People · Planet · Progress

AGREENCO

Benchmarking rehabilitation in the SA opencast coal industry

Adrian Haagner, Amanuel Abraha & Fanus van Wyk

Opencast coal mining is responsible for the greatest area of land disturbance across all of the commodity types in South Africa. Many thousands of hectares have been rehabilitated to date and, although rehabilitation performance is not always measured or reported, a significant database, spanning 22 years, has now been analysed to identify the main shortcomings holding back rehabilitation sustainability across the industry.

We looked at data from 41 different collieries with rehabilitation performance scores measured from 2000-2024. A standardised assessment framework was implemented at all 41 collieries, focusing on aspects of land capability, soil fertility, landscape form and drainage, vegetation species composition and basal cover, implementation of maintenance programmes and prevalence of invasive alien plants.

The findings show that, although invasive species management, plant species composition and plant basal cover are often adequate, the implementation of aftercare and maintenance programmes (influencing soil fertility) and deficiencies in overall land form design and drainage systems are most significant in preventing overall rehabilitation progression and self-sustainability. Integrating these during design and rehabilitation execution, followed by intensive maintenance (especially in the first five years post-topsoiling and seeding) will be key for the overall industry performance to improve to acceptable levels. The database is biased towards collieries that actually do undertake rehabilitation and that do measure it, hence the actual industry performance is likely worse than what we present. Due to the substantial hectarages involved and the main post-mining land-uses being grazing and crop production, the industry cannot afford to keep perpetuating deficiencies in achieving the foundational aspects of rehabilitation that would pave the way for sustained economic future use.