BUILDING THE POST-PANDEMIC VALUE CHAIN
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Introduction

The World Economic Forum’s Mining and Metals Industry Action Group (IAG), in collaboration with Accenture, explored and identified areas where the industry can collaborate to prepare for a world reshaped by COVID-19.

Three priority themes were identified to further industry resilience through collective action: A New Paradigm of Work, The Connected Value Chain and An Accelerated Purpose. This effort fits within “The Great Reset” initiative, a call to action for businesses to consider all stakeholders in building a more fair, sustainable and resilient future (Figure 1)—especially important for the mining and metals industry.
This white paper explores how mining and metals companies can develop the Connected Value Chain—one that anticipates shifts and is able to respond quickly and accurately to changes in supply, demand, operations and logistics. This is a key to continuing to work and move ahead during a pandemic—or any other major disruption.

COVID-19 triggered shutdowns that affected operations around the world and caused many supply chain disruptions. Mining and metals businesses responded creatively to continue operations. Many revised operating plans shifting production from location to location, while others found ways to share logistics to get products to customers. Some gold companies transported gold bars on private planes, as medical supplies were taking up the space on commercial flights.1,2 Many of these efforts were effective, but they also underscored the need for a more systematic approach to strengthening the value chain.

Figure 1. The mining and metals industry response to COVID-19

The Great Reset
A World Economic Forum initiative to call on all stakeholders to manage the direct effects of the Covid-19 crisis and build a resilient future.

01 02 03

A New Paradigm of Work
The Connected Value Chain
An Accelerated Purpose

STAKEHOLDERS
- Future and current employees
- Contractors
- Operations

STAKEHOLDERS
- Suppliers
- Customers
- Consumers

STAKEHOLDERS
- Society
- Communities
- Investors
- Governments

Build resilience and flexibility in operations and the workforce
Build resilience and flexibility into business models and the value chain
Embrace a broader responsibility to strengthen a global social license to operate

04

Introduction
Success in the Post-COVID Value Chain

Mining and metals businesses have an opportunity to build a more Connected Value Chain that does not simply focus on lowest cost, but instead provides greater flexibility and resilience, as well. Building a Connected Value Chain means creating ways to continue operations during difficult times and often, in the face of unpredictable change stemming from pandemics to economic volatility and nationalistic trade policies. Through collaboration, technology and end-to-end integration, companies can transform their operations and business models to continue to thrive in the face of disruption.
The World Economic Forum Mining and Metals IAG has identified four areas where companies can focus their efforts—and collaborate with others upstream and downstream—to build the Connected Value Chain (Figure 2). These are discussed below.

**Figure 2:** The Connected Value Chain: Shifting from cost to resilience

<table>
<thead>
<tr>
<th>Post-COVID trends</th>
<th>Options for future resiliency</th>
<th>Examples: building a skilled ecosystem</th>
</tr>
</thead>
</table>
| Reducing risk through deglobalization of key materials and processes | • Localization where possible  
• Increasing redundancy  
• Maximizing efficiency for commodity distribution | **Commodity distribution collaboration:** Downstream gas stations source gas from the closest midstream producer |
| De-commoditization of products                         | • Product branding to the consumer  
• Shortening the value chain | **Low carbon metal trading:** New low-carbon platforms to determine customers willingness to pay |
| Navigating unpredictability in downstream demand       | • Ultra-smart forecasting  
• Removal of just-in-time model  
• Increased agility | **Agile repurposing of manufacturing:** Auto manufacturers retooled their product lines to create ventilators during COVID-19 crisis |
| Expansion of the touchless supply chain                | • E-commerce platforms  
• Contactless handoffs  
• Data sharing and tracking | **Logistics traceability:** Collaborative pharmaceutical logistics platform places and RFID tag on shipping containers to monitor conditions. |
Reduce risk through deglobalization of key materials and processes

COVID-19 exacerbated a number of existing risks to global business, such as the US-China trade dispute, the vulnerabilities inherent in long-distance supply chains and the increasing pressure to reduce carbon emissions in complex supply chains.
The crisis also exposed the risk of relying on a single supplier or region that could suddenly become unavailable to the supply chain.

For example, Hubei, a province responsible for 4.5 percent of Chinese GDP, was shut down due to COVID-19—causing Chinese exports to fall 17.2 percent from January to February in a year-on-year comparison. To avoid being affected by those kinds of events, mining and metals companies can diversify their supplier bases to increase redundancy and increase production flexibility to reduce their reliance on individual companies or geographic areas.

In general, global supply chains are working to adapt to pandemic-driven changes. One approach to limiting supply chain risk is to localize some operations and move them closer to markets to shorten the supply chain, reducing complexity and CO₂ emissions as well as the risk of disruptive interventions by governments, such as the lockdown of Hubei province. Two examples of COVID-19 exacerbating government decisions include: China considered alternative nickel supply networks while Indonesia banned ore exports and US policy makers explored shifting the sourcing of rare earth metals from China to Australia. With the impact of COVID-19 and changing supply chain strategies, global goods trade is expected to contract between 13 percent and 32 percent this year, according to the World Trade Organization.

However, the mining and metals industry is not likely to see a great deal of localization immediately, because its fixed asset based makes it difficult to quickly move operations in a highly globalized industry.

If this trend persists, mining and metals companies have an opportunity to focus on relationships closer to home that may prioritize proximity over cost.

Commodity distribution collaboration case study: Oil and Gas

The gasoline that a company sells in its branded fueling station is not necessarily produced by the company itself. This is because gasoline from various sources is combined in pipelines, and fuel is not traced back to a particular source: an oil retailer will source whatever is delivered by the pipeline for its gas stations, but will include additives to build its own downstream brand.
De-commoditization of products

A number of minerals and metals products will always be considered commodities. But mining and metals companies also have an opportunity to offer more value-added products by taking advantage of the growing demand for socially responsible products.
Material grades are a key factor in how much mining and metals businesses can charge for their products.

For example, high-grade iron ore prices would probably rise because steel production that uses high-grade iron ore releases fewer emissions, compared to production using low-grade iron ore. As electric vehicles become more popular, such differentiation will be important for companies serving the automotive industry, especially for metals such as copper. In addition, high-tech businesses have started looking at the mining sector as a potential area of investment in order to gain greater control over their supply chains.

Metals companies also have the opportunity to strengthen their brand based on their products’ properties. For example, copper has excellent anti-microbial properties, but the industry does not sell directly to consumers and therefore does not market its unique properties. Some start-ups, such as CopperSAFE, have begun to take advantage of copper’s properties in copper face masks.

As consumers begin to see metals as de-commoditized goods, the mining and metals industry can capitalize on this changing landscape by branding their products for end customers.
Branding raw materials case study: Textiles

Companies in the outdoor industry decided to collaborate to minimize fiber fragmentation by creating The Microfiber Consortium. The consortium worked to engage and support suppliers in that effort. In January 2020, Polartec announced that its Polartec PowerAir fabric was now 100 percent recyclable and designed to be used in circular products. Consumer-facing businesses, such as Pentand Brands, have been able to co-brand with Polartec and market their products as sustainable, and tell customers that more than 2 million plastic bottles have been diverted from landfills to make fleeces.

With branded, differentiated raw materials, mining and metals companies can become more visible to the end consumer. By doing so, they can collaborate with consumer-facing companies to tap into new markets with new buyers and improve their position against competitor materials.
Navigating unpredictability in downstream demand

Mining companies, and to a lesser extent metals companies, have traditionally operated far upstream from the end-use consumer. But COVID-19 has demonstrated that demand fluctuations can quickly have a significant ripple effect across the value chain.
A World Economic Forum survey found that demand and supply were equally disrupted during the pandemic.\textsuperscript{14}

More than 190,000 construction projects in China came to a halt with COVID-19, sending massive disruptions through the mining and metals supply chain.\textsuperscript{15} Consumers are purchasing in new, unpredictable ways, changing where, when and how they are purchasing.\textsuperscript{16} They want efficient experiences, have a growing interest in local brands, and are adopting more socially responsible buying behaviors.\textsuperscript{17}

As pandemic-related government stimulus packages start to wear off, the private and public sectors are expected to put investments towards clean infrastructure and green initiatives.\textsuperscript{18} This will increase demand for certain metals such as copper, zinc and nickel. Electric vehicle batteries contain 33 to 80 percent nickel, and that percentage grows as the performance and energy densities of batteries increase.

The key to navigating changing demand is staying in touch with customers. However, even prior to the pandemic, mining and metals businesses were not always in sync with buyer values. In an Accenture study, two thirds of metals respondents said that they struggle to get customer centricty right, leading to consequences in terms of customer attrition.\textsuperscript{19}

To become more in tune with downstream demand, companies can pursue two strategies: Become hyper-smart or become hyper-agile.

A \textit{hyper-smart} company is focused on understanding demand. For example, companies could use machine learning to help determine demand during the crisis to maintain appropriate stocks on high priority items. With better insight into demand, manufacturers can be in a better position to transition and repurpose legacy lines in times of crisis or address opportunities for growth.

A \textit{hyper-agile} company is able to react quickly to changing situations. Here, one approach is to increase the flexibility of operations. Consider the US and UK car manufacturers that shut down vehicle production lines during the crisis, and then pivoted to create ventilators, which allowed operations to continue while providing value for society.\textsuperscript{20} Many mining and metals businesses have been working off a just-in-time model, particularly in automotive, which can make that kind of pivot difficult and put the supply chain at risk.
The United States Air Force established the RAND Corporation as a think tank in 1948 to help decision making through the use of “rational tools of quantitative analysis.” One of these tools was strategic foresight, which focused on imagining numerous possible futures. These futures were created using simulations, such as war games and scenarios, to help inform strategists in areas where history alone could provide little guidance; e.g., no one had ever before fought or tried to avoid a nuclear war. These RAND techniques were later used again—first by Shell in 1973 during the price shocks from OPEC oil embargo; then by the US Coast Guard after the September 11, 2001 terrorist attacks, to heighten port security in NYC. The strategies that emerged from these scenario planning efforts enabled those organizations to be better prepared for an unpredictable future.  

In dealing with uncertain and, often, unprecedented change, mining and metals companies can use scenario planning to help them understand what situations they are prepared for and where the gaps are, and then make investments to address those gaps to increase agility.
Expansion of the touchless supply chain

There are many benefits that can come from improved data sharing, but a key one is that it enables a touchless supply chain—one where data is shared and tracked, enabling a consistent flow of goods that helps enhance revenue, profitability and customer satisfaction.
A World Economic Forum study identified $100 billion in value from data sharing.⁰² But mining and metals businesses will need to build the infrastructure that will enable them to achieve those benefits.

Today, the touchless supply chain can extend all the way to the consumer, due largely to the growth of e-commerce and flexible logistics. E-commerce has thrived during the pandemic, as people and businesses turned to online channels to make purchases. Indeed, consumers have been using e-commerce 156 percent more than they did before the pandemic.⁰³ For mining and metals companies, these trends are opening the door to having more direct access to consumers and their data, which they can leverage with big data. Raw material businesses have started to capitalize on this opportunity, as seen with BASF’s sales on AliBaba.⁰⁴ E-commerce is also creating a fundamental shift in logistics with more on-demand shipping, creating opportunity for first movers in the transportation space such as Uber freight.⁰⁵

There is still work to be done in enabling the extensive touchless supply chain. The pandemic has accelerated the shift to digital, but there is a gap between those who are able to use technology to adapt and those who are not. Thirty-one percent of consumers disagree with the statement “technology makes my life easier” and many businesses are not prepared to adopt full digital strategies.⁰⁶

In a future where customers shift further to e-commerce, raw materials businesses that rely heavily on freight contracts and inflexible logistics could benefit from building more flexibility into their supply chain, enabling them to capitalize on e-commerce platforms.
Envisioning mid-long-term resilience

A Connected Value Chain requires a deep understanding of all players, from suppliers to customers, as well as more touchpoints across the value chain. Relationships will be based on a foundation of shared and transparent data, which both increases net value and reduces risk.
Mining and metals companies can draw on the experience of other industries to collaborate on their own Connected Value Chain. The Mining and Metals IAG identified three priority areas that the industry should focus on in these efforts:

01 Flexibility

02 Traceability

03 Product Strategy
Flexibility: Preparing for a Sustainable Future

What if the mining and metals industry could accurately anticipate consumer shifts in demand for electric vehicles and renewable infrastructure? What if it could proactively adjust the supply chain so that it could offer the most sustainable materials for electric vehicles, helping to accelerate the move to electric vehicles and attract more investment to the industry?

As governments’ incentives increase demand for electric vehicles and renewables, mining and metals businesses can build a closer-to-real-time understanding of demand changes in order to make their supply chains more responsive.

They can move to this type of hyper-smart approach by exploring new methods of demand sensing, such as social scraping for consumer data. They can thus become hyper-agile by using tools such as simulation planning in their value chains.
Imagine that mining and metals companies could collaboratively build the ability to report on their products’ environmental footprint—before the plastics or forest products industries are prepared to do so. This could help mining and metals become a trusted, competitive material choice, and ultimately unlock investor dollars that have not previously been accessible to the industry.

Improved traceability and data sharing along the value chain opens up a number of opportunities for the entire chain to better serve demand. Companies can understand what supply exists where, adjust logistics to take advantage of that supply, and build better relationships with their consumers through trust and transparency. To strengthen data-sharing capabilities, companies can explore RFID, blockchain, and the simplification of the value chain.
Product Strategy: New Products for the Collective Brand

Mining and metals companies now have an opportunity to collaborate on the development of new products that are low-carbon and lightweight to meet the growing demand for sustainable offerings. These products can be used in electric vehicles, net zero buildings and other initiatives to help sustainable growth.

Mining and metals companies could provide key products needed for clean energy technologies and electric vehicles. By being better prepared for unpredictable demand, they may be able to be first movers with sustainable products, while the environmental traceability of their products is likely to enhance their reputation as catalyst for a fair, resilient and sustainable future.
Conclusion

Overall, the insights into the Connected Value Chain developed by World Economic Forum’s Mining and Metals IAG can help companies work together to chart a course forward. But in a world of constant change, these insights are a starting point for the ongoing exploration of how to build resilient value chains—which will be key to building a resilient business.
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