

# IM4DC

## Action Research Report

### SUMMARY

#### Researchers:

Mansour Edraki, Thomas Baumgartl, Rudy Sayoga Gautama\*, Ginting Jalu Kusuma\*, Ali Munawar\*\*, Lana Saria\*\*\* and Ms Sujatmiko\*\*\*

#### School/Centre:

Centre for Mined Land Rehabilitation

#### University/Institutions:

Sustainable Minerals Institute

The University of Queensland

\*Bandung Institute of Technology

\*\*Bengkulu University

\*\*\*Ministry of Energy and Mineral Resources, Indonesia

#### Key themes:

Community and Environmental Sustainability  
Operational Effectiveness

#### Key countries:

Indonesia

#### Completion:

March 2015

#### Research aims:

This research aimed to assess the acid and metalliferous drainage problems in the Asam-Asam coal basin. The project included:

- a case study of pit lake water chemistry
- knowledge transfer through in-country workshops
- the opportunity to collaborate with lead researchers in the field from Bandung Institute of Technology and Bengkulu University

#### For further information on this action research:

Contact person: Mansour Edraki

[m.edraki@cmlr.uq.edu.au](mailto:m.edraki@cmlr.uq.edu.au)

## Mitigating Acid and Metalliferous Drainage in the Asam-Asam Basin, South Kalimantan, Indonesia

Acid and metalliferous drainage (AMD) is a major environmental problem in the coal mines of the Asam-Asam Basin, South Kalimantan, Indonesia. This project conducted by the Sustainable Minerals Institute in collaboration with Bandung Institute of Technology (ITB), aimed to assess the AMD issues by visiting the area, reviewing site specific environmental monitoring data and gathering information through on-site discussions and workshops.

The study found that there were three major areas that required further attention in order to mitigate the risks associated with AMD. These were:

1. the periodic overflow of acidic water from pit lakes and the lack of enough hydrological monitoring data or a water balance model, which has resulted in inefficient water treatment
2. uncertainties with regard to the classification of solid materials for acid generation potential, due to not measuring metal acidity by dissolution of Al and Fe minerals, which commonly add to proton acidity by pyrite oxidation
3. the interference of illegal miners through opportunistic and indiscriminatory mining practices which makes any catchment scale strategies for AMD management impossible.

The study concluded that there was not enough timely hydrological and geochemical monitoring data to effectively mitigate the risks from the pit lake acidic overflows. In addition, on a catchment scale, AMD management strategy requires co-operation with the illegal miners.

The report made the following recommendations for further studies to address the above issues for mitigating the risk of AMD either by at-source control or by treatment of the impacted waters:

1. a hydro-geochemical modelling study, including water balance modelling, based on timely water flow and water quality monitoring
2. a social study to better understand the drivers of illegal mining to enable the development of a catchment scale AMD management strategy involving local communities