

Plenary Session – Best Papers

The Use of Innovation by SMMEs to Tackle Social challenges in South Africa

Nokuthula Lukhele and Ogundiran Soumonni
Wits Business School, South Africa

Service Learning in a Graduate Environmental Engineering Program – Community Engagement, Knowledge and Technology Transfer for Capacity Building and Sustainable Development

John Tharakan, Sunny George, Ratish Menon, and Pramod P. Thevannoor
Cochin University of Science and Technology, India
Howard University, USA
SCMS Group of Educational Institutions, India

Towards a Core Curriculum for Civic Engagement on Appropriate Technology: Characterizing, Optimizing, and Mobilizing Youth Community Service Learning

Alexia J. Wensing and Enrico J. Wensing
McMaster University, Canada
Columbia University, USA

Successful Appropriate Technology Commercialization for Sustainability

John Tharakan and Joseph Thomas
Cochin University of Science and Technology, India
Howard University, USA
Indian Institute of Technology Madras, India

Bio-Digester Technology: Process Selection through Multi-Criteria Decision Analysis

Cecil Manala, Daniel Madyira, Charles Mbohwa and Thabo Mahlatsi
University of Johannesburg, South Africa
City of Johannesburg Metropolitan Municipality, South Africa

Cold storage for low cost air conditioning

Daniel M. Madyira
University of Johannesburg, Johannesburg, South Africa

Paper Session A – Facilitator - Dr D. Madyira

Session I: Water

Indigenous Knowledge Systems for Water Harvesting, Storage and Conservation- Appropriate Technologies for Drought-Prone Times in India

John Tharakan, Cochin University of Science and Technology, Kochi, INDIA and Howard University, Washington, DC 20059, USA

Mapping of Groundwater quality in Great Kordufan states with Geochemistry and Health Aspects

Sahl I. Yasin and Marwan Adam

Sudanese Knowledge Society, Khartoum, Sudan

Session III: Policy, Standards and Ethics

Appropriate Technology and Ethical Obligations of the University: W.E.B. Du Bois on the Africana University Mission

*Verharen C.¹, Kadoda, G.², Bugarin, F.³, Fortunak, J.⁴, Schwartzman, D.⁵, Tharakan, J.⁶,
Wensing, E.⁷, Middendorf, G.⁸*

Departments of ¹Philosophy, ³African Studies, ⁴Chemistry and Pharmaceutical
Sciences, ⁶Chemical Engineering, ⁷Biology (Professor Emeritus), ⁸Biology, Howard
University, Washington, DC, USA, ²Independent Researcher, Khartoum, 13314 Sudan

⁷Department of Human Development, Columbia University, New York, USA

Dynamics of future-thinking for energy security in Sudan: community- based system dynamics modeling for socioeconomic impact of dams in North Sudan

Seed Ahmed, W.¹ and Kadoda G.²

¹Sciences Po Paris School of International Affairs, Paris, France

²Sudanese Knowledge Society, Khartoum, Sudan

Electronic Tendering a 21st Century Necessity in Zimbabwe

Lorraine Chiedza Chitongo, Daniel Musundire and Khesani Chilumani
NUST, Zimbabwe

Technology and Knowledge Transfer - Session II: Applications in Education and Health **Zimbabwean A' Level Subjects and Career Guidance Mobile Application**

Daniel Musundire and Chitauro Stanslous

National University of Science and Technology, Zimbabwe

Designing a User Centered M-Health Application Interface to be Used for HIV/AIDS Management in Zimbabwe

Walter Chipambwa and Kay Terera

Chinhoyi University of Technology, Zimbabwe

An Assessment of e-readiness for IoT Adoption in Zimbabwean Hospitals: A Case of Chitungwiza Hospital

Samkeliso Dube, Sibonile Moyo, Sibangiso Ngwenya, and Tinashe Mugaro

National University of Science and Technology, Zimbabwe

Ministry of Health and Child Care, Zimbabwe

Paper Session B - Mrs S. Dube

Session: Agriculture and Environment

Farmers Market Price Prediction Model

Tirivangani B.H.T. Magadza, Rachael Chikoore, and Tererai T. Maposa
Harare Institute of Technology, Harare, Zimbabwe

Agricultural Market Portal for rural communities

Sibangiso Ngwenya and Vuli Moyo
National University of Science and Technology, Bulawayo, Zimbabwe

Characterisation of compression and flexural properties of a composite made from cotton stalk fibres and phenol formaldehyde resin

Nkosilathi Nkomo¹, Londiwe Nkiwane¹, David Njuguna², and Eric Oyondi
¹National University of Science and Technology, Bulawayo, Zimbabwe
²Moi University, Eldoret, Kenya

Agriculture information dissemination mobile application

¹Sibusisiwe Dube, ²Tony Togara, and ³Bekezela Dube
¹National University of Science and Technology, Bulawayo, Zimbabwe,
²Hurudza Africa, Harare, Zimbabwe,
³The Palladium group, Harare, Zimbabwe

Energy Session I: Energy Generation (Solar, Wind & Hybrid Systems) and Utilization

Distributed Generation as an Alternative Paradigm for Electric Power Planning in Southern Africa: A Modelling-based Study.

Ogundiran Soumonni
Wits University, South Africa

Development of container based community factories

Daniel M. Madyira
University of Johannesburg, Johannesburg, South Africa

Energy - Session II: Adoption and Sustainability

Why are Households Adopting Small-Scale Solar in Northern Tanzania? Survey results from the Arusha and Kilimanjaro regions.

Kyle Karber^{a}, Katherine L. Dickinson^a, Livinus Manyanga^{b#}, Michael Hannigan^a*
^aUniversity of Colorado at Boulder. 427 UCB, Boulder, CO 80309, USA
^bKAKUTE Ltd. P.O. Box 13954, Arusha, Tanzania

Sustainable Energy for Africa and the African Diaspora.

Willie Davis
Lansing Community College, USA

Paper Session C -

Technology and Knowledge Transfer - Session I: Planning and Community Development

Technology Transfer, Appropriate Technology and National Planning

John Trimble

Tshwane University of Technology, South Africa

How Sugar Oriented the Caribbean 1640 to 1892

Tom Dalgety (Ras Dalgettie I)

Confederation of African Nationals and Descendants, Guyana

Smart Community Development Framework (SCDF): An Approach to Empower Vulnerable Communities Movement Towards Sustainable Development

Lucas Fagundes Veiga Ribeiro, Dena McMartin, and Katherine Arbuthnott

University of Regina, Canada

Appropriate Technologies and Solutions for Disaster Management: Discovered and Applied Knowledge

Lana Abdallah and Gada Kadoda

University of Khartoum, Sudan

Sudanese Knowledge Society, Sudan

Technology and Knowledge Transfer - Session III: Applications in Business

Automated Monitoring of Call Activity and Usage for Cooperate Mobile Phones

Nicodemus Samoyo and Khesani Chilumani

National University of Science and Technology, Zimbabwe

A Methodology to Improve Sheet Metal Bending CAPP for Reconfigurable Bending Press Machines Using Web-Based System

E. Murena, K. Mpofu, J. Trimble, and E. Manjoro

Tshwane University of Technology, South Africa

National University of Science and Technology, Zimbabwe

Paper Session D - Mr M. Nsikani & Paper Session E – Mr S. Ngwenya
Energy - Session III: Biofuels (Biogas, Biomas and Biodiesel)

Development of the loose biomass briquetting value chain

Daniel M. Madyira

University of Johannesburg, Johannesburg, South Africa

Design of a self-sustaining biogas and bio-fertilizer producing plant that uses rumen inješta and manure as raw materials for Zimbabwean abattoirs. (Abstract Only)

Lovemore T. Mapasure and William M. Goriwondo

National University of Science and Technology, Zimbabwe.

Biochemical Characterization, Morphological and Ultrastructural Configuration of *Chlorella vulgaris* Cultivated in Wastewater Supplemented with Varying Dosages of Free Chlorine.

Mutanda T. and Zibula N.

University of KwaZulu-Natal, Durban 4000, South Africa

Session: Green Economy and Innovation

Elephant Coin: Pegging digital tokens to endangered natural resources as a means of conservation

Matthew Mcilhenny,

Umati Blockchain Limited, USA

Open Source 3-D Printers: An Appropriate Technology for Developing Communities

J. Gwamuri, J.E. Poliskey and J.M. Pearce

Michigan Technological University, USA

Summary-view: Biomass anaerobic Respiration Technology in South Africa

Cecil Manala, Daniel Madyira, Charles Mbohwa and Ruben Shuma

University of Johannesburg, Johannesburg, South Africa

Appropriate Technology Innovation – Equipment Design for Sustainability

Vennan Sibanda, Khumbulani Mpofu, John Trimble

Tshwane University of Technology, Pretoria, South Africa

Smart Community Development Framework (SCDF): An Approach to Empower Vulnerable Communities Movement Towards Sustainable Development

Lucas Fagundes Veiga Ribeiro, Dena W. McMartin, and Katherine Arbuthnott

Regina University, Canada

Saturday 26 November, 9:00am “The Way forward with INAT and AT”

Technology and Knowledge Transfer - Session IV: The Way Forward

The Appropriate Technology Movement: Tinkerers or Futurists

Gada Kadoda

Sudanese Knowledge Society, Sudan