



## Decarbonization Workshop | 2022

During the decarbonization workshop held on September 28, 2022, participants discussed priority topics, challenges and requirements, and next steps. The key next steps discussed included:

1. Map the various design guides required (i.e., greenfield, brownfield, surface, underground) while considering the macro and micro conditions for the mines to enable strategic assessment
2. Develop guidelines based on each design
3. Feedback loop and update with a versioning system

Priority Topic	Challenges and Requirements	Next Steps
<b>Mine design planning for energy efficiency</b>	<ul style="list-style-type: none"> <li>• Energy efficiency versus decarbonization.</li> <li>• How can a new mine adapt as new technology is introduced and how to retrofit and redesign (i.e., redesign is more realistic because the technology is available and tested)?</li> <li>• How to work with local governments to change local grid to renewable.</li> <li>• Bridging gap between getting decarbonization versus diesel fuel (can renewable fuels help bridge the gap?).</li> <li>• Planning a greenfield mine with technology that is not available is very risky because there is limited knowledge if that technology will work.</li> <li>• For existing mines, it is around the remaining life versus opportunity.</li> </ul>	<ul style="list-style-type: none"> <li>• Design guideline for different purposes (e.g., early stage to help transition greenfield and brownfield).</li> <li>• Focus on identifying which assets can be influenced in terms of a brownfield site and then develop guidelines based on where they will be affected (i.e., surface, underground, greenfield, and brownfield should be looked at separately).</li> </ul>
<b>Addressing and changing the mine business model to sustainability</b>	<ul style="list-style-type: none"> <li>• Profitability: capex in financing and the regulatory environment.</li> <li>• Some areas are dependent on fossil fuels with no indication of stopping their use of coal mining.</li> <li>• Mines creating their own renewable energy, but if there is no grid, or power transmission network then it is a problem and gives no incentive to try and decarbonize.</li> <li>• Understanding energy mix but also consider mineral/metal availability to meet demand (i.e., commodity, outlook, and relation to risk).</li> </ul>	<ul style="list-style-type: none"> <li>• Getting all mine stakeholders to capture ESG related data collaboratively (i.e., people report and collect data different ways and there is a lot of efforts being made to standardize – especially scope 1,2, and 3).</li> <li>• Collaborate to start developing common metrics and definitions without reinventing the wheel.</li> <li>• Guidance on what we need to consider about macro and micro conditions for the mines (enables strategic assessment).</li> </ul>
<b>Workforce skills gap in the mining value chain</b>	<ul style="list-style-type: none"> <li>• Different players have the knowledge needed (i.e., mine design, electric design – collaboration needed).</li> </ul>	<ul style="list-style-type: none"> <li>• Bringing different players together to share expertise.</li> </ul>

Note that this document captures some key discussions among a small cross-section of industry participants during a needs and priorities roundtable held on September 28, 2022. It is intended to be one of many inputs into the working group and is not intended as industry guidance or a formal report.