



BME

June, 2021

Public Miner Database

Overview and product sample

*Image: Bingham Canyon
near Salt Lake City, United States*

Image credit: Clouse, 2019

Blast Mining Enterprises

BME is a mining consultancy business that identifies, optimizes, manages, and monetizes projects in the mining & metals industry.



Mining industry opportunity generation: BME identifies, evaluates, and develops opportunities. The work includes applied market analysis & opportunity development, and establishing relations to fill Customer project pipelines & sales funnels



Feasibility studies & business improvement: Services also include various level study work for global mining projects, as well as the development of operational forecasts, and support for technical-economic simulation and optimization work



Program, project & product management: In addition, BME provides management (support) for innovative mining projects and products and helps manufacturers & service providers maximize the value they contribute to mine operations



Corporate and merger & acquisition support: Strategy consultancy, supporting businesses to become “safer”, “greener”, and “smarter”, (emerging) conflict resolution & incentive re-alignment, M&A modelling support, and due diligence

Introducing the Public Miner Database

Public Mining companies are generally more forthcoming in terms of the information they publicize. For this reason, BME developed a database that comprises of more than 2300 public mining and mining royalty companies.

All miners BME could find with listings on 40 stock exchanges in 30 countries are included. The information contained is up to date (version 2021 – H1). As a result, the database serves as a summary of sorts of how global public mining companies are currently strategically positioned. Based on popular demand, BME now offers the database as a product.

Public Miner Database >2300 publicly listed mining companies

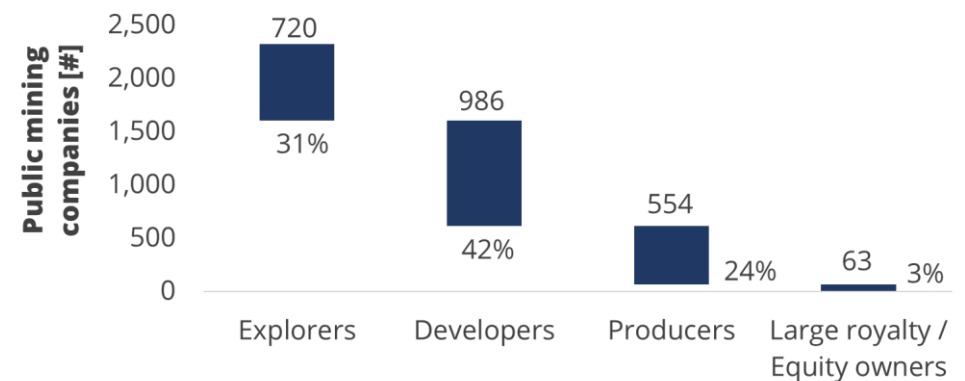


Figure 1: “Public Miner Database contains > 2300 mining companies”



How the Public Miner Database is different

To support daily consultancy activities, BME requires a relatively up to date summary of the mining industry with some drill down functionality. This summary can either be used to make informed holistic assessments of the industry for Customers, connect specific types of operations to applicable service providers, or identify specific opportunities.

Although there are a number of reputable global mining industry data providers, BME believes much of the information they provide is out of date and relatively expensive. In addition, available datasets often don't cover all major global mining regions and can be piecemeal. Accordingly, to meet its own requirements, BME has developed its own database known as the Public Miner Database. Due to popular demand, BME now offers the database to the general public.

An executive summary of the public mining industry

The database is developed based on a review of data published by individual miners. Data sources include mining company websites, presentations, annual reports, and other 1st hand data available in the public domain. Some drill-down functionality exists, but the database is not intended to provide significant detail for any specific mining company. Instead, **the database aims to enable its user to see the forest for the trees and quickly develop holistic market insights, identify trends, and generate a list of companies that may be particularly interesting based on a few rudimentary selection criteria.**

Uses of the database

The Public Miner Database is a valuable tool to support mining companies, equipment manufacturers, and service providers with:

- I. **Sales:** Rapidly identify, investigate, and select possible mining company customers for mining products & services
- II. **Market analysis:** Generate opportunities or establish the global landscape of competitors (for benchmarking exercises)
- III. **Project / Product development:** Distinguish and develop projects or products for which demand is greatest
- IV. **Strategic industry insights:** Gain insight into how the public mining sector is strategically allocated
- V. **Investment:** Develop a (short-) list of potential investment or merger & acquisition opportunities based on selections for the preferred company type, primary / secondary / individual commodities, or a preferred region / country.



An example of the strategic insights the **Public Miner Database** has to offer (Part 1 of 2)

Mining professionals characterize the mining industry as:

- **Dominated by bulk commodities.** BME includes iron ore, bauxite, metallurgical coal, thermal coal, and heavy mineral sands as bulk commodities
- **With battery age metals in 2nd place.** BME includes copper, zinc, lead, nickel, manganese, rare earths, cobalt, vanadium, lithium, graphite, and cadmium
- **And precious metals in 3rd place.** BME includes gold, silver, platinum, palladium, rhodium, iridium, indium, and rhenium in this category

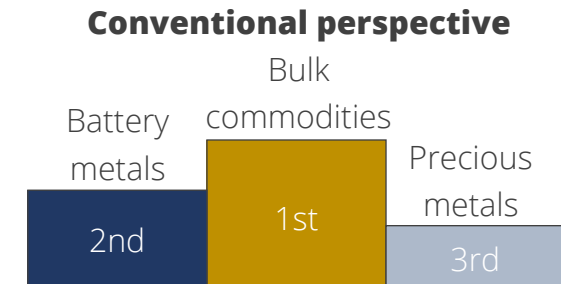
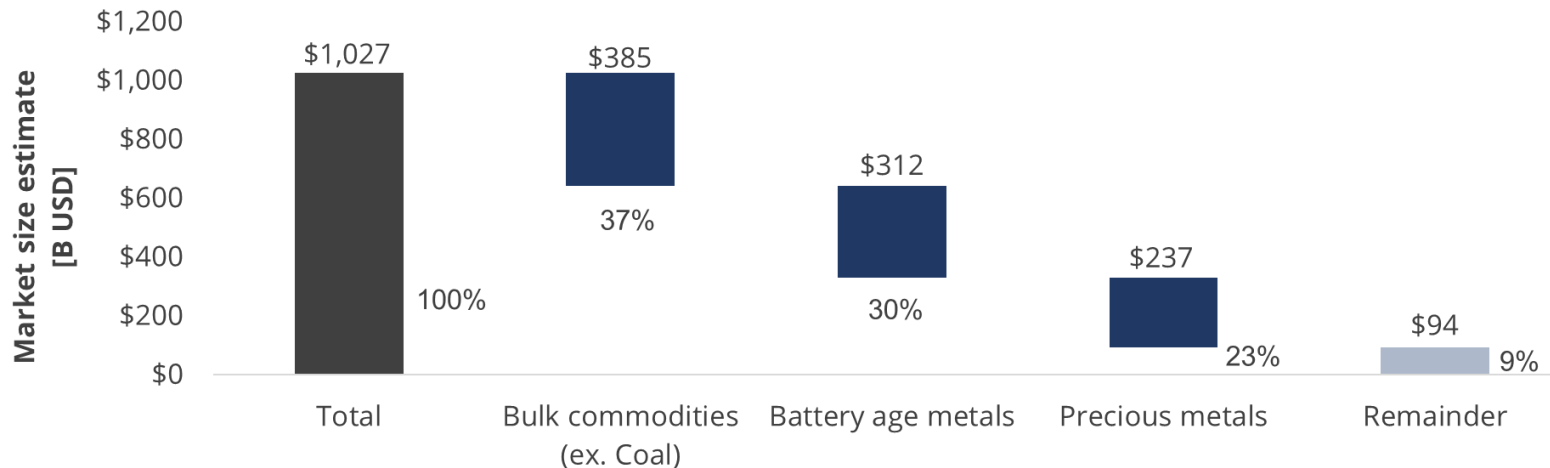


Figure 2: "Conventional market perspective"

This consensus is supported by, or perhaps based on, widely referenced data from the United States Geological Survey (Figure 3).

Estimate market size global mine production 2020

44 Commodities (ex. Coal & U), USGS 2020 mine production data & May 2021 BME prices



Overview derived based on U.S. Geological Survey 2020 global mine production estimates & BME indicative price assumptions. Commodities included are: Fe, Al, Ti, Zr, Cu, Ni, Pb, Zn, Mn, REE, Co, V, Cd, Li, Graphite, Au, Ag, PGM's, Cr, Mo, Sn, W, Nb, Ta, Bi, Ga, Be, Tl, Hg, Ge, Sb, Te, As, K, Se, Ba, P, F, Br, I, Sr, NaCl, gypsum, feldspar, and diamonds

Figure 3: "2021 Estimate size global mine production based on USGS production data & BME indicative price assumptions"



An example of the strategic insights the **Public Miner Database** has to offer (Part 2 of 2)

Although this conventional view of the mining market is useful, it doesn't tell the whole story. For instance, a strategic insight developed using the **Public Miner Database** shows public mining companies strategic 'primary commodity' positioning is entirely focused on gold. Truly nothing else even comes close.. *How does this affect your business?*

Principal commodity analysis for different types of public mining companies 2021 - H1													
Principal commodity (BME assessment)	Units	Total number of mining companies	Type of business (BME assessment)										
			Junior explorer	Junior prospect generator	Junior developer	Junior developer close to production	Junior operator 1 asset	Junior operator 1 asset + development	Junior operator multi asset	Mid-tier producer	Large producer	Royalty business	Equity owners
			Explorers		Developers		Producers					Investors	
Gold	#	1,052	424	23	350	67	17	61	33	31	22	18	6
Copper	#	265	85	6	111	13	3	12	11	9	10	3	2
Silver	#	93	32	0	36	5	3	6	3	5	1	1	1
Lithium	#	92	28	0	30	21	3	2	1	0	3	1	3
Iron ore	#	88	5	0	25	5	5	7	5	11	14	5	6
Nickel	#	77	19	0	36	6	4	0	5	3	2	1	1
Thermal coal	#	74	3	0	9	1	7	3	12	21	17	0	1
Zinc	#	69	14	1	30	5	2	6	3	1	6	1	0
Uranium	#	47	10	0	19	11	0	1	0	0	3	1	2
Graphite	#	40	2	0	18	15	3	2	0	0	0	0	0
Metallurgical Coal	#	31	0	0	6	3	1	3	7	7	1	3	0
Rare Earths	#	28	3	0	17	3	1	2	0	1	0	0	1
Diamonds	#	26	11	0	5	0	3	3	2	0	2	0	0
Potash	#	26	2	0	10	7	0	2	0	0	5	0	0
Heavy Mineral Sands	#	25	1	0	12	3	0	3	1	1	3	1	0
Remainder	#	294	54	1	85	22	16	28	27	12	44	0	5
Total	#	2,327	693	31	799	187	68	141	110	102	133	35	28

Table 1: "Principal commodity analysis different types of mining companies using the Public Miner Database"

BME's offer

BME offers a license to the database at the company level. The database is provided in Excel format, which is user friendly & allows for data to be used in the maximum number of ways. General Terms & Conditions that apply to this product are described on the BME webpage under 'Terms' (<http://www.blastminingenterprises.com>). Depending on ongoing public demand, BME may (and reserves the right to) provide additional products in the future, including (but not limited to):

- Updates of the Public Miner Database that can be purchased periodically
- A subscription based web-service that always contains the latest information BME has at its disposal
- An expansion of the dataset contained or products that are derivatives of the database

What is included?

The database lists the following information per public mining company:

1. Company name, company website, status assessment: 'Active' / 'Inactive'
2. Type of business, countries where company has active mining assets, continents where company has active mining assets
3. Assessments total number of operational, development, and exploration assets; primary commodity & secondary commodity
4. Individual commodities (67 commodities)
5. Stock exchange(s) on which public mining companies are listed (incl. dual listings)

Contact BME

Contact BME if you are interested in purchasing the database and/or other services & products BME provides



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Business location during COVID Lockdown: Litslaan 21, 2082 GW Santpoort-Zuid, the Netherlands (Europe)



Exchange listings for public mining companies included in the Public Miner Database (Edition 2021-H1)						
Country	Stock Exchange	Mining company listings				Comment
		Total listings		Excl. dual listings		
-	-	#	%	#	%	-
Canada	Toronto Stock Exchange, Toronto Venture Exchange, Canadian Securities Exchange	1,294	56%	1,223	53%	91% of public miners identified have a listing on a stock exchanges in these 5 nations
Australia	Australian Securities Exchange	607	26%	583	25%	
United Kingdom	London Stock Exchange	311	13%	151	6%	
United States	NASDAQ, New York Stock Exchange, American Stock Exchange	132	6%	132	6%	
Germany	Börse Frankfurt, XETRA Exchange	654	28%	31	1%	
20 other nations	30 Other stock exchanges incl. other European nations, China, India, Russia, Japan, South Korea, Hong Kong, Singapore, New Zealand, South Africa, Brazil, Mexico, Indonesia, the Philippines, and Turkey	307	13%	207	9%	Other European nations' include Switzerland, Norway, Ireland, Sweden, Finland, the Netherlands, Denmark, France, Belgium, Italy, Spain, Portugal, Iceland, and Poland
Total listings	All exchanges in database	3,305	142%	2,327	100%	
"Unique" companies included in the database (i.e. excl. dual listings)				2,327		
Companies with website found				2,279	97.9%	Database is expected to include data for most public mining companies
Website not (yet) found; Company filings published in the public domain				38	1.6%	
Website not (yet) found and no data				10	0.4%	
"Active" companies ("Active" means expected to be operational)				2,300	98.8%	

Table 2: "Public Miner Database sample – Number of stock exchanges and public mining companies included in the Public Miner Database"

Sample BME's database of global public (i.e. exchange listed) mining companies										Page 1 of 5
Database company number	Database entry date, company name & website, and company status								Active / Inactive	
	Data entry period	Company name	Company website	Website status						
				Available	Password protected	Malfunctions	Connection ≠ private / safe	Under construction		Not available
#	-	-	-	-	-	-	-	-	-	
28	1st Half 2021	AEX Gold Inc.	https://www.aexgold.com/	x						Active
29	1st Half 2021	Afarak Group Plc	http://www.afarak.com/en/	x						Active
30	1st Half 2021	Affinity Metals Corp.	https://affinitymetals.ca/	x						Active
31	1st Half 2021	African Energy Resources	http://africanenergyresources.com/	x						Active
32	1st Half 2021	African Gold Group, Inc.	http://www.africangoldgroup.com/	x						Active
33	1st Half 2021	African Gold Ltd	https://www.african-gold.com/	x						Active
34	1st Half 2021	African Rainbow Min Ltd	https://arm.co.za/	x						Active
35	1st Half 2021	Afritin Mining Ltd	http://afritinmining.com/	x						Active
36	1st Half 2021	Aftermath Silver Ltd.	https://aftermathsilver.com/	x						Active
37	1st Half 2021	Agnico Eagle Mines Limited	https://www.agnicoeagle.com/	x						Active

Table 3: "Public Miner Database sample – Data included per public mining company – Part 1 of 5"



Sample BME's database of global public (i.e. exchange listed) mining companies											Page 2 of 5		
Type of business, company jurisdictions, assessment primary & secondary commodities													
Company name	Type of business	Jurisdiction(s) in which mining assets are located	Number of assets						Primary commodities (Assessment BME based on information reviewed)				
			Countries						Production	Development	Exploration	Primary company commodity	Secondary company commodity
			North America	South America	Europe	Africa	Asia	Oceania	#	#	#		
-	-	-	-	-	-	-	-	-	-	-	-	-	-
AEX Gold Inc.	Junior developer close to production	Greenland	x							1	5	Gold	
Afarak Group Plc	Junior operator multi asset	South Africa, Turkey, Serbia			x	x	x		3	2		Chromium	
Affinity Metals Corp.	Junior explorer	Canada	x								2	Silver	Gold
African Energy Resources	Junior developer	Botswana, Australia				x				3	5	Thermal coal	Au
African Gold Group, Inc.	Junior developer close to production	Mali				x				1		Gold	
African Gold Ltd	Junior explorer	Mali, Ivory Coast				x					6	Gold	
African Rainbow Min Ltd	Junior operator multi asset	South Africa				x			8			Iron ore	Platinum Group Metals+
Afritin Mining Ltd	Junior operator 1 asset + development	Namibia, South Africa				x			1	1		Tin	
Aftermath Silver Ltd.	Junior developer	Chile		x						2	1	Silver	Gold
Agnico Eagle Mines Limited	Large producer	Canada, Mexico, Finland, United States, Sweden	x		x				10	7	10	Gold	Silver

Table 4: "Public Miner Database sample – Data included per public mining company – Part 2 of 5"



Sample BME's database of global public (i.e. exchange listed) mining companies																												Page 3 of 5									
Specific commodities per company: Precious metals, battery metals, bulk commodities, and other metals																																					
Company name	Precious metals			Battery age metals									Bulk commodities					Other metals																			
	Gold	Silver	Platinum Group Metals+	Copper	Nickel	Lead	Zinc	Manganese	Rare Earths	Cobalt	Vanadium	Cadmium	Lithium	Graphite	Iron ore	Bauxite	Metallurgical Coal	Thermal coal	Heavy Mineral Sands	Titanium/zirconium (hard rock)	Uranium	Thorium	Chromium	Molybdenum	Tin	Tungsten	Niobium	Tantalum	Bismuth	Gallium	Hafnium	Beryllium	Strontium	Thallium	Mercury		
AEX Gold Inc.	x	x	x	x	x	x	x	x						x							x			x				x									
Afarak Group Plc	x		x																				x														
Affinity Metals Corp.	x	x		x		x	x																														
African Energy Resources	x			x														x																			
African Gold Group, Inc.	x																																				
African Gold Ltd	x																																				
African Rainbow Min Ltd	x		x		x			x							x				x				x														
Afritin Mining Ltd																			x						x			x									
Aftermath Silver Ltd.	x	x		x																																	
Agnico Eagle Mines Limited	x	x		x																																	

Table 5: "Public Miner Database sample – Data included per public mining company – Part 3 of 5"



Sample BME's database of global public (i.e. exchange listed) mining companies																											Page 4 of 5										
Individual commodities per company: Gemstones, metalloids and other minerals																																					
Company name	Gems		Metalloids (modern electronics)					Other minerals																													
	Diamonds	Other gemstones	Boron	Germanium	Antimony	Tellurium	Arsenic	Silica sand + Frac sand	Aggregates	Stone	Limestone / Dolomite	Calcite	Gypsum	Magnesium	Phosphate rock	Potash	Bromine	Salt (NaCl)	NaCO3 / Soda / Trona	Iodine	Rubidium	Fluorspar	Selenium	Cesium	Garnet / Olivine (hard rock)	Pozzolan / Zeolite / Perlite	Bentonite	Kaolin / halloysite	Barite	Mica	Feldspar	Other clays	Other				
AEX Gold Inc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Afarak Group Plc	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Affinity Metals Corp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
African Energy Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
African Gold Group, Inc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
African Gold Ltd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
African Rainbow Min Ltd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Afritin Mining Ltd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Aftermath Silver Ltd.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Agnico Eagle Mines Limited	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 6: "Public Miner Database sample – Data included per public mining company – Part 4 of 5"



