

# oikos Case Writing Competition 2014

## Corporate Sustainability Track

### Runner Up

#### **Barrick Gold Corporation: A Perfect Storm at Pascua Lama**

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## Introduction

As Peter Munk fended off calls for his resignation in the fall of 2013, the gold mining company he had founded in 1980 was at the centre of what he called a “perfect storm” of environmental, community and stockholder pressures.<sup>1</sup> Based in Toronto, Canada, Barrick Gold Corporation had built its position as the world’s biggest gold mining company on a policy of “responsible mining”, which involved careful environmental planning and millions of dollars of investment in the communities where it mined.

At 85, Munk still guided the corporation as chair of the board (see Figure 1). But now its success was threatened by tougher requirements from environmental regulators, community protests, and demands for greater profit-sharing from the governments of several nations where its most promising mining developments were underway. Furthermore, the price of gold had dropped precipitously. Some shareholders were calling for Barrick’s board to be reconstituted, saying members like Munk were out of sync with the current market realities.

At the centre of this storm was the huge Pascua Lama mining project that Barrick was developing high in the Andes, straddling the border of Chile and Argentina. Set in a remote region among ancient glaciers, the mine would tap into one of the world’s largest gold reserves, believed to hold nearly 18 million ounces of gold and 676 million ounces of silver.<sup>2</sup> As the world’s first mine to operate across national borders, Pascua Lama would set a precedent for other ambitious mining projects which Barrick hoped to develop in the same region.

The company had already poured more than \$5 billion into the giant construction project, which it listed as its top priority.<sup>3</sup> Start of production had been delayed to 2016, and it had already cost billions more than anticipated when it started planning in 1997. It had been a dismal year for the project. First a court had delayed construction on the Chilean side, after an indigenous community in the region had alleged that the project would pollute local water supplies. Then environmental regulators halted construction on the Chilean side until Barrick could complete the installation of an improved water management system. These problems and the drop in gold prices sent the company’s stock on the Toronto and New York Stock exchanges tumbling: it had lost nearly 50% of its value since the beginning of the year. Some analysts were calling on the company to get out of the business of building new mines altogether.<sup>4</sup>

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<sup>1</sup> Peter Munk’s comments to Barrick Gold Corporation’s Annual Meeting, April 24, 2013

<http://www.gowebcasting.com/events/barrick/2013/04/24/2013-annual-meeting-of-shareholders/play/stream/7102>

<sup>2</sup> Barrick Gold Corporation Pascua Lama Summary  
<http://www.barrick.com/operations/projects/pascua-lama/default.aspx>

<sup>3</sup> Julie Gordon, “Barrick shows progress on costs, cuts spending,” Reuters, April 24, 2013

<sup>4</sup> [Pav Jordan](#), “Peter Munk confronts Barrick’s ‘perfect storm,’” Toronto Globe and Mail, April 24, 2013

Originally, the governments the Chile and Argentina had welcomed the Pascua Lama project as a way to bring jobs and economic benefits to a desolate, impoverished region. Barrick had gone through years of negotiations and made many concessions, abandoning a plan to move parts of the glacier to get the necessary environmental permits. The company had mobilized support among members of the communities nearby. But despite almost 1,000 community meetings and millions spent on local improvements for those who lived around the mine,<sup>5</sup> not everyone had been won over.

The cost overruns and the obstacles created by local residents and international environmental groups who opposed the project had grown so high that, as Munk and other company officials explained to shareholders, they now had to consider whether to suspend the project altogether.

Outside the Barrick's annual meeting at the Metro Toronto Convention Centre in April, several dozen protesters waved banners saying Barrick's gold was a "toxic asset". (See Figure 2). Inside, the 85-year-old Munk told the crowd of 700 shareholders and employees that the very fundamentals which had inspired mining companies to expand into developing nations – high gold prices and governments eager for international investment – had changed dramatically from when the Pascua Lama project was launched in 2004.

*"Did we know then that we were going to run into, every year, more and more difficulty?...Did we know then that the same governments who practically begged us to invest in their remote areas to provide jobs, to provide opportunities for education, to provide foreign exchange, to provide for taxes, were going to be changed and newcomers would say, 'Who are these foreigners? Why would they take our gold away from us?'"*

Even as the storm swirled around them, Munk and Barrick managers vowed to stick to the company's core philosophy that "doing the right thing is good business". The question now was: What was the right thing?

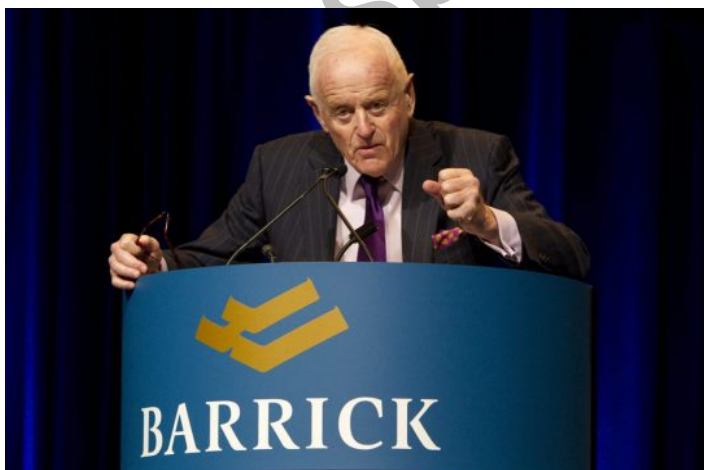


Figure 1. Peter Munk

Source: The Canadian Press, Darren Calabrese

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<sup>5</sup> Barrick, "Pascua Lama FAQs" <http://www.barrick.com/operations/projects/pascua-lama/faq/default.aspx>



Figure 2. Protesters outside Barrick's 2013 AGM

Source: ProtestBarrick.net, Alan Lissner

## Background

### Barrick Gold Corporation

Barrick had launched its gold mining business in 1983, riding the wave of social consciousness known as the anti-apartheid movement (against apartheid in South Africa). Thirty years later, the company was the world's largest gold producer with adjusted net earnings of \$3.8 billion in 2012. It generated 7.4 million ounces of gold and 468 million pounds of copper. It had 27 mines or mining projects in Argentina, Australia, Canada, Chile, the Dominican Republic, Papua New Guinea, Peru, Saudi Arabia, Tanzania, the United States and Zambia.<sup>6</sup>

It had started out as a failing oil and gas exploration company. The Hungarian-born Peter Munk, whose family fled from Nazi Germany to Switzerland, arrived in Canada from war-torn Europe in 1948, at the age of 18. A shell-shocked Jew with little English, a funny-looking suit and hardly a friend in the world, he expected to be shunned when he presented himself at Lawrence Park Collegiate, a high school in Toronto. Instead, the Canadians he met promptly took him in.<sup>7</sup>

<sup>6</sup> Barrick Gold Corporation Annual Report 2012

<sup>7</sup> Historic details summarized from *International Directory of Company Histories* (2000) - Vol. 34. St. James Press. <http://www.fundinguniverse.com/company-histories/barrick-gold-corporation-history/> and Margaret Wentz, "Our World Needs More Peter Munks," *Toronto Globe and Mail*, June 11, 2011

Before long, he was pursuing big business ambitions. He launched a stereo company and a hotel chain. Then he and a partner founded Barrick Petroleum Corporation in 1980. They never struck oil and suffered huge financial losses, so in 1983 they decided to go into mining precious metal to take advantage of investors' deserting the South African gold mines run by the apartheid government.

Under a new name, Barrick Resources, the company went public on the Toronto Stock Exchange and generated \$2.5 million. The plan was to target European pension funds that had investments in the increasingly unstable South African gold market. Munk sought to offer investors more stable markets in gold mines based in North America. They started by acquiring stakes in already-operating mines in Alaska's Valdez Creek region and in Ontario, Canada. Barrick quickly earned a reputation for improving production at existing mines and for protecting investors with aggressive hedging that shielded its profits even if the price of gold went down.

For decades, it pursued growth with a series of acquisitions. It became the world's largest gold mining company in 2006, when it acquired Placer Dome Inc. with an offer worth US\$10.4 billion. By 2012, Barrick had 27,000 employees around the globe. (See Figure 3 for a summary of the company's financial performance as reported to stakeholders in the company's 2012 financial summary).

One of the company's stated goals was to be the "world's best gold mining company" by operating in a "safe, profitable and responsible manner". It had a policy of giving back to the communities where it operated, investing millions in hospitals, medicine, water projects and education in the localities of its mines. Ranked as one of North America's best companies in terms of corporate responsibility, it was also listed as one of the 'top 100 sustainable companies' by NASDAQ, consistently featured on the Dow Jones Sustainability World Index, and included on the Corporate Knights Global 100 list of the most sustainable companies. It had set up a Corporate Responsibility Advisory Board and human rights compliance programmes.



Figure 3. Barrick Gold Corporation 2012 Financial Summary

Source: Barrick 2012 Annual Report

Yet Barrick – and Munk himself – had become targets of environmental and social protesters who called into question the company’s motives for social responsibility and the effects of its mines on pristine landscapes and local communities. In its push for expansion, the company had acquired and developed mines in some “challenging environments” where corruption, violence and poverty were endemic, and human rights were often flouted. Barrick claimed to make it a priority to improve the lives of citizens in countries like these – first by stoking the

economy and adding employment opportunities, then through community enhancements such as building hospitals and schools. (See Figure 4, geographic breakdown of Barrick's international gold production).

In 2011, Barrick came under fire when police security guards at the partly-owned Northern Mara gold mine in a remote area of Tanzania shot at marauding locals looking for remnants of gold rocks on the site. The company was also called to account for rapes allegedly committed by its workers at a mine in Papua New Guinea.<sup>8</sup> A newly-opened mine in the Dominican Republic, which Barrick operated in a joint venture with Goldcorp, faced a setback when the government demanded a larger share of the profits just a few months after the mine began operating in 2013. To cap it all, the company's push to develop Pascua Lama in the Andes had drawn international protest from environmentalists.

Munk often restated his vow that the company would conduct its mining in a socially responsible fashion, telling shareholders in 2012:

*"It's not enough to have money. It's not enough to have reserves. It's not enough to have great mining people... Today, the single most critical factor in growing a mining company is a social consensus — a license to mine."*

#### GOLD PRODUCTION BY REGION IN 2012

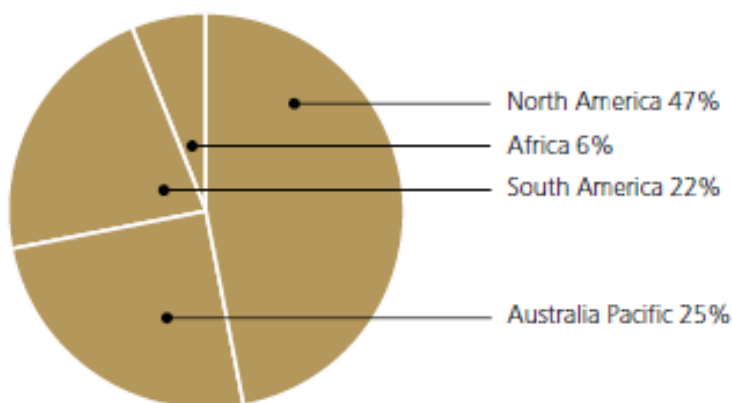


Figure 4. Barrick Gold Corporation's Gold Production by Region

Source: Barrick 2012 Annual Report

## Pascua Lama

<sup>8</sup> Margaret Wentz, "Our World Needs More Peter Munks," Toronto Globe and Mail, June 11, 2011

The Pascua Lama mining project posed unprecedented challenges – both political and engineering – as the first gold mine to straddle national borders and at the dizzying altitude of 5,000 metres above sea level.

Sitting on one of the world's biggest gold reserves, the open-pit mine was expected to generate an average of 800,000-850,000 ounces of gold and 35 million ounces of silver per year in its first five years, at very low cost. It had a projected lifespan of 25 years.<sup>9</sup> It was being built on mountain ledges so high that most plants couldn't grow there, and workers had to be checked frequently for altitude sickness. Even in the summer the land was barren. Temperatures ranged from 30 degrees Celsius to minus 40.<sup>10</sup>

The nearest community on the Chilean side was 45 kilometres westward down the mountain. The nearest Argentine neighbours were 156 kilometres away. Both were keenly interested in the project's potential to impact their water supplies. The mountain peaks where the project was being built tower above Chile's Atacama desert region, one of the driest areas on earth. The land there gets almost no rain and depends upon the runoff from snowfall in the Andes Mountains for almost all its water. The Huasco Valley on the Chilean side, with a population of 66,000, is dotted with olive groves and vineyards, where a sweet wine called *pajarete* is produced.

Historically, the populations in the valleys below had had some of Chile and Argentina's highest high poverty and unemployment rates, but the Pascua Lama project promised to increase job opportunities. In February 2013, some 12,500 people were working on the construction of the project.<sup>11</sup> According to Barrick, the Pascua Lama promised to generate 1,660 direct jobs during the 25 years of its operation. It had received more than 145,000 applications for employment, mostly from people in the surrounding areas.

Before it could even begin the project, Barrick had to help negotiate a treaty between the governments of Argentina and Chile to allow the gold – 75% of which was expected to come from the Chilean side – to cross the border by truck and conveyor belt to the Argentina side for most of the processing.

Exploration for the project began in 1994, after Barrick acquired the assets of Lac Minerals Corporation. In 2000, Barrick submitted a first environmental impact report (EIR) to the Chilean government, but low gold prices kept the project on hold. A second EIR was submitted in 2004. At that time the mine was estimated to cost \$1.5 billion and to go into production in 2009.

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<sup>9</sup> Barrick Pascua Lama project description, <http://www.barrick.com/operations/projects/pascua-lama/default.aspx>

<sup>10</sup> Descriptions of the mine site summarized from Barrick's Pascua Lama FAQs and Catherine Solyom, "More than just costs are a concern at Barrick Gold's \$8.5B Pascua-Lama Megamine," Montreal Gazette, December 14 2012

<sup>11</sup> Barrick Newsletter, Beyond Borders "[Training helps fill local skills gap at Pascua-Lama](http://barrickbeyondborders.com/2013/02/training-helps-fill-local-skills-gap-at-pascua-lama/)" <http://barrickbeyondborders.com/2013/02/training-helps-fill-local-skills-gap-at-pascua-lama/>

Since then, Barrick had spent more than \$15 million and 200,000 man hours generating 5,336 pages of environmental review documents to obtain the permits for the Chilean side alone.<sup>12</sup> Meanwhile the project had piled up enough delays and cost overruns to make it one of the most expensive mines ever constructed. By the fall of 2013, expected total costs by end-of-project had soared to \$8.5 billion and production had been pushed back to mid-2016.

## Stakeholder Outreach Efforts



Figure 5. A Barrick outreach worker goes door-to-door to explain Pascua Lama

Source: Barrick Beyond Borders, 2009

As part of the company's commitment "to be a partner in every community where it operates" Barrick had conducted information campaigns and poured resources into the region around Pascua Lama. Starting in 2000, the company held "disclosure meetings", conducted a door-to-door information campaign that reached 40% of the homes in the Huasco region, mounted television, radio and billboard ad campaigns, and set up community information offices in local towns and villages on either side of the border. Barrick held nearly 1,000 meetings and dozens of 'open house' opportunities in the region to solicit and respond to community comments.<sup>13</sup> (See Figure 5 for photo of outreach efforts).

In February 2006, the Chilean region's environmental commission set more than 400 conditions the company needed to meet in order to go forward with the project, many of which reflected the concerns expressed by affected residents during the review process. Barrick agreed to a number of changes including changing the mine pit's boundary to avoid glaciers, increasing the project's environmental monitoring, moving the rock crusher to a below-ground location, road improvements, and the addition of a camp for 750 workers

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<sup>12</sup> Barrick, "Pascua Lama FAQs" <http://www.barrick.com/operations/projects/pascua-lama/faq/default.aspx>

<sup>13</sup> Barrick's stakeholder outreach activities summarized from Barrick's "Pascua Lama FAQs" and "Barrick Pascua-Lama Shareholder Report" prepared by ERM, November 30, 2006

(instead of having them transported to the mine daily). By 2009 it had all the government go-aheads needed for the project.

While conducting the required environmental review, Barrick was spearheading dozens of social projects for local residents. It built a paediatric ward to improve a poorly-equipped hospital in Rodeo, Argentina. It funded school buses to take Chilean children to school in the Huasco Valley area. It built housing for victims of Chile's devastating 2010 earthquake. It partnered with Intel Corporation to bring laptops and teacher training to secondary schools in Chile, and sponsored a dental hygiene program that served 2,000 children. It paid to create a book and education programmes on the history of the valley's local Diaguita indigenous tribe, and it teamed up with the Chilean government to start a fund to bring \$60 million in water system improvements to local consumers over the lifetime of the mine.<sup>14</sup> In addition, the company ran training programmes to give local residents the skills to work in the mining industry and supplier development programmes to help local merchants gain the expertise to provide supplies to Pascua Lama.

The mine gained fans in the community. In 2007, Barrick published a letter addressed to the regional government from a residents' association representing 6,600 families in the Huasco province of Chile supporting the mine's development:

*"For many years we have seen how our families, friends and neighbours have been forced to leave their homes in search of jobs... There are many who fight against our people's progress, to keep them living in inadequate conditions, with no aspirations. But it is time for us to raise our voices demanding the same opportunities that others have had. Our people deserve prosperity."*

But other community members protested that the land was sure to be harmed by the vast amount of rock crushing and chemicals the gold mine operations would bring. Each ounce of pure gold can require the removal of as much as 20 tons of rocks, creating rubble heaps the size of a 30-storey building.<sup>15</sup> They worried about the effect on the glaciers. They said their sleepy farming community would be turned into a boom town that would be abandoned when the mine closed 25 years later.

During the EIR process in 2006, protesters dumped chunks of ice in front of the presidential palace in Santiago, Chile, to symbolize the destruction of glaciers. In the years that followed, protesters marched on the streets of Vallenar, the biggest city in Huasco province, and Greenpeace protesters were arrested for blocking trucks heading to the site. An email petition purporting to be written by valley farmers circled the globe, charging that the project would destroy the glaciers, contaminate rivers, and then "every last gram of gold will go abroad to the multinational corporation."<sup>16</sup>

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<sup>14</sup> Benefits to the community summarized from various Barrick Beyond Borders blog posts 2007-2013 <http://barrickbeyondborders.com/> and Catherine Solyom "Clean Capitalism Gets Mixed Results in the Andes," Montreal Gazette, December 17, 2012

<sup>15</sup> Jimmy Langman, "Pollution: Losing Some Luster; With gold prices skyrocketing, environmentalists are taking aim at one of the world's dirtiest industries", Newsweek April 24, 2006

<sup>16</sup> See <http://www.hoax-slayer.com/pascua-lama-petition.html>

While Barrick responded that many of these claims were exaggerated or distorted, the company's outreach efforts seemed to have backfired. Opponents of the project charged that Barrick had simply been buying off community members by paying for costly social benefits. They complained that the Barrick logo had become so prevalent on school buses, new medical clinics and billboards in the Huasco Valley that the area was becoming a company town. They even charged that Barrick had tried to get supporters elected in local mayoral contests.<sup>17</sup>

In particular, opponents pointed to the Pro-Water Fund, created with money from Barrick and the Chilean government, which had committed to spend \$60 million on improvements such as sealing irrigation ditches to prevent water waste through evaporation. This resulted in some farmers getting use out of arid lands that couldn't have been farmed before. But it also divided the 2,000-member irrigation users group from others who didn't enjoy the benefits. Opponents labelled the fund "hush money", noting that members of the irrigation network had vehemently opposed the Pascua Lama mine until it negotiated the Water Fund with Barrick in 2005.<sup>18</sup>

Some groups said they had been completely disenfranchised. A group representing some of the indigenous Diaguita people living in the Huasco Valley region of Chile, for example, accused government leaders and company officials of ignoring local community concerns in their haste to get money flowing from the gold mine. In two separate lawsuits they claimed that the project would jeopardize the water and environmental health of the region and impinge upon their ancestral lands. They also claimed that the company had divided their community by creating education programmes that were not faithful to the indigenous traditions of the region, showing a picture of local people dressed up in "fake" Indian costumes.

In 2010, members of the indigenous community came to Barrick's annual meeting in Toronto to express their opposition to the project. "Barrick has manipulated and corrupted our culture," said a letter from representatives of the Diaguita Huascoalinos Indigenous and Agricultural community presented to shareholders (see Figure 6).

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<sup>17</sup> Catherine Solyom, "Clean Capitalism Gets Mixed Results in the Andes," Montreal Gazette, December 17, 2012

<sup>18</sup> Catherine Solyom, "In Arid Chile, Villagers and Farmers Divided over Benefits of Water Fund," Montreal Gazette, December 17, 2012

**Letter Presented to the Barrick Gold 2010 Annual General Meeting by:**

Idolia del Carmen Bordones Jorquera, Jaime Nibaldo Ardiles Ardiles, María Inés Bordones Jorquera, Daniela Guzmán González (interpreter and advisor)

We have come from the Huasco Valley in Chile, representing the Diaguita Huascoalinos Indigenous and Agricultural Community. We are the direct heirs of the Native People of Huasco Alto, and we have inhabited this land since time immemorial. Our Community consists of 250 families of indigenous peasants, farmers and herders; we are the only Diaguita community that remained organized after the Spanish colony in Huasco Valley and we also have title to our lands.

Huasco Valley is the last unpolluted valley of northern Chile. Our lands guard important natural and cultural resources, and they hold the major fresh water reservoirs of this valley. That is why in 2006 we decided to make our Community territory a Natural and Cultural Reserve. This is incompatible with Barrick's Pascua Lama and future Pachuy megaproject.

Barrick Gold, without respect for our traditions, our plans and our right to self-determination, wants to force us to accept the mega mining in our Reserve. In 1998, Barrick Gold seized about 124,000 acres of ancestral lands that belong to our Community. Then, Barrick installed a locked gate that prevents the passage of herders through our own land. This gate is illegal as this road is public, but Barrick continues to refuse public access.

The Pascua Lama project was approved by the State of Chile in 2001 without permission from our community. So we sued the State of Chile in the Inter-American Commission on Human Rights, and this demand was admitted for processing in February of this year.

Although the project officially began this year, Barrick exploration has led to the degradation of the glaciers near the Pascua Lama project. In 2005, the General Directorate of Water of Chile issued a report that blames the company for the loss of 50-75% of glaciers in the area. Recently, on November 11, 2009, the Chilean Government fined Barrick Gold for, among other things, continuing to damage the glaciers, drawing water from unauthorized sites and breaking occupational health and air quality commitments.

Now, Barrick has illegally extended its work to other sectors of our domain title. In those areas, we can already see the destruction of wetlands and forests, and the extraction of water from unauthorized sites, among other damages. These actions have led us to bring two lawsuits against the company in the courts of Chile which are now being processed.

Also, in seeking to better its image, Barrick Gold, in conjunction with the National Indigenous Development Corporation of Chile, has promoted the creation of Diaguita Communities with no territorial base. With financial support from the company, Barrick has manipulated and corrupted our culture. They have denied that we, Huascoalinos, are an indigenous people, they have raised false community leaders, and they have brought professionals to teach the Huascoalinos about our own culture. What right do you have to come to teach us about our own traditions? What right do you have to manipulate our traditions, inventing costumes, dances, forms of weaving and pottery that are not our own? With this, the company has divided and confused the identity of our people, and has caused us great damage.

We have always been aware that in the land of Huascoatinos there is great mineral wealth, but our real wealth is its landscapes, the pure water rising in the Andes, with its unique animals and plants. It is our responsibility to protect this precious legacy, as a mark of respect to our ancestors, as a gift to our children and grandchildren, and also as a contribution to the care of Mother Earth and the heritage of all mankind. Therefore, as Huascoatinos, we are going to defend the Valley. We will not allow Barrick to destroy our land and our culture. We will not allow you to appropriate the legacy left by our ancestors. Today, we come here to order the closure of Pascua Lama. Shareholders, if you continue to mine in our lands, you will remain complicit in the pollution and destruction of our culture and you will be enriched in return for the death of our people. We are here to tell you again that we do not need your money to develop and we are not seeking compensation, because there is not fair compensation for the death of our Mother. We just want you to leave our lands and allow us to live in peace.

Figure 6. Letter presented to the Barrick Annual Shareholders Meeting in 2010 by members of the Diaguita Huascoatinos indigenous and agricultural community

McGill University History Professor, Daviken Studnicki-Gizbert, who was also the coordinator of the McGill research group investigating Canadian mining in Latin America, said Barrick's approach to corporate social responsibility was more akin to public relations than genuine community involvement: "It gives an aura of concern and respectability to the industry on social and environmental issues. But the company never sits down and actually says, 'Do you want this mine here?'" Studnicki-Gizbert told the *Montreal Gazette*. "It's not consultation. It's a performance."

Speaking about the Barrick's corporate social responsibility efforts, Peter Munk said that the company needed to draw a line between genuine stakeholders and those who opposed all industry. He told shareholders in 2012:

*While we love NGOs...we equally have to stand up to those who are—just on principle – against any type of development... Instead of working with us to develop better mine operations...they say 'Whatever you do, go away. We don't want you.' What are people going to do – line up for social programmes in the remote hills of Tanzania or Peru? There ain't no social programmes there, so there is no alternative.*

## Environmental Concerns

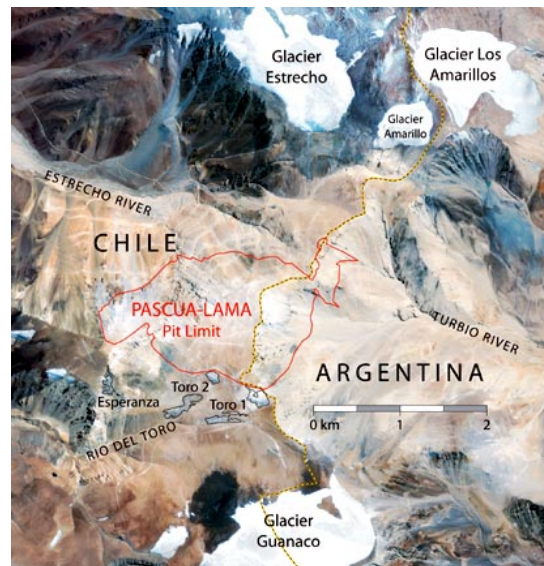


Figure 7. Pascua Lama Plan

Source: Barrick Gold Corporation

For residents of the valleys down the slopes from Pascua Lama, the biggest worry was that the project would dissipate or contaminate their already dwindling water supplies. (See Figure 7). Once in operation, the mine would use up to 38 tons of explosives a day to blast mountain tops into rocks, then up to 27 tons of cyanide and 33 million litres of water per day to extract the gold.<sup>19</sup> The processing plant would have the capacity to move 45,000 tons of ore per day through a cyanide leaching process. Barrick said that the mine would only draw about 0.3% of the water flowing down the Huasco River into the Chilean valley's main reservoir. The rest would come from the Argentina side, where most of the processing facilities were being constructed.

Seeing as how the Huasco farming region on the Chilean side of the border depended upon runoff which coursed down the slopes from the Pascua Lama area, Barrick planned to prevent contamination that could occur if natural runoff were to pass through the mine site. The company acknowledged that if precipitation, snow melt or runoff passed through the mine, it could produce acidic water potentially harmful to the environment. This toxic runoff, known as acid rock drainage (ARD), is released when sulphides in the rock come into contact with air and water. The disturbance caused by crushing tons of rock in the mining process could worsen the acidification.

Barrick planned to prevent acid drainage from coming into contact with the surrounding landscape by capturing and diverting water that would have naturally flowed through the mine facility. Instead it would be carried around the site in troughs that encircled the mine's perimeter. It would run the water used in the mining process through a treatment plant, then recycle it to be used again in mining. The company promised to monitor the quality of any

<sup>19</sup> Catherine Solyom, "More than just costs are a concern at Barrick Gold's \$8.5B Pascua-Lama Megamine," *Montreal Gazette*, December 14 2012

water leaving the Barrick property going into the Huasco Valley and ensure it met Chilean potable water standards 15 kilometres upstream from the nearest users. Water quality would be monitored at 49 surface and underground points in Chile and 25 points in Argentina.<sup>20</sup>

In practice, regulators started finding fault with the mine's environmental regulation systems long before Pascua Lama was due to open. In January 2013, Barrick said, one of the water diversion channels on the Chilean side collapsed, causing a mudslide that flooded a small area of vegetation. The facility was forced to let natural runoff water flow through the mine construction site – a violation of Barrick's environmental permit.<sup>21</sup>

The violation resulted in Chilean regulators suspending construction on the Chilean side of the project until Barrick could complete millions of dollars in improvements to the water diversion system. The regulator claimed that under its permit, Barrick should have finished the water system before it started the “pre-stripping process” of moving tons of rock mountain tops to reach the gold-containing ore underneath, but didn't.<sup>22</sup> (See Figure 8 for Barrick's explanation).

The Chilean government had already suspended pre-stripping in October 2012, citing concerns that excessive dust from the pre-stripping process could harm workers' health. Also hanging over the project was a law approved by Argentina's congress in 2010 banning any mining on or around glaciers. The measure passed into law, but hadn't been enforced by local authority's overseeing Pascua Lama's development in Argentina's San Juan Province. Environmentalists were pressing for the law to be used to stop the mine, but Barrick denied it was applicable as the ore it was mining was not under a glacier. Courts had also demanded a stop to the construction on the Chilean side of the project while they considered the validity of the environmental claims by members of the indigenous Diaguita community.

While the locals were most concerned about whether Pascua Lama would harm their water supplies, it was the potential to damage glaciers that worried the international environmental community most. The Glacier Estrecho was a few kilometres to the north of the vast pit Barrick was clearing for the mine. To the south was Glacier Guanaco. Within the boundaries of the mine site were three smaller glaciers, referred to by Barrick as “glacierets” or “ice reserves” known as Toro 1, Toro 2 and Esperanza.

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<sup>20</sup> Barrick, “Pascua Lama FAQs” <http://www.barrick.com/operations/projects/pascua-lama/faq/default.aspx>

<sup>21</sup> Barrick Pascua-Lama Chilean Water Management System Fact Sheet

<sup>22</sup> Reuters “Chile environment permit for Barrick mine was flawed –president,” June 6, 2013



## PASCUA-LAMA

### Chilean Water Management System Fact Sheet

Pascua-Lama is a mining project located approximately 5,000 meters above sea level in the Andes Mountains on the border of Argentina and Chile. At this altitude, the project is one of the most complex engineering challenges in the world, subject to legal and permitting requirements in both of its host countries. The project has significant value to Barrick, its shareholders and the project's host countries, and is expected to produce an average of 800,000-850,000 ounces of gold per year in its first full five years of production.

#### Natural Environment

The Chilean portion of Pascua-Lama is located in the arid Atacama Region, which receives very little precipitation, apart from significant snowfalls during the winter in the Andes Mountains. As this snowfall melts, it courses along natural waterways down the mountains, providing the valleys below with the majority of their water resources for the year, with glacier melt accounting for another small portion of this annual replenishment.

#### About the Water Management System

Barrick has an obligation to protect natural runoff water as it passes around the project site. Pascua-Lama's water management system includes a series of diversion channels, pipelines and sedimentation ponds to ensure run-off water from the surrounding mountains is diverted around the mine area.

Precipitation and groundwater that does come into contact with the mine will be captured, monitored and treated as necessary before being reused in mine operations. It is important to capture and treat this water because the rock in the area contains sulfides that, when exposed to air and water, produce acid rock drainage (ARD), or acidic water. While ARD occurs naturally in the area, disturbance caused by mining activity could accelerate this process. This can be harmful to the environment if not properly managed. A water treatment plant at Pascua-Lama will safely treat water that comes into contact with the mining site to ensure there is no risk of ARD as a result of mining activity.

The water management system also includes 49 surface and groundwater monitoring points in Chile to track water quality, flow rates and other parameters. Similar monitoring is also in place in Argentina.

#### Compliance

In mid-January 2013, Barrick self-reported a compliance failure of the water management system on the Chilean side of Pascua-Lama to local authorities. When run-off water from the mountains began flowing into the system, a key channel intended to discharge this water into the local river system experienced significant erosion and collapsed. This caused a mudslide that covered a small area of vegetation in the valley below. As a result of the damage to the main discharge channel, the project had to divert some run-off water into the area of the mine's future waste rock site, which is a violation of the project's permit conditions.

Barrick immediately took action to contain the problem and conducted a thorough clean-up of the affected area. The company is also preparing a restoration plan for a small area of vegetation that could not be recovered in the clean-up, while continuing environmental monitoring of the site.

Following this incident, the Chilean Environmental Authority (SMA) fined the company and suspended all construction activities in Chile, except those necessary for environmental protection, until the water management system is completed in accordance with permit conditions. It is important to clarify that these compliance issues did not result in water contamination or damage to glaciers.



### Next Steps: Strengthening the Water Management System

Barrick has submitted a plan to the SMA that outlines how the company will complete the water management system, and how it will strengthen key aspects of it to ensure such an incident does not occur again. Subject to permit approvals, Barrick anticipates this work will be completed by the end of 2014, after which the company expects to be in a position to resume construction on the project in Chile. The improvements to strengthen the system target the design of key channels and include enhancements to environmental monitoring at the site.

The North Channel design has been significantly upgraded to handle increased water and sediment flow. Natural and unlined channels will be strengthened with concrete lining and cover slabs will be used in areas where landslides may occur. The enhanced design also features improved sediment controls. The run-off water discharge channel that failed in January will be upgraded to a stepped concrete channel, which will disperse energy from water as it flows down, transporting it safely into the local river system below. This is natural water from snow and glacier melt that does not come into contact with the mine area.

The environmental monitoring system will be enhanced to include additional flowmeter sensors to better measure and control the water flow rate in the system. Enhancements to dust monitoring and mitigation measures include the installation of additional dust monitoring stations, fog cannons and mesh netting around waste rock sites and the open pit area to reduce airborne dust.



Figure 8. Barrick fact sheet explaining water management problems at Pascua Lama

Source: Barrick Gold Corporation

In its 2005 environmental report, Barrick had proposed getting at some of the buried gold deposits by moving some of this ice by bulldozer and attaching it to another glacier a few kilometres away. But Chile had insisted, as one of 400 environmental conditions set for the project in the permit process, that “the company shall only access the ore in a manner that does not remove, relocate, destroy or physically intervene with the Toro 1, Toro 2, and Esperanza glaciers.” The company then redrew the boundaries of the mine pit to avoid the glacial areas, thus agreeing to leave more than one million ounces of gold under the ice. Barrick vowed not to impact the small glaciers, which it said were already melting due to global warming. It planned monitoring programmes to watch for impacts with photographic surveys, melt water monitoring and baseline statistical comparisons.

But environmental groups claimed damage had already been done in Barrick’s initial exploration of the site and in the pre-stripping process. A technical report by the Center for Human Rights and Environment, an NGO in Cordoba, Argentina, claimed glaciers had already been affected by road building and the dust and disruption caused by explosions used in the process of building Pascua Lama and Veladero, another Barrick mine 10 kilometres away on the Argentina side of the border, which went into operation in 2005. The report claimed that the small glacier Toro 1 had been completely covered in debris and dust from construction, which had the potential to change the glacier’s reflectivity and accelerate melting. It said Google satellite images showed that roads were built right through the glaciers during the exploratory process.<sup>23</sup>

Barrick acknowledged that the glaciers had shrunk, but attributed it to the effects of global warming. Barrick Corporation President Jamie Sokalsky told shareholders in April: “it’s important to note there have been no adverse impacts on water quality or glaciers.”

## Industry-wide Woes

As Munk explained to shareholders at Barrick’s 2013 annual meeting, even larger market forces were threatening to capsize the entire gold mining industry. For years, gold prices had been pumped up by the world’s economic worries. Between 2007 and 2011 the price of gold tripled from around \$680 to an all-time high of \$1920 an ounce, sending mining companies scrambling to develop new sources of precious ore. Most of the easily-accessible gold had already been mined, forcing miners to undertake ambitious projects to cull the valuable metal from increasingly lower grades of ore. Like Barrick, many companies had launched expensive mega-mining projects.

Meanwhile, said Munk, the world’s citizens were becoming more environmentally conscious and regulators were becoming tougher on mining projects. Developing countries were showing increasing signs of ‘resource nationalism’ and demanding greater royalties from projects. All this pushed costs up at the worst time.

The price of gold began falling in late 2011. By June 2013 it had taken its biggest plunge since 1980 to \$1,233 an ounce. By October it hovered at around only \$1300 an ounce, a level that

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<sup>23</sup> Jorge Daniel Taillant, “Barrick’s Glaciers, Technical Report on the Impact by Barrick Gold on Glaciers and Periglacial Environments at Pascua Lama and Veladero,” Center for Human Rights and Environment, 2013

threatened to make much of the ongoing production unprofitable.<sup>24</sup> “Everybody was enjoying the high tide, and now that the tide is coming down you're seeing who's swimming naked. And the thing is, everybody's swimming naked,” Veritas Investment Research analyst Pawel Rajszel told Reuters.

For Barrick, pressure to take new action on Pascua Lama was coming from all sides. Shareholders were demanding immediate profitability and even calling for Munk's resignation as part of a push for new management direction. Environmentalists and some locals wanted the project to be scrapped altogether. And regulators were looking for quick action on the environmental problems at the site. Meanwhile, the costs of the project were rising by the minute, as falling gold prices made the prospect of profitability ever more distant.

As the end of 2013 neared, the question of what Barrick would do with its most ambitious project loomed large. Should the company push past the opposition to forge ahead with a project that promised to provide rich gold sources for years to come? Or should it turn its back on the nearly \$5 billion it had already invested? Munk made it clear to investors that under existing conditions there was no easy course for gold mining interests. He told shareholders in April:

“Gold itself is under attack...There are traders and analysts who have pointed out that trees don't grow to the sky, and there's a limit to this bonanza that for the last 10 or 12 years covered up all kinds of mistakes and flaws and all these missteps, purely by having a higher gold price.”

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<sup>24</sup> Allison Martell and Euan Rocha “Gold miners face new challenge in plummeting gold price”, Reuters, April 15, 2013