Insights Into Gold Exploration & Mining Business

Presented by Chris Lim Kuoh Yang
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Gold demand in Q3 2012 was 1,084.6 tonnes, worth US$57.6bn

Demand was up 10% from previous quarter

ETFs recorded a strong rise

Central banks remained net purchaser

Source: World Gold Council
8 Reasons To Own Gold

➤ A history of holding its value

➤ Weakness of the U.S. Dollar

➤ Inflation

➤ Deflation

➤ Geopolitical Uncertainty

➤ Supply Constraints

➤ Increase Demand

➤ Portfolio Diversification

Photo: CNMC Goldmine Holdings Limited
HOW TO INVEST IN GOLD
How To Invest In Gold

- Direct gold ownership
- Gold exchange traded funds (ETFs)
- Gold mutual funds
- Gold options and futures
- Gold Mining Stocks

Photo: CNMC Goldmine Holdings Limited
Shares of the leading precious-metals companies have lagged behind the price of physical gold bullion so steeply in recent years that they now trade for significantly less than the value of the companies’ gold reserves. In fact, the gap is among the widest ever seen.
Guidelines For Buying Gold Mining Stocks

- Independent professional technical report
- Experienced management team
- Deposit size and potential resource
- Ore grade
- Cost per ounce

Source: CNMC Goldmine Holdings Limited
How Many Discoveries Turn Into Mines, And How Long Does It Take?

- Not all discoveries are developed into mines
  - The conversion rate depends on project economics, business risk and social issues
- Even for those that do get developed, there is often a delay of 10-15 years between discovery and commencement of mining
Trends In Conversion Rates

Development Time For Successful Gold Projects

For gold, it typically takes 5 to 20 years (average 10 years) from discovery to mine start up.

Source: MinEx Consulting
Mineral Resource Classification

- Canadian Institute of Mining, Metallurgy and Petroleum (CIM)
- South African Code for the Reporting of Mineral Resources and Mineral Reserves (SAMREC)
- Chinese Reserves and Resource Classification
- Russian Federation Classification System
- Australasian Joint Ore Reserves Committee Code (JORC Code)
JORC Code

Exploration Results

MINERAL RESOURCES

Inferred

Indicated

Measured

Probable

Proved

MINERAL RESERVES

Increasing level of geological knowledge and confidence

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the “Modifying Factors”).

Source: The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
GOLD EXPLORATION PROCESS
Process Of Exploration For Gold Involves The Following Stages

- Literature survey
- Geological mapping
- Identification of gold bearing zones
- Three dimension sampling
- Estimation of resource

Photo: CNMC Goldmine Holdings Limited
Gold Exploration Process

Literature Survey

- Collection of available exploration literature facilitates picking up of targets for further probing, forms the first step in exploration process

Geological Mapping

- Preparation of a good geological map of the area of interest, initially on a regional scale (1:50,000) by taking up number of field geological traverses, and with the help of aerial photographs and landsat imageries is generally the next step

Source: CNMC Goldmine Holdings Limited
Identification Of Gold Bearing Zones

- This is done by collecting rock chip samples from favourable locales for gold mineralization while preparing the geological map of the area. If the rocks are not exposed, geochemical methods like stream sediment sampling, soil sampling can be adopted to identify gold anomalous areas. Similarly geophysical methods can be deployed to locate any conductive or magnetic bodies below the soil cover.
Three Dimension Sampling

- Three dimension sampling of gold bearing zones is carried out by drilling. Drilling is the most common means of investigating what sort of mineralization exists beneath the ground surface. There are several reasons to drill:
  - to determine the position or shape of underground formations
  - to ascertain the presence or absence of veins, ore bodies, or other type of mineral deposit
  - to estimate the tonnage and grade of an already discovered mineral deposit
If the drill intersects with the ore body, then the geologist can estimate the width the vein at the intersection. If multiple holes intersect the vein, the geologist can begin plotting the veins geometry from which the tonnage and the grade of the deposit can be developed.
Estimation Of Resource

- Based on the three dimension sampling of the gold-bearing zone (ore body), i.e. length, width, depth and grade, a global resource of the gold deposit is estimated.

Source: CNMC Goldmine Holdings Limited
GOLD MINING & EXTRACTION
Surface Mining

- Surface mines are mining operations that delve into rock to extract deposits of mineral resources that are close to the surface.
  - Placer mining
  - Open pit mining
  - Dredging

Photo: CNMC Goldmine Holdings Limited
**Underground Mining**

- Underground mining refers to a group of techniques used for the extraction of valuable minerals or other geological materials from the earth
  - Draft mining
  - Slope mining
  - Shaft mining
Gold Extraction Methods

- Amalgamation
- Gravity concentration
- Floatation
- Refractory ore processing
- Cyanide process
Heap Leaching Gold Extraction Process

Heap leaching means leaching ores that have been mined and transported on impervious pads for leaching by sprinkling and percolation of the gold extraction solution through the ore.

- Mining of gold bearing ore
- Ore transportation
- Stack piling of ore
- Application of gold extraction solution
- Transportation of loaded carbon to desorption facility
- Smelting process to produce doré bar
Heap Leaching Gold Extraction Process

Mining Of Gold Bearing Ore

- Utilizing open-pit mining method, blocks of earth are dug from the surface to extract the ore contained in them.
Heap Leaching Gold Extraction Process

Ore Transportation

- Transportation of mined gold bearing ore to impervious pads

Photo: CNMC Goldmine Holdings Limited
Heap Leaching Gold Extraction Process

Stack Piling Of Ore

Stack piling of gold bearing ore on impervious pads in preparation for leaching.
Heap Leaching Gold Extraction Process

Application Of Gold Extraction Solution

- Gold extraction solution is distributed across the top of the pile and the solution percolates through the pile and leaches out the gold. The gold laden pregnant solution drains out from the bottom of the pile and is collected for gold recovery by carbon adsorption. The barren solution is then recycled back to the pile.
Heap Leaching Gold Extraction Process

Transportation Of Loaded Carbon To Desorption Facility

- Loaded carbon being transported to gold desorption facility for processing

Photo: CNMC Goldmine Holdings Limited
Gold mud formed in the desorption electrowinning process is dried by baking before sending the dried gold mud into induction furnace for melting to form gold doré bar at about 1250 degree Celsius.
OVERVIEW OF CNMC

- We are a mineral exploration and mining company, focusing on gold.
- Our principal mining activity is in Kelantan, Malaysia.

Source: CNMC Goldmine Holdings Limited
THE SOKOR GOLD ZONE

The project is a gold exploration and mining project located in Kelantan State, Malaysia.

CNMC has –

- **Gold mining** for an area of 10km² (“Sokor Block”) separate from the exploration area (“Sokor Gold Field Project”)

4 IDENTIFIED AREAS

- Mason’s Lode Vein
- New Discovery Vein
- Sg. Ketubong Target
- Rixen Target

Source: CNMC Goldmine Holdings Limited
As Of 31 December 2011 The Exploration Has Yielded The Following Discovery –

- JORC Compliance total resource of approximately 503,000oz Gold, 1,259,000oz Silver, 9,200 tons Lead, & 8,900 tons Zinc. The mineral resource estimate is base on data from 272 diamond drillholes drilled for a total of 19,046 meters.

- Mineralized system are open at depth and along strike.

- Considerable exploration potential within Sokor Block to locate additional gold resources. Ongoing exploration drilling is expected to add significantly to the resources and reserves.

<table>
<thead>
<tr>
<th>AREA</th>
<th>RESOURCE</th>
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<tbody>
<tr>
<td>MASON’S LODE</td>
<td>56,000oz</td>
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<tr>
<td>NEW DISCOVERY</td>
<td>68,000oz</td>
</tr>
<tr>
<td>SG. KETUBONG</td>
<td>70,000oz</td>
</tr>
<tr>
<td>RIXEN</td>
<td>309,000oz</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>503,000oz</strong></td>
</tr>
</tbody>
</table>

Source: CNMC Goldmine Holdings Limited
Production Facility

- 60,000 tonnes per annum vat leaching production facility
- 1,500 tonnes per day alluvial production facility
- 100,000 tonnes per month heap leach operation
- Full set gold desorption, active carbon re-generation, and smelting system in place
- Ship ore containing base metal resources to lead and zinc smelting service provider in China to produce silver, lead, and zinc
Gold Production

- Commenced gold production based on mining and treating near surface oxide ore
- CNMC has completed more than 100 gold pours and is capable of producing refined gold on weekly basis
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