

CHUKA



UNIVERSITY

Knowledge is Wealth (*Sapientia divitia est*)

1st International Research Conference



*Gender & disability mainstreaming
inspirer - Seer Jerusha Kanyua*

Theme

**“Enhancing Innovation for
Sustainable Development in
the 21st Century & Beyond”**

29th – 31st Oct., 2014

in

Chuka University, Kenya



*HPLC machine for scientific &
technological research innovations*



*Llamas - beasts of burden for innovative
research*

Partners

Kenya Wildlife Service



*Chuka University improved dairy cows for
food security*

National Commission for Science,
Technology & Innovation (NACOSTI)



*Computer laboratory for ICT educational
advances*

Hon. Kiraitu Murungi Foundation



*Tree planting trees for climate change
mitigation*

Proceedings

Chuka University is ISO 9001:2008 Certified



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Proceedings

**Of the 1st International Research Conference
Held On the Main Campus from
29th – 31st October, 2014**

Theme:
**“Enhancing Innovation for Sustainable Development in the
21st Century & Beyond”**

CHUKA



UNIVERSITY

Knowledge is Wealth (Sapientia divitia est)

Philosophy

Education and training for social cohesion, human and economic development

Vision

To be a Premier University for the provision of quality education, training and research for sustainable national and global development

Mission

To generate, preserve and share knowledge for effective leadership in higher education, training, research and outreach through nurturing an intellectual culture that integrates theory with practice and innovation

Core Values

- 1) Passion for excellence and devotion to duty
- 2) Integrity, transparency and accountability
- 3) Social fairness
- 4) Professionalism
- 5) Timeliness
- 6) Prudent use of resources
- 7) Corporate citizenship
- 8) Customer focus
- 9) Teamwork
- 10) Confidentiality

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PREFACE

The establishment of Chuka University was foretold way back in 1951 by a famous philanthropist and seer by the name Jerusha Kanyua. She prophesied that an academic mountain shall sprout at Ndagani. She advised the youth to take a pen like a spear and a book like a shield. Subsequently in 1956, the Chuka community built a Craft Centre to train school leavers to acquire skills that could be useful in nation building. The Centre was upgraded to a Youth Polytechnic in 1969. In 2003, the community members felt that they needed an institution that could provide higher education and training access for the people of eastern region and Kenya at large. At that time no institution in the eastern part of Kenya had the capability of educating and training students at diploma and degree levels. As a result, education and training opportunities were limited in the region. During the same time, Egerton University was planning to open a Campus in eastern Kenya. The community then approached Egerton University who found Chuka to be centrally placed in eastern Kenya and suitable for establishment of a university campus.

In an effort to acquire land for the Campus, the Chuka community donated the Ndagani Youth Polytechnic and Sports Stadium. In addition, the Presbyterian Church donated more land from institutions forming the Ndagani Educational Complex, which included the Ndagani Secondary, Primary and Nursery Schools. The Chuka community also added a further 500 acres at Kairini in Meru South to make the total land area 550 acres. On 21st August, 2004, when His Excellency President Mwai Kibaki visited Chuka area and held a meeting at Ndagani (the present location of Chuka University), the Chuka community through their leaders informed him of their desire to establish a university in the area. Among the dignitaries who attended the meeting were Members of Parliament from the Greater Meru and Senior Government officials. The President supported the aspirations of the people of Chuka and Meru and pledged Government's support to establish a university at the site. Due to the goodwill of the Government, Egerton University Council approved establishment of a Campus, named Egerton University Eastern Campus at Ndagani in Chuka area.

The Campus was then launched on 1st August, 2005. The Youth Polytechnic was then relocated to another site. On 23rd August, 2007, H.E. President Mwai Kibaki elevated the Egerton University Eastern Campus to Chuka University College through Legal Notice Number 161. On 10th October, 2007, H.E. President Mwai Kibaki visited and inaugurated Chuka University College. After about five years, H.E. President Mwai Kibaki visited again and chartered Chuka University on 8th January, 2013, making it the 2nd public university to be chartered and the 9th full-fledged public university in Kenya. The University is located in Chuka Division in Meru South Subcounty, Tharaka-Nithi County at approximately 186 km from Nairobi City along the Nairobi-Meru Highway on the slopes of the snow-capped Mt. Kenya at an altitude of 1,500 m above sea level. The area provides a cool climatic environment, with temperatures ranging from 16°C to 24°C and annual rainfall averaging 1,000 mm. This serene environment is excellent for learning because it is devoid of the mundance hustle and bustle activities found in big cities.

The University is designated as a centre of excellence in Environmental and Renewable Energy Studies and offers diverse university education, training and research at Certificate, Diploma, Bachelor's, Master's and Doctorate degree levels in the Faculties of Education and Resources Development; Business Studies; Agriculture and Environmental Studies; Arts and Humanities; and Science, Engineering and Technology. Chuka University is an ISO 9001:2008 Certified, Chartered and full-fledged public University in Kenya. It has triple core Missions of Education, Research and Extension. Great strides have been made in delivery of higher education. Impressive strides have been made in pursuit of research and delivery of extension services in the region. The University endeavours to strengthen and sustain these noble strides by organizing International Research Conferences since application of scientific research breakthroughs stimulates development of nations.

The First International Research Conference was held from 29th to 31st October, 2014. The Conference provided a forum for sharing findings of the various researches conducted by stakeholders. The exchange

was expected to contribute to realisation of Chuka University's Vision: "To be a Premier University for the provision of quality education, training and research for sustainable national and global development".

The theme of the Conference was: **Enhancing Innovation for Sustainable Development in the 21st Century**. The sub-themes were:

1. Agriculture, Food & Nutrition Security
2. Climate Change Mitigation and Adaptation
3. Devolution, Governance and Management Interrogation
4. Innovations and Creations for Entrepreneurship
5. Information Communication Technology Advances
6. Engineering, Science and Technology Developments
7. Education and Human Health for Visions Realisation
8. Arts, Humanities & Social Sciences for Development
9. Gender and Disability Mainstreaming Enhancement

The objectives were:

1. To share and publicise current innovations to spur development.
2. To gather researchers, scholars, professionals and policy makers together to interact and network.
3. To encourage industries to exhibit their capacity and uptake recent innovations.
4. To provide a forum for staff and students to exhibit and market their creations and innovations.

Subsequently, four lead papers by expert scholars and nearly 150 session papers were presented alongside exhibitions. The Conference had a rich collection of papers in line with the subthemes, on topical subjects such as: potato, tomato, pumpkin, coffee, *Terere*, coconut, biofortification, millet, fodder crops, salt-licks, indigenous chicken, farming and knowledge, Zai pits, organic farming, crop protection, famine coping strategies, agropastoralism, human-wildlife interaction, sea water, group farming, soil fertility, greenhouse farming, plastic tube digesters, biodiversity, mining, ethology, swamp reclamation, coalition governance, corporate social responsibility, peace building, constitutionalism, performance contracting, open tendering, IFMIS, diaspora, graduates training, hawking education, religious pacification and tourism, extension, technology transfer and commercialisation, entrepreneurship, *Etinga*, *Mgalo*, stock markets, cloud computing, e-services, digital education, hormones, ethnomedicine, waste management, Banach space, packaging, symbiosis, *Ajuga*, ponds, *Acacia*, plagiarism, counselling, *Miraa*, disasters, modeling, liberal and theatre arts, strategic planning, cognitive potentials, GIS, journalism, diplomacy, fiction, *Kiswahili*, literacy, patriarchy, equity, and representation.

The Conference took place over three days, from 29th October 2014 (Thursday) to 31st October 2014 (Saturday). On 29th, all participants attended the official opening ceremony. Thereafter, participants proceeded to parallel breaker sessions organised in three rooms, according to subthemes. Papers of a wide range were presented in the breaker sessions to give participants a chance to update and share their knowledge. Participants viewed exhibits during break time. In the evening of 30th, all participants attended the official closing ceremony and a reception dinner. On 31st, participants proceeded for picturesque tour of eastern Kenya to experience the serene countryside neighbouring Chuka University, including Mt. Kenya. The Conference ended on 31st October, 2014 in the evening.

The Conference was educative, enriching, informative, inspiring and memorable. Subsequently, manuscripts presented in it were compiled into these proceedings.

Professor Dorcas K. Isutsa, Ph.D.

Deputy Vice-Chancellor (Academic, Research & Student Affairs)

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Views expressed in these proceedings are those of contributing authors and do not in any way represent views of the publisher, Chuka University. Only papers that were orally presented, consented by authors, and had met overview criteria were published in these proceedings. The publisher reserved the right to typeset the papers to meet proceedings layout.

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