterpart funding obligation in full, in many cases there were substantial delays in suppliers receiving the 15 percent for contracts denominated in foreign currency again due to the bureaucratic constraints. Suppliers were aware of this and were to a large extent reluctant to service the Project without upfront payment. To address this, in some cases UCPM made upfront payments against pro forma invoices. The annual audit highlighted this unconventional practice and the MTR introduced actions to address it.
- **Weak Capacity of UCPM.** Lack of project management skills and familiarity with Bank procedures on the part of UCPM staff, particularly in regard to procurement and administration of the Special Account, slowed implementation in the initial stages of the Project. Difficulty in recruiting an experienced and competent Project Coordinator and high turnover of staff (especially competent procurement specialists familiar with World Bank procedures) aggravated UCPM's problems in executing the Project efficiently. These issues were highlighted during the MTR, with actions undertaken to address them. From January 2007, the UCPM functioned with a reduced staff complement in view of Project closure, with the well-performing Financial Management Officer taking on a heightened role and the Head of the Project Steering Committee, the Director of Studies in MIREM, taking on the Project Coordinator role.

- **Procurement.** Procurement represented a major challenge for Project implementation. Specific issues are discussed in Section 2.4.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

**M&E Design.** The Project was designed in 2000/2001, before the Bank adopted the 2004 template and guidelines for the Project Appraisal Document. Thus, the design of the results framework follows the format used under the old Project Document System and is not as detailed as results frameworks currently used in projects. By contrast, this Project focused on measuring specific outputs under each component, linking Project outputs to the overarching CAS goals/outcomes of broad-based growth led by private foreign investment; improvement in the performance and institutional capacity of government; and enhancement of social development, including poverty reduction and HIV/AIDS awareness.

**Review of M&E Design.** A comprehensive review of the Project’s results framework/indicators was carried out under the Project in 2005. In line with the terms of reference for the review, recommendations were made on developing a results framework more closely aligned with the new format. However, based on the detailed information on progress-to-date on existing indicators gathered as part of the exercise, the Bank task team decided that the original Project monitoring indicators remained relevant. The key performance indicators included in the PAD were directly linked to the PDO, quantitative, and monitorable. While there was a lack of milestones/targets against which to track progress during Project implementation, at Project completion the key performance indicators provide a good basis against which to judge Project achievements. That said, in the area of artisanal and small-scale mining, the Project’s focus over the course of implementation was increasingly related to the establishment of the artisanal ceramic and gold pilot sites. Successful establishment of the sites would serve as models to improve the lives of small-scale miners. Thus, the indicators reported on in the ICR are more closely related to the establishment of the pilot sites than originally set out in the PAD.

**M&E During Implementation.** The Bank regularly undertook monitoring and evaluation over the course of the Project during supervision missions. The Bank task team held regular meetings with MIREM/the Project Steering Committee (including the Minister and Vice Minister), DNM, DNG, UPCM, and Ministry of Finance (as necessary) to review the Project’s implementation progress. In addition, not later than 45 days after each quarter, UCPM was to submit to the Bank a quarterly progress report on all Project activities, including procurement, and a financial summary report. While the reports provided some useful information on Project implementation, the quality and timeliness of such reports varied over the course of the Project and remained weak. The MTR (30 months after effectiveness) provided an in-depth analysis of implementation progress, including performance on selected performance indicators. A more complete data gathering was carried out in the context of the 2005 review of the results framework as described above. As mentioned previously, the UCPM Financial Officer and Bank task team used a strong budget monitoring process for resource allocation at the Project sub-component level, which also
served as a mechanism for tracking progress on Project achievements. The Project budget was updated regularly and provided flexibility to adjust various subcomponent activities to fit within available funds and in line with achievement of the PDO. In terms of strengthening DNM’s and DNG’s capacity for monitoring and evaluation, the information systems that the Project helped put in place, i.e., the MIS, mining cadastre and associated geological information and EMIS, and strengthening of the Documentation Center, allow for enhanced tracking of data and information.

2.4 Safeguard and Fiduciary Compliance
(focusing on issues and their resolution, as applicable)

Safeguards. The Project was classified as environmental category C for safeguard purposes because of its technical assistance nature. While Project activities did not have any direct effect on the environment, the Project helped to further the government’s capacity to deal with environmental issues in the mining sector. As a result of the Project’s Institutional Reform and Capacity Building of Public Mining Institutions component, a well-functioning Environment Monitoring Unit within DNM was established; under the Project’s Environmental Management System component, an Environmental Management Information System was established and linked to the cadastre so that requirements for environmental action plans/impact assessments related to mining developments can be tracked easily. New environmental regulations (general to mining activities and specific to artisanal mining) were also adopted under the Project and are being implemented.

Fiduciary Compliance. As mentioned in Section 2.2, lack of project management skills and familiarity with Bank procedures on the part of UCPM staff, particularly in regard to procurement and administration of the Special Account, slowed implementation in the initial stages of the Project. Procurement, in particular, posed a major challenge: In Mozambique, disbursements against contracts in foreign currency are subject to approval of the Ministry of Finance and issuance of Boletim de Autorização de Pagamento by the Central Bank. Due to bureaucratic and cumbersome procedures, approval of contracts often faced substantial delays, which in turn significantly slowed Project implementation. Because of the administrative delays experienced with contracts denominated in foreign currency, local shopping through domestic intermediaries was used whenever possible. This led to a situation, addressed during the MTR, in which local shopping substantially exceeded the aggregate ceilings for both Goods and Works as provided for in the DCA. To rectify this, the Bank agreed to delete the aggregate ceilings initially included in the DCA in favor of the adoption of, and strict adherence to, an agreed procurement plan, in line with procurement procedures adopted by the Bank in May 2004. As mentioned above, due to lack of resources, a few local suppliers providing equipment to the small scale and artisanal mining pilot sites were provided upfront payments against pro forma invoices. One company in particular failed to deliver the goods against payment received; GoM agreed immediately to refund the Special Account the requisite amount. While various Project audits and review of fiduciary procedures by the Bank’s Procurement and Financial Management Specialists noted the fiduciary weaknesses discussed, there was no misprocurement declared under the Project and all of the Project audit management letters were unqualified. Despite delays, the Government met its counterpart funding obligations.

2.5 Post-completion Operation/Next Phase
(including transition arrangement to post-completion operation of investments financed by present operation, Operation & Maintenance arrangements, sustaining reforms and institutional capacity, and next phase/follow-up operation, if applicable)

It is expected that the operating budget for activities implemented under the Project will continue to be provided by MIREM. In particular, MIREM has decreed that a portion of the Minerals Development Fund
be allocated to cover the operating budget of the mining cadastre, which is important both for sustainability and operational independence.

MIREM expressed interest in a follow-on project, particularly to continue capacity building activities. However, while relevant to GoM’s development strategy, given competing areas of need GoM did not choose to include mining among Bank lending operations planned under the 2007 CAS. In general, the Bank—together with Mozambique’s other donor partners—have focused heavily on GoM’s agenda in regard to service delivery (e.g., education, health, water) and building public sector capacity (e.g., budgeting and governance). While significant revenues from the mining sector could help to fund service delivery programs and will affect budgeting and governance, scarce IDA resources forced selectivity in the Bank planned interventions. That said, the Bank is likely to use regional IDA funds to support a Southern Africa Technical Advisory Services Project. The Project, which will include Mozambique, Malawi, and Zambia in its first phase, is modeled upon the just-in-time, expert advisory assistance provided to GoM in the context of the Moatize coal development, and will focus on large infrastructure projects in the Southern African region, including in the minerals sector.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation
(to current country and global priorities, and Bank assistance strategy)

Although limited resources and competing priorities forced selectivity in regard to the Bank’s future mining sector interventions, the Project’s objective was and remains consistent with the country’s development agenda and the Bank’s strategies to assist Mozambique. The Project spanned Mozambique’s development of its first and second Action Plan for the Reduction of Absolute Poverty (PARPA I and II), both of which feature mining as a driver of growth. The Project was aligned with PARPA objectives related to mining. The Project also spanned three CASs—2000 (i.e., the CAS prevailing at the time the Project was prepared and approved); 2003 (i.e., the CAS developed during Project implementation); and 2007 (i.e., the CAS developed near Project completion). All three CASs are aligned with PARPA objectives, and thus discuss mining in the context of growth and improving the investment climate. The 2006 CAS Progress Report included an emphasis on cross-sectoral synergies in the Bank’s program, introducing more attention to growth poles and regional integration, natural resource management, and local development.

3.2 Achievement of Project Development Objectives
(including brief discussion of causal linkages between outputs and outcomes, with details on outputs in Annex 2)

The Project was successful in achieving its objective. On balance, the Project has made a significant contribution to improving the investment climate and MIREM’s capacity to promote and manage investment and growth in Mozambique’s minerals sector. The Government continues to fully own the agenda implemented under the Project and, while additional support from donors to further reforms and enhance capacity in the mining sector has been requested, the Government is committed to sustaining Project activities after closure.

Impressive achievements include significant reforms to the mining legal, regulatory, and fiscal framework; implementation of a state-of-the art, decentralized mineral license application and granting system (cadastre); reform and strengthening of the key public mining institutions, namely DNM and DNG; and collection and dissemination of geological data and production of up-to-date geological maps, which are being used locally and abroad to promote minerals sector development in the country. Although not originally planned under the Project, given the availability of the data, an updated 1:1,000,000
geological map of the country is being produced (via parallel funding by NDF). As a result of Project activities, MIREM is better placed to handle the current increase in mineral investment in the country, as evidenced by Kenmar’s development of the MOMA mineral sands deposit, planned development of the Corridor Sands titanium deposit, and CVRD’s development of the Moatize coal deposit.

Achievements in each of the main areas covered by the Project are described below, with additional details by Project component in Annex 2.

**Strengthened Legal and Regulatory Framework.** A new Mining Law was adopted in 2002 and updated Tax and Mining Fiscal Laws, and an associated Model Mining Contract (drafted with Project assistance), were adopted in 2007. New environmental regulations were adopted in 2004; regulations on the trading of mining products and a statute on the Minerals Development Fund were adopted in 2005; and health and safety regulations and regulations on environmental management in artisanal and small-scale mining activities were adopted in 2006. Internationally competitive mining fiscal regulations, which accompany the 2007 laws, have also been drafted and are expected to be adopted in early 2008.

**Establishment of a Modern Mining Cadastre.** A state of the art, digital mining cadastre for the registration and granting of mineral licenses was established with Project support. A central bureau in Maputo and four provincial bureaus (Manica, Nampula, Tete, and Zambezi) are functioning, with “on line” communication with the central cadastral database via 3G technology supplied by Vodacom under contract with MIREM. The cadastre is linked to geological information of concession areas (plotted using GPS technology) as well as the EMIS, allowing for automatic tracking of required environmental assessments/studies. The establishment of the cadastre is a success story in that it improves transparency of the management of mineral resources, giving more confidence to investors. The cadastre has greatly facilitated access to mineral resources by the private sector and supported the enforcement of legal rights in the sector. Clients are served on a first-come-first-served basis, and each applicant is given a documented number to guarantee orderly processing of the application. The cadastre has reduced average processing time from over 130 days in 2000 to 46 in 2003. The number of licenses processed has increased from 315 in 2001 to a high of 978 in 2005 (and 866 in 2006).

**Institutional Reform.** A study on the institutional restructuring of DNM and DNG was carried out under the Project. Based on the study, DNM fully implemented the recommended restructuring, including the introduction and staffing of an Environmental Monitoring Unit. DNG only partially implemented the study’s recommendations due to the sensitivity of the reforms, right sizing, and necessary skills alignment. However, DNG geologists have benefited from on-the-job training and are now able to conduct field sampling and analysis in line with international standards on their own. Over time, with natural attrition, further training and selective recruitment, DNG aims to implement more of the study’s recommendations to fulfill its revised mandate more effectively.

**Reform of the Minerals Development Fund.** The Minerals Development Fund was restructured under a reformed charter in July 2006, with a quasi-independent Board with term limits. The Fund receives allocations from the Treasury based as specified under the Mining Law based on a proportion of surface fees, royalties, and penalties levied on the mining companies. The Fund has a mandate to support the sustainable development of small and artisanal mining; provide institutional support and funding to the expanding network of regional mining associations; and fund the independent operation of the mining cadastre and geological survey. Additional reforms are planned, as part of the formulation of a five-year, strategic plan.

---

4 Due to the “complaints period” required under the legislation this cannot be reduced further.
**Investment Promotion.** Investor interest in the Mozambique is strong. In 2005, 2006, and 2007, DNG participated in local and international events promoting the country’s geological information (e.g., 21st African Geological Colloquium in Maputo in 2006, PDAC 2005 in Canada, Indaba 2005, 2006, and 2007 in South Africa). In follow-up to the institutional restructuring, DNM created an investment promotion division within the Technical and Economic Department. With Project support, DNM commissioned an investment promotion strategy, which includes recommendations on marketing and communications that DNM plans to implement.

**Minerals Information System/Intranet Network.** The establishment of the MIS, housed in DNG, was successfully completed. Connection to a central intranet network, linking DNM, DNG, and other MIREM units, was postponed indefinitely due to a projected lack of funding. MIREM requested that this be completed using excess funds available under AfDB financing.

**Development of Geological Infrastructure/Documentation Center.** A geophysics regional airborne survey covered 192,441 line kilometers (about 168,189 km2), and a high density airborne survey covered 521,837 line km (about 136,218 km2). All data was delivered to DNG in digital format. The impact of this new data has been positive, with strong demand by mining investors. Several lots of maps on various scales were produced, including: Lot 1, 31 maps at 1:250,000 scale and 13 maps at 1:50,000 scale; Lot 2, 20 maps at 1:250,000 scale and 20 maps at 1:50,000 scale; Lot 3, 24 maps at 1:250,000 scale and 11 maps at 1:250,000. All maps are available in digital format at the DNG Documentation Center. The updated 1:1,000,000 map is expected in March 2008. DNG collected 1,820 geochemical samples in 2005 and 2006—472 samples were analyzed and 1,348 are currently in Finland for analysis; of 11,700 historical samples located, 1,144 have been subject to geochemical analysis in Finland. Results of the geochemical analysis were presented at a major international conference on African geology in Maputo in July 2006, partially supported by the Project. An industrial minerals survey was also completed under the Project.

**Seismological Network.** Regarding the establishment of a seismological network, parallel funding by CGS equipped Tete, Nampula, Manica, and Changalane with modern seismological equipment, feeding into the processing center in Maputo. MIREM purchased equipment to outfit Lichinga and re-equip Manica in May 2007. Modernization of DNG’s Documentation Centre was completed, and more then 65 percent of existing maps and reports have been scanned into the system, with scanning of the remainder ongoing. The new digitized maps produced under the Project are also available at the Documentation Center. The National Museum of Geology was successfully rehabilitated and has remained independent. While AfDB’s equipping of the national geological laboratory and associated training for its staff has experienced delays, GoM remains confident that the laboratory will become operational, serving Mozambique and possibly other countries in the region.

**Environmental Management System.** Environmental regulations were adopted in 2004 with Project support. The EMIS was completed and incorporated into the mining cadastre to allow for better tracking of required environmental action plans and impact assessments of license holders. MIREM will likely need additional support for further dissemination of the new environmental regulations, particularly as pertains to small-scale and artisanal miners.

**Small Scale and Artisanal Mining.** A new law delineating specific areas for small-scale and artisanal mining was approved with support of the Project, as were new health and safety regulations. An HIV/AIDS strategy for artisanal and small-scale mining was also completed and local social workers employed by DNM are involved in implementation of the strategy’s recommendations, including sensitization programs in small-scale mining areas. Regarding the artisanal ceramic and gold pilot sites, which became increasingly important as the course of the Project as a demonstration activity, DNM reassessed some of the sites to chose more appropriate, higher-impact locations. While delays in the supply of equipment were experienced, the pilots are largely complete, and associations have been formed.
with training of operators at the sites. The table below provides information on the number of ceramic and
gold pilot sites equipped and artisans trained. The sites are expected to be sustainable. The issue of
artisanal and small-scale mining is complex and further attention in this area is needed, including through
the global Communities and Small-scale Mining (CASM) initiative. Mozambique will likely host the
international CASM conference in 2009, when it returns to Africa.

<table>
<thead>
<tr>
<th>ARTISANAL MINING PILTOS: SUMMARY OF EQUIPMENT AND TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceramic Sites</strong></td>
</tr>
<tr>
<td>Provinces Supplied</td>
</tr>
<tr>
<td>Gaza</td>
</tr>
<tr>
<td>Inhambane</td>
</tr>
<tr>
<td>Maputo</td>
</tr>
<tr>
<td>Cabo Delgado</td>
</tr>
<tr>
<td><strong>Gold Sites</strong></td>
</tr>
<tr>
<td>Provinces Supplied</td>
</tr>
<tr>
<td>Manica</td>
</tr>
<tr>
<td>Nampula</td>
</tr>
<tr>
<td>Zambezi</td>
</tr>
</tbody>
</table>

3.3 Efficiency
*Net Present Value/Economic Rate of Return, cost effectiveness, e.g., unit rate norms, least cost, and
cost comparisons; and Financial Rate of Return*

As a technical assistance operation, no specific efficiency assessment was undertaken. However,
during the Project period, the country experienced a significant increase in foreign direct investment in
the minerals sector, including the commissioning of the MOMA beach sands deposit, and concessioning
of the Moatize coal deposit through public tender to CVRD for in excess of US$100 million. The latter
will be the country’s largest ever mining investment once it is commissioned (expected in 2009).

3.4 Justification of Overall Outcome Rating
*combining relevance, achievement of PDOs, and efficiency*

Rating: Satisfactory

As discussed in Section 3.2, the satisfactory rating is based on the fact that the PDO remained relevant
and was achieved. MIREM’s capacity to promote and manage the minerals sector has been enhanced
significantly. GoM has adopted an internationally competitive mining legal and fiscal framework as well
as a transparent, rules-based, best practice mining cadastre; private sector investment in Mozambique’s
minerals sector has increased; the country’s geological infrastructure—including digital geological maps
and geochemical samples—has been greatly improved; an environmental management system has been
introduced; and artisanal and small scale miners have been formalized and policies to better serve them
are being implemented.

3.5 Overarching Themes, Other Outcomes and Impacts
*if any, where not previously covered or to amplify discussion above*
With CVRD’s investment to develop the Moatize coal deposit, significant revenues are expected to accrue to GoM in the future. Such revenues can be used to fund GoM’s poverty reduction and social development programs. The Moatize coal development is also expected to have significant development impacts in the northern region of Mozambique, and also to affect Malawi and other nearby countries given the rail, port, and power linkages. The increase in exploration activity and payments in royalties and license fees will support the Minerals Development Fund and accelerate its efforts to develop small scale mining and rural job creation. More immediately, the small-scale and artisanal mining pilot projects are benefiting over 900 ceramists, 60 percent of which are women, while six artisanal gold mining associations benefited from equipment and training under the Project.

Institutional reform and capacity building of public mining sector institutions was a key Project goal. As mentioned in Section 3.2, a study on the institutional restructuring of DNM and DNG was undertaken. Recommendations related to DNM were fully implemented, resulting in five operational units within DNM (a) Mining Cadastre, involved in licensing and registry of permits; (b) Mining Safety, working on security and safety issues; (c) Technical and Economic Department, in charge of investment promotion and technical and financial evaluations; (d) Small-scale Mining, providing technical assistance to artisanal miners; and (e) Environmental Protection, responsible for overseeing implementation of the new environmental regulations, including social impact assessments, working in close collaboration with MICOA. While DNG only partially implemented the study’s recommendations, over time, with natural retrenchments, DNG aims to implement more of the study’s recommendations.

The Project has also contributed to enhanced staff performance as a result of training. This included training for DNM staff on the management of the mining cadastre, implementation of the environmental and health and safety regulations, negotiations skills in the context of the Moatize development…training for DNG geologists in collection of field samples, management of geological information (in digital format). The refurbishment of DNG and DNM work spaces with necessary equipment (e.g., computers) also helped to improve efficiency. Institutional reform and capacity building is a long-term activity and additional support in this area is needed.

During Project implementation, in 2002, the Extractive Industries Transparency Initiative (EITI) was launched. While Mozambique is not yet a resource-rich country, the ongoing policy dialogue in the mining sector under the Project provided a good basis for discussion around Mozambique’s possible interest in future adoption of EITI to improve transparency, revenue management and avoid the potential consequences of the “resource curse.” There were no unintended negative impacts of the Project.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops
(optional for Core ICR, required for ILI, details in annexes)

Not applicable.

4. Assessment of Risk to Development Outcome

Rating: Moderate
Significant reforms in regard to the legal and regulatory framework, institutional reform; strengthening and enhancement of the country’s geological infrastructure; and formalization and support of artisanal and small scale miners have been achieved. While GoM is expected to continue funding the institutions and programs begun under the Project (e.g., an allocation from the Minerals Development Fund will help sustain the independent operation the mining cadastre and management of the application and granting of mineral licenses), without continued technical assistance to consolidate and deepen achievements under the Project (e.g., continued capacity building of DNM/DNG staff, ensuring that the geological laboratory becomes a world class facility), the overall sustainability of the development outcome is judged to be moderate.

5. Assessment of Bank and Borrower Performance

(relating to design, implementation and outcome issues)

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

(i.e., performance through lending phase)

Rating: Satisfactory

The Bank’s performance in Project identification, preparation, and appraisal is rated satisfactory. Bank assistance to support mining sector reform in Mozambique was based on the Mining Sector Policy Review, a joint MIREM/World Bank report that identified priority technical assistance requirements. The follow-on Mining Policy Dialogue Seminar helped to build consensus around the reform agenda, identify issues to be addressed, attract the attention of potential foreign investors, and mobilize donor support. Thus, the design process was highly responsive to GoM’s sector needs and priorities. It was also aligned with GoM’s poverty reduction strategies and, in turn, the prevailing CAS. During preparation, the Bank also responded to GoM’s request for assistance by securing a PHRD Grant. The Project provided a participatory framework, for example small-scale and artisanal miners were fully involved in Project preparation with respect to the small-scale mining component. The Project was discussed with mining companies and interested NGOs. No QEA for the Project was performed. Weaknesses in Project design, which became evident during Project implementation, included an overly ambitious agenda and lack of adequate attention to under-developed commercial environment and donor coordination in regard to the parallel financing of activities (see lessons learned).

(b) Quality of Supervision

(including of fiduciary and safeguards policies)

Rating: Satisfactory

On balance, the Bank’s performance during supervision is rated satisfactory. Sufficient budget and staff resources were allocated to supervise the Project. The Bank Project team regularly prepared aide-memoires in follow-up to missions and alerted GoM and UCPM counterparts to implementation problems, introducing remedial actions. The Bank acted quickly to address fiduciary management issues identified during the MTR, and a post procurement review was conducted in January 2006 to ensure compliance with remedial actions. That said, the Bank should have picked up on such issues much earlier. Implementation Status Reports (ISRs) realistically rated Project performance, with all 13 ISRs rating both DO and IP consistently satisfactory.
Good cooperation between the Bank and other Project sponsors, i.e., AfDB and NDF, existed throughout Project implementation. However, coordination among donors could have been enhanced, and this issue should have been addressed more explicitly in the Project design stage. Frequent changes of task team leaders on the part of AfDB made it more difficult to track progress on AfDB-funded activities, while good oversight by CGS and engagement by NDF saw NDF-funded components implemented relatively efficiently.

(c) Justification of Rating for Overall Bank Performance

Rating: Satisfactory

Based on the above, overall Bank performance is rated satisfactory.

5.2 Borrower Performance

(a) Government Performance

Rating: Satisfactory

As discussed, the Borrower’s commitment to the Project and the reform agenda it supported was clear from the outset. The Project was aligned with GoM’s poverty reduction strategies and GoM ownership was evidenced by participation in the Project preparatory seminars that addressed in-depth the sector reforms to be tackled.

During implementation, both the Minister and Vice Minister of MIREM were extremely supportive of and actively engaged in the Project and followed its progress closely. While the Minister and Directors of DNM and DNG each changed once, respectively, during Project implementation, the transitions were smooth and the incoming personnel were drawn from the Ministry and were very familiar with the issues. The Project Steering Committee, created at the Ministerial level, was well organized, knowledgeable, and responsive to the Project agenda and its implementation. The Committee met regularly to address implementation issues. While systemic issues such as the processing of foreign-currency denominated contracts were beyond MIREM’s mandate, MIREM officials helped to facilitate when necessary and the Committee was proactive in addressing implementation issues.

(b) Implementing Agency or Agencies Performance

Rating: Moderately Unsatisfactory

UCPM, established within MIREM, acted as the Project Implementation Unit. It was responsible for overall Project management and coordination and in this context handled (a) procurement, including all contracting for goods, works, and services; (b) financial management, including the Special Account, withdrawal applications, and payments; (c) the contractual relationship with the Bank; and (d) Project monitoring and reporting.

The Project Coordinator was responsive in organizing meetings and facilitating exchanges between the Bank Project team and MIREM officials. However, weaknesses in understanding of Bank procurement procedures, high turnover of procurement staff, and broader systemic issues related to procurement in Mozambique (e.g., bureaucratic delays related to approval of foreign-currency denominated contracts) led to an excessive use of less competitive procurement methods, such as shopping through local intermediaries. Since this kept disbursement rates steady, the Bank failed to pick up on this issue early on.
Adequate record keeping was also an issue identified during a post procurement review in 2006, although UCPM was able to rectify this and reconstitute the necessary documentation in compliance with the provisions of the Development Credit Agreement.

Regarding financial management, the Project accounting system was based on conventional accounting software called FINPRO. This accounting package proved to be adequate to produce necessary reports required to manage and monitor financial operations. However, weakness in financial management were observed during Project implementation, including lack of regular Financial Management Reports and deficiencies in the system of internal control (e.g., instances of payments supported by pro-forma invoices, instances of payments processed without the requisite signatures).

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Satisfactory

While GoM’s commitment to the Project was high, based largely on weaknesses in UCPM’s Project management capabilities, overall Borrower performance is judged to be moderately satisfactory.

6. Lessons Learned
(both project-specific and of wide general application)

Key lessons learned from Project implementation included:

- **Targeted, Flexible Technical Assistance Can Succeed.** While technical assistance projects often fail, this Project was successful because it customized assistance to very specific areas and responded directly to a reform agenda specified by the government. The Project was also flexible enough to accommodate evolving circumstances, such as GoM’s urgent need for assistance to respond to CVRD in regard to the development of the Moatize coal concession.

- **Align Project Design with Implementation Capacity.** While successful in achieving its objective, the Project was overly ambitious, particularly in regard to the amount of procurement needed to implement the activities. Given the country’s general lack of capacity, the number of activities should have been limited, prioritized, or implemented using a phased approach, to better align with project management capacity. To help build such skills and reinforce government ownership and sustainability, future projects in the sector should integrate project coordination and management into government institutions rather than using a separate project implementation unit, although retention of specific skills would be a challenge.

- **Take into Account Limitations in the Commercial Environment.** Technical Assistance does not occur in a vacuum and certain limitations in the commercial environment and supply of specialized goods needs to be taken into account during Project design—especially in the mining sector.

- **The Bank Has a Role in Promoting Good Sector Practice.** Given limited human resources and often weak negotiations skills in many resource-rich developing countries, the Bank has an important role to play in helping governments use standard mining agreements rather than having to negotiate individual mining project agreements. This also helps increase transparency and accountability.

- **Establish a Clear Understanding Regarding Fiduciary Management.** While certain procurement issues encountered under the Project could not have been foreseen, more proactive monitoring of procurement activities should have been instituted from the start. Regarding financial management,
the format and timing of Financial Monitoring Reports should have been agreed during Project preparation and their delivery strictly enforced during Project implementation.

- **Donor Coordination is Key.** Due to the significant amount of parallel financing for various Project components, the Project was effectively implemented as a set of “sub-projects” with each parallel-financed component implemented according to the rules of the respective funding agency. Additional time and effort should have been spent upfront with donor partners to agree on a more harmonized, integrated approach to implementation (e.g., regarding procurement, M&E, timing and pace of implementation).

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) **Borrower/implementing agencies**

The draft ICR was shared with the Borrower and minor comments on the text were incorporated. The Borrower’s evaluation report is included as Annex 7.

(b) **Cofinanciers**

The draft ICR was shared with co-financiers, but no comments were received.

(c) **Other partners and stakeholders (e.g. NGOs/private sector/civil society)**

Not applicable.
Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

<table>
<thead>
<tr>
<th>Components</th>
<th>Appraisal Estimate (USD millions)</th>
<th>Actual/Latest Estimate (USD millions)</th>
<th>Percentage of Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPACITY BUILDING OF PUBLIC MINING INSTITUTIONS</td>
<td>6.93 (4.28 local, 2.65 foreign)</td>
<td>10.07</td>
<td>145.3</td>
</tr>
<tr>
<td>DEVELOPMENT OF GEOLOGICAL INFRASTRUCTURE</td>
<td>18.61 (3.97 local, 14.64 foreign)</td>
<td>21.52</td>
<td>115.6</td>
</tr>
<tr>
<td>ENVIRONMENTAL MANAGEMENT SYSTEM</td>
<td>2.35 (0.87 local, 1.48 foreign)</td>
<td>0.76</td>
<td>32.3</td>
</tr>
<tr>
<td>SUSTAINABILITY OF SMALL-SCALE MINING</td>
<td>2.20 (1.68 local, 0.52 foreign)</td>
<td>1.16</td>
<td>52.7</td>
</tr>
<tr>
<td>PROJECT MANAGEMENT</td>
<td>1.91 (1.68 local, 0.23 foreign)</td>
<td>1.78</td>
<td>93.1</td>
</tr>
<tr>
<td>CONTINGENCIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Baseline Cost</td>
<td>32.00 (12.48 local, 20.52 foreign)</td>
<td>35.29</td>
<td>110.3</td>
</tr>
<tr>
<td>Physical Contingencies</td>
<td>0.00</td>
<td>0.22</td>
<td>--</td>
</tr>
<tr>
<td>(unallocated AfDB)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Contingencies</td>
<td>1.00 (foreign)</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>Total Project Costs</td>
<td>33.00 (12.48 local, 20.52 foreign)</td>
<td>35.51</td>
<td>107.6</td>
</tr>
<tr>
<td>Project Preparation Fund</td>
<td>0.00</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>Front-end fee IBRD</td>
<td>0.00</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>Total Financing Required</td>
<td>33.00 (12.48 local, 20.52 foreign)</td>
<td>35.1</td>
<td>107.6</td>
</tr>
</tbody>
</table>

(b) Financing

<table>
<thead>
<tr>
<th>Source of Funds</th>
<th>Appraisal Estimate (USD millions)</th>
<th>Actual/Latest Estimate (USD millions)</th>
<th>Percentage of Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Development Bank</td>
<td>3.50</td>
<td>3.00 (1.76 as yet undisbursed)</td>
<td>85.7</td>
</tr>
<tr>
<td>Borrower</td>
<td>1.00</td>
<td>1.10</td>
<td>110</td>
</tr>
<tr>
<td>South Africa, Republic of</td>
<td>1.30</td>
<td>1.30</td>
<td>100</td>
</tr>
<tr>
<td>International Development Association (IDA)</td>
<td>18.00</td>
<td>21.27</td>
<td>118.2</td>
</tr>
<tr>
<td>Nordic Development Fund (NDF)</td>
<td>9.20</td>
<td>11.70</td>
<td>127.2</td>
</tr>
</tbody>
</table>
## Annex 2. Outputs by Component

<table>
<thead>
<tr>
<th>PROJECT COMPONENTS AND SUBCOMPONENTS</th>
<th>ACHIEVEMENTS/OUTPUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component 1. Institutional Reform and Capacity Building of Public Mining Institutions</strong></td>
<td></td>
</tr>
</tbody>
</table>
| A. 1: Modernization of Regulatory Framework | The following laws and regulations were adopted:  
- Mining Law (nr.14/2002) adopted 06/26/2002;  
- Environmental Regulation applicable to Mining Activity (Decree nr. 26/2004) adopted 08/20/2004;  
- Regulation for the trading of Mining Products (Decree nr. 16/2005) adopted 06/24/2005;  
- Statute for the Mining Development Fund (Decree nr. 17/2005) adopted 06/24/2005;  
- Regulation for Technical Safety and Health for Geological and Mining Activities (Decree nr. 61/2006) adopted 12/26/2006;  
- Basic Norms of Environmental Management for Artisanal Mining Activity (Ministerial Diploma nr.189/2006) adopted 12/14/2006;  
- Tax Law Specially focused on the Mining Activity (nr.12/2007) adopted 06/27/2007;  
- Model Mining Agreement adopted 2007;  
- Mining Fiscal Regulations drafted, for adoption in early 2008 | |
| A2: Institutional Reform/Capacity Building | A study on the institutional restructuring of DNM and DNG was carried out under the Project. DNM fully implemented a restructuring, while DNG only partially implemented recommendations in the study due to the sensitivity of the reforms. DNG aims to implement the reforms over time, via labor attrition, training, and alignment of skills. | |
| A.3: Mining Cadastre and Registry System | A state-of-the-art, decentralized Application and Granting of Mineral Licenses System (mining cadastre) is operational – a central bureau in Maputo and four provincial bureaus (Manica, Tete, Nampula, Zambezi) are functioning, with “live” communication of the cadastral database via 3G technology supplied by Vodacom under contract with MIREM. The Environmental Management Information System (EMIS) has been integrated into the cadastre. DNM, which houses the cadastre, worked with the technical consultants to migrate the database to a larger server to ensure un-interrupted functioning of the system. | |
| A.5: Intranet Network | The intranet network was not installed under the World Bank component due to fear of insufficient funds. GoM has requested that the intranet network be implemented using available funds under the AfDB component. | |
| **Component 2. Development of the Country’s Geological Infrastructure** |
| B. 1: Component Supervision and Coordination | The Council for Geosciences of South Africa ably carried out supervision of this component, coordinating the different consulting firms and contractors to undertake the activities involved. | |
| B.2: Geophysics Airborne Survey (parallel financing by NDF) | Regional airborne survey covered 192,441 line km (about 168,189km²); high density airborne survey covered 521,837 line km (about 136,218km²). The program was successfully concluded. All data was delivered to DNG in digital format including the Final Report. The impact of this new data is positive, and there is much demand for it by mining investors. | |
**B.3: Geological Mapping of Mozambique (parallel financing by NDF)**

Mapping undertaken resulted in several lots of maps on various scales being produced: Lot 1: 31 maps at 1:250,000 scale and 13 maps at 1:50,000 scale; Lot 2: 20 maps at 1:250,000 scale and 20 maps at 1:50,000 scale; Lot 3: 24 maps at 1:250,000 scale and 11 maps at 1:250,000. All maps are available in digital format at the DNG Documentation Center. An updated 1:1,000,000 map is expected by March 2008.

**B.4: Geochemical Sampling (parallel financing by AfDB)**

DNG collected 1,820 samples in 2005 and 2006. 472 samples were analyzed, and 1,348 are currently in Finland for analysis. 1,144 historical samples (collected by Hunting) have also been subject to geochemical analysis. The results of the geochemical analyses were presented at the 21st Colloquium on African Geology in Maputo in July 2006.

**B.5: Seismological network (parallel financing by Government of Mozambique, CGS)**

Parallel funding by CGS equipped Tete, Nampula, Manica, and Changalane with modern seismological equipment, feeding into the processing center in Maputo. MIREM purchased equipment to outfit Lichinga and re-equip Manica in May 2007.

**B.6: Documentation Center (parallel financing by AfDB)**

Modernization of the Documentation Centre was completed. More than 65 percent of existing maps and reports have been scanned into the system, and scanning to complete the remainder is ongoing. New digitized maps produced under the Project are also available at the Documentation Center.

**B.7: Minerals Information System (parallel financing by AfDB)**

The establishment of the MIS was successfully completed at DNG. DNG’s web site/home page is partially functional. The system is still functioning partially due to configuration. The effort is being done to complete the configuration to allow the system to hold more information.

**B.8: Industrial Minerals Survey (parallel financing by NDF)**

The field work for the industrial mineral survey was carried out in 2005 and 2006, and a report with final results was submitted to DNG. Associated raining of DNG staff was completed with good results, however more extensive field work training would be desirable.

**B.9: National Museum of Geology**

The National Museum of Geology was successfully rehabilitated. It has remained independent and is functioning well.

**B.10: Reinforcement of DNG’s Central Laboratory (parallel financing by AfDB)**

Supply of equipment for the lab experienced delays. AfDB extended this Project sub-component through December 2007, which allowed for delivery and installation of basic equipment for the lab including for chemical analyses, mineralogical determinations, and basic sample preparation/preliminary studies of geological samples.

**Component 3. Environment Management System**

Environmental regulations were produced and approved during the Project. The EMIS was completed and incorporated into the mining cadastre (by Spatial Dimension of South Africa) to allow for better tracking of required environmental action/management plans and environmental impact assessments of license holders.

**Component 4. Sustainability of Small Scale and Artisanal Mining**

A new law delineating specific areas for small-scale and artisanal mining was approved during the Project, as were new health and safety regulations. An HIV/AIDS strategy for artisanal and small-scale mining was also completed and local social workers on the ground carry out educational programs to implement its recommendations (MIREM should pursue longer-term funding with the national HIV/AIDS agency). While delays in the supply of equipment for the ceramic and gold pilot artisanal mining sites were experienced, the sites are nearly all complete. Regarding the ceramic pilots, 12 sites in four Provinces were equipped, including with kilns. In Gaza province, this included two sites for associations of Macupulane, one site in Chibuto, and once site in Xai-Xai; two units were established in the Province of Inhambane; three ovens were established in the Province of Maputo, and three in Province of Cabo Delgado (two in Muitimbe and one in Meluco). For these sites, 50 people have been trained in pottery, 20 of which were women. In addition, there are over 900 ceramists in the areas surrounding the sites who have benefited from direct
support from the Project, 60 percent of which are women. Regarding the
gold pilots, three associations in Manica Province (Munhena, Mimosa and
Bandire) benefited from support, including a processing plant in Munhena.
Together among these sites, 60 association operators were trained, 10 of
them women. The associations of Jagoma and Muva in Nampula Province
and the association of Namunono in Zambezi Province were also supported
with equipment. Thirty mining operations were trained. The pilots are
expected to be sustainable.

<table>
<thead>
<tr>
<th>Component E. Project Management and Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Project Implementation Unit, UCPM, within MIREM was responsible for overall Project management and coordination, including (a) procurement; (b) financial management; (c) the contractual relationship with the Bank; and (d) Project monitoring and reporting. While the Project Coordinator was responsive in organizing meetings and facilitating exchanges between the Bank Project team and MIREM officials, weaknesses in understanding of Bank procurement procedures, high turn over of procurement staff, and broader systemic issues related to procurement in Mozambique (e.g., bureaucratic delays related to approval of foreign-currency denominated contracts) led to an excessive use of less competitive procurement methods, such as shopping through local intermediaries. The Project MTR picked up on the issue and introduced actions to address it. Adequate record keeping was also an issue identified during a post procurement review in 2006, although UCPM was able to rectify this and reconstitute the necessary documentation. All Project audits were unqualified, although weaknesses in financial management, including lack of regular Financial Management Reports and deficiencies in the system of internal control (e.g., instances of payments supported by pro-forma invoices, instances of payments processed without the requisite signatures), were observed under the Project. From January 2007 to Project close, UCPM functioned with a reduced staff complement in view of Project closure.</td>
</tr>
</tbody>
</table>
Annex 3. Economic and Financial Analysis
(including assumptions in the analysis)

Not applicable.
Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

<table>
<thead>
<tr>
<th>Names</th>
<th>Title</th>
<th>Unit</th>
<th>Responsibility/Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lending</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paulo de Sa</td>
<td>Lead Mining Specialist</td>
<td>COCPO</td>
<td>Task Team Leader</td>
</tr>
<tr>
<td>Koh Naito</td>
<td>Mining Specialist</td>
<td>COCPO</td>
<td>Mining Sector Specialist</td>
</tr>
<tr>
<td>Jose Paulo Kastrup</td>
<td>Legal Counsel</td>
<td>LEGAF</td>
<td>Lawyer</td>
</tr>
<tr>
<td>Anthony Hegarty</td>
<td>Sr. Financial Management Specialist</td>
<td>AFTFM</td>
<td>Financial Management</td>
</tr>
<tr>
<td>Franco Sarno</td>
<td>Sr. Procurement Officer</td>
<td>AFTPC</td>
<td>Procurement</td>
</tr>
<tr>
<td>Jose Janeiro</td>
<td>Financial Management Specialist/Disbursement Officer</td>
<td>LOAFC</td>
<td>Disbursement</td>
</tr>
<tr>
<td>Claude Ginet</td>
<td>Institutional Consultant</td>
<td></td>
<td>Institutional Review</td>
</tr>
<tr>
<td>Jehanne Sansaricq</td>
<td>Team Assistant</td>
<td></td>
<td>Project Support</td>
</tr>
</tbody>
</table>

**Supervision/ICR**

<table>
<thead>
<tr>
<th>Names</th>
<th>Title</th>
<th>Unit</th>
<th>Responsibility/Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles Husband</td>
<td>Lead Mining Specialist</td>
<td>COCPO</td>
<td>Task Team Leader</td>
</tr>
<tr>
<td>Allison Berg</td>
<td>Operations Officer</td>
<td>COCPO</td>
<td>Operations</td>
</tr>
<tr>
<td>Alexandra Pugachevsky</td>
<td>Operations Officer</td>
<td>COCPO</td>
<td>Operations</td>
</tr>
<tr>
<td>Slaheddine Ben-Halima</td>
<td>Sr. Procurement Specialist</td>
<td>AFTPC</td>
<td>Procurement</td>
</tr>
<tr>
<td>Antonio Chamuco</td>
<td>Procurement Specialist</td>
<td>AFTPC</td>
<td>Procurement</td>
</tr>
<tr>
<td>Joao Tinga</td>
<td>Financial Management Analyst</td>
<td>AFTFM</td>
<td>Financial Management</td>
</tr>
<tr>
<td>Suzanne Morris</td>
<td>Sr. Finance Officer</td>
<td>LOAFC</td>
<td>Disbursement</td>
</tr>
<tr>
<td>Teresa de Jesus McCue</td>
<td>Finance Analyst</td>
<td>LOADM</td>
<td>Disbursement</td>
</tr>
</tbody>
</table>

(b) Staff Time and Cost

<table>
<thead>
<tr>
<th>Stage of Project Cycle</th>
<th>Staff Time and Cost (Bank Budget Only)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of staff weeks</td>
<td>USD Thousands (including travel and consultant costs)</td>
</tr>
</tbody>
</table>

**Lending**

| FY98 | 4 | 48.3 |
| FY99 | 0 | 0.0  |
| FY00 | 3 | 35.7 |
| FY01 | 23| 125.8|
| FY02 | 15| 77.7 |
| **Total:** | **45** | **287.5** |

**Supervision/ICR**

| FY03 | 26 | 128.3 |
| FY04 | 27 | 131.9 |
| FY05 | 23 | 104.1 |
| FY06 | 22 | 105.7 |
| FY07 | 13 | 65.4  |
| FY08 | 5  | 60.0  |
| **Total:** | **116** | **595.4** |
Annex 5. Beneficiary Survey Results
(if any)

Not applicable.
Annex 6. Stakeholder Workshop Report and Results
(if any)

Not applicable.

REPUBLIC OF MOZAMBIQUE
MINERAL RESOURCES MANAGEMENT CAPACITY BUILDING PROJECT (MRMP)
IMPLEMENTATION COMPLETION REPORT (ICR) – OCTOBER 2007

A. Institutional Reform and Strengthening of Institutional Capacity

The Institutional Reform and Strengthening of Institutional Capacity component was developed to modernise the legislation and strengthen institutional capacity in terms of control and application of the laws, provision of efficient support service provision to mining communities and development of favourable environment to private sector investment to the sector.

This component includes five sub-components: (A.1) Modernisation of the legislation; (A.2) Institutional reform and capacity strengthening; (A.3) Mining cadastre and registration system; (A.4) Promotion of investments; and (A.5) Extranet Intranet, to improve the flow of information within MIREM and to the different stakeholders of the sector.

A.1 Modernisation of the Legislation

This component was fulfilled satisfactorily. The initial work consisted in the carrying out of two seminars on political dialogue in Maputo and Nampula, where consensus was reached with the different stakeholders of the sector on the intention of the legislation reform supposed to be carried out. Central and local Government, the private sector, small-scale mining operators and the communities supported the reform, thus allowing the setting of the basis for the reformulation and approval of the new legislative package for the sector, which included:

- Approval of the new Mining Law (nr.14/2002) of 26 June 2002;
- Regulation approved by Decre n. 62/2006, of 26 of December;
- Environmental Regulation applicable to Mining Activity, approved by Decree n. 26/2004, of 20 August;
- Regulation for Technical Safety and Health for Geological and Mining Activities, approved by Decree nr. 61/2006, of 26 December;
- Regulation for the trading of Mining Products, approved by Decree nr. 16/2005 of 24 June;
- Statute for the Mining Development Fund, approved by Decree nr. 17/2005, of 24 June;
- Law nr.12 /2007, of 27 June, Tax Law Specially focused on the Mining Activity;
- Ministerial Diploma nr.189/2006, of 14 December, approving the Basic Norms of Environmental Management for Artisanal Mining Activity;
- A new Contract Model was designed

Except for the brochures on Mining Legislation, the activities planned for this component were all carried out, the legislation was disseminated country-wide, it is an on-going process, and supposed to reach the bottom level: the Administrative Posts and communities.
A.2 Institutional Capacity Building

i) Adjustment and Implementation of the New Model
The aim was to adjust the structure to the geological-mining policy and to the dynamics of economic development, where the Government plays the role of legislator and promoter, leaving the productive activities in the hands of the private sector.

The general guidelines of the mandate and the structure to be implemented had already been defined during preparation of the project. An institutional auditing to the National Directorate of Mines and Provincial Directorates was carried out by an external auditing company, to adjust the structure to the new challenges. A new structure was designed and implemented at the National Directorate of Mines, and it entails two new units, namely the Cadastre Department and the Environment Department.

The consultant service concluded that DNM is complying with its mandate and role, despite the financial and staff limitations. A major difficulty found was the lack of staff training in specific areas of the mining industry. The auditing recommended the recruitment and training of staff. Regarding recruitment, new personnel were recruited within the budgetary limitations, and the training of staff is being carried out in the different sub-projects. It is an on-going project, within the budgetary limits.

Auditing at the Provincial Directorates concluded that there was a stressed disparity of skills (mining, geology and energy) and need for training Provincial Directorates in terms of administration and leadership, in order to facilitate the integration of the different sectors under its responsibility.

ii) Infrastructures of the programme
Together with the implementation of the new model, the premises were improved and office and field equipment were provided for, and vehicles were purchased to support field activities.

a) Improvement of Premises
In this sub-component, premises were improved to accommodate new units at the National Directorate of Mines and Provincial Directorates of Tete, Zambezia and Nampula, were the mining cadastre sectors were created.

b) Equipment
Equipments to be purchased within the institutional infrastructure programme included: i) computers and office equipment; ii) equipment for geological fieldwork and duties of the department of mining safety; iii) 4X4 vehicles for DNG, DNM and Provincial Directorates; iv) laboratory equipment for mining premises at Provincial Directorates.

Vehicles, office furniture and office equipment were purchased. In general, the ergonomic working conditions improved considerably the visible changes of commodity and work environment.

A.3 Mining Cadastre and Registration.

The establishment of a well-organised, mainstreamed and interactive mining cadastre constitutes a high priority objective for the policy of the sector. A reliable and transparent mining cadastre represents an essential component for the promotion of investments.
The Mining Cadastre sub-component progressed with some satisfaction. The main achievements of this sub-component include:

Supervision
An international consultancy company was hired to assist DNM in the supervision of the works that integrated the sub-component. It was essential to assure the timely coordination of all tasks for the control of quality of the different consultancy companies that were hired.

Validation and Codification of Existing Mining Titles
Before the implementation of the new Cadastre and Registration System, the validation and transformation of all existing titles into the new cadastre rules was carried out. A new codification was simultaneously designed. The implementation of the new Cadastre initiated in March 2003 with the pre-cadastre team, under the supervision of the consultant, and the transformation of all existing titles into the new codification was completed in July 2004.

Geodesic Network
Within the framework of the process of creation of the new cadastre system, the whole geodesic network of Mozambique was reviewed. The network was constructed by 750 points at a common distance of 30 Kms and a rough precision of 10 meters which, unfortunately, was not compatible with the GPS technology.

The correct and precise use of the GPS technology for the positioning of the mining licenses required the availability of a transformation algorythm, to avoid positioning errors. For the review of the whole geodesic network of Mozambique, the services of DINAGECA were hired, and they worked in 2002. the transformation software was designed later on and it is available in the form of a CD ROM.

Implementation of the New Cadastre System
The implementation of the new computerised cadastre system was successful. The Swedish Geological (Sweden) – Spatial Dimension (South Africa) consortium was in charge of the works, which initiated in September 2003. The consortium provided office and computer equipment and training for the technicians working at the Mining Cadastre in Maputo and at selected provincial directorates, in order to accommodate regional cadastres, namely Manica, Nampula, Tete and Zambezia.

The overall evaluation is that the cadastre system achieved the established objectives, i) the overlapping of titles were reduced to insignificance ii) there has been a reduction in the timeframe for the processing of mining titles, iii) regarding the success of the project as a whole, the number of applications for mining titles increased considerably; and iv) the collected land tax increased.

The Arc GIS system, initially installed for the management of mining titles, has become inefficient with the increase in the number of titles and users of the system, having the consultant altered it to SQL server.

A.4 Promotion of Investment
Promotion of private investment in the mining sector is the prime objective of the Project, therefore the efforts made to strengthen the capacity of promotion of the institution, including the establishment of a sector for the promotion of investment in DNM’s Department of Mining Technology and Economy.
DNM has implemented most of the recommendations of the institutional auditing and has created a sector for the promotion of investment in the Technical and Economic Department, according to the adjusted model. The investment promotion unit has been providing its assistance in the preparation of printing material for exhibition at events such as Indaba, PDAC, and other mining events.

Despite the substantial contribution towards promotion of investment, efforts must be made to improve the limited capacity of the sector due to lack of training of its staff in terms of promotion and communication strategy.

To assist DNM in designing the promotion and communication strategy, as well as training of staff in the preparation of promotion material, a local company was hired and has already submitted the diagnostic and strategy reports.

The project funded DNM’s participation in various events of promotion of investment within and outside the country, which increase the exposure and dissemination of the geological-mining potential of the country and dissemination of the services provided by the institution to its clients.

A.5 Intranet Network

The Project previewed the establishment of various information systems (Mining Cadastre System (MCS), Mining Information System (MIS) and the Environmental Management Information System (EMIS) to guarantee the formal collection, storage and recovery of technical information. However, these information systems will form independent chains under the responsibility of different technical units. The link to a central network was not carried out as planned.

The plan for the design and installation of the intra/extranet network to improve the flow of information between the Ministry of Mineral Resources, the National Directorates, the Provincial Directorates, and other related Ministries and Institutions in Maputo, was not implemented as planned. Nevertheless, different computer equipment were purchased and a provisional network was installed.

In 2003, proposals for the installation of the intra/extranet network were submitted and evaluated. “No objection” approval by the World Bank had been planned to take place by the end of the first semester of 2004.

B. GEOLOGICAL INFRASTRUCTURE PROGRAMME (GIP)

The mining policy of the Government of Mozambique focuses on the promotion of private investments to develop the mining sector, based on a favorable geological environment and mining potential of the country. As part of this policy, the Ministry of Mineral Resources, MIREM, through the National Directorate of Geology (DNG), developed the geoscientific infrastructure of the country in support of mining investments promotion, and the sustainable social and economic development of the country. The availability of basic geological information is an important parameter to promote investments as well as an essential tool for the planning of the construction of infrastructures and for natural disasters mitigation.

B.1 Airborne geophysical survey

Mozambique has made a great effort to develop the basic geoscientific infrastructure of the country. In 2001, the Government of Mozambique, in cooperation with the World Bank, the Nordic Development Fund, the African Development Bank and the South African Government with the aims of developing the following programmes:
• Basic geological mapping programmes at 1:250,000 covering the total surface of Mozambique and 1:50,000 for selected mineral potential areas;
• Regional and High Density (in selected areas) Airborne Geophysical Surveys;
• Rehabilitation of the seismological network of Mozambique;
• Geochemical and industrial mineral survey;
• Modernization of the Documentation Centre (DC) and Establishment of the Mineral Information System (MIS);
• Refurbishment of the National Geological Laboratory; and
• Institucional Reform.

Training of the staff of the MIREM formed a central and very important part of the project to ensure that all the new achievements are sustainable managed and systems were operated correctly and used to maximum advantage. During the phase of implementation of the project the training programme was developed in the field work and also at the headquarters of the consultants involved in the implementation of the sub-component of the GIP listed above.

The Project Design fully met the Government objectives to respond to the needs of the private investments to develop the mining sector of the country with the minimum risk. During the implementation of the project we got useful experience such as contract negotiations, experience in large projects design and management, experience in dealing with consultants from different backgrounds, relationship with Mineral Resources Coordinating Unit in terms of project management and the major lesson was the experience gathered by most of the staff along the project. The establishment of the Mineral Resources Coordinating Unity (UCPM) and the Steering Committee which represented a strong team to guarantee the successful management and implementation of the Objectives of the Project is important aspect to mention.

B.2 Basic geological mapping programmes at 1:250,000 covering the total surface of Mozambique and 1:50,000 for selected potential areas

The main achievements of the mapping projects are:
• A complete set of topographical maps on a scale of 1:250,000 and data set of recent satellite images is now available for the whole country. The topographical map sheets have been specially prepared from digitally data and corrected throughout the project so that the final products are much more accurate than any other existing maps.
• A complete set of aerial photographs which forms the basis of any mapping program is available at the DNG future use.
• A complete set of new and modern geological maps at a scale of 1:250,000, covering the whole country. The geological maps are based on the latest available satellite images, new geophysical data and modern geological mapping methods, and are based on a lithostratigraphic classification. Furthermore the data is seamless in the sense that a single legend can be applied to the whole coverage, which is an exceptional achievement in geological terms. A set of detailed explanations that accompany the geological maps, were also published.
• Detailed geological maps on a scale of 1:50,000 of selected areas with a high potential for mineral resources.
• New geochronological ages, of which the results have been integrated with the geological mapping were determined and integrated in Mineral Information System, MIS. This aspect has made a significant contribution to the state of geological knowledge in Mozambique.
• A new stratigraphic classification has been designed for the geology of Mozambique. This classification is in line with modern international accepted methods and concepts of stratigraphy, and make use of a lithostratigraphic basis, which is well suited for mapping and further
interpretation. In addition, many stratigraphic units in Mozambique have now been properly named, a type area identified and properly described in detail, according to the newly created stratigraphic code for Mozambique. In the case of sedimentary and volcanic successions, lithostratigraphic units are further described by means of stratigraphic sections.

- During the last phase of the program in July 2006 an International Conference on African Geology took place in Maputo. The meeting was partially sponsored by this project, via the World Bank. The conference was well attended by scientists from throughout the world. All the consultants who participating in the project made use of the opportunity to deliver papers as well as exhibit posters on aspects of the geology of Mozambique, from results obtained during the project.

**Regional and High Density Airborne Geophysical Surveys**

- Compilation and digitization of 273,000 line km of analogue airborne geophysical data over northern Mozambique. It was done the acquisition of 157 000 line km of total magnetic field and gamma-ray spectrometric data flown at 100 m a.g.l., from flight lines with a 1000m spacing. It was also carried out the acquisition of a high density survey consisted of a detailed airborne geophysical (magnetic and gamma-ray spectrometric) survey (300m flight line spacing) over areas of high mineral potential in northern Mozambique. This data is of very high quality and has been particular useful during geological mapping. It can potentially contribute enormously towards mineral exploration. Complementary expansion of the existing regional surveys (1 km flight line spacing) in the northeastern part of Mozambique, to cover gaps in previous regional geophysical data, was also done.
- 75% of the country is covered with digital geophysical data of high international standard.

*The demand for this new data from mining and exploration companies has been excellent. The availability of quality data and the parallel world-wide increase in the demand for raw materials has contributed to a significant increase in the number of new mining licenses.*

**B.3 Geochemical mapping**

Capturing datasets of important previous geochemical surveys and reworking it into a format that is compatible with the MIS system.

New geochemical surveys in economically important part of the country was carried out, some gold anomalies were identified. The follow-up soil sample survey confirmed the occurrence of gold anomalies.

- The collection and reanalysis of old samples, it was managed to locate two major sets of samples, in total about 11 700 historic samples were located. Of these 1144 samples were reanalyzed for gold, palladium and Te, mostly from the Hunting survey in the northwest of Mozambique. The result of the analyses showed gold values below the results of previous studies, which implies that the methods of sampling used in previous studies must be carefully studied, and could potentially be questioned. However, the results in certain areas are still promising enough to warrant further work by exploration companies.
- The results of the geochemical survey were presented during the 21st Colloquium on African Geology, held in Maputo in July 2006.
- Training has been very intensive and can be considered as very successful, probably because it managed to combine a theoretical background to practical experience and allowed the trainees to operate independently by the end of the project. Two geochemists can operate as project leaders in geochemical sampling programs and train their own staff.
B.4 Rehabilitation of the seismological network of Mozambique

- Three stand-alone digital seismographs were installed at stations in Nampula, Tete and Changalane. The equipment consists of 16-bit EARS event recorders developed in-house by the Council for Geoscience (CGS). Data are automatically archived at the stations onto zip drive. Each station was recording short-period, vertical ground motion.
- Changalane is now equipped with broad band 24-bit, installed by Africa Array programme, Manica and Lichinga are equipped with 24-bit station but not broad band which transmit continuously data to processing centre in Maputo. The Government of Mozambique funded the installation of these modern seismological equipment.
- A processing facility consisting of a PC, printer and analysis software was installed in Maputo in June 2006. For Processing Centre 6 Analysts were trained in Maputo as well as at the CGS. Through this Centre the magnitude and geographical coordinates of epicenters of the seismic events can be determined.

B.5 Documentation Centre

It was organized, categorized, catalogued, and scanned into digital form all the documents, papers and maps within the DNG into a single management system or database which is fully capable of communicating with internal and external systems, including over the Internet, and which is fully compatible with the parallel development of the Minerals Information System (MIS)

- Provide government and the general public instant access to the DNG documents, including via the Internet. Supply and install the PANGIS MS-Access bibliographic database and migrate all currently captured data to the new system. The bibliographic database is fully Web-compatible and it is incorporated into the DNG Website, in order to make the bibliographic data available.
- DNG web page, containing metadata on the spatial data and attribute data in the MIS, is functioning disseminating information via the Internet. This will form a major step towards the distribution of information to the various stakeholders in Mozambique and abroad, and the promotion of investments opportunities in the mining sector.

B.6 Mineral Information System (MIS)

- It was categorised, catalogued, digitised, unified and integrated the results from mineral exploration and mining projects, both from the Government and private sector, into a GIS environment under a single management system and to import additional relevant datasets, including topography, geophysical data, geology, satellite imagery etc.
- The MIS provides Government with instant access to a readily accessible, consistent and up to date set of data for information and planning purposes
- The MIS encourages the public access to the system via the Internet and promotes knowledge of the country’s mineral deposits and mineral potential.

B.7 Industrial Mineral survey

- The programme captured 300 deposits and occurrences, 117 of them were visited in a follow-up survey.
- It was carried out laboratory studies on 114 samples from the above mentioned deposits by means of chemical and microprobe analyses, XRD determinations, particle size analyses (sand, kaolin) and brightness (for kaolin).
- A total of 18 new thin sections have been studied from carbonate/carbonatite occurrences.
• The training component was very successful, with the DNG staff trained to compile and assess the data themselves. Generally the technicians already had basic knowledge and adjusted easily to the program.

• Field guide for Industrial Mineral surveys was compiled.

• The project has a major impact on the construction materials including road aggregate.

• A good index for the various development corridors in terms of the availability and need for specific material such as road aggregate, clay (brick clay), cement, sand and gravel was compiled.

• In terms of road aggregate it was found that the Karroo rhyolites are well suited for this purpose and was well used, especially since it occurs near the largest development area around Maputo and in Gaza. In the Beira Corridor area, and in the Provinces of Manica, Tete, Zambezia, Nampula and Niassa there is adequate material but in the Cabo Delgado area and Inhambane areas/provinces there is a lack of proper sources which need addressing.

In terms of brick clay it was found that there are many resources being used. However, the quality is generally very inconsistent and is usually fuelled by firewood which contributes to environmental problems.

B.8 National Museum of Geology

The National Geological Museum is an important tool in the education of the general public, especially on school level.

• The Museum was successful renovated. In addition the final renovations included a better security system and additional storage space for the specimens that are not exhibited.

• The database to catalogue all the various specimens was installed and trained staff of the Museum in the use of it.

• The staff of Museum received training in collection and data management so that it is prepared to run accordingly the institution.

The Museum promotes the mineral potential of the country not only through exhibitions in the Museum but also develops gemological exhibitions/fairs.

B.9 DNG Central laboratory

• Part of the basic equipment for laboratory for chemical analyses and mineralogical determinations was installed and ready to be used (XRF and XRD) as well as the equipment for basic sample preparation and preliminary studies of geological samples is also ready to be utilized.

• The DNG posses a well-trained staff on all levels for carrying out analytical work responding to international standards. The staff has received extensive training in Finland, Tanzania, Brazil and South Africa. Services which can be offered to in-house customers and outside paying customers are already viable.

C. Environment Management System

According to its plan of activities, this sub-component should include i) the carrying out of environmental and social studies of the mining sector; ii) Pilot studies, institutional capacity building of the Environment Department and development of participatory procedures; iii) Environment Management Information System (EMIS); and iv) supervision.
C.1 Environmental and Social Evaluation

The environmental and social auditing was the first task to be carried out within component C, aimed at making a global diagnosis of the environmental conditions and social impacts of mining activity, in order to identify strategic priorities for environmental management in the mining sector.

The priorities identified would then be used for the planning of project activities in the environment component and measures could be taken to mitigate the main problems or deficiencies of the environmental control of former mines.

The environmental auditing was carried out by the Swedish consortium and the Mozambican company Impacto during 2003. The report was submitted in December 2003 with recommendations for the development of environmental management capacity and strengthening of the institutional capacity of the Environment Department and Provincial Directorates through assistance, training and provision of field equipment.

The consultant recommended various activities to be carried out to provide the Department with fieldwork experience and training for DNM and DIPREMs staff.

1. Execution of environmental auditings in former mines (Mundonguara mine - copper, Mavita Mine - asbestos, Moatize coal mine).

2. Monitoring of basic conditions within the existing mining areas, with emphasis on land water quality, flora and fauna.

3. Carry out baseline studies in regions where future Mines and ecological sensitivity areas, among others, are to be installed.

In the first semestre of 2007, the environmental management system EMIS/SIGA linked to a mining cadastre database was installed at DNM. The department was equipped with computer materials to help fulfilling the mandate; the technicians benefitted from training extensive to DIPREMs technicians.

D. Sustainability of Artisanal and Small-Scale Mining

The aim is to guarantee the sustainable development of small-scale and artisanal mining exploration (creation of economic and social conditions to guarantee environment protection, health and technical safety)

D.1 Baseline Studies

This activity initiated prior to the approval of funding for the project. DNM carried out the first baseline study on small-scale and artisanal mining for the characterisation and identification of areas for pilot projects to assist operators in environmentally healthy and sustainable production techniques in the provinces of Manica, Tete, Nampula and Niassa in 2003. The second study was carried out in 2003 in the provinces of Zambezia and Cabo Delgado by the consortium CSA Group and MEPC.

The studies recommended:

- Review of the Mining Law and respective Regulation in terms of small-scale and artisanal mining regarding its practices and develop a more inclusive policy for this sector of activity.
- Establish a participatory training programme to include DNM and DIPREMEs staff and artisanal miners in issues concerning mining, health and hygiene and technical safety, with visits to various mining operations to provide technical advice, support services and guidance to the miners.

The scope of the CSA work included the identification and design of an integrated pilot project focused on improving mining techniques and mineral processing with appropriate technology, environment protection, dissemination of information related to the equipment and demonstration of alternative technologies. The pilot project would be executed as part of the next sub-component.

D.2 Pilot Projects

Based on the results of the study the following areas were proposed for the pilot projects: Namunanono, near Mutala, in the Province of Zambezia; Munhena, in the District of Manica, Province of Manica; and Morrupula, in the Province of Nampula.

Among these provinces, the Province of Manica was chosen for the implementation of the gold pilot projects.

D.3 Health Sensitisation for Mining Sector Operators

Sensitisation campaigns to raise awareness among the population towards HIV/AIDS and occupational health care in artisanal and small-scale mining areas are being carried out as part of this sub-component. The company Austral Consultoria was responsible for the design of the HIV/AIDS strategy and the contract was adjudicated in mid-2004.

D.4 Supervision

Having into account the highly specialised content of the activities of this sub-component, the project implementation plan previewed the recruitment of an expert in social studies and technical assistance to artisanal miners as supervisor. It was in this context that Mr. Joachim Bayah, an expert in small-scale mining, was hired for the supervision of the component. He provided important contribution in the guidance of the project.

INSTITUTIONAL REFORM

Part of the recommendations from auditors to DNG was implemented among them the establishment of the new structure in 2002 with introduction of the new Department of Applied Geology and Geo-hazard. Some staff was transferred to other institutions of the MIREM in the context of the staff reduction. The professional quality of the DNG staff improved significantly, consequently the quality of produced geological information. The main advantage gained by institutional reform is the identification of specific personnel allocated to specific functions.

EVALUATION OF THE PERFORMANCE OF THE WORLD BANK AND OTHER DONORS

During the implementation of the Project regular Banks missions have been conducted, reviewing the ongoing and future activities and we deeply appreciate the support provided by all TTL (the Nordic Development Fund (NDF), the African Development Bank (AfDB) and the World Bank during the mission towards achieving the Project goals. We also would like to underline the important role played by the Council for Geoscience of South Africa in supervising all the components of the Geological Infrastructure Programme listed above.
Some constraints were found during the life of the Project among them:

- Constant changes of TTL, specially the AfDB;
- Communications problems;
- Delay in giving NO OBJECTION, consequently disbursement;
- Lack of fund for implementation of some of the programmed components of the Project;
- General biggest problems in this program was the timing of events. The program/project schedule was very tight with very little room for maneuvering.

EVALUATION OF THE PERFORMANCE OF CONSULTANTS INVOLVED IN MAPPING PROGRAMME

This is the first experience of the country involving more then one consultant in the mapping. Although the success of the mapping programme some constraints were encountered:

- Language communication with Mozambican geologists;
- Little time for consultants to transmit their experience accordingly to Mozambicans;
- Correlation of the geology in the border of the areas mapped by different consultants;
- Use of the same nomenclature for same geological formations; and
- Different format of the final products, maps and reports.

The death of Dr Erik Hammerback in April 2006, brought serious constraints in the management of the Project in terms of the supervision programme by CGS.

It is our pleasure to say that we appreciate the support and the effort of the World Bank extends to the Government of Republic of Mozambique. We are convinced the World Bank will continue to be reliable partner on a long-term based and will support the forthcoming programmes.

CONCLUSIONS

As a result of the very well defined objectives of the Project, well designed Project Implementation Programme, responsible involvement of all intervenient and successful implementation, the Republic of Mozambique achieved the following principal results:

- Geological mapping of the whole country at 1:250 000 scale and 1:50 000 in selected mineral potential areas;
- 75% of the Country is covered by regional and high density airborne geophysical and digital data are available for public use;
- Improved seismological network with real transmission of the seismic event to the Processing Centre in Maputo;
- A number old geochemical data were compiled into a digital format including new limited geochemical data from central part of Mozambique;
- Industrial Mineral deposit and occurrences were inventoried;
- Mineral Informal System was established, airborne geophysical, geochemical and other geological information are stored in digital format;
- New facilities for national geological laboratory was built by the Government and the Project purchased/acquired new XRF, XRD and other which are already installed;
- The training course in-the-job and field mapping and at headquarters of consultants improved professionally the quality of the staff consequently the geological information produced by them; and
- As a result of the recent 1:250 000 scale geological mapping, in March 2008, will come out updated 1:1 000 000 scale geological map of Mozambique.
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

None received.
Annex 9. List of Supporting Documents


Mozambique Country Assistance Strategy, June 14, 2000 (Report No. 20521-MOZ)

Mozambique Country Assistance Strategy, October 20, 2003 (Report No. 26747-MZ)

Mozambique Country Partnership Strategy, April 24, 2007 (Report No. 39395-MZ)


Model Mining Agreement, 2007 (MIREM/DNM)

Investment Promotion Strategy, 2007 (MIREM/DNM)

HIV/AIDS Strategy for the Mining Sector, 2004 (MIREM/DNM)

Institutional Review of DNM and DNG, 2002 (MIREM)

Project Status Reports/Implementation Status Reports (Project Portal)

Aide-Memoires and Back-to-Office Reports (IRIS)