METAL MINING AND ALASKA'S ECONOMY

Alaska's entire mining industry produced $3.4 billion in 2013, about 6.5% of the Gross State Product. Mining (of all types) was the 5th largest industry in the state economy, after petroleum, government, fishing, and tourism/recreation.

Metal Mine Economic Facts: *Starred (*) items include coal & quarrying*

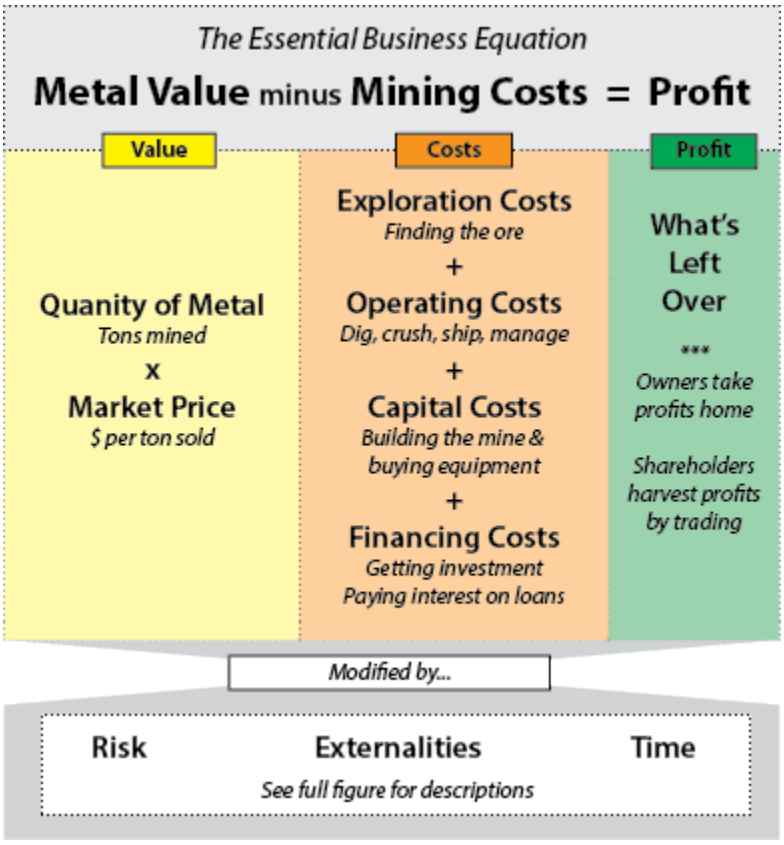
Metal mining directly employs about 2,000 people in Alaska, out of 3,500 total state direct mining jobs. The industry attracts new workers and outside investment to the state, and leads to the expansion of infrastructure like roads and harbors. Metal mining is the most robust sector of Alaska mining, with five major mines and hundreds of small mines scattered across the state.

Metal mining also produces long-term environmental problems and waste dumps which must be managed for the indefinite future, and leads to the expansion of development into previously wild areas. Metal mines pay only a very small excise tax in-state, and contribute only a small fraction of their taxes to Permanent Fund. Most of Alaska's major mines are owned outside the state, and their profits are exported. Alaskans are divided in their opinions about mining.

Driving Dynamic: Metal Value vs. Mining Costs

Mining in Alaska is ultimately driven (or inhibited) by two countervailing economic forces: the total value of the metal gotten out of the ground, and the cost per pound of doing it. The difference between these two numbers, in very simple terms, determines the profitability of mining.

Total metal value is controled by the amount of metal mined, and market prices. The quantity of metal in a deposit is geologically fixed, but its price-per-pound varies with market prices, tying the metal value to the world markets. As metal prices rise, mining becomes more attractive.



Metal Mining Business Equation: *Determining whether a mine is profitable or not*

Mining costs depend on factors like the remoteness of a deposit and the concentration of metal in the ore, and vary depending on the technology and logistics that can be brought to bear on those

problems. Technological innovations have over time enabled humans to extract metal much more cost-effectively, letting us target lower and lower grade ores, as richer deposits have been exhausted. Mining becomes less attractive when costs, often due to factors like logistical issues, environmental remediation, higher local wages, or unexectedly poor ore.

Metal prices are controlled largely by the world metal market, and are beyond the control of Alaska mines. Operating costs, in contrast, are influenced by many different factors. Some of these factors are global, while others are local, such as infrastructure limitations.

Long transport distances to commodity markets can drive up costs for Alaska mines, as can the difficult operating conditions of the Alaska climate, and the relatively high labor costs. Other local factors are more changable and related to government actions, such as tax rates, regulations, and public financing of mining infrastructure (such as roads and ports).

Establishing mines can be economically risky. Building a mine often involves an investment of millions or billions of dollars, across multiple years, before any metal is produced. Market prices of metal may fall and render operations unprofitable. Mines may run into legal and environmental difficulties which increase costs, and ore bodies may prove less rich than exploration suggested. Exploration itself is expensive, and the largest ore bodies can costs hundreds of millions of dollars to explore before a mine is ever permitted. For every worthwhile prospect, companies also spend a lot of money exploring prospects that turn out to be dead ends.

Jobs, Revenue, and Taxes

In 2010, the Alaska Department of Labor reported 2,000 direct metal mining jobs. The number of indirect jobs associated with metal mining is not clearly determined, but is likely in the range of 2,000. The average salary of all state direct mining jobs (including coal and gravel as well as metal) was reported at slightly over $100,000 per year. This figure is average (not median) salary, and therefore may be

buoyed upward above the state average by very high salaries of the best-paid mine managers. However, anecdotal reports suggest Alaska mining jobs are generally well-paid.

For comparison, the oil and gas industry is responsible for 4,700 direct jobs, 8,400 jobs in support services, 37,000 jobs indirectly supported by oil and gas industry spending, and 60,000 jobs created by government spending of oil tax revenue.

Red Dog Mine stands as a particular example of the ability of mines to provide jobs and allow communities to economically sustain themselves in remote areas. The operation of Red Dog has employed local villagers and provided a mechanism for young people to remain in the villages.

Mine workers

Workers and spurts of water at a drill rig, Pebble East.

In 2010, the same year as the job statistics just described, Alaska produced minerals of all types worth a gross market value of $3.1 billion. Although the market value of mining production is often cited in Alaska mining statistics, it actually has little direct relevance to Alaska's economic gains from mining. Many mine-related expenditures occur, and most profits are realized, out-of-state. Instead, the most important cash flows for Alaska's economic health are probably in-state payroll, taxes, and vendor expenditures. Mining provides in-state revenue in the form of political contributions, advertising, and lobbying.

Mining activities paid roughly $54.9 million in state taxes and $14 million in local taxes in 2010. Oil & gas, in contrast, returned about 20%. In terms of absolute tax revenues in the same year, oil & gas paid $3.8 billion, tobacco $72 million, fisheries $58 million, commercial passenger vehicles $44 million, and alcohol $39 million. (Note: fisheries is a sum of 7 different tax categories in the 2010 tax revenue report).

Based on 2002 analyses, mining pays a very low tax in Alaska, returning roughly 1.6% of the resource value to the state. Economic forecasters predict a state government budget crunch by 2023. Steeper taxes on metal mining could help fill the shortfall, which is expected to result from falling oil revenues and rising state government spending, although they might also discourage investment. Other options include a statewide sales or income tax, cutting government spending, and tapping the Permanent Fund.

The town of Iliamna during the 10-year Pebble Prospect exploration provides an example of the local jobs that mines sometimes provide. In 2012, Pebble provided some work to 1,403 total people in the region (including very brief contracts), and 183 of those people were from the Bristol Bay region. Iliamna's boom has recently switched to bust, as Pebble's future has come into question. As of August 2014, the regional Pebble workforce had contracted to 184 total jobs, and has likely declined since. Although Pebble may not be built, the exploration provided income for hundreds of residents.

Ownership, Investment, and Profits

Small-scale mines can be built and funded largely within Alaska. Although they represent a minority of total state metal production, they are numerous, with around 300 operations going. Many of these operations are locally owned, and their profits go to in-state owners before being spent.

In contrast, large Alaskan mines consistently have outside owners because such mines have massive startup expenses for exploration and construction. For instance, Fort Knox gold mine's initial construction cost was $373 million, Red Chris mine being constructed in British Columbia will cost roughly $500 million, and Pebble Mine is estimated to have a build-cost of $4.7 billion. Exploration

alone at the Pebble Prospect has cost more than $500 million. Alaska lacks local firms with sufficient funds and know-how to establish such large mines.

Building any mine can be risky, especially a big mine, since changes in global metal prices or development roadblocks could render mines unprofitable, meaning that investors take a big risk – as demonstrated by Anglo-American's recently abandoning its $540+ million investment in the Pebble Prospect.

Initial capital investment and subsequent operating expenses at big mines can either go into the state economy (when they are spent on Alaskan workers and suppliers) or immediately leave the state (when they are spent on outside workers and vendors). Vendor purchases are likely to channel money outside the state, because mining equipment and most other goods are not produced in Alaska.

Of the five major mines in Alaska, only Red Dog mine has in-state ownership. Red Dog is half-owned by NANA Native Corporation, which owns the land, and is therefore able to charge Teck mining corporation an economic rent, in the form of a 50% ownership share. Regional Native Corporation profit sharing then distributes this money around the state, and Native Corporations' obligatory dividends distribute some of this money to all Native Corporation shareholders. This leads to an unusually wide distribution of Red Dog profits into the state population.

Infrastructure

Mining creates significant long-term features which outlive mine operation and can have ramification well beyond the mine itself, including infrastructure and waste dumps.

Infrastructure like roads, ports, and pipelines that is built for mines can have other uses, or may remain serviceable long after a mine closes. By improving transport and energy access into remote areas, large mines can facilitate the local development of additional mines and related businesses, reinforcing an industrial development cycle.

Infrastructure can also impact local Alaskans in other ways. For instance, large mines can bring lower-cost electricity to small villages which are otherwise reliant on inefficient and aging diesel

generators. Better transportation access can bring more outsiders to an area for hunting and fishing, leading to competition with local subsistence users. In an extreme example of infrastructure creation, the proposed Pebble Mine would involve the construction of a deepwater harbor, a long-distance road, several pipelines, and a natural gas powerplant which might increase Alaska's total generation capacity by around 20%.

Typical Mine Tailings Dam

Earthen tailings impoundment dam at Fort Knox gold mine in Alaska

source: Northern Alaska Environmental Center (2004). Copyright held by photographer.

Waste

The creation of massive, long-term economic liabilities is an unusual property of mining. These liabilities usually come in the form of waste dumps and water contamination.

The full extent of damages caused by worldwide seepage of contaminated water from mine facilities is unknown, and may never be scientifically well-understood since it is very hard to measure. A large 2006 study found that more than 60% of large U.S. mines failed to meet downstream water requirements. Contamination can become most acute after mine closure, when the mine is allowed to fill with water (for example, the Berkely Pit in Butte, Montana).

Eventually, old mines become wards of the state, as the actual mining firms that own them go out of business or relinquish their long-term liability. Regardless of whether private firms or the state is responsible for management of old mines, their impacts become a cost to society – either in money and

manpower to manage them, or in the damages to health and the environment they cause. Analysis suggest that Alaska's reclamation bonds are systematically inadequate to cover future waste management costs, as does independent industry commentary.

Read more: http://groundtruthtrekking.org/Issues/MetalsMining/metal-mining-alaska-economy.html#ixzz3QCmtutiy