
Dark Matter of Conflict: The Semirara Coal Mine Accident

Introduction

White dots on a blue and green background — that is what Harold Dureza had been staring at for the last 15 minutes or so. Working at the Philippine Department of Energy (DOE) in Manila, Dureza was deep in thought. For a moment, only the dots registered in his brain. He closed his eyes and rubbed his head. He did this a couple of times. He felt relieved. At last, he opened his eyes. He was looking at a map of Semirara Island (see **Exhibit 1**).

Suddenly, Dureza was reminded of the office memorandum he had received Friday morning from DOE Director Harlan Cartagena. The memo informed him that the agency urgently needed his team's comprehensive report on the recent mining accident at Semirara Island. The deadline for him to submit this very important document was Tuesday. Dureza had been tirelessly studying maps, pictures, printed reports, and data over the past six hours. He came back to the office just yesterday. He and his team had spent the last two weeks on Semirara Island gathering as much information as they could on the recent coal mine accident.

Semirara Island was a district belonging to the Municipality of Caluya in the province of Antique, Philippines.¹ It was home to the only large scale coal mining company in the Philippines — the Semirara Mining and Power Corporation (SMPC).² Two death inducing incidents — the first one in February, 2013

and the second in July, 2015, that killed a total of 19 mine workers in barely two years,³ compelled the DOE to conduct a thorough and exhaustive investigation of the cause of the second mining accident.

Exhibit 1

Semirara Island, Caluya, Antique



Source: Maplandia.com. "Semirara Map — Satellite Images of Semirara." Accessed 3 Nov. 2015.
<<http://www.maplandia.com/philippines/region-6/antique/semirara/>>.

2013 Mine Collapse

At five minutes before midnight on February 13, 2013, the western portion of the Panian open pit mine on Semirara island, Philippines collapsed, killing five mine workers and leaving five others missing. The landslide happened two weeks after the coal mine passed a safety inspection conducted by DOE. This was the first time that an accident happened inside the Semirara coal mine.⁴

The mining company had started its coal mining operations in the Unong mine, which was eventually closed down in 2000 after 17 years of extraction.⁵ The company then opened a much larger mine, the Panian pit on the northern portion of the island, and continued to expand this open pit.⁶

Dureza and three of his co-workers were designated to investigate the 2013 mining accident. The present director of DOE, who then was the undersecretary of the department, was assigned to head the investigation team. Dureza remembered being rushed off to the coal island for the first time on February 15, 2013. It was his 40th birthday.

The bodies of the five missing miners were never recovered. The death toll for the February 2013 mining accident at Semirara was 10.⁷

2015 Mine Collapse

At half past 4 a.m. on Friday, July 17, 2015, Dureza was roused by an urgent phone call from Cartagena: “Harold, it happened again. Please find a way to reach the coal island today.” And then his mobile phone went silent.

And so, on July 17, 2015, Dureza found himself in a rush once more to reach the coal island to investigate another tragic mining accident, the second in just two years. He was the head of the investigating team this time. Reports indicated that it was the northern wall of the Panian pit that collapsed and descended on the workers. The present accident site was only 1 km away from the 2013 collapsed wall.⁸ The information forwarded to him was that three miners were killed and six others were still missing.⁹

Dureza’s Challenge

Dureza could still recall the seriousness and the conviction in Cartagena’s voice when he met with the investigating team for the first time on July 18. “It is the mandate of the agency and hence our group, to conduct a systematic, impartial, and exhaustive investigation on this second mining accident at Semirara under SMPC. We shall look at this incident from all angles and we shall leave no stone unturned until we have a comprehensive understanding of the cause of this tragedy.”

And thus began the roller coaster ride of Dureza’s team in search for the true cause of the second Semirara mining accident.

Suddenly, Dureza was awakened from his reverie, when a head inserted itself in the doorway and spoke, “Hey man, Harold, snap out of the mine pit. It’s Friday, go home early and watch a good movie. For God’s sake, Tuesday is like ages away from today.”

The head had a name, Brem Andola, one of the engineers on Dureza’s team. All Dureza could do was to shoo Andola away with his hand. When the door closed, he smiled. It was a relief that somebody reminded him that it was Friday. He had the weekend to read his team’s individual reports and mull them over before presenting a report to Cartagena Tuesday.

The DOE by virtue of Presidential Decree No. 972 was the primary implementing government agency responsible for all matters concerning coal contracts, mining, and explorations. The DOE had direct jurisdiction on matters concerning coal mining activities of SMPC at Semirara.¹⁰

As a consequence of the fatal accident, the DOE central office had issued an immediate suspension order on all operations of coal operating contract No. 5, the coal contract for the Panian pit at Semirara, Antique.¹¹ Only activities related to rescue operations were allowed.¹²

Dureza was fully aware that the report on the results of their investigation would be vital to the DOE’s future recommendations on the status of its suspension order for SMPC. In his mind, he was contemplating three questions his team needed to answer.

What was the true cause of the tragic mining accident? Did the mining company, SMPC commit violations of the provisions of the coal mine safety rules, standards, and regulations? Did the mining company commit violations of environmental laws?

Answers were needed immediately.

Tumbling Mound: The Accident

A new day was slowly creeping up the horizons of the Semirara Island. But for Ricarido Panes, a dump truck driver at SMPC, his shift was about to end in less than three hours. He was on a 12-hour night shift which had started yesterday, Thursday, at 6 p.m. He was very anxious to get home. Work at the mines was exhausting and precarious, especially during the wet season. Prolonged days of rain flooded the mines. Three of his friends had been assigned to operate the machines that pumped water out of the mine pit. Since 11 p.m. the night before, all three had been working on a damaged water system.

As Panes' truck approach the mine pit, he could hear the familiar sounds of excavators. One of these was operated by his friend, Generoso Talaro. Panes turned off his truck's engine for a few minutes of rest.

As he leaned backward in his seat to relieve his aching back, he smiled as he recalled leaving home at 4:30 p.m. Before he left, he had told his wife, Remia, "Please give me a kiss. I'm going." Remia lovingly obliged, planting a kiss on his cheek as their three young grandchildren looked on. Lately, he found himself regularly complaining to Remia of exhaustion and muscle aches that persisted for days. Panes' thoughts drifted to the many times he and his wife talked about his retirement from the mining company. He had been working at the mines for 11 years. He wanted to buy a jeepney with his retirement money.¹³ But that had to wait for another six years. Or so he thought.

Suddenly, he heard a loud rumble from above. Panes was quick to start the truck's engine and maneuver the truck toward the exit path. But stones and dirt began pounding down on his truck and obscured his vision. In the next moment, there was a huge downpour of earthen materials. In a flash, Panes was entombed in his smashed truck by what was then backfill of the north face of the Panian pit. It was 3:45 a.m., July 17, 2015. Semirara Island would be awakened this Friday morning by a tragic mining accident, the second one in less than two years.

Upon reaching the coal island, Dureza confirmed that three miners were dead and six others were missing. Panes' body was recovered at around 6:30 a.m. on Saturday, July 18, a day after the unfortunate mine collapse. In days following the accident, the search and rescue team dug out, one by one, the bodies and body parts of the missing mine workers from the rubble of the collapsed north wall of the Panian pit. By July 22, the official report for the number of dead was nine.¹⁴

After talking to SMPC officials on the island, Dureza's team learned that it had rained from July 1 to 14. This could have loosened the soil, leading to the collapse of the mound of excavated soil and part of the wall of the mining pit. Engineer Arnel Jadormio, the company safety officer, said the monitoring system recorded soil movement on January 10, March 2, and July 5. On July 16, the monitoring system readings at 11 p.m. had indicated that soil movement was going in the direction opposite the mouth of the pit. At 3 a.m., there had been no movement according to the readings. The personnel conducting the readings left at 3:30 a.m.¹⁵

Fifteen minutes later, an estimated 374,000 cubic meters of excavated solid fell on the workers.¹⁶ The fatalities were Alexander Nudo, Arnold Omac, Dicson Daupan, Bernie Manriquez, Generoso Talaro,¹⁷ Noel Penolla, Ian Catulay,¹⁸ Danilo Bayhon,¹⁹ and Panes. (See **Exhibit 2**).

Exhibit 2

Retrieval and Clearing Operations at the Collapsed Panian Coal Mine



Source: Manila Bulletin. "EMB stops Semirara Mining Operations; Probe of Coal-Fired Power Plant Sought." 22 July 2015. Accessed 3 Nov. 2015. <<http://www.mb.com.ph/emb-stops-semirara-mining-operations-probe-of-coal-fired-power-plant-sought/>>.

The Significant Three: DOE, DENR, and EMB

Three Philippine government agencies had played key roles in unfolding the layers of events that would bring to light the true cause of the tragic coal mine accident at Semirara Island. These were the DOE, Department of Environment and Natural Resources (DENR), and the Environmental Management Bureau (EMB).

The DOE had been mandated to prepare, integrate, coordinate, supervise, and control all plans, programs, projects, and activities of the Philippine government related to energy exploration, development, utilization, distribution, and conservation.²⁰

Philippine Presidential Decree No. 972, which took effect July 26, 1976, was also known as "The Coal Development Act of 1976." This law provided for the active and systematic exploration, exploitation, development, disposition, and utilization of Philippine coal resources. It introduced the Philippine coal service contract system and established the appropriate guidelines for coal operations.²¹ Sections 4, 8, and 18 of the law had stipulated the Energy Development Board (the DOE in 2015), its successors or assigns as the government agency that would undertake the coal development program, execute coal operating contracts on behalf of the government, and promulgate rules and regulations for its implementation.²²

To comply with Presidential Decree No. 972, the DOE had promulgated and enforced two circulars: BED Circular No.1, Series of 1978 also known as the “Coal Mine and Safety Rules and Regulations” and BED Circular No.81-11-10 also known as the “Guidelines for Coal Operations in the Philippines.”

The circular on coal mine and safety rules and regulations was a set of rules and regulations pursuant to Section 9 of Presidential Decree No. 972. Safety rules were prescribed for underground and surface/open mine operations covering requirements for: exits, escape ways, submission of mine maps, ventilation, allowable limits of toxic and explosive gases, control of coal dust, ground support, rescue organization for emergency situations, fire protection, handling of explosives, health and sanitation facilities, and other miscellaneous safety rules. All holders of coal operating contracts and special operating permits had been required to comply with these rules and regulations. Non-compliance with these rules and regulations would constitute sufficient ground for cancellation of coal operating contracts or special operating permits.²³

Presidential Decree No. 1174 was signed and took effect on July 27, 1977. It amended Presidential Decree No. 972 with the following pertinent provisions:²⁴

- a. Awarded additional incentives to coal operators through the reimbursement of all operating expenses not exceeding 90% of gross income from production.
- b. Increased the amount of a special allowance for Philippine corporations from an amount not exceeding 20% to 30% of the balance of the gross income, after deducting all operating expenses.
- c. Granted timber and water rights within the coal contract area and access to government reserved lands subject to applicable laws and guidelines by concerned agencies.

On July 11, 1977, the Energy Development Board, awarded a 35-year coal operating contract to a consortium of companies — the Vulcan Industrial & Mineral Exploration Corporation, the Sulu Sea Oil Development Corporation, and Seafront Petroleum and Mineral Resources Incorporated. On April 7, 1980 the same coal operating contract was subsequently assigned to SMPC.²⁵

On June 8, 1983, the Ministry of Energy (the DOE in 2015), issued a new coal operating contract to SMPC that had given SMPC the exclusive right to conduct exploration, development, and coal mining operations on Semirara Island until July 13, 2012. On May 13, 2008, the DOE granted SMPC’s request for a 15-year term extension of its coal operating contract until July 14, 2027.²⁶

On November 12, 2009, the coal operating contract was amended further, expanding its contract area to include portions of Caluya and Sibay islands in the province of Antique, covering an additional area of 3,095 hectares and 4,096 hectares, respectively.²⁷

The DENR was the government agency tasked with implementing environmental and natural resources laws and policies and supervising related projects.²⁸ The DENR was also the agency that implemented the Philippine Environmental Impact Statement (PEIS) system, which was formally established by the Philippine Presidential Decree 1586 June 11, 1978.²⁹

The PEIS system was a comprehensive and integrated program designed to safeguard the Philippine environment and natural resources in the face of growing industrialization, urbanization, and other socio-economic undertakings. It provided the legal and procedural framework for conducting Environmental Impact Assessments (EIAs) for projects likely to have significant environmental impacts. The law had designated the DENR and EMB as the implementing agencies of environmental impact assessments.³⁰ The EMB was also the national authority in the Philippines responsible for pollution

prevention and control. It set air and water quality standards and monitored ambient and point source pollutants. It managed hazardous and toxic wastes under the Toxic Substances, Hazardous, and Nuclear Waste Control Act.³¹

Resource extractive industries including major mining and quarrying projects like coal mining were included in the list of environmentally critical projects as identified in the PEIS system.³² These projects were deemed to pose a high risk of negative environmental impacts. Hence, the proponents of these projects were required to secure an environmental compliance certificate prior to operation or any undertaking. For the required environmental compliance certificate, the proponents were obliged to have completed the environmental impact assessment process and prepared an environmental impact statement report for the perusal and approval of the regulating agencies, EMB, and DENR.³³

An environmental compliance certificate was a document issued by the DENR through the EMB after a positive review of the certificate application. The same document certified that based on the representations of the proponent, the proposed project or undertaking would not cause significant negative environmental impacts. The certificate also contained specific measures and conditions that the project proponent had to undertake before and during the operation of the project, and in some cases, during the project's abandonment phase to mitigate identified environmental impacts. The environmental compliance certificate would confirm that the proponent had complied with all the requirements of the environmental impact statement system and had committed to implement its approved environmental management plan.³⁴

SMPC was issued an environmental compliance certificate for the Panian pit by the EMB central office on August 12, 1999. The certificate covered 4,000 hectares. On November 27, 2000, the certificate was amended to cover another pit, the East Panian site that included 1,000 hectares. EMB Region 6 monitored compliance with this certificate.³⁵ The environmental impact of the mining activities were regularly being evaluated by the Multipartite Monitoring Team. This team was composed of representatives from SMPC, DENR provincial and regional offices, the office of EMB Antique, the office of the mayor of Caluya, Department of Health Antique office, and various local stakeholder organizations. The Multipartite Monitoring Team was tasked with ensuring that regulations and conditions of the environmental compliance certificate were followed.³⁶ In 2014, the team conducted three on-site monitoring activities, reporting on the quality of air and water, mine operations, and relevant social and environmental projects and concerns.

The Uncomfortable Silence: Suspension Orders

On July 23, 2015, another new day broke at Semirara Island. Unlike other mornings, this one was wrapped in silence. No distant booming sound of excavators. There was the absence of the familiar roar of dump trucks as they moved about the curved path of the pit, carrying truckloads of earthen materials from the bottom to the mound above. There was no bustling noise of workers as one shift replaced another for a day's work.

The unusual silence was also a consequence of the suspension orders on all mining activities by the government agencies that had direct and indirect jurisdiction on coal mining activities at Semirara. The first suspension order was issued by the DOE July 17. It was an immediate suspension on SMPC's coal operating contract. This had stopped all mining operations at the Panian mine.³⁷ The DOE, as the signatory of the mining contract on behalf of the government, had direct jurisdiction over all activities undertaken by SMPC on Semirara.³⁸

The second was in the form of cease and desist order on all mining activities on the island and was issued by the EMB-Region 6 July 20. The cease and desist order ending time was indefinite. It would only be lifted after SMPC had instituted better safety measures.³⁹ The next day, July 21, the mining company was slapped with another suspension order by the EMB central office in Manila, this time on the company's environmental compliance certificate.⁴⁰ The suspension on SMPC's environmental compliance certificate was put into effect as a precautionary measure since two accidents had already occurred in the Panian mine site.

As part of the suspension, the mining company's environmental compliance certificate, which was issued in 2009, was reviewed. The conditions that had been stipulated in the certificate in 2009 may have no longer matched the physical conditions of the mine in 2015. Without an environmental compliance certificate, SMPC could not resume operations even if the DOE and DENR lifted their separate suspension orders. The DOE's suspension order would remain in effect until such time that remedial measures and safeguards had been put in place by SMPC.⁴¹ On July 29, the DOE announced that it would conduct a further investigation. No concrete timeline for the investigation was given.

On July 30, SMPC received its fourth suspension letter, this time from Certification International Philippines Inc. (CIPI). It informed the company of the suspension on its integrated management system (IMS). The IMS certification was given to facilities that adhered to standards on safety, health, quality, and environmental management. It integrated the Environmental Management System (ISO 14001:2004), Quality Management System (ISO 9001:2008S), and Occupational Health and Safety Management System (18001:2007). The suspension on the ISO certificates would be lifted when DOE, DENR, and EMB lifted their suspension orders.⁴²

SMPC sent an appeal to the DOE as early as July 20 to lift the suspension order on its coal mining operation on Semirara island in three weeks' time because the remaining stockpile of coal was likely to be exhausted in that time frame. If the stock supply was exhausted before the suspension order was lifted, the local power plants that used Semirara coal would have to import coal. Six major plants in Luzon and Visayas used Semirara coal to produce around 1,500 MW of electricity per day. Importing coal for electricity generation would eventually translate into high costs for consumers.⁴³

The local government of Caluya and the residents of Semirara village had also conveyed their opposition to the total stoppage of mining activities. Also on July 20, the officials of Caluya council (Sangguniang Bayan of Caluya) issued a resolution calling for the continued operation of SMPC. The vice-mayor of Caluya explained that almost 80% of the residents in Semirara village worked at SMPC. If the Panian mine closed, their lives and livelihoods would be adversely affected. Businesses that sprouted in Semirara due to the operation of SMPC would also be impacted. The local government of Caluya, too, would suffer. Coal mining made Caluya a first-class municipality. From mine royalties alone, the local government of Caluya had earned on average not less than PhP 290 million (USD 6.53 million)ⁱ annually.⁴⁴

i Average US dollar to Philippine peso exchange rate: USD = PhP 42.442162 (2013), USD = PhP 44.399242 (2014) (Source: US FOREX Yearly Average Rates (USD to Philippine Peso) <<http://www.usforex.com/forex-tools/historical-rate-tools/yearly-average-rates>>).

For the second time in 36 years, silence pervaded at Semirara Island, affecting the economy of the island, the municipality of Caluya, and the economics of electricity generation in the country.

When would the silence be broken?

Coal Mining at Semirara: A Necessary Evil?

The Philippines was comprised of approximately 7,100 islands and was well known for its beautiful beaches. However, in the Philippines, when you asked ordinary folk about coal, the first answer that you would get was Semirara. Coal for Filipinos was synonymous with Semirara Island. (See **Table 1** for a summary of Philippine regional coal reserves).

Table 1

Summary of Philippine Regional Coal Reserves (in Metric Tons as of Dec. 31, 2010)

	Resource Potential	Positive Reserves	Probable Reserves	In-situ Reserves	Mineable Reserves
Cagayan Valley	336,000,000	80,104,730	3,695,000	82,568,063	70,182,854
Cebu					
Central	40,000,000	3,354,055	4,763,160	6,529,495	3,917,697
Northern	75,000,000	2,229,719	655,727	2,666,870	1,600,122
Southern	50,000,000	1,207,416	1,870,206	2,454,220	1,472,532
Davao	100,000,000	208,000		208,000	124,800
Masbate	2,500,000	74,994		74,994	44,996
Mindoro	100,000,000	1,310,641	198,000	1,442,641	865,585
Negros	4,500,000	1,204,952	1,213,387	2,013,877	1,208,326
Polillo, Batan & Catanduanes	17,000,000	4,975,416	1,604,675	6,045,199	3,627,119
Quezon	2,000,000	93,000		93,000	55,800
Samar	27,000,000	7,474,890	1,667,725	8,586,707	7,278,807
Semirara	570,000,000	105,543,151	43,820,358	134,756,723	114,543,215
Surigao	209,000,000	28,924,726	60,978,034	69,576,749	47,575,224
Zamboanga	45,000,000	33,995,639	5,984,679	37,985,425	22,791,255
Bukidnon	50,000,000				
Maguindanao	108,000,000				
Sarangani	120,000,000				
South Cotabato	230,400,000	35,093,186	68,959,017	81,065,864	48,639,518
Sultan Kudarat	300,300,000				
Total	2,366,700,000	305,794,515	195,409,968	436,067,827	323,927,851

Source: Philippine Department of Energy

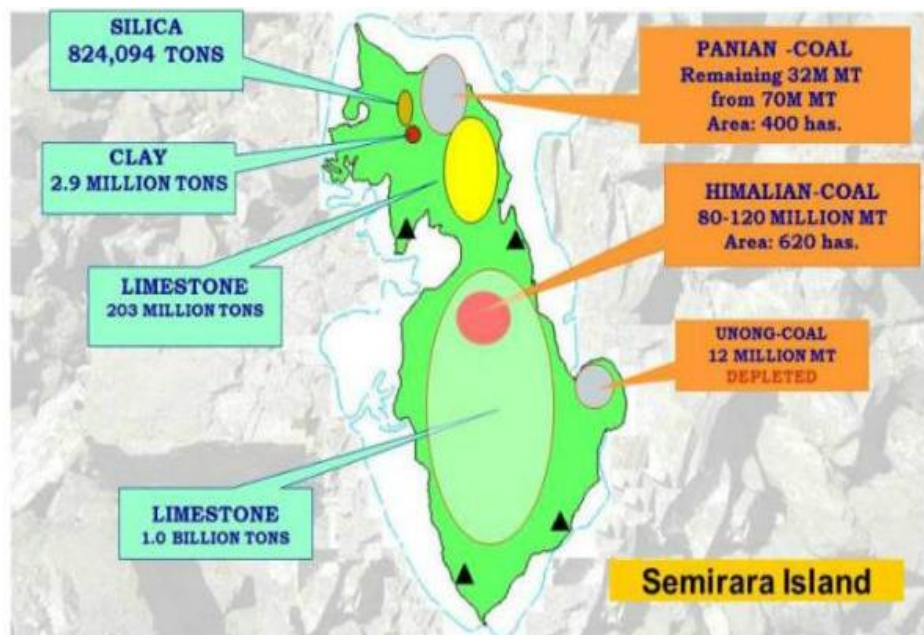
On November 20, 1940, the islands of Semirara, Sibay, and Caluya in the province of Antique were established as coal mining reservations through Proclamation No. 649, signed by then Philippine President Manuel L. Quezon.⁴⁵

These three islands belonged to the municipality of Caluya situated between the bigger islands of Mindoro and Panay, about four to five hours by ferry from both islands. Semirara Island was located 350 km south of Manila, the capital city of the Philippines. It had an area of 55 km² (21 miles² or 5,588 ha).⁴⁶

Coal resources had been discovered at four separate sites on Semirara Island. These sites were Unong, Panian, Himalian, and Bobog. The first mine operations were at the Unong pit mines. Production started in 1984 and continued until the end of the mine's economic life 17 years later.⁴⁷ In 2000, coal extraction started in the much larger Panian pit in the northern portion of the island. In 2015, much of Semirara's mine operations were at this pit mine.⁴⁸ (See **Exhibit 3**).

Exhibit 3

Coal Mine Sites at Semirara Island



Source: Rappler. "Fast facts: Who owns Semirara?" 17 Feb. 2013. Accessed 3 November 2015.
<<http://www.rappler.com/business/21968-one-of-ph-s-richest-own-semirara>>.

In 2004, an independent technical review by Minarco Asia Pacific Pty Ltd. had provided data on the total *recoverable coal reserves*ⁱⁱ in the Panian pit.

According to the review, there was a total of 52 million MTⁱⁱⁱ of recoverable reserves and a total of 210 million MT of *in-situ*^{iv} coal. There was another 120 million MT of *in-situ* coal inside the Himalian Mine, which in 2015 remained unopened.⁴⁹

On June 25, 2015, SMPC announced that a new reserve was found west of the Panian reserve. Called "West Panian," it had a reserve of 90 million MT. The Panian field had reserves of 17 million MT. Aside from the Panian and West Panian reserves, SMPC had also verified coal reserves in other parts of the island: 40 million MT of coal in the Bobog Pit and 80 million MT in the Himalian field. The brokerage firm Abacus Securities Corporation pegged Semirara's mine life to continue until 2036.⁵⁰

Much of the coal in Semirara Island was extracted through a method called open pit mining. This method of extracting coal was the most appropriate because the soil cover was thin (less than 5 m) and the thickness of the ore deposit was more than 100 m. Hence, the back cover-to-ore thickness ratio was financially beneficial to the mining company.⁵¹

ii Coal reserves of any particular place are defined as the amount of measured resource coal that can be expected to be economically mineable under the current economic and technological conditions

iii MT (metric ton) = 1,000 kilograms.

iv "In-situ" means that additional drillings are required to reclassify coal reserves to "proven and recoverable."

Open pit mining refers to digging a big hole in the ground and extracting the desired material. In practice, open pit mining involves a complex benching method of digging the hole (see **Exhibit 4**).

Exhibit 4

An Open Pit Mine at Semirara Island



Source: CNN Philippines. Accessed 4 Nov. 2015. <http://cnnphilippines.com/incoming/yibrk0-Semirara_Coal_site_CNNPH.png/alternates/FREE_640/Semirara_Coal_site_CNNPH.png>.

The benching is similar to the concrete benches at any local sports stadium in the Philippines, only these benches are about 10 to 20 m wide, winding around the open pit. Open-pit mines can expand to huge dimensions, until the coal deposit has been mined. Benchening provides stability and prevents landslides as the pit increases in depth to around 300 m, together with the increase in pit diameter (the Panian pit diameter was more than 1 km). Benchening in open pit mining also provides the road network for the trucks that haul the coal. These trucks bring the coal to the surface and unload it onto a rubber belt conveyor for processing to remove impurities and meet standards required by power plants (See **Exhibit 5**).⁵²

Semirara coal was of sub-bituminous grade with a heating value of 8,700 BTU/lb to 10,200 BTU/lb.⁵³ Although Semirara coal was middle grade (first grade anthracitic coal can have a heating value of 15,000 BTU), it had among the lowest inherent sulfur content, making it attractive as a lower-polluting fuel.⁵⁴

Annual coal production in 1997 was 806,451 tons run of mine^v coal.⁵⁵ In its 2014 integrated annual report, SMPC claimed that total coal production in the last three years was as follows: 2012, 7.710 million MT; 2013, 7.57 million MT; and 2014, 7.961 million MT.⁵⁶

^v Run of mine means the coal that comes directly from a mine that has impurities associated with it.

Apart from coal, Semirara island had about 824,000 tons of silica, 1.2 billion tons of limestone, and 2.9 million tons of clay. SMPC had the option to convert its permit into a mineral production sharing agreement. The agreement would grant the company the right to mine these other resources.⁵⁷

Exhibit 5

Benching at Semirara Coal Pit Mine



Source: Canadian Inquirer. Accessed 6 Nov. 2015. <<http://www.canadianinquirer.net/wp-content/uploads/2015/07/philippines-mine-2.jpg>>.

In its 2014 integrated annual report, SMPC reported that of the total coal volume it sold, the majority (59%) or 5.25 million MT went to foreign markets; China was its biggest customer. The rest went to local power plants (25%), cement manufacturers (10%), and other industrial plants (6%).⁵⁸

In 2015, six major plants in Luzon and Visayas used Semirara coal to produce around 1,500 megawatts of electricity.⁵⁹ These plants were the Calaca-Puting Bato Coal Powered Plant, Southwest Luzon Power Generation Corporation, the South Luzon Thermal Energy Corporation, Panay Energy Development Corporation, Cebu Energy Development Corporation, and Toledo Power Corporation.⁶⁰

Coal mining at Semirara island had provided employment to some 2,800 residents of the three villages — Semirara, Tinogboc, and Alegria. About 4,000 people had been relying on its operations for their livelihoods.⁶¹ Despite earnings from coal production, the lives of people had not significantly improved. For instance, in the villages of Tinogboc and Alegria, roads were still unpaved, there was lack of infrastructure, and an absence of a hospital with adequate personnel and facilities and the absence of a decent pier.⁶²

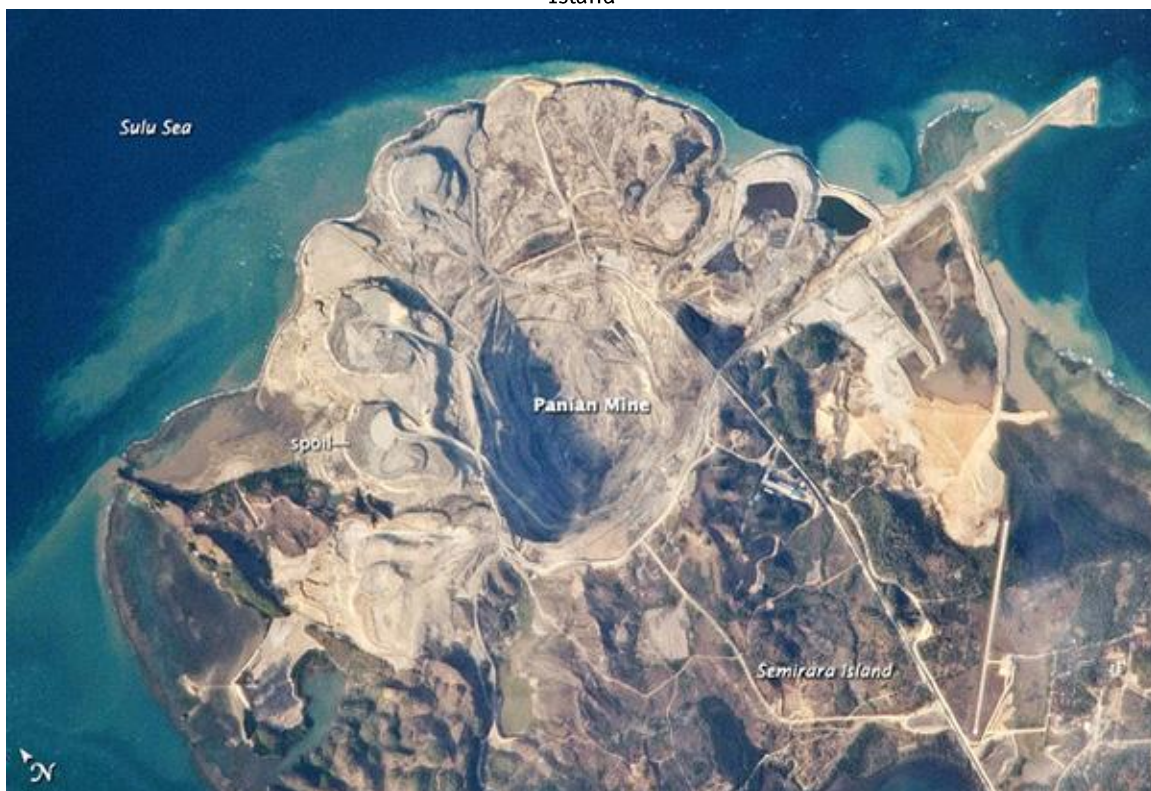
And then there was the issue of the environmental impact of coal mining activities.

Semirara Island had not always been about coal. Like many islands on this side of the Pacific, it had a rich biodiversity of corals, mangroves, fish, seaweeds, and forests. In the days before the mining company ramped up its operations on the island, local folk used to earn their livings from fishing, agriculture, and seaweed farming.⁶³ In 2014 local folks in the village of Tinogboc lamented that the mangroves, sea grass, and other marine resources that had sustained their livelihoods were fast diminishing. They feared that there might be nothing left of these resources for their children when the mining ended.⁶⁴

Open mining had reshaped large parts of the island as well. The hills were gone, replaced by huge mines. The excavated materials had filled the land as far as 2 km into the ocean, removing vast coral areas⁶⁵ (see **Exhibit 6**).

Exhibit 6

Aerial view of Panian Pit on Northern Semirara Island



Source: Philippine Star. Accessed 6 Nov. 2015. <<http://media.philstar.com/images/the-philippine-star/headlines/20150722/semirara-coal-mine-nasa.jpg>>.

The environmental impacts of mining at Semirara had been felt for years. These included loss of vast mangrove forests brought by clearing, land reclamation, and infill dumping; toxic contaminant buildup in surrounding waters; increased particulate matter in the waters and air; coral destruction; and air and water pollution.⁶⁶

Coal mining had increased the municipality's revenue. Yet it was unclear whether the economic benefits trickled down to ordinary citizens and whether those benefits outweighed the environmental and social impacts that coal mining had created.

Semirara Mining and Power Corporation (SMPC)

Coal at Semirara Island had been mined for 36 years by a single mining company, SMPC. This mining company was owned and chaired by the fifth richest man in the Philippines in 2012, David Consunji. Consunji and his eight children operated DMCI Holdings, Inc., the holding firm for all the business interests of the family.⁶⁷

SMPC was incorporated on February 26, 1980 to explore, develop, and mine the coal resources on Semirara Island. The company had the exclusive rights to conduct exploration, development, and mining on the island.⁶⁸

SMPC started commercial operations in 1983. However, in the years that followed, it struggled through operational inefficiencies, debt restructuring, loan foreclosures, falling coal prices, and the devaluation of the Philippine peso.⁶⁹ In April 1997, DMCI acquired a 40% interest in SMPC's common shares, including PhP 2.5 billion (USD 84.8 million)^{vi} of its outstanding loans. Following SMPC's sustained financial difficulties, DMCI agreed to a debt-to-equity conversion in 1998, raising its total interest in SMPC to 74%.⁷⁰ In 2015, DMCI had 56% ownership of SMPC and derived about 40% of its income from it.⁷¹

After gaining controlling interest in SMPC, DMCI appointed a new management team in August 1999. The team was composed of local and expatriate staff. Since then, SMPC had adopted flexible, cost efficient, and advanced mining techniques to increase the quantity and improve the quality of its coal production. From an initial annual coal production of 806.451 tons run of mine coal in 1997, it was able to produce 7.12 million MT run of mine coal in 2013.⁷²

In 2014, SMPC had disclosed that due to higher mine site productivity, there was a marked growth in its coal sales from 7.63 million MT in 2013 to 8.89 million MT in 2014, an upsurge of 16%, even though the price of coal had dipped by 3% to PhP 2,127 (47.906 USD) per MT from PhP 2,185 (USD 51.482) per MT in 2013.⁷³

Despite the decline in global coal prices, the higher energy content or *calorific value* of Semirara coal had provided a premium on its export price, which slightly increased (1%) from PhP 2,142/MT (USD 50.468) in 2013 to PhP 2,164/MT (USD 48.739) in 2014.⁷⁴

In 2009, SMPC acquired two 300-MW coal-fired power plants located in Calaca in the province of Batangas. With the SEM-Calaca Power Corporation, SMPC had been transformed from a pure mining company into an integrated power company.⁷⁵

In 2014 SMPC was the only large scale coal producer in the Philippines, and the only power producer in the country that owned and mined its own fuel source. It had accounted for more than 90% of the Philippines' domestic coal production and had supplied 20% of the country's total coal demand.⁷⁶

The Philippine Coal Outlook

Coal had always been an important resource for power generation in the Philippines. In 2005, coal had the highest contribution to the power generation mix at 27%.⁷⁷ In 2011 the total percentage of coal

vi Average US dollar to Philippine peso exchange rate in 1997: USD = PhP 29.471

(Source: <<http://www.nationsencyclopedia.com/economies/Asia-and-the-Pacific/Philippines-MONEY.html>>).

in power generation was increased to 37% and it was 36.63% in 2012.⁷⁸ In 2014, coal accounted for 34% of the power generation mix, with 13 coal-fired power plants in operation.⁷⁹

Trends indicated that coal's role in the country's energy mix was growing.⁸⁰ In 2014, the Philippine government had lined up 45 new coal power plants in various planning and construction stages. In 2015 the government announced that 23 new coal power plants would go online in 2020.⁸¹ This endeavor was viewed as one of the solutions to the challenge of increasing energy demand in the context of increasing population. Electricity consumption in the Philippines had been expected to grow by an average of 5.7% annually between 2015 and 2020, while electricity generation was expected to lag at just 5.3% average annual growth.⁸²

The key energy policy, the Philippine Energy Plan for 2012-2030 was guided by the vision of providing "energy access for more." The plan envisioned bringing reliable and affordable energy services to a larger populace that was expected to accelerate and sustain local productivity and countryside development.⁸³ To achieve the goals of energy security and energy independence, the government had recognized that a highly diverse energy mix was needed to fuel the Philippine economy. The plan had aimed to increase the utilization of indigenous energy resources (fossil fuels and renewable energy) by 2030.⁸⁴ The utilization of fossil fuels (coal, oil, and gas) to sustain primary energy demand stood at an average of 86% annually. With the implementation of the Renewable Energy Act of 2008, the utilization of renewable energy sources in the mix was expected to rise.⁸⁵ But energy generation was still dependent on the fossil fuels.

Still, in the context of pursuing energy independence, the Philippine government had undertaken several measures to identify and encourage greater understanding of the country's hydrocarbon resources. For the country's coal potential, estimates of coal reserves from several studies had been wide ranging and conflicting. From 316 million MT to as much as 19,000 million MT had been the estimates for coal that would have been economically recoverable. In addition, *potential coal resources* ^{vii} had been estimated to be 270,000 MT.⁸⁶

Coal had been considered a dependable, reliable, and cost effective option for power generation. Thus the DOE was obligated to continually optimize the exploration, development, and utilization of indigenous coal reserves. To achieve this, the agency had regularly conducted the Philippine Energy Contracting Round (PECR). This was a transparent and competitive system for awarding service contracts for coal, petroleum, and gas resources. The goal of PECR had been to showcase the exploration opportunities in the Philippines and to attract energy investors to develop the country's indigenous resources.⁸⁷

On May 9, 2014, the DOE conducted PECR 5, the latest contracting round for petroleum and coal. Eleven coal areas were offered for exploration.⁸⁸ On December 19, 2014, DOE announced that it had awarded seven new coal areas for operation.⁸⁹

As of December 31, 2012, there was a total of 60 companies holding 68 coal operating contracts. Of these, 29 were involved in various stages of exploration and 31 were in various stages of development and production.⁹⁰ As of 2012, the DOE monitored and supervised 68 coal operating contracts and had issued a total of 84 small-scale coal mining permits.⁹¹ In December 2014, the number of coal operating contracts had risen to 78.⁹²

Local coal production from operating contractors had continuously increased over the years. As of December 2014, a total of 7.58 million MT at 10,000 BTU/lb of local coal had been produced that year.

vii Coal resource refers to how much coal is actually in the ground.

The open coal mine pit in Semirara, Antique contributed the majority share registering 96.9%. Small scale coal mines in Negros, Surigao del Sur, Zamboanga del Sur, Bicol, and Cebu had yielded about 232,100 MT or the remaining share of 3%.⁹³

However local coal demand for the last three years had averaged 14.83 million MT. Obviously production could not meet demand. More than 50% of the annual coal consumption for the last three years was imported (see **Table 2**).

Table 2

2012-2014 Coal Supply and Demand Forecast (in Million MT at 10,000 BTU/lb)

	2012	2013	2014
DEMAND	14.42	14.79	15.28
Power generation	12.25	12.60	13.06
Industry	2.17	2.19	2.22
SUPPLY	5.80	5.97	6.60
Production	8.62	8.82	8.68
Importation			

Source: APEC Energy Working Group. Accessed 23 Nov. 21015. <www.egcfe.ewg.apec.org/publications/proceedings/CFE/Australia_2012/4A-2_Ocampo.pdf>.

The increased consumption of imported coal started in the 1990s when a large number of coal-fired power plants designed to burn imported coals were built. In 2010, demand for coal from the power sector was 12.5 million MT and this was projected to increase to 16-20 million metric tons by 2015, and to 30-40 million MT by 2030.⁹⁴

Apparently the trend on coal demand and production, seemed to compel the Philippines to boost local coal production at present time as well as in the future. To meet the growing demand for the resource especially in electricity generation and to achieve energy security and energy independence, it is essential to espouse a scheme that would attract more investors and accelerate the granting of more coal operating permits especially for large scale mining

Deafening Clamor: Reactions to the Mining Accident

On July 18, 2015, the day after the second coal mine accident, Senator Loren Legarda, chairperson of the Senate Environment Panel, reminded mining site operators of the importance of safety in coal mining in a press release. The senator stressed that safety measures in mining areas should be stringent and that work should have been suspended at Semirara amid heavy rain. "Semirara Mining Corporation was given a license to operate an open pit mining facility. It is their responsibility to comply with

occupational and safety standards. On the other hand, government agencies, particularly the DOE, the DENR, and the Department of Labor and Employment (DOLE) must strictly enforce safety standards on these mining sites,” the press release read.⁹⁵

On July 19, Antique Governor Rhodora Cadio spearheaded a resolution through the Antique Provincial Disaster Risk Reduction and Management Council recommending closure of the north side of Panian open pit. “It’s time to let go of Panian pit. Mother Earth is already crying. She is sending a message to stop because it is over-mined. It is already two and a half km below sea level,” Cadio said. “I want to clarify that we only want the closure of the Panian pit and not the entire operation of the Semirara mining.” Cadio said she could not compromise the lives of Antiqueños in exchange for economic gains from the coal mine.⁹⁶

The same day, a research group from IBON foundation, a non-profit development organization, had called on the government to rescind the 20-year-old Republic Act 7942 or the Philippine Mining Act of 1995. IBON said that the recent mining disasters brought to fore not only safety issues in the workplace, but also the dangers that large-scale mining posed for the miners’ livelihoods. It indicated that the law had allowed the operation of big local and foreign corporations in large scale mining nationwide, undermining farming and indigenous communities and compromising the Philippine environment.⁹⁷

Similarly, members of the Philippine Movement for Climate Justice had called for the eventual closure of mining operations in Semirara Island. The group said mining operations in the area should be replaced by renewable sources of energy in phases. It had opposed the extension of mine operations as well as the expansion of the mining areas.

The Philippine Movement for Climate Justice was a broad movement of 103 national networks and local organizations representing basic sectors, grassroots communities, and the marginalized and most vulnerable groups (women, indigenous peoples, fisher folk and coastal communities, farmers and rural communities, forest communities, formal and informal workers, environmental groups, and the urban poor) in the Philippines.⁹⁸

On July 20, the Catholic bishops of the Philippines had called on the Philippine government to rethink its mining policy. Fr. Jerome Secillano, executive secretary of the bishops’ public affairs office, said: “In mining, tragedies are likely to happen. It’s unfortunate that the workers who earn a measly sum from such dangerous work are always the victims. Mining destroys our natural resources, contributes little to our country’s income, and endangers the lives of workers. I hate to say this, but it’s only the mining companies that are benefitted enormously. Its negative effects obviously outweigh the positives.”⁹⁹

Also on July 20, SMPC announced that it would provide PhP 1 million (USD 27,728) to each of the nine grieving families. Furthermore, the mining company had promised to undertake the following actions for the dead workers’ families: facilitate life and accident insurance claims; release additional funds for their transportation and other expenses; shoulder educational expenses up to the collegiate level for their children; provide jobs for children who were of employment age; provide all funeral expenses; provide the families with free permanent housing on Semirara Island if they decide to stay or provide them with housing assistance elsewhere.¹⁰⁰ The Caluya local government had also pledged PhP 25,000 (USD 550.72)^{viii} to the families of each of the casualties and PhP 10,000 (USD 220.37) to the survivors.¹⁰¹

viii 2015 Average US dollar to Philippine peso exchange rate: USD = PhP 45.378475.

In the local regional newspaper Daily Guardian, Edgar Mana-ay, a retired mines maintenance manager of the Philippine National Oil Company at the Malangas Coal Mines in Zamboanga and a professional member of the Geological Society of America, wrote: “To call for the permanent closure of Semirara Mine because of two accidents in the past two years is being simplistic and brainless.” Mana-ay noted that some 80% of electric power at Panay Island had been fueled by coal, 40% in Negros Island and 50% countrywide. Because of coal, the electric bill of Panay Island in 2015 had averaged PhP 12.00 per kWh (USD 0.26 /kWh). It was PhP 19 per kWh (USD 0.42 /kWh) at Palawan Island since their power plants utilized bunker fuel.¹⁰²

Providing an analogy Mana-ay further wrote that in the past two years, there had been more than 15 casualties due to motorcycle accidents in Iloilo province. “Does that mean that all motorcycle stores in Iloilo should be closed? That would be absurd and foolish. The riders who had been either drunk or careless caused the fatal accidents. In the case of Semirara mines, the direction should have been towards more of safety engineering practice at the coal mines and increased skills of government agencies to conduct a safety audit. But certainly not closure.”¹⁰³

On July 22, DOLE announced that it had allocated an initial amount of PhP 100,000 (USD 2,204) in livelihood assistance for the families of the nine dead mine workers. Under the DOLE Integrated Livelihood and Emergency Employment Program the families had the option to use the amount for their livelihoods through livestock farming, trading, or grocery sales.¹⁰⁴

Probable Cause

From the moment they arrived at Semirara, Dureza and his team had their hands full as they went about their investigation. They had been roaming the Panian pit mine, taking photographs of the physical state of the mines from the first day they arrived.

Two engineers on the team were tasked with taking measurements and conducting quantitative investigations. They found that 2.7 ha of the north Panian mine wall had collapsed.¹⁰⁵ They also came to the conclusion that the mine pit was already about 2 kilometers below sea level.¹⁰⁶ There was a possibility of water seepage. Dureza recalled that seeping seawater was also believed to be the cause of the 2013 accident.¹⁰⁷ Dureza and another team member joined the search and rescue team in their operations. They witnessed how man and machine together were pulled out of the rubble. Many of the missing were truck drivers and excavator operators; they were buried together with the equipment they were operating.¹⁰⁸

On July 20, Cadio divulged that based on the initial result of the investigation by the Antique Provincial Police Office, the cause of the landslide was the loose soil excavated from the ground and stocked above or near the mouth of the open pit. “The loose soil was taken from the ground and was placed near the mouth of the open pit. It was as high as a mountain and for two weeks of raining, it became heavy and became saturated with water; it caused the mouth of the mine site to collapse,” Cadio said.¹⁰⁹

Caluya Mayor Genevieve Lim Reyes of the municipality of Caluya said in a statement that despite the landslide, the local government maintained its belief that it was an accident: “We know the lives of all

employees of the company are regarded seriously by the management, and reflect our own staunch views on safety and proper precaution.”¹¹⁰

As Dureza and his team investigated the area to determine the true cause of the 2015 Semirara mining accident, they could not help thinking about the trade-offs associated with the mine's operations. The mine provided jobs and energy to the Philippines, but also had negative environmental and social impacts. It seemed that all stakeholders from the company owners to the townspeople to the government and citizens had strong, often conflicting points of view.

Composing the Narrative

Another Friday was about to end. But for Dureza, there would be no respite for the weekend. As he put the maps, pictures, and printed materials into his briefcase, he tried to work out in his mind the outline of his comprehensive report. He closed his case and gave a sigh of relief. He was confident that he could write the comprehensive report based on their investigation of the accident. The report would enable the DOE to make a decision to lift or continue the suspension of operations in the Panian open pit mine.

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