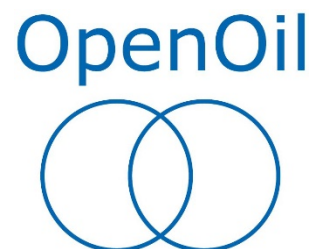# Batu Hijau Mining Project, Indonesia
Narrative Report

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Context

Batu Hijau is a large surface mine operation in Indonesia, primarily producing copper and gold along with small amounts of silver. The first discoveries were made in 1990 and commercial production began late 1999. The mine is located in the West Sumbawa District, West Nusa Tenggara Province. By 2015, it had produced 7.3 billion pounds of copper and 7.1 million ounces of gold, with a further 5.4 billion pounds of copper and 5.6 million ounces of gold reserves remaining to be produced.[1]

Batu Hijau is the second biggest copper producer in Indonesia. It is operated by P.T. Newmont Nusa Tenggara ("PTNNT") under Indonesia's 4th generation of Contract of Work, which were used for projects agreed in the sector between 1986 and 1994. PTNNT is owned by:
- Newmont Mining Corporation 31.5%
- Sumitomo[2] 24.5%
- PT Multi Daerah Bersaing 24%
- PT Pukuafu Indah 17.8%
- PT Indonesia Masbaga Investama 2.2%

The project is currently subject to contract renegotiation; Negotiations are centered on revisions of royalty rate, mining area and divestment and the obligation to develop a refining industry.

The project has contributed around 12% of provincial GDP (it is one of the three biggest contributors). Because of a revenue sharing mechanism in operation in Indonesia, the project has also contributed more than 50% of the local budget of West Sumbawa District[3] The project has hired more than 4,000 employees, of whom more than 90% have been Indonesians.[4]

Executive Summary

Batu Hijau is the second biggest copper producer in Indonesia, operated by Newmont Mining under a 4th Indonesia's Generation Contract of Work.

Discovered in 1990, commercial production began in late 1999. By 2015, Batu Hijau had produced 7.3 billion pounds of copper and 7.1 million ounces of gold. At the end of 2015 proven & probable reserves were 5.4 billion pounds of copper and 5.5 million ounces of gold.

Production was interrupted from 2012 to 2014 due to the expansion of the mine and a brief ban on exports. However even with this, and recent falls in the copper price, the project has a relatively high after-tax IRR of 17%.

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[1] Newmont Annual Report, 2015
[2] Together with several other Japanese companies
[3] Regional Statistical Bureau, 2016
[4] https://www.ptnnt.co.id/workforce-reductions-1.aspx

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Assumptions

We separately model copper and gold production, sales and revenues and have reconstructed the production, realised price and cost history of the project from publicly available information, principally accounts for the Nusa Tenggara Partnership V.O.F – the joint entity through which Newmont and Sumitomo hold their share of Batu Hijau.

We note that the company entered a new phase of ore stripping in 2011 and the production has been low since then. That process was completed in 2014 though. But due to the new restrictions on copper ore exports, Newmont closed the operation and put all the employees on "stand-by" for about four months (June to September 2014). They started the operation again right after securing an export permit from the government. This leads to low production figure in 2014, which we can see that in figure 4.

In the absence of any publicly disclosed remaining life of mine production forecast we simply assume that production continues at 2015 levels until 2026 and stops when total production from 2016 forward matches the 2015 figure of proved and probable reserves. The total life of mine (LOM) is therefore 28 years (17 years to date plus 11 years remaining). The user can change these forecast assumptions from the model Dashboard. There is also the possibility that production might continue for longer if in future some mineral resources are converted to reserves.

Economic Parameter	
LOM	28 years (end of mining 2026)
Production profile (LOM)	12.7 billion lb of copper, remaining (2015) reserves of 5.4 billion lb. Constant future production assumed 494 million lb per year.
	12.6 million ounces of gold, remaining (2015) reserves of 5.6 million ounces. Constant future production assumed 0.5 million ounces per year.
Forecast price	$2.50 per lb of constant copper price *(IMF WEO Copper)*
	$1,476 per ounce of gold price *(calculated using the ratio of gold to copper December futures prices futures observed in October 2016)*
Cost	$87 million of exploration cost
	$2.48 billion of development cost
	$1.59 billion of sustaining capital

	$286 million of decommissioning cost
	$10.58 billion of LOM operating cost
	$15.02 billion of total cost *(Newmont Annual Report)*

Table 1. Economic Parameter Assumption

The fiscal regime is mainly set out in the contract of work but major changes occurred in 2014 as part of the contract renegotiation process. The company agreed to an increased royalty rate. In addition, the government announced new fiscal treatment of exports as part of a policy to boost domestic use of minerals in the downstream industries, as well as promoting the development of a domestic refining industry. Under this policy, exports of untreated ore without processing in Indonesia are not allowed. Since then, the company has needed to secure government permits for export and has also had duty applied to its mineral exports. That duty rate depends on progress in refining industry development obligations.

We have modeled the project from the perspective of PTNNT, without considering the complex set of financing arrangements between the various shareholders. In effect, we model the project as if it had one owner which provided all of the necessary investment in the form of equity. We aim to expand the model to include financing in due course as this could materially impact the government revenues estimated by the model due to deductible financing costs.

Fiscal Regime	
Royalty rate	1.7% of copper royalty rate *(up to 2014)*; 4% of copper royalty rate *(2015 onwards)*
	1 to 2% of gold royalty rate, depending on the price *(up to 2014)*; 3.75% of flat gold royalty rate *(2015 onwards)*
Additional royalty on copper exported	Royalty rate is doubled for exports of copper
Export duty	0 to 7.5%, depending on the progress of refining industry *(applied since 2014)*
Income tax rate	35%
Dividend withholding tax	15% for domestic payer and 10% for foreign payer, double tax treaty applied
Asset depreciation	25% declining balance

Table 2. Fiscal Regime Assumptions

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Findings

The model achieves a close match between the benchmark price for copper and gold[5] and the actual, realized prices reported – a gap of only 1.1% and 0.6% for copper and gold respectively for actual sales to date. However, the gap is quite volatile from one year to another, and warrants further discussion and analysis. (Fig.1)

Further, the model also derives revenues consistent with actual reported revenues (Fig 2). However, further reconciliation work is needed to resolve the remaining differences and ensure it does not result from misinterpreted sales volumes or realized prices. However, the overall difference between actual reported to date and model revenues is only 0.4%, suggesting the model materially accurately recreates reported revenues.

Even with the recent fall in copper prices, the project is quite profitable, with a project (pre-fiscal) IRR of 22.1% and a post-fiscal IRR of 17.1%.

The project's profit (net cashflows before tax over its entire life) is shared 48% for government and 52% for the mining company. The government gains $12.4 billion undiscounted, nominal net cashflow through to closure in 2026, while the company has net cashflows after tax of $13.5 billion. Project capital and operating costs over the life of mine total $15.2 billion, plus $2.3 billion in refining and transportation cost. The latter amount to 5.4% of gross revenue on average over the life of the project and exhibit some volatility, though have been more stable in recent years. (Fig 3).

One interesting issue is that Newmont reported hedging losses related to Batu Hijau of $931 million during 2004 to 2006. We do not have information on which Newmont entity incurred these losses, but if we recognize these as being a cost to PNNT (done through parameters on the model dashboard), these would reduce the PNNT post-fiscal IRR from 17.1% to 16.1% and also reduce government share, if we assume that hedging losses are tax-deductible in Indonesia.[6] The government would have lost approximately $388 million in income tax if the hedging loss was judged as tax deductible. We do not know how these losses were accounted for in practice, or whether they were in fact deducted against Indonesian income tax at all, but this illustrates the material impact that such transactions can have. Recognising these risks, many countries have revised their fiscal rules to not allow the deduction of hedging losses against mining profits.

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[5] London Metals Exchange (LME) for copper and World Gold Council for gold.
[6] PWC, 2015

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Changes to the royalty rate from 2015 will materially boost royalty revenues as comparing to its current rate, despite a shorter life of mine. Up to 2015, the government had gained $455 million in royalties, but a further $1.2 billion are forecast from 2016 until mine closure. We observe a gap in government revenues 2012-2014 resulting from low production figure due to Phase 6 ore stripping development and suspension of exports of concentrate in 2014 before the company secured government permit of export in September 2014.

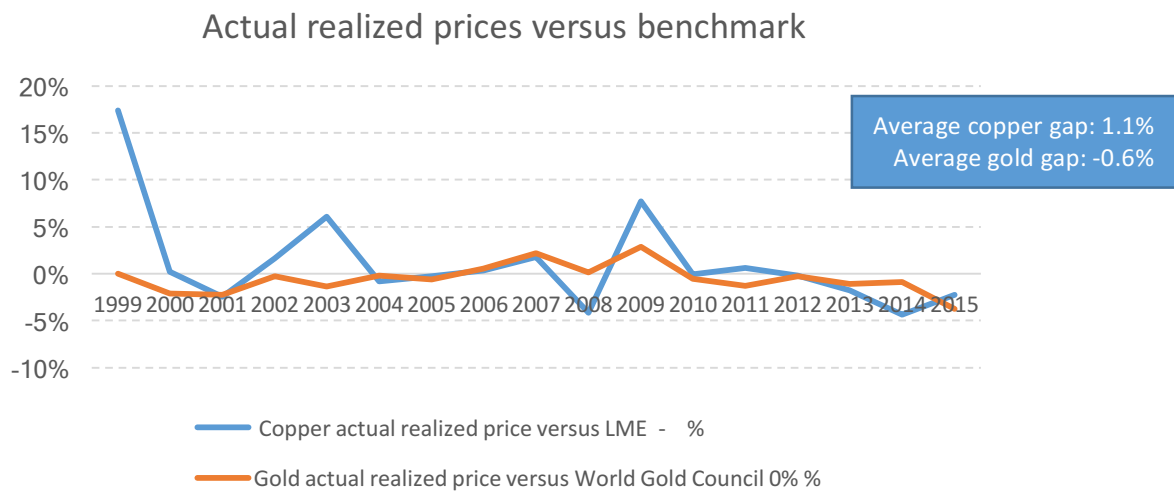# Batu Hijau Mining Project, Indonesia
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Charts

Actual realized prices versus benchmark

Average copper gap: 1.1%
Average gold gap: -0.6%

— Copper actual realized price versus LME -   %

— Gold actual realized price versus World Gold Council 0% %

Figure 1. . Difference (%) of Benchmark and Actual Price

RECONCILIATION OF MODEL TO ACTUAL REVENUES

■ Total copper plus gold revenue per financial statements pre hedging & refining

■ Total production revenue per model

— Percentage difference (right)
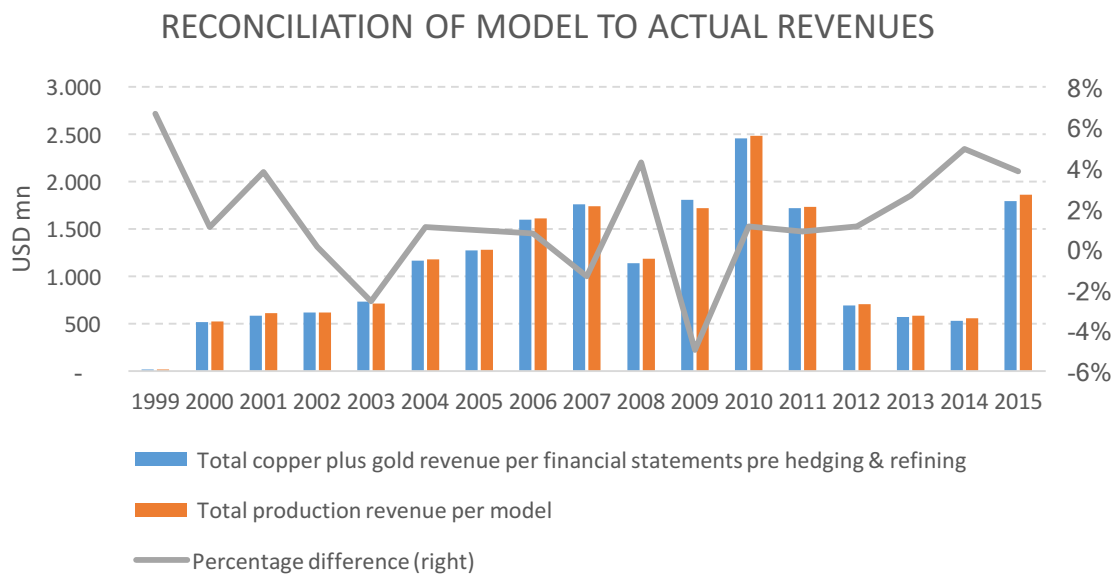
Figure 2. Reconciliation of model to actual reported revenues

TREATMENT AND REFINING CHARGES
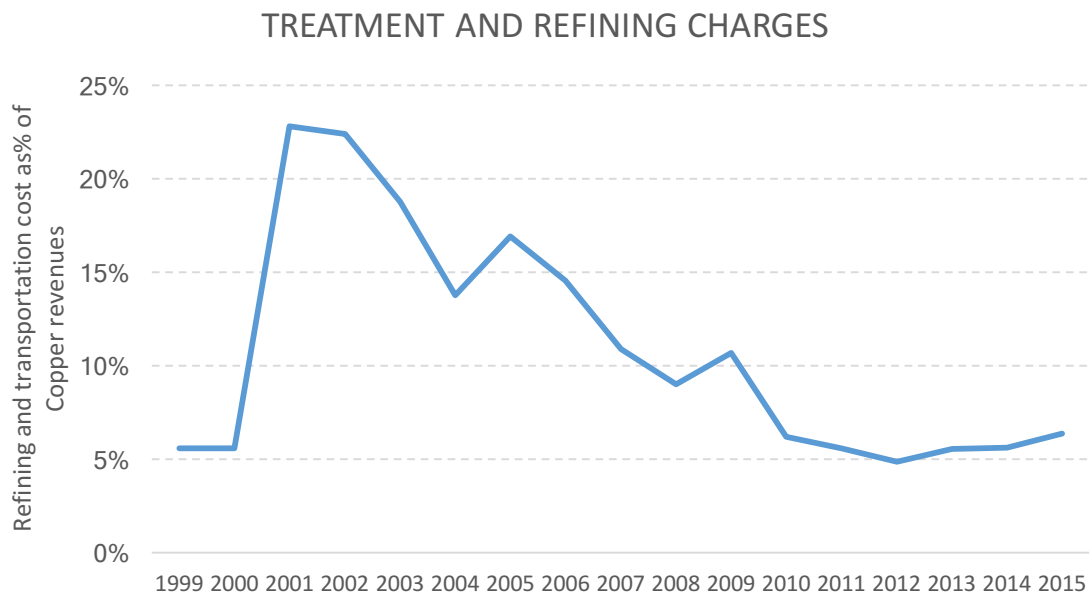
Figure 3. Refining and transportation cost

Annual Government revenue (total $12,383 mn)

Total royalty paid · Tax payable · Total mining company dividend withholding tax · Export duty paid
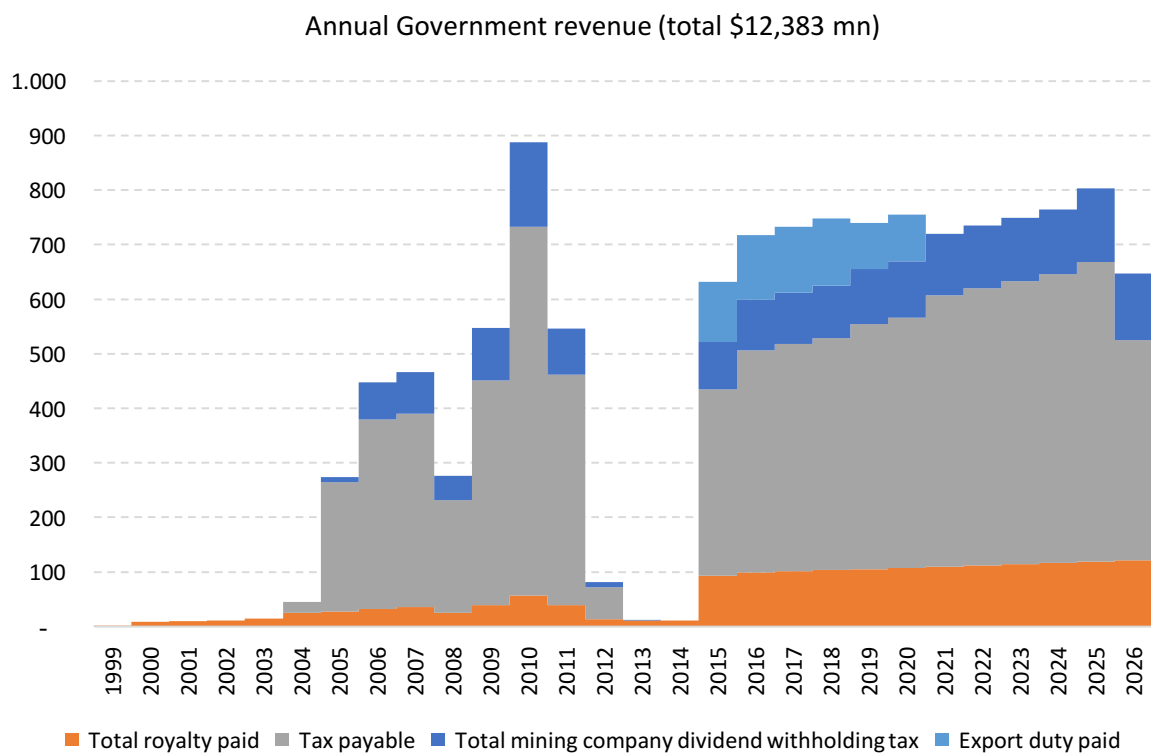
Figure 4. Government revenue profile

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Information Gap Analysis

- A remaining life of mine production forecast, ideally with alternative scenarios. Our constant annual production assumption is arbitrarily based on current reserves, and may overstate NPV versus a case where the same total production was produced over a longer period.

- Full reconciliation of model-calculated versus actual reported revenues.

- As part of this, the basis for refining and transportation costs and an explanation for their volatility, particularly in the early years of the project.

- Information on the likely proportion of exports. We have assumed a constant percentage of exports for the remining LOM. This matters depending on the additional royalty and/or export duties.

- Clarity around fiscal rules is needed. For instance, the additional rate of royalty on exports and whether this has actually been changed following contract renegotiations. Also, given the new export policy, it is unclear to us whether this additional royalty on copper will be applied together with the export duties, or just one or the other. This can potentially be supplied by a new EITI reconciliation report in 2017.

- Reconciliation with EITI or any other public sources of information on actual government revenues. This may need collaboration with the Indonesian authorities.