



Designing and Implementing an Integrated Project Management System at Minas-Rio (A)

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On May 1, 2013, sixteen months after his appointment as CEO of Anglo American's Iron Ore Brazil operations on January 1, 2012, Paulo Castellari realized that he had outlasted each of his four predecessors in the job. Yet, he still had much to achieve in the nineteen months before the November 30, 2014 deadline that he had set for achieving "first ore on ship" (FOOS). Given the steady escalation of iron ore prices since 2003, the potential of the Minas-Rio project was clear, but none of his predecessors had been able to overcome the challenges in execution.

Paulo reflected on the tools, processes, and systems that supported discipline, rigor, and resilience in the management of the large and complex project. He considered how these tools, processes, and systems had slowly worked to eliminate skepticism both within the project team and at the corporate office; how they had created an alignment across functions and between the potential of the project and the reality on the ground; how they had surmounted conflicts of interest and useless cycles of blame for past mistakes; and how they had endured surprises that emerged almost every day in the complex project.

While some people attributed Paulo's success to date to his personal leadership style, Paulo knew that it was actually attributable to a small team that built systems to mobilize attention and

focus all employees on one common objective: achieving FOOS by November 30, 2014. Instead of treating "inside the fence" (i.e., financial and construction) and "above ground" (e.g., legal, political, community, environmental and government) risks separately, both types were now addressed together. The progress to date in achieving the ultimate goal of FOOS was to structure and rigor, not personality.

But the systems alone weren't enough. Similar structures had been developed elsewhere and failed. In order to succeed, those systems required support and reinforcement. The question of which supporting and reinforcing elements had made a difference intrigued Paulo as he reflected on the achievements to date, and on the challenges in the next nineteen months and beyond.

A Complex Project

The Minas-Rio project was a project of massive scale and complexity. Close to six billion tons of iron ore would be mined over 45 years in an open pit configuration. The beneficiation plant, in which impurities were removed to produce higher grade ore, would have to be powered by a newly constructed 230 kV transmission line. Three thousand tons of iron pellets suspended in concentrate would travel through the world's

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Some of the values and numbers presented throughout the case are disguised or should be considered approximate and may not represent actual values or costs. Statements and opinions expressed in this case are those of the authors. They do not express the opinions of the Wharton School, University of Pennsylvania, the International Finance Corporation, Anglo American Iron Ore Brazil or Anglo American plc.

longest slurry pipeline at a speed of 6 km/hour, taking a total of four days to reach the port facility powered by its own, custom-built 138 kV transmission line. The 529-km pipeline traversed 33 municipalities, spanning the states of Minas Gerais and Rio de Janeiro, and land previously owned by more than 1,500 different landowners. At the port, after filtration to separate the water from the iron ore, up to one million tons of iron ore could be stockpiled before being loaded in a 30-hour process onto vessels with a carrying capacity of 180,000 tons each, which would then transport the iron to China and other markets. All told, construction would require 170 million hours of labor, 19,000 tons of steel, 35.6 million cubic meters of earth works, 1.5 million meters of cable and 4,100 vehicles that would travel four million kilometers per month. See Exhibit 1 for a visual representation of the project scope; for a video summary, click here.

Despite the complexity of the project, the mine was perceived as highly attractive when it was first projected in 2006. Though the iron ore was not particularly high grade (37%), it contained few contaminants and was soft, which made it relatively easy to crush and float and thus reduced the marginal cost of production. The use of a slurry pipeline would also substantially lower the marginal cost of production as compared to the more traditional choice of building and operating a dedicated railway. According to 2006 financial disclosure documents of the then-owner MMX Corporation, which were the first to detail the project, the estimate for construction costs was \$2.03 billion, with operations forecast to commence at the end of 2009. The timing was fortunate, as spot prices for iron ore were at historic highs. (See Exhibit 2) and, at current forecasts, Minas- Rio was a low-cost mine (See Exhibit 3).

The challenges of meeting the 2009 deadline and bringing ore to market during the commodity boom were substantial. Even if Minas-Rio had been a greenfield project under development by a major mining company in the United States or Australia, the challenges would have been daunting. The challenges were made even greater in this case by the mine's location in the heart of an historical ecotourism region in rural Brazil and the fact that Anglo American, a staid industry leader, had acquired the project in the midst of development from Eike Batista, a bombastic Brazilian billionaire.

Politics: National, State, and Local

National Politics

Brazil is an “indissoluble union” of states, municipalities, and the federal district, which constitute the three levels of government.¹ Each of the 26 states possesses a unicameral legislative assembly made up of elected members known as “state deputies.” The government in Brazil’s 5,000+ municipalities function in a similar manner to those of the states, with an executive branch led by a mayor and a unicameral legislative branch. However, the municipalities are treated as part of the Brazilian Federation, and not just as dependent entities of the states.² Brazil’s political system is highly fragmented with 35 registered political parties, but four in particular stand out as major forces in politics: the Workers’ Party (PT), the Brazilian Social Democracy Party (PSDB), the Brazilian Democratic Movement Party (PMDB), and the Democrats (DEM).

¹“Government: Brazil,” CIA World Factbook, accessed February 29, 2016, <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html>

²“The sub-national level- States and Municipalities,” City Mayors, accessed March 3, 2016, http://www.citymayors.com/government/brazil_government.html

Brazil, colonized by the Portuguese in 1500, has a long political history involving two major European colonial powers, two military dictatorships, and a populist movement. Brazil declared its independence in 1822 and the monarchy was abolished in 1889. The first of the two military dictatorships began in 1930 when Getulio Vargas carried out a bloodless coup d'état, placing the nation under authoritarian state control while also initiating a social welfare revolution, including a reformation of the laws regulating industry. Vargas was ousted in a military coup in 1945, beginning the populist era during which Brazil achieved rapid economic growth spurred by state intervention in industry and the economy.

The second military era began in 1964 when left-wing President Goulart was ousted in a military coup, ushering in a period of military rule characterized by repression and continued rapid economic growth based on government ownership of key economic sectors. The return to democracy came in 1985, when Tancredino Neves was elected as first civilian president in 21 years. Neves died before his inauguration, and his vice president Jose Sarney served as president during the ensuing economic crisis. Sarney introduced the Cruzado Plan, which froze prices and wages in an effort to control inflation. Prices soared after the freeze was lifted, throwing Brazil into a sustained recession with soaring external debt.

Brazil's economic woes continued from 1990 to 2003. After a series of unstable presidencies, Fernando Henrique Cardoso was elected president in 1994, and he held this position until 2003. Cardoso implemented the Plano Real, an economic reform plan that managed to permanently rid the country of its excessive inflation, in part by replacing the discredited old currency and also by privatizing many public services and state-owned companies. Cardoso

was also credited with tackling Brazil's massive social and economic inequality through various social programs.

At the end of 2002 Luiz Inácio Lula da Silva was elected president, after three failed attempts at election. Lula was a founding member of the Workers' Party (PT), a center-left party launched in 1980 by a heterogeneous group made up of militants opposed to Brazil's military government, trade unionists, left-wing intellectuals and artists, and Catholics linked to liberation theology.

Since then, the PT has replaced its revolutionary commitment "to changing the power structure in Brazil with a more pragmatic, social-democratic platform."³ After assuming office in 2003, the PT became the largest party in both the Federal Chamber of Deputies and the Federal Senate.

Lula was one of the most popular politicians in Brazil's history, leaving office with approval ratings of over 90%.⁴ He led the nation through the global financial crisis without a single bank failure, and he even achieved a budget surplus⁵ after the economy quickly began to grow again. Lula also implemented key social welfare programs aimed at eradicating the widespread income and wealth inequality, and he remained committed to prioritizing the poor and defending ethical government.⁶ He repeatedly raised the minimum wage, pumped billions into

³Profile: Luiz Inacio Lula da Silva," *BBC News*. October 29, 2011, accessed February 29, 2016 <http://www.bbc.com/news/world-latin-america-10841416>

⁴"Luiz Inacio Lula da Silva Fast Facts," *CNN*. October 16, 2015, accessed February 29, 2016 <http://www.cnn.com/2013/08/05/world/americas/luiz-inacio-lula-da-silva-fast-facts/>

⁵"The Most Popular Politician on Earth," *Newsweek*. December 31, 2010, accessed February 29, 2016 <https://web.archive.org/web/20101229032256/http://www.newsweek.com/2009/09/21/the-most-popular-politician-on-earth.html>

⁶"Profile: Luiz Inacio Lula de Silva."

social programs such as Bolsa Familia, the state's largest family grant program, and "can reasonably claim to have helped reverse Brazil's historic inequalities."⁷

Dilma Rousseff, also a member of the PT and former Chief of Staff to Lula, succeeded Lula to become Brazil's first female president in 2010. Rousseff was supported by her coalition of nine political parties, collectively known as "For Brazil to Keep on Changing." Rousseff ran a campaign on promises to harness oil and boost the economy and had steady approval ratings of around 65% during the majority of her first term.⁸

State Politics

The Minas-Rio project spanned two states, Minas Gerais and Rio de Janeiro. Minas Gerais is a landlocked state in western Brazil. It is the second most populous state in the country, with the third largest economy and the fourth largest geographic area. Mining has long played a critical role in the state's economy, though agriculture remains the largest employer. Minas Gerais is governed by a republican system including three branches: an executive branch led by the governor, a legislative branch led by a unicameral legislative assembly (known as the State "ALMG," and a judicial branch. The state is further subdivided into 853 municipalities, increasing the political system's complexity.

To the east of Minas Gerais lies the state of Rio de Janeiro, the third largest state by population and second largest by economic output, but the smallest by area. It too is governed by a republican system including three branches: the executive branch led by the governor, the legislative branch led by the Legislative Assembly of Rio de Janeiro (ALERJ), and the judicial branch led by the Court of Justice of the State of Rio de Janeiro.

Local Politics

Though the Minas-Rio project impacted main municipalities and myriad communities, two of particular note were Conceição do Mato Dentro (CMD) and Serro, which were both relatively large towns close to the construction site in Minas Gerais. The former is a municipality located 167 km from the state capital of Belo Horizonte. The estimated population of CMD as of 2015 was 18,198 inhabitants.⁹ CMD is considered to be the region's capital of ecotourism and has several natural and historical tourist attractions. No fewer than six mayors have ruled it since 2008.

Serro is a municipality located to the north of Conceicao de Mato Dentro along the highway from Belo Horizonte. The estimated population of Serro as of 2013 was 21,419 inhabitants. The city was founded in the early 18th century and quickly became the regional center for gold mining, followed by diamond mining. During the course of the 19th century, however, many of the mines' resources were exhausted, leading to long-term economic decline. Since then, farming (primarily dairy) and tourism have replaced mining as the foundation of the municipal economy. Serro has a rich historic and cultural heritage and became famous for the cheese (Queijo do Serro) produced by its farmers. It was the first Brazilian city designated as a national heritage site in 1938.

See Exhibit 4 for a visual representation of the shifting party control of the national, regional, and key local governments.

⁷Ibid.

⁸Wure Davies, "Rousseff's woes worsen as Brazil's protesters smell blood," *BBC News*, August 17, 2015, accessed March 1, 2016 <http://www.bbc.com/news/world-latin-america-33955154>

⁹"Conceicao do Mato Dentro," IBGE, accessed March 14, 2016 <http://cidades.ibge.gov.br/xtras/perfil.php?codmun=311750>

Economy: National, State, and Sectoral

National Economy

Brazil is a middle-income country with a diversified economy including agribusiness, mining, manufacturing and service sectors, with most industry located in the southern and southeastern regions. It is among the leading emerging-market economies, or BRIC nations¹⁰, and in 2010 surpassed Italy to become the seventh largest economy globally.¹¹ Brazil is the fifth largest country in the world, by both population (203 million) and landmass (3.29 million square miles), and has significant offshore oil reserves that include the western hemisphere's largest discovery since 1976. The country also boasts the world's second largest iron ore reserves, and is the world's second largest producer of soybeans and third largest producer of corn.¹² In 2010, Brazil's nominal GDP grew at a rate of 7.6%, and the nation had initially escaped the global financial crisis unscathed. However, nominal GDP growth slowed drastically to 2.7% in 2011, 1.0% in 2012, and 2.3% in 2013 as the commodity boom slowed and transformed into a bear market (see Exhibit 5).

Brazil's government has traditionally played an interventionist role in the domestic economy promoting import substitution up through the early 1990s. In the four decades preceding the 1990s, government investment was key to financing the country's economic development in such areas as steel production, oil exploration, petrochemicals, mining, and public infrastructure. However, the foreign debt crisis of the late 1980s and the resultant scarcity of public financing spurred the government to privatize key sectors such as mining, petrochemicals, and telecommunications in the 1990s. The privatization program was a critical factor in improving Brazilian industry

and triggering significant foreign direct investment (FDI).¹³ Mining constitutes less than 5% of Brazil's GDP and 17% of the country's exports.

Brazil is a moderate performer among countries where Anglo American operates, as reflected in the key economic and social performance indicators tracked by the company. In 2013, Brazil ranked 130th on the World Bank's Ease of Doing Business Index, continuing a steady erosion since the index's debut in 2006, and 56th on the World Economic Forum's Global Competitiveness Index. The country ranked 91st on the Institute for Economics & Peace's Global Peace Index, and 75th on the United Nations' Human Development Index. In terms of corruption, Brazil ranked 72nd according to Transparency International, and ranked 90th in freedom of the press according to Freedom House.

State Economy

The states of Minas Gerais and Rio de Janeiro are Brazil's third and second largest economies, respectively. In 2012, Minas Gerais had a GDP of R\$ 403,551,317, constituting 9.2% of national GDP,¹⁴ and was home to roughly 20 million people. Minas Gerais has a thriving industrial economy: it is the largest producer

¹⁰BRIC nations includes Brazil, Russia, India and China

¹¹KPMG, *Brazil: Country Mining Factsheet*, accessed March 5, 2016 https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Brazil_Mining_Factsheet.pdf

¹²David Biller "Brazil's Highs and Lows," *Bloomberg Views*, February 5, 2016, accessed March 3, 2016, <http://www.bloombergvew.com/quicktake/brazils-highs-lows>.

¹³Ernst & Young and Rio Negócios, *Doing Business in Rio*, accessed March 5, 2016 [http://www.ey.com/Publication/vwLUAssets/Estudo_Doing_Business_In_Rio_2014_EY_Brasil/\\$FILE/LR_doing_business_in_rio.pdf](http://www.ey.com/Publication/vwLUAssets/Estudo_Doing_Business_In_Rio_2014_EY_Brasil/$FILE/LR_doing_business_in_rio.pdf)

¹⁴"Brazil Regional Dataset, May 2015," Knoema, accessed March 4, 2016 <http://knoema.com/wvvo/kg/brazil-regional-dataset-may-2015>

of steel, cement, and iron ore in Brazil,¹⁵ and accounts for more than half of national mining production. It is also the second largest exporter in Brazil, with the bulk of its income growth driven by the exportation of iron ore, soya, and other crops and resources.¹⁶

The state of Rio de Janeiro is an important industrial, financial, and commercial center. In 2013, it had GDP of R\$ 504,221,371,000, constituting 11.48% of national GDP,¹⁷ and was home to nearly 16 million people. More than half of the investments received by the state are in oil and gas.¹⁸ Rio de Janeiro has also been responsible for much of the oil and natural gas production in Brazil during the past decade. Rio de Janeiro is characterized by a high population density, with nearly 75% of its residents living in a metropolitan area. The state also has a well-developed transportation and logistical network, with over 27,000 km of roads, 3,000 km of railways, seven ports, and 12 airports.¹⁹ In 2009, the state of Rio de Janeiro surpassed the state of São Paulo to become the leading destination for FDI in Brazil.²⁰

Mining Economy

The history of commercial mining in Brazil stretches back at least 500 years, but it is only in the past 15 years that sustained progress has been made toward linking commercial mining with sustainable economic, social, and environmental development, and even that progress remains rudimentary. Brazil is a leading producer of minerals, and mining products represented more than 50% of its exports in 2010, during which it was the top global producer of niobium and tantalum, the third largest producer of iron ore and rare earth minerals, and the fifth largest tin producer.²¹ The most important mining states in the country are Minas Gerais (48% of production), Pará (28%) and Goiás (5%).

As of 2011, there were 8,870 mining companies operating in Brazil, with most (3,609) concentrated in the southeast. The Brazilian mining market, particularly the iron ore market, is dominated by approximately fifteen domestic and international mining companies, including VALE, Anglo American, MMX, Samarco, AngloGold Ashanti, and BHP Billiton (partial owner of Samarco).²² Brazil's other leading mineral commodities are dominated by a relatively small group of firms, including VALE, Anglo American, Alcoa, and CBMM.²³ Several of these companies are members of both the International Council on Mining & Metals (ICMM) as well as the Brazilian Mining Association (IBRAM), including Anglo American and BHP Billiton, and have sought third party assurance of their compliance with ICMM and IBRAM guidelines to ensure sustainable operational practices.²⁴

¹⁵ Minas Gerais State Investment Promotion Agency – INDI, *Getting to Know Minas Gerais Economy*, accessed March 4, 2016 <https://www.bio.org/sites/default/files/Sept%2010%20-%20Company%20Presentation%20-%2014h15%20-%20INDI.pdf>

¹⁶ Olavo Machado Júnior, "Sustainable Innovation: The Third Wave of Economic Growth in Minas Gerais." Presentation at the United Nations World Urban Forum 6, Naples, Italy, September 2012.

¹⁷ "Brazil Regional Dataset."

¹⁸ Olympic Games Impact Study, *Initial Report to Measure the Impact and the Legacy of the Rio 2016 Games*, accessed March 5, 2016 http://www.rio2016.com/sites/default/files/parceiros/ogi_rio_2016_r1_eng1.pdf

¹⁹ Thayne Garcia and Luciana Benamor, *Rio de Janeiro: The Best Place for Your Company in Brazil*, accessed March 5, 2016 <http://download.rj.gov.br/documentos/10112/2484562/DLFE-78819.pdf/BusinessEnvironmentinRio.pdf>

²⁰ Thayne Garcia and Luciana Benamor, *Rio de Janeiro: The Best Place for Your Company in Brazil*, accessed March 5, 2016 <http://download.rj.gov.br/documentos/10112/2484562/DLFE-78819.pdf/BusinessEnvironmentinRio.pdf>

²¹ "Snapshot of the Mining Industry in Brazil," AWEX, accessed March 14, 2016 <https://www.awex.be/fr-BE/Infos%20march%C3%A9s%20et%20secteurs/Infosmarch%C3%A9s/Br%C3%A9sil/Documents/Snapshot%20of%20the%20mining%20industry%20in%20Brazil%201.doc>

²² "Brazil Mining," *Engineering and Mining Journal*, February 10, 2011, accessed March 15, 2016 <http://www.e-mj.com/features/850-brazil-mining.html?showall=&start=1>

²³ "Brazil Mining."

²⁴ "Members' Performance Table," ICMM, accessed March 14, 2016 <http://www.icmm.com/document/8544>

Eike Batista

Eike Batista was born in 1956 as one of three children of Eliezer Batista da Silva, who was minister of mining and energy at the time and would be again in the 1990s, serving in the interim as the CEO of Brazil's largest mining company, Vale. By the time that Batista turned 23 in 1979, he had become a millionaire from trading gold and diamond commodity futures, and in 1980 he launched a gold mining company, TVX. In 1983 he founded EBX, the umbrella under which he would establish all of his other companies. Between 2004 and 2012, he added six public companies under the EBX umbrella – OGX (oil), MPX (energy), LLX (logistics), MMX (mining), OSX (offshore industry), and CCX (coal mining).²⁵ The total market capitalization of Batista's business was over \$20 billion, and by 2012, Batista was estimated to have a net worth of \$35 billion²⁶ and *Forbes* ranked him as the eighth richest man in the world. Determined to ascend to the number one spot, Batista issued a warning on the BBC to the current occupant,

Mexican tycoon Carlos Slim: "I told Carlos Slim that he should clean both of his rear mirrors, because I would not warn him on which side I was going to overtake him."²⁷

The flamboyant Batista lived out his billions to the fullest, entering and winning speedboat contests around the world and purchasing a superyacht, several private jets, and a luxury car collection. He became something of a Brazilian socialite and celebrity when he married supermodel, actress, and carnival queen Luma de Oliveira in 1991 (the couple divorced in 2004). During the height of his wealth, Batista seemed "the perfect emblem" for the new Brazil – "tough, frighteningly ambitious, politically savvy, and willing to take outside risks."²⁸

However, such wealth was shortlived and by the end of 2012, Batista had lost two-thirds of his fortune, as his oil company OGX lost 40% of its value and his mining concern MMX received a \$1.8 billion overdue tax bill. The cash-strapped billionaire quickly made a deal with Abu Dhabi's sovereign fund Mubadala Development Company, exchanging 5.63% of EBX for a \$2 billion investment in the company. The plummeting of commodity prices in recent years certainly hastened EBX's demise, with EBX's shares losing \$60 billion in value from their peak in 2012 to mid-2013.

Batista and his companies had long had a questionable history with regard to their business dealings. In his early days of gold trading in the 1980s, Batista would reportedly go into the jungle and show the village chiefs an outdated newspaper displaying a price of gold lower than its current standing, pay the village chiefs in the local currency, which was dropping, and then sell the gold back in Rio hard currency, giving him large margins, though with very questionable ethics.²⁹ By 1999, both Batista and TVX had left a lot of carnage in their wake, including, according to one report, "burned TVX shareholders, fired executives,

²⁵Lisa Mahapatra and Linette Lopez, "The Fabulous Life of Eike Batista – The Brazilian Who Is Risking It All To Become Richest Man in the World," *Business Insider*, February 5, 2013, accessed March 15, 2016 <http://www.businessinsider.com/who-is-eike-batista-2013-2?op=1>

²⁶Bloomberg's billionaire index.

²⁷Gerardo Lissardy, "Eike Batista, Brazil's Fallen Billionaire," *BBC News*, July 11, 2013, accessed March 15, 2016 <http://www.bbc.com/news/world-latin-america-23262926>

²⁸Mac Margolis, "The Brutal Fall of Brazilian Billionaire Eike Batista," *The Daily Beast*, June 25, 2013, accessed March 15, 2016 <http://www.thedailybeast.com/articles/2013/06/25/the-brutal-fall-of-brazilian-billionaire-eike-batista.html>

²⁹Paul Kaihla and Barry Fitzgerald, "The boy from Oz goes to Rio for the force," *The Age*, June 15, 1999.

acid relations with former partners, and at least one corpse (a peasant miner, shot by his bodyguards in Brazil after a heated argument).”³⁰ At the time, Batista lamented the losses, including a drop in TVX’s stock price from \$C15.50 in 1996 to \$C1.38 in 1999, stating, “My reputation is tarnished because I was not very successful with the operational side of things because I had bad executives.”³¹ Batista resigned from TVX in 2001 and put the company up for sale after plans for a gold mine in Greece went bust due to political opposition and the price of gold plummeted.³² Further, MMX (Batista’s mining company) was fined several times for failure to follow environmental regulations and, in 2008, a group of Tupí-Guaraní Indians accused his company LLX (logistics) of bribery and coercion to force the Indians off the land.³³ Additionally, police raided his offices and home in 2008 as part of an investigation in allegations of fraud, tax evasion and smuggling, though he was later cleared of any wrongdoing. Batista’s most recent legal problems began in October 2012 when he promised to inject \$1 billion into OGX if requested to by management, a pledge which propped up the company’s stock for a few months. By the next May, however, Batista began selling millions of his shares. OGX acknowledged that its key petroleum fields were economically unviable in July 2013, and when management requested the promised \$1 billion injection from him in September 2013, Batista claimed that a change in the company’s business plan had released him from his commitment. OGX defaulted on \$5.8 billion in debt the following month and filed for what became Latin America’s largest-ever corporate bankruptcy, wiping out the shareholders in spite of a reorganization.

Batista had developed and honed key political relationships that facilitated the rise of his business empire, including ties with former presidents Luiz Inácio Lula da Silva (“Lula”) and Dilma Rousseff.

The relationship between Batista and the PT government was symbiotic, as the government was also a key supporter of Batista. Lula and Rousseff saw him as “a new kind of business mogul who could spearhead the development of vital sectors . He became strategically important for the government . Brazil really didn’t have a national player to invest in these areas. So they bet on him, no matter how flamboyant or how much of a self-promoter he was.” This support translated into licenses for vast, controversial new projects, as well as \$4.7 billion in loans provided by the government’s development bank BNDES.³⁴ According to one report, Batista was, in many ways, the PT government’s “pet” entrepreneur, whose meteoric rise gave credibility to PT’s claims that its statist economic policies were simultaneously market friendly.³⁵

MMX's Disorganized Rush to Permit

The stakeholder engagement strategy employed by Batista’s team in its effort to meet the aggressive 2009 deadline for the Minas-Rio project was highly confrontational and disorganized, and focused on moving as fast as possible. The team didn’t have a proper budget or schedule, or even the correct permits. They began construction anyway, making unwritten deals and promises and failing to coordinate their activity more generally. The environmental team only worried about environmental issues, the land management team focused only on land, and the construction focused exclusively on construction. In reality, all three were parts of a tightly coupled system.

³⁰“The boy from Oz goes to Rio for the force.”

³¹Ibid.

³²“The Fabulous Life of Eike Batista – The Brazilian Who Is Risking It All To Become Richest Man in the World.”

³³Heather Campbell, “Eike Batista,” *Britannica*, accessed March 15, 2016, <http://www.britannica.com/biography/Eike-Batista>

³⁴Juan Forero, “Midas Touch Can’t Save Brazilian Billionaire’s Empire,” *The Washington Post*, August 12, 2013.

³⁵Joe Leahy, “Fall of Brazil’s Batista Embarrasses President Dilma Rousseff,” *Financial Times*, November 4, 2013.

Land access was a huge issue given the footprint of the project. Batista was a shrewd negotiator throughout the acquisition process, allegedly using multiple front companies to obtain the necessary land under false pretenses (e.g., a livestock company claiming to want to use the land for pasture). Batista may have believed that revealing that a mining company was purchasing the land would lead to greater scrutiny and higher prices. Where residents had to be relocated, Batista allegedly cut corners on their replacement homes, leading to community resentment. Along the pipeline route, there were numerous instances in which Batista allegedly claimed to have secured a commitment from a landowner, but that commitment was later found to have been made by someone other than the title owner or otherwise contested.

The mine, pipeline, port, and electricity transmission line all required separate permits for their feasibility studies, construction, and operations. The permits for the mine and the transmission line came from the state of Minas Gerais where mining was a well-established industry. The permits for the port were issued by the state of Rio de Janeiro, which had less experience with the mining sector than Minas Gerais due to its traditional focus on the petroleum industry and tourism development. Owing to the cross-border nature of the project, the pipeline permits were issued by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the federal environmental regulator. A typical mining project in Minas Gerais would take eight years to move through IBAMA's three-part licensing process before it could begin operations. Each license would typically contain dozens of conditions that had to be met for the license to remain valid. Minas-Rio, however, was substantially more complex than the average project.

By 2006, Batista claimed to have preliminary permits for all four parts, statements of support

from the six most affected of the 33 municipalities whose approval was required and letters of intent from 200 of the 1,500 landowners. Even if this characterization had been true, the target date for operations of 2009 seemed wildly optimistic. In reality, the first preliminary license (for the port) was obtained in December 2006. None of the other permits was actually obtained by Batista, making the 2009 target virtually impossible to obtain.

In order to secure local approval for the mine, Batista allegedly made promises regarding jobs and public services including transportation, health and other social infrastructure. However, Batista's detractors claimed that he neither recorded these commitments nor made any efforts to deliver upon them, further fueling resentment by external stakeholders.

Communities along the route felt slighted and environmentalists were concerned about the impact of construction on the limited surviving rain forest in the area. Other stakeholders alleged coercion, oppression, and intimidation by Batista with the complicity of the Brazilian government. The environmental licensing process also revealed problems and mismanagement, including the weakness of technical studies on the socio-environmental, socioeconomic, and archaeological impact of the project.

Acquisition by Anglo American

In April 2007, Anglo American acquired 49% of the Minas-Rio project for \$1.15 billion. In August 2008, the company spent \$5.5 billion to acquire the remaining 51% of Minas-Rio, along with 49% of LLX, which controlled the port facility, and 70% of operations at the Amapá project. The Minas-Rio project would diversify the company's portfolio away from diamonds and platinum, which represented 40% of its assets, and away from South Africa, where 80%

of its assets were located. Iron ore was perceived as lower risk than these other commodities with the growing demand in emerging markets for infrastructure development (e.g., train tracks) as well as medicine, cosmetics, engineering, construction, paint, and numerous other products.

Company Background

Anglo American is one of the world's largest multinational mining companies, with operations on every continent. Sir Ernest Oppenheimer founded the company in 1917 in South Africa. Since then, the company has continued to expand and diversify. It is now the largest platinum producer, as well as a leading producer of diamonds, copper, nickel, coal and iron ore. After Ernest's son Harry assumed leadership in 1957, Anglo American expanded beyond South Africa for the first time, acquiring Canada's Hudson Bay Mining and Smelting Company (1961) and a series of international acquisitions followed including in Botswana (1969), Brazil (1973), Chile (1980, 1995 & 2002), Colombia (1997) and Australia (2000). It spun off its gold producing assets into AngloGold in 1998 and divested those assets over the period 2006-2009. By contrast, Anglo American increased its stake in De Beers, a world-renowned diamond producer, buying out the founding Oppenheimer family.

In 2013, Anglo American had revenues of approximately \$29 billion and a net loss of \$1.47 billion. Revenues had been roughly constant since 2005 with the exception of 2009, which were negatively impacted by the economic crisis. Profits fluctuated wildly between losses in 2009 and profits of between \$3.5 billion and \$7.0 billion in the other years. Employment was in relatively steady decline, from a peak of more than 250,000 in the 1990s to 100,000 employees by 2013 (see Exhibit 6).

Anglo American enjoys a strong reputation in the area of stakeholder engagement. Harry Oppenheimer had personally funded opposition to the apartheid regime in South Africa, and Anglo American similarly advocated for liberalization, including making public a scenario analysis which detailed two paths forward for the company and the country: a low road characterized by “intransigence and conflict coupled with a stagnant and isolated economy” and a high road characterized by “political negotiation and compromise at home and acceptance that South Africa would need to join the global free market mainstream if sustainable development was to be possible.” The publication of these scenarios, coupled with the company's economic importance, led Anglo American managers and officers to direct involvement in the peace accord negotiations in 1993-94. Michael Spicer, Anglo American's executive vice president for corporate affairs at the time, summarized the company's perspective:

“Yes, of course, there's self-interest involved ... But let us borrow the phrase, enlightened self-interest. We didn't believe in the 1980s, and we don't believe now, that poverty, instability and inappropriate economic policies are all conducive to business. So we've always been driven by this idea of socioeconomic development that is sustainable, and political configurations that are stable.”

Anglo American was a pioneer in providing HIV treatment for its workforce in South Africa, and it was also among the original signatories in 2001 for a new industry group, the International Council on Mining and Metals, which was dedicated to improving the industry's environmental and social performance (see <http://www.icmm.com>). Efforts in this area intensified after the 2002 appointment of Sir Mark Moody Stuart as

chairman of the board. Sir Mark was credited with transforming Royal Dutch Shell Group's approach to external stakeholders and initiated a similar process at Anglo American. An early output of this process, in 2003, was an internal toolkit called the Socioeconomic Assessment Tool (SEAT) for use at Anglo American's projects and operations. The tool could be used to gauge the expected impact a mine in a given socioeconomic context, mitigate negative effects, enhance positive impacts, and engage the communities throughout this process. The tool was expanded over the years, with new versions introduced in 2007 and 2012. Beginning with the 2007 update, Anglo American made prior versions public. In 2007, an external evaluation by Business for Social Responsibility (BSR) concluded that SEAT represented "international best practice in sustainable community development," offering "a more comprehensive level of detail and guidance for identifying and addressing socioeconomic impacts, while establishing a leadership practice in terms of accountability and transparency."

Initial leadership of Anglo American's Iron Ore Brazil

After the acquisition of the Minas-Rio project in 2007, Anglo American's Iron Ore Brazil initial leadership team was headed by Alexandre Gomes, an engineer who had previously worked under Anglo American CEO Cynthia Carroll at Alcan Aluminum in China. Alexandre had a reputation for high standards and compliance with international environmental and social standards. After only a few months, however, he was moved to manage health, safety, sustainability and government affairs, and Bernie Pryor, who had served as the head of business development, replaced him. Pryor had previously worked in operations in a number of African mines but spoke no Portuguese. He appointed Stephen Hall as Project Director.

Hall's background was in the London Underground rather than iron ore, and Hall also spoke no Portuguese. He advocated the use of Prism, a sophisticated, data-driven software tool for the financial management of large-scale projects.

Within a few months, Rick Waddell, who had worked across South America for Enron and the BG Group after leaving a decade-long career in the US Army, replaced Pryor. Waddell was fluent in Portuguese, and he had successfully supervised the construction of a 3,150-km gas pipeline between Bolivia and Brazil at Enron. Less than a year later, in August 2009, Waddell was called up from his reserve status to rejoin the US Army in Iraq.

Waddell was replaced by Stephan Weber, a metallurgic engineer trained in Brazil who had first worked on the manufacture of steel furnaces and then shifted to iron ore mining in Western Australia for Rio Tinto. Under Weber's leadership, some progress was made in securing the mining permit and installation licenses for the mine, beneficiation plant and tailing dam, as well as easements for land access for the pipeline. Weber also signed a fixed 25-year tariff agreement for the use of the port at Açú.

Gomes left the company in early 2011 and his portfolio of corporate affairs, safety, health and environment was taken over by Pedro Borrego, who since 1989 had worked at Anglo American primarily in logistics and administration, but most recently in human resources. At the same time, a new chief operating officer, Rodrigo Vilela, was hired.

The new team had a herculean task: to overcome existing siloes by integrating and coordinating previously autonomous units, while at the same time interacting with hundreds of external stakeholders at the community, state, and federal levels. Moreover, the "English team" in Rio de

Janeiro and the “Brazilians” in Belo Horizonte were constantly in conflict. Beyond the challenge of communications, there were also important differences in organizational culture as members of the former group were also outsiders to Anglo American in comparison to their counterparts in the latter.

Initial Project Management Strategy by Anglo American Iron Ore Brazil

The Anglo American Iron Ore Brazil team rapidly began to appreciate the complexity of managing the Minas-Rio project and the amount of unfinished work left to do. The leadership team was highly dysfunctional, with split accountability and rigid siloes. Scheduling was not coordinated across functions, nor could managers easily access relevant information from other functions. There was no common understanding of the critical challenges, no clear idea of the sequences of milestones necessary to achieve FOOS, and no incentives to get there. Given these issues, there seemed little chance that the company would be able to sign and implement 450 permits, 92 environmental management plans, and 160 public agreements with over 80 public institutions, and then meet over 2000 agreed conditions.

The pipeline route alone traversed 33 municipalities and 1500 separate landowners, and required 300 separate licenses in addition to land easements with each property owner. The leadership team considered using a legal route akin to eminent domain, but ultimately decided to play by the book and negotiate individually with each landowner. The first challenge was often to identify the true landowner through a search of tax records, divorce proceedings, and other public documents, after negotiations for access could begin. The approach was to proceed with three rounds of negotiations, often with a threat of modifying the pipeline route to avoid a

recalcitrant counterparty. At the end of this process, Anglo American would seek access through the eminent domain-like route if necessary.

A team of 30 people working in a conference room that they had christened the “sausage factory” tried to coordinate the project management process among engineers who had to conduct surveys; a legal team that had to secure permits and approvals; environmental teams that had to conduct studies; and construction teams that, after all the others were complete, could begin work on the construction itself.

As this process proceeded unevenly, a decision was made to work along the route where possible, rather than to start at both ends and meet in the middle. Though expedient, this approach increased the negotiating power of some holdouts, raised costs substantially, and led to questions of equitable treatment by different landowners and communities.

The permitting process itself required extensive cross-functional coordination. Approximately 20 judges were involved, as well as prosecutors and town councils. The prosecutors were highly capable technocrats who were responsible for investigating all aspects of the project and overseeing the licensing process. This local system operated in parallel with the national environmental permitting process.

Anglo American worked slowly to change the basis for discussion with external stakeholders, from one of confrontation to a more cooperative focus on how to reach the common goal of building a world-class project according to Brazilian rules. Doing so required that Anglo American let external stakeholders in, admitting that they had power and, in some cases, ceding power to them. Anglo American had to understand their requirements. This

meant forging personal relationships not just between Anglo American's lawyers and government officials, but also between managers and politicians. By involving the whole company, the government relations team of Anglo American sought to convey a different message regarding the basis for the relationship: it was not just legal compliance but core business strategy. Yet, there were no systems or procedures in place to ensure that all employees implemented this new strategic approach, and the environmental and licensing team lacked the human resources to realize that strategy.

Delays and Cost Overruns

Claims by MMX that operations were possible in 2009 were likely never realistic. Members of the Anglo American leadership team sincerely believed that it might be possible to commence operations in 2011 or 2012. As they learned more about MMX's casual approach to stakeholder relations — which fell drastically short of Anglo American's industry-standard practices — the gaps, in the due diligence process became evident and delays and cost overruns mounted.

The remaining preliminary permits and those necessary for construction permits took many months longer than expected to acquire. The construction permit for the port was first granted in May 2007. The preliminary permits for the pipeline followed in August 2007, but the pipeline construction permits were not obtained until July 2008, and the preliminary permits for the mine and beneficiation plant did not come through until December 2008. The construction permits for the mine took another year for phase I (December 2009) and yet another for phase II (December 2010). Despite the granting of these permits, construction was still unable to begin due to isolated environmental and social protests. In 2011, workers demanding higher wages and improvements to their housing,

together with farmers protesting damages to their crops and water shortages, repeatedly blocked access to the port, causing delays to construction.

Though at the time of acquisition Anglo American had continued to cite Batista's boast that it would be possible to begin production by July 2009, a revised target of March 2010 soon emerged, and regulatory filings suggested that this target rapidly slipped to December 2011. In October 2009, the deadline was further postponed until June 2012, and in December 2009, it was pushed back again to September 2012. By early 2012, the deadline had slipped more than another year to December 2013.

The initial forecasts of \$2.9 billion in costs were raised to \$3.6 billion in October 2009, \$3.8 billion in December 2009 and to \$5.8 billion by the end of 2010. Partly, the increase in costs reflected an increase in forecast total reserves and an expansion of peak production to 90 million tons. However, some of the cost increases were due to the increased cost of land acquisition including overcoming a series of legal injunctions and higher than expected costs in meeting permitting requirements. Inflation and damage caused by harsh rains and flooding in December 2012 also caused cost escalations.

Some analysts began to question the attractiveness of the mine, suggesting that with cost escalations, the break-even price had risen to \$71/ton, which didn't include the higher transportation costs to the key market of China. Critical estimates based on rapidly rising shipping rental costs (Anglo didn't own its own ships) suggested that in order to generate a 15% return on capital, Minas-Rio would require a price of \$133/ton to compensate for shipping costs that could be as high as \$26,650/day. The global price surpassed this level in late 2010, rising to a peak of \$190/ton at the start of 2011. However, as economic slowdown around the

world — and particularly in China — mounted, prices tumbled to a low of \$120/ton late in 2011 before recovering slightly.

A New Direction

Facing increasing skepticism from the press — and more importantly, from shareholders — Anglo American CEO Cynthia Carroll decided to make a change in December 2011, appointing Paulo Castellari as the new CEO of Iron Ore Brazil.

Paulo was of Brazilian heritage and grew up in Santo André, São Paulo. He received his undergraduate degree in general management from Fundação Getúlio Vargas in Sao Paulo, and his MBA from London Business School in 2000. Not an engineer, Paulo had a cross- functional background that bred in him a strong sense of how to organize and run a company. In his 17 years of prior mining industry experience, he had served in such roles as commercial director, marketing and business development director and CEO, developing expertise in such areas as marketing and business development, operations, finance and project management.

Paulo had recently left a leadership position in a newly constituted office tasked with integrating best practices across the base metals division and devising a means to transfer and manage these practices across multiple operations. He worked there with Duncan Wanbald, now CEO of base metals and minerals and a member of Anglo's group management committee. In his previous work in the platinum division, Duncan had implemented a centralized Project Management Office (PMO), which he believed had aided in the prioritization and resourcing of cross- functional tasks. Together, Duncan and Paulo spent a great deal of time discussing the features of a successful project management organization, and the design and the rollout of such an office became a central initiative of their "Center of Excellence."

After a restructuring in 2009, Paulo took over the operations of Anglo's phosphates and niobium businesses in Brazil, where he sought to implement the best practices he had studied in the abstract. This initial version of the PMO and supporting system was helpful in prioritizing opportunities to improve the value of the unit leading up to a planned divestiture. Prior to his appointment as CEO, Paulo began his tenure at Iron Ore Brazil as commercial director in May 2011. Both in this capacity and subsequently, when Paulo was transferred into the CEO role of Iron Ore Brazil, he sought to improve on this initial version of the PMO and supporting system. With his integrative and cross- functional approach to project management, and his belief in dependencies between the social license to operate and project success, it was hoped that he could mount a desperately needed rescue.

Mining companies were accustomed to management systems that linked operations and finance. Paulo extended the scope of the best available system to include the elements that were so clearly responsible for delays and cost overruns: licensing, permitting, community affairs, environmental issues, and government relations.

Paulo was a firm believer in the importance of the social license to operate. His Facebook page highlighted his commitment with a graphic depicting a Development Partner Framework emphasizing that a successful mine required shared goals; an ecosystem in equilibrium; and a partnership of companies, communities, and governments who co-inspired, co-collaborated, co- invested, and co-educated (See Exhibit 7). Only through such efforts could mining companies obtain the social license to operate and gain access to land, markets and capital needed for their operations.

Diagnosis, Treatment & Response

Diagnosis

Paulo's new leadership team had inherited a set of highly conflictual relationships both among internal stakeholders and between them and external stakeholders. In addition to the delays and cost overruns already experienced, three new injunctions were filed against the project shortly after he assumed office, halting construction on the beneficiation plant, the transmission line, and the pipeline. Next, there were complaints regarding blasting. The project team couldn't move forward on any front: daily conference calls to discuss the delays were characterized by chaos, and in unstructured conversations, team members blamed each other, raising conflicting facts and interpretations of the best path forward. It became clear that a number of changes were required to achieve a more coordinated approach to the massive challenges ahead. Paulo and his leadership team became increasingly concerned that there was a complete mismatch between the promises made to Anglo American's global headquarters in England on the timing of FOOS and reality in the field.

The project team was dispersed geographically among Rio de Janeiro, Belo Horizonte, and the mine site. Each site seemed to have its own perspective on the schedule and its own strategy for attaining it. Building has commenced, permits were required, people were working, and land was being acquired over 500 kilometers. Negotiations were required with 1,500 separate landowners. Yet the existing team seemed to prioritize issues "inside the fence" over the relationships with external stakeholders. They discounted the negative impact on the community and blamed others for not managing their responsibility to build and maintain social support for his construction.

Beyond the challenges posed by an engineering-centered approach and the sheer scope and complexity of the project, the staff also suffered from the wrong mindset. Every employee was focused on his or her individual target, and every team on its target, but without a sense of how meeting these targets would contribute to the overall success of the project. As a result, the company was in serious trouble. Few appreciated the size of the overall task, or what element was the most critical at any given moment.

For example, when engineers encountered an obstacle to construction, such as a rock that was too large to move, they would propose using an explosive charge and classify it as an emergency. The use of an explosive, however, required a series of permits and approvals involving the legal and environmental teams. The engineers would send these teams an email requesting immediate assistance. However, the teams would have their own priority objectives and timelines, and were often reluctant to rapidly allocate the resources necessary to obtain the required approvals and permits. Such real-time reactions would lead the teams to miss their internal targets and come in over-budget on their financial metrics. As a result, construction would halt for days or even weeks. Capital equipment would sit unused, and workers would be paid for waiting. The engineers would blame the lawyers and the environmental team for not acting sooner, while the lawyers and environmental team would, in turn, blame the engineers for not starting the process sooner. In the end, the target date for completion of the pipeline would again be postponed. Yet, the employees gained no insight into why the delay had occurred and didn't change their behavior so as to share necessary information earlier.

Another example could be found in the process of land acquisition for the pipeline. Here, the previous management team had measured their success according to the percentage of necessary land acquired, which in one sense seemed a reasonable performance metric. However, not all hectares of land were equally important at a given moment in time. As the construction process grew to involve thousands of employees and hundreds of bulldozers, it was of paramount importance to acquire contiguous blocks of land that would allow for construction of large segments of the pipeline, and to fill in the gaps that prevented the completion of such segments and even the transfer of equipment and manpower. Since the different teams involved remained separate, uncoordinated, and focused on their own task and methodology, it was difficult to achieve this goal. The land management team, for example, consisted of trained negotiators focused only on minimizing the cost paid for the necessary land. Drawing on psychology, they worked to develop tactical advantages in bargaining power using subtle people skills. In contrast, the construction team was methodically analytical in its focus on the construction schedule. Also involved was the archaeological permit team, which was focused on government agencies and technical processes. All three needed to cooperate closely in order to avoid costly halts to construction.

The new leadership team quickly zeroed in on a key defect of the existing processes and systems. Though they were working with a world-class project management tool (Prism), this tool failed to include the critical information that was holding up the project. The team managed the data in the tool and viewed these “above ground” risks as exogenous and beyond their control — so they didn’t blame themselves for the shortfalls and found fault with the support staff. The corporate affairs teams, by contrast, blamed operations for not consulting with them, sharing information, and heeding their advice

about the legal process that had to precede their actions. It suddenly seemed obvious: the new leadership team needed to expand the scope of Prism to encompass land acquisition as well as the permitting and licensing processes.

Even to start a conversation on what we should do differently, we needed data.

Paulo Castellari, CEO Iron Ore Brazil

The first challenge was the availability and quality of data.

Vicente Galliez, Head of Legal for Anglo American Iron Ore Brazil and Nickel, Niobium and Phosphates)

We had lots of KPIs and metrics. Had a ton of metrics. Just didn’t know how to use them.”

Joesse Queiroz, Human Resources Manager, Anglo American Iron Ore Brazil

Treatment

The leadership team rapidly started working on an expansion of the existing project management software to encompass the full set of critical risks that were causing delays and cost overruns, and to build a report structure that would allow all managers to access and understand the complex cross-functional dependencies that they were so prone to ignore. In the coming months, a dedicated team of 15 staff would expand the system, which supported the PMO and was known by the same acronym, to encompass more than 20,000 specific tasks that had to be completed before FOOS in November 2014.

The vision was simple: to include every task in a single database that allowed managers to quickly track this information, see linkages with other

functional areas, and ensure coordination with those areas at a high level of performance. For example, a deadline for finishing a tunnel by December 2013 would require land access by December 2012. Everyone should be able to see this linkage well before December 2012, and not only after a challenge emerged sometime in 2013 or 2014. Given sufficient lead time, the land acquisition team would have the grounds and the expectation to ask for help. They could call around to get whatever they needed from the licensing, negotiations, and environmental units because everyone would recognize and agree on the importance of their tasks.

The first draft of the PMO report to support such an integrated vision and strategic responses was ready on March 12, 2012. It remained very much a work-in-progress, with limited integration and numerous placeholders and gaps. The overall project schedule and critical path analysis that would allow readers to identify tasks with the potential to delay the entire project were not yet ready. Also missing were budget data, with the exception of some information on the cost of land acquisition relative to forecast.

The effort to “PMO” the process of securing the license to operate (dubbed the ELO initiative, for “Environmental Licensing Office”) was launched in 2012. The goal of the ELO initiative was to compile all agreed conditions in every license, identify and gather data on every affected stakeholder, and understand the financial implications of the conditions. These data were meant to guide strategy in licensing, stakeholder relations and, ultimately, operations, human resources, and other core functions. The task was massive, ultimately revealing 450 public permits containing more than 2000 conditions, 92 environmental management plans, over 160 public agreements, and direct formal relations with 80 public institutions.

Despite the absence of certain critical data and exhibits, the first PMO report and the second that followed 30 days later demonstrated to the potential of the PMO and ELO initiatives. The report identified “critical issues” that were holding up the project, such as the need to resume construction of the breakwater at the port and close the negotiations regarding bonuses with the contractor for the beneficiation plant. It also revealed a host of “at risk” issues that had the potential to become critical and delay the project even further. Each issue was assigned to a senior manager who would take responsibility for overseeing its resolution. Additionally, each element of the project (i.e., the mine and beneficiation plant, pipeline, filtration and port) had its own high-level dashboards and a set of anticipated issues with responsibility for meeting targets assigned to specific managers. Each element then had further drill-down plans for sub-elements of the project. Throughout the report, a common color coding was used: items on schedule or within 5% of schedule were coded green, items within 5-10% of schedule or 0-15 days behind schedule were coded yellow, and items beyond 10% of schedule or greater than 15 days behind schedule were coded red.

Critically, the PMO report for the first time contained an extensive treatment of licensing and land management issues emerging from the ELO initiative. At the mine and beneficiation plant, for example, issues relating to archaeological permits, caves, flora and fauna, hydrological, deforestation, city hall authorizations necessary for the mine, waste stockpile, access road, containment dam, beneficiation plant, tailings dam, pipeline and transmission line were listed together with the fraction of conditions and programs completed. Similarly, detail was available for the three segments of the pipeline and five elements of the port. Critical issues including necessary

archaeological and cave permits, as well as access to specific farms along the pipeline route that had the potential to delay the mine and pipeline were, for the first time, clearly visible to all before a delay occurred. The report also revealed that no register of signed commitments with local communities was available.

The full scope of the licensing and land management challenge was now coming into focus, with only 39 of 122 conditions and 0 of 47 programs at the mine and beneficiation plant complete, 67 of 116 conditions and 0 of 15 programs at the pipeline complete, and 545 of 725 conditions and 14 of 57 programs complete at the port. Similarly, only 150 of 209 properties were released at the mine and beneficiation plant, 1,326 of 1,438 at the pipeline, and 112 out of 298 at the port. Of 28 commitments with authorities, only 6 were complete and 10 had issues.

By July 2012, the data structure had been sufficiently developed for a preliminary summary dashboard to be presented at the beginning of the report. This initial dashboard contained:

- (1) safety information
- (2) measures of overall progress for each element and progress for each element since the last report (see Exhibit 8)
- (3) budget performance for each segment last month and year to date as well as the end of year target (see Exhibit 8), and
- (4) key actions to be taken

Among key action items, approximately half were related to “above ground” risks involving external stakeholders, including archaeological permits, legal injunctions, contractor-community tensions, land acquisition, and

a host of other environmental and social issues. The analysis showed continued slippage from the targets established, and the overall implementation dashboard flashed red on every indicator. The goal of FOOS by December 2013 was slipping further and further out of reach. The mine and beneficiation plant was 36.6% behind schedule, the pipeline 16.4%, the filtration plant 11.8% and the port 13.5%. The only consolation was that Anglo American had spent even less as a percentage of their expenditure forecast on each item.

The updated July report also contained a summary sheet for licensing and land management that showed progress on licensing for each segment, breaking performance down into licenses and programs with conditions with issues, conditions suspended, conditions complete, and conditions in progress, along with the number of properties negotiated, cleared, and impeded. Little progress was evident since the April report on licensing and land management, with no change in conditions or programs at the mine and beneficiation plant or at the port, and only 19 out of 137 previously incomplete conditions at the pipeline addressed. Similarly, 13 properties were released at the pipeline, but 45 additional properties were identified as being needed. More progress had been made at the port, with 49 of 158 previously unreleased properties released.

Twenty-four new commitments with authorities were identified, whereas only one additional condition had been completed. Though seven additional conditions were now listed as on track and seven fewer with issues, nine additional ones were listed at risk.

As the data came into focus, neither the deadline of December 2013 nor the current budget was a viable target. After much analysis and discussion in Q3 of 2012, a new target date of November 30, 2014 and additional budget request of

\$2 billion were codified, and the PMO data structure and report became the official plan and guide for how to meet those targets. The PMO office became the “war room” with its staff’s fingers on the pulse of all information. Everyone would call on them to learn the current status of the project and their next charge.

The October 2012 PMO book showed all green, as the project was on target and even had a cushion in meeting its revised deadline of November 30, 2014. The same book, however, had a substantially expanded reporting structure for “regulatory matters” that allowed the reader not only to see progress in licensing, land acquisition, and permitting, but also included an integrated dashboard that revealed an ever-widening chasm of regulatory challenges. That regulatory dashboard revealed that of 298 total permits, only 93 were issued, used, and fulfilled, without conditions or with conditions already fulfilled (Type I). Of the remaining 205, 189 were issued with conditions that had yet to be fully fulfilled (Type II), and 16 were still to be issued (Type III). Of the 1,630 total conditions, 675 were completed for Type I permits and 763 were completed already for Type II permits. That left 192 conditions with issues. Thirty-eight programs were proceeding without issue but 60 faced issues. The number of properties released increased modestly, but the number of new properties identified as needing release continued to climb faster.

Response

The initiative first met with substantial resistance. The finance team believed that they owned reporting. Now it seemed that ownership had been taken away from them and moved to a centralized project management team that reported directly to Paulo. Making it worse, the expense involved in having an external consultant creating the new system significantly heightened the finance team’s opposition. Other

managers’ reactions ranged from cool skepticism to hostile “fits.” Having operated in a decentralized, flexible entrepreneurial structure, the shift to a highly bureaucratic, centralized, data-driven system was a shock. People didn’t want to report to a new organization. They didn’t like this external group controlling their lives. The additional staff time spent on reporting and, in particular, in designing the baseline reporting structure was time taken away from necessary action on a project whose delays and costs kept escalating.

Over the ensuing months, however, a notable shift had occurred. By May 2013, just a few months after implementing the new PMO and ELO reporting initiatives, a turnaround was evident, most notably on issues, conditions, and land acquisition. The number of conditions with issues had fallen from 192 to 111 even though the total number of conditions had climbed to 1,833 from 1,630. The number of programs with issues had fallen from 60 to 31. While there were some areas of yellow and even red on his dashboard report, overall the project was proceeding on target towards his November 30, 2014 goal. For the first time, the ELO team had been able to develop an integrated licensing plan akin to that of the PMO. This allowed for an analysis of not just current and past performance but planning and optimization for future performance (See Exhibit 9).

The new leadership team was also able to point to two additional successes in the rollout of the parallel PMO and ELO initiatives by the PMO office and the government relations teams:

(1) *The relationship between the managers leading the initiative to develop the PMO and ELO systems and their peers within the functions:* At the beginning, when functional managers saw the new arrivals, they would hide and avoid them, not wanting to tell the truth. Only a few months later, now, these same people realized

that they were partners in achieving FOOS. Functional managers would ask for help from the PMO or ELO teams.

(2) *The advocacy of different members of the functional teams once they observed how the reports could save them time:* For example, the government relations team would constantly be asked for status reports and updates by government officials. Every meeting, they had to prepare briefing packets. Before the PMO and ELO, the team didn't know what data to provide nor where to access it. You would call one person and get one answer and then call someone else and get another and then when you checked back with the same two people two weeks later their answers had both changed and they denied every telling you something different. As a result, the company would lose credibility and the licenses were threatened. The new systems made things much easier because they offered an integrated approach, with one place where everyone could go for the answer. As the PMO and ELO developed, the government relations team could focus on strategy and relationships because the PMO monthly report already provided the leadership team with all the answers that they needed, and it ensured the accountability of the managers responsible for the deadlines.

Furthermore, as Paulo prepared for the negotiations and engagements with external stakeholders, he was increasingly confident in the data that his corporate affairs team was providing him. As the license to operate (ELO) reporting grew in sophistication, the system prioritized issues based on the product of their severity (the average of risk to new permits, impact on constructions, and impact on community or environment), effort (the average of solution complexity and third-party dependency), and urgency.

For each issue, a risk mitigation plan targeting specific stakeholders was identified. For each of these stakeholders, the government relations and local stakeholder engagement teams amassed rich information on attributes, including socioeconomic profile (e.g., social class, education, employment, sources of information), technical profile (e.g., areas of knowledge, education, hierarchical position), degree of impact (e.g., positive vs. negative, direct vs. indirect, local vs. regional vs. national), perception (e.g., relationship history with Minas-Rio and degree of support or opposition), interests (e.g., types of demands, individual vs. collectively -focused, inspection power) and behavior (e.g., personality and values, leadership capacity, political and religious engagement).

That data could be extracted onto a single page that captured a photo, career, and educational history; description of the formal role of the stakeholder; a list of other stakeholders that influenced or were influenced by the stakeholder; personal traits; a summary of the relationship with Iron Ore Brazil capturing its tenor and the internal relationship owner; as well as the stakeholders' power over the mine, pipeline and port. Such stakeholder records were available for 1500 local, regional and national stakeholders.

In addition to this issue-centered analysis that provided information for mitigating specific risks to the project, the corporate affairs team could also take a stakeholder-centered analysis that would provide target goals and guidance for the ongoing management of relationships with each stakeholder as well as updates on the progress of meetings relative to the engagement plan (see Exhibits 10-11). The relationship goal was based on a segmentation (see Exhibit 12) of stakeholders along an array from a focus on

individual compensation³⁶ to more collective orientations focused on economic development,³⁷ the general collective interest,³⁸ or compliance with legal obligations.³⁹

Within each of those groups, stakeholders were further segmented into those who were leaders vs. followers, and those who were favorable, neutral, opponents, and opportunists. For each type of stakeholder in this complex three-dimensional categorization, a specific strategy for managing the relationship was identified. For example, opportunists in all categories except the judiciary were to be weakened by reducing their credibility, influence, and impact. Each strategy included a list of potential actions, communication channels, and monitoring strategies. The amount of effort devoted to the implementation of a given relationship strategy depended upon the stakeholders' ability to influence peers, the ability of Anglo American to influence the stakeholder, and the potential impact of the stakeholder on the license to operate. (See Exhibit 13).

Crisis in Serro

Numerous Anglo American trucks traversed the community of Serro each day. The historic center of town was designed for pedestrians and was not built to support heavy automobile traffic. Since the only road that linked the major highway from Belo Horizonte to the construction site traversed the center of the town, Anglo American trucks had to drive directly through the historic center each day, stirring up dust, causing degradation of the street, and damaging numerous homes.

In addition to the physical damage caused by the truck traffic, there was also socioeconomic stress. Many temporary workers chose to move into Serro, causing rents to triple. Permanent residents responded to the demand by moving out of their homes in the center

and renting them to temporary workers. The workers brought many new children to the area and overwhelmed the capacity of the existing schools. Workers also elected not to pay for the expensive health care offered by Anglo American, relying instead on the public system that lacked sufficient capacity.

When a new mayor assumed office in Serro, Anglo American general managers came to him with a proposal to build a bypass road and an offer of how much they would be willing to pay for its construction. The mayor was uneasy, as the values for the homes and companies that had to be relocated seemed too low. Offers were around 150,000 reais, but he believed that the true costs would be 10 times greater. At the time, many people went to the prosecutor's office to complain.

Frustrated with a lack of progress and escalating protests, the new mayor reached out to Anglo, asking for an acceleration of progress on the construction of the bypass. Anglo American initially rebuffed him, noting that there was no alternative to traversing the town. Feeling he had exhausted all of his options, the mayor then issued a decree barring access to the roads to the town. Anglo American was caught off guard by his action. Construction was not halted, but substantial additional costs were incurred in the transfer of material to smaller trucks and the application for special permits to use alternative routes. Anglo American refused to negotiate while the road was closed, and the mayor refused to open the road until the negotiations were complete.

³⁶e.g., residents being resettled or land owners; members of the local community including residents, students, physicians, teachers, farmers and religious representatives; local and regional suppliers

³⁷e.g., trade and industry associations; the media including television, radio, newspapers and magazine; trade unions

³⁸e.g., NGOs and educational institutions and local authorities including mayors, city governments, alderman and prosecutors

³⁹e.g. environmental agencies and the judicial or legal apparatus

The implementation puzzle

As Paulo prepared to respond to this latest threat, he reflected that he was more confident in a positive resolution that he would have been only months earlier. He believed that he had the information that he needed on the stakeholders and their impact on the project to reach an informed negotiated compromise that would be a win-win. It made his desire to understand how he had gotten here even more intense. It wasn't just the data, nor was it just the people who managed the systems. He remembered a quote that his colleague Duncan Wanbald, with whom he worked in the Center of Excellence, had shared with him when they sought to design the best practice Project Management Office:

We have a lot of systems. Most don't work. If they are not well understood, not well integrated, they just become bureaucratic checkerboard processes with low or even negative performance impact. Such initiatives are a total and utter failure. You have to make people understand the system and their roles and responsibilities within it as well as believe that the system can help them to achieve their goal. It takes leadership to get there.

Duncan Wanbald, CEO, Base Metals and Member, Group Management Committee, Anglo American

Duncan's quote was emblematic of the challenges faced in implementing a project management organization. According to a recent survey by the project management consultancy PMSolutions, 51% of initiatives struggled due to "organizational resistance to change," 47% because the project management organization was seen as unnecessary overhead, 45% because they lacked sufficient resources, 43% because they struggled to demonstrate their value-added, and 43% because they lacked sufficiently talented management. On the one hand, there was thus nothing new in the design of the project management system, or in the struggle to implement it. On the other, this system had succeeded in generating energy across the management team and staff.

This energy provided a focus that allowed everyone to work off of and on the same page.

Paulo reflected on how he could codify the reasons for this outcome. He also pushed back against the sentiment that it was due merely to personality and leadership, explaining instead how concrete elements of the implementation process that generated such a positive outcome. His team worked with a common objective and with structure, focus, and rigor. Everyone was able to harness the entire organization in support of the objective of FOOS. Yet, Paulo was also unable to articulate which elements of the people, structures, incentives, and culture that had been developed were responsible for the dramatic turnaround.

He put aside this reflection and prepared for his meeting with the mayor of Serro.

DISCUSSION QUESTIONS

Imagine that you are Paulo Castellari, CEO of the Anglo American subsidiary Iron Ore Brazil. Your goal is to win the hearts and minds of external stakeholders in support of the organizational mission of attaining First Ore on Ship (FOOS) by November 30, 2014. This will require

- (1) state-of-the-art stakeholder mapping;
- (2) project management systems and financial models that incorporate stakeholder actions and reactions;
- (3) relationship building efforts that instill trust among stakeholders;
- (4) adaptive or learning systems to allow reallocation of resources in real time;
- (5) open communications with external stakeholders that reinforce trust; and
- (6) an organizational mindset that focuses all internal stakeholders on the importance of stakeholder engagement and “corporate diplomacy.”

Your recently-hired team together with external consultants have developed systems and plans to achieve these objectives, and you are amazed at the sophistication of their proposal on each of these fronts.

You believe it is critical for the project to not only adopt the PMO system but for it to become part of the corporate DNA. However, you are worried that the time and resource demands for implementation will be so daunting that the status quo will persist (i.e., the stakeholder database will not be sufficiently filled in, the financial models and plans will not be used, stakeholder-relationship management will retain its confrontational fire-fighting approach, plans

will be updated only once per year during the planning cycle; communications will be ad hoc and crisis driven; and the existing organizational mindset — embodying complacency toward delays and cost overruns and a tendency to shift blame rather than solve problems — will persist.)

Use the Nadler & Tushman reading, frameworks from other relevant classes, and your own experience with organizational change to develop specific suggestions for ensuring the implementation and strategic use of the PMO and ELO data at Minas-Rio. Be specific in your recommendations with regard to the following items.

- 1) The characteristics of the individuals needed for the team
- 2) The tasks for which the team members will be responsible
- 3) The formal organizational structure in which the team members will operate
- 4) The informal culture that will reinforce the desired behaviors
- 5) The means to ensure “fit” across these organizational elements

Exhibit 1: Map of the Minas-Rio Project



Exhibit 2: Global price of iron ore



Exhibit 3: Position of Minas-Rio on global marginal cost curve

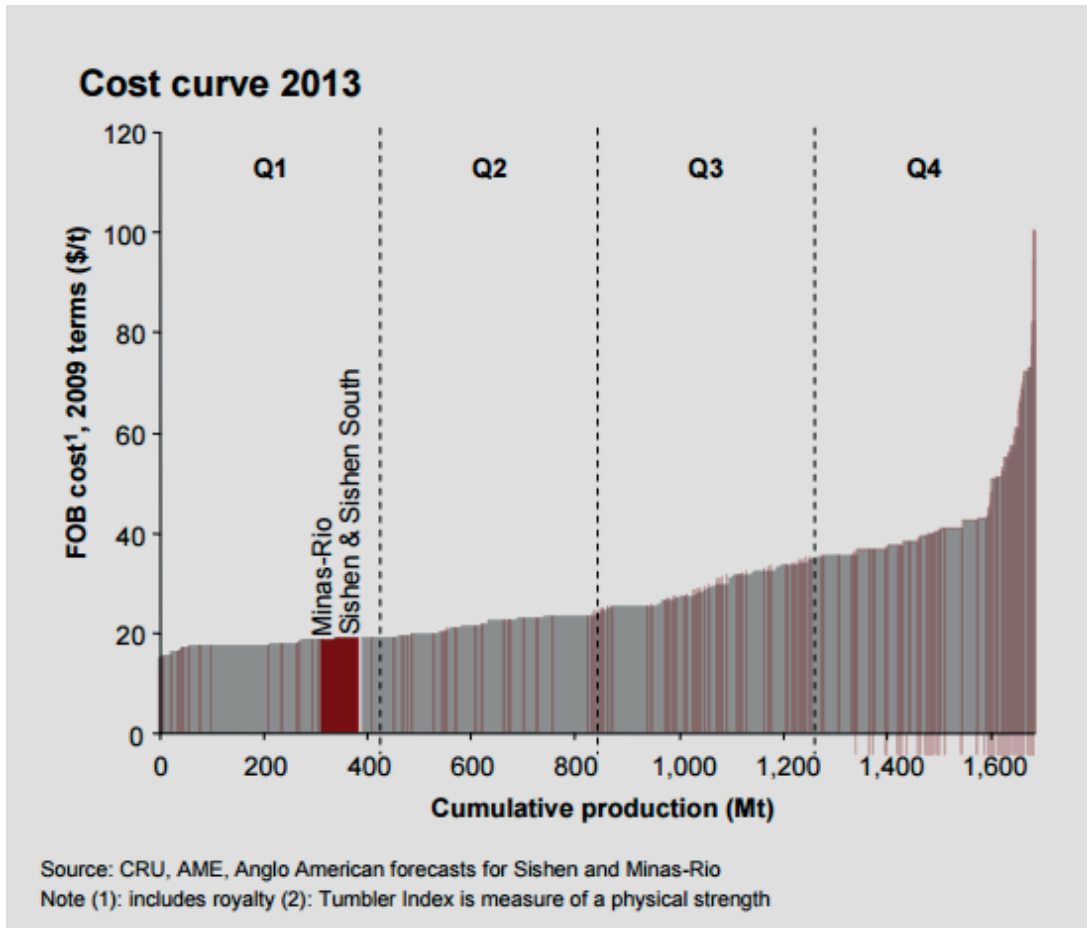
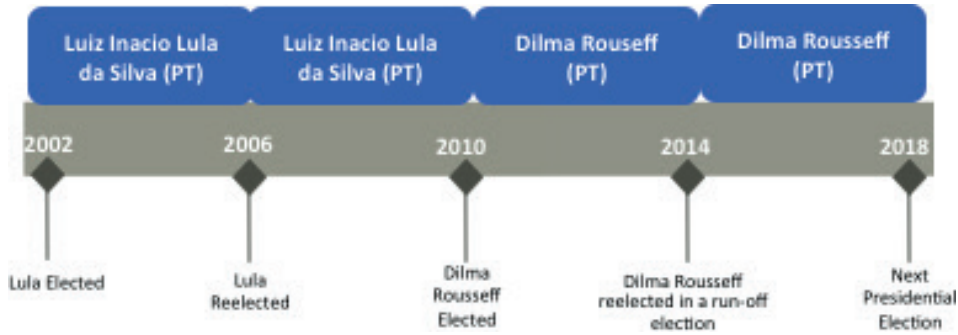
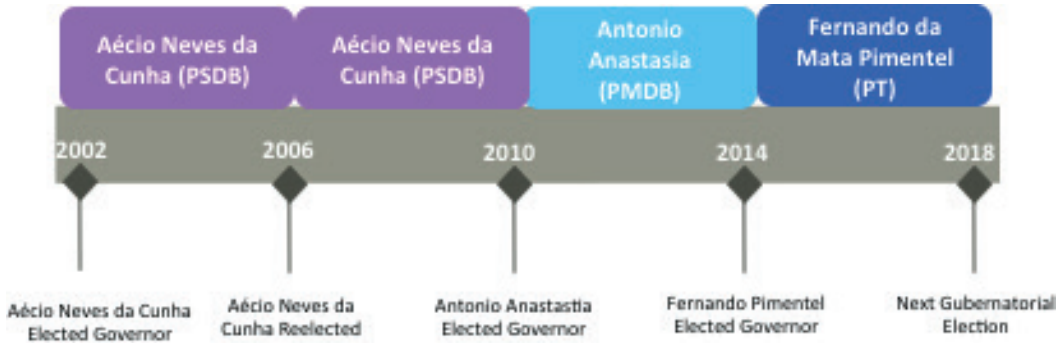


Exhibit 4: Political Parties in Power in National, State and Key Local Governments

National Government

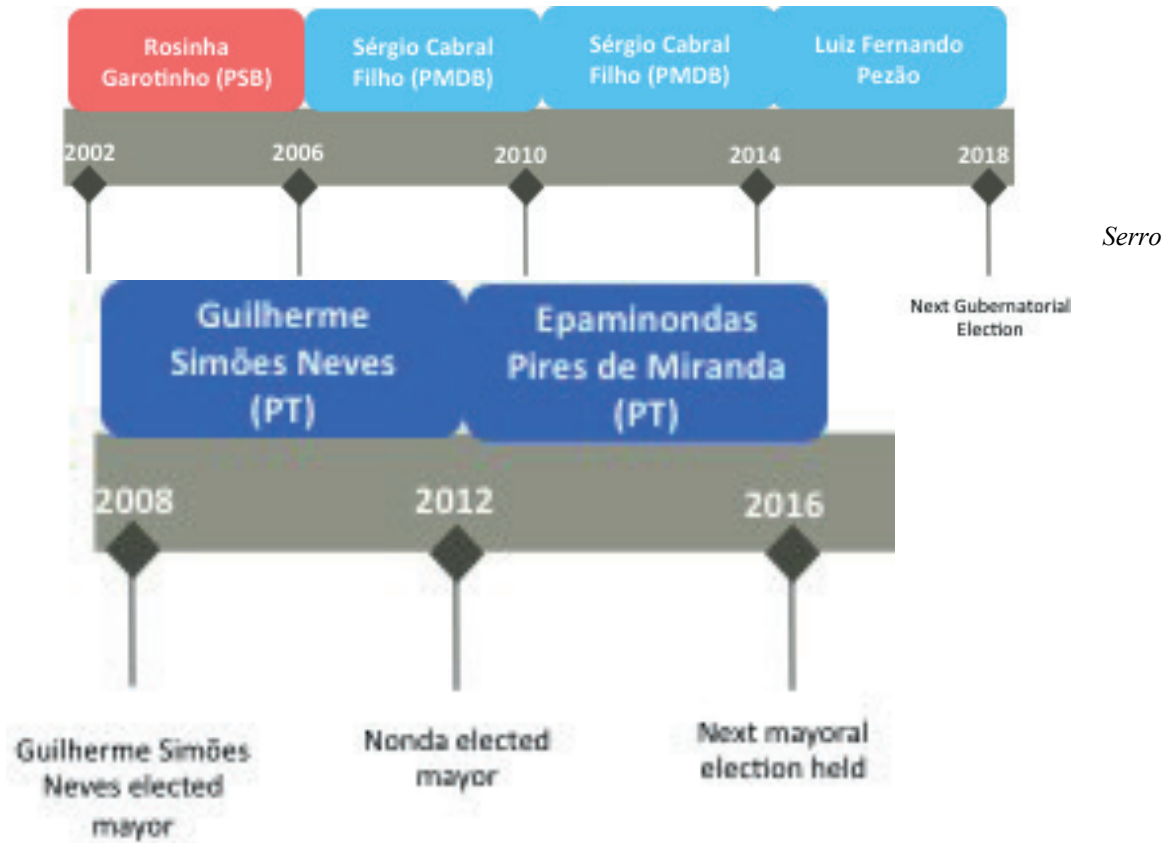


Minas Gerais State



Rio de Janeiro State

Designing and Implementing an Integrated Project Management System at Minas-Rio (A)



Conceição do Mato Dentro

Designing and Implementing an Integrated Project Management System at Minas-Rio (A)

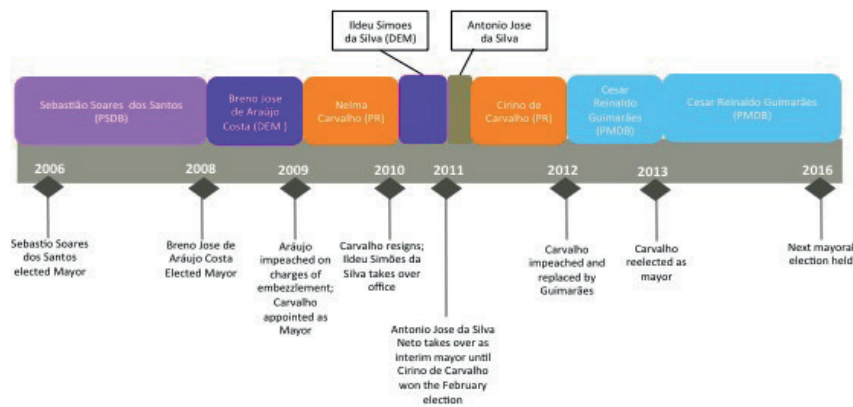


Exhibit 5: Gross Domestic Product and Mining Output of Brazil



Output



**Exhibit 6: Anglo American Income Statement
(US\$ Millions, except per share)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Group Revenue	24,991	25,470	26,311	20,858	27,960	30,580	28,680	29,342	27,073
Total Operating Costs	(17,349)	(17,198)	(19,461)	(18,118)	(19,294)	(20,912)	(30,280)	(23,174)	(26,935)
Operating Profit from Subsidiaries and Joint Ventures	7,642	8,272	6,850	2,740	8,666	9,668	(1,600)	6,168	138
Total profit from operations and associates	8,514	8,929	8,972	4,436	11,067	10,646	217	6,411	(39)
Investment Income	609	742	589	514	568	668	418	271	242
Interest Expense	(680)	(850)	(850)	(780)	(801)	(695)	(630)	(584)	(562)
Net Finance Costs	(71)	(108)	(140)	(407)	(139)	(20)	(388)	(276)	(220)
Profit Before Tax	8,443	8,821	8,571	4,029	10,928	10,626	(171)	6,135	(259)
Profit for the Financial Year	6,922	8,172	6,120	2,912	8,119	7,885	(564)	4,274	(1,524)
Attributable to Equity Shareholders of the Company	6,186	7,304	5,215	2,425	6,544	6,120	(1,470)	2,673	(2,513)
Earnings per Share - Basic	3.51	4.04	4.34	2.02	5.43	5.06	(1.17)	2.09	(1.96)

40

Ordinary Dividends Paid During the Year (Per Share, in US Cents)	95	113	NA	NA	25	68	78	85	85
Ordinary Dividends Paid During the Year	1,391	1,527	NA	NA	302	834	970	1,078	1,099

Exhibit 7: Paulo's Facebook Figure Capturing the Development Partner Framework



Note: Developed in cooperation with the Kellogg Innovation Network at the Kellogg School of Management

Exhibit 8: PMO Overall Status

Issue Date: 19-Apr-13
Data Date: 15-Mar-13

Legend:
■ No BD delay / Less than 5 pp below
■ Delayed w/o FOOS Impact / 5-10 pp below
■ Delayed with FOOS Impact / >10 pp below

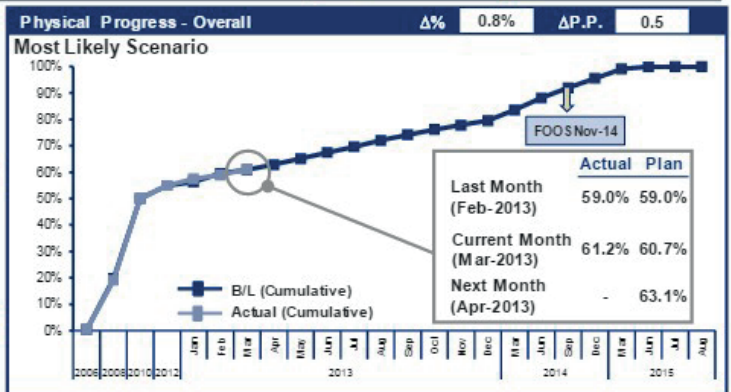
Status ■ Actual
 Resp. P. Castellari ■ Planned

Minas-Rio Overall Status

Implementation		wt. 0.857	62.1%	61.6%	Owner : L. Renato	
Status	% Actual	% Planned ⁽²⁾	Baseline	Forecast		
Beneficiation Plant	58.6%	55.7%	28-May-14	28-May-14		
Pipeline	68.7%	69.2%	30-May-14	30-May-14		
Filtration ⁽¹⁾	79.1%	78.9%	11-Jun-13	07-Nov-13		
Port	54.8%	55.5%	13-Aug-15	13-Aug-15		

Operations		wt. 0.100	48.4%	47.4%	Owner : R. Vilela	
Status	% Actual	% Planned	Baseline	Forecast		
Mine	43.2%	42.6%	30-Dec-14	30-Dec-14		
Infrastructure	68.8%	67.9%	31-Mar-14	31-Mar-14		
Operational Readiness	52.1%	50.1%	30-Dec-14	30-Dec-14		

ELO		wt. 0.043	72.0%	73.0%	Owner : P. Borrego	
Status	% Actual	% Planned	Baseline	Forecast		
Overall Status	72.0%	73.0%	01-Jul-14	01-Jul-14		



Indicator	Beneficiation Plant		Pipeline		Filtration + Port		Operations		Total	
	YTD	2013 Target	YTD	2013 Target	YTD	2013 Target	YTD	2013 Target	YTD	2013 Target
HPI	2	0	2	0	0	0	0	0	4	0
FIFR	0	0	0	0	0	0	0	0	0	0
LTIFR	0	0	0	0	0	0	0	0	0	0
VFL	23.1%	8,700	24.8%	14,300	13.9%	4,600	30.1%	2,400	23.1%	30,000

USD \$ million	Actual			Budget	Budget	Outlook 2+10	2014	2015	Total Project Cost
	Up to 2012	Q1 2013	TOTAL	Q1 2013	FY 2013	FY 2013			
Implementation	3,505	171	3,676	698	2,136	1,918	938	55	6,634
Pre-Operational	128	16	145	28	160	178	251	91	630
Land Management	235	6	241	25	94	95	66	0	394
Others	274	44	318	-46	311	270	241	14	841
Subtotal	4,143	237	4,379	705	2,700	2,461	1,496	161	8,499
Hedge	-351	10	-342	6	-62	-87	-72	-14	-499
TOTAL excl Risk & Mgmt Reserve	3,791	246	4,037	711	2,638	2,374	1,423	147	8,000
Risk & Mgmt Reserve		0	0	67	268	118	479	24	771
TOTAL	3,791	246	4,037	778	2,907	2,491	1,902	171	8,771

⁽¹⁾ Filtration plant actual status was decreased to rework at site (quality of pipe assembly)

⁽²⁾ Planned progress for all four implementation components were slightly adjusted for the most likely scenario (no change on high productivity curves used for project execution)

Source: Ando American IOR PMO Team / IOR CFO Office

PMO Responsible: Aldo Souza

Exhibit 9: ELO Performance Indicators

Issue Date: 26-Jul-13
Data Date: 15-Jul-13

Legend:
■ On Track / Less than 5 pp
■ Delayed w/o BD Impact / 5-10 pp below
■ Delayed with BD Impact / >10 pp below

Status ■ ■ Actual
 Resp. J. Centeno ■ ■ Planned

ELO Project



Overall Progress Comments:
 A recovery plan was created to adequate deadlines for licensing and land access to meet implementation and operation schedule. The most important social programs with issues were reviewed in order to identify the main actions needed.

Mine and Beneficiation (1) wt. 0.333 84.0% 84.0% Owner : J. Centeno

Status	Selected Packages	% Actual	% Planned	Baseline	Forecast
■	Licensing	93.0%	79.0%	30-Dec-13	30-Dec-13
■	Land Access	92.0%	97.0%	22-Jan-14	17-Jan-14
■	Land Management	78.0%	85.0%	18-Dec-13	30-Dec-13
■	Biotic	78.0%	72.0%	28-May-14	30-Apr-15
■	Physical	65.0%	59.0%	30-May-14	30-May-14
■	Social	72.0%	74.0%	12-Feb-14	07-Jul-14

Operation License Granting Owner : J. Centeno

Status	Selected Packages	Filed		Obtained	
		Baseline	Forecast	Baseline	Forecast
■	OL for Mine - Beneficiation	30-Dec-13	30-Dec-13	30-May-14	30-May-14
■	OL for TL 230kV	30-Oct-13	30-Oct-13	20-Feb-14	20-Feb-14
■	OL for Pipeline	01-Feb-14	01-Feb-14	01-Jul-14	01-Jul-14
■	OL for Port	28-Feb-14	28-Feb-14	30-Aug-14	30-Aug-14

Comments: The key dates for OL Application and Obtainment was readjusted according the implementation needs and can change due to the construction progress during 2013

TL 230kV (1) wt. 0.036 82.0% 77.0% Owner : J. Centeno

Status	Selected Packages	% Actual	% Planned	Baseline	Forecast
■	Licensing	70.0%	60.0%	20-Feb-14	20-Feb-14
■	Land Access	99.0%	93.0%	15-Aug-13	15-Aug-13
■	Land Management	72.0%	86.0%	07-Aug-13	01-Aug-13
■	Biotic	72.0%	64.0%	03-Feb-14	03-Feb-14
■	Physical	80.0%	62.0%	10-Jan-14	10-Jan-14
■	Social	51.0%	54.0%	03-Feb-14	03-Feb-14
■	Legal Obligations	50.0%	67.0%	25-Nov-13	20-Nov-13

Pipeline (1) wt. 0.484 93.0% 93.0% Owner : J. Centeno

Status	Selected Packages	% Actual	% Planned	Baseline	Forecast
■	Licensing	88.0%	83.0%	17-Mar-14	15-Jan-14
■	Land Access	100%	98.0%	21-Nov-13	21-Nov-13
■	Biotic	78.0%	86.0%	15-May-14	15-May-14
■	Physical	58.0%	57.0%	31-Mar-14	31-Mar-14

Port (1) wt. 0.147 79.0% 82.0% Owner : J. Centeno

Status	Selected Packages	% Actual	% Planned	Baseline	Forecast
■	Licensing	69.0%	25.0%	28-Feb-14	28-Feb-14
■	Land Management	100%	100%	01-Aug-12	01-Aug-12
■	Biotic	81.0%	81.0%	01-May-14	30-Jul-14
■	Physical	70.0%	68.0%	15-Jul-14	15-Jul-14
■	Social	45.0%	45.0%	16-May-14	16-May-14
■	TL 138kV - Land Access	100%	100%	04-Apr-13	15-Jun-13
■	TL 138kV - Biotic	88.0%	92.0%	17-Jul-14	17-Jul-14
■	TL 138kV - Physical	41.0%	37.0%	11-Feb-14	11-Mar-14
■	Stone Quarry - Biotic	30.0%	74.0%	24-Jan-14	24-Jan-14
■	Stone Quarry - Physical	81.0%	63.0%	20-May-14	20-May-14
■	Stone Quarry - Legal Obligations	19.0%	100%	02-Jul-13	02-Aug-13

(1) The dates and percentages reported in each area are the planned in the Recovery Plan.
 Source: IOB PMO Team

PMO Responsible: Giovanni Schettino

Exhibit 12: Segmentation of Stakeholders

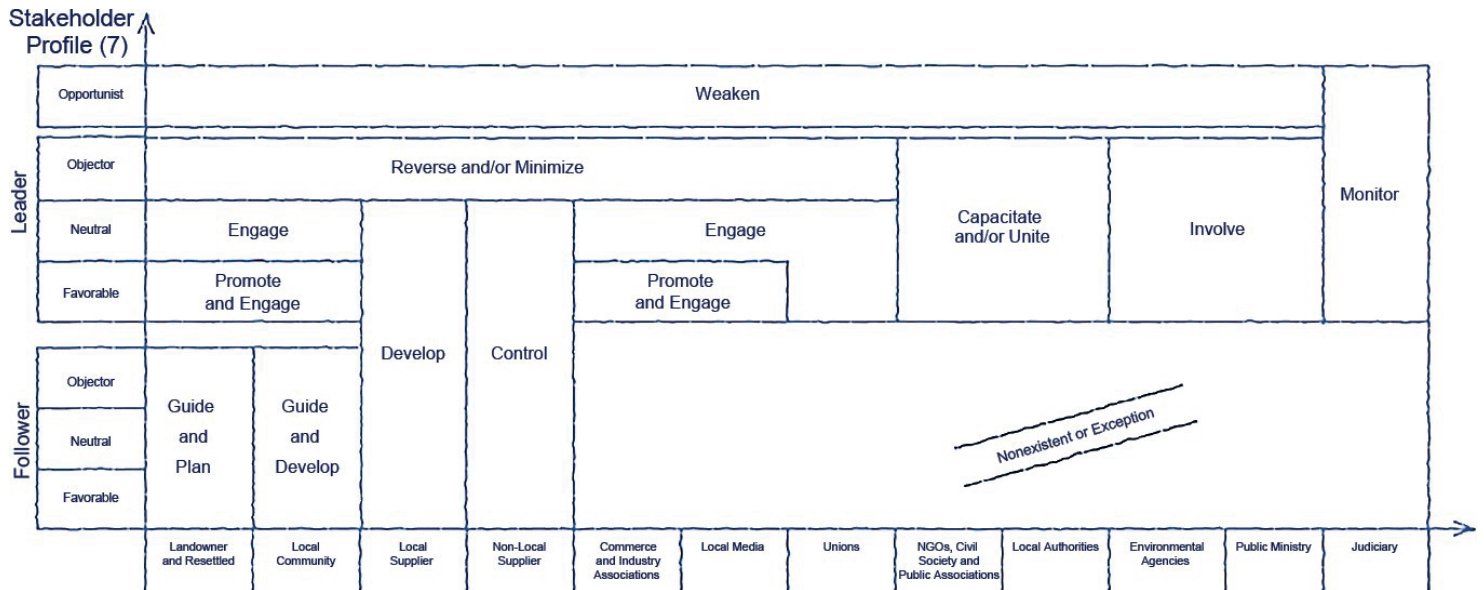


Exhibit 13: Stakeholder On a Page Summary Template

Key Stakeholders Low Medium High

Main stakeholder			
Influenced by	<ul style="list-style-type: none">	Personal traits	<ul style="list-style-type: none">
Main roles			
IOB relationship	<ul style="list-style-type: none">	Quality of Relationship	<ul style="list-style-type: none">
Relevance	<ul style="list-style-type: none">Influence on LO:Ease of access <p>Mine <input checked="" type="radio"/> Pipeline <input type="radio"/></p>	Material Links	<ul style="list-style-type: none">

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