

Towards Resilient Futures Community of Practice Workshop 2

Driving Post-mining Industrial Development through Fibrous Multi-product Value Chains

Held on the 24th May 2019 at the Radisson Blu Gautrain Hotel, Johannesburg

Round Table Discussion Notes: Mine Rehabilitation

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1 Mine rehabilitation

- Usual uses of land: grazing, wilderness (not agriculture); do not tap into agriculture potential since it is rehabilitated land which is usually not very effective for agricultural purposes
- Focus is more on the physical rehabilitation of the mine land
- Concurrent rehabilitation is proposed; while mining is still underway
- Better rehabilitation → less water to be treated
- Kromdraai (AngloCoal) will close around September; did modelling exercise → rehab is linked to water
- If rehab is not done correctly, a lot of money is spent on wastewater treatment
- Close a mine in a way which is beneficial for everybody (Green Engine concept)
- Growing maize on virgin land using mine water (productivity up to 13 tonnes/ha) (AngloCoal trial experiments)
- Contaminated sites are limited with respect to cultivation potential; Some sites are very contaminated and so we are limited with what we can do
- Land is a big issue (mine health & safety act is a big issue)
- Understand your area and what can be grown on it
- Mine is focused on numbers and minimising liability returns (positive legacy)

2 Potential issues for developing a fibre value chain

- The products will depend on the market
- Be sure to highlight that the proposed products are not for consumption as toxicity is a big issue when doing cultivation on mine land
- Long investment (~ 10 years) who will fund? Mines make decision in 3 – 4-year cycles and usually want returns within 3 – 4 years → A long term vision is required
- Economies of scale is important
- Is water available for the successful growth of fibrous plants? Do we need an additional technology like reverse osmosis to treat the water beforehand? We need sustainable resources to enable plant production
- There is not enough data to understand the required timeline for hyper-accumulators to clean up the soil
- Cost of new process vs conventional scenario (who will be willing to subsidise?)
- Most plants require good top soil which is difficult to get on degraded mine. Is there a possibility to grow plants using fabricated soils?
- Rehabilitated soil is not fertile enough
- Need to integrate value chains; diversified products. How to make sure we have an integrated value chain in a multi-product space?
- Possible way forward: Invest in short, medium & long term crops in order to generate income within a few years and ensure that a positive legacy is left behind
- Long term crops create the balance sheets which leave the value chain and legacy
- Seepage issues (plant above seepage in order to clean, to know whether the fibrous plants can grow there?)

3 Social

- Identify the entrepreneurs and people who want to have their skills diversified, set up training centres
- Mine health and safety act is a big issue; best way forward is to start doing things differently on new mines and to think outside the box. E.g. Green Engine: Interlinked processes, agriculture, biogas feedstock
- What can enable social closure?

- Toxicity issues → addressed by using bioenergy crops (which can help remediation as well)
- Need to find innovative solutions when things do not work out
- Who is responsible to provide water, infrastructure or seed capital? Farmers do not possess this kind of capital

4 Overall notes

- There is not much interest for bamboo cultivation
- Mining companies are mostly focused on reducing environmental liability; restoring the degraded mine land primarily and decreasing water pollution
- What is the value proposition to the mining companies?
- Agriculture for food crops is not usually considered due to toxicity issues
- Mining companies do not have long term vision and mostly would like return on investment in 3 – 4 year cycles.