

USING EARTH OBSERVATION FOR CHALLENGES FACING MONITORING ENVIRONMENTAL REMEDIATION OF DERELICT MINES IN SOUTH AFRICA

Brilliant Petja

University of Limpopo/Agricultural Research Council

Mines have a finite life and as such they are not permanent land use on the physical environment. However, they leave scars of environmental damage resulting from exploration, extraction and processing of minerals. These environmental impacts tend to exacerbate during the post closure period on the abandoned derelict mines. Like most developing countries, South Africa has over the past decade been enforcing legislations that require mining companies to undertake environmental remediation when the mines are decommissioned. This is informed by policies aiming at sustainable use and management of the environment. In most cases it is difficult to monitor enforcement and implementation of these legislations because of the limited capacity within the relevant authorities. This study therefore experiments the use of freely available Landsat images in the context of South African asbestos environment to address some monitoring problems experienced after closure of mines. The use of satellite imagery makes it possible to monitor the possibility of changes in the previously mined out areas brought by environmental rehabilitation. In order to understand the dynamics depicted from satellite images in the post mining phase, a field campaign was conducted to understand the reflective properties of the variables (vegetation species) used for environmental remediation. Results provide a proper reasoning for the type of positive environmental change reflected from satellite images. This therefore makes earth observation an important supplement to the limited field monitoring capacity for observing the dynamics of mining environments in the post closure phase.