

CALL FOR APPLICATIONS FOR DOCTORAL (x1) SCHOLARSHIP FOR 2024 : Operationalising the water-energy-food nexus for delivering on socio-economic development (Funded by the Water Research Commission of South Africa)

The Centre for Transformative Agriculture and Food Systems at University of KwaZulu-Natal (CTAFS-UKZN) is seeking to recruit driven PhD student to participate in research for operationalising the water-energy-food nexus for delivering on socio-economic development. The postgraduate student will register with and be supervised by the University of KwaZulu-Natal at the Pietermaritzburg campus in South Africa.

Project overview: The water-energy-food (WEF) nexus has developed into an important transformative approach to guide sustainable socio-economic development and natural resources management. It envisages integrated cross-sectoral natural resources management and is a transformative approach for sustainable development (SD) using an evidence-based approach based, potentially, on indicators of all SD components. The need for cross-sectoral management of the three resources is exacerbated by climate and global change and population increase. This is particularly true for the global South, where resource scarcities, increasing populations, environmental degradation, and climate change pose significant threats to sustainable socio-economic development.

This first phase of WEF nexus research focused on developing the concept, facilitating discourse and developing tools for assessing the WEF nexus. However, the adoption and implementation of the WEF nexus as a practical and transformational approach have been limited by a lack of real-world applications or case studies that demonstrate how it can deliver tangible socio-economic development outcomes.

The second phase of WEF nexus research focuses on operationalising the WEF nexus into defined human wellbeing outcomes embedded within South African strategic policy frameworks, such as the National Development Plan and National Framework for Sustainable Development (2008, NFSD). The goal is to achieve sustainable socio-economic development, ensuring that the biophysical WEF dimensions, as already well defined within phase 1 of the WEF nexus development, are embedded within relevant economic, social, health and then environmental dimensions and outcomes, as envisaged by the NFSD, all of which are underpinned by sound governance. The second phase will build on several completed and ongoing projects being led by the Project Team, focussing on integrating the WEF nexus into sustainable natural resources management, integrating WEF sectors, including the additional dimensions we identify, informing cooperation and collaboration on the ground across sectors and levels of government, building WEF nexus capacities and awareness, and providing evidence-based guidance for investments.

The project adopts a transdisciplinary approach focusing on seven (7) integrated work packages related to (i) building shared understanding and WEF nexus scenarios; (ii) supporting rural, peri- and urban livelihoods, wellbeing, and social cohesion; (iii) embedding the WEF nexus more strongly into health and the environment, as an essential component of sustainability, and sustainable development; (iv) sustainable and resilient food systems that build equity and promote dignity; (v) transitioning to a

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circular economy, (vi) identifying and guiding cross-sectoral WEF nexus investments; and (vii) capacity development and scaling approaches.

The WRC has also established a WEF Nexus Centre of Excellence, which will coordinate research, development and capacity development on the WEF Nexus. This is part the first call for the first cohort of students to participate in the transdisciplinary WEF nexus research programme.

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 execute the following packages and specific objectives:

- WORK PACKAGE 6: Identifying and guiding cross-sectoral WEF nexus investments
 - Specific objective 6: to further develop existing WEF nexus models and tools for screening and prioritising cross-sectoral WEF nexus investments using South Africa as a case study

Eligibility and inherent requirements: The project seeks creative, self-motivated, and energetic candidates to contribute to aspects of and be trained in this exciting and highly relevant field of research. The successful candidate should be driven, disciplined, and able to work as a member of a transdisciplinary research team and set and meet deadlines.

PhD Scholarship: The candidate is expected to have a Master's degree (or equivalent) in any relevant natural and social sciences, preferably agricultural economics, and demonstrated competence in the following skills, abilities and capacities, especially in natural science field studies:

- 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.

Only candidates below the age of 35 will be considered for PhD students. For the PhD scholarship, a peer-reviewed scientific publication; presentation skills for internal team meetings and scientific conferences; and the ability to work independently would be an advantage.

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, and Masters Scholarships are for up to two 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: Cuthbert Taguta (221089062@stu.ukzn.ac.za) or Prof M Mudhara (Mudhara@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 Cuthbert Taguta (221089062@stu.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 20 December 2024.

