



CAPACITY BUILDING IN SPACE TECHNOLOGY FOR DEVELOPING COUNTRIES

KENYA'S PERSPECTIVE

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Importance of Space Technology

- ❑ Space Technology continues to grow at a high rate and offers developing countries very reasonable returns-on-investments
- ❑ Space Technology has over the years provided spin-off technologies which find application in everyday life and thus impacts the common livelihood of the every human being
- ❑ Space Technology offers developing countries a catalyst to stimulate their the socio-economic development by providing solutions to many of the following areas of application

Fields of Space Technology Applications



Agriculture



Resources Management



Disaster Management



Communication



Urban Planning



Security

Kenya's Space Program

- Kenya is seeking to utilize space technology and its related applications to promote and support Kenya's socio- economic development
- Kenya aspires to have a viable indigenous space industry by the year 2030 to position Kenya as a self-sufficient developer in key areas of space science and space technology
- The mandate of the Implementation of the Space program in Kenya is being undertaken by the recently established Kenya Space Agency

Capacity Building in Space Technology

- For Kenya to derive maximum benefit from Space Technology and its related applications, it needs to build capacity in all the related space disciplines; engineering, remote sensing, navigation, GIS, telecommunication, etc.
- **Capacity building** in the Space sector is one of the main priorities of the Kenya Space Agency and its partnering with a number of stakeholders to realize this mandate.
- Examples of organizations undertaking training in space technology and its related disciplines as well as current and envisioned training programs being conducted and/or supported by Kenya Space Agency

RCMRD

- Kenya hosts Regional Centre for Mapping of Resources for Development (RCMRD) established by the United Nations Economic Commission for Africa (UNECA) and the African Union (AU) in Nairobi, Kenya.
- RCMRD is an inter-governmental organization and currently has 20 Member States in the Eastern and Southern Africa Regions
- Besides offering Satellite-based services, RCMRD provides training to its member states on the following Space-related disciplines;
 - Remote Sensing (RS) & Satellite Image Processing/Interpretation.
 - Geographic Information Systems (GIS) & Global Positioning/Navigation Systems (GPS)
 - Geo-spatial database development and management
 - Integrated Water Resources Management.
 - Land Information Management Systems.

KMD/IMTR

- Institute for Meteorological Training and Research (IMTR), a branch of the Kenya Meteorological Department (KMD), is charged with the responsibility of training personnel in meteorology, hydrology and related geo-sciences in Kenya and the Anglophone countries in Africa.
- IMTR was established in 1964. In 1965, it was upgraded to the status of the World Meteorological Organization Regional Training Centre (WMO-RTC) for the Anglophone Africa.
- There are only 23 such training centres in the world including eight in Africa. IMTR RMTTC is regarded as a “Centre of Excellence” specialized in training meteorology, hydrology, applied meteorology and related geosciences.
- IMTR provide training that supports the regions National Meteorological and Hydrological Services (NMHS's).

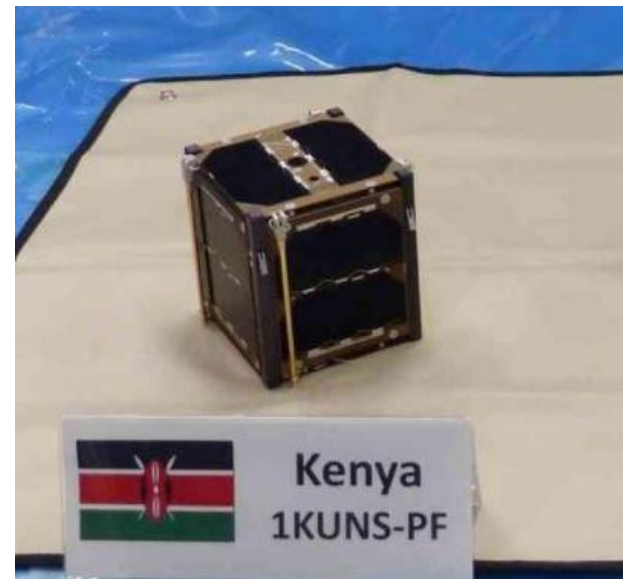
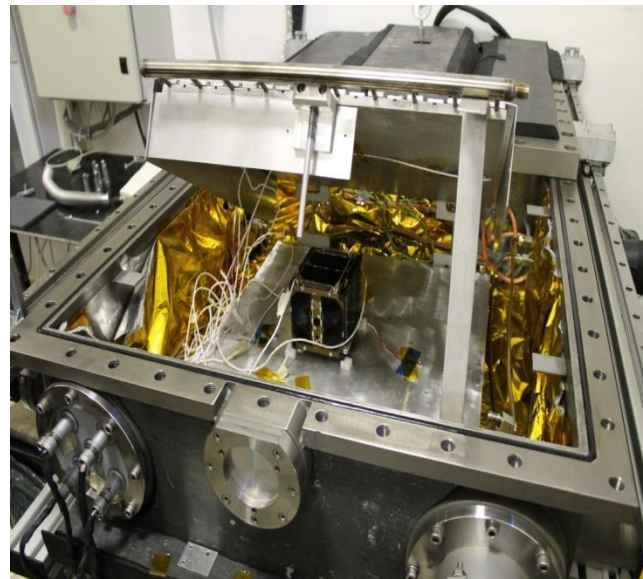
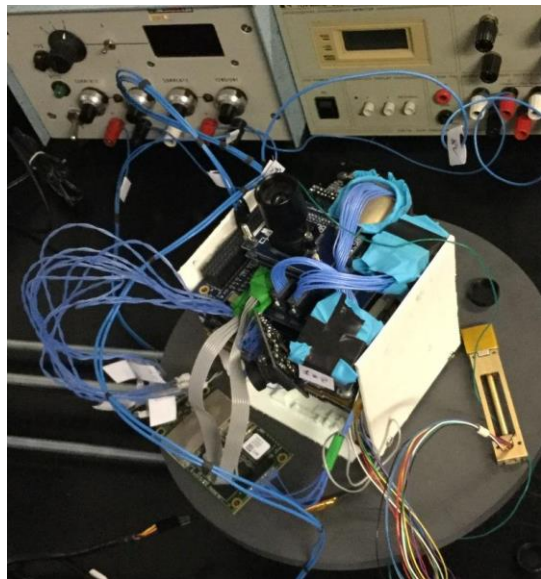
GLOBE Program

- The Global Learning and Observations to Benefit the Environment (GLOBE) program is a worldwide hands-on, primary and secondary school-based science and education program.
- GLOBE is jointly sponsored by U.S. National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF), and is available in 122 countries.
- Internationally, GLOBE is implemented through Government-to-Government agreements with each Country Partner responsible for in-country activities.
- In Kenya, the Kenya Space Agency oversees the implementation of GLOBE Program. The program is used to promote STEM and introduce students to practical Earth Science at an early age.

Kenya's Nano-Satellite Initiative

- ❑ Kenya Nano-Satellite program, with support from Italy, seeks to use local engineering capacity to send a 6U cubesat to space under the Italian-Kenya University Nano-Satellite (IKUNS) project.
- ❑ During the development phase, UNOOSA/JAXA in 2016 launched the KiboCUBE initiative to offer an opportunity for developing country to launch cubesat from JAXA's KiboCUBE module on ISS.
- ❑ The project team submitted an application and were selected to benefit from the 1st Round of the KiboCUBE program for a 1U cubesat precursor mission flight for Italian-Kenya University Nano-Satellite (IKUNS) project to test sub-systems.
- ❑ The cubesat was called First Kenya University Nano-Satellite-Precursor Flight (1KUNS-PF) and was developed by Kenyan and Italian students. It was launched on 11th May 2018 for KiboCUBE module on ISS

1 KUNS-PF Development



International Space Forum (ISF 2019)

- ❑ International Space Forum – the African Chapter – was organised by the International Astronautical Federation (IAF), the Italian Space Agency (ASI) and the Kenya Space Agency (KSA).
- ❑ The Forum brought together African Ministers of Education, Science and Research, Heads of Space Agencies, representatives of Universities and Academia involved in space activities as well as members of International Space Organisations
- ❑ The aim of the forum was to promote the discussion on how Space education and technology can support the exploitation of Space for the Africa's socioeconomic development.
- ❑ The key themes of the forum were: **capacity development**, environmental sustainability and space partnerships
- ❑ The African page was adopted which proposed that the Malindi Space Centre host the **International Center for Space Education in Africa**

Luigi Broglio - Malindi Space Centre

- ❑ Kenya hosts the Luigi Broglio – Malindi Space Centre along the Kenyan coast
- ❑ The Malindi Space Centre, which is jointly managed with the Italian Space Agency, has been at the centre of space activities in Africa since 1964.
- ❑ The centre undertakes the following activities
 - launching and tracking of satellites and suborbital platforms,
 - tracking and telemetry services,
 - satellite data acquisition,
 - earth observation,
 - Navigation and positioning application and services and
 - Education and training activities
- ❑ Plans are at advanced stage for the Centre to host the **International Center for Space Education in Africa**

Highlights

- Developing countries need to realize the potential of space science and technology to address its developmental challenges
- Developing Countries need to invest in building capacity in Space Technology and its related applications to maximize on the benefits that accrue from its utilization and to spur their socio-economic development
- Due to limited expertise in Space Technology and its related disciplines in developing countries, there is need to establish partnerships with space-faring countries

Thank you...

