



## **Minimising the risk of tailings dams failures through the use of remote sensing data**

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Tailings dams are earth embankments used to store toxic mine waste and effluent, often constructed with steep slopes and using the tailings to save on costs. Their failure, estimated to be more than two orders of magnitude than for water dams, can cause loss of life, irreversible damage to ecosystems and large economic damages. In countries with limited resources, it is challenging for the authorities to be able to effectively monitor this type of infrastructure, especially when located in remote areas.

We are developing a system for a sustainable and cost effective way of remotely monitoring tailings dams. We are measuring the displacement of the structures using earth observation technologies such as Interferometric Synthetic Aperture Radar (InSAR) and Global Navigation Satellite System (GNSS) technologies, combined with real-time in-situ devices. Data analysis, weather forecasting tools and assessment of consequences support the monitoring, allowing the issue of alerts for unusual behaviour or weather conditions that could lead to failure.

We are working with mining companies, local governments and private stakeholders in Peru to test our approach on a number of sites. The project focuses in the mining region of Cajamarca, where in 2015 there were at least 9,000 inactive mining facilities registered.

The system contributes to a sustainable management of tailings storage facilities, reducing the risk and the consequent damage to population and ecosystem services downstream, upon which many vulnerable communities rely for both their source of water and livelihoods.