This is the challenge of a century – mining must adapt and mitigate

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When the history of the 21st Century is written, the struggle against COVID-19 will take a chapter. After all, it's changed, if only temporarily, the way we live and work. The book, however, will focus on climate change and the action taken to not only save the planet, but humanity.

If history was to judge that action as meaningful and effective, it would show that policy and decision-makers of today in government, industry, and finance understood three critical points.

First, the climate's response to emissions is not immediate. If humanity ceased all greenhouse gas (GHG) emissions in 2050, as many countries have committed to, the planet will continue to warm, and the climate will continue to change for about 30 years.

Second, unlike almost all other environmental considerations, the impact of GHGs is not local, it is global. The climate does not respond to emission intensity, only total emissions.

Third, the greatest impacts from climate change will be felt in the developing world, in jurisdictions with developing infrastructure and burgeoning mining. Successful mining depends on stakeholder content. Although climate change may open new opportunities, it will also increase risk in the industry as storms intensify and weather patterns destabilise.

However, knowledge about climate change is increasing. The world (including the Mining Journal and Mining Magazine readership) is already taking action to reduce the risk to mining and mining communities, which can be considered in terms of mitigation and adaptation.

Mitigation

Increasingly, investors and financiers are making decisions based on environmental, social, and governance (ESG) considerations. As perhaps the one true global metric, GHG has the potential to be used as a meaningful comparator as long as units of measurement and emission scopes are comparable.

While reading company statements, it's all too easy to find the GHG number, note it, and move on. With carbon emissions, however, the devil is in the detail.

There are multiple standards and methodologies available for GHG reporting. For example, a mine in the European Union, which is subject to the emissions trading scheme (ETS), may report low emissions compared to a mine in South America reporting high emissions. One cannot automatically assume the mine in Europe is better. Due to the rules of the ETS, the mine in Europe may only be reporting direct Scope 1 site emissions, whereas the mine in South America may be reporting Scope 1, Scope 2, and Scope 3 emissions, making meaningful comparison impossible.

Organisations such as the Carbon Disclosure Project have brought some standardisation, but at the cost of adding another methodology to a subject already flush with exemptions, subtractions, and professional judgements.

While independent verification goes some way to improve confidence, there remain several different permissible ways to measure and present emissions to stakeholders that are acceptable to verifiers.

Adaptation

It's important to understand and manage GHG emissions and their contribution to climate change. It's equally important to acknowledge that historical emissions have an impact that will need to be managed.

Our ability to forecast climate has improved with significant advances in computational modelling capabilities. However, reliability and accuracy decrease the further into the future we try to predict climate. Due to various uncertainties, such as political decisions over the coming decades, representative concentration pathways (RCPs; previously referred to as emission scenarios) are used for modelling.

When combined with advanced computing and data science, RCPs can be used with global weather data to construct climate models. However, there are several key limitations in a mining context, including the uncertainty between the RCPs, the lack of a single 'correct' model, and the inability to predict conditions beyond 2100. Although mining operational lives are finite, the environmental liabilities during and after closure can be perpetual.

Responsible mines will design for closure, even during the prefeasibility stage. This may, however, result in the risk of either under- or over-engineering infrastructure if climate change isn't taken into account.

Until 2020, designing for climate change had been predominantly voluntary. The Global Industry Standard on Tailings Management – a joint initiative between industry, investors and the United Nations released last year – now mandates the consideration of climate change in the design of tailings facilities. The Task Force on Climate-related Financial Disclosures, created in 2017, increased reporting on mining company climate change policies and risk assessment protocols. In addition, the International Finance Corporation is taking bold steps to address climate change concerns relating to its investments.

Whether it be constraints to water supply, managing extreme storms or peak flows from freshet, or planning around permafrost degradation, mining companies are incorporating strategies to identify and mitigate risk associated with climate change. Typical approaches may include the following:

- Building resilient infrastructure, i.e., testing systems under a range of climatic conditions or design criteria to assess vulnerability to climate change impacts and improve resilience

- Updating emergency response plans, i.e., having detailed plans in place, with contingency solutions to reduce the consequence of an event or condition.

As with other risks, organisations that take these changes into consideration early and re-evaluate them frequently will be in a stronger position to meet financial and performance objectives now and in the future.

The way forward

As an example of the mitigation and adaptation just discussed, SRK has recognised the need to develop tools to benchmark and monitor climate change impact and risks, and develop approaches that address those risks.

The key is making use of data management tools to efficiently capture data and automate GHG calculation and verification processes. Equally, SRK uses advanced computing and data science to predict potential climate change risks to inform design. Coupling this approach with a wide suite of professional services ensures a continuous mitigation and adaptation strategy can be implemented.

Such an approach is critical as the future of the mining industry is undoubtedly tied to climate change. As the world moves towards a greener economy, there are opportunities for the mining industry, such as the potential to supply minerals that promote a low-carbon future which are necessary for the transition, and risks, such as those associated with operating in an environment of destabilising weather patterns. The mining industry must be up to speed on all opportunities and risks if it is to thrive.

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