



Economic Development is a Team Sport

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Look to the many, not the few to increase wealth creation. All economies are highly interconnected webs of value chains, their worth far greater than the sum of their parts.

Gap analysis of this web of actors, focusing on the forest – not the trees, is a powerful approach. Not only can it identify outright gaps, but misalignments, thin patches, and opportunities to strengthen the regional economic fabric.

VALUE CHAINS

For example, *mining supply and services* is a supporting industry that must align ever more closely with the global, US\$900 billion (2013) mining industry it serves. World-wide, miners such as Glencore, Vale, and Barrick are increasingly integrating their own value chains, in part by rationalizing their supplier base. Below, we summarize the Value Chain Model that underpinned our gap analysis of mining supply and services for a group of Northern Ontario communities.

The mining supply and services industry provides a wide range of outputs that cover the entire life cycle of a mine, from prospecting through closure and site rehabilitation

Value Chains

What are value chains? Value chains are economic structures that transform more basic resources into goods and services worth more than the sum of their inputs.

How do they add value? They integrate all of the activities required to conceive, make, apply, and support products and services to better meet user wants and needs.

What are these activities? There are two distinct kinds: direct and supporting.

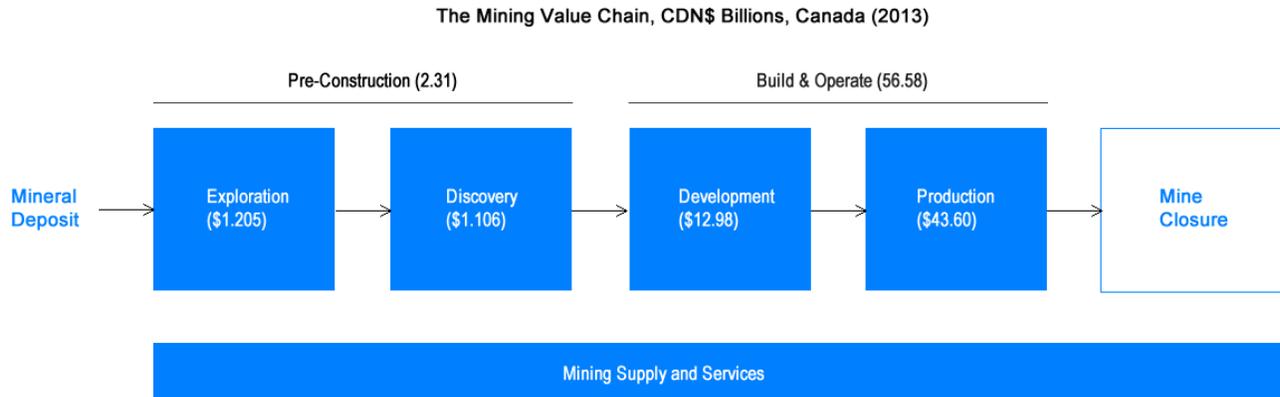
In Companies: *Direct activities* comprise hands-on tasks that literally move goods and services 'out the door': e.g., procurement, receiving, production, sales, shipping and distribution. *Supporting activities* are 'behind the scenes' efforts that increase the effectiveness and efficiency of direct ones. Examples include: R&D, marketing, IT services, and accounting.

In Industries: *Direct activities* integrate the outputs of many other industries: e.g., the products of the wireless, software, process equipment, electronics, and petroleum industries are among those used by miners. *Supporting activities* facilitate value creation. They include industry, professional and trade associations, education, standards and regulations. For example, metals and minerals depend on supporting inputs such as satellite and aerial imaging, testing laboratories, shipbuilding, finance and insurance as well as infrastructure such as ports, road, rail, and air service.

In Regions: All activities ultimately rest on the most fundamental resources of *governance, knowledge, workforce, and capital*; they determine the limits of value creation through their impact on resource integration.



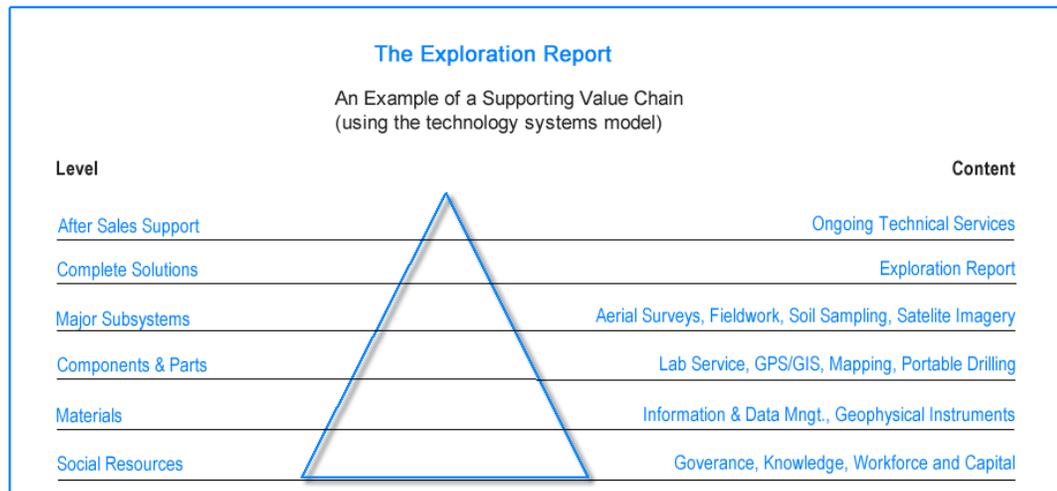
– the latter a growing market, taking off since 2000. Separating mining supply and services, according to the segment of the mining value chain served, facilitates gap analysis. There are two major segments.



1. Pre-Construction, CDN\$2.3billion (2013): It begins with exploration to find ore deposits; it ends with discovery, an evaluation of their potential.

An example of a pre-construction supporting activity is the Exploration Report. It is the output of a specialized value chain that we can better analyze by drawing on the technology systems model.

Technology systems incorporate a hierarchy of underlying inputs to offer complete solutions for users. These underlying inputs combine major subsystems which, in turn, are created from components & parts, supported by lower level inputs.



E.g.: The Exploration Report is a complete solution that evaluates a potential mine site. It integrates major subsystems of the exploration effort such as fieldwork and soil sampling, which in turn rely on components & parts such as laboratory services and their analysis of cores from portable drilling. The most basic materials which support the higher levels of the technology system include geophysical instruments, information and data management. The user puts the Exploration Report to work, assisted by technical services from its authors: i.e., after-sales service. And like all products, creating the Exploration Report ultimately depends on broader social resources such as a skilled workforce.

2. Build & Operate (CDN\$56.6 Billion): It is served by multiple supporting value chains that can be grouped into four categories, as shown below.

Build & Operate: Four Categories of Supporting Value Chain

Core Equipment	Information & Communications Technology	Essential Services	Engineering Construction & Management
Drilling & Blasting Crushing & Conveying Excavation, Loading & Hauling Hoisting & Accessories Pumps & Pipelines Mineral Processing	Automation & Robotics Equipment Monitoring & Analysis Communications & Networks Asset Location & Mgmt. Computer Services	Product Transport & Logistics Fuel Handling & Storage Water, Dust, Tailings & Energy Management Supplies & Consumables HR & Training Health, Safety & Security Financial & Legal Mine Closure & Rehabilitation	Infrastructure & Buildings Mine Planning & Management Contract Services (e.g., procurement)

Just as in the previous example, each supporting value chain can be analyzed according to the six hierarchical levels derived from the technology systems model.

THE BOTTOM LINE

Models like the value chain and technology systems to support a gap analysis of regional industries are only as good as the information gathered.

A bottom-up process works best. In-person meetings (50 in this case) determined:

1. Outputs: key mining supply goods & services;
2. Value-Added: how these outputs better meet miners' wants and needs;
3. Inputs: those most important in suppliers' Cost of Goods Sold;
4. Process: how value is added; and
5. Industry Context: the 'rules of the game' imposed by markets, regulations, human resources, finance, technology, and established practices.

Valuable information is all about connecting these dots.

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is a series of articles that explore how technology is reshaping the economy and serves to better inform decision making in business and government.

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