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“Strike while the coal is hot!” – a Public Private Partnership approach to the development of the Moatize Coal Deposit

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PPPs have been seen as a tool to develop infrastructure projects in developing countries as governments are, for the most part, constrained by the lack of resources to fully finance such projects. Mining projects, however, are generally seen to be wholly in the private domain. The development of complex mining projects in remote regions requiring substantial investment in infrastructure with associated developmental impact may require a PPP approach to ensure successful implementation. This article describes the Government of Mozambique’s approach to develop the Moatize Coal Deposit and indeed the Zambezi region as whole, which began with strong public support for the development of transportation infrastructure and will likely require continued public support to ultimately ensure successful development of the Project.

Background

Mozambique has enjoyed some success in the last few years. The country has had a sustained GDP growth rate in excess of 7% for the last three years, and this is expected to continue over the near term¹. Given the natural resource wealth of the country, the Government adopted a strategy of spurring economic development through a series of “mega projects”, which has been largely successful.

The first of these mega projects was the US\$2bn Mozal Aluminium Smelter, which began production in 2000 and currently exports about 500,000 tonnes of aluminium every year². Other mega projects include natural gas exports to South Africa via the gas pipeline from the Tamane and Pande gas fields³ and a heavy sands mine at Moma in Nampula Province⁴. The country gained independence from Portugal in June 1974 and has been politically stable since the cessation of the civil war in 1992.

In spite of these successes, however, Mozambique is still faced with some incredible challenges. The GDP per capita of US\$280⁵ is amongst the lowest in the world and almost half the population is below the national poverty line. Life expectancy is also low and literacy is only about 47%⁶. These factors are contributing to a two-speed growth: high economic growth in new capital-intensive sectors with the help of large inflows of foreign investment, but stagnation in the traditional and informal sectors⁷.

The trickle-down effect of the mega projects is not as evident as perhaps was originally expected⁸. For this reason, the Government of Mozambique’s objectives for the Moatize Coal Project, the fourth such mega project, were socio-economic in nature and included both the generation of sustainable development particularly in the Zambezi Valley and

the strengthening and diversification of Mozambique’s productive base. The Moatize Coal Project is intended to serve as an anchor-project for the development of the Zambezi Valley, increasing the economic activity in the region and improving the social conditions of the people living there, while also making a substantial positive contribution to the national accounts.

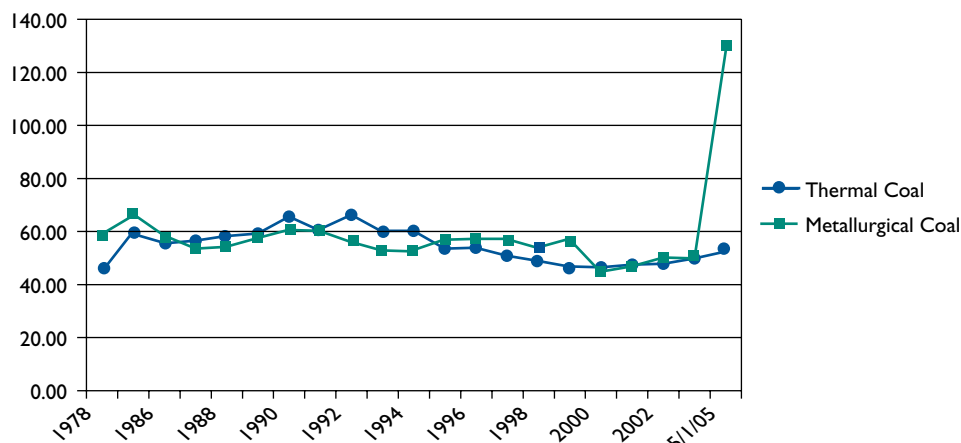
The Government’s approach to a phased development of the Moatize Coal Project

Zambezi Valley – a region desperately waiting for development

Although the Zambezi Valley offers a number of opportunities for investment in commercial agriculture (sugar cane, rice and cotton), livestock, timber, other minerals and eco-tourism, it remains one of the least developed regions in Mozambique. It is also one of the more populated regions of the country where currently approximately 3.5 to 4.0 million people live in the Zambezi Valley, mainly off subsistence agriculture. The region was ravaged during the civil war, and remained largely on the sidelines of the economic development experienced by the southern part of the country.

The development of the Moatize Coal Deposit, a large-scale mining project, has always been viewed as a catalyst for development of the Zambezi region. For some years now, the Government of Mozambique has been keen to promote the large-scale development of the Moatize Coal Deposit. The deposit is one of the largest unexplored coal reserves in the world comprising both metallurgic and thermal coal estimated at about 2,440 million tonnes.

Figure 1: OECD Coal Price (US \$/tce)



Note: Using US Coal spot prices for 1/5/2005 / tce = tonnes of coal equivalent

Source: International Energy Agency

The chicken or the egg...

The lack of a means of transport for the ensuing coal production is often pointed out as one of the main reasons for the difficulties encountered in the development of the Moatize Coal Deposit⁹. The Sena Railway Line, connecting Moatize to Beira had been seriously damaged during the civil war, with important segments completely destroyed, and was eventually closed in 1982.

It should be noted here that only after several unsuccessful attempts by the Government of Mozambique to develop the Moatize Coal Project in an integrated fashion, did the Government decide to proceed with the rehabilitation of the railway, independent of the mine. This decision was based on the potential development impact of the railway in the region, including the contribution to the overall attractiveness of the Moatize Coal Project.

Consequently, in 2001, the Government of Mozambique requested the World Bank's support to the Sena Line rehabilitation and a US\$115m IDA loan to the Government was contemplated.

The Mozambican Rail and Port Company (CFM) designed a competitive international bidding process to select a railway investor who would undertake to rehabilitate and operate the Sena Line under a 25-year concession. In addition to the more standard provisions, the rail concession agreement plans for the eventuality of coal transportation by providing for a conflict resolution mechanism in the event that a satisfactory agreement cannot be reached between the rail operator and the future coal developer. The development of the Moatize Coal Project will likely require a substantial upgrade of the Sena Line in terms of capacity and operational standards.

The selection of an Indian consortium comprising

of RITES Limited and IRCON International Limited as concessionaire for the Sena Line on May 4, 2004 set the stage for the Moatize Coal Project and accordingly, the Government of Mozambique engaged the International Finance Corporation to advise on the selection of a coal developer.

And the coal gets hot...

The timing of the Government of Mozambique's decision to launch the Moatize Coal Project was clearly influenced by the successful concession of the Sena Line and upcoming national elections of December 2004, but was also driven, in no small part, by the recent run-up in coal prices. The price of metallurgical coal has hit all time highs in 2004 and global mining companies have scrambled to maintain the security of supply to their traditional clients in a particularly tense market. The market interest in the Moatize Coal Deposit was clearly evident; it was now a matter of ensuring that the Project took full advantage of this market opportunity.

The power supply in the Southern Africa region becomes constrained...

Of Moatize's 2,440 million tonnes of estimated reserves, about one-third are likely to be of a mid-volatile metallurgical coal and a further one-third is expected to be mid-volatile thermal coal with an ash content of 16% or less. Most of the latter will likely be burned in situ in a thermal plant of a capacity between 1,000 to 2,000 MW, depending on the ultimate size of the mine.

From an overcapacity situation in the energy market in the Southern Africa region some years ago, recent assessments indicate that a power shortage may be imminent in the short to medium term, especially in South Africa, which is by far the

largest national market¹⁰. In addition, some important Mozambican projects are hampered due to the lack of energy supply, among them the potential expansion of Mozal¹¹.

The new regional demand prospects for power are today radically different from those of the 1990s, characterised by overcapacity and depressed prices. Although projections indicate that the power output from Moatize could easily be absorbed in the regional energy market, it is doubtful whether such a large investment could be made on a strictly private basis, especially if the transmission lines to feed into either the Southern Africa Power Pool or Mozambican national grid are also included.

The coal developer selection process: Taking advantage of a competitive situation

The objectives of the selection process were: (i) to generate sustainable economic and social development particularly in the Zambezi Valley, while strengthening and diversifying Mozambique's productive base; (ii) to select a financially strong and experienced mining company as a coal developer; and (iii) to ensure transparency and a level playing field amongst the potential bidders in order to create competition and extract the maximum value from the bidding process for the Government and people of Mozambique.

However, several constraints hindered potential investors from formulating a well informed offer, in particular the extremely short timeframe, which essentially allowed for three-months from pre-qualification to submission of proposals. Additionally, there was very limited geological information available on the Moatize Coal Deposit and the complexity of the risks, principally those relating to the infrastructure sectors (rail, power, port) are, at this stage, difficult to evaluate.

The process however, has proven very successful. Ten mining companies presented credentials for pre-qualification, of which four were pre-qualified: Anglo American Corporation of South Africa; BHP Billiton Mitsubishi; Companhia Vale do Rio Doce and Rio Tinto. The wide interest and quality of the pre-qualified companies is reflective of the strong market conditions and the Government's support to this transaction.

A complex selection process was designed to create competition among potential bidders while ensuring transparency and credibility. The process also enabled the Government to shape its objectives that included the bidders' commitment to sustainable development through environmental management and community and social development programmes in the

region. The Selection Criteria essentially comprised a scoring system based on the value attributed to different strategic elements of the Project, and were organised into four broad categories: Commitments during the Exploration Phase; Strategy, Business Plan and Long-term Commitments; Company Experience; and Financial Offer.

Ultimately, Brazil's CVRD was declared the winning bidder of this process on November 12, 2004. The main highlights of CVRD's proposal include a commitment to develop an integrated feasibility study for the Moatize Coal Project over the course of the next two years as well as a series of pre-feasibility studies for projects aimed at value-added activities through the use of coal or energy in Mozambique (for example, a coking plant, ferroalloys plant, cement plant, aluminium smelter and others). In addition, CVRD offered an upfront payment of US\$122.8m for the exploration rights to the Moatize Coal Deposit.

Key elements of CVRD's long-term strategy include the development of a mine with a capacity of 21 million tonnes per annum, run-of-mine, which implies a 1,500 MW mine-mouth power plant; 3% production tax; 5% carried interest for the Government of Mozambique; up to 10% of the shareholding will be reserved for Mozambican nationals; US\$6.5m to be spent on community and social development programmes in the region during the exploration period and a further US\$50m is expected to be spent on similar programmes during the production phase.

Moatize coal: A strategic resource for Companhia Vale do Rio Doce

CVRD's strong proposal is the result of its recently announced strategy to become a global player in the mining industry, through direct investments outside of Brazil. Metallurgical coal however appears to be particularly strategic for CVRD for two main reasons: first, it largely completes the spectrum of products CVRD is able to offer to its steel clients since the company is already the world's largest producer and exporter of iron ore and the world's second-largest producer of manganese and ferroalloys; secondly, CVRD is fulfilling a Brazilian strategic need to access metallurgical coal given the size of the national steel industry, its potential for growth and the planned investments. Moreover, with CVRD being an important shareholder of several Brazilian steel producers, its access to a large coal resource will enable the company to vertically integrate its supply chain for metallurgical coal in Brazil.

CVRD's investment in Moatize is furthermore a stunning example of a "south-south" investment and,

in this respect, helps to consolidate an increasing south-south cooperation, particularly among countries of Portuguese language.

Features of the transaction: Transitioning from exploration to the development stage

Due to the fact that the Moatize Coal Deposit is to a large extent unexplored, CVRD was granted an exploration licence with the obligation to prepare an integrated feasibility study for the Moatize Coal Project in about two years. CVRD assumes all the risks associated with the feasibility of the Project. However, if the feasibility study is positive for a mine development of at least five million tonnes per annum of saleable product, the Government's minimum production criterion, and CVRD presents proposals that demonstrate the technical and economic viability of the related infrastructure components, the Government of Mozambique has undertaken to grant CVRD a mining concession.

The Moatize legal documentation does not grant CVRD, at this stage, any entitlements, rights and obligations in relation to any related project infrastructure and requires that such entitlements will be in full compliance with applicable law. However, to the extent that such infrastructure is required for the successful implementation of the Moatize Coal Project as contemplated by CVRD, the Government shall consider the granting of access to such infrastructure, including through direct negotiations or other forms of preferential rights.

Notwithstanding the current lack of certainty, the Government recognises however that infrastructure, including without limitation the conditions to access the Sena Line, is critical to the viability of any long-term development proposal and that additional infrastructure development may be required in connection with the development of the Moatize Coal Deposit.

Consequently, the Government committed to use its best efforts to authorise the granting of and entering into of all agreements, concessions and other relevant arrangements in connection with any required related project infrastructure. Failure by the Government to fulfil its obligations in this respect is cause for termination and compensation of all costs incurred by CVRD, including the bid payment.

Although the Moatize Agreements seem satisfactory in terms of allocation of risks at the exploration stage, an important question remains: Will the Moatize Coal Project be viable without a PPP approach? In particular, under what conditions will the coal project be able to fully support the development of the required new infrastructure and afford commercial rail tariffs? Will the Government's

financial support be required in order to develop the transmission infrastructure for the thermal plant? How much of the anticipated Project's feasibility depends on sustained high coal prices? Will the development of such a complex project require some sort of revenue sharing with the Government indexed to international coal prices?

Looking forward

One of the specificities of the Moatize Coal Project is the duality of the markets it proposes to serve: on one hand, a volatile international metallurgical coal market, while on the other, regulated national energy markets in the region which individually, with the exception of South Africa, are small in size and lack creditworthy off-takers.

The Moatize Coal Project development strategy will therefore require the determination of an optimal mine capacity and management of the product mix to ensure the stable supply of the *in situ* thermal plant over a period of 25 to 30 years. The economic and financial viability of the Moatize Coal Project must justify the energy investment that including transmission is estimated at over US\$2bn. The need to develop long-term power purchase agreements with off-takers is critical.

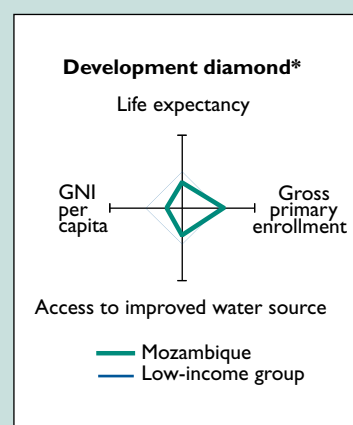
The impact of economies of scale would favour a large metallurgical coal production given the required investment in upgrading the railway infrastructure, building a new coal terminal and developing the social infrastructure. Hence, proving large-scale exploitable reserves over the course of the next two years in the Moatize project area and eventually in other nearby prospects is of paramount importance.

It is our view that the successful and rapid development of the Moatize Coal Project will require the Government of Mozambique to continue to adopt a PPP approach, as public financial support will likely be key. It is not uncommon for large-scale projects, including mining projects that require extensive development of new infrastructure, to benefit from some form of public support at least during the early years of operation. The extent of required public support will be dependent on the overall attractiveness and financial viability of the Moatize Coal Project which, to a large extent, will be determined by the size of the mine. The larger the mine, the less likely public support will be required for transportation infrastructure given the returns to scale.

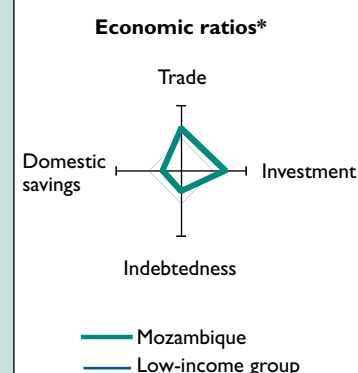
The energy component of the Moatize Coal Project is however the most challenging, as failure to negotiate power purchase agreements with creditworthy off-takers will halt the project's overall development. Additionally, the energy component is the most likely aspect of the project to require a

Mozambique at a glance

POVERTY and SOCIAL	Mozambique	Sub-Saharan Africa	Low-income
2003			
Population, mid-year (millions)	18.8	703	2,310s
GNI per capita (Atlas method, US\$)	210	490	450
GNI (Atlas method, US\$ billions)	3.9	347	1,038
Average annual growth, 1997-03			
Population (%)	2.0	2.3	1.9
Labor force (%)	2.1	2.4	2.3
Most recent estimate (latest year available, 1997-03)			
Poverty (% of population below national poverty line)	54	..	..
Urban population (% of total population)	36	36	30
Life expectancy at birth (years)	41	46	58
Infant mortality (per 1,000 live births)	101	103	82
Child malnutrition (% of children under 5)	24	..	44
Access to an improved water source (% of population)	57	58	75
Illiteracy (% of population age 15+)	60	35	39
Gross primary enrollment (% of school-age population)	106	87	92
Male	107	94	99
Female	95	80	85

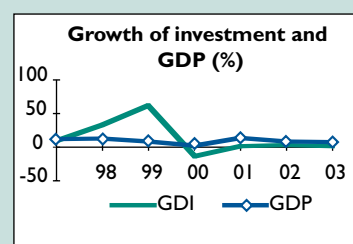


KEY ECONOMIC RATIOS and LONG-TERM TRENDS	1983	1993	2002	2003
GDP (US\$ billions)	3.2	2.0	3.6	4.3
Gross domestic investment/GDP	11.6	25.5	30.3	27.9
Exports of goods and services/GDP	6.1	13.2	23.5	22.8
Gross domestic savings/GDP	-5.0	-9.6	15.6	11.3
Gross national savings/GDP	-3.9	-3.2	15.8	12.8
Current account balance/GDP	-13.5	-25.8	-18.8	-12.2
Interest payments/GDP	0.0	3.8	4.9	3.8
Total debt/GDP 1/	13.0	227.8	132.2	116.3
Total debt service/exports 1/	0.0	19.0	26.1	8.0
Present value of debt/GDP 1/2/	..	..	24.8	23.2
Present value of debt/exports 1/2/3/	..	..	96.0	91.2

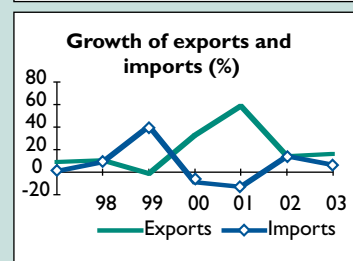


	1983-93	1993-03	2002	2003	2003-07
(average annual growth)					
GDP	3.6	8.1	7.4	7.1	7.6
GDP per capita	2.6	5.7	5.3	5.1	5.8
Exports of goods and services	5.0	17.6	14.1	16.2	17.0

Structure of the Economy	1983	1993	2002	2003
(% of GDO)				
Agriculture	37.6	29.5	26.6	26.6
Industry	27.5	20.7	28.9	31.2
Manufacturing	..	7.3	14.9	15.5
Services	34.9	49.8	44.6	42.8
Private consumption	84.3	95.4	73.4	77.3
General government consumption	20.8	14.3	11.0	11.5
Imports of goods and services	22.8	48.4	38.2	39.4



	1983-93	1993-03	2002	2003
(average annual growth)				
Agriculture	2.9	6.1	7.2	8.0
Industry	-3.5	17.7	7.5	9.0
Manufacturing	..	18.1	4.0	12.8
Services	7.7	3.1	6.2	3.3
Private consumption	2.8	1.9	10.4	5.0
General government consumption	1.7	6.2	5.8	8.6
Gross domestic investment	-0.3	14.4	2.5	0.5
Imports of goods and services	0.0	4.0	13.9	5.8



Note: 2003 data are preliminary estimates.

*The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

1/ Public and Publicly Guaranteed debt. Excludes private non-guaranteed debt.

2/ data include impact of total debt relief under the enhanced HIPC initiative, additional bilateral assistance, and new borrowing

3/ As percent of 3 year moving average of exports of goods and non-factor services.

comprehensive public-private partnership in order to be developed. The remote location of the deposit, especially from the larger energy consumption centres immediately renders the investment in transmission an important bottleneck that the Government of Mozambique in cooperation with CVRD, by itself or in the context of bilateral cooperation, must overcome.

In summary, assuming that the results of geological exploration confirm large quantities of exploitable metallurgical and thermal coal reserves, a substantial effort will be required to structure the power component in order to ensure the feasibility of the entire Project. It is likely that the development of the power component will require some form of concessionary financing due to the long-term nature of the investment. However, equally necessary will be public support in the form of close cooperation between CVRD and the Government of Mozambique. Eventually some form of bilateral cooperation will be required in the context of the Northern Mozambique Power Development Initiative probably with the participation of multilateral or regional development institutions.

The imperatives of regional development within a framework of sustainable development appear to justify a PPP approach to the development of the Moatize Coal Deposit. This is on the basis of the Moatize Coal Project's high development impact in an extensive and populated region and its catalytic effect on the development of other projects in the Zambezi Valley. It will still however be essential that the reserves prove to be as extensive as anticipated and that coal continues to remain hot.

Notes:

- ¹ Economic Intelligence Unit, Dec 1, 2004. "Country Report Mozambique December 2004", Economic Structure: Annual Indicators.
- ² Ryan, Orla, BBC business reporter, Dec 9, 2004. "Can Mozambique gain from investment?"
- ³ Economic Intelligence Unit, Jan 1, 2003. "Business Africa 1 Jan 2003."

⁴ Economic Intelligence Unit, Dec 1, 2004. "Country Report Mozambique December 2004", Outlook for 2005-06: Economic Growth.

⁵ Economic Intelligence Unit, Dec 1, 2004. "Country Report Mozambique December 2004", Economic Structure: Annual Indicators.

⁶ Economic Intelligence Unit, Dec 1, 2004. "Country Report Mozambique December 2004", The Domestic Economy: Mozambique ranks among the bottom 10 in HDI.

⁷ Ryan, Orla, BBC business reporter, Dec 9, 2004. "Can Mozambique gain from investment?"

⁸ Ibid.

⁹ The deposit is located in central western Mozambique, in the Zambezi Valley, about 600 kilometres north north-west of the port city of Beira.

¹⁰ The normal Southern Africa national maximum demand is less than 500 MW for all but four utilities – Eskom in South Africa (32,000 MW), ZESA in Zimbabwe (2,000 MW), ZESCO in Zambia (1,200 MW) and SNEL in the Democratic Republic of the Congo (1,000 MW).

¹¹ The Mozal Aluminium smelter has a demand of 895 MW, supplied directly from South Africa; Mozal's consumption is more than three times the current national demand of 280 MW in Mozambique.

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