

CALL FOR APPLICATIONS FOR DOCTORAL (x1) SCHOLARSHIP FOR 2025 : Enhancing the Harmonisation of Water-Energy-Food-Environment-Health (WEFEH) Sector Policies and Advancing Cross-Sectoral Management of Related Resources Through Scenarios and Pathways Development in South Africa (funded by the Water Research Commission, South Africa)

The Centre for Transformative Agriculture and Food Systems at University of KwaZulu-Natal (CTAFS-UKZN) in Pietermaritzburg, is seeking to recruit a purpose driven PhD student to participate in the research for policy integration and harmonization using the nexus approach. The postgraduate student will register with and be supervised by the University of KwaZulu-Natal at the Pietermaritzburg campus in South Africa.

Project overview: Water, energy, food and land are fundamentals for socio-ecological and socio-economic sustainability, human and environmental health, dignity and prosperity. However, South Africa's Sustainable Development Goal (SDG index) of 64.1% (ranks 111th in the global list) is below the global average of 68.6%. The country is facing significant challenges in achieving SDG#6 (clean water and sanitation) with a moderately improving trend, and major challenges with stagnating trends in achieving SDG#7 (affordable and clean energy) and SDG#2 (zero hunger). Consequently, some South African households lack access to safe water, electricity, and adequate and nutritious food. A key determinant of the security of **water, energy, food, environment, and health (WEFEH)**-related resources and services amidst multiple drivers of change is how society plans, develops and manages resources through policy and governance in response to demand or scarcity. In South Africa, such policy framework includes the National Development Plan 2030 (NDP2030) and National Infrastructure Plan 2050 (NIP2050), which seek to enhance the universal security of WEFEH related resources and services through several measures. Critiques blame the fragmented and conventional siloed and incoherent monitoring and oversight models for the suboptimal delivery of services, duplication, and failure to address the triple challenges of poverty, inequality and employment in South Africa. Thus, this project seeks to enhance the harmonisation of WEFEH related sector policies and inform the advancement of cross-sectoral management of WEFEH-related resources through scenarios and pathways development in South Africa. Such harmonisation of policies will potentially lead to integrated WEFEH-related programmes and cross-sectoral WEFEH-related resource management towards improved security of WEFEH resources and services for all.

Scholarships description: An aspect of the project is to develop transdisciplinary research capacity and train postgraduate students for the future who can deal with complex and dynamic systems. To that end, we seek to appoint one (1) PhD student who will undertake a series of interconnected work packages designed to generate actionable knowledge, inform policy, and support systems transformation. The selected candidate will contribute to the following work packages and specific objectives:

- **WORK PACKAGE 2:** To quantify trade-offs and identify synergies across the WEFEH sectors in relation to South Africa's developmental agenda.
 - Specific objective 2: To improve the iWEF model through consideration of human health and environmental integrity.

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- **WORK PACKAGE 4:** To co-develop an integrative WEFNH nexus scenario planning tool for South Africa with a focus on policy outcomes and implementation.
 - Specific objective 4: To co-develop and apply an integrative WEFNH nexus scenario planning tool for South Africa with a focus on policy outcomes and implementation.
- **WORK PACKAGE 5:** To develop stakeholder driven and policy based integrated WEFNH nexus scenarios and devise feasible pathways for harmonized WEFNH policy development and implementation for sustainable WEFNH systems transformation in South Africa.
 - Specific objective 5: To develop stakeholder driven and policy based integrated WEFNH nexus scenarios and devise feasible pathways for harmonized WEFNH policy development and implementation for sustainable WEFNH systems transformation in South Africa.

Eligibility and inherent requirements: The project seeks a disciplined, self-motivated, and intellectually curious candidate with a demonstrated ability to work independently and as part of a transdisciplinary research team. Applicants must exhibit a strong work ethic, the capacity to think critically across disciplinary boundaries, and the commitment to meet demanding deadlines. Only candidates who are prepared to engage rigorously with complex systems research and contribute meaningfully to the project's objectives will be considered.

- **PhD Scholarship:** The candidate is expected to have a Master's degree (or equivalent) in any relevant natural and social sciences, and demonstrated competence in the following skills, abilities and capacities, especially in natural science field studies:
 - policy review and analysis,
 - numerical methods and techniques including modelling,
 - data collection including designing and conducting qualitative and quantitative surveys,
 - data analyses (including social) and visualisation using any established statistical package,
 - geospatial analysis (GIS),
 - narrative and discourse analyses,
 - writing clearly,
 - participate in team-based research,
 - a valid driver's licence (with appropriate driving experience), and
 - proficiency in English, both verbal and written.

Applicants must be under the age of 35 to be eligible for the PhD scholarship. Candidates without demonstrated academic output, such as a peer-reviewed publication, and proven presentation and communication skills will not be competitive. The ability to work independently with minimal supervision is essential. Preference will be given to applicants who can clearly demonstrate readiness to contribute to high-level scientific outputs and actively engage in transdisciplinary research processes.

Scholarships package and benefits: Competitive stipends will be offered to successful candidates. The candidates will be expected to find private accommodation and cover all living expenses from this funding, including travel to/from the University. However, the project will cover all project-related expenses, including fieldwork and travel to/from the University to the experimental sites. PhD Scholarships are for up to three years based on satisfactory performance. The successful candidates will belong to an international and diverse working research group that forms part of the WEF Nexus Centre of Excellence (CoE) and join an exciting cohort of students working on various topics on the nexus in

Africa and Asia. They will become part of a knowledgeable, high-achieving, and experienced team, with an opportunity to have a published PhD thesis and peer-reviewed journal articles.

Contact for more details: For more details on the postgraduate opportunities please contact: Dr Cuthbert Taguta (TagutaC@ukzn.ac.za) or Prof Tafadzwa Mabhaudhi (mabhaudhi@ukzn.ac.za).

How to apply: Interested candidates should submit a letter of motivation, one-page concept note, accompanied by a detailed CV (listing academic publications), academic transcript(s), expressing their interest and suitability to Nopayi Mkhize (mkhizen34@ukzn.ac.za), CC Dr Cuthbert Taguta (TagutaC@ukzn.ac.za). The one-page concept note should be a summary detailing how interested candidates plan to approach the research, including research problem(s), main research objective/question/hypothesis, specific objectives/questions/hypotheses, and a tentative methodology.

Application deadline: The closing date for receiving applications is 15 August 2025.

