



UNAM
UNIVERSITY OF NAMIBIA

PROPOSED CENTRE FOR MINING AND METALLURGICAL RESEARCH AND TRAINING



BACKGROUND

A report on Mining Industry Prospects in Africa prepared by the African Development Bank Group in 2012 states that despite the significant amount of mineral resources found on the African continent, which are more than 30% of the world's global mineral resources (IFC, 2014), Africa's mineral production represents only about eight per cent (8%) of the world mineral production, broken as follows (bauxite, 7%; chromite, 38%; cobalt, 60%; copper 9%; gold, 20%; iron ore, 2%; lead, 2%; manganese, 38%; diamonds, 56%; coal and petroleum, 12%; uranium, 18%), and most of this is exported in raw form. This is because of the many challenges facing the mining industry, which need to be urgently addressed in order to unlock the continent's potential. The challenges include the low industrialisation of the mining industry, lack of policies for local beneficiation, lack of re-investment in education for mining and processing industries, governance, environmental degradation (air and water pollution, soil and land degradation, deforestation, disruption of the ecosystem, waste management, etc.) and social issues among many others. The African Mining Vision (AMV) which was adopted by the African Union (AU) in 2009 aims at maximizing Africa's mining potential to accelerate the continent's development and growth by achieving rapid and inclusive socio-economic development. AMV's action plan covers the following: building human and institutional capacities; mining sector governance; promoting research and development; dealing with environmental and social issues; linkages and diversification; etc.

In accordance with its motto Education, Service and Development the University of Namibia (UNAM) has designed educational programmes that are aimed at meeting national human resource requirements through quality teaching, research, consultancy and community service. Through its competent and dedicated staff and quality infrastructure, the University has been serving the nation in various ways and contributed significantly to national reconstruction and development since its inception in 1992. UNAM has already been focusing on building capacity in all major economic sectors such as agriculture, fisheries, geosciences, tourism, engineering, etc. For example, between 2012 and 2016, the department of Mining and Metallurgical Engineering at UNAM's Jose Eduardo dos Santos (JEDS) Campus has produced a total of 40 graduate Mining Engineers. Now UNAM would like to do more in building research capacity in the mining sector and offering in-service training to mining personnel.

Mining projects contribute to development on the continent through taxes and royalties, creating jobs and local procurement, and community investment projects such as schools and hospitals. For example, according to IFC 2014, the boom in investment and resource prices contributed to the continent's Gross Domestic Product (GDP) growth by 64 percent between 2000 and 2011. In Namibia, The Mining industry in Namibia is a major contributor to Namibia's economy and one of the major contributors to the country's GDP with a direct contribution of 11.9% in 2015 (Chamber of Mines, 2015). From 2014 to 2015 Namibia was ranked as the most favourable investment destination in Africa, attracting N\$ 32 billion worth of investments in new mines and reinvestments over a period of three years (Chamber of Mines, 2015).





The University of Namibia, acknowledges and believes that science and technology education and research is the engine that would drive economic development and growth through sustainable and responsible utilization of the country's mineral resources wealth, is to establish a Centre for Mining and Metallurgical Research and Training at the coast, possibly at Arandis town in the Erongo region. This Centre will promote research and development strategies and activities focusing on poverty reduction and sustainable development, while at the same time playing an important role in human resource skills development through in-service training and tailor-made courses.

Currently, the training of Mining Engineers and associated Metallurgical Engineers is done by UNAM and Namibia University of Science and Technology (NUST) at Bachelor Honours degree level. In addition, UNAM has a Master of Science degree programme in both Mining Engineering and Metallurgical Engineering that are offered at the Jose Eduardo dos Santos Campus in Ongwediva. The training of Technologists at B. Tech level for the mining industry is done by NUST. On the other hand, the training of artisans for the mining industry is mainly done by Namibia Institute of Mining and Technology (NIMT).

It should be noted that NIMT offers vocational/apprenticeship training only up to National Technical Certificate Level 3 (N3), corresponding to Certificates at National Qualifications Framework (NQF) Level 3. NIMT produces hundreds of artisans each year who are absorbed in the mining industry. These artisans form the pool of operators and miners who constitute the largest proportion of mining employees. However, there exists a knowledge gap in the training of artisans in that there is no training offered at National Technical Certificate (NTC) Level 4 (NQF Level 4). Given the challenges of modern industry and the ever-changing technological advancements in the mining sector, there is need to upgrade the skills of the current artisans so as to reach NTC 4 (N4) level. The proposed UNAM Centre for Mining Research and Training will address this gap.

Preliminary discussions between the UNAM Management team led by the Vice Chancellor Prof. Lazarus Hangula, and some selected mining companies indicated that there are strong merits in promoting a research and training centre that would provide skills upgrade to mining personnel and become a centre of excellence in research towards mining engineering and technology with a particular focus on mineral beneficiation, materials handling and transport systems in mines; mine geology, mining health and safety, recycling and waste disposal in mines; mineral processing and value-addition; land ecosystems and rehabilitation of degraded land; impact of mining operations on the environment; impact of mining operations on climate change, etc. Thus the Centre will provide transdisciplinary research and training (science, engineering and technology, economics, social sciences, etc.) that is needed for sustainable development and growth.

The rapid development of better mining technologies means that there would always be a need for skills transfer and upgrading of existing employees while at the same time develop better courses for incoming new labour force in the mining sector. For this to succeed it would require attracting technology and skills from more developed mining countries in order to enhance mining efficiency and the quality of mineral products. Thus the Centre has the potential to enhance employment opportunities of young African/Namibian graduates providing them an opportunity to qualify further to become engaged in a sector that is projected to grow.

The proposed Centre is expected to promote awareness on the significance of mining science, engineering and technology as an engine for development and growth, and for alleviating and eradicating poverty in Namibia and the SADC Region and the wider African continent through responsible and sustainable utilization of the abundant underutilized mineral resources. Both Namibia's Vision 2030, National Development Plans (NDPs) and the Harambee Prosperity Plan (HPP) call for increased government investment in science and technology with the aim of promoting sustainable utilization of natural resources including minerals, and recognize their potential for promoting development and growth, poverty alleviation, and food security in Namibia. By including environmental and social dimensions as they relate to the mining industry, the Centre will contribute to achieving the targets set by Sustainable Development Goals (SDGs, e.g. Nos. 8, 11 & 15) of the United Nations Development Agenda 2030, while meeting national and regional needs.





The Centre for Mining Research and Training which will be established in the Erongo region will be demand driven and aimed at addressing challenges facing the mining industry sector while at the same time complementing the efforts taking place at other UNAM faculties as well as at Namibia University of Science and Technology (NUST) and the Namibia Institute of Mining and Technology (NIMT). The broad range of research and training activities that are to be undertaken by the Centre will need inputs from many local and international engineers, scientists, mining companies, environmental agencies, lawyers, the Chamber of Mines of Namibia, etc. in the form of instructors and lecturers, especially on issues that are of particular relevance in the Namibian/African context, while both undergraduate and postgraduate students would be the major players in the envisaged research programmes. Below is a brief description of the Centre and its envisaged task ahead.

1. VISION: To be a leading centre of excellence for mining research and training in Namibia.
2. MISSION: To undertake research and training in Namibia to promote sustainable development and utilization of mineral resources.
3. OUR STRATEGY: To use Five Year Development Plans, keeping in mind national priorities as contained in Vision 2030 and NDPV and Harambee Prosperity Plan, to implement output-oriented inter-related research and research related programmes, each of them focusing on selected thrusts or objectives.



Implementation Activity Plan and Timeline for the Establishment of the Centre for Mining and Metallurgical Research and Training

Objectives	Activities/Actions	Milestones	Indicators	Motivation	Timeframe
1 - To provide a conceptual framework for the establishment of the centre for Mining Research and Training - To mobilize partnerships for the project initiative	Develop a Concept Paper for establishment of the Centre for Mining Research and Training	- A viable concept paper accepted ;	Number and diversity of stakeholders accepting the concept paper and partnership.	A strategic conceptualization for the establishment of the Centre	Jan-Feb 2017
2 - To share the project concept; - To solicit inputs for project implementation	Organize individual stakeholder consultation meetings	- Inputs and partnerships from stakeholders; - Project initiative acceptance	- Number of stakeholders for the project initiative; - Number of inputs for project plan; - Budgetary items;	- Build a common understanding on the project initiative - Get a buy-in from different stakeholders	March-May 2017
3 To identify a group of stakeholders to guide the project process and activities	Establish Project Advisory Group/ Steering Committee	- A viable and committed Project Advisory Group/ Steering Committee established	- Number and diversity of stakeholders represented in Project Advisory Group/ Steering Committee	Identify and establish a group of committed stakeholder representatives to guide the initiative implementation	May/June 2017
4 Finalise the Concept Note and develop a brochure to be used for marketing and other uses	The Steering Committee reviews and finalises the concept document	Acceptable Concept Note in the form of a brochure	Stakeholders endorse the Concept Note and thus support the project	Widespread buy-ins and willingness to support the project established among stakeholders	June-August 2017
5 - To get empirical data on the feasibility of establishment of the Centre; - Explore regional and international partnerships	Conduct a feasibility study on the prospects and challenges of the project initiative; - Survey of similar programmes at regional and global levels	A detailed Feasibility Study Report; Viable partnerships	- Number of stakeholders (public and private) accepting the Report - List of prospects and challenges; - Attained leverage for goals of the Centre	To establish the prospects and challenges of the envisaged Centre ; Quality enhancement	February/April 2018

6	To provide a detailed outline and process for the establishment of the Centre	Develop a Business Plan for the Centre	- A viable Business Plan - Budgetary outlines	Number of stakeholders (public and private) accepting the Business plan	Business Plan will provide a detailed outline and process for the project initiative including prospects and challenges	May/June 2018
7	To acquire sufficient funding resources for the establishment of the Centre	Mobilize funding resources for the feasibility study and needs analysis; infrastructure development, and human resources capacity development for the Centre	Sufficient funding and commitments from various sponsors/donors available to implement the development plan of the Centre	Amount of funds acquired from different sources to finance the Centre's activities	Setting up the Centre will require mobilizing funds from different sources	Ongoing
8	To determine priority areas of human resource needs leading to academic and training priority areas as well as research needs	To determine priority areas of human resource needs leading to academic and training priority areas as well as research needs	Human resource development needs and research themes are identified	Academic and training programmes outlines to be used as guidelines for curricula and training materials development	Satisfied stakeholders with outcome of stakeholder workshop	March-June 2018
9	To set up offices and training facilities either at Arandis, Swakopmund or Henties Bay	Identify some facilities in Erongo region to host the Centre's offices and training venues	Adequate facilities available to kick off the Centre's activities	Number of offices as well as training facilities are available to initiate human resource capacity building activities for the mining industry	The mining industry would be assured of the engaged quality training for its sustainability	July/August 2018
10	To promote knowledge and skills transfer that would contribute to efficient and effective mining operations; To create awareness on the obstacles that hamper the development and growth of the mining industry; To build a critical mass of human capital for sustainable development of the industry.	Develop capacity building programmes for the mining industry using available competent academics in the faculties of Engineering & IT, and Science (School of Geosciences), and also from the mining industry, Lawmakers, NGOs, etc.	Appropriate capacity building programmes developed and accepted by the mining industry and other relevant stakeholders	Number and diversity of participants from several mining companies attending the capacity building programmes; Number of graduates with improved knowledge and skills arising from the different training programmes	Creation of knowledge and awareness on the importance of efficient and effective mining operations for the sustainability of the industry; The development and sustainability of the mining industry requires a critical mass of human capital for research, innovation, teaching and quality products development	Ongoing

11	To organize consultative meetings involving scientists and stakeholders from the mining industry in order to identify key research themes in priority areas of need.	Development of Research Themes and respective Research Teams	Appropriate Research Themes identified and accepted by the mining industry.	Number of active research programmes being undertaken; Multidisciplinary research teams working with respective mining companies to address challenges they face; and diversity of users of the reference materials/data arising from research	Provision of key research information that would enhance the efficiency and effectiveness of mining operations and improve the quality of the mineral products and the impact on the environment, thus generating more revenue for socio-economic development and growth	March/April, 2018
12	To develop academic and training programmes based on the guidelines provided during the stakeholder workshop	Development of curricula and training materials	Approved curricula by professional bodies like NGA, NCHE, NTA, and any other relevant organisations	Academic programmes in place	Mining industry stakeholders are ready and willing to send their employees for further training at the centre	June/July 2018
13	To have adequate professional teaching, research and administrative staff	Recruit a critical mass of teaching, research and administrative staff for the Centre, with additional support from stakeholders	Adequate professional teaching, research and administrative staff are recruited	Number and diversity of professional teaching, research and administrative staff	Ensure that the Centre has quality teaching, research and administrative staff needed to fulfil the Centre's mandate	August/September 2018

Current Steering Committee Members:

Prof. Osmund D. Mwandemele; (UNAM) Chair; Mr. Timo Ipaangela (Swakop Uranium); Mr. Mighty Katulo (NTA); Ms. Elke Hanstein (DeBmarine); Mr. Veston Malango (Chamber of Mines); Prof. Fred A. Kamona (UNAM); Prof. J M Akande (UNAM); Mrs. Lorna Mbwale (UNAM Foundation); Dr. Romanus Shivoro (UNAM); Ms. Victoria Shipate (UNAM-Committee Administrator)