

National  
Research  
FoundationMINERAL LAW  
IN AFRICAm2m  
minerals to metalsDEVELOPMENT POLICY  
RESEARCH UNITCENTRE FOR BIOPROCESS  
ENGINEERING RESEARCH  
CeBERFUTURE  
WATER

Policy Brief: DSI-NRF CoP/PB1

October 2019

# From Tailings to Tillings: Designing the Legal Framework for Mine Wasteland Rehabilitation Through Bioremediation

**Prof Hanri Mostert** (DST/NRF SARCHI: Mineral Law in Africa (MLiA), UCT)

**Prof Alexander Paterson** (Director: Institute for Marine & Environmental Law, UCT)

**Dr Louie van Schalkwyk** (Postdoctoral fellow: MLiA, UCT)

**Ms Aysha Lotter** (Researcher: MLiA, UCT)

**Ms Reneilwe Kgosana** (Researcher: MLiA, UCT)

## Summary

This research evaluated how the law impacts on innovations in mine rehabilitation using fibrous plants. The study examines available legal incentives and sanctions relevant to mine rehabilitation, and concludes that more proactive law-making is required.

The basis of this policy brief is a legal analysis that specifically interrogates the status quo – the currently available remedies and incentives, sanctions and penalties afforded and imposed by the law – to establish the extent to which they will facilitate the envisaged mine rehabilitation proposals. The brief scopes the potential legal issues that may arise in initiating a fibre-farming industry on mine wasteland. A brief discussion of the social and economic context within which the legal research was conducted precedes the explanation of the distinction between proactive and reactive lawmaking. The main questions determining applicable legislation are then laid out. The policy brief concludes by advocating for more proactive laws.



© DPRU, University of Cape Town 2019  
ISBN: 978-1-920633-69-1

This work is licenced under the Creative Commons Attribution-Non-Commercial-Share Alike 2.5 South Africa License. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-sa/2.5/za/> or send a letter to: Creative Commons, 171 Second Street, Suite 300, San Francisco, California 94105, USA.

## Introduction

As a country and a society, South Africa is driven by mining. It holds the world's fifth-largest mining sector in terms of GDP value. However, it is vulnerable to the "resource curse" – the "phenomenal dichotomy" between natural resource wealth and socio-economic development. Generating sustainable and inclusive economic growth is an imperative for South Africa in dealing with practically every one of its developmental and societal challenges, aptly summarised as the "evil triplets" of unemployment, poverty and inequality.

Very often, the people most harshly affected by the evil triplets are those living on or close to mine sites. They risk losing their main source of wealth creation – land – to the degradation that follows in the wake of a mining project. In the mining heartland of South Africa, the widespread occurrence of metal pollution of soil and water sources is a particular and extensive challenge.

Bioremediation and restorative agriculture are potential areas of interest for rethinking mine rehabilitation and economic development. They offer the chance to repair degraded land by enhancing its environmental and social value and provides economic value through integrated land development. New economic sectors can be enabled to grow, and new product spaces enabled to emerge as a result, while diverse productive opportunities and economic inclusivity are enhanced. The mine's life cycle may end in the rebirth of a resilient future: a future envisioned as one with a sustainable environment, providing security for the surrounding communities, and actively pursuing skills development and job creation.

***If the legal framework is prohibitive, even the best-laid plans will have very little practical value.***

However, if the legal framework is prohibitive, even the best-laid plans will have very little practical value. An enabling legal framework is needed to implement the various aspects of the suggested venture of cleaning mine wasteland and simultaneously boosting the agricultural and manufacturing sectors of the economy.

One needs to understand the legal framework to evaluate how well the solutions proposed by the economic, agricultural or scientific perspectives are catered for. Where the legal framework bars the adoption of what seem to be particularly useful and innovative solutions, suggestions for law reform must follow.

## Proactive and Reactive Lawmaking

The law fulfils several functions in society that may be relevant to attempted creation of economic complexity and diversification. The range of devices available to law is far wider than just what is on the statute book. They range from measures to remedy grievances or impose penal sanctions, through provisions to achieve distribution or to regulate particular behaviours, to private arrangements.

On the one hand, the law can be reactive: this is the backwards-looking, failure-oriented approach through which errors or injustices are addressed to restore the balance in society or to restore the peace. Some authors refer to this as negative sanctioning in the law and this is seen as a major

power of the state: the ability – legitimately endorsed (in statute) – to coerce certain types of behaviour. The strength of this approach lies in the penalties that befall those who do not comply with the expected behaviour: fines or criminalisation with/or without imprisonment, loss of property and/or licences, to name but a few.

On the other hand, the law can also operate proactively to address anticipated future problems, needs or changes. Some authors refer to this as positive sanctioning in the law: good behaviour is rewarded by permitting a say in how scarce resources are to be distributed and used. Government power is not expressed through use of force, but by conferring benefits.

## Basic Questions Determining the Applicable Legal Framework

Determining which legislation would apply to a specific project will depend on very specific circumstances present in each case. In general, four basic questions must be answered to determine the legal framework applicable to a proposed bioremediation project:

### ***What is being grown?***

Legislation regulating invasive species, water use, use of fertilisers, etc. may be relevant, depending on the crop selection. Complex environmental legal processes, permitting requirements and general obligations may be associated with the cultivation of the proposed plant species.

### ***Where is the site located?***

Knowledge about where the crops are to be grown is crucial to identify the relevant spatial planning and land use management laws applicable. The location of the site will determine the applicable zoning requirements, land use restrictions and authorisations needed to proceed with the growing or processing of the selected crop. It is also necessary to determine how the proposed agricultural and processing activities fit in with the municipality's integrated development plan and spatial development framework.

### ***Why are the crops grown?***

If the crops are grown mainly to rehabilitate degraded mining land, this bioremediation proposal must be included in, and align with, the mining right holder's rehabilitation plan. Conversely, if the crops are grown largely to provide an alternative economic industry and encourage social development, the project must be included in the mining right holder's social and labour plan. The social and labour plan must align with the municipality's integrated development plan and identify local economic development initiatives supported by the mining right holder.

### ***Who are the stakeholders?***

The applicable law will also be determined by who the stakeholders are: those participating, such as the fibre-farmers and the landowners, as well as the persons, neighbours and communities affected. In the case of landowners, for instance, it would make a difference whether the land is under a lease agreement or not and whether the landowner is a natural person, juristic person, or an indigenous community. The applicable laws will determine whether consultation with other parties or consent of those parties are required before bioremediation can commence. Another stakeholder is the state – for example, the ministries dealing with mining, agriculture, land and environment, labour, etc.

## Key Policy Implications and Recommendations

To foster the entrepreneurial economy envisaged in the National Development Plan, lawmaking must become more proactive. Proactive lawmaking – promoting good behaviour through incentives – may enhance buy-in to achieve behavioural changes.

Proposed amendments to the environmental regulations should be implemented to change mine rehabilitation goals. The legislative provisions should not be restricted to efforts at returning the land to its pre-mining state as the only acceptable outcome. The focus of rehabilitation efforts should rather be on a sustainable end-state. Such a focus will alleviate the impact of legislative restrictions regarding biodiversity and enable bioremediation using fibrous plants.

The government should create an enabling environment for environmentally and socio-economically sustainable projects on degraded mining land. This can be achieved by greater efforts at intergovernmental relations and co-ordinated legislation. Different government departments should also play a more active role in facilitating agreements between the mining right holder, the landowner and the local community.

## Conclusion

The assessment underlying this policy brief concluded that the current legal framework for environmental rehabilitation of mine land, the regulation of land use, the contractual basis of relationships and the protection of communities are largely reactive. It is a framework of sticks, rather than carrots. In legislation dealing with mine land rehabilitation, this is probably to be expected. However, our legal system has not previously catered for innovative methods of mine land rehabilitation such as the one being explored by using fibrous plants.

## References and Useful Resources

- Africa Progress Panel (2013). *Africa Progress Report: Equity in Extractives Stewarding Africa's natural resources for all*.
- Centre for Applied Legal Studies (2018). *The Social and Labour Plan Series - Phase 3: Alternative Models for Mineral-Based Social Benefit* (03-2018).
- Dell, M. (2004). "The Devil's Excrement: The Negative Effect of Natural Resources on Development" *Harvard International Review* (FALL) 26(3):38

- Freiberg A. (1986). "Reward, Law and Power: Toward a Jurisprudence of the Carrot" *Australian & New Zealand Journal of Criminology* 19:91-113
- Harvey, R. 2018. "How to ensure communities living near mining activities get a better deal" *Mail & Guardian* available at <https://mg.co.za/article/2018-05-08-how-to-ensure-communities-living-near-mining-activities-get-a-better-deal> (accessed on 02/11/2018)
- Humphreys, et al. (2007). *Introduction: What is the Problem with Natural Resource?*
- Managing Transformation Solutions (2014). *The Marikana Commission of Inquiry: The Problems of the Social and Labour Plan (SLP) 'System' within the Mining Sector in South Africa* (08-2014).
- Mhlongo, S.M. and Amponsah-Dacosta, F. (2016). "A review of problems and solutions of abandoned mines in South Africa". *30 International Journal of Mining, Reclamation and Environment* 283
- Richard, M. (1993). *Sustaining development in mineral economies: the resource curse thesis*, London and New York: Routledge.
- Ross, M.L. (1999). "The Political Economy of the Resource Curse" *World Politics* (January) 51:297-322.
- Ross, M.L. (2012). *The Oil Curse: How Petroleum Wealth Shapes the Development of Nations* New Jersey: Princeton University Press.
- Sachs, J.D. and Warner, A.M. (2001). "The Curse of National Resources", *European Economic Review* 45:827-838.

This research is funded through the Department of Science and Technology (DST) and the National Research Foundation (NRF) via the awarding of a [Community of Practice](#) to existing Research Chairs under the South African Research Chairs Initiative (SARChI) funding instrument.



**\*Disclaimer:**

This Policy Brief is intended to catalyse policy debate. Views expressed in these papers are those of their respective authors and not necessarily those of the University of Cape Town, or any associated organisation/s.