

The NRF Postgraduate Research Indaba – Feedback from PSANA:

Introduction: Prof Mangaliso – President and CEO – NRF:

- The NRF believes in supporting and producing young rated researchers that collaborate both nationally and internationally.
- However, postgraduate student throughput is a crisis; it is amongst the lowest in the world in South Africa.
- In Europe, the length of time taken by a student to pursue a Doctoral degree (PhD) has been shortened to 7 years (as part of the Bologna Agreement).
- In South Africa, a Masters degree is often too focussed rather than the traditional approach of covering a broader level of the field of study and providing some depth to the topic.
- An Honours degree is typically considered as a Bachelors degree with an assignment on the side.
- Presently in South Africa, 94% of the total research output is produced by historically advantaged scientists, representing less than 10% of the total population of active researchers.
- 0.87% of the GDP (total: R2bn) was spent on research in 2005. The current aim is to increase that figure to 3%.

Presentation 1: Dr Beate Scholz (Director – DFG): Research Capacity Development – International Experience:

- There is a high demand for researchers internationally. Projected estimates for the year 2020 are that Europe will need a further 700 000 researchers while China will need 2 million.
- South Africa has a number of factors in place for developing a strong research capacity. These include a “young” population (Fig. 1), a high number of female researchers, and an increase in student numbers.
- Motivation for the pursuit of a Doctoral degree include:
 - For non-degree holders: a lack of freedom when employed, limitation to what must be done, a lack of opportunities, job insecurity, and inadequate remuneration.
 - For potential degree holders: a high demand for qualified and trained professionals (postdoctoral students), multiple career opportunities, freedom to experiment with new ideas, better working conditions, higher level of salaries and better standard of living, and opportunities for working internationally.
- In Germany an intensive system of training for students has been developed by the DFG.
 - Under this system, students are exposed to a broad base of knowledge which is interdisciplinary and are well supported.
 - Students can also receive support to study overseas at an institution of their choice with the aim being that they ultimately return to their home country with the knowledge, wisdom and experience they have gained overseas.

Presentation 2: Dr Prins Nevhutalu (Deputy Vice Chancellor of Research – TUT): Postgraduate Student Funding:

- Typically in postgraduate degree programmes, poor students are automatically excluded for financial reasons.
- In addition, those students that do pursue a postgraduate degree might see their non-degree pursuing colleagues being able to afford many material luxuries (new car, big house, etc.). Affirmative action also plays a role as well as social responsibilities that include nurturing a family (marriage) and raising children, most of the time during the tenure of the degree of study.
- Financially degrees at tertiary institutions cost a student: R30 000 pa for an Honours (1 year), R10 000 pa for a Masters (2 years hence R20 000 total), R10 000 pa for a Doctoral (3 years hence R30 000 total), and R150 000 pa for a Postdoctoral degree. A Bachelors typically costs R25 000 pa (3-4 years hence R75 000-R100 000).

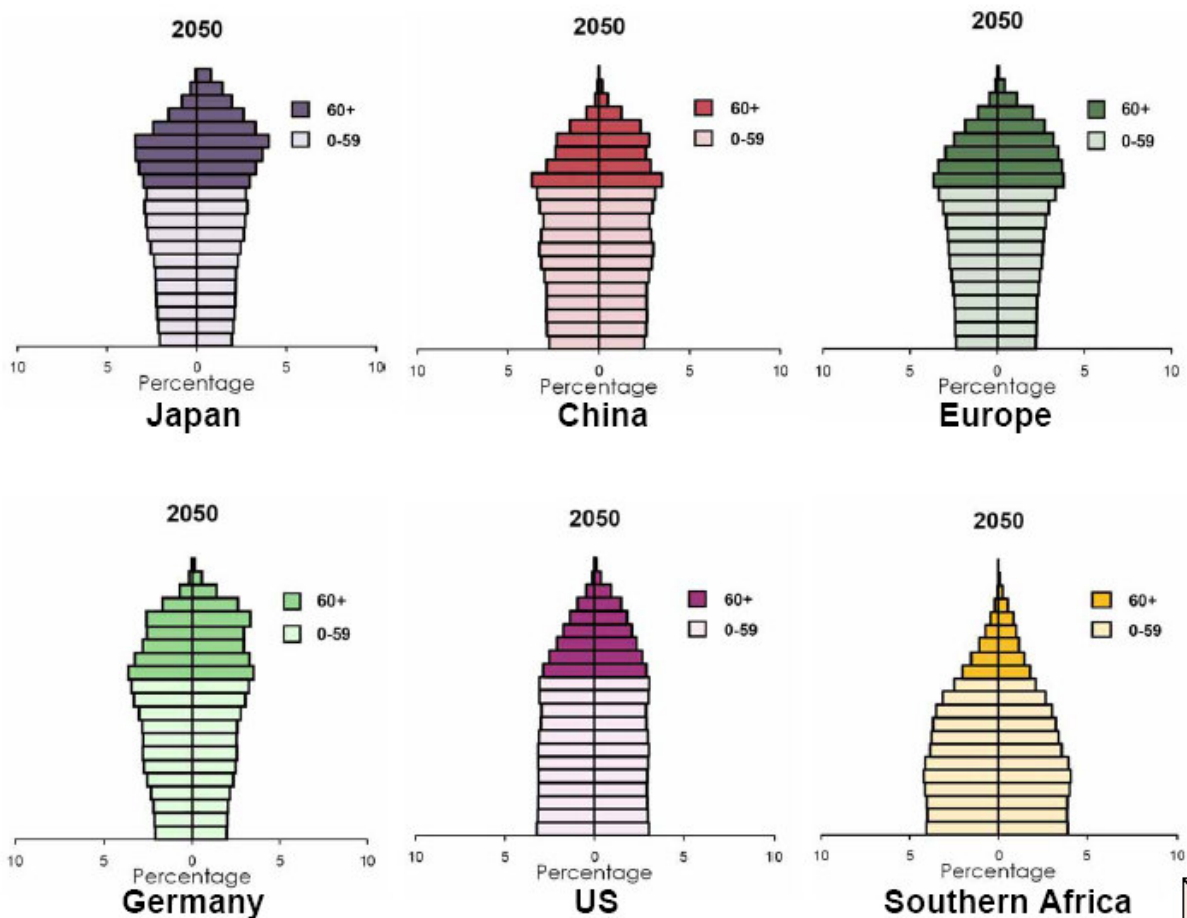


Fig. 1: South Africa has a “young” population, when compared to other countries. This is an advantage towards developing research capacity.

- In addition to this, living expenses amount to R30 000-R50 000 per year, regardless of the degree.
- Unfortunately postgraduate study takes too long (a period of 6-10 years, sometimes in total, sometimes per degree). The average pipeline to a Doctoral degree, for example, is a total of 13 years while other countries manage 8 years.
- The financial requirements for the pursuit of an Honours degree have a major impact on the small recruitment of students, and ultimately contribute to the low throughput rate.
- The process is ultimately too costly for the country to be sustained.
- There are too many funding agencies available to students and a lack of collaboration and coordination between these agencies.
- The amount of money allocated towards research facilities and infrastructure is not proportional to the cost of human capital i.e. the researchers and students involved. The funds allocated by the NRF to student support are inadequate and the money that universities receive from industry does not take into account student funding. This places additional stress onto supervisors who have to teach, manage their research budget and take care of the students under them.
- To develop human capital, there are two possible solutions to overcome the present state of affairs: abolish research-based universities or simply do not fund postgraduate students.
- However a research-based university plays a critical, if not vital, role in enhancing the welfare of a nation and is a major driver towards revolution and social change and the African Renaissance will flounder without strong research-based universities. In addition, postgraduate students at these universities help to advance research and are essential agents of change and development.
- Therefore South Africa cannot afford to abolish research-based universities and should rather concentrate on strengthening them. This raises the question: can universities afford to

accommodate postgraduate students for free?

- The typical cost of tuition for a postgraduate student is R10 000 pa. However a university also generates income from a student through graduation of the student and publication of research articles from the thesis. The tuition fee is minor compared to these other benefits. A tuition-waiver for universities should be considered.
- Possible improvements to the current system include increased allocations by the NRF, allocations from each government department (only DoE, DST and DTI support postgraduate training and development), a once-off allocation from the NSFAS toward a potential student, a national postgraduate students association, a national skills fund, and a marshal plan for human capital.
- In the breakaway discussion session it was noted that the low progression in postgraduate studies is affecting skills shortage in the country, poverty is a concern for most black South Africans so a tuition waiver might not necessarily be the most effective solution, and some institutions may not be in a position financially to waive tuition fees.
- The idea of a tuition waiver will be explored. It is possible that a study will be conducted to examine what the effect and potential effects of this have been in other countries, including those in Africa.
- NRF-like institutions should be established in other African countries.
- Universities should provide postgraduate students with internships and/or job opportunities.
- A summit should be used to mobilize existing resources of postgraduate funding.

Presentation 3: Prof Cheryl de la Rey (Deputy Vice Chancellor of Research – UCT): Policy on Postgraduate Studies:

- The number of postgraduate qualifications across the country is increasing.
- An Honours degree has typically been viewed as a means to prepare potential students for research-based Masters and Doctoral degrees. However, in several fields (law, engineering, clinical medicine) an Honours degree is not required and there are several postgraduate diplomas which automatically qualify a student for entry into a Masters degree. In addition, the Honours degree is sometimes not focussed enough leading to poorly-prepared Masters students.
- The dominant research-based Masters degree is also losing ground as there are many taught/coursework based Masters degrees on offer. Allocating a research component to these is not always an effective method of judging the skills acquired as the result may vary from a simple literature review to a full thesis. The research-based Masters degree is also not always a reliable method of expected success in the Doctoral degree. And because these are spread across the country, the requirements for each may vary from institution to institution.
- The requirement of a Masters degree for pursuit of a Doctoral degree is also always adequate as a student may lack vital research skills required in the degree.
- In addition, sometimes the research generated in a Masters degree is equivalent to the level of a Doctoral degree.
- Many of the personnel employed as academics and busy actively supervising both Masters and Doctoral degree candidates do not generate research outputs as peer-reviewed publications. Some of these may have come immediately from having completed a Doctoral degree and lack the necessary postdoctoral experience. The supervisor is meant to be a role model for supervision to the student but clearly cannot be a good model if this is the case. This indicates a need to develop the Postdoctoral degree as an important, distinct career phase.
- These problems in either or both parties involved may sometimes only be identified several years after registration of the postgraduate candidate(s). Sometimes the shortcomings may be a source of conflict as one or both parties may recognize the shortcomings in the other.
- At UCT the development of a memorandum of understanding (MoU) has been implemented. After some discussion, this is agreed upon by both parties. This has been a success with problems identified sooner and the student able to vent their grievances without being victimised. It has also emphasized the responsibility that the supervisor has. A programme has also been developed to train up supervisors to improve their skills and eliminate any

shortcomings.

- To address any potential skills that a student may be lacking (developing writing skills, research methodology, training in computer skills), additional initiatives and courses have been developed and implemented. These complement and support current supervision and attendance is voluntary. These are often led by researchers with a strong research output and graduate output from their student supervision.
- In the breakaway discussion session it was noted that the Masters degree should be shortened to one year and that the Honours be incorporated into the Bachelors to generate a four-year degree that includes research work. However, the length and structure of these are issues that should be discussed at the National Qualifications Forum (NQF).
- It may be necessary to contextualise the Masters degree and determine what the degree needs to provide.
- Career development opportunities and a more prominent role as a scientist for Postdoctoral degree candidates should be investigated.
- At some institutions, capacity to train postgraduate students is lacking. Capacity, in general, should be expanded in collaboration with the private sector.
- Research personnel that transfer between institutions should be interviewed both before leaving their previous institution and upon entering their new institution.
- It was suggested that the research output funds should be shared between the student and the supervisor.
- The MoU will not develop the relationship between the supervisor and the student, it will merely define it.

Presentation 4: Prof Johann Mouton (Director of the Centre for Research in Science and Technology – US/SUN): Doctoral Throughput:

- The major problem with doctoral throughput is a deficiency/lack of students in the system. South Africa ranks amongst the lowest with 50 Doctoral graduates per 1 000 people in the population (Fig. 2). Non-attraction towards following an academic or scientific career is cited as a factor.

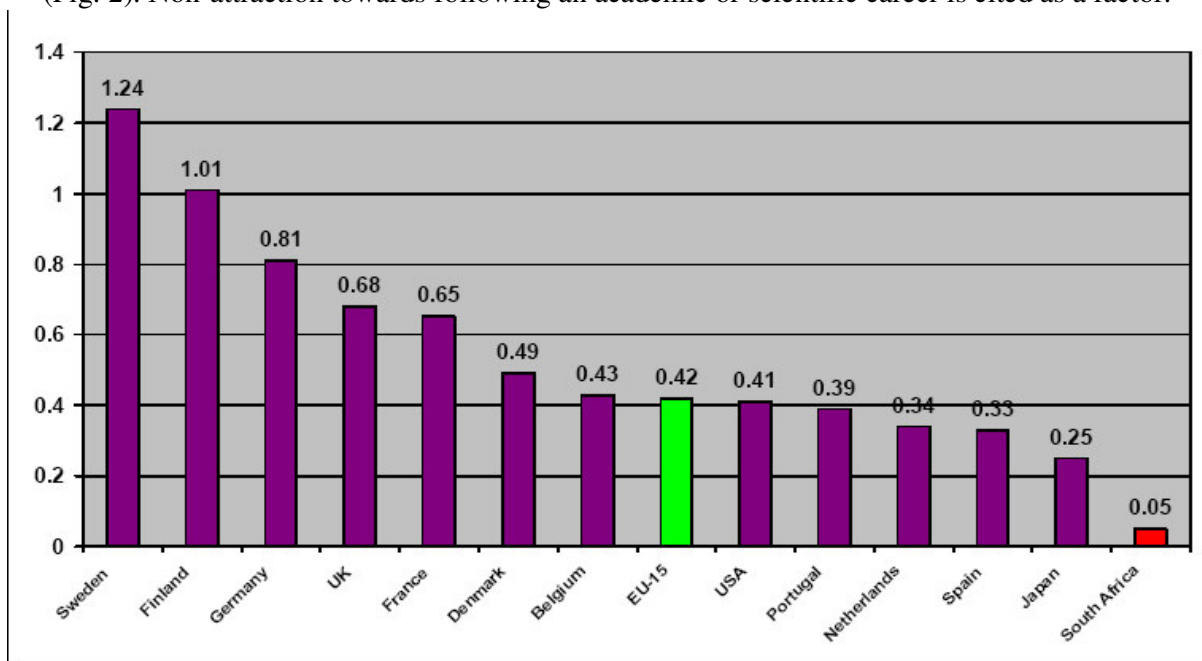


Fig. 2: South Africa ranks amongst the lowest when it comes to producing Doctoral graduates, most likely due to a lack/deficiency of students in the system.

- It was noted that the University of Pretoria has consistently over the past 17 years graduated the most students every two years than any other similar South African institution/university.
- It was noted that these statistics do not necessarily take into account the retention of

undergraduate students to a postgraduate level or the measure of migration of students between institutions

- Generally South African students in all fields take four or more years to complete their degrees (Fig. 3). This creates stress on students as bursaries available from the NRF only provide support for 2 years in the case of a Masters and 3 years in the case of a Doctoral degree.

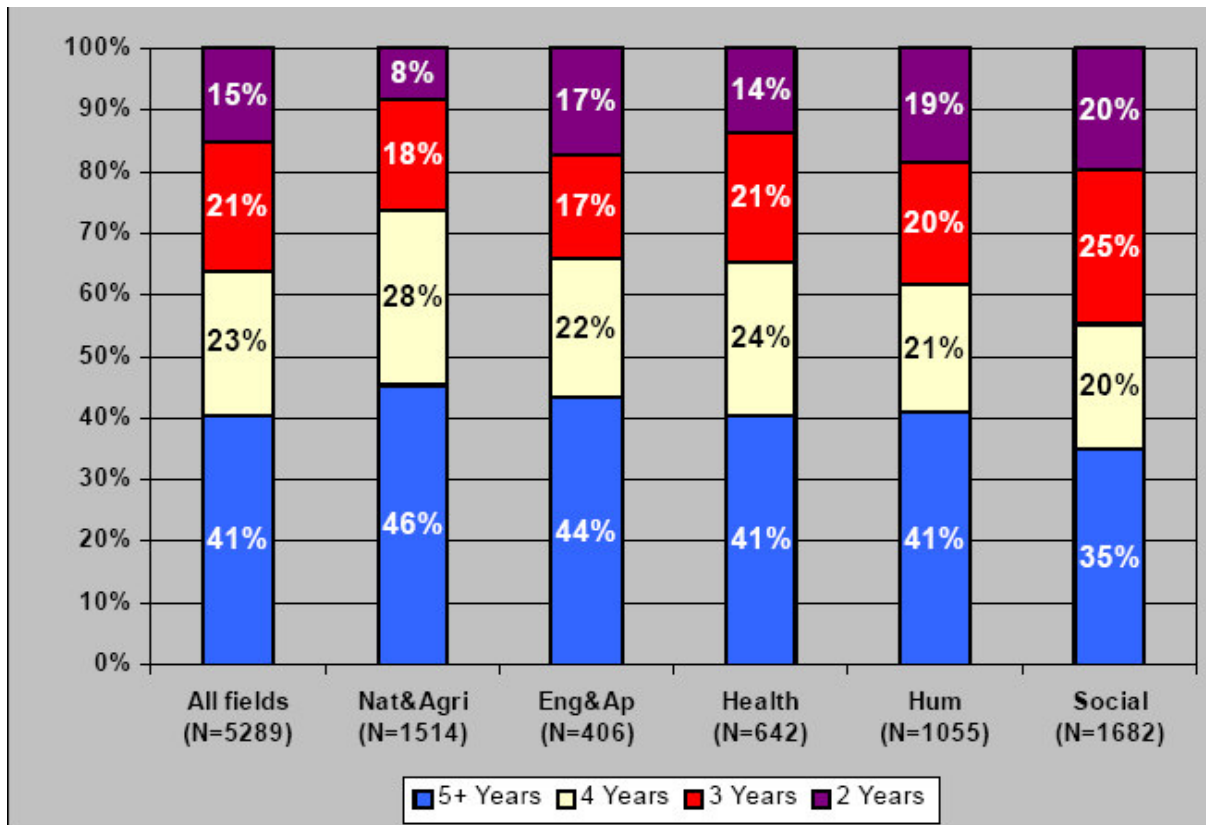


Fig. 3: South African students take, on average, four years or more to complete their degrees. A small percentage complete their degrees within the period for which their bursaries can accommodate them (2 years in the case of a Masters, 3 years in the case of a Doctoral degree).

- These statistics are comparable internationally; students in other universities in other countries have similar completion rates for their degrees.
- Evidence from studies done at these other universities indicates that students usually drop out/fail to complete their degrees for several reasons. These include the pressure of the work (a thesis prepared that is not up to the standard expected) and the lack of time. Inadequate supervision is rarely the primary reason but it often contributes.
- Generally students indicate that more time, more support from their supervisors and more money would have enabled them to complete their degrees.
- These studies also indicate the following; only up to 75% (no more) of students registering for a Doctoral degree will actually complete the degree, rates of completion are higher in the physical and life sciences than in the social sciences and humanities, rates are higher for men than women, higher for students in a majority rather than those in a minority, and higher for those in smaller programmes than those in larger programmes.
- Numerous problems including overburdened and inexperienced supervisors, insufficient preparation for research, insufficient financial support for students as well as insufficient institutional support for postgraduate studies have to be addressed. In Sweden, for example, 20% of the research time taken by a student is dedicated to teaching under the supervisor concerned.

Presentation 5: Prof Laetus Lategan (Dean of Research and Development – CUT, Bloemfontein):
Directives for a Postgraduate Supervision Programme:

- Three case scenarios involving junior academics i.e. recently graduated Doctoral students, were studied and their response to assessing postgraduate students considered.
- Junior staff members underwent hands-on training to become supervisors and were provided with examples of supervision as well as theoretical issues and practical support however they ultimately lacked a holistic view of the research process as well as critically comment and give feedback to the students.
- Doctoral students were given the opportunity to supervise other Doctoral students however they lacked several things; critical knowledge of the literature, methodology to be applied, structure of as well as writing skills and referencing in preparation of the thesis, the ability to assert themselves as the (co-)supervisor, and to organize assistance for the student concerned in the form of a language reviewer or statistician, for example.
- External examiners were allowed to assess theses produced by Doctoral students however they lacked critical knowledge of the literature, methodology to be applied, structure of as well as writing skills and referencing in preparation of the thesis. This coincides with the point above.
- Possession of a Doctoral degree does therefore not necessarily qualify somebody as a supervisor. The supervisor is only as good as the student they are supervising.
- The question was raised as to whether supervisors are adequately compensated financially for supervising students as well as the need for technicians skilled in producing a quality thesis.

Conclusions:

- The tuition waiver suggested will continue to be debated. With proper institutional planning, however, it can be implemented.
- The establishment of a four-year Bachelors degree including research work, the scrapping of the Honours degree, and the establishment of a one-year Masters degree will be discussed in the appropriate forums.
- The MoU will be supported by the NRF. It is possible that an institution will not be supported if an MoU is not in place.
- Funding of postgraduate students should be coordinated between the various organizations involved.