



ENERGY WATER FOOD CLIMATE
NEXUS[®]
 INTERNATIONAL SUMMIT



EnergyWaterFoodClimate Nexus

International Summit 2024

AGENDA

1 – 4 July 2024 | Durban South Africa

www.mut.ac.za/energywaterfoodclimatesummit/



sanedi

South African National Energy
 Development Institute.



ENERGY WATER FOOD CLIMATE
NEXUS[®]
 INTERNATIONAL SUMMIT

WHAT WE WANT IS
POSSIBLE

JOIN US TO RECRUIT AND TRAIN A NEW
 GENERATION OF LEADERS READY TO SOLVE THE
 VEXING CHALLENGES OF OUR ENVIRONMENT.

FLORIDA A&M UNIVERSITY

SUMMIT AGENDA: DAY 1 | 2 JULY 2024



EnergyWaterFoodClimate Nexus International Summit



07h00-09h00 **Registration and viewing of exhibitions**

09h00-09h50 **High-level welcome remarks and tone-setting**

- Professor Nokuthula Sibiyi, Acting Vice-Chancellor & Principal: MUT
- Dr Lary Robinson, President: Florida Agricultural & Mechanical University
- Mr Sicelo Xulu, Board Chairperson: SANEDI
- Mr Bheki Nxumalo, Group Executive Generation, Eskom

Introduction of Hon Premier of KZN MEC: Thembeni Madlopha-Mthethwa

- Honourable Mr Thami Ntuli, Premier: KwaZulu-Natal

09h50-10h20 **Keynote Address** | Honorable Minister Jiwoh E Abdulai

Ministry of the Environment and Climate Change: Freetown, Sierra Leone

10h30-11h00 **Tea Break and viewing of exhibitions**

11h00-13h00 **A TRANSCONTINENTAL PANEL DISCUSSION**

Energy Water Food and Climate Change Nexus - Solutions for advancing impacts

Panel moderators: Mbali Mkhize, Senior Director: Marketing and Communications, MUT
Andrew Skerritt, Associate Director: Office of Communication, FAMU

Panellists:

- Honourable Rev Thulasizwe Buthelezi, MPL: MEC for Cooperative Government and Traditional Affairs (COGTA)
- Mr Muzi Mkhize, National Energy Regulator of South Africa (NERSA) Full-Time Regulator Member: Petroleum Pipelines Regulation
- Dr Endre Dobos, Chair: Commission 1.3 Soil Genesis of the International Union of Soil Sciences and the President of the Hungarian Soil Science Society



- Professor Khandakar Islam, Program Director: Ohio State University
- Lisa Williams, CPIM, CSCP, Operations Contracts, Labor Strategy Director: DOW, USA.

11h00-13h00

A TRANSCONTINENTAL PANEL DISCUSSION

Energy Water Food and Climate Change Nexus – Solutions for Advancing Impacts

Panel moderators: Mbali Mkhize, Senior Director: Marketing and Communications, MUT
 Andrew Skerritt, Associate Director: Office of Communication, FAMU

Panellists:

- Robert Ebo Hinson, Pro Vice-Chancellor: Ghana Communication Technology University (GCTU)
- African perspective on EnergyWaterFoodClimate Nexus, Global Institute of Sustainable Development, Advanced Analysis and Design (GISDAAD)/GEISE
- Dr Titus Mathe, CEO: SANEDI, South Africa
- Dr Endre Dobos, Chair: Commission 1.3. Soil Genesis of the International, Union of Soil Sciences and the President of the Hungarian Soil Science Society.
- Professor Khandakar Islam, Program Director: Ohio State University
- Dr Allyson Watson, Provost: Educational Implications on EnergyWaterFoodClimate Advancements, USA, FAMU
- Lisa Williams, CPIM, CSCP, Operations Contracts, Labor Strategy Director: DOW, USA.

13h00 - 14h00 Working-Lunch and viewing of exhibitions

13h00-14h00

THE WHY HACK

Speaker: Dr Leslie Nwoke

A platform where students provide solutions to EnergyWaterFoodClimateNexus (EWFCN) challenges.

14h00-16h00 CONCURRENT SESSION | ENERGY, WATER, FOOD, AND CLIMATE

All sessions include a presentation by South African Qualifications Authority (SAQA) – qualification registered on the NQF that relate to Water, Food, Energy, and Climate

14h00 -16h00

ROOM 1 | FOOD SESSION 1

Soil Health Advances: A Key to Food Security

Session Chair: Professor Roger Coopoosamy, Dean: Faculty of Natural Sciences, MUT



Presenters:

- Dr Bonginkosi Mthembu, Head of Department: Community Extension, MUT
- Dr Sandile Mthimkhulu, Lecturer: Community Extension, MUT
- Prof Xolile Mkhize, Assistant Professor: Community Extension, MUT
- Dr Thomas Worley, Director: Ohio State University South Centers
- Dr Terry Hofecker, Chief Technology Officer: Soil1, LLC
- Mr Ben Hofecker, CEO: Soil1 LLC

Sub-theme and sub-tracks

1. Soil organic matter in South African agriculture;
2. The role of soil health and nutrition in community development (introducing the soil kit MUT model);
3. Agricultural profitability through sustainable practices;
4. Soil Health Entrepreneurship Laboratory session one: Introduction of the soil health field test kit; and
5. Soil Health Entrepreneurship Laboratory session two: Hackathon based on soil health test kit.

Q & A

ROOM 1 | FOOD SESSION 2

Resilient and sustainable farming systems

Session Chair: Professor Thuli Mphambukeli, Head of Department: Urban Planning and Built Environment, UJ

Presenters:

- Dr Rafiq Islam, Soil, Water and Bioenergy Resources Program: Ohio State University Centres
- Mr Jeff Ngaka, Director: National Extension Reform, DALRRD
- Mr Parton Khumalo, Research and Development Manager: PPCEB
- Dr Ndumiso Ncobela, Lecturer: Department of Agriculture, MUT

Sub-themes and sub-tracks

1. Climate-smart agriculture and the role of carbon;
2. Smallholder farmer support land utilization and smart-agriculture case study;
3. Intervention for post-harvest and food loss in the fruit export value chain; and
4. The contribution of the poultry market to food security in South Africa.

14h00-16h00

ROOM 2 | SCIENCE ENTERPRISE

TIA Science Enterprise – Food and Agriculture

Panel Chair: Ambassador Nkosinathi Twala, Former Ambassador: Zambia

Keynote speaker: Mr Vusi Sikhosana, TIA Executive



Panellists:

- Mr Sibusiso Manana, Head: Agriculture, Technology Innovation Agency (TIA)
- Professor Maboko Mphosi, Agrifood Technology Station (LATS), University of Limpopo
- Mr Ndumiso Mshicileli, AgriFood Technology Station (AgriTS), CPU
- Dr Vuledzani Ndou, Senior Lecturer: Community Extension, MUT
- Professor Godfrey Zharare, Department of Agriculture, University of Zululand
- Dr Phiyana Lebea, TokaBio (Pty) Ltd
- Mrs Busisiwe Moloi, Sawubona Mycelium (Pty) Ltd
- Mr Sanele Ngcobo, Gemini Stars (Pty) Ltd

Sub-theme and sub-tracks

1. Technology and innovation – Agriculture: Food.
2. Agriculture: Agriculture: IKS, Biopharmaceuticals, Cosmeceuticals and Cannabis industries.

Q & A

14h00-16h00

ROOM 3 | ENERGY**Renewable Energy systems**

Moderator: Professor Babatunde Bakare, Dean: Faculty of Engineering, MUT

Presenters:

- Mrs Aradhna Pandarum, Head of department: Just transition at Impact Catalyst in Pretoria
- Professor Yves Kusakana, Head of Department: Electrical Engineering, CUT
- Professor Eriola Betiku, Chemical Engineering Professor: Obafemi Awolowo University, Nigeria

Sub-theme and sub-tracks

1. Empowering Communities: A Just Energy Transition Towards Sustainable Futures;
2. Solar energy and wind energy: recent technologies and challenges;
3. Focus on bioenergy in Africa: state of the art and barriers to widespread production; and
4. Navigating change: responses on non-renewable energy generators to the imperative of energy transition.

Q & A

14h00-16h00

ROOM 4 | WATER

Global access to safe water

Session Chair: Professor Paul Musonge, Faculty of Engineering, MUT

Guest speaker: Ms Nothando Mkhize, Deputy Board Chairperson, Umgeni, uThukela Water

Presenters:

- Ms Mbali Sibiyi, Umgeni
- Ms Thandeka Jwara, Umgeni-u Thukela Water
- Dr Thobeka Makhathini, Senior Lecturer: Chemical Engineering, MUT
- Dr Martha Chollom, Post-doc research fellow, MUT
- Dr Abiola Taiwo, Post-doc research fellow: Chemical Engineering, MUT
- Dr Adeyinka Gbadebo, Post-doc research fellow: Chemical Engineering, MUT
- Dr Felicia Afolabi, Researcher: DUT

Sub-theme and Sub-tracks: Water quality: improve water quality, wastewater treatment and safe reuse

1. Access to safe water: accounting for water quality and the resulting impacts on Sub-Saharan Africa;
2. Assessment of the implementation of a flood management framework for small water treatment works;
3. Biochar as a low-cost adsorbent for the removal of aqueous heavy metals from wastewater;
4. Artificial intelligence and water quality monitoring;
5. Evaluation of water quality and health risk of underground water around the Okinni township of Osun State, Nigeria; and
6. Influence of characterization on the performance of biosorbents for heavy metals removal: A review.

Q & A

14h00-16h00

ROOM 5 | CLIMATE

Sub Theme 1 | Centering Indigenous Knowledges in Climate Research in Action

Session Chair: Professor B Nkonki-Mandleni, MUT

Moderator: Professor Fikile Nxumalo, University of Toronto

14h00 -14h15

Panellists:

- Mr Siyanda Sikobi & Mr Zamani Dlungwane, Isigqi Sobuntu Youth Organisation
- Mrs Cynthia Mpati, Dexter Matu and Zama, Agricultural Academy
- Mrs Aureli Kalenga Njimngou, African Reality Project
- Professor Champaklal Jinabhai, DUT



Presenters:

14h25-14h50 Paper: Restoring South African Feminist Indigenous Knowledge's: Women & Climate Action -
Prof June Bam Hutchison, University of Johannesburg

14h50-15h35 Panellists: From river to the sea: Black planetary entanglements with water: The Black Planetary
Studies Collective:

- Professor Hugo ka Canham, University of South Africa
- Relebogile Rasodi, University of South Africa
- Tshifhiwa Mokobedi, University of South Africa
- Bongani Mavundla, University of South Africa
- Daniel Radebe, University of South Africa
- Nick Malherbe, University of South Africa
- Xolisa Gwadiso University of South Africa
- Seneca James, University of South Africa

15h35-16h00 Q & A

14h00-15h00 ROOM 6 | ENERGY

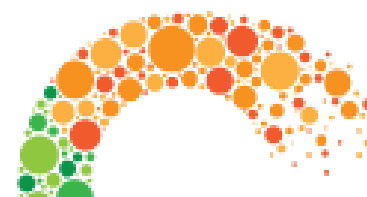
Energy transitions Zero GHG emissions: SANEDI

Session Chair: Mr Muzi Mkhize, Full-Time Regulator Member: Petroleum Pipelines Regulation, NERSA

Presenters:

- Dr Comas Chiteme, Department of Science & Innovation, DSI
- Professor Sampson Mamphweli, Head of DSI Energy Secretariat, SANEDI
- Mr Thabo Kekana, Deputy Director General: DMRE responsible for projects and programmes
- Professor Eric Maluta, Director for Renewable Energy Centre: University of Venda
- Dr Titus Mathe, CEO: SANEDI

Panel Discussion: How energy transition is contributing towards net zero by 2050. South African Energy policy.




PROGRAMME

EnergyWaterFoodClimate Nexus Summit

NEXUS THOUGHT LEADERS AWARDS & GALA EVENT

 02 July 2024

 18h00 for 18h30

 Coastlands Hotel, Musgrave

Master of Ceremony – Dr Lesley Nwoke

1. Welcome and recognition of guests of honor: Mbali Mkhize & Andrew Skerrit
2. Entertainment
3. Dr Sarah Emond, Science Center, Malmo University, SWEDEN:
Promoting the sustainable Development Goals (SDG) and the Inner
Development Goals (IDGs) through the Science Village Project
4. Awards ceremony
5. Entertainment
6. Dinner
7. Vote of thanks



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 **MUT**
MANGOSUTHU
UNIVERSITY OF TECHNOLOGY

45
YEAR
ANNIVERSARY



07h30-09h00 **Registration and viewing of exhibitions**

09h00-09h20 **WHAT WE WANT IS POSSIBLE**

High-level presentations and Welcome remarks

Professor Nokuthula Sibiyi, Acting Vice-Chancellor & Principal: MUT

Dr Allyson Watson, FAMU Provost

09h30-10h00 **Keynote Speaker:**

Adebisi Adeoti, Head Sustainability & Strategy, Africa and Country leader, Western Africa, DOW

10h00-11h00 **PANEL DISCUSSION**

Way forward on Energy, Water, Food, and Climate Nexus. Alignment to the SDGs, Agenda 2063, and Grand Societal Challenges.

Panellists:

- Professor Babatunde Bakare, Acting Dean: Faculty of Engineering, MUT
- Ms Duduzile Mthuli, Nutrition Manager Africa: Unilever South Africa
- Dr Nomcebo Mthombeni, Acting Deputy Dean: Durban University of Technology
- Dr Olu Ajayi, CEO: Siyacanda Energy

11h00-12h00 **Policy Reviews on Zero Hunger SDG 2: Global and Regional Food Systems**

Moderator: Professor Thokozile Simelane, Professor of Practice: Human Sciences Research Council



Panelists:

- Dr. Jemina Moeng, Chief Director: Department of Agriculture, Land Reform and Rural Development (DALRRD)
- Mr Zibusiso Dlamini, Head of Department: KZN Department of Agriculture and Rural Development (DARD)
- Mr Lethukuthula Jongisa, Chief Director: Agricultural Sciences-DARD

12h00-12h30 **Launch of the South African National Food and Nutrition Security (SAFNSS) study – DARD/HSRC**

12h00-12h30 **Media Briefing / Interviews**

13h00 - 14h00 Working-Lunch

13h00-14h00 **THE WHY HACK**

Speaker: Dr Leslie Nwoke

A platform where students provide solutions to EnergyWaterFoodClimateNexus (EWFCN) challenges.

14h00-16h00 CONCURRENT SESSION | ENERGY, WATER, FOOD, AND CLIMATE

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14h00 -16h00 **ROOM 1 | FOOD SESSION 1**

Advocacy for Nutrition Education and Food Safety and Urban Food Systems

Session Chair: Ms Duduzile Mthuli, Nutrition Manager for Africa: Unilever South Africa

Presenters:

- Dr Nomusa Dlamini, Research Group Leader: CSIR
- Ms Pumeza Melane, Technologist: CSIR
- Mr Vuyo Jayiya, Head of Department: Agribusiness, eThekweni Municipality
- Dr Mpou Manyatsa, Lecturer: Department of Environmental Health, MUT

Sub-themes:

1. Making food safety possible for producers, processors, and community Projects- CSIR;
2. Food Development and innovation for improved nutrition
3. eThekweni food systems responding to climate change resilience
4. National Nutrition School Programme implications on food safety



14h00 -16h00

ROOM 1 | FOOD SESSION 2

Nutrition Security: Building Conducive Environments and Markets for Food and Nutrition Security

Session Chair: Dr Lindelani Qwabe, Acting Head of Department: Chemistry, MUT

Presenters:

- Dr Thandeka Khoza, Lecturer: Department of Biochemistry, UKZN
- Professor Theophilus Davies, Research Professor: Faculty of Natural Sciences, MUT
- UNICEF: Nutrition Club, MUT
- Mr Toni Mzobe, Acting Science Communications Manager: SACNASP

Sub-themes

1. Product innovation for empowering local communities to address food and nutrition security gaps;
2. Environmental impact on the food chain;
3. The impact food environments for student wellness; and
4. Empowering Scientific Professionals to ensure high quality services in the sector.

14h00 -16h00

ROOM 2 | ENERGY

Miscellaneous Energy Topics

Host: Dr RF Chidzonga, Head of Department: Electrical Engineering, MUT

Presenters:

- Professor Prathieka Naidoo, Stellenbosch University
- Mr Sbu Ntshalintshali, Head of Department, Energy Office, eThekweni Municipality
- Dr Olu Ajayi, CEO: Siyacanda Energy
- Dr AO Etim and Professor P Musonge, MUT
- Professor Kaniki Tumba, Research leader: MUT

Sub-themes and sub-tracks:

1. Charting the Evolution of Green Hydrogen Adoption in South Africa: Past, Present and Future;
2. Planning for energy transition at municipal level: eThekweni municipality journey;
3. Funding Access for Energy Sector Investment: Insights from Small and Medium Enterprises; and
4. Numerical optimization and prediction of biodiesel thermal properties from x- situ poly-hybrid bio feedstock oil; and
5. Electricity production from major African rivers using reverse electro dialysis:
A solution to energy poverty?



14h00 -16h00

ROOM 3 | WATER

Global access to safe water

Session Chair: Dr Thobeka Makhathini, Senior Lecturer: Chemical Engineering, MUT

Presenters:

- Dr Kweinor Emmanuel, DUT
- Ms Thandeka Jwara, Umngeni-u Thukela Water
- Ms Mbali Sibiyi, Umngeni
- Ms Nomthandazo Sibiyi, MUT
- Mr Great Chazuza, DUT
- Dr CA Mecha, University of Arizona
- Ms Caressa Jaanu, DUT

Sub-theme and sub-tracks : Water quality, water governance, infrastructure, and investment

1. Valorisation of wastewater into bioenergy using integrated anaerobic digestion system
2. Impact of Climate Change on Water Quality: Amanzimtoti Water Works Case Study;
3. Biosorption of copper ions from aqueous solution using magnetic biosorbent produced from banana peels;
4. Biosorption of copper ions from wastewater using apple pomace;
5. Advances in photocatalytic ozonation treatment of water; and
6. Effect of light source on the performance of oxide and non-oxide transition metal and non-oxide transition metal – a comparative study of UV, UV-vis, and sunlight

14h00 -16h00

ROOM 4 | CLIMATE

Session Chair: Dr Bheka Ntshangase, Dean: Faculty of Management Sciences, MUT

Moderators: Professor Busi Nkonki-Mandleni, Director: Community Engagement, MUT

Professor Fikile Nxumalo, University of Toronto

Panellists:

Students from MUT, DUT, UKZN, UNIZULU and FAMU

14h25 -14h50

Paper: Designing for cultural sustaining climate science education; Dr Tia Madkins, University of Texas, Austin

14h50 - 15h15

Paper: Relational curriculum for ocean futures; Joanne Peers (PhD) candidate, The University of Oulu, Finland, Head of Academics; Centre for Creative Education



15h15 - 15h40 **Paper:** Land education through philosophical inquiry as climate change education; Dr Rose-Anne Reynolds, University of Cape Town

15h40 -15h50 **Q &A**

14h00 -16h00 **ROOM 5 | CLIMATE**

Moderator: Dr Mabongi Mvuyana, Senior lecturer: Public Administration and Economics, MUT

Presenters:

- Professor Halima Khunoethe, Chief Director: Capacity Building, COGTA
- Dr Sandile Mbatha, National Chief Data Officer: COGTA
- Professor Prathaban Moodley, GM: Applied Research, SANEDI
- Professor Sandiso Ngcobo, Head of Department: Communications, MUT
- Professor Alfred Msomi, Head of Department: Mathematical Sciences, MUT
- Dr William Leslie Brown-Acquaye, Dean: Faculty of Computing and Information Systems

Sub-themes and sub-tracks

1. Climate change impacts and human settlements in the Global South. Impact on water resources weather patterns, food security, food safety, and increased health risks;
2. Cities, settlements and key infrastructure, disaster management, the readiness of cities and adaptation;
3. Regional trends on climate change research and enterprise. Focus on developing science-based solutions, their applications, and the research that makes climate change response possible; and
4. Accelerated innovation. A focus on harnessing big data, and artificial intelligence for spatial solutions to transform big data into environmentally relevant information to advance sustainable and efficient use of natural resources in sustainable cities.

15h30-15h30 **All delegates return to the main room**

Poster session

Closure and the way forward: Dr Victor Ibeanusi, Executive Dean: School of the Environment, FAMU

Vote of thanks:

- Dr Larry Robinson, President: Florida Agricultural & Mechanical University
- Professor Nokuthula Sibiya, Acting Vice-Chancellor and Principal: MUT



SUMMIT CPD POINTS: The South African Council for Natural Scientific Professions (SACNASP) has accredited the summit for CPD points for all the registered scientists.

SUMMIT EXHIBITORS:

- TIA -Agriculture/TIA Bioprocessing Platform/TIA
- University of Limpopo - LATS
- CPUT- AgriTS
- UNIZULU- Agriculture
- Sawubona Mycelium Pty ltd
- Kushmed Pty Ltd
- Nguni Bakes
- Zukhanye Organics
- Heal your Guts
- Emphare Organics
- NRA Solutions Pty Ltd
- Nozidiya Agro-processing Pty Ltd
- Agave Master Jelly
- CSIR
- SANEDI
- ELET
- DHET International Scholarships
- Department of Agriculture, Land Reform, & Rural Development –
Branch: Food Security and Agrarian Reform
- MUT Innovative Projects
- University of Limpopo - LATS
- AgriTS
- KZN Agricultural Development Agency (ADA)
- SACNASP
- UKZN INQUBATE
- TokaBio Pty ltd
- Msoco NutriFoods
- Tribond Chemical Institute
- Umgibe Farming Organics and Training Institute
- Embo Sauce and Spices
- JoAnne Herbs Farm
- Kwajali Agricultural Services

