



Faculty of Engineering

Department of Mining and Process Engineering

Development of the Department of Mining and Process Engineering in Namibia

H. Musiyarira



Presentation Outline

- Introduction
- Namibian Mining Industry Performance
- Namibia University of Science and Technology
- History of the Department Mining and Process Engineering
- Current Situation
- The way ahead
- Conclusions

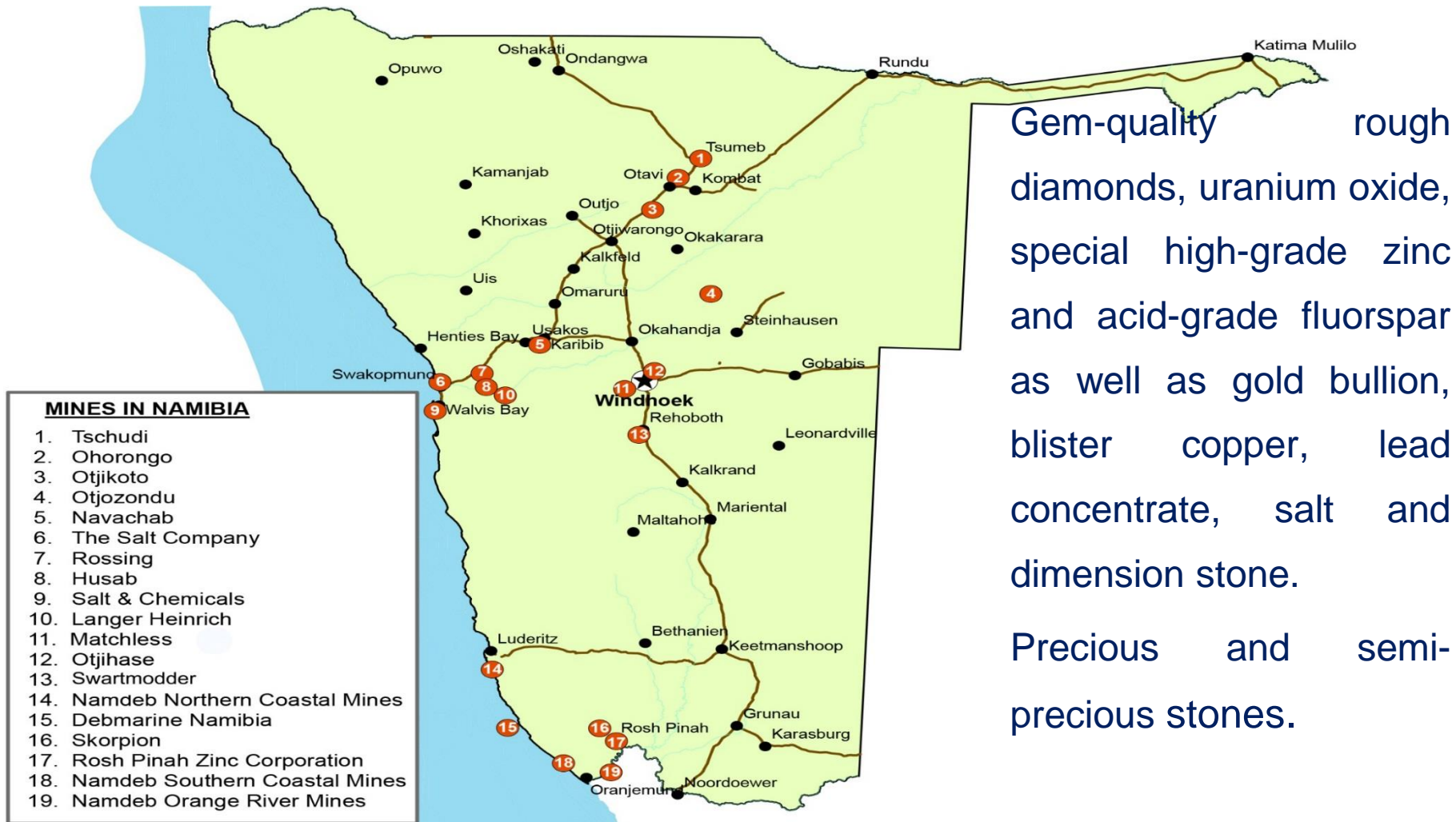
Introduction

Namibia

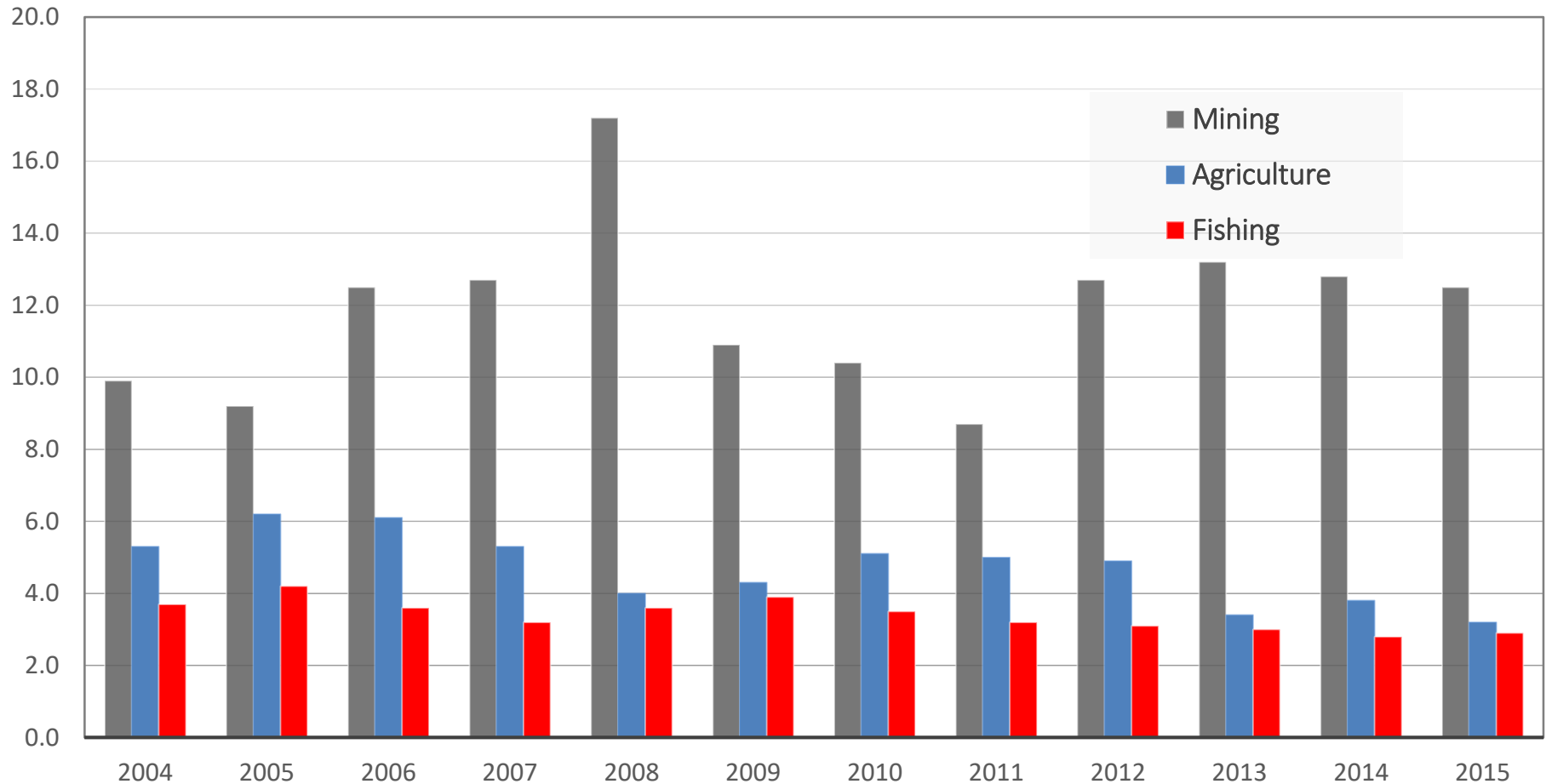
- Independence 1990 from SA
- Population = 2.3 million
- Windhoek = 350, 000
- Female= 52 %
- Male = 48 %
- Two State universities
- One Private university



Introduction

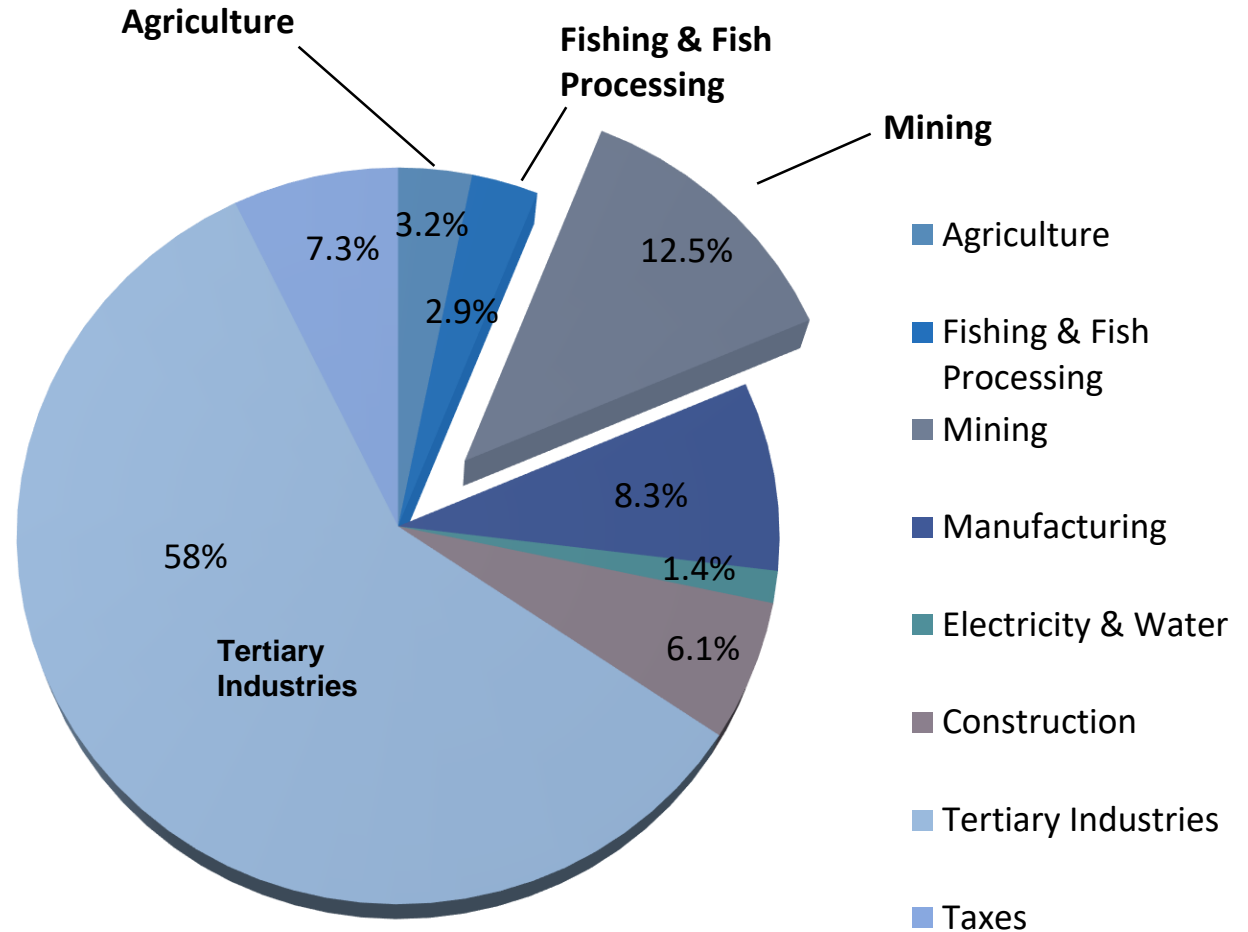


Comparison of GDP Contribution by Primary Industries



Source: Namibia Statistics Agency

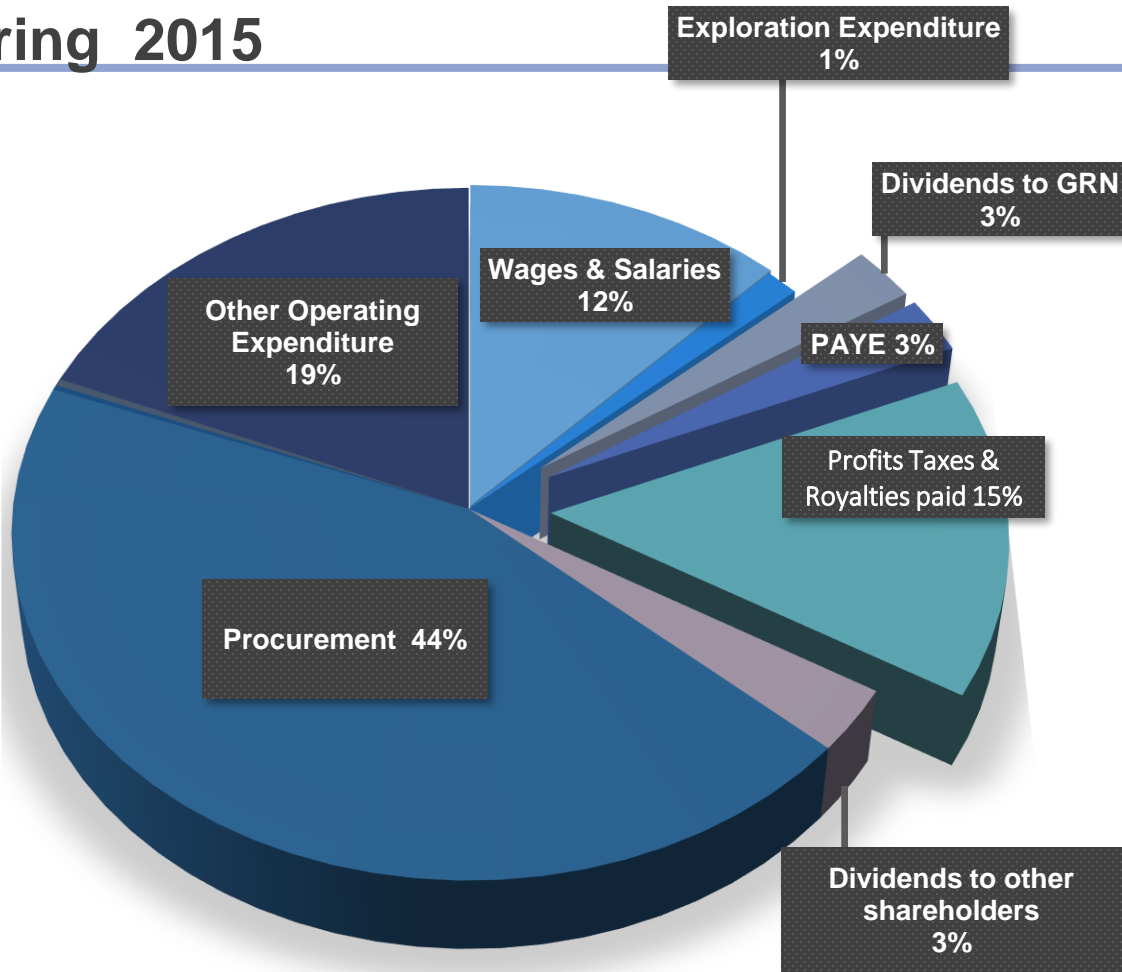
Sector Contribution to GDP



Source: Namibia Statistics Agency

Mining industry generated > N\$25.28 bn in revenue during 2015

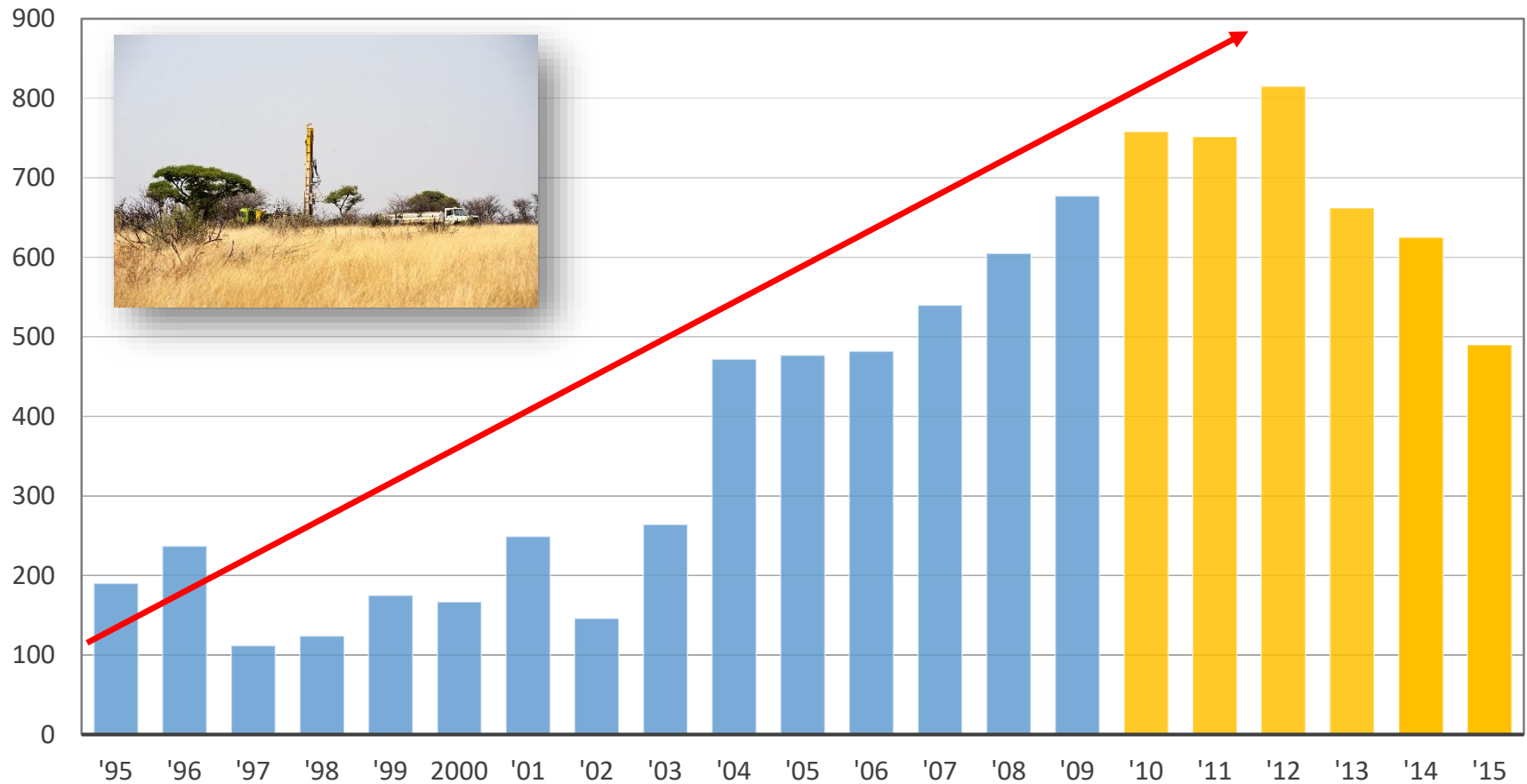
Mining Industry Contribution (N\$ bn)	
Wages & Salaries (Net)	3.088 (12%)
Exploration Expenditure	0.326 (1%)
Dividends to GRN	0.639 (3%)
PAYE	0.654 (3%)
Profits Tax & Royalties paid	3.763 (15%)
Dividends to other Shareholders	0.757 (3%)
Procurement (Namibia spend)	11.198 (44%)
CSR	0.057 (< 1%)
Expenditure on Skills & Development	0.080 (< 1%)
Other Operating Expenditure	4.722 (19%)
Total	25.284



Total Revenue to GRN: N\$5.056 billion

Source: Chamber of Mines of Namibia

Total Exploration expenditure (N\$m)



Source: Namibia Statistics Agency and Chamber of Mines of Namibia

History of the Department

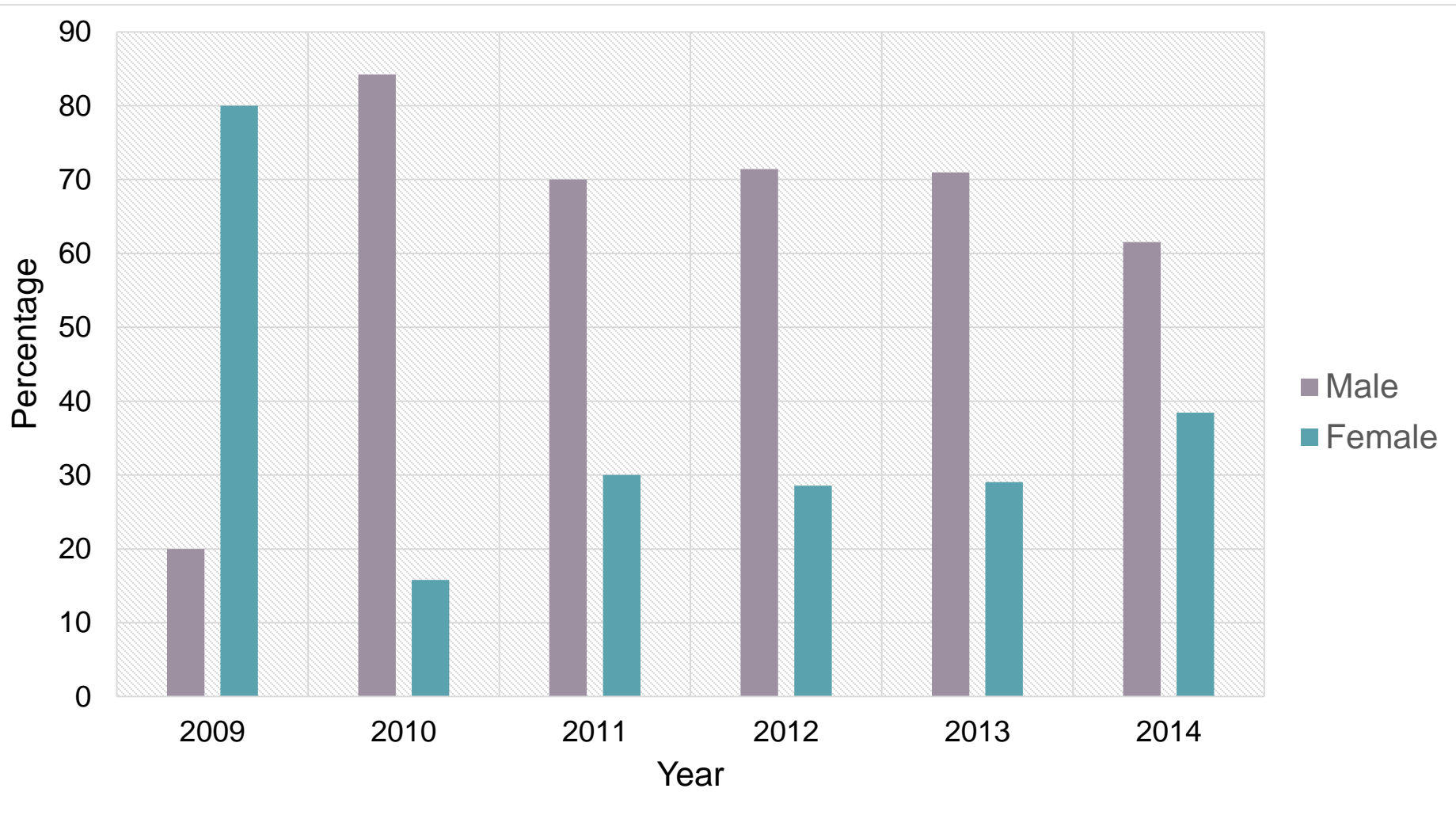
Namibia University of Science and Technology (NUST) introduced minerals engineering degree programs in 2009.

- DMPE Established as a result of:
 - Needs analysis to determine relevance and alignment with National imperatives,
 - NUST leadership being proactive to Vision 2030
- Started with 10 students and two faculty members with two specialisations:
 - Mining Production
 - Mineral Processing

Development challenges

- Faced teething challenges as staff shortages were experienced.
- Convinced Management to utilise salary vote for budgeted positions in bringing in visiting professors
- managed to run all courses
 - Limited staff on the ground, 80% courses were done on block mode by renowned and experienced visiting professors
- Focus on teaching and ensuring that all courses were delivered

Male and Female Student Ratio



Student Experience



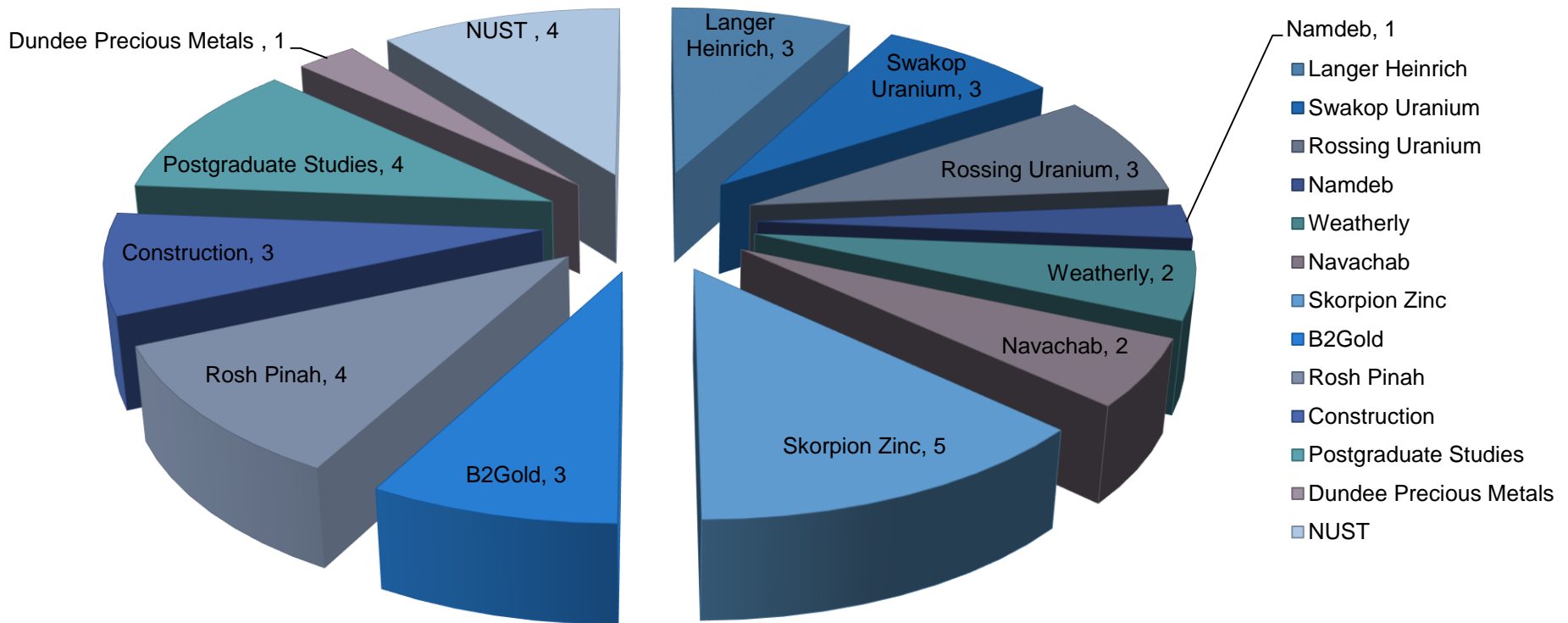
Excursions

First Stream of Mining Students



Harmony kutakwashe musiyana

Graduates Employment



SAIMM Student Colloquium

The Southern African Institute of Mining and Metallurgy

is proud to present

The Young Professionals Week

13th Annual Student Colloquium, 20 October 2015

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YUNIBESITHI YA BOKONE-BOPHIRIMA,
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS



Colloquium Announcement

OUR IDENTITY

Our Mission

To provide international best practice tertiary level education, training, and applied research in Mining and Process Engineering

Our Vision

To be the premier department of choice for Mining and Process Engineering in Southern Africa

Our Values

EXCELLENCE INNOVATION TEAMWORK INTEGRITY COMMITMENT

Strategic Goals

- Long and short term secondment of professors
- Secondment of industry staff to teaching & vice versa
- Internships & excursions
- Review existing and develop new academic programmes

Teaching & Learning

- Industrial related projects
- Establish an interactive Research Centre and a Mining Museum
- Subscribe to top journals or research engines
- Acquire state of the art laboratory equipment

Research

Visibility

- Engaging industry conferences
- Promotional material and branding
- Marketing of the department

Sustainability

- Funding from industry
- Funding from government
- Raising funds through short courses for industry

Strategic Goals

Enhancing Teaching & Learning

Strategic Objectives: Developing & Enhancing the Quality of Programmes on Offer

Strategic Action	Outcome	Performance Indicator	Responsibility	Target	Budget (N\$/year)
Review existing and develop new academic programmes curricula to meet changing needs in science & engineering education	Senate approved curricula	Approved gemmology curriculum	HOD & Staff	2015	50 000
		Approved B Eng curriculum for chemical engineering	Programme Development Unit; Curriculum Advisory Board	2017	40 000
		Approved postgraduate curriculum for Mining & metallurgical engineering		2017	80 000
Attain ECN/ ECSA accreditation for the undergraduate programmes	Marketable graduates who can compete and excel globally	ECN/ECSA Accreditation	Dean, HOD, PC	2016	200 000
Implement effective quality control mechanisms	Reputable programmes of high quality	Number of moderator reports Number of departmental board meetings	Staff, HOD, PC	2014	100 000

Industrial Advisory Board



Local symposium



Harmony Kuitakwashe Musiyarira



3rd Society of Mining Professors Regional conference



Harmony Kuitakwashe Musiyarira



Current Situation

Recruitment (2015/2016)

- ***Prof Dick Groot*** Hydrometallurgy ; Uranium chemistry, Electrometallurgy, University of Pretoria and Mintek, *South Africa*

- ***Prof Chris Magomedze*** Mineral Processing, [Olympic Dam, MMG-Australian and Laos], *Zimbabwe, Australia*

- ***Dr Sofya Mitropolskaya*** Physical Metallurgy [Uni of Ekaterinburg *Russia*]

- ***Prof Thomas Hollenberg*** Mining Engineering, [Fichtner Mining & Environment, and Clausthal University] *Germany*

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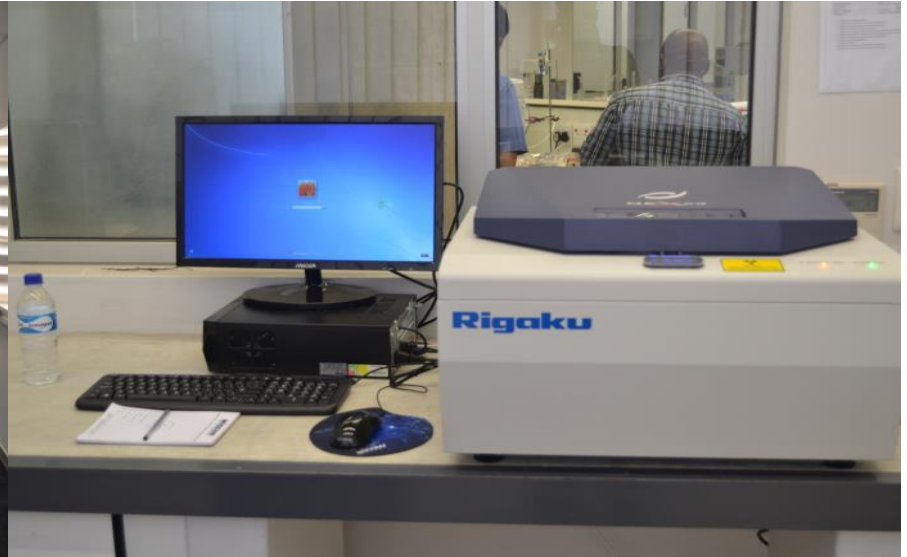
- ***Prof Dr Addai-Mensah*** Chemical Engineering, Hydrometallurgy , Mineral Processing, University of South Australia

- ***Mr Tshivute lipinge*** Mining Engineering, Namdeb, Rosh Pinah

Staff Qualifications



Lab Facilities



Lab Facilities



Lab Facilities: Magotteaux Mill & Flotation Unit



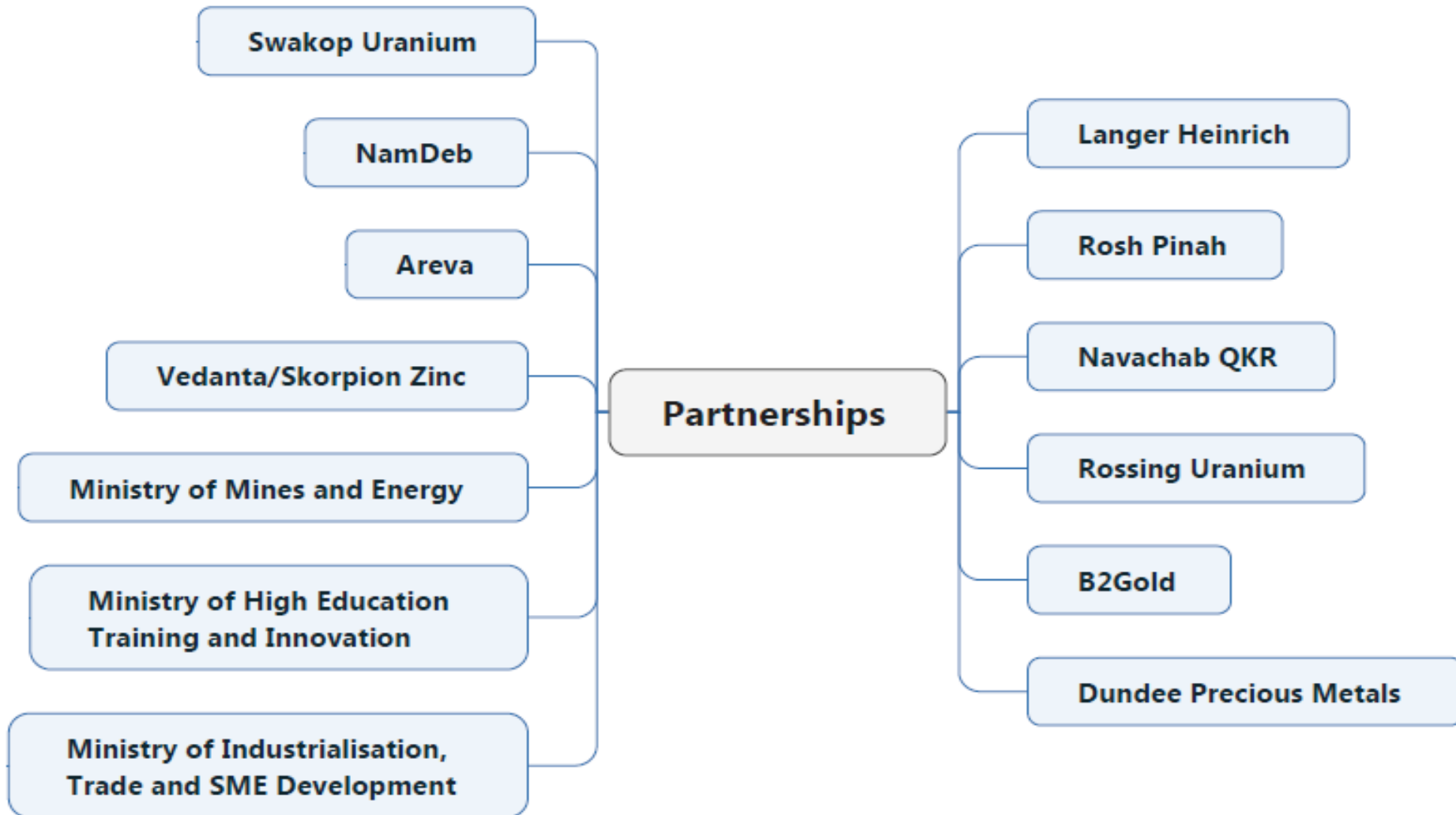
Stakeholder Engagement



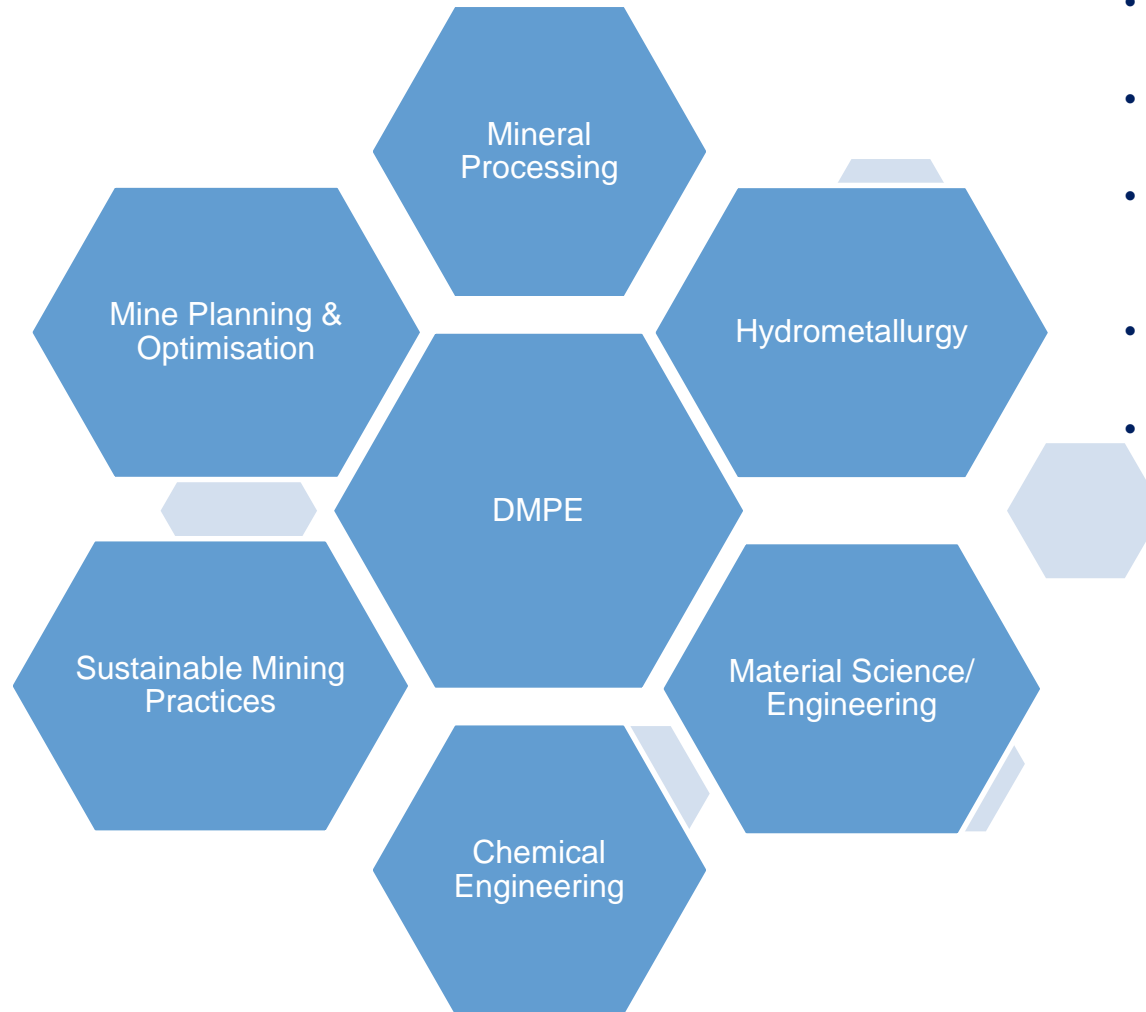
NAMDEB – NUST MoU



Key Stakeholders



Research Themes



- 40 publications in 2016
- 50 in 2017 (year to date)
- 2 approved National research grants
- 4 industry related projects
- DMPE has become Government and industry first port of call
 - Rossing Uranium
 - Dundee Precious Metals
 - Rosh Pinah
 - B2Gold

Internationalisation



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Engineering Council of Namibia Evaluation

August 2015, March 2017

•The programme evaluator of the Engineering Council of Namibia has conducted a final assessment on the B.Eng. Mining Engineering and B.Eng. Metallurgy Engineering programmes offered at the Polytechnic of Namibia for purposes of registration. Both the 2010 curriculum as well as the 2012 curriculum were assessed and the programme evaluator has recommended that graduates who have completed the 2010 or the 2012 curricula may be registered as Engineers in Training in the Professional Engineering category with the ECN. “

Mr Von Jeney, President of the Engineering Council Of Namibia

National Council of Higher Education

EVALUATION October 2016

The **B Eng (Metallurgy)** programme fully meets international standards and I have no hesitation in stating that for any engineering accreditation in the world, it will pass on all criteria assessed for accreditation if the team continues on this trajectory of excellence.

By Lead Evaluator : Professor Herman Potgieter (Head of School Chemical and Metallurgical Engineering at the University of Witwatersrand)

EVALUATION March 2017

The **B Eng (Mining)** programme fully meets international standards.

By Lead Evaluator : Professor Zacheus O Opafunso, Nigeria

Accreditation: Comments

Prof Herman Potgieter made an offer to partner with NUST in developing the postgraduate programmes in which the graduates will receive a joint degree (NUST and WITS)

In his own words he said, “ We are very selective in who we do business with and it is an opportunity we rarely present to any institution unless we are definitely sure that the institution is on the same level as us or is on a path of excellence”

He also noted the team spirit in the department and congratulated the HOD for creating such an enabling environment since most young universities have challenges of professionals building their own empires in the department as opposed to building the department

Barry Wills Blog

There are now sixteen academic staff working in the Department, with a further five support staff giving a complement of twenty one. John says that the Department is very well led by its energetic Head, Associate Professor **Harmony Musiyarira**, who has a PhD from Witwatersrand University. Harmony is an experienced metallurgical and environmental engineer, who has a fine combination of industrial and academic experience.

I was pleased to see that recent appointments include Professor **Jonas Addai-Mensah**. I have known Jonas for many years, and last caught up with him at ALTA 2011 in Perth ([posting of 30 May 2011](#)). He is a highly respected international researcher with wide experience in minerals processing and was formerly Professor and Associate Director at the WARK Institute, University of South Australia.

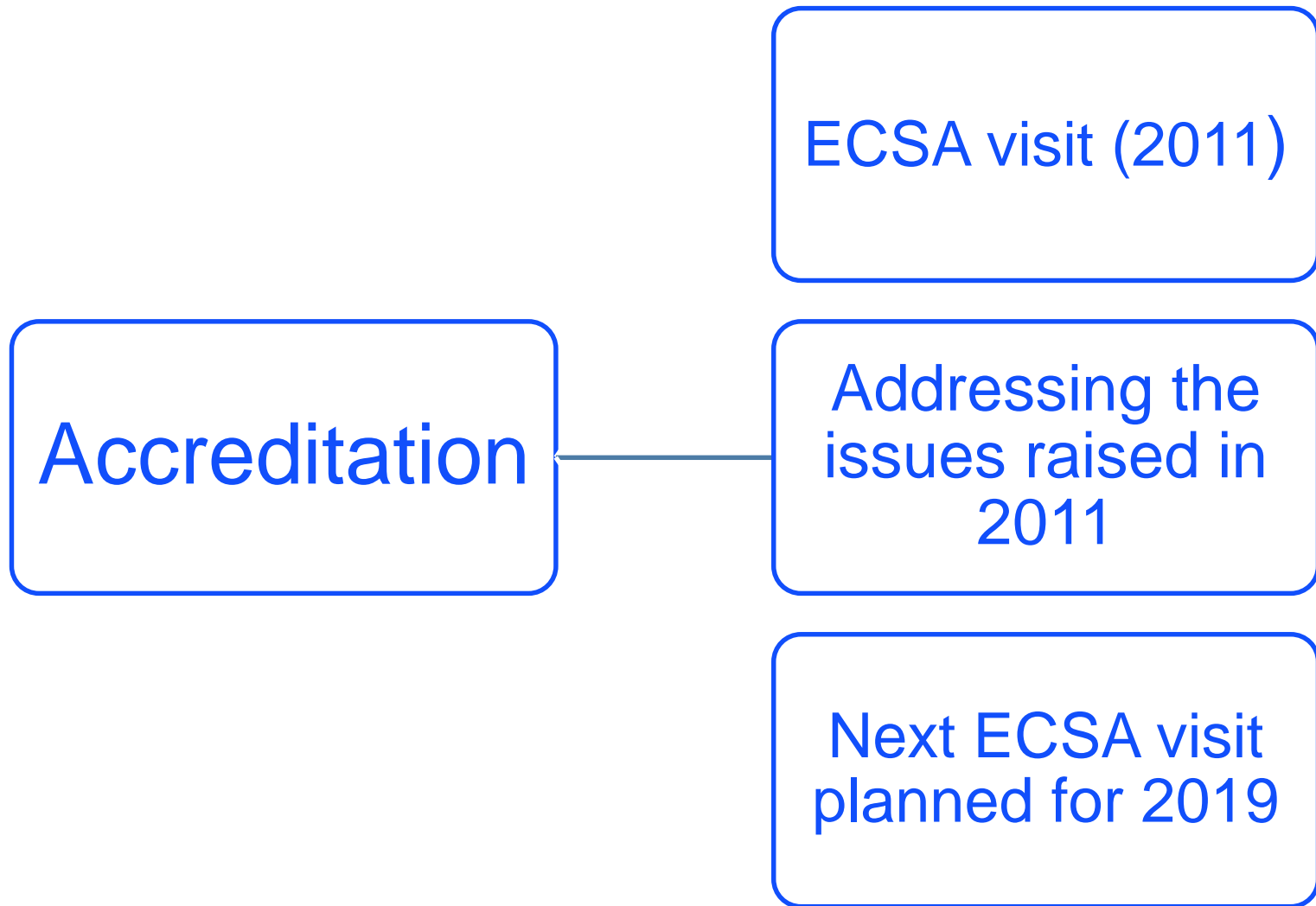


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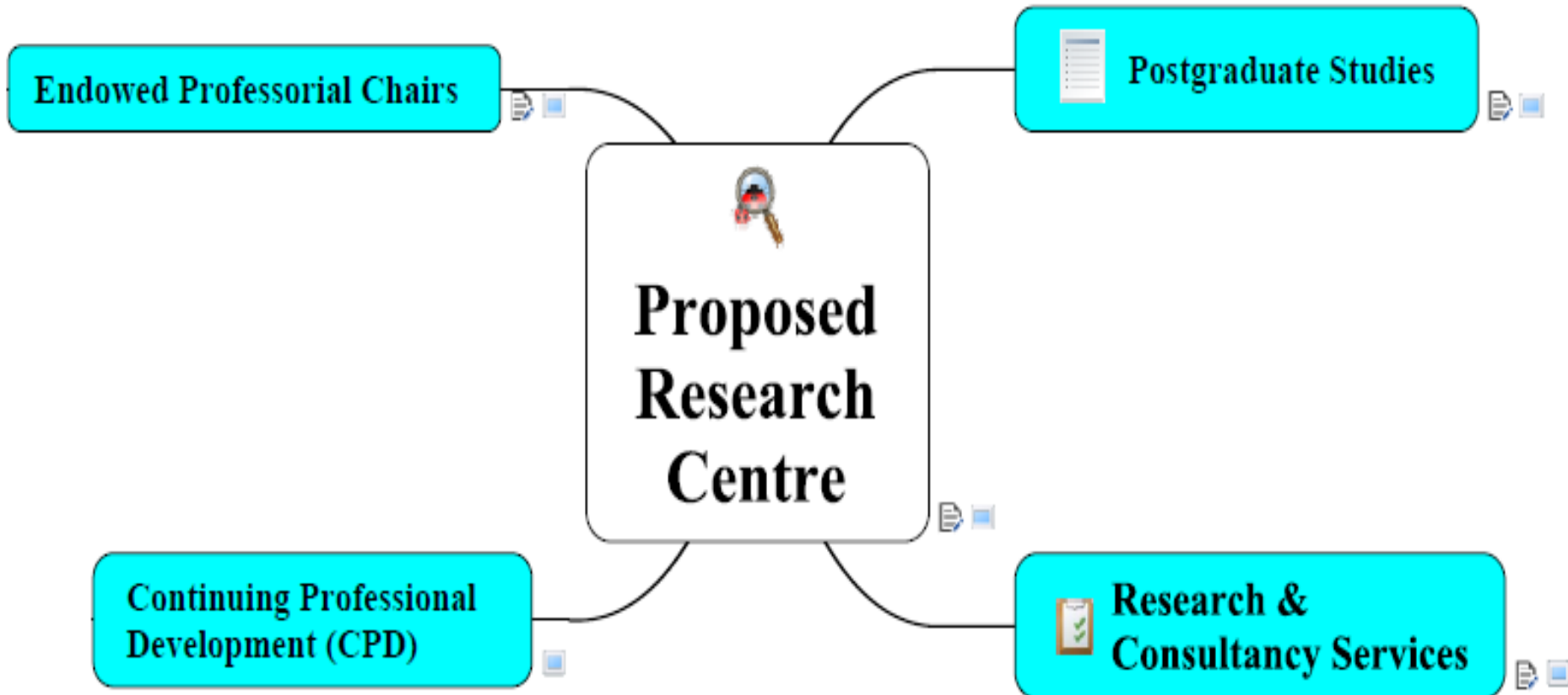


Moving Forward

International Accreditation

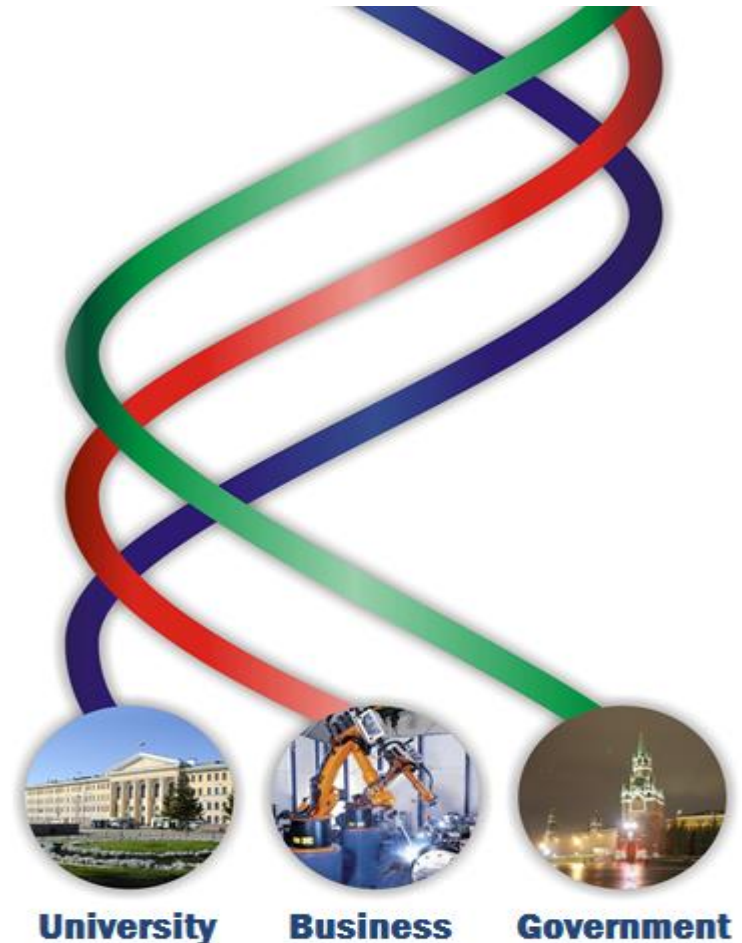


Establishment of Research Center



Triple Helix Approach

- For any country to develop technologically and economically there must be a **strong link** between its **industry**, **government** & **academic institutions**
- All courses & programmes offered by such institutions derive their **relevance from the needs of the nations** they serve, and hence should promote development of existing and also new industries



Conclusions

From a base of very poor infrastructure and negligible equipment levels, DMPE is now housed in a multi-million dollar building and, with significant purchase of modern equipment; a qualified staff complement making a world class Mining and Process Engineering Center

The Department is now a natural port of call for the local mining industry.

Over the next five years, the DMPE aims to enhance its research capacity, through the development of postgraduate programs and applied research, working with industry.

Strategic intent of establishing a National Centre of Excellence, the Namibia Resource Engineering Centre, in 2019.

Building the road as we walk it

Winston Churchill's quote: "You will never reach your destination in time if you stop to throw stones at every dog that barks at you"

You will never have the passion to fly like eagles if you hand around ducks

SAIMM Zimbabwe Branch: Continue shining!!!



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Faculty of Engineering
Department of Mining and Process Engineering

Thank You.

