# MINING SUPPLY CHAIN ECONOMIC IMPACT STUDY (MSCEIS)

SUMMARY MEMO

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MABC
MINING ASSOCIATION OF BRITISH COLUMBIA

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# INTRODUCTION

The Mining Association of B.C. (MABC), in partnership with the Mining Suppliers Association of B.C. (MSABC), undertook the **Mining Supply Chain Economic Impact Study (MSCEIS)** over the summer of 2019. The purpose of the study was to contextualize the societal benefits flowing from mining and smelting operations in B.C. MSCEIS reports the aggreaged supply chain spend in British Columbia from 17 mine and 2 smelting operations in the 2018 calendar year[1].

Summary of the MSCEIS participants:

| **MSCEIS** 2018<br>B.C. Supply Chain Summaries | | |
|---|---|---|
| **Metal mine operations** | **Steel making coal operations** | **Smelter operations** |
| Centerra Gold - Mount Milligan | Conuma Coal Resources Ltd. – Willow Creek, Brule, Wolverine | Rio Tinto |
| Coeur Mining – Silvertip | Teck Resources Limited – Steel-making Coal Operations: Coal Mountain, Elkview, Fording River, Greenhills, Line Creek | Teck Resources Limited – Trail Operations |
| Copper Mountain Mining Corporation | | |
| Imperial Metals - Red Chris Development Company | | |
| New Gold – New Afton | | |
| Nyrstar Canada – Myra Falls Mine | | |
| Pretivm – Brucejack Mine | | |
| Taseko Mines Limited – Gibraltar | | |
| Teck Resources Limited – Highland Valley Copper | | |

The study was conducted between June – August 2019 by iTotem Technologies Ltd. An Indigenous-affiliated business based in Vancouver, B.C., iTotem offers services in data modelling, research and economic analysis. Using integrated data management methodologies, iTotem specializes in working with general contractors and supply chain managers to complete socio-economic performance reporting.

This report includes the key findings from the MSCEIS and describes the methodology and assumptions.

[1] Imperial Metals data represents 2017 procurement.

# SECTION ONE: KEY FINDINGS

The following is a summary of key findings from MSCEIS.

Three themes are addressed in the report:

1) Geographic reach of B.C.'s mining and smelting supply chain
2) Diversity of B.C.'s mining and smelting supply chain
3) Mining and smelter industry investment extends beyond suppliers

## Geographic reach of B.C.'s mining and smelting supply chain

### MINING AND SMELTING OPERATIONS POSITIVELY IMPACT COMMUNITIES IN EVERY REGION OF BRITISH COLUMBIA

- In 2018, there were ~3700 mine and smelter suppliers located or affiliated with 215 municipalities, unincorporated communities and Indigenous Nations.
- More than $2.8B of materials, goods and services were procured from British Columbian businesses by B.C.'s 17 mines and 2 smelters in 2018.

| Province-wide supply chain impact of B.C.'s mining and smelting supply chain | Measure Values |
|---|---|
| Number of Smelters Supporting Supply Chain | 2 |
| Number of Mines Supporting Supply Chain | 17 |
| Number of Non-Indigenous and Indigenous-Affiliated Suppliers in BC | ~ 3,730 |
| Number of BC Municipalities, Unincorporated Communities, Indigenous Nations and Indigenous Development Corporations | ~ 215 |
| B.C. Supply Chain Spend | ~ $2,880,000,000 |

### URBAN BRITISH COLUMBIANS ARE ACTIVE MINERS

B.C.'s mining industry is having an impact in urban British Columbia. In the Metro Vancouver Regional District (MVRD) approximately $940M was procured from ~ 1250 businesses in 20+ municipalities. On Vancouver Island, more than $100M was procured from 270+ suppliers. Campbell River is home to the most mine suppliers with more than 115 local businesses providing goods and services to the industry. With an estimated $36M of goods and services sold to B.C.'s mines and smelters in 2018, the City of Victoria had the greatest dollar value of the Vancouver Island mining and smelting spend.

| Supply-chain impact | MVRD | Vancouver Island |
|---|---|---|
| Number of Suppliers | ~1,265 | ~270 |
| Number of Municipalities and Unincorporated Communities with a Mine Supplier Business | ~20 | ~ 25 |
| Supply Chain Spend | ~ $941,424,000 | ~ $104,661,000 |

## SUPPLY CHAIN TOP 10 LIST

Supply chain impact can be reported in a number of ways:

a. The dollar value of the mining and smelting supply chain in a municipality/community; or,
b. The number and types of suppliers in a municipality/community that are active in B.C.'s mining and smelting value chain.

Top 10 supply chain impact communities by spend:

| Municipality / Community | Impact by Spend** |
|---|---|
| 1. Kamloops | $342,523,000 |
| 2. Prince George | $252,041,000 |
| 3. Vancouver | $247,491,000 |
| 4. Sparwood | $238,401,000 |
| 6. Burnaby | $202,471,000 |
| 6. Elkford | $183,247,000 |
| 7. North Vancouver | $156,076,000 |
| 8. Chetwynd | $124,371,000 |
| 9. Surrey | $111,110,000 |
| 10. Kitimat | $85,590,000 |

** All $ values are approximate

Top 10 supply chain impact communities by number of suppliers:

| Municipality / Community | Impact by Number of Suppliers[2] |
|---|---|
| 1. Vancouver | 485 |
| 2. Kamloops | 410 |
| 3. Prince George | 300 |
| 4. Williams Lake | 270 |
| 5. Surrey | 190 |
| 6. Burnaby | 140 |
| 7. Trail | 135 |
| 8. Terrace | 125 |
| 9. Campbell River | 115 |
| 10. Richmond | 110 |

*See Appendix A for a list of the Top 25.*

[2] All values are approximate.

### INDIGENOUS-AFFILITIATED BUSINESSES ARE SUPPORTING B.C.'S MINING AND SMELTING INDUSTRY

There were approximately 120 Indigenous-affiliated suppliers active in B.C. mines in 2018, representing in $265 million in procurement. These businesses are associated with more than 25 Indigenous Nations or Indigenous Development Corporations in the British Columbia.

| Nation or Indigenous Development Corporations with Affiliated Businesses Active in B.C.'s Mining Sector |
|---|
| Xat'sull First Nation |
| West Moberly First Nations |
| Upper Similkameen |
| Tsetsaut / Skii km Lax Ha Nation |
| Tsay Keh Dene |
| Tk'emlúps Te Secwépemc |
| Takla Lake First Nation |
| Tahltan |
| T'exelc Nation |
| Skeetchestn Indian Band |
| Saulteau First Nations |
| Nisga'a Village Of New Aiyansh |
| Nisga'a Village Of Laxgalt'sap |
| Nisga'a Village Of Gitwinksihlkw |
| Nisga'a Village Of Gingolx |
| Nak'azdli Whut'en |
| Mcleod Lake |
| Lower Similkameen |
| Lower Nicola Indian Band |
| Kwadacha |
| Ktunaxa Nation |
| Halfway River First Nation |
| Gitxsan |
| Gitanyow |
| Dease River |
| Coldwater |
| Citxw Nlaka'pamux Assembly |
| Cheam |
| ?Esdilagh First Nation |

## Diversity of B.C.'s mining and smelting supply chain

Province-wide, the materials, goods and services procured by B.C.'s mine and smelting operations included:

- Catering
- Chemicals and Fuels
- Communications
- Construction and Consulting
- Crane and Hoist
- Earthworks
- Electrical and Mechanical Engineering
- Environmental Consulting
- Equipment Rental
- Fencing
- Geotechnical
- Grinding
- Media
- Hospitality and Room Rentals
- Hydrovac and Pumping
- Industrial Products
- Landscaping and Irrigation
- Laundry and Coveralls
- Locksmith
- Materials and Fabrication
- Office Furniture
- Paint Supplies
- Parts and Equipment
- Pest Control
- Plumbing and Heating
- Power Generation and Electrical Systems
- Printing and Promotional Items
- Professional Services
- Restoration and Cleaning
- Road Paving
- Safety Equipment
- Septic
- Survey and Inspections
- Tires
- Transportation
- Waste and Recycling
- Wildlife and Cattle Husbandry
- Wire Rope and Rigging
- Software Applications and Technology Developers
- Crushing and Conveying Suppliers
- Drilling and Blasting Vendors
- Education and Training Providers
- Electrical Equipment Distributors and Utilities
- Laboratory Services
- Mine Planning
- Construction and Remediation Specialists
- Mineral Processing
- Water Management

Each mine categorizes materials, goods and services according to their site-specific operations. Generally, the percentage of annual procurement expenditures reported by the mines for annual operations and maintenance is shown below.

See section two: Methodology for explanation on categorization.

| Category Operation and Maintenance Expenditures | % of Total Annual Spend |
|---|---|
| Parts and Equipment | 25.63% |
| Consulting and Technical Services | 25.94% |
| Consumables, Support Services and Construction-Related Services | 48.43% |

Nearly $1B was spent in MVRD in 2018, a sub-set of expenditures were evaluated to consider the different types of business specialization. Based on the list of the professional and external service providers in MVRD, the pie graph represents the percentage[3] of suppliers by category type in the region.

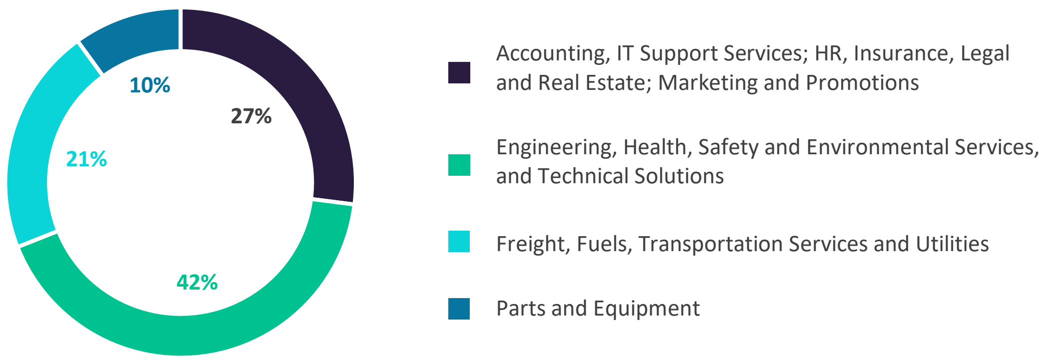


*Figure 1Percentage of suppliers by category type*

## The mining and smelter industry investment in British Columbia extends beyond suppliers

- Approximately $6.5M was contributed to community investments by B.C.'s mine and smelter operators.
- More than 340 organizations in 50+ municipalities and Indigenous Nations across B.C. were recipients of community investments.
- The top three areas of community investment, based on the number of recipients across the province in 2018 were:

Service Clubs and non-profit agency support

Community athletics and sports

Education, literacy and library support

[3] Percentage is defined by number of suppliers and not based on the percentage of spend.

# SECTION TWO: METHODOLOGY

The following sections describes the methodology used in the MSCEIS report.

| Inputs and Considerations | |
|---|---|
| **Scope** | • The data set covers 2018 cumulative procurement spend as self-reported by 17 mines and two smelters with two exceptions:<br>1. Imperial Metals Red Chris. Red Chris data is based on 2017 expenditures in B.C.<br>2. Coeur Silvertip data is based on April 1 – December 31, 2018 expenditures in B.C.<br>• MSCEIS participants included:<br>◦ Centerra Gold<br>◦ Coeur Mining<br>◦ Conuma Coal Resources Limited<br>◦ Copper Mountain Mining Corporation<br>◦ Imperial Metals<br>◦ New Gold<br>◦ Nyrstar Canada<br>◦ Pretivm<br>◦ Rio Tinto<br>◦ Taseko Mines Limited<br>◦ Teck Resources Limited<br>• All MSCEIS participants provided data on:<br>◦ Spend by geographic region<br>◦ Number of suppliers by geographic region<br>◦ List of suppliers by geographic region<br>◦ Annual spend on community investment<br>• MSCEIS metal and steel making coal mines provided additional information regarding<br>◦ Indigenous-affiliated spend<br>◦ List of community investment recipients<br>◦ Approximate allocation of spend by category |
| **Unique Vendor Counts, Exclusions and Verification** | • The geographical region is British Columbia only. Any spend with vendors outside of B.C. is excluded.<br>• Vendors can be active on more than one mine operation.<br>• If a vendor has multiple satellite offices engaged by a mine operator, the municipality where the vendor is located is tagged with a benefit. A vendor can be tagged in more than one community, but this does not change the total number of unique vendors in the province of B.C.<br>• The unique vendor count for the Province means the vendor is counted once. In situations where one mine uses the same vendor as another mine, but spelling is recorded differently, iTotem standardized the spelling and applied exclusions for duplications.<br>• Eligible costs are expenditures on community investment, Indigenous or local procurement (goods, materials and services). Examples of exclusions are contract staff, municipal fees and levies and expenditures outside of B.C.<br>• A vendor's head office can be outside of B.C., but if the expenditure is made with a B.C. based office, the vendor is counted as B.C.<br>• A QA process was run to remove duplications, standardize spelling and apply exclusions. Final data output was then verified by the participants. |

| | |
|---|---|
| **Definitions and Geographic References:** | • iTotem tagged suppliers by Indigenous Nation, municipality or unincorporated community according to the following federal and provincial government mapping resources:<br>Indigenous – https://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ-AI/STAGING/texte-text/ai_mprm_fnc_wal_pdf_1344968972421_eng.pdf<br>Municipalities - https://www.civicinfo.bc.ca/municipalities<br>Unincorporated Communities – B.C. Stats<br>• Indigenous affiliated spend is any procurement with an Indigenous-owned or joint venture business, as reported by participants. The percentage of ownership or contract allocation was not asked or provided.<br>• Consumables as defined in the categorization process is generally considered: items / activities which are not replaced, or which are finished during the process. For ex. Oil, Hand Gloves, Coolant etc.<br>• Parts and equipment as defined in the categorization process are those parts and equipment which are replaced – doesn't vanish from the machine during process. For ex. Flanges |
| **Categorization** | **See below for explanation on categorization.** |
| **Rounding and Margin of Error** | • If supplier count was below 5, the number rounded up to 5; otherwise the value is rounded down to the nearest 5.<br>  ○ For illustration:<br>  ○ 1 -> 5<br>  ○ 3 -> 5<br>  ○ 9 -> 5<br>  ○ 17 -> 15<br>  ○ 24 -> 20<br>• $ were rounded to the nearest million<br>• Margin of error is ~ 5%, assuming data submitted by the mine and smelters is correct. Margin of error is applied to reflect possibility of vendor duplicates per 100 reported. |

*Categorization Methodology – Material, Goods and Services:*

Each mine categorizes materials, goods and services according to their site-specific operations. Recognizing the level of accuracy possible to standardize more than 200 categories of materials, goods and services reported by MSCEIS's 17 mine sites, iTotem tagged supply chain spend into three broad groups of spending:

- Consulting, Contractors, and Technical Services
- Consumables / Construction and Support Services
- Parts and Equipment

**See below for a categorization matrix applied in the data model.**

| Standardizing categories across mines MABC 2019 | | | |
|---|---|---|---|
| | **Indicator: Categories of Spend** Tag spend by macro-categories – A higher-level estimate, consistent with the level of accuracy possible given the variation in data / definition across Mines. | | |
| **Indicator: Type of materials, products and services** Tag geographically the different types of material, product and services suppliers | Consulting, Contractors, Technical Services | Parts and Equipment | Consumables |
| Engineering / Health and Safety Consulting, Environmental and Forestry Services and Training | X | | |
| Parts and Equipment (Parts / HVAC improvements) | | X | |
| Accounting and IT support services<br>HR, Insurance, Legal and Real Estate<br>Marketing and Promotions | X | | |
| Freight, Fuels, Rentals, Tires, Transportation and Transportation Maintenance and Travel<br>Support Services (Furniture, Catering, Chemicals, Coveralls, Janitorial, Laundry, Office Supplies, Pest Control, Septic)<br>Telecommunications & Utilities | | | X |
| Technical Services (Analytics, Blasting, Conveying, Crushing, Drilling, Fabrication, Grinding, Inspection, Plumbing, Survey, Testing Etc.) | X | | |
| Total: # of supplier types by community | Total $ | Total $ | Total $ |

*Categorization Methodology – Community Investment:*

Approximately 340 community investment recipients were grouped according to 11 categories:

1. Art, Music and Theatre
2. Business Improvement Associations
3. Festivals and Fairs
4. Educational support, Literacy and Libraries
5. Indigenous Community Investment
6. Elders and Senior Support Services
7. Health Infrastructure, Community Wellness and Youth/Child Support Services
8. Recreational / Outdoor Pursuits
9. First Responder Investment and Recreational Emergency Preparedness
10. Community Athletics and Sports
11. Service Clubs and Non-Profit Agency Support

## APPENDIX A – THE TOP 25 MUNICIPALITIES BY SPEND AND NUMBER

| Municipality / Community | Impact by Spend** |
|---|---|
| 1. Kamloops | $342,523,000 |
| 2. Prince George | $252,041,000 |
| 3. Vancouver | $247,491,000 |
| 4. Sparwood | $238,401,000 |
| 5. Burnaby | $202,471,000 |
| 6. Elkford | $183,247,000 |
| 7. North Vancouver | $156,076,000 |
| 8. Chetwynd | $124,371,000 |
| 9. Surrey | $111,110,000 |
| 10. Kitimat | $85,590,000 |
| 11. Rossland | $84,762,000 |
| 12. Trail | $67,853,000 |
| 13. Port Moody | $65,837,000 |
| 14. Delta | $65,341,000 |
| 15. Cranbrook | $56,622,000 |
| 16. Hazelton | $46,118,000 |
| 17. Prince Rupert | $43,488,000 |
| 18. Langley | $40,876,000 |
| 19. Williams Lake | $39,604,000 |
| 20. Terrace | $38,178,000 |
| 21. Victoria | $36,178,000 |
| 22. Smithers | $35,744,000 |
| 23. Campbell River | $27,528,000 |
| 24. Kelowna | $23,434,000 |
| 25. Vernon | $20,806,000 |

** All $ values are approximate.

| Municipality / Community | Impact by Number of Suppliers[4] |
|---|---|
| 1. Vancouver | 485 |
| 2. Kamloops | 410 |
| 3. Prince George | 300 |
| 4. Williams Lake | 270 |
| 5. Surrey | 190 |
| 6. Burnaby | 140 |
| 7. Trail | 135 |
| 8. Terrace | 125 |
| 9. Campbell River | 115 |
| 10. Richmond | 110 |
| 11. Delta | 100 |
| 12. Kelowna | 100 |
| 13. Langley | 100 |
| 14. Smithers | 95 |
| 15. Chetwynd | 90 |
| 16. Kitimat | 75 |
| 17. Cranbrook | 55 |
| 18. North Vancouver | 55 |
| 19. Princeton | 55 |
| 20. Quesnel | 55 |
| 21. Castlegar | 45 |
| 22. Coquitlam | 45 |
| 23. Penticton | 45 |
| 24. Victoria | 45 |
| 25. Tumbler Ridge | 40 |

[4] All values are approximate.