INTRODUCTION:
- The African Materials Science and Engineering Network (AMSEN) is one of 5 RISE networks.
- Aims to prepare PhD, MSc graduates in materials, in Africa to teach in Africa.
- Optimize the use Africa’s vast material resources.
- Currently has Nodes in SA, Kenya, Botswana, Namibia & Nigeria.
- Presentation gives an overview of experiences with AMSEN at the UoN node.
• BACKGROUND
  ➢ Up to the Seventies, Government of Kenya funded University education fully.
  ➢ As numbers increased, Universities had to fund a substantial part of running costs
  ➢ Done by levying fees on students
  ➢ Concentration on undergraduate – larger numbers.
Less emphasis on capital intensive programs e.g. post graduate in engineering
Stipends, when provided were ridiculously low (about $70 a month)
No equipment for testing
No funds for simple supplies
For the persistent takes 6 yrs to complete MSc, over 10 yrs to complete PhD.
Worse in engineering, higher degree does not translate to better pay
Most simply abandoned their studies
Yet the large number of undergraduates require qualified lecturers
Partly solved by sending students overseas (Europe, USA, etc.)

However:
• This disrupted family life: could not bring the family along
• Most did not return
• Those who returned frustrated since they could not continue their line of research
• Heavy teaching load left little time for research
• ACHIEVEMENTS OF AMSEN

- AMSEN was formed in 2008 to address some of the challenges above
- Network of five Universities with different strengths (each termed a node)
- Share both human and physical capital at no extra cost
- Students co-supervised from different nodes => diversity of views + mentoring.
Funding ensures reasonable stipend (about $485 for a PhD candidate)

Purchase simple test equipment, supplies and consumables

Allows students to travel within the network

Allows students to maintain family life

On completion, continue their line of research

For UoN node, set a target of 3 PhD/MSc
Registered 5 candidates: 3 PhD, 2 MSc
Two MSc’s have completed: one graduated, one has submitted thesis
Both completed their studies in just over two years
One PhD candidate (who registered in April 2009) has given notice of intention to submit in March 2012, 3 yrs after starting.
Trend replicated in other nodes of AMSEN.
Part of funds used to purchase equipment
Used by both AMSEN and non-AMSEN students
For UoN, include a work station (for modeling), macro/micro hardness testing machine, load cell
Also repaired/rehabilitated several test equipment
WAY FORWARD

- Challenge: sustainability of network beyond 2013
- Each node to develop into centre of excellence in a particular area of ms/e
- Expensive equipment necessary for materials research is shared
- There is optimal use of equipment
Namibia and Botswana nodes: Government has started investing in physical facilities
Wits already fairly well endowed
UoN: Centre for modeling and characterization of mechanical behavior
Human resource base is in place
Leverage to obtain physical infrastructure
Expansion of network. Other universities to join. Universities in Ethiopia and Zambia have shown interest

Bringing in non-African universities:
- Allow access to facilities for AMSEN alumni
- Joint research projects
- Joint funding proposals (PEER)
- Staff exchange (offering sabbatical homes)
• Running short specialized courses including non-materials based e.g. funding proposal writing

➢ Involving the African Diaspora:
  • Material/financial support/technical support
  • Spending sabbaticals in AMSEN nodes