

# Water Risks in Mining: Enhancing Social Acceptance through Early Data Integration



This case study focused on identifying, assessing, and proposing mitigation measures for water-related risks in mining operations by incorporating data-driven strategies from the earliest stages of the mining cycle in Finland.

The main goal was to address the growing concerns surrounding water usage, contamination, and overall environmental impact of the mining sector. By integrating comprehensive water data early in the project lifecycle, mining companies can more accurately predict and manage potential risks, leading to more sustainable practices, improved community relations, and enhance their social license to operate.

This initiative is relevant to a broad range of stakeholders in and around the mining industry. Environmental scientists and sustainability experts would design data-driven conservation strategies. Mining companies can enhance operations, mitigate risks, and ensure regulatory compliance. Government bodies can use this as a reference for developing more comprehensive policies. Local communities would benefit from greater transparency, reduced environmental risks, and enhanced corporate accountability.

Water risks and social acceptance of mining and their constructiveness was analysed with a literature review. The team interviewed an expert in the field, Toni Eerola from Geological Survey of Finland on 28.5.2024. On the other hand, data integration possibilities were analysed by exploring open data sources and collecting relevant data and metadata on a table.

## Data integration

A lot of data was found that could be used to assess water risks and social acceptance during mineral exploration. Six data categories were formed: water, socio-economic, protected and valuable areas, biodiversity, mining and other.

There were four types of water data: hydro-geological (i.e. water bodies, flows, runoff, basins), climate and meteorological data (i.e. rainfall, climate change scenarios), water quality data (for groundwater and surface waters) and valuable waters. Majority of the data is public and can be used at an early stage to assess the water risks of a potential mine. It can be used to set no-go areas but also to identify areas with acceptable risk level and prepare for the risks and take action to gain social acceptance.

In addition, data and maps that depict mineral deposits and exploration in Finland can help communities better decide where to have summer cottages, while leaving room for future exploration. On the other hand water quality surveys can bring awareness of not only the bad but the well-managed and environmentally responsible mining activities which can help communities gain a better understanding and acceptance of the mining industry.

Therefore, leveraging available data, especially in mineral exploration is crucial for ensuring sustainability by reducing environmental risks, ensuring compliance, promoting circularity, and building trust and social acceptance, thereby advancing Sustainable Development Goals. However, realising this potential demands active collaboration among industry stakeholders, government bodies, and local communities.

***"By embracing early water data integration, the mining industry can turn potential risks into opportunities for sustainability, earning community trust and driving social acceptance."***



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