

Preparations for the Teaching of Nuclear Science at JOOUST¹

25th INPRO Dialogue Forum on Nuclear Energy Development in Embarking Countries, Nairobi, Kenya

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TOPIC NUMBER 1

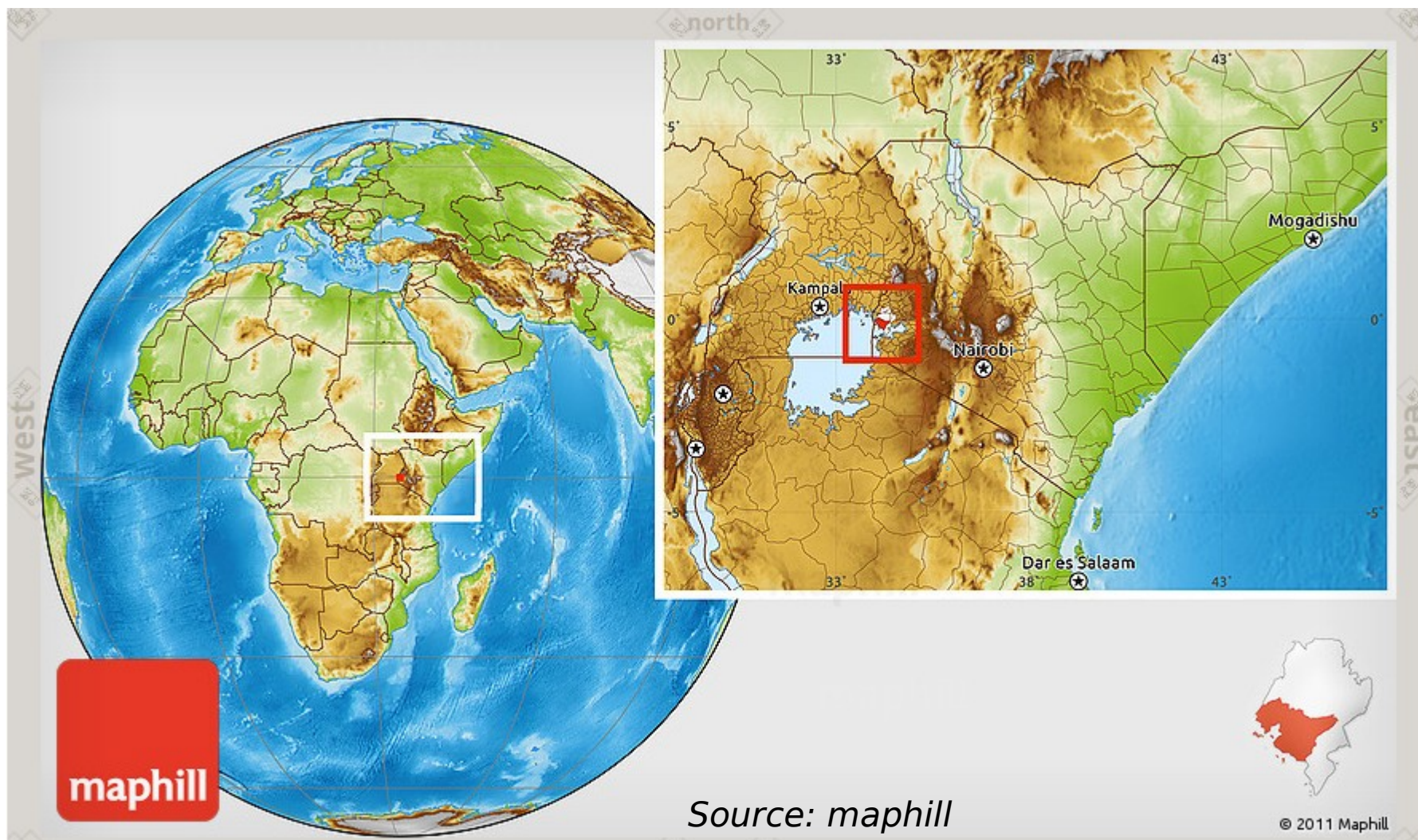
National, regional opportunities and challenges in newcomer countries on development of nuclear energy including its potential contribution to economic development and minimization of environmental impacts.

Outline

- 1 About Jaramogi Oginga Odinga University of Science and Technology**
- 2 Background to the Nuclear Science Course Introduction**
- 3 Preparations for the Course**

About Jaramogi Oginga Odinga University of Science and Technology

Location of JOOUST



JOOUST Campuses

Main Campus



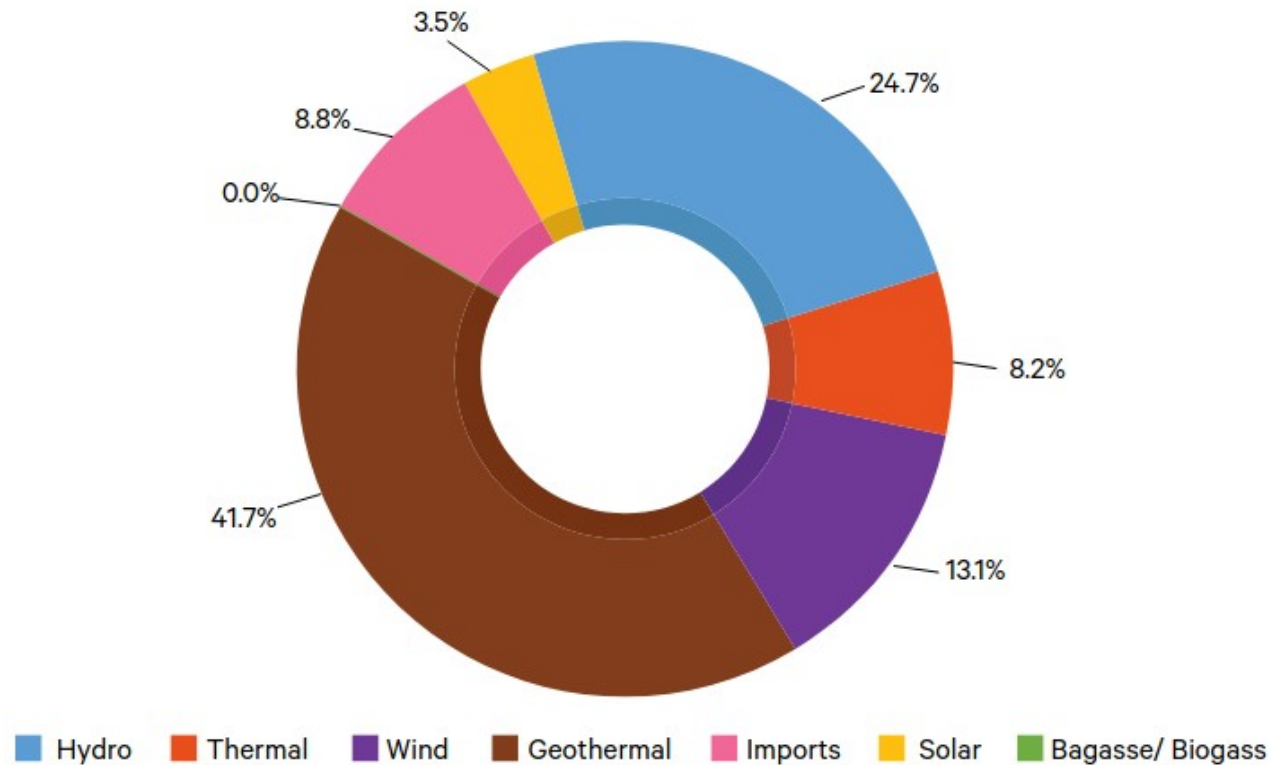
Miyandhe Campus



Source: The Oasis Newsletter, JOOUST

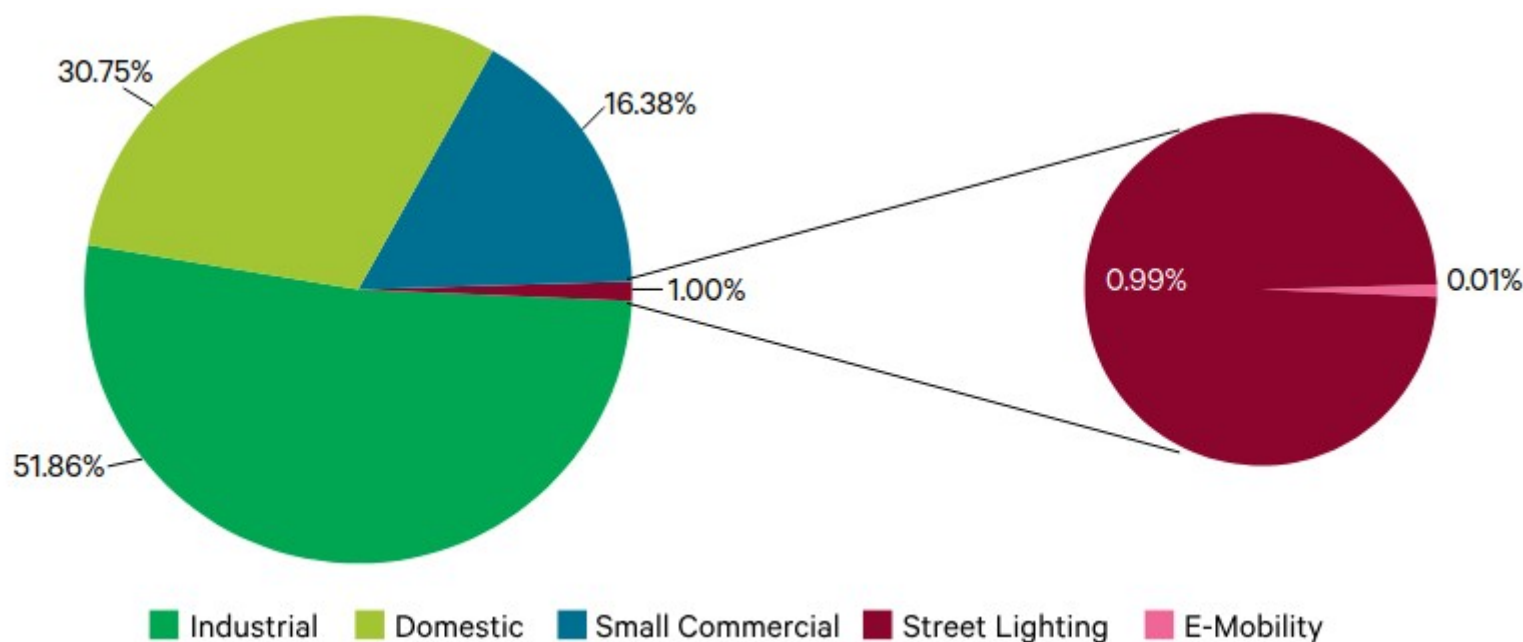
Background to the Nuclear Science Course Introduction

Kenya's Current Sources of Power



Source: Energy and Petroleum Regulatory Authority, Kenya.

Kenya Energy Consumption by Consumer Category



Source: Energy and Petroleum Regulatory Authority

Consumption by all categories set to rise.

Long-term Solution: Nuclear Power

- **Legal framework already in place.**
- **Possible sites have been identified.**
- **Preliminary site studies ongoing.**

Gaps in implementation of project include:

Inadequate manpower to manage the project; Need for more trained personnel.

Universities; gaps in funding by the government.

Advantaged Position of JOOUST

Core relevant physics courses already up and running.

Proximity to one of the proposed sites of the nuclear reactor.

An MoU with NuPEA regarding teaching of students the relevant courses.

Goodwill of the community.

Preparations for the Nuclear Science Course

Functional Laboratories



A physics laboratory in JOOUST

Physics Courses Already Offered at JOOUST

Course

**Atomic structure and
chemical bonding**

Thermodynamics

**Quantum mechanics I
and II**

Solid State Physics

Statistical Mechanics

Relevance

**Fundamentals of
nuclear physics**

**Applications of nuclear
energy**

**Quantum-mechanical
understanding of the
atom.**

**Links microscopic to
macroscopic reactor
properties.**

Physics Courses Already Offered at JOOUST [Contd.]

Course

**Electricity and Magnetism
I and II**

Electrodynamics

**MSc course work in the
above units.**

**Partnership with KU in
Internet Reactor
Laboratory Project**

Relevance

**Generation of current
electricity.**

**Advanced theoretical
understanding of
nuclear processes.**

Nuclear Course Content Preparation

- **Nuclear science curriculum is under development.**
- **BSc to PhD level to be covered.**
- **Guiding document: “Model Curriculum On Strategic Planning For Sustainable Nuclear Energy” from IAEA**
- **Relevance to Kenyan situation is key.**

Challenges to Implementation

- ***Accreditation of course by CUE; many competing financial needs of the university.***
- **Lengthy process of hiring required lecturers.**
- **The cost of the necessary infrastructure.**

However, these can be overcome:

Goodwill of the government.

Partnership with IAEA and other interested bodies.

Thank You