

Global Digitalization Trends in Mining and their Impact on Aspects of Sustainability

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ABSTRACT

The move towards digital transformation in mining is largely driven by the need for improvement in productivity and safety and a reduction in operational cost to cope with the current challenges of the raw materials industry. The global mining industry has begun the digitalization journey and has been undergoing significant changes over the past decade. At the same time, the industry is under an increasing pressure from various stakeholders to change towards more sustainable business practices.

To date, the discussion on sustainability practices is largely detached from the discussion on digitalization trends and, consequently, there has not yet been any systematic investigation on the relationship between digitalization and sustainable business practices. Thus, the impact of the implementation of specific digitalization technologies on aspects of sustainability is largely unknown. In a pioneering two-part study commissioned by Germany's Federal Institute for Geosciences and Natural Resources (BGR), the Institute for Advanced Mining Technologies (AMT) at RWTH Aachen University in collaboration with BRENK undertook a comprehensive assessment of the impact of global digitalization trends on various aspects of sustainability.

The paper will present the key findings of the study along the following leading questions:

- What are the main trends in global digitalization in mining at this time?
- What are the main challenges as well as opportunities associated with these trends from a global perspective?
- What are the impacts of digitalization technologies on various aspects of sustainability from a global perspective?
- Are there discernible patterns for indicating advanced practices of sustainability associated with digitalization trends?