

Junior Fellowship for Dr. Ferdinand Postma: Possible role of the South African mining industry in the establishment of a sustainable biobased economy.

Initiative: Wissen für morgen – Kooperative Forschungsvorhaben im subsaharischen Afrika (beendet)

Ausschreibung: Postdoctoral Fellowships on Livelihood Management, Reforms and Processes of Structural Change

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Economically triggered declines in South African mining activities in the past have often led to environmental, health and social crises due to poor closure or abandonment of mines by the industry. An integrative approach to environmental restoration and socio-economic investment could improve the livelihoods of thousands of people living near derelict mines. The establishment of a biobased economy with the help of the mining industry and local communities could improve the current socio-economic positions of marginalized people. Various bioremediation technologies for treating mine wastewater can be used to stimulate a biobased economy where biomass can be generated for subsequent valorization. Currently our knowledge on how to link bioremediation technologies with revenue generating mechanisms and job creation is limited. Therefore the aim of this research is to investigate various mine wastewater bioremediation technologies for their suitability in sustaining a biobased economy and the potential impact it could have on socio-economic development in mining communities in South Africa. To achieve this aim a techno-economic analysis of bioremediation technologies that are suited to treating the polluted water of a selected mining site will be performed. This analysis will be combined with quantitative data collected from a nearby mining community. The data will include information about the perception of the community on bioremediation and biotechnology as well as the human and social capital available to make to process viable. Furthermore, the potential impact of the technology on the community will be measured in terms of the reduction of the vulnerability of the community to poverty. The expected outcome is an integrated conceptual model of how bioremediation and biotechnology can be maximally utilized for progress in environmental restoration and community development post mine closures.

Projektbeteiligte

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