

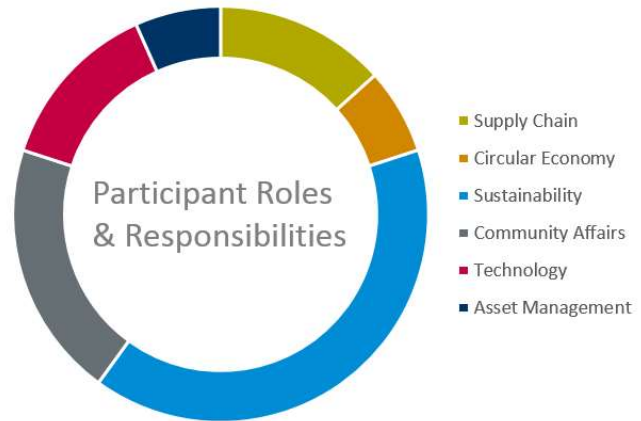
Mining & Technology Forum

ERM Facilitated Discussion – April 2020

As calls for a circular economy grow, the practical aspects of achieving circularity often remain murky. Curiosity and a commitment to resolving challenges brought together 11 mining and technology companies from different points in the value chain to explore perspectives around this topic. Here is what emerged from the discussion.

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Trillion+ USD, the estimated total market cap represented by the Technology and Mining clients for this event.



Defining the Circular Economy

Participants shared their company's definitions of the circular economy, and how circular principles are being applied in their respective businesses.

It was found that the Ellen MacArthur Foundation definition of circular economy is generally adopted by technology and mining companies. The Foundation's principles are underpinned by a transition to renewable energy sources, and aims to redefine growth, focusing on positive society-wide benefits. It embraces three principles: design out waste and pollution, keep products and materials in use, and regenerate natural systems ([see full definition](#)).

The nuance of definitions by different participants showed where we can work together to achieve progress. Additionally, the different language that participants use to describe the crucial elements of circularity, illustrated gaps that must be filled in order to close the circle. Collaborative work to develop a common language and align specific objectives will help us to achieve progress.

Both sectors identified ethical or responsible sourcing, human rights' impacts and community benefits/investments as important considerations. Sustainability was also discussed as an important component to circular models, but we need to make sure that it is not simply re-branded under the guise of the circular economy.

Focusing on the "E" in Circular Economy

Both mining and technology companies have built elements of the circular economy into their business plans in ways that reflect their interpretations of the concept. All participants agreed that traceability is a crucial aspect of this.

Circularity is at the forefront of business models for technology companies. They aim to use closed loop initiatives, with the goal to eliminate the use of prime or newly mined materials, and design their products to be disassembled and reused. Where recycling and reuse of high-grade materials is not feasible, such as those in computer chips, there is an opportunity to repurpose them in other markets.

Leading mining companies are rethinking their value chain. They are designing out waste streams and/or re-purposing off shoots from smelters and ore processing. They are also implementing programs that focus on responsible mining, especially for specialty (vs. bulk) commodities. Blockchain technology is being used by some miners to help trace the transparency of their products.

Cost Parity & Revenue Streams

Developing a strong economic case involves more than redirecting costs from one industry into another. It requires creating new demand to build additional revenue streams.

Some participants see the circular economy as a disruption to the current mining business model. Mining participants acknowledge this risk, but also see opportunity. One thing is clear: the numbers need to add up.

One issue is that it currently costs more to recycle metals than to source prime materials, and it is not clear whether customers are willing to pay a premium for them. In the current environment, consumers will need to attribute increased value and pay a premium for recycled materials to make it a feasible revenue stream.

While the technology sector purchases relatively high amounts of cobalt, demand for some elements such as gold are not as high. Participants discussed whether economies of scale, derived from building tech consortia or by bringing in parties from other sectors across the value chain, could tip the balance and create the need for new business models that recognize all players.

Beyond these economic factors, there is no denying that technology brands hold great value to enact change. They have the resources and vision to innovate, disrupt, and affect change, along with the ability to pass on new ways to other players in the market.

Participants framed an intriguing question: What does a cross-sector win/win vs. win/lose model look like? A discussion our attendees deem is worth exploring further.

Barriers to Success

Sector Familiarity & Other Players

The forum brought together two groups with a somewhat limited understanding of each other's industries. The mining and technology sectors are at opposite ends of the supply chain. In the middle, sit influential players such as recyclers. What role might they play in the circular economy? What is the potential for them to evolve into suppliers?

Each metal is at different stages in the circular economy maturity curve. Participants articulated two crucial questions to explore together: How do we combine our expert knowledge about the sourcing, processing, recycling and reuse of essential and shared materials to fully understand the value chain? How can we use that combined knowledge to break down barriers to circularity?

Regulations

Both sectors share the motivation to participate in the circular economy and have made many advances, however the complexity of day-to-day operations and a high level of regulations can hinder efforts. Moreover, each region has a different set of rules. Aspects such as waste shipment are not easy to navigate. They impede the supply chain and ability to source (re)usable material.

Conflict Minerals, Human Rights & Loopholes

We cannot forget the human element in the mining and technology equation. Smuggling loopholes lead to unsafe conditions and uncertainty in supply purity and/or source – traceability is crucial. Building shared value with host communities is also of the utmost importance to ensure they receive benefits as well.

Continuing the Conversation

This forum showed the importance of continuing the conversation. While organizations such as the Responsible Minerals Initiative (RMI) offer a community where the two sectors can connect, participants in this forum did not identify an organization that currently hosts discussions on the circular economy and details the metals that unite mining and technology.

The main areas identified to advance the conversation include:

- Defining a common language of circularity and a working answer to the question “what does responsible look like?”
- Building out the economic model for the circular economy. How does this map out, and what are the current or new streams that could fit into this?
- Looking at specific metals or minerals that are of interest to both sectors. How are they sourced, what is their travel along the supply chain and finally how they are reused or remanufactured?

In Closing

Closing the circularity loop requires that players along the value chain meet on common ground and work from a shared economic model in order to take effective tactical action. This group is well positioned to take on a piece of the circular economy puzzle and examine solutions. We look forward to having further discussions that help to advance these concepts and lead to actionable tactics.