



Canatuan – A History of Success



November 2015

Canatuan Overview



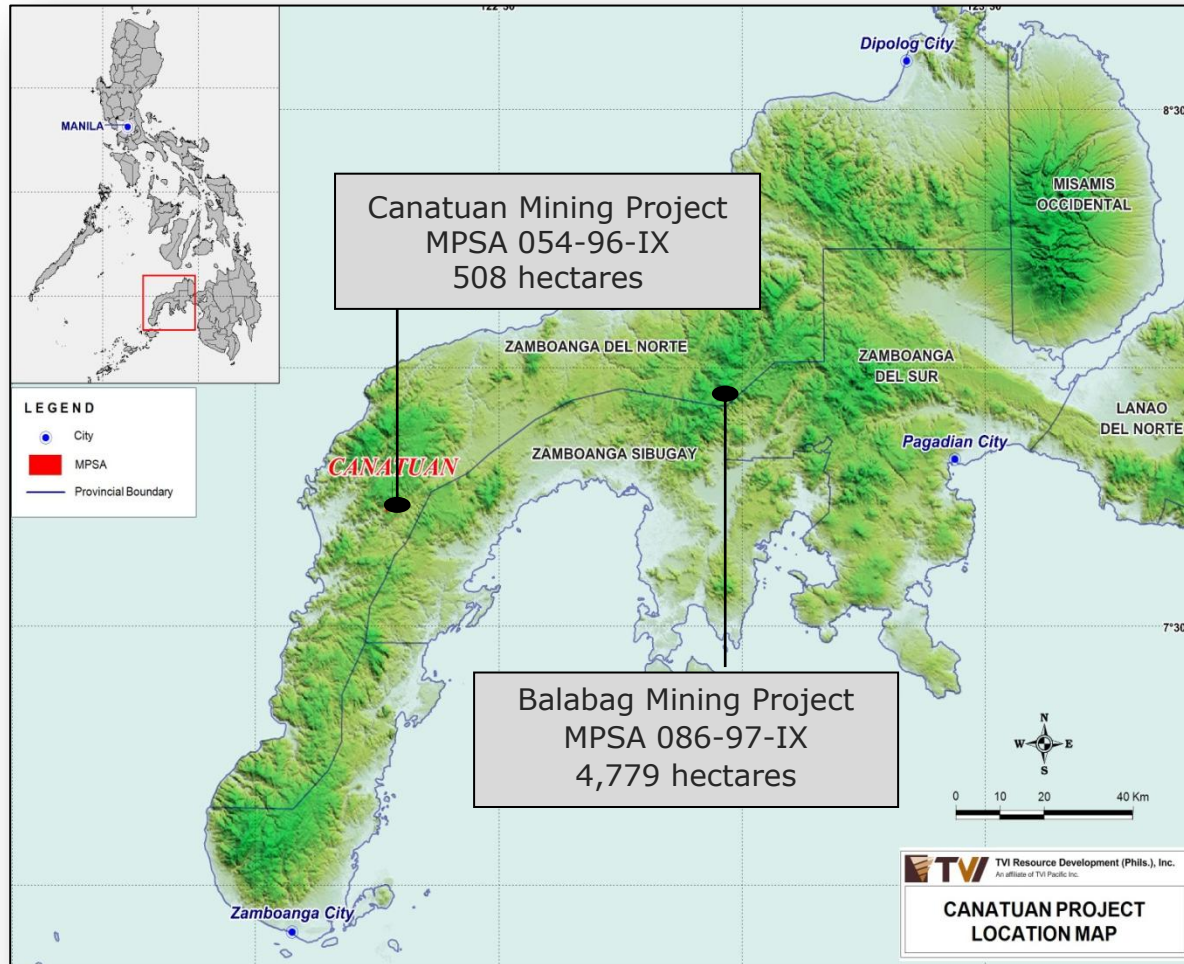
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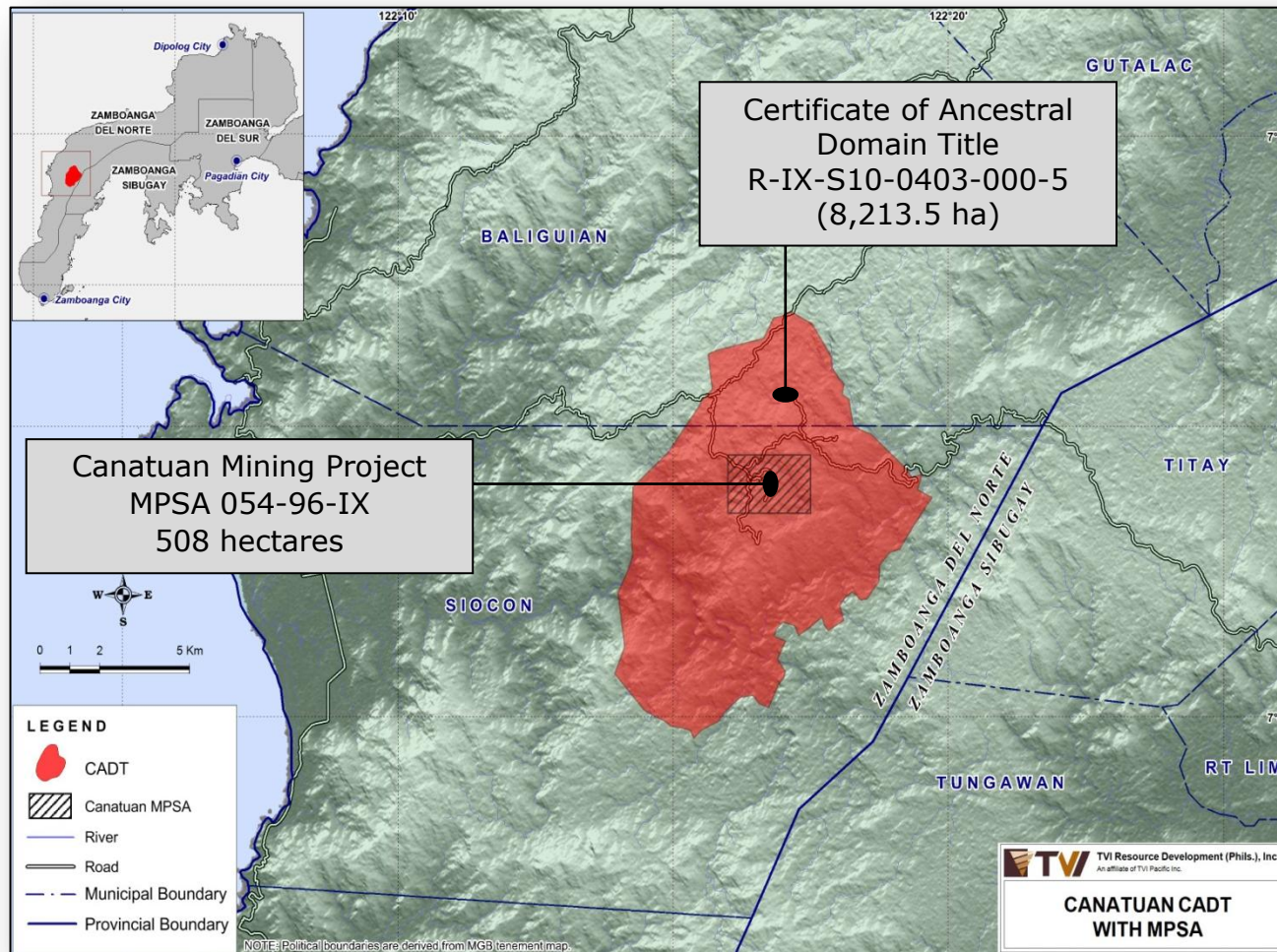
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Canatuan Overview



- The Canatuan Mining Project was the first foreign-invested mine to reach production after the passage of the Philippine Mining Act of 1995.
- Located within the Province of Zamboanga del Norte in Mindanao, with the agricultural town of Siocon as the host Local Government Unit.
- The Project encompasses a 508-hectare property and is covered under a Mineral Production Sharing Agreement (MPSA) valid from October 23, 1996 until October 23, 2021.
- The Declaration of Mining Project Feasibility was approved in October 2002.

Canatuan Overview



- The MPSA is located entirely within an 8,213 hectare Certificate of Ancestral Domain Title (CADT) awarded to the Indigenous People known as the Subanen.
- A Memorandum of Understanding with the Subanen for implementation of the Project was signed in October 2001 and a subsequent MOU was signed in November 2003.
- Royalties paid to the Subanen throughout the 10 year mining period

Canatuan Overview

Two full-scale projects were developed during the mining operations and focused on two distinct orebodies:

- An upper gold and silver-rich **gossan** (oxidized) zone which was mined between Years 2004 and 2008. A combined gold/silver dore was the product of this operation.
- A lower copper and zinc-rich **sulphide** zone which was mined from Years 2008 to 2014 and processed. Conventional flotation circuits were used to produce copper and zinc concentrates.

By the end of operations, nearly 6 million tonnes of ore were mined and processed.



Activity Timeline

- 1996 MPSA Issued
- 1996 Feasibility Studies
- 1997 1st ECC
- 2002 DMPF
- 2003 Issuance CADT
- 2004 Begin Gossan Operations
- 2007 Preparation of Final Reclamation and Closure Plans (FMRDP)
- 2008 End Gossan Phase Operations
- 2008 Begin Sulphide Operations
- 2009 Approval FMRDP
- 2014 End Sulphide Operations
- 2015 Begin Closure Plan
- 2021 Expiration MPSA

Mine and Mill Production History for Combined Phase Operations

Mining Project Phase	Mined Ore (tonnes)	Milled Ore (tonnes)	Waste Overburden (tonnes)	Total Material Extraction (tonnes)
Gossan	1,750,652	1,750,652	2,885,093	4,635,745
Sulphide	4,136,300	4,229,351	5,797,393	9,933,693
Total	5,886,952	5,980,003	8,682,486	14,569,438



Canatuan Before TVIRD



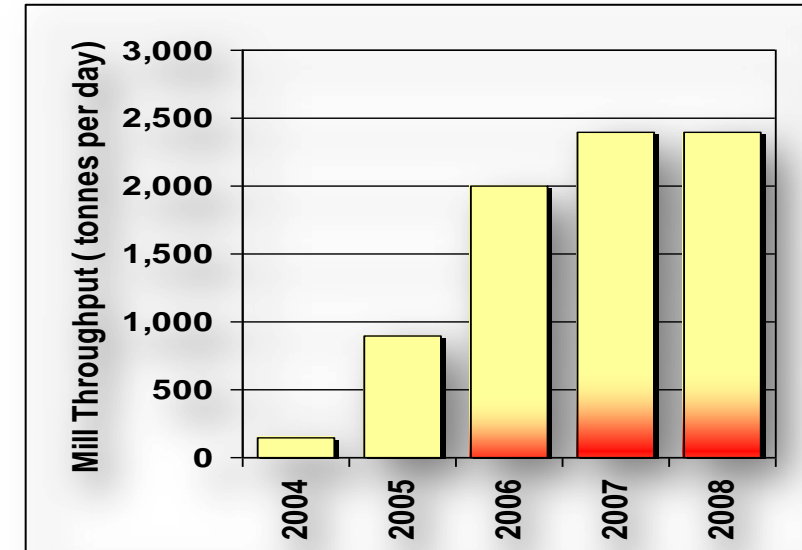
- Prior to TVIRD's involvement in 1994, the Canatuan area saw many years of illegal mining activities carried out by a population in excess of 10,000 small scale miners.
- The area suffered from uncontrolled tailings discharge to the area streams and rivers as well as rampant deforestation in support of the illegal mining activities.
- Child labor was predominant and few or no safety measures were implemented.
- In 2002 and 2003 TVIRD purchased tailings contaminated with cyanide and mercury from the small scale mining operators to clean up the area and to act as feed for the initial gold extraction pilot plant.
- The plant processed approximately 24,000 tonnes of tailings which were then deposited within an engineered tailings storage facility.

Canatuan Gold and Silver Operations Years 2004-2008



- In July 2004, TVIRD commissioned a full-scale processing plant for the Gossan Phase of operations (gold-silver) with an initial daily throughput of 125 dry metric tonnes.
- The processing plant used CIL recovery methods and produced gold and silver doré.
- Processing facilities were incrementally expanded over a 4 year period to a maximum daily production of ~2,500 tonnes per day in 2008.
- Initial capital costs were low and mostly funded by existing cash flows from earlier tailings processing:
 - **Prior to 2005:** US\$16.89 Million
 - **Sustaining (2005 to 2007):** US\$12.29 Million
 - **Project Total US\$29.18 Million**

Daily Mill Throughput Capacity

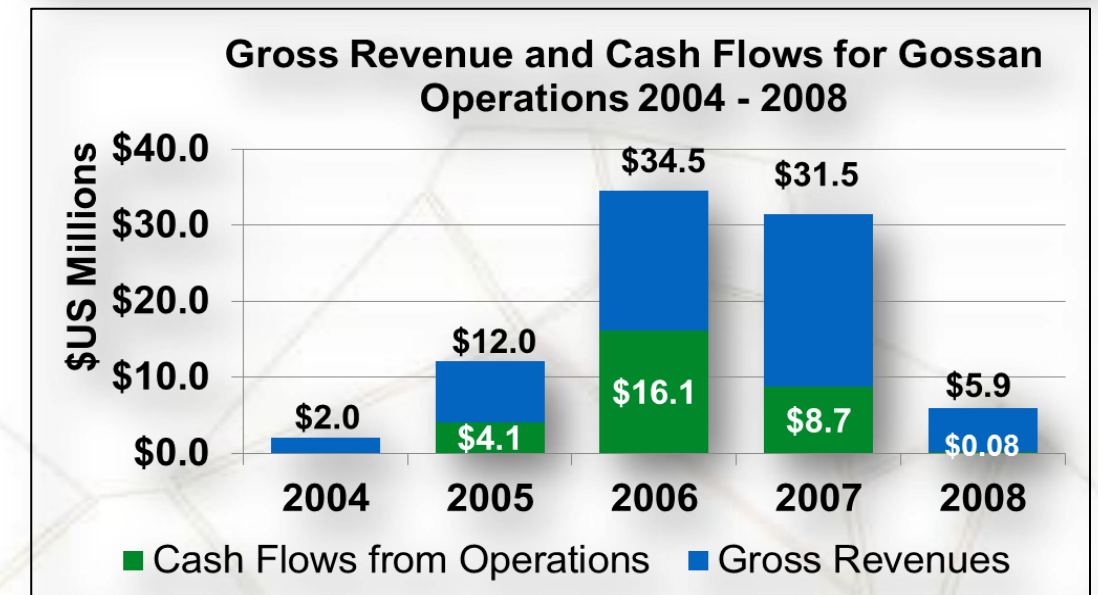
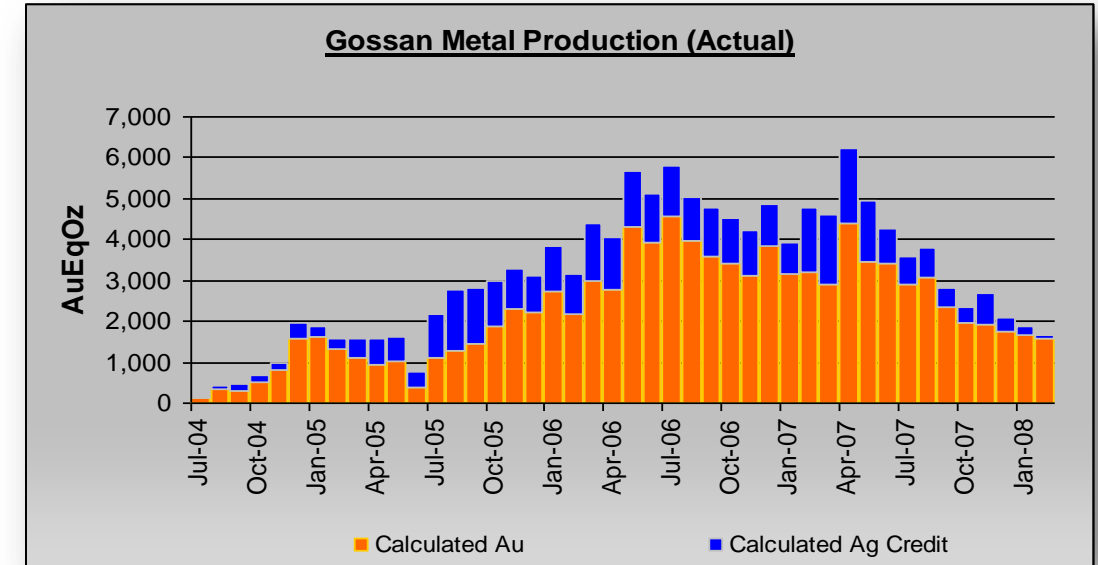


Canatuan Gold and Silver Operations Years 2004-2008



Financial Summary

- **AuEq (Equivalent Gold) produced: 137,000 ounces** (at average operating cost of US\$26 per tonne of ore milled)
- **Original reserve estimate:** 1.0 million tonnes at 3.12 grams per tonne of gold and 119 grams per tonne of silver.
- **Actual mined amount:** 1.9 million tonnes at 2.1 grams per tonne of gold and 70 grams per tonne of silver.
- Mine life was extended due to increased metal prices and lower cutoff grades
- **Gross revenues (2004-2008): US\$86.0 Million**
- **Net Cash Flow from Operations (2005-2008): US\$29.0 Million**



Canatuan Gold and Silver Operations Years 2004-2008



Gossan Surface Mine



Ore Stockpile



Mill and Processing Plant



Gold and Silver Recovery Leach Tanks



Pouring of Gold/Silver Bars

Canatuan Copper and Zinc Operations Years 2009-2014



- In May 2008, TVIRD began construction of a sulphide plant and associated infrastructure to process the underlying sulphide orebody containing copper and zinc.
- Construction on the sulphide plant was completed on time and under budget in November of 2008.
- Initial CAPEX for the project was **US\$28.3 million**
- Exclusive copper offtake agreement with MRI Trading AG was signed in October 2008
- Copper ore processing began in November 2008 and first copper concentrate shipment was made in March 2009.



Canatuan Copper and Zinc Operations Years 2009-2014



- In January 2009, TVIRD arranged a US\$30.1 million 5-year Omnibus Loan and Security Agreement with LIM Asia Multi-Strategy Fund Inc. and LIM Asia Special Situations Master Fund Limited to support mining operations and complete the residual construction related to the sulphide plant.
- By June 2010, (less than 18 months) TVIRD had completely repaid the US\$30.1 million Omnibus Loan and Security Agreement using cash flows from operations and local financings – well ahead of schedule.
- On April 25, 2011 TVIRD announced the commencement of zinc production at the Canatuan mine. The first shipment of zinc concentrate was completed on August 12 that year.



Canatuan Copper and Zinc Operations Years 2009-2014

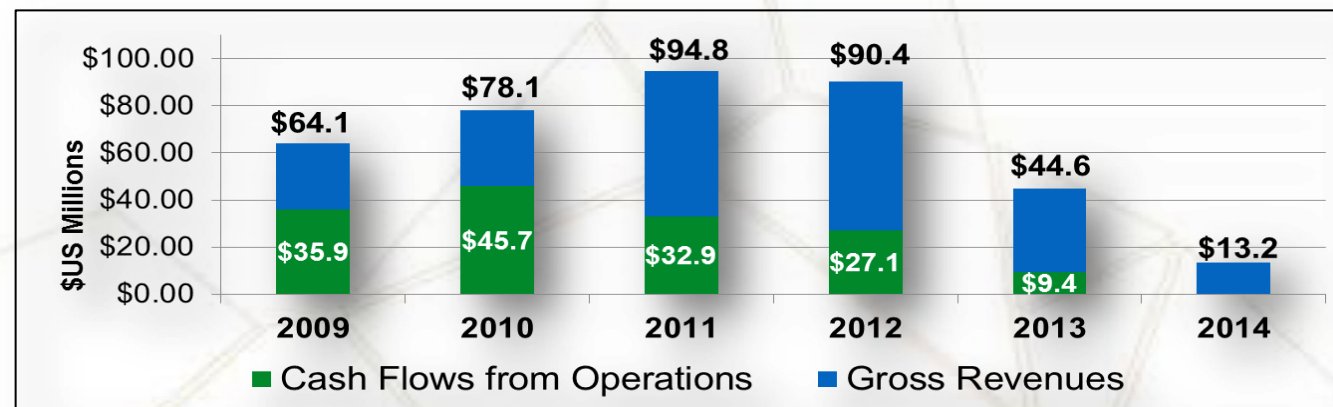


Financial Summary

- Milling operations ended in January 2014.
- **Originally anticipated amount of concentrate to be produced:** 119,800 tonnes of copper concentrate and 6,100 tonnes of zinc concentrate.
- **Actual amount of concentrate produced:** **199,778** tonnes of copper concentrate and **30,548** tonnes of zinc concentrate.
- **Gross revenues (2009-2014): US\$393.0 Million**
- **Net Cash Flows from operations (2009-2013): US\$151.0 Million**

		2009	2010	2011	2012	2013	Q1 2014
Mill Throughput	<i>tonnes per</i>	1,439	2,204	2,389	2,645	2,701	3,068
Copper pound equivalent produced	<i>thousand Cu lb eq</i>	26,824	25,312	26,437	28,197	20,296	
Copper produced	<i>thousand</i>	20,726	19,923	16,680	14,955	10,842	
Gold produced	<i>oz</i>	6,970	6,316	7,248	11,430	11,026	
Silver produced	<i>oz</i>	532,108	514,299	486,026	504,626	371,967	
Zinc produced	<i>thousand</i>			8,847	13,619	9,111	
Copper concentrate produced	<i>dty metric tonnes</i>	50,403	48,300	34,055	37,231	28,055	1,066
Zinc concentrate produced	<i>dry metric</i>			7,924	12,713	9,923	
Total Cost per Cu lb eq	<i>(\$US)</i>	1.05	1.84	2.81	2.67	2.88	2.53
Production cash cost per	<i>(\$US)</i>	0.61	0.99	1.51	1.40	1.81	1.81

Gross Revenue and Cash Flows for Sulphide Operations 2009-2014



Canatuan Copper and Zinc Operations Years 2009-2014



Sulphide Mill and Processing Plant



Concentrate Production and Shipping from Port Sta. Maria

Canatuan Operations Financial Summary Years 2005-2014



Gossan Phase Operations Years 2004-2008

- Total Project CAPEX: US\$ 29.18 million
- Gold Equivalent Produced: 137,000 ounces
- Gross Revenue: US\$ 86.0 million
- Cash Flow Generated: US\$ 29.0 million



Sulphide Operations Years 2009-2014

- Initial CAPEX: US\$ 28.3 million
- Total Project CAPEX: US\$ 44.8 million
- Copper Concentrate Produced: 199,778 tonnes
- Zinc Concentrate Produced: 30,548 tonnes
- Gross Revenue: US\$ 393.0 million
- Cash Flow Generated: US\$ 151.0 million



TVIRD Industry Awards - "Best in Class"



From 2010 to 2013, TVIRD received multiple prestigious awards at the annual Presidential Mineral Industry Environmental Awards ceremony.

2010 Awards:

- Platinum Achievement Award, Surface Mining Category
- Safest Mines Award, Concentrator Category
- Mining Forest Award, Metallic Category
- Health and Safety Award

2011 Awards:

- Titanium Award for Excellence in Environmental Management
- Safest Mining Operation
- Safest Surface Mining Operation
- Safest Mineral Processing, Concentrator Category

2012 Awards:

- Presidential Mineral Industry Environment Award – Platinum Award
- Safest Surface Mining Operation
- Safest Mineral Processing, Concentrator Category
- Best Mining Forest, Metallic Category – 3rd runner up

2013 Awards:

- Titanium Award – Surface Mining Category
- Safest Mineral Processing, Concentrator Category
- Safest Exploration (for Agata Nickel Project) – Category A
- Best Mining Forest, Metallic Category – 2nd runner up



Commitment to Environmental Protection and Environmental Resiliency



Environmental Management and Rehabilitation Programs

- 320,000 trees planted during the operations period. Nearly 140,000 cash crops are planned as part of the final rehabilitation
- No negative climate change impacts based on the PAGASA Climate Change model.
- Carbon sequestration potential after rehabilitation nearly 10 times greater than pre-mining conditions.
- Monitoring programs by internal and third parties included:
 - Terrestrial flora and fauna and aquatic resource habitat
 - River and stream water and sediment quality
 - Air quality and noise impact
 - Forest resources within and around the Project area
 - Meteorology, hydrology and watershed impacts
 - Geotechnical and operating performance of tailings storage facilities
- More than US\$45 million spent on environmental management programs and infrastructure during operations and final rehabilitation.



Commitment to Environmental Protection and Environmental Resiliency



Mining Waste and Process Tailings Management

- Waste rock disposal areas developed using engineered slope stability methods and geotechnical controls. Areas rehabilitated using cash crops for post mining agricultural benefits.
- Four dams and tailings storage impoundments constructed for tailings management and environmental protection
 - Designed for the Maximum Credible Earthquake and Probable Maximum Flood.
 - Design and construction management by international engineering firms specializing in tailings dam design and construction management.

Commitment to Social Responsibility and Community Resilience



- Social and Community activities focused on 4 primary components:
 - Health and Sanitation
 - Responsive Education
 - Sustainable Livelihood
 - Community Infrastructure
- Two 5-year Social Development and Management Programs (SDMP) completed during the Canatuan operating period.
- Combined expenditures for the Canatuan SDMP activities was nearly Php 173 million between 2004 and 2015.
- More than Php 264 million were paid to the local Subanen Indigenous Peoples as royalties during the Gossan and Sulphide operations periods.



Commitment to Social Responsibility and Community Resilience



- Health and Sanitation Sector - TVIRD constructed a health clinic that provides free 24/7 healthcare, ambulance service and health & wellness programs -- receiving 14,000 consultations and admissions per year.
- Responsive Education - TVIRD constructed 10 schools accommodating nearly 4,000 students as well as providing teachers, learning tools, equipment and 48 college scholarships.
- Sustainable Livelihood - Focused on sustainability, economics and social well-being of community including micro-finance, technical skills, training and apprenticeship programs.
- Infrastructure -TVIRD built four bridges in partnership with the Philippine government and a major highway spillway. Built and maintained a road network of 140 km that mobilized people and goods. Built Sta. Maria water system and 11 kilometers of farm-to-market roads.

Canatuan Post Mining Agribusiness



- In 2013, TVIRD established TVI Agriproducts Inc., to shift local economy at Canatuan from mining back to agriculture,
- TVI Agriproducts formed a joint venture an international company to engage local communities in the production and sale of cacao beans through a lease/operation arrangement.
- TVIRD plans to establish an initial 200-hectare cocoa plantation with projected total of 220,000 cacao trees to be planted.
- If proven successful, the joint venture would scale up the plantation in the medium term to at least 1,600 hectares depending on available land.
- Other cash crops included as part of the Agribusiness enterprise consist of coffee, rubber, rattan, bamboo and tiger grass.

Thank You



For more information, please visit www.tvird.com.ph