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AFRICAN STANDARDS AND GUIDELINES FOR QUALITY ASSURANCE IN HIGHER EDUCATION (ASG-QA): STANDARD 9 – RESEARCH AND INNOVATION SESSION 1

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1

OPENING COMMENTS

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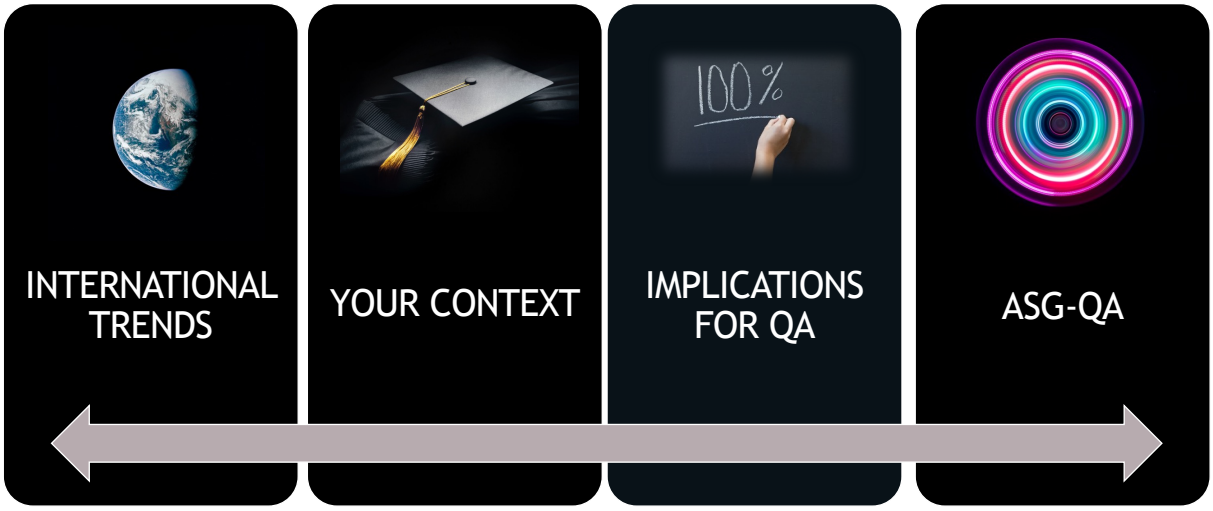

2

WHAT IS *QUALITY* IN HE

(Clemons & Jance, 2024; Harvey & Green, 1993, 2010; Prisacariu & Shah, 2016)

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- Quality
  - Vague, dynamic, relative, multi-dimensional, elusive & slippery concept, no single definition
    - If we do not know what it is, we cannot improve it
  - Popular in policy & strategic HE documents
    - Political positional power & control struggle
    - Contextually rooted in values & assumptions
    - Academic, managerial, pedagogic and/or employment focus
    - Form of ideology & culture, limiting how we understand role of HE in society
    - Need for culture of quality responsibility & ethics
  - Exceptional, perfection, fitness for purpose, value for money, transformation, conformance to specifications & requirements, loss avoidance, meeting/exceeding expectations
  - Doing the right things in the right ways
    - Both the character of educational development AND educational achievements
    - System: input, process AND output that satisfy various stakeholders' expectations
  - Academic standards and the specific levels of knowledge, skills and abilities that students achieve because of their engagement in higher education

3

WHY TALKING ABOUT QUALITY ASSURANCE IN RESEARCH AND POSTGRADUATE EDUCATION IS IMPORTANT

(Civera et al., 2020; Chankseliani, et al., 2021; Seyfried & Polenz, 2020)

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- What counts as 'quality research'?
  - So-called 'blue skies'/basic versus applied research differ in terms of impact measures
  - Emphasis on inter- and trans-disciplinarity to solve 'wicked problems'
  - Higher education as a 'social good'
- Who determines quality?
  - Quality means different things to different stakeholders (e.g. labour market representatives, scientific community, students, society, policy makers & politicians), making it difficult to decide what relevant and methodologically sound indicators (in terms of their validity & reliability) could be used to measure quality
  - What are local, national and global dimensions of quality?
    - Externally defined global challenges (e.g. SDGs) may not reflect locally valued, indigenous meanings of education equity and quality
  - To what extent do academics possess the freedom and agency to imagine university contributions to development and quality?
- What are the un-/intended consequences of quality assurance?
  - Dysfunctional effects of performance-based reward systems - 'On the folly of rewarding A while hoping for B' (Kerr, 1975)
- How does funding act as a driver for research & innovation (competition vs egalitarianism)?
  - Performance criteria; Size; Subsidizing the disadvantaged
- What acts as indicators of quality (3 levels)?
  - Efficiency; Quantity; Quality

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4

(Baldock & Chen, 2021; Cerda-Navarro et al., 2022; Dominguez-Whitehead & Maringe, 2020; Ganguly, 2020; Kobayashi & Emmeche, 2023; Mantai & Marrone, 2022; McKenna & van Schalkwyk, 2023; Nerad et al., 2022; Sharmini & Spronken-Smith, 2020; Taylor, 2022; Van Schalkwyk et al., 2020; Wilkins, et al., 2021)

INTERNATIONAL TRENDS IN PG QUALITY

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- PG quality determined through
  - Merit of the PG candidate & thesis
  - Facility and position of the PG supervisor
  - Examination system of the granting universities
  - Publication as proxy for quality
- Seeing more collaborative and structured approaches with associated benefits including
  - Better throughput
  - Mitigation of loneliness and power issues implicated in one-on-one approaches
  - Possibility for a stronger research foundation and interdisciplinary work
  - Structured learning opportunities and personalised professional development plans with formative portfolios
- Concerns about
  - Increasing managerialism whereby support structures focus on efficiencies rather than quality
  - Growing ties between industry and PG education without much critique of possible conflicts

5

QUALITY INDICATORS FOR HE RESEARCH & INNOVATION

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- What serves as possible proxies for quality in HE research & innovation?
  - Research reputation
    - Areas of research strength, excellence & influence
    - Nobel Laureates & field medalists
  - Research networks
    - Industry partnerships
    - Proportion of international faculty
    - Proportion of international students
  - Availability of research resources
    - Research income generated
    - Student-to-supervisor/lecturer ratio
  - Publications
    - Citations & citation indices (per faculty member & per paper)
    - Number of publications indexed
    - Publication/citation impact factors
  - Postgraduate research
    - PG completions, throughput & publications
  - Innovation
    - Registered patents
    - Registered companies
    - Research products

6

ASG-QA STANDARD 9: RESEARCH & INNOVATION

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- **Standard**
  - The institution shall encourage, promote, and engage in innovative research consistent with its policies and strategic plans, and address national, regional, continental, and international needs
  - The institution shall encourage innovation in its teaching, learning and research
  - The institution shall ensure that the management of postgraduate studies is conducted within an approved framework of institutional policies and plans that ensure quality ethical research

7

ASG-QA STANDARD 9: RESEARCH & INNOVATION

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- **Guidelines**
- Research is one of the core activities of a higher education institution, and the institution therefore requires an institution-wide research policy that sets the direction of its research
- The policy is at both institutional and research-programme level (postgraduate studies) to ensure proper engagement in research
- The institution ensures that:
  1. There is a shared understanding of the nature, role and goals of research
  2. There are standards, procedures and processes for the approval of research proposals, and theses, and the conduct and supervision of research studies
  3. There are policies, research management systems and strategies, adequate infrastructure and resources that facilitate all staff to undertake innovative research, and publish research results
  4. There are standards and processes for the approval of research proposals and theses, in line with the research needs of the national or regional context, and capacity building possibilities for researchers, management of research partnerships and research contracts, handling of intellectual property and commercialisation of research, and effective and trustworthy management of research information
  5. There is adequate academic integrity through the establishment and use of appropriate research committees and boards to ensure academic integrity
  6. The research undertaken is relevant and responsive to the needs for academic advancement and community development expectations
  7. There is effective monitoring and evaluation of the research system

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SHARED UNDERSTANDING OF THE NATURE ROLE AND GOALS OF RESEARCH

9

AFRICAN RESEARCH THAT MATTERS
(Butler-Adam, 2017)

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- Africa produces 1.1% of global scientific research
- Africa and its universities, institutes and scientists need to make far greater contributions to world knowledge
  - BUT high quality and important research is happening
  - The contribution might be small, but smart people are undertaking smart and important work
- The range of research being undertaken is remarkable in view of the size of Africa's overall contribution
- Irrespective of the disciplines involved, the research is tackling both international concerns and those specific to the African continent and its people's needs

➢Despite these advances, development is skewed across African countries

➢What role does doctoral education play in the African research context?

10

TALENT AND ABILITY ARE EVERYWHERE, BUT OPPORTUNITY IS NOT (Roser, 2019)

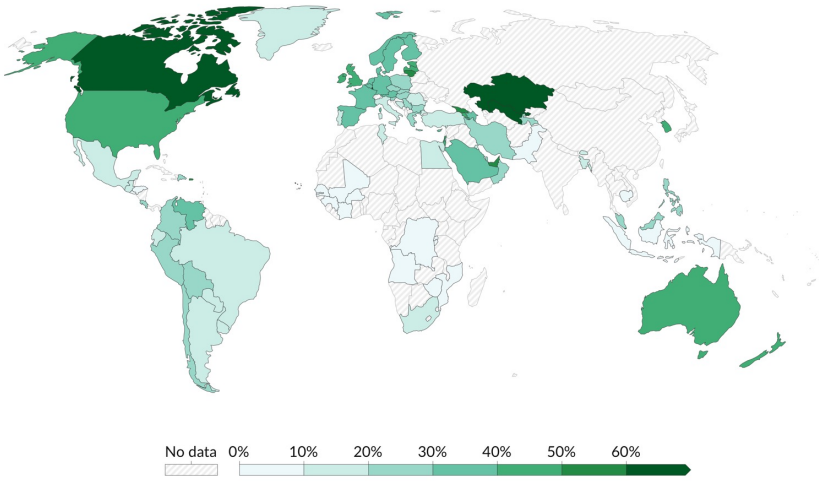
- 'Wicked problems' demands ideas and innovation
- Creative and talented people who can contribute to this important work are everywhere, but the opportunity to develop is limited to only a small number of well-off children
- As a consequence of this, we are missing out on the creativity and innovations that would enrich our world and help us move forward
- Those who have brilliant ideas are often able to make a good living from them for themselves, but big insights and discoveries also benefit society as a whole
- We should make sure that all talented people have the chance to develop new ideas

11

Share of the population with post-secondary education, 2019

Percentage of the population aged 25 and over who have completed post-secondary education (ISCED level 4 or higher).

Our World in Data



Data source: UNESCO via World Bank

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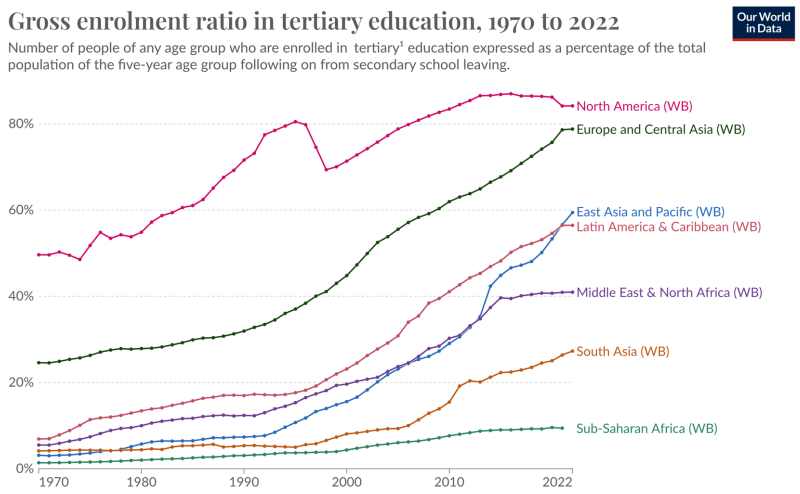
12



13

THE POSTGRADUATE SUPERVISION CONTEXT IN AFRICA (Cloete & Bunting, 2013)

- Africa needs strong research universities
- Knowledge transfer, production, re-production and dissemination
  - Universities remain only producers of self-renewing knowledge-producing capacity
  - Production of research-based PhDs as proxy for national knowledge contribution
- Universities better at indirect, long-term knowledge capacity building than at direct short term knowledge application (parastatals, NGOs)

➢Vibrant knowledge production landscape only occurs successfully in counties which have a stable PhD producing university sector

14

RESEARCH EDUCATION AS A QUALITY ISSUE

(Egan et al., 2009; Le Grange et al., 2006)

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- Research education varies among systems, countries, disciplines, and timing (e.g part-time versus full-time studies; coursework versus non-coursework)
- No gold standard model of graduate supervision which can be applied in all situations, across all disciplines – for supervision to be effective, it must be an evolving process that concentrates on meeting the needs of different students, programmes and administrative structures
- If research students only experience one kind of learning, such candidates will be ill-prepared to practise in other settings

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GLOBAL CONCERNS ABOUT RESEARCH EDUCATION

- Dropout rates too high, throughput too slow
- Low completion rates
- Funding/subsidy issues
- Quality assurance issues within institutions
- Comparable international benchmarks and standards
- Inconsistencies in the system
- Inexperience and un(der)preparedness of candidates
- Lack of research background and a research base
- Lack of training and inexperience of supervisors
- Expectations of the doctoral production system

DOCTORAL ATTRIBUTES
(CHE National Doctoral Review, 2020)

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Knowledge

- Broad, well-informed and current knowledge of field or discipline
- Expert, specialised and in-depth current knowledge of specific area of research
- Insight into the interconnectedness of one's topic of research with other cognate fields
- Ethical awareness in research and professional conduct
- An original contribution to the field of study

Skills

- Evaluation, selection and application of appropriate research approaches, methodologies, and processes in the pursuit of a research objective
- Reflection and autonomy
- Communication skills, including relevant information and digital literacy skills
- Critical and analytical thinking for problem-solving

17

DIFFERENT DOCTORAL FORMATS

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	Traditional PhD (monograph)	Professional doctorate	Doctorate by publication	Doctorate by startup
Scope	Major project planned, executed & reported in a thesis/ dissertation/ book. Up to100 000 words	High level coursework plus thesis/dissertation Up to 60 000 words	Varies - usually 3-4 published articles or equivalent plus intro and conclusions	New development in Eastern Europe. Researching the entrepreneurial project. Business + thesis
Characteristics	Extended period of research education. Develop future scholars	Market driven Regular contact with clients & industry	Scholarly contribution Peer approval	Close relation between entrepreneurship and research
Evaluation	Examination panel (+ viva). Theory important	Examination panel (+ viva) Reflective practice important	Peer review, examination panel (+ viva)	Expert review, exam panel (+ viva)
Quality assurance	External examiners	External examiners	External examiners + peer review	External examiners + expert review

18

19

IMPLICATIONS: PG QA STARTS AT APPLICATION

20

QA OF RESEARCH PROPOSALS

- Time allowed for proposal development
- Guidelines on the expected structure and/or content of a doctoral level research proposal
- Existence of higher degrees committees (either at departmental, faculty and/or institutional levels) that consider the academic merit of doctoral research proposals
- Guidelines on the constitution and procedures followed within higher degrees committees
- Requirements to engage with higher degrees committees to defend/discuss research proposals
- Role of supervisors is in relation to the submission and possible defence of doctoral proposals
- Exceptions to standard operating procedures

21

QA OF RESEARCH PROPOSALS

- Full-time students given six months to develop and defend proposals; part-time students a year
- Variation from very specific guidelines or no guidelines at all
  - Expected to develop a feasible and defendable proposal based on the general discipline, topic and methodological requirements, allowing for flexible and diverse research traditions and approaches

University of the Sunshine Coast, Australia

1. *Background analysis of the research issue being explored*
2. *Literature Review*
3. *Research Question*
4. *Focus Questions/Objectives*
5. *Significance*
6. *Research methodology/method including data gathering and analysis techniques*
7. *Research Rigour/Trustworthiness*
8. *Ethical issues*
9. *Timeline*
10. *Budget*
11. *List of references*

University of Stockholm, Sweden

1. *Stringency of the research question and analysis of earlier work and of the research plan*
2. *Familiarity with the research area of the intended research plan*
3. *Methodological and theoretical understanding and the degree to which reflexivity is reached in the texts*
4. *The qualities of planned research in relation to what it contributes to the discipline*
5. *Ability to express themselves both written and verbally in an academic setting*
6. *The planned study's feasibility within the allotted time*

22

QA OF RESEARCH PROPOSALS

- Not all universities have a form of a higher degrees committee but, where they do exist, they tend to play a definitive role in admission to and/or vetting of doctoral proposals
  - *The Confirmation Review Panel (CRP) will include all supervisory panel members, including industry-based supervisors. The CRP will include at least 1 additional person who is independent and external to the supervisory panel who will serve as the Chair. This independent person will be the Delegated Authority, or their independent delegate on the panel. They may be the HDR Convenor, or they could be another ANU academic appointed by the Delegated Authority. They must not be a member of the panel or have a close personal relationship to a panel member or the candidate.* (Australian National University, Australia)
- Guidelines used by review panels/committees to consistently consider the academic merit of a proposal are generally based on consideration given to the academic merit of the proposal, the feasibility and ethics of the study, and the potential to make an original contribution to the field of study
- Expert input is sought from internal and/or external reviewers in the institutions where the vetting of proposal quality is overseen by a committee
  - *The panel is considered to have read the proposal in advance; the student gives a presentation outlining their proposed research; the student is questioned by the panel and the research is discussed; the student leaves, and the panel and supervisors have a confidential discussion and reach a decision. The student may be required to do further work and submit revisions to their proposal following the confirmation event if needed.* (University of Waikato, NZ)

QA OF RESEARCH PROPOSALS

- In the cases where a higher degrees committee of some sort oversees the proposal quality, proposals are either reviewed by the committee and feedback given to the student and supervisor for the further development of the proposal where necessary without the student appearing in front of a committee, or students are required to appear in person before the committee to defend their proposal
  - *With the aim of ensuring candidates have set out on their research journey with the best possible chance of success, Confirmation is intended to be a rigorous yet collegial process. Together with their supervisory panel and other experts within or beyond their immediate research environment Confirmation ensures that:*
    - *candidates receive the best possible supervision arrangements*
    - *the project is developed with guidance to be a suitable PhD or MPhil project, and*
    - *resources and training needs are identified and agreed* (Australian National University, Australia)

QA OF RESEARCH PROPOSALS

- The role of supervisors is in relation to the submission and possible defence of doctoral proposals
  - Supervisors play no role in the development of a proposal until such time as the application to the PhD programme has been approved by the selection committee
  - Supervisors play a mentoring and formative role in the development of the proposal
- In the examples from South Africa, all institutions acknowledged the formative role that supervisors play in the development of doctoral proposals, however, supervisors do not actively take part in the cases where a student needed to defend their doctoral proposal to a higher degrees committee, even though they are allowed to attend the defence/presentation
  - *The supervisor may also attend the higher degrees committee meeting where the proposal is being considered and might be called onto offer clarity on certain points, but should not be seen to exert any pressure on the committee - the proposal should 'speak for itself'.* (Rhodes University, South Africa)
  - *While the student is the primary presenter, the supervisor's role is supportive, ensuring the student is well-prepared for any queries from the committee.* (Wits University, South Africa)
- The proposal defence is the student's time to shine and prove their intellectual ownership of the study and potential to becoming a 'creative critical autonomous and responsible intellectual risk takers' (Hannover Recommendations, 2019: 1)

25

QA OF RESEARCH PROPOSALS

(Dominguez-Whitehead & Maringe, 2020; Geven, Skopek & Triventi, 2018)

- Common to have doctoral proposal review processes coupled with feedback from institutionalized committee structures beyond supervisory inputs
- An oral defence of doctoral a doctoral research proposal is not uncommon, and is seen as an opportunity to develop prospective doctoral students' oral presentation skills and their ability to defend their research ideas (that will also be required along the line if annual review panels and/or an oral exam [or viva voce] is required)
- Nowhere in the literature is mentioned that any particular group or individuals are exempted from process that are institutionally mandated
- Early review and structured input into doctoral proposals are seen as contributors to doctoral success
- Expert inputs and support mechanisms are not limited to that of a single supervisor, even though the literature cited above and elsewhere acknowledge the importance of effective and regular supervision (which is not disputed by us either)

26

PG SUPERVISION AS A QUALITY CONCERN

(Lee & Green 2009; Parker 2009; Engebretson et al. 2008; Bawa 2007; Wisker et al. 2007; Dysthe et al. 2006)

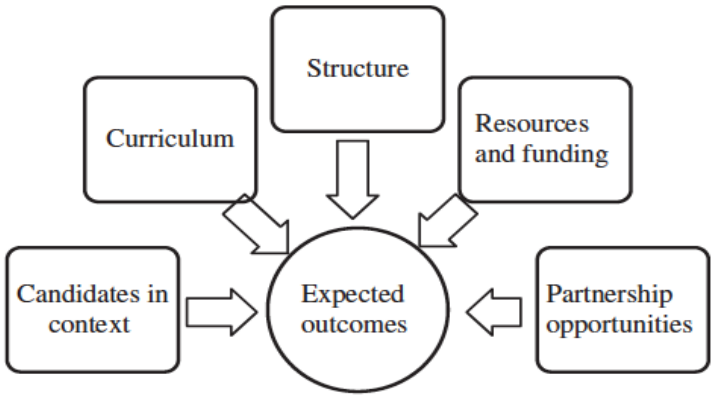
- Supervising increasing numbers of postgraduate students in challenging higher education contexts
- Traditional approaches challenged
- Supervisors tend to follow apprenticeship approach uncritically

- Supervisors need to be aware of *alternative approaches* to supervision
- *Structured planning* for the postgraduate supervisory process needed

27

DOCTORAL EDUCATIONAL FACTORS TO CONSIDER IN AN AFRICAN CONTEXT

(Cross & Backhouse, 2014)



28

WHY ARE WE SEEING MORE ALTERNATIVE APPROACHES TO PG SUPERVISION?

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- Intellectual capital currency
  - PG qualifications valued in the workplace (Bloland 2007)
- Commodification
  - Means to get ahead without understanding the extent of what is required (Boehe 2016; Engebretson, et al. 2008)
- Shift in mode of learning
  - More students with Mode 2 knowledge expectations (McAlpine et al. 2013; Evans 2011)
- Focus on vocational utility
  - Fewer students pursuing PG studies primarily for a career in academe as may have been the case for their supervisors (Tymon & Batistic 2016; Acker & Haque 2015; McAlpine et al. 2013)
- Credential inflation
  - Increased numbers of students enrolling in PG studies
- Increased pressure
  - On the institution and the supervisor workload (Usher 2002)
- Increased focus on PG pedagogy
  - Other skills needed than scientific research skills (Baker & Pifer 2015; Lee & Green 2009; Dall'Alba & Barnacle 2007)

29

SIX MODELS OF SUPERVISION

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	Individual students	Students in teams
Individual supervisor		
Pair of supervisors		
Supervising teams		

Synergy of expertise ↓

Lower supervision load →

30

30

THE PG ASSESSMENT CONUNDRUM
(Baldock & Chen, 2021)

- Examiners are tasked with providing an independent assessment of a body of scholarship (thesis) to determine whether it meets a required threshold 'standard'
- Examiners, often international, are usually provided with an examination rubric by the doctoral candidate's institution of enrolment that gives guidance regarding the criteria which evidences that the thesis has demonstrated
  - Deep disciplinary knowledge
  - Advanced research expertise
  - Independence of thought and approach
  - Original contribution to knowledge
- However, examiners do not always adhere to the criteria of the examination rubric provided and approach the examination process with their own biased interpretations and often subjective opinions as to what constitutes the appropriate PG standard
  - May be informed by their own personal 'standards' and experiences or the examination standards of their own institution

31

ASSESSMENT CRITERIA
(Kumar, Kaur, & Sanderson, 2024)

- Contribution to research
- Relevance
- Overall quality in terms of
  - Empirical dimension
  - Theoretical dimension
  - Methodological dimension
  - Connecting theory and experimental work
- Publication as a proxy for quality
- Quantity
- Focus and depth
- Contribution in collaboration
  - Overview of the earlier research in the field
  - Own contribution in relation to previous work
- Ability to discuss and judge own results
- Communication
  - Structure, coherence, clarity, illustrations, language, editing
- Engagement
- Conditions

32

CRITERIA TO CONSIDER WHEN SELECTING EXAMINERS

- Masters or doctoral level?
- Subject expertise
  - Balance/representation if different areas are covered
  - Publication record
    - Types of publications
    - Recent?
- Prior experience in examining
- International vs local examiners
- Availability
- Language

33

APPOINTING EXAMINERS

(Remenyi & Money, 2012)

- Appoint an examiner who is competent
  - At doctoral level this means a world-class or near world-class expert in the field being examined
- Examiners must be knowledgeable of and 'sympathetic' to the research methodology used by the student
- The role of supervisors in examiner selection
  - What about the supervisor as examiner?
  - How many examiners are necessary?
  - Internal/external examiners?

34

ORAL EXAMS
(Kumar et al., 2024; Van Teijlingen et al., 2022)

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- The nature and purpose of oral examinations (vivas) at the M and D levels will differ
- Anticipating examiner questions and answering them appropriately
- Oral exams have both cognitive and affective elements
- The role of non-examining chairs
  - Main role is to facilitate a consensus among the examiners
  - Not involved in judging the quality of the thesis itself
  - Have to know
    - Exam regulations
    - Procedure for convening PhD exams
    - Procedure for oral examinations
    - Issues likely to arise during the examination
    - Best practices, as shared by experienced convenors
- The role of supervisors
  - Be present physically
  - Ensure candidates are examination ready
  - Hold a mock oral and motivate candidates
  - Assist the candidate after the oral examination
  - Prepare candidates to be bold, to ask questions, and to stay positive

35

UNDERTAKING INNOVATIVE RESEARCH AND PUBLISHING RESEARCH RESULTS

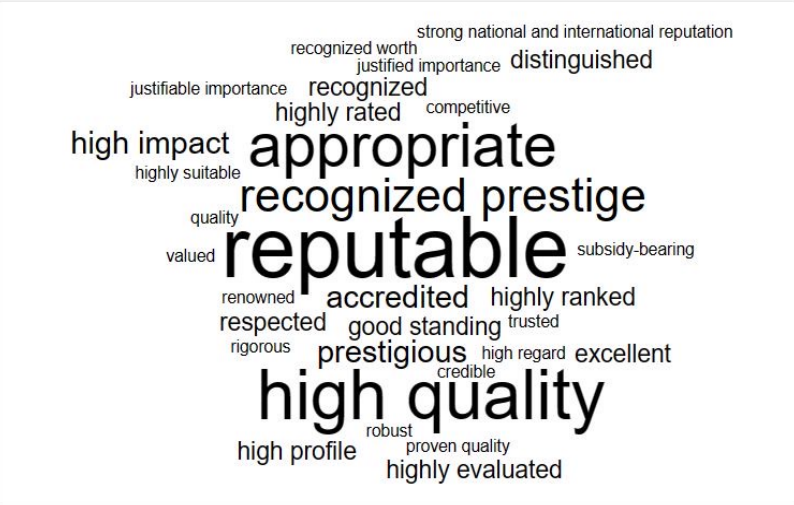
36

TO PUBLISH, OR NOT TO PUBLISH

(Van Schalkwyk, Mouton, Redelinghuys & McKenna, 2020; Wilkins, Hazzam & Lean, 2021)

- In spite of increasing trends in publications by graduates, many are not disseminating their work
  - Significant bodies of research are potentially not being shared with the academic community and not contributing to the relevant discipline or field
- Most of the research publications in a system or institution are typically produced by a relatively small group of highly active academics
- Graduates who obtain one publication, are more likely to have more
  - 75% of those doctoral graduates who do publish manage to publish two or more articles
- Support to disseminate work through publication is important, yet mentorship to support doctoral publication is not common practice, particularly in the social sciences
  - Higher Education Qualifications Sub-Framework makes it clear that this is indeed central to doctoral education as 'training for an academic career' through the production of knowledge that should 'merit publication'
- Developmental benefits of doctoral publishing should not be underestimated
  - Students may become better researchers when they publish, because the demands and expectations of journal editors and reviewers may be greater than those of the doctoral programme
  - Writing for publication force students to think about the originality and contributions of their research, and all aspects of the research process, from developing sound research questions, to conducting a comprehensive and critical literature review, to effectively collecting and analysing data
  - In response to editor and reviewer comments students improve the clarity of their writing and the quality of their reasoning

ADJECTIVES* USED TO DESCRIBE PUBLICATIONS, PUBLISHERS AND OUTLETS (Mason et al., 2024)



* size of each word corresponds to its frequency

PUBLICATION COUNTS AS A PROXY FOR PROGRAMME & RESEARCH QUALITY (Heesacker & Elliot, 2007; Kumar, Kaur, & Sanderson, 2024)

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- What is programme quality in doctoral education?
- How can we "count" (measure) such quality?
- Can staff (faculty) publication count as a proxy for doctoral programme quality?
- Can doctoral student publication count as a proxy for doctoral programme quality?

39

DEVELOPING QUALITY ASSURANCE INDICATORS FOR PG PUBLICATION

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- Consider the student first
  - What is the student to become?
- Consider the project
  - What contribution will it make?
- Consider the timelines
  - It has implications for several parties
- Consider ethics
  - To whose benefit is the research?
- Be careful of too narrowly formalising a particular route of inquiry

40

41

Share of students studying abroad, 2021

Percentage of a country's tertiary[1] level students studying abroad as international students. International students are those that move from their home countries for education, identified based on their past education, residence, or distinct immigration regulations.

Our World in Data

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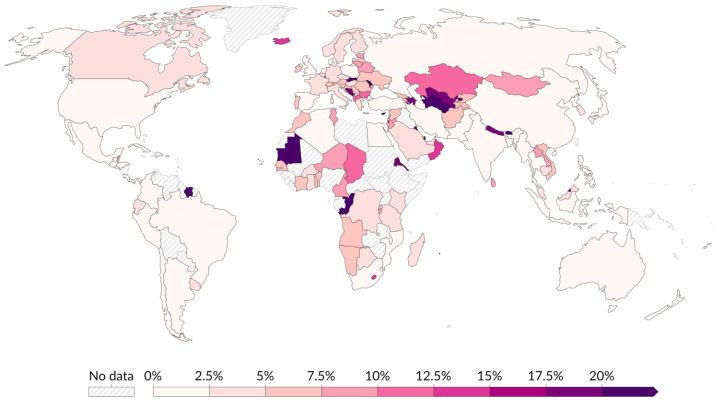

Data source: UNESCO Institute for Statistics (2024) OurWorldinData.org/global-education | CC BY
Note: Values can be greater than 100% when more students are studying abroad than are studying in the home country.

1. Tertiary education: Tertiary education (International Standard Classification of Education Level 5 to 8) expands upon secondary education by offering specialized learning activities in various fields. It targets advanced levels of complexity and specialization, encompassing both academic and advanced vocational or professional education.

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ECR SUCCESS: BEING STRATEGIC (Ramsden, 1998; Sutherland, 2015)

- Predictors of ECR success
  - Being a member of a highly active research group
  - Active research departments with a strong culture of research and staff support to develop research careers
- Measures of ECR success
  - Research productivity
  - Publications
  - Citations
  - External grant funding

43

44

Research & development spending as a share of GDP, 2021

Includes basic research, applied research, and experimental development.

Our World in Data

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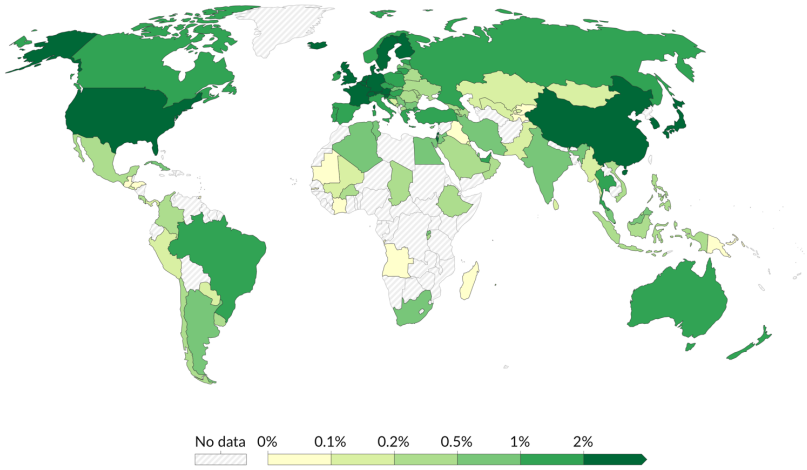

Data source: Multiple sources compiled by World Bank (2024) OurWorldinData.org/research-and-development | CC BY
Note: Spending includes current and capital expenditures (public and private) on research.

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45

Gross overseas development assistance (ODA) from all donors for scholarships, 2021

Scholarships are defined as financial aid awards for individuals towards systematic instruction in private or public institutions of higher education to follow full-time studies or training courses in the donor country. This data is expressed in US dollars. It is adjusted for inflation but does not account for differences in the cost of living between countries.

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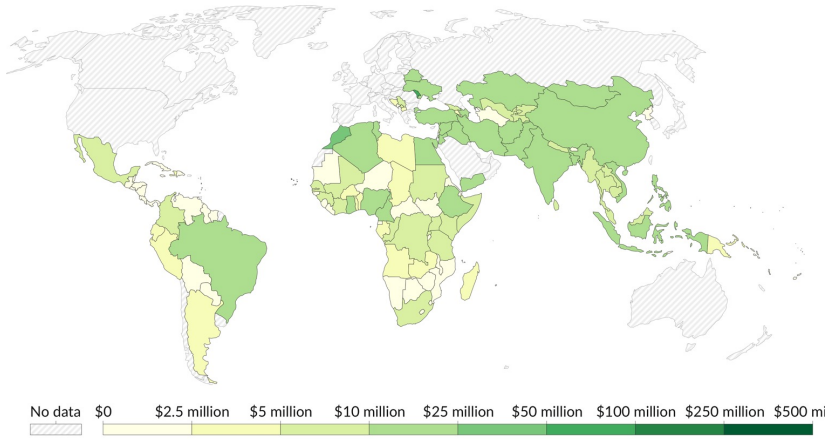

Data source: Organisation for Economic Co-operation and Development OurWorldinData.org/government-spending | CC BY
Note: This data is expressed in constant 2021 US$.

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46

DOCTORAL EDUCATION AS A SPACE FOR RESEARCH PARTNERSHIPS

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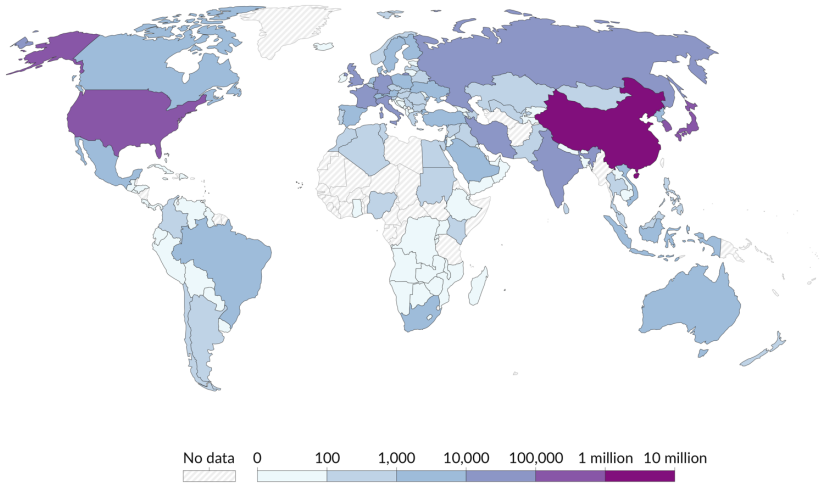
- Background
  - From the single isolated scholar on a lone knowledge quest into a diverse array of programme formats and supervisory arrangements
  - Diversity within doctoral education systems and structures include the crossing of national borders and institutional boundaries for both students and supervisors, sometimes through formal arrangements such as dual and joint degree programmes
  - BUT research is limited, which restricts our understanding to anecdotal evidence
  - Existing research does not explore the complexities inherent to arrangements when partnerships are forged between more than two partnering institutions, when North-South divides are crossed, when there are historical and current inequalities to navigate, and differences in structures, policies and practices across the partnering institutions
- Exploring what potential for innovation joint doctoral programmes of this nature may offer in terms of
  - Structuring collaborative spaces in doctoral programmes
  - Development of early career researcher capacity (for both students and novice supervisors)
  - Challenging institutional hierarchies and establishments

47

IP & COMMERCIALISATION OF RESEARCH

48

Annual patent applications, 2021



Data source: Multiple sources compiled by World Bank (2024) OurWorldinData.org/research-and-development | CC BY
Note: Each country's data includes patent applications for which the first-named applicant is a country resident.

49

RESEARCH AS A DRIVER FOR INNOVATION

(Baptista et al., 2015; Busch, 2023; Huggins et al., 2020)

- Innovation involves the process of transforming an invention into practical application
- Innovation as part of doctoral research privileges the production of knowledge that is economically useful, either in terms of technological advances or societal use
  - Technological innovation is typically linked to marketable technologies, for example developing patents
  - Social innovation would relate to applied research aimed at improving societal conditions or solving societal problems
- Innovation requires vast socio-technical infrastructure
- Universities with the most central positions (*network centrality*) within university-industry network structures also have high rates of relational involvement in activities such as spin-off generation and engagement in externally funded research projects
- Some forms of activity, in particular intellectual property protection through patenting, are found to be negatively associated with centrality
  - Increasing an inventor's share in university patent revenue does not necessarily encourage researchers to develop and commercialize more remunerative patents
  - BUT patents may provide reputational benefits or encourage faculty-run spin-offs, or financial incentives
  - Lack of a measurable impact of higher royalty shares on patenting activity suggests that, from a social welfare perspective, it may be preferable for a larger share of royalties to be retained by universities, which are then reinvested in science research and education

50

51

RELATIONSHIPS BETWEEN QUALITY, EXTERNAL AND INTERNAL QUALITY ASSURANCE (ANSAH, 2017)

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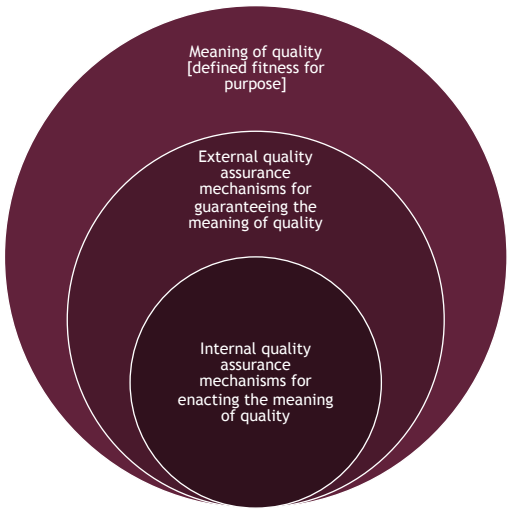

52

RESEARCH ASSESSMENT & INFORMATION MANAGEMENT (Schöpfel & Azeroual, 2023)

- Research assessment (RA)
  - Multifaceted process aimed at evaluating the quality, impact, and effectiveness of research endeavours
  - Establishing and upholding standards of research quality for purposes of resource allocation, accountability, quality assurance, strategic planning on the institutional level, and recognition and reward of individual researchers
  - Conducted by a variety of entities (e.g. academic institutions for promotion and tenure committees, departments; funding agencies in the form of grant review panels; research councils consisting of advisory committees, program managers, or government bodies for the purposes of national assessment programs)
  - Affects scholarly careers of researchers (promotions and tenure; likelihood of securing grants and funding; reputation)|
- Importance of responsible research assessment (RRA), which advocates for transparency, diversity, quality, and open metrics
  - Acknowledges diverse contributions to research
  - Underscores the imperative of qualitative evaluation while advocating for the judicious use of quantitative indicators
  - Mitigating unintended consequences of metric-driven assessment practices and foster a culture of responsible and equitable evaluation
- The transformation of assessment indicators and procedures directly affects the underlying research information management infrastructures and information systems which collect and store metadata on research activities and outputs

53

54

RESEARCH INTEGRITY

(Kruk, 2013; Singapore Statement on Research Integrity, 2010)

- Ethics: basis of scientific research
- Prerequisite for research results to have integrity Without integrity, research loses most of its worth

55

ISSUES IN ACADEMIC INTEGRITY

- Interweaving of personal relationships
- Taboo topics (gender, authorship)
- Cultural clashes
- Academic power

Need to untangle the complexity of power issues and contribute to a gradual process of cultural change in enhancing professional self-awareness within academe

56

RESEARCH RELEVANT & RESPONSIVE TO NEEDS FOR ACADEMIC ADVANCEMENT & COMMUNITY DEVELOPMENT EXPECTATIONS

57

Number of R&D researchers per million people, 2021

Professionals engaged in conceiving or creating new knowledge, products, processes, methods, or systems.

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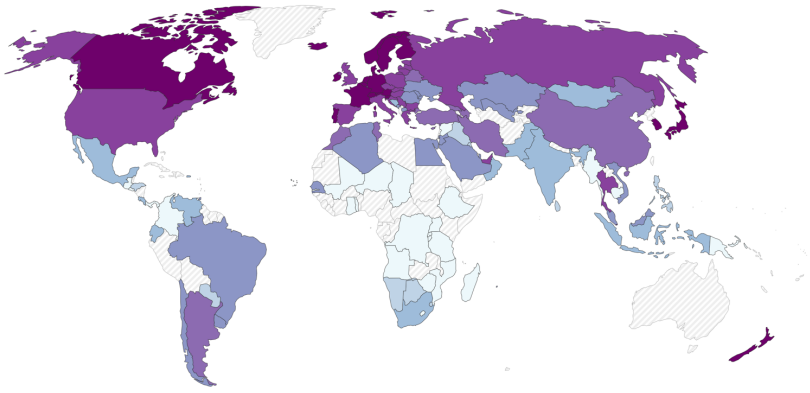

Data source: Multiple sources compiled by World Bank (2024)
Note: Postgraduate students are included.

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58

59

Public spending on education as a share of GDP, 2022

Total general government expenditure on education (all levels of government and all levels of education), given as a share of GDP.

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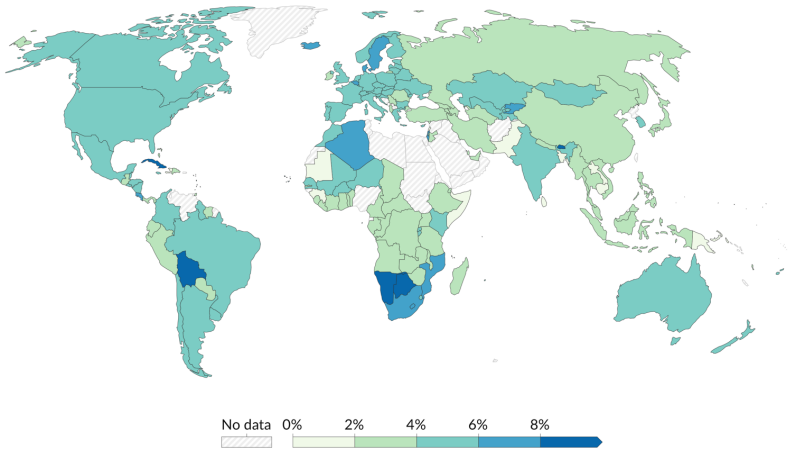

Data source: Our World in Data based on Tanzi & Schuknecht (2000) and UNESCO via World Bank
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Annual articles published in scientific and technical journals, 2020

Includes physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.

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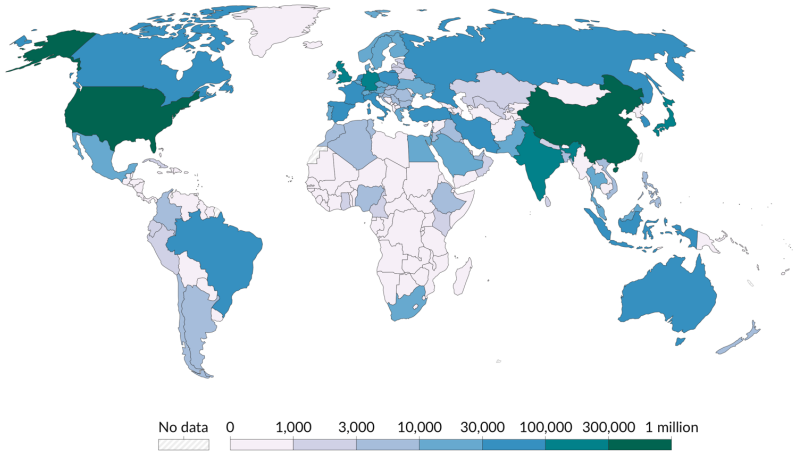

Data source: Multiple sources compiled by World Bank (2024)
Note: Articles are counted by the country of the author's institution.

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61

SOME TENTATIVE CONCLUSIONS…

- Research & PG education remain central to the idea of what it means to be a university
  - However, it requires strategic focus and investment of resources
  - Human capability central to the success and sustainability of research & innovation
  - Careful consideration of the role of the continent (and diversity of HE institutions) to global debates on research & innovation
- Research & innovation in Africa requires that:
  1. There is a shared understanding of the nature, role and goals of research
  2. There are standards, procedures and processes for the approval of research proposals, and theses, and the conduct and supervision of research studies
  3. There are policies, research management systems and strategies, adequate infrastructure and resources that facilitate all staff to undertake innovative research, and publish research results
  4. There are standards and processes for the approval of research proposals and theses, in line with the research needs of the national or regional context, and capacity building possibilities for researchers, management of research partnerships and research contracts, handling of intellectual property and commercialisation of research, and effective and trustworthy management of research information
  5. There is adequate academic integrity through the establishment and use of appropriate research committees and boards to ensure academic integrity
  6. The research undertaken is relevant and responsive to the needs for academic advancement and community development expectations
  7. There is effective monitoring and evaluation of the research system

62


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Thank you
Enkosi
Dankie
Photo by Stefan Els

63