



## 2025 WITS INTERFACULTY RESEARCH SYMPOSIUM ON CLIMATE, SUSTAINABILITY AND INEQUALITY

**Date:** 13–14 August 2025 | **Venue:** Wits Club, Braamfontein Campus West

**Host:** Office of the Pro Vice-Chancellor: Climate, Sustainability and Inequality

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### 1. Introduction

The **2025 Wits Interfaculty Research Symposium** marked a significant milestone in the University’s journey to support and highlight research on **climate, sustainability, and inequality**. Convened under the leadership of **Professor Imraan Valodia**, Pro Vice-Chancellor: Climate, Sustainability, and Inequality, in partnership with the Assistant Deans for Research of each faculty, the two-day gathering brought together academics, students, and postdoctoral fellows in a vibrant exchange of ideas, strategies, and collaborations.

Now in its **fourth year**, the symposium has evolved into a cornerstone of the Wits calendar, a space where bold ideas meet urgent action, and where the university community demonstrates its commitment to shaping Africa’s and the world’s response to the intertwined crises of climate change and inequality.

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### 2. Opening Reflections

In his opening remarks, Prof. Valodia reflected on the extraordinary progress of the past four years. He highlighted both **landmark achievements** and the “**everyday contributions**” that together are reshaping Wits’ academic culture:

- The **world-first compulsory undergraduate course**, *Climate Change and Me*, ensuring that every Wits student graduates with foundational climate literacy.
- The securing of major **research grants**, such as the £20 million **Wellcome Trust Climate and Health Programme** and the **Nedbank Chair in Climate Modelling**, which are positioning Wits as a global leader.
- Cross-faculty innovations such as the **Claude Leon Chair on Water Systems** (bridging Science and Law) and cutting-edge projects on **AI and climate change**.
- Expanding opportunities for students to showcase their work, particularly through **poster presentations and awards**, which elevate the voices of emerging scholars.



Prof. Valodia underscored that the symposium is not simply an academic exercise, it is a **call to action**, embedding urgency, creativity, and justice in how Wits responds to global challenges.

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### 3. Day One Highlights: Research, Skills, and Justice

Day One spotlighted the **depth and diversity of research** underway across Wits faculties. Sessions ranged from technical innovation to social justice, weaving a powerful narrative of interdisciplinary solutions.

**Mapping systems and skills for climate transitions:** Chevonne Reynolds presented work examining how woody plant encroachment simultaneously alters South African ecosystems and exacerbates socio-economic vulnerabilities in low-income communities, using data and citizen science. This study found strong links between encroachment, biodiversity loss (particularly amongst birds), and socio-economic disadvantages. Kate Mlauzi presented a mapping of the skills ecosystem of MSMEs in Nkangala, Mpumalanga, to evaluate barriers to the just energy transition. This highlighted weak institutional linkages which could be strengthened by MSME-TVET collaborations and municipal capacity-building. Presha Ramsarup presented research identifying missing occupations in climate adaptation such as care work, water security management, and ecological restoration. Connecting grassroots adaptation to policy reform for a just transition, this work argues for the formal recognition of these occupations in national skills systems.

**Conservation: large-scale ecosystem preservation, local biodiversity and legal reform:** Kim Zoeller proposed an African-led framework for natural climate solutions, integrating biodiversity, livelihoods, and Indigenous knowledge. This reframes conservation as a systems transformation rooted in local priorities. Similarly, Zanele Malindi critiqued colonial legacies in South Africa's conservation law, and using the Kruger Park as a case study, proposed an Indigenous and gendered approach rooted in land justice, care, and knowledge plurality. Paul Manger presented the *Project Plains Zebra* multinational research initiative evaluating migration patterns of zebra to improve conservation and carbon sequestration. He recognised the integral role of Indigenous knowledge in such evaluations.

**Sustainability in data analysis and climate research using data:** Deepak Kar reflected on sustainable computing in particle physics at CERN, detailing South Africa's contribution to such green practices. He highlighted the training and resource gaps in such work, while emphasising the need for interdisciplinary sustainability collaborations. Shobna Sawry (representing Celeste Madondo), presented a trial study of wearable



devices on pregnant women in Tshwane to track heat exposure and physiological stress. This displayed challenges in power and safety but demonstrated the potential for collecting maternal health data. Jean le Roux reported on the lessons from carbon emissions tracking in several Tshwane healthcare facilities. This found that data quality, institutional trust, and stakeholder engagement were key barriers to accurate emissions monitoring. Sherif Ishola Mustapha presented his research on a catalytic co-pyrolysis process combining microalgae and hardwood to produce renewable bio-oil and wastewater purifying biochar. This demonstrates the dual-benefits of a green technology advancing circular-economy principles.

### **Critical reflections on climate justice and knowledge production in the global South:**

Ariel Prinsloo discussed the need for Global South-led biometereology to address extractive North-South research practices, and advocated for equitable collaboration and local benefit in climate-health studies. Similarly reflecting on North-South practices, Samia Chasi examined the environmental cost of internationalisation in higher education, such as through air travel for conferences. She stressed the need for more sustainable and equitable models of global academic engagement. Matthew Wilhelm-Solomon presented research on Indigenous reforestation struggles of the Laklāñō-Xokleng people as a site of climate justice and spiritual renewal. This introduced the concept of “terrestrial (re)forestations” to encompass ecological, juridical and cosmological meanings of land. Nechama Brodie investigated the media and state responses to the 2022 Durban floods, revealing how class and race shape disaster narratives. This argued for better integrating social justice and accountability with climate change responses.

The keynote address by **Prof. Lucy Allais** framed the day’s discussions in a global justice context, asking: *What are South Africa’s climate obligations when powerful nations such as the U.S. backslide on commitments?* Her message was clear — South Africa must pursue a **just and inclusive transition**, not only for compliance but for its own economic and social resilience. See the seminar recording online [here](#).

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## **4. Day Two Highlights: Collaboration and Impact**

Day Two deepened the focus on **interdisciplinary collaboration and practical impact**, beginning with the **Deans’ Roundtable**.

- **Prof. Shabir Madhi (Health Sciences)** warned of climate’s growing threats to health systems and called for stronger links between **research and public health policy**.



- **Prof. Thokozani Majozi (Engineering & Built Environment)** emphasised sustainable infrastructure and engineering innovation, while championing climate responsiveness in higher education policy.
- **Prof. Jason Cohen (Commerce, Law & Management)** highlighted the transformative role of **data and digital systems** in managing climate risks.
- **Prof. Nithaya Chetty (Science)** reinforced Wits' contributions to **global climate modelling networks**, positioning African science at the global table.
- **Prof. Mucha Musemwa (Humanities)** championed the **environmental humanities**, reminding participants that the climate crisis is not only technical but also deeply human.

The day's sessions showcased groundbreaking work in:

**Water security and new approaches to managing disaster risk:** Francois Engelbrecht analysed the 2022 Durban floods and rising flood risks from tropical systems. He advocated for climate-smart disaster planning which integrates scientific evidence and community-based evacuation strategies. Jennifer Fitchett presented an isotope analysis used to trace moisture sources in Lesotho and identifying key transport patterns influencing regional rainfall. This deepens an understanding of future water security risks for Southern Africa. On water security, Samiksha Singh used GCRO survey data to detail inequalities in Gauteng's perceived water quality, particularly in informal settlements. This linked poor water access to health risks, emphasising the need for equitable interventions. Smarte Anekwe discussed cobalt-modified zeolite catalysts to optimise ethanol-to-fuel conversion, evaluating catalyst performance and carbon deposition. This highlighted the need for precise formulation and operational optimisation tailored to desired applications.

**Food and energy nexus:** Andrew Thatcher presented co-designed seasonal climate-forecasting tools which could improve adaptive planting and food security for smallholder farmers. Such an approach enhances local understanding and trust in forecasts. Landu Landu conducted a social life-cycle assessment of waste-to-energy technologies, highlighting how integrating social impacts strengthens sustainable energy policy and community outcomes. Dambala Kutela discussed South Africa's political-economy coal lock-in and the conditions necessary for a just energy transition. This linked the decline in cost of renewables and shifts in stakeholder power to a tipping point.

**Public health and teaching about climate change:** Christopher Chekwa presented a self-study on the teaching of climate change to Grade 6 learners using a practical application of a food garden, tracking a shift from teacher-centred to inquiry-based learning. This demonstrated the effectiveness of reflective pedagogy in fostering climate



literacy. Shüné Oliver discussed the adaptation of *Anopheles arabiensis* mosquitoes to temperature changes and their potential to carry disease with climate change. Under warmer scenarios, the findings indicated improved ability to transmit malaria. Sibusiso Mkwanzani presented research surveying healthcare workers in Tshwane to assess how heat affects wellbeing and care quality. Findings indicated that high indoor temperatures reduced communication and comfort, highlighting the need for adequate adaptation.

**Climate change and maternal health:** Darshnika Lakhoo discussed the findings of a global meta-analysis that there are strong links between heat exposure and risks such as preterm birth or stillbirth. This identifies key windows of vulnerability requiring targeted interventions. Strengthening these findings, Lebohang Radebe presented a multi-country analysis (in Africa and Europe) which demonstrated the same outcomes of preterm birth or stillbirth, finding stronger effects in African sites. Lucy Pearl Khofi further explored, through feminist ethnography, how climate injustice and reproductive struggles intersect for women in urban and rural South Africa. This nevertheless highlighted everyday resilience amidst structural vulnerability. Pascalia Munyewende presented a qualitative study of healthcare workers in Tshwane, revealing heat-related strain affecting wellbeing and care quality. This highlighted the need for urgent adaptation in healthcare facilities. Shobna Sawry, finally, presented a study of postpartum women's real-time heat exposure in Tshwane, linking physiological data to building structures. This provides evidence for the adaptation needed to ensure reduced heat exposure for postpartum women.

The day closed with reflections from Prof. Valodia and an update on the **Wits Food Gardens by Karuna Singh**, a practical demonstration of how **research can connect directly to community benefit and sustainable practice**.

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## 5. Student Poster Presentations

### Showcasing Emerging Scholars

A special highlight of the 2025 Symposium was the Postgraduate Poster Presentation Competition, held across both days of the event. The symposium featured a dedicated poster session in the Wits Club gardens, where students exhibited their research. This format not only fostered interaction but created a vibrant, informal space for dialogue between established academics and the next generation of scholars.

### Purpose of the Poster Session

The call for posters invited postgraduate students to share research aligned with the symposium's themes of climate, sustainability, and inequality. Objectives included:

- Showcasing cutting-edge student research across disciplines.



- Fostering cross-generational and cross-faculty collaboration.
- Providing students with exposure to academic critique and real-world policy perspectives.
- Encouraging innovative approaches to climate justice, public health, conservation, and sustainable development.

### Student Presenters

- Amanda Ndiweni: *Evaluating the risk of acclimatization-related heat stress to tourists visiting Cape Town from abroad during summer*
- Cassia Holtz: *Does this count? Heat wave thresholds and how they have shifted over the last century*
- Megan Smith: *Toward AI-Enabled Climate Resilience: Monitoring Water Quality in the Witwatersrand Basin Using Remote Sensing and Machine Learning*
- Michael Tafadzwa Nyamajiwa: *Climate Change Adaptation of Smallholder Irrigation Schemes and The Just Transition in Zimbabwe*
- Monique Hayes: *Just transition of energy and ownership in the creative print industries in South Africa*
- Reuben Davids: *Evaluating Risk Management Practices of JSE-Listed Companies Against Global Risk Benchmarks: A Sustainability Perspective*
- Robyn Nelson: *Exploring synergistic effects of climate change and land cover transformation on the range expansion of invasive avian species across South African landscapes*
- Tiisetso Mphela: *Managing fire risk under global change: Exploring the relationship between plantation forestry ownership and fire in Mpumalanga, South Africa*

These students' posters spanned diverse themes, from the climate-related health inequalities and conservation law, to energy transitions, urban resilience, and the psycho-social impacts of climate anxiety. The winners of the poster competition were Robyn Nelson in first place, Amanda Ndiweni in second place, and Tiisetso Mphela in third place.

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## 6. Key Outcomes

The symposium generated momentum across four key areas:





1. **Strengthened Interdisciplinary Collaboration** – Clear pathways emerged for joint research across faculties.
2. **Emerging Research Frontiers** – Maternal health, conservation neuroscience, sustainable computing, and AI in climate research.
3. **Wits as a Convener** – Consolidated Wits' role as a **continental hub for climate and inequality scholarship**.
4. **Youth and Equity Focus** – A strong emphasis on integrating **women and young people into climate pathways**, especially within the Just Transition. There is opportunity to develop new inter-disciplinary undergraduate programmes.

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## 7. Looking Ahead

The symposium reinforced the Pro VC's office as a **strategic driver of climate leadership** at Wits. Going forward, priorities include:

- **Scaling flagship research Chairs and grants** into global centres of excellence.
- Embedding **climate literacy in every programme of study**, ensuring all graduates leave Wits equipped to lead change.
- Building **living laboratories** such as the Wits Food Gardens that model sustainability in practice.
- Expanding **continental and global partnerships**, while ensuring African voices and Indigenous knowledge remain central.
- Strengthening **policy and industry linkages** to translate cutting-edge research into real-world impact.

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## 8. Annexures

- Symposium Programme – [programme link](#)
- Symposium Booklet with presentation abstracts – [booklet link](#)