

Topics (T)  
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## DETECTING ILLEGAL MINING ACTIVITIES IN ZIMBABWE THROUGH EARTH OBSERVATION

### Abstract

The Zimbabwean economy is heavily reliant on agricultural and mining activities which are the major boosters of the market and common business for regional and international trade (BRADBURY and WORBY, 1985). These two sectors have seen a lot of investment potential and rise over the years and as such, illegal activities have since been on the rise in the mining industry.

Across the country, most of the free, state land has become the breeding grounds for illegal mining activities and this has caused quite a number of devastating effects and damage to the environment which have also contributed immensely to an uneven balance of biodiversity in the country (Mkodzongi and Spiegel, 2019). The government on the other hand, has made various calls to action through its law enforcement agency to curb and spread of such illegal activities which pose a great danger to both the environment and the economy (Dalu et al., 2017). Unfortunately, much of these efforts have been to no avail as much of these activities are going undetected leaving the law enforcement agencies together with the environmental protection agencies and partners without a starting point for countermeasures against such activities.

Through Earth Observation technology and data, the government of Zimbabwe can be able to detect illegal mining activities and be in a better position to draft counter measures which assist in curbing this national problem. On the other hand, Environmental Protection and Management agencies in Zimbabwe<sup>1</sup> can be able to assess the damage caused by such activities among others for the benefit of crafting a sustainable future which leads to a balanced ecosystem which supports and promotes biodiversity at all levels.

This paper provides a short case study of earth observation technology, techniques and data applications in one of the well-known and well assumed illegal mining hotspot towns of the country and serves as a demonstration on how such technologies can be leveraged for development, enforcement and governmental approaches to issues affecting the environment and the future of today and tomorrow. The paper also gives a quantitative study and analysis of the damage that has been made by such illegal mining activities in the study area.

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<sup>1</sup>The Environmental Management Agency (EMA) and the Forestry Commission headed under the Ministry of Lands, Agriculture and Fisheries in Zimbabwe.