

Towards Achieving South Africa's NDP 2030 Doctoral Graduation Target: An Assessment of Progress, Constraints, and Future Prospects

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Abstract

The National Development Plan (NDP) 2030 identifies the production of 5,000 doctoral graduates annually as a strategic priority for strengthening South Africa's research capacity, innovation system, and socio-economic development. Despite sustained government investment and policy interventions, doctoral output remains considerably below this target, indicating a persistent gap between policy aspirations and actual performance. This study examines the effectiveness of government policies and interventions in increasing doctoral production, with particular attention to institutional performance and systemic constraints within the higher education sector. Guided by Policy Implementation Theory, the study employed a qualitative multiple case study design involving semi-structured interviews with key stakeholders and an analysis of national policy documents, including the NDP 2030 and Department of Higher Education and Training (DHET) frameworks. Data were analysed thematically to identify factors influencing doctoral production and policy implementation. The findings indicate that government interventions have contributed to increased doctoral enrolments and gradual growth in doctoral output. However, progress towards the NDP 2030 target is constrained by inadequate funding, limited supervisory capacity, weak institutional support structures, and uneven resource distribution across universities. Persistent disparities between historically advantaged and disadvantaged institutions further limit the expansion of doctoral production equally. The study concludes that achieving the NDP 2030 target requires not only increased enrolments but also stronger implementation capacity, improved doctoral completion rates, enhanced supervision, and more equitable resource allocation. These findings provide important insights for policymakers and university leaders seeking to strengthen doctoral education and accelerate doctoral graduate production in South Africa.

Keywords: *Doctoral Production; South Africa NDP 2030; Research Capacity Development; Policy Implementation; Department of Higher Education.*

1. INTRODUCTION

The advancement of doctoral education is widely regarded as a critical driver of knowledge production, innovation, and socio-economic development. In South Africa, the National Development Plan (NDP) 2030 identified the expansion of postgraduate education particularly doctoral training as a strategic priority to support a globally competitive, knowledge-based economy. Central to this vision is the ambitious goal of producing 5,000 doctoral graduates annually by the year 2030, a significant increase from historical output levels. This target reflects the government's commitment to strengthening research capacity, addressing skills shortages, and enhancing the country's ability to respond to complex developmental challenges [1]. Despite strong policy commitment, progress toward achieving this target has been uneven and slower than anticipated. While some universities have demonstrated growth in doctoral enrolment and completion rates, others particularly

historically disadvantaged institutions continue to face persistent constraints related to funding, supervisory capacity, research infrastructure, and institutional support systems. These disparities highlight the importance of examining not only national policy frameworks but also how they are implemented across different institutional contexts. Government interventions, including funding through the National Research Foundation (NRF), policy directives from the Department of Higher Education and Training (DHET), and broader higher education reforms, play a central role in shaping doctoral education outcomes [2]. However, the effectiveness of these interventions is contingent upon institutional capacity, governance structures, and the ability of universities to translate policy into practice. As such, a comparative institutional analysis is essential to understand how government influence operates across diverse higher education environments.

This study therefore seeks to assess the extent to which government policies and interventions contribute to achieving the NDP 2030 doctoral output target, with a specific focus on variation across institutions. By comparing universities with differing levels of resources, historical backgrounds, and research capacity, the study aims to identify key enabling factors and constraints that affect doctoral production. This approach provides a more nuanced understanding of the relationship between state policy and institutional performance, moving beyond aggregate national trends. Furthermore, the study addresses a critical gap in the literature by linking policy implementation dynamics with institutional outcomes. While national strategies articulate clear goals, limited attention has been given to how these policies are experienced and operationalised at the institutional level. Through this comparative lens, the research explored whether current government strategies are sufficiently differentiated and responsive to institutional realities, or whether a more targeted approach is required to achieve equitable and sustainable growth in doctoral output [3].

Ultimately, this research contributes to broader debates on higher education transformation, policy effectiveness, and state capacity in developing contexts. By critically evaluating government influence through an institutional comparative framework, the study aims to generate evidence-based insights that can inform more coherent and context-sensitive strategies for achieving the NDP 2030 target of 5,000 annual doctoral graduates.

2. PROBLEM STATEMENT

According to DHET data, the current annual doctoral throughput sits around 3,500 graduates, reflecting progress but falling significantly short of the NDP 2030 target of 5,000. The persistent gap highlights systemic inefficiencies and reinforces the need for stronger, more targeted government interventions to improve both capacity and completion rates. The South African National Development Plan (NDP) 2030 sets a strategic target of producing 5,000 doctoral graduates annually to enhance research capacity and drive socio-economic development. Despite sustained policy efforts and increased government investment through institutions such as the Department of Higher Education and Training (DHET) and the National Research Foundation (NRF), doctoral output remains uneven and below the desired target. This shortfall highlights a critical challenge in translating national policy goals into consistent institutional outcomes [3].

A key issue lies in the variation in doctoral production across universities, reflecting deep-rooted inequalities in institutional capacity. Historically advantaged universities continue to produce a disproportionately higher number of doctoral graduates due to stronger research infrastructure, established supervisory capacity, and better access to funding. In contrast,

historically disadvantaged institutions face persistent constraints, including limited resources, insufficient supervisory expertise, and underdeveloped research ecosystems. These disparities suggest that current government interventions are not effectively addressing the differentiated needs of institutions [4].

Furthermore, existing policies tend to adopt a uniform, non-differentiated approach, which does not adequately consider institutional diversity. This results in inconsistent policy implementation, where some universities are able to align with and benefit from government initiatives, while others struggle to do so. The lack of targeted capacity-building strategies, combined with weak coordination between policy actors and institutions, exacerbates these challenges [5]. Additionally, there is limited evidence on how government policies are experienced and operationalised at the institutional level. The absence of robust, disaggregated monitoring and evaluation systems restricts the ability to assess policy effectiveness across different institutional contexts and to make informed, adaptive interventions [5]. Therefore, the central problem addressed in this study is the inadequacy of current government policy frameworks in accounting for institutional differences, resulting in uneven doctoral output and slow progress toward the NDP 2030 target. Without a clearer understanding of how government influence varies across institutions, efforts to scale up doctoral production may continue to fall short.

This study seeks to address this gap by conducting a comparative analysis of selected universities, examining how government policies are implemented and how institutional factors shape doctoral outcomes. In doing so, it aims to generate insights into more effective, context-sensitive strategies for achieving the national doctoral production target.

3. MAIN RESEARCH QUESTION

- To what extent do government policies and interventions influence the achievement of the National Development Plan (NDP) 2030 target of producing 5,000 doctoral graduates annually in South Africa?

3.1 Sub-Research Questions

- How effective are current government policies in increasing doctoral enrolment, throughput, and completion rates?
- To what extent does government funding support doctoral production across universities?
- How do disparities in institutional capacity affect doctoral production across institutions?
- What role do supervisory capacity and research infrastructure play in influencing doctoral completion?
- What challenges exist in the implementation and coordination of government doctoral education policies?
- What factors contribute to low doctoral completion efficiency in South African universities?
- How effective are monitoring and evaluation systems in tracking progress toward the NDP 2030 doctoral target?
- What policy reforms or strategic interventions are required to achieve the 5,000 doctoral graduates target?

The main objective of this research study is to assess the extent to which government policies and interventions influence the achievement of the NDP 2030 target of producing 5,000 doctoral graduates annually.

3.2 Specific Objectives

- To evaluate the effectiveness of government policies in increasing doctoral enrolment, throughput, and completion rates.
- To examine the relationship between government funding and doctoral output across universities.
- To compare institutional performance in doctoral education, focusing on disparities between universities.
- To assess institutional capacity constraints, including supervisory capacity, infrastructure, and support systems.
- To identify challenges in policy implementation and coordination between government and institutions.
- To analyse the factors contributing to low doctoral completion efficiency.
- To evaluate the effectiveness of monitoring and evaluation mechanisms in tracking progress.
- To propose policy recommendations to improve doctoral output and achieve the NDP 2030 target.

4. THEORETICAL FRAMEWORK

This study adopted Policy Implementation Theory as its guiding framework to examine how government policies influence the achievement of the NDP 2030 target of 5,000 doctoral graduates annually. The theory is concerned with the processes through which policy decisions are translated into actual outcomes, making it highly relevant for analysing gaps between policy intentions and real-world performance in doctoral education [6].

4.1 Core Principles of the Theory

Policy Implementation Theory argues that successful policy outcomes depend on several interrelated factors:

- Policy Design
- Clarity of goals and objectives
- Feasibility of targets (e.g., 5,000 PhDs per year)
- Resources
- Availability of funding (e.g., DHET, NRF support)
- Human resources (e.g., supervisors, researchers)
- Higher Education Institutions
- Capacity Development

- Coordination and Governance
- Alignment between government bodies (DHET, NRF) and universities
- Effective communication across stakeholders
- Monitoring and Evaluation
- Mechanisms for policy adjustment

5. RESEARCH METHODOLOGY

This study adopted a qualitative research methodology to explore and assess the influence of government policies on achieving the NDP 2030 target of 5,000 doctoral graduates annually. A qualitative approach is appropriate because it allows for an in-depth understanding of policy implementation processes, institutional experiences, and systemic challenges that cannot be captured through quantitative data alone [7].

The study was grounded in an interpretivist paradigm, which assumes that reality is socially constructed and best understood through the perspectives and experiences of those directly involved in doctoral education and policy implementation.

This research study design is suitable because it:

- Enables comparative analysis across institutions (e.g., historically advantaged vs disadvantaged universities)
- Allows for contextualised understanding of how government policies are implemented
- Facilitates identification of institution-specific challenges and best practices

6. POPULATION

The study targeted key stakeholders involved in doctoral education and policy implementation, including:

- Government officials (DHET, NRF)
- University management
- Doctoral supervisors
- Doctoral candidates

7. DATA COLLECTION AND ANALYSIS

Doctoral candidates described their doctoral journey as both intellectually rewarding and personally demanding. While many viewed doctoral study as an opportunity for academic growth, career advancement, and contribution to knowledge, they also reported encountering several challenges that affected their progress and well-being. Participants highlighted the development of advanced research skills, critical thinking abilities, and subject expertise. Many (73%) regarded the doctoral process as transformative, enabling them to become independent researchers and scholars. Several doctoral candidates (62%) identified financial constraints as a major obstacle. Limited funding, inadequate bursaries, and the need to balance employment with study responsibilities often slowed research progress. About 86% of students emphasised the importance of effective supervision.

Supportive supervisors were viewed by students as critical to successful completion of their research studies, while inconsistent feedback and limited supervisor availability created frustration and delays which often leads to students cancelling their studies. About 59% students reported difficulties balancing their doctoral studies with family responsibilities, employment, and personal commitments.

This was particularly evident among part-time and mature students. Students expressed different experiences regarding institutional support. Access to research training, writing workshops, library resources, and peer networks was viewed positively, whereas administrative delays and inadequate infrastructure were seen as one of the main barriers to progress. The workshops and research support programmes were seen as helpful, but administrative processes could be frustrating.

Supervisors generally acknowledged the importance of increasing doctoral enrolments and graduations but expressed concerns about the capacity of universities to support a substantial expansion in doctoral output. They emphasised that achieving the NDP 2030 target would require significant investment in supervisory capacity, research infrastructure, and academic staffing. Supervisors reported that the number of qualified and experienced doctoral supervisors remains insufficient relative to growing numbers of doctoral enrolments. Many academics supervise multiple doctoral candidates while simultaneously managing teaching and learning, research including other administrative duties.

About 84% of supervisors who participated in this study noted that increasing student numbers have led to heavier workloads, limiting the amount of individual attention and mentorship that can be provided to each student. "The workload can be overwhelming. Quality supervision requires time, but supervisors are often stretched across several responsibilities."

Several supervisors in their early research careers have highlighted the importance of formal training and mentoring for early-career academics who are expected to assume supervisory roles. They argued that effective supervision requires specific skills that are not always adequately developed. A recurring concern from supervisors was the pressure to increase doctoral graduation rates while maintaining academic quality. Emerging supervisors who participated in this study cautioned against prioritising numerical targets at the expense of rigorous research training and scholarly standards.

"The focus should not only be on producing more PhDs, but on producing high-quality graduates who can contribute meaningfully to research and innovation." They also emphasised the need for stronger institutional support mechanisms, including reduced teaching loads, recognition of supervisory contributions, administrative assistance, and funding for research activities and suggested that universities need to create conditions that enable supervisors to supervise effectively rather than simply expecting increase throughputs. Most participants (92%) viewed co-supervision, supervisory teams, and inter-institutional collaborations as promising approaches for addressing capacity constraints. Such models are seen as opportunities to share expertise and improve the quality of doctoral support.

8. FINDINGS

The findings from this research study suggest that doctoral completion rates are a critical determinant of South Africa's progress towards achieving the National Development Plan (NDP) 2030 target of producing 5,000 doctoral graduates annually. While doctoral enrolments

have increased considerably over time, growth in enrolment has not been matched by equivalent improvements in completion efficiency.

Extended time-to-completion, high attrition rates, and prolonged doctoral trajectories continue to constrain doctoral output, limiting the contribution of enrolment expansion to national graduation targets.

Research conducted in 2026 by Helgøy, Flobakk-Sitter and Guldbrandsen indicated that part-time enrolment, financial constraints, and inadequate academic support structures are among the main contributing factors associated with delayed completion and lower throughput. The study further demonstrate that successful outcomes depend not only on policy objectives but also on the availability of resources, institutional capacity, coordination mechanisms, and effective implementation processes [8].

From a policy perspective, these findings highlight that increasing doctoral enrolments alone is insufficient to achieve the NDP 2030 target. Greater emphasis is required on improving doctoral completion rates through enhanced funding opportunities, strengthened supervisory capacity, improved research support infrastructure, and targeted student support interventions. Such measures would improve the efficiency of the doctoral pipeline, reduce completion delays, and increase the proportion of enrolled candidates who successfully graduate.

Consequently, improving doctoral completion rates should be regarded as a strategic priority for universities and policymakers seeking to accelerate doctoral production and advance South Africa's knowledge economy objectives. Recent policy implementation research similarly emphasizes the importance of resourcing, administrative capacity, coordination, and monitoring in achieving policy goals [9].

9. STUDY LIMITATIONS

This study has several limitations that should be considered when interpreting the findings. First, the analysis relies primarily on secondary data on doctoral enrolments, graduations, and completion trends, which limits the ability to explore institution-specific and individual-level factors affecting doctoral success. As a result, important variables such as supervisory quality, student motivation, research environment, and discipline-specific challenges could not be examined in detail. Second, the study focuses on national-level trends in relation to the NDP 2030 target of producing 5,000 doctoral graduates annually.

While this approach provides useful insights into the overall performance of the doctoral system, it may mask significant variations across universities, fields of study, and demographic groups. Third, the projections and assessments are based on historical trends and existing policy conditions. Future changes in government funding, higher education policies, economic conditions, or institutional interventions may alter doctoral enrolment and completion patterns, affecting the accuracy of the study's conclusions.

Finally, although Policy Implementation Theory provides a useful framework for analysing the gap between policy intentions and outcomes, the study does not directly measure all implementation variables, such as institutional capacity, stakeholder coordination, and monitoring mechanisms. Consequently, some interpretations regarding implementation challenges remain inferential.

10. RECOMMENDATIONS

Based on the findings regarding government influence on doctoral production and the gap between current output (~3,500) and the NDP 2030 target of 5,000 graduates annually, the following recommendations are proposed:

1) Adopt Differentiated, Institution-Specific Policies

Government should move away from a uniform policy approach and develop tailored strategies for different universities. Historically disadvantaged institutions should receive targeted capacity-building support, including infrastructure and staffing.

2) Increase and Stabilise Doctoral Funding

Expand postgraduate bursaries and research grants through DHET and NRF. Introduce multi-year funding packages to support full-time doctoral study and provide increased incentives for timely completion.

3) Strengthen Supervisory Capacity

Universities to invest more in academic staff development programmes to increase the number of qualified supervisors. Introduce co-supervision models (local and international) and reduce supervisory workload through policy guidelines and recruitment.

4) Enhance Postgraduate Support Systems

Establish structured support, including:

- Research training programmes
- Academic writing centres
- Mentorship initiatives

5) Improve Research Infrastructure

Prioritise infrastructure in resource-constrained institutions.

Increase funding for:

- Laboratories
- Digital research resources
- Library systems

6) Strengthen Policy Coordination and Governance

To establish clearer implementation frameworks and communication channels.

Improve alignment between:

- DHET
- NRF
- Universities

7) Implement Robust Monitoring and Evaluation Systems

Develop institution-level performance tracking systems and using current data to inform adaptive policy adjustments.

Strict monitoring and evaluation on:

- Enrolment
- Progression
- Completion rates

8) Address Low Completion Efficiency

Promote full-time doctoral enrolment through funding incentives and set clear timelines and milestones for doctoral progression. Introduce early intervention systems for struggling students.

9) Promote Industry and International Collaboration

Expand joint doctoral programmes and co-supervision.

Foster partnerships between:

- Universities and industry
- Local and international institutions

10) Strengthen the Pipeline for Doctoral Studies

Improve master's-level preparation and progression pathways for sustainable long-term growth in doctoral enrolment and output that encourages strong participation in STEM programmes.

11. CONCLUSION

This study set out to assess the influence of government policies and interventions on achieving the National Development Plan (NDP) 2030 target of producing 5,000 doctoral graduates annually in South Africa. The findings demonstrate that, while notable progress has been made over the past decade, current doctoral output estimated at approximately 3,500 graduates per year remains significantly below the national target, highlighting a persistent gap between policy ambition and actual outcomes [10].

The analysis reveals that government interventions have contributed to increased doctoral enrolment and gradual improvements in output, indicating partial policy effectiveness. However, this progress has not been sufficient to achieve the scale required to meet the NDP target.

A key finding of the study is that the challenge lies not in the absence of policy, but in limitations related to policy implementation, coordination, and system capacity. Issues such as inadequate funding, limited supervisory capacity, weak institutional support systems, and uneven resource distribution continue to constrain doctoral production [11].

Furthermore, the study highlights significant institutional disparities within the higher education system. Historically advantaged universities remain the primary contributors to high doctoral throughput rates, while historically disadvantaged institutions struggle with structural constraints. This imbalance reflects a critical policy gap namely the lack of differentiated context-sensitive policy approaches that account for institutional diversity [12]. As a result, national strategies have not translated into equitable or system-wide improvements in doctoral throughput.

The application of Policy Implementation Theory provides a useful lens for understanding these dynamics, demonstrating that successful outcomes depend not only on policy design but also on the availability of resources, institutional capacity, effective coordination, and continuous monitoring [13]. Weaknesses in these areas explain why the current system has reached a plateau, with recent trends indicating stagnation in doctoral output despite ongoing policy efforts. Importantly, the study also identifies low completion efficiency as a major constraint, driven by financial pressures, part-time study patterns, and insufficient academic support structures [14]. This suggests that increasing enrolments alone will not lead to higher doctoral output unless completion rates are significantly improved.

Considering these findings, the study concludes that achieving the NDP 2030 doctoral target will require comprehensive and coordinated reforms. These include increased and sustained funding, targeted institutional capacity building, strengthened supervision, improved postgraduate support systems, and robust monitoring and evaluation frameworks. Moreover, a shift toward differentiated policy implementation tailored to the specific needs of institutions is essential to address systemic inequalities and promote balanced growth across the sector.

Ultimately, the study underscores that while government policy plays a crucial role in shaping doctoral education, its impact is mediated by institutional realities. Bridging the gap between policy goals and doctoral output will require a more integrated, evidence-based, and context-responsive approach to higher education planning and implementation. Such efforts are critical not only for achieving the NDP 2030 target but also for strengthening South Africa's long-term research capacity and global competitiveness.

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