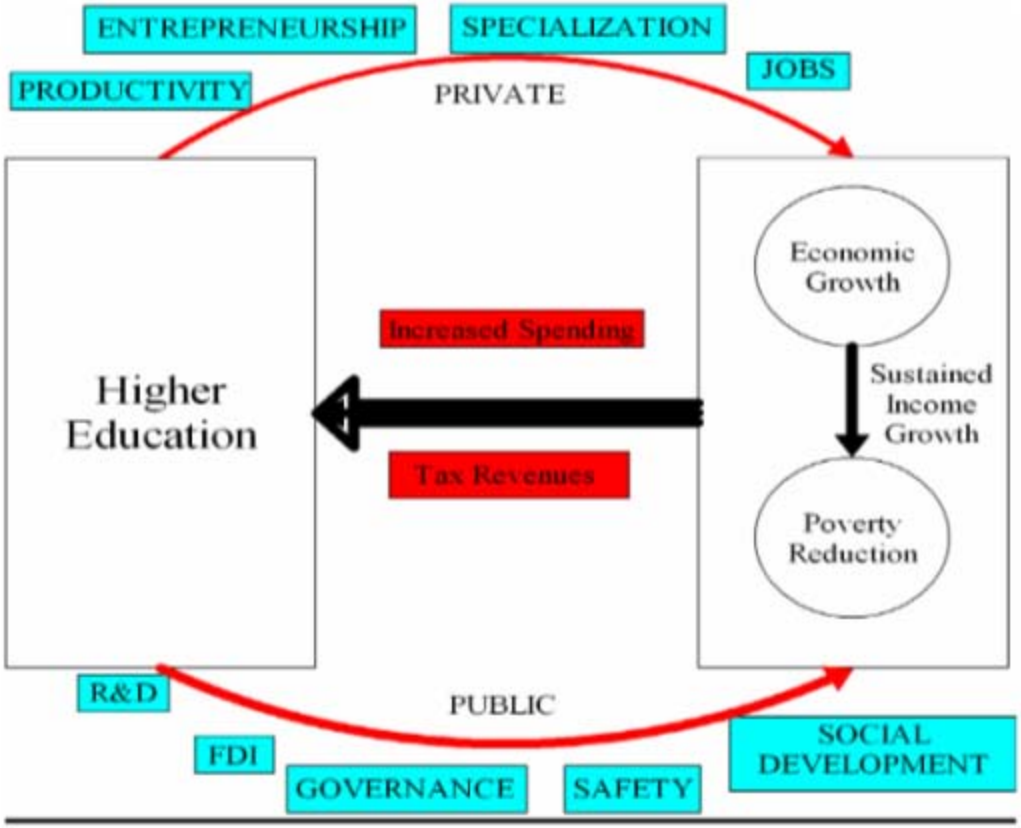
The Presidential Initiative on Science and Technology: Stimulus for Research and Innovations

RELATIONSHIP BETWEEN HIGHER EDUCATION ENROLMENT AND ECONOMIC DEVELOPMENT IN AFRICA



RELATIONSHIP BETWEEN RESEARCH AND ECONOMIC DEVELOPMENT

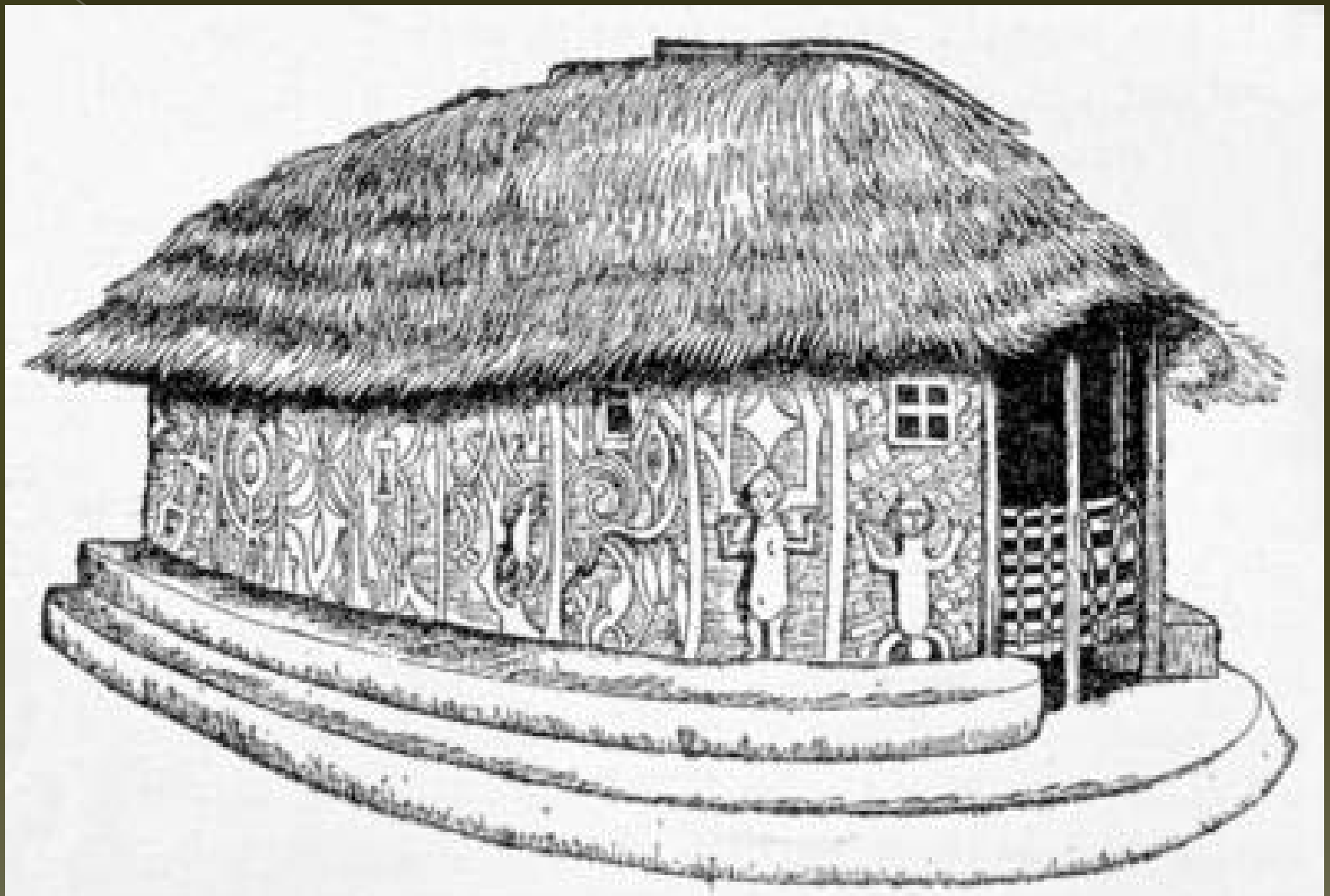
Rank	Country/Region	Expenditures on R&D (billions of US$, PPP),	% of GDP PPP	Expenditures on R&D per capita (US$ PPP),	Year
1	United States	405.3	2.7%	1,275.64	2011
2	China	296.8	1.97%	217.69	2012
3	Japan	160.3	3.67%	1,260.42	2011
4	Germany	69.5	2.3%	861.04	2011
5	South Korea	55.8	3.74%	1,111.12	2011
6	France	42.2	1.9%	640.91	2011
7	United Kingdom	38.4	1.7%	602.78	2011
8	India	36.1	0.9%	29.07	2011
9	Canada	24.3	1.8%	688.47	2011
10	Russia	23.8[n1]	1.0%	165.62	2011
11	Brazil	19.4	0.9%	96.50	2011
67	Algeria	0.16	0.07%	4.13	2007
68	Costa Rica	0.15	0.32%	32.14	2007
69	Uganda	0.13	0.39%	3.68	2007
70	Azerbaijan	0.11	0.17%	11.61	2007
71	Botswana	0.11	0.42%	54.32	2007
72	Ethiopia	0.1	0.17%	1.15	2007

A BRIEF HISTORY OF SCIENCE AND RESEARCH IN UGANDA

THE PRE-COLONIAL ERA

- Season determination and weather forecasting.
- Prospecting, mining iron ore and smelting it.
- Making iron implements.
- Indigenous Veterinary and Human Herbal medicine.
  - Liver fluke treatment
  - Malaria treatment
- Agriculture and animal husbandry well developed.
  - Crop selection
  - Animal breed selection
- Traditional Food Processing and Preservation.
  - Fermentation of milk
  - Butter churning
  - Banana juice extraction and wine making

Science and technology was part of our culture. Although it was driving the economies of the time, it was not differentiated from tradition.



Egbo House.

THE COLONIAL ERA

- Science and technology prescribed for Ugandans
  - Prospecting, mining and smelting of iron ore became illegal activities punishable by cutting off of ones hands.
  - Herbal medicine became satanic (witchcraft).
  - Ugandans lost their names to adopt colonial names (loss of identity, pride and nationalism, independent thinking).
  - Ugandan food became inferior left to be eaten by "natives" (Hotels did not serve native dishes, fermented milk was burned in schools).
  - Education was constructed to serve the colonial masters, with no intention of advancement or development.
  - Higher education was adapted to ensure white supremacy.
    - 1924 a School of Senior Native Medical Assistants began at Mulago, serving limited to government service.

POST-INDEPENDENCE PERIOD(1962-1980)

- Education and training followed the colonial curriculum
- Primary and secondary education accessible at a subsidized fee
- University education delivering clerks, administrators, doctors, agriculturalists, geologists, lawyers, engineers etc. guided by mainly an experts from the West.
- Human medicine open to all and the numbers grew from 20 in 1960 to 100 by 1980; Prof. Lutwama becomes the first African Professor and Dean of Medical School.
- Graduate training shifts to Makerere University
- Research in Agriculture and Medicine taken over by Ugandans
- Research agenda heavily influenced by foreign interests where Ugandan scholars went for graduate studies.

Science and Technology delinked from the economic realities but the seed was planted for modern science and technology through the secondary and university education.

MODERN SCIENCE AND TECHNOLOGY IN UGANDA'S ECONOMY (C 21ST)

- Uganda's economy is fast becoming a knowledge based economy esp. in telecommunications, renewable energy, food technology, engineering, mining and banking.
- These require increased investment in generating, adapting and diffusing available technology and skills.
- Research and training to identify and solve Ugandan challenges.
- Agricultural Research Institutes and CAES delivering new crop varieties with disease resistance and high yields.
- However, research funding still dominated by foreign donors (SIDA, NORAD, Rockefeller Foundation etc.)
- 2010/11 Makerere University receives GoU funding through the President's Initiative.

Celebrating 50 years of Partnership between Norway and Mak

TYPICAL HEALTH RESEARCH PROBLEMS

SOME FACTS

- Mak is 6th largest University in Africa (40,000 students)
- Mak accounts for 55% of University enrolment in Uganda
- Mak accounts for 90% of all research publications in Uganda
- Mak is 2nd top research University in Africa

VISION AND MISSION

- **VISION**

  To be the leading institution for academic excellence and innovations in Africa

- **MISSION**

  To provide innovative teaching, learning, research and service responsive to National and Global needs

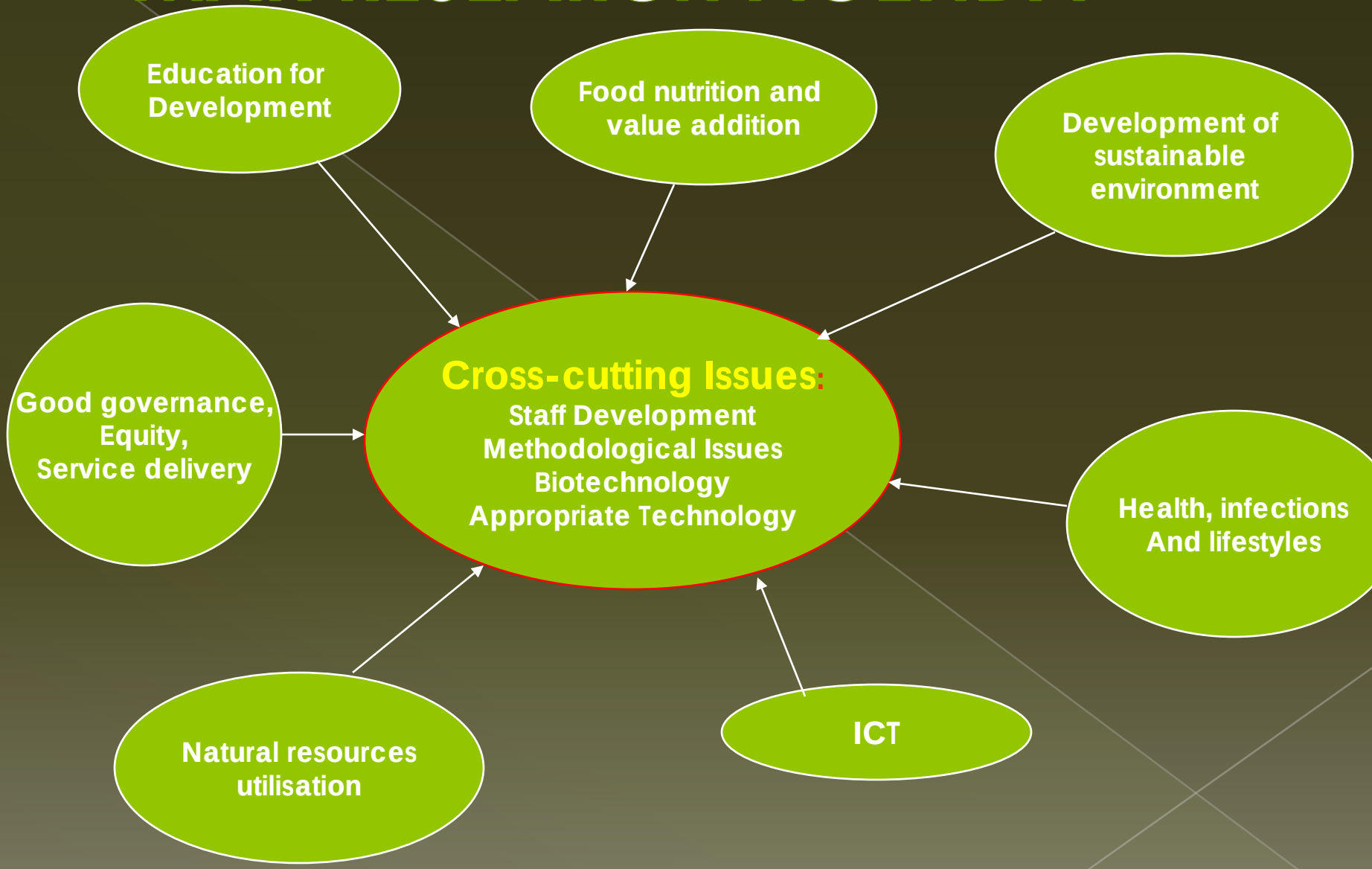
SOME PAST CUTTING EDGE RESEARCH FINDINGS AT MAK

- NEVRAPINE (PREVENTION OF MOTHER TO CHILD HIV INFECTION)
- DROUGHT RESISTANT CASSAVA FOR EASTERN UGANDA (JOINTLY WITH NARO RESEARCHERS)
- TB DIAGNOSTIC KIT
- MALARIA TREATMENT COCKTAIL
- RAINWATER HARVESTING TECHNOLOGIES IN LUWERO

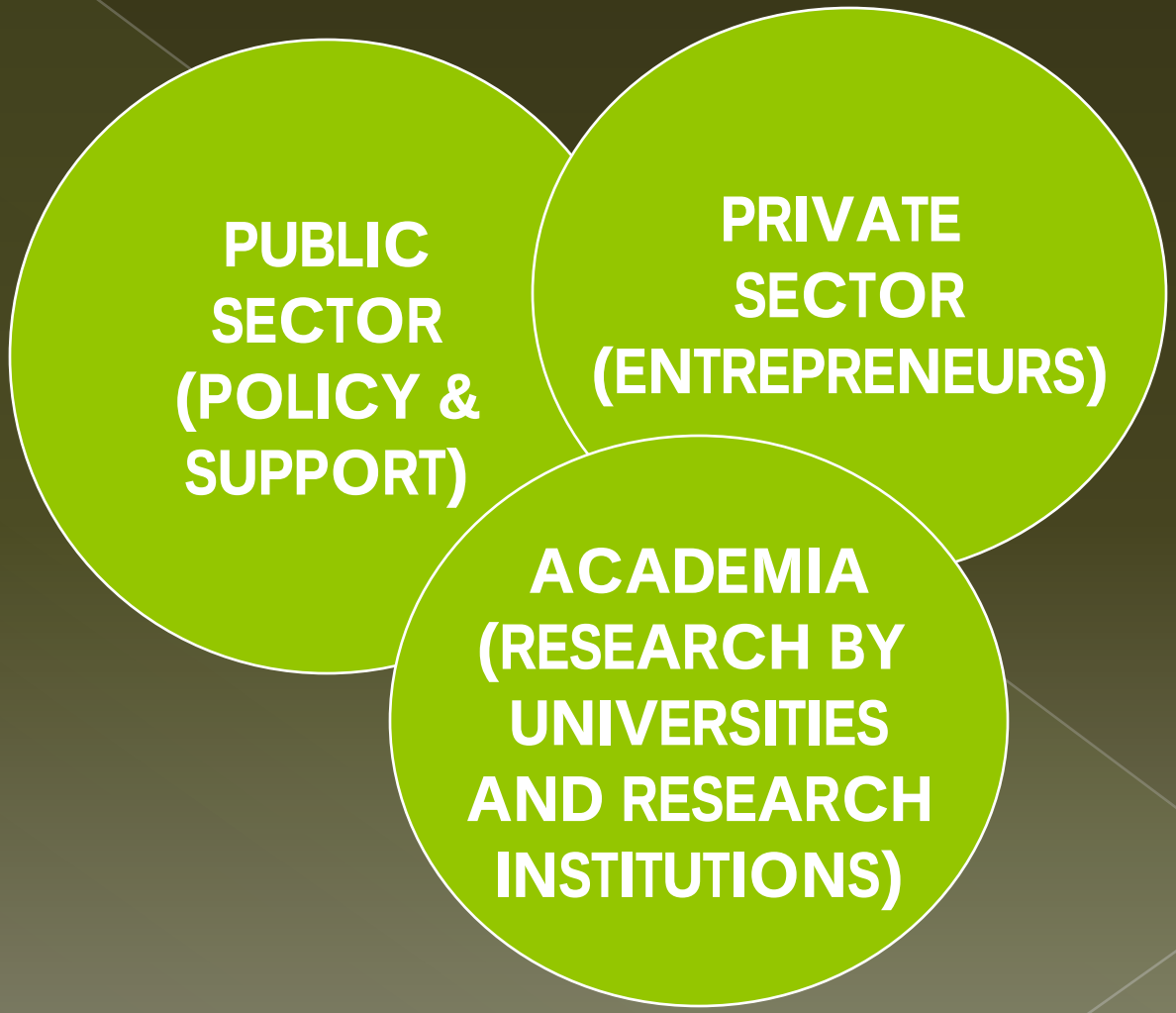
MAK RESEARCH AGENDA

- Health and Health Systems
- Agriculture and Food Security
- Climate Change and Environment
- Natural Sciences and Technology
- Human rights and good governance
- Conflict and Conflict resolution

MAK RESEARCH AGENDA



INNOVATION SYSTEMS (TRIPLE HELIX)



OUR HARSH REALITY

THE PRESIDENTIAL INITIATIVE ON SCIENCE AND TECHNOLOGY AT MAK

UNIVERSITY DELEGATION WITH H.E. THE PRESIDENT AT STATE HOUSE IN DECEMBER 2010

THEMATIC AREAS

IMPLEMENTING UNIT	THEME
COLLEGE OF VETERINARY MEDICINE, ANIMAL RESOURCES & BIO-SECURITY (COVAB)	ENHANCEMENT OF SKILLS AND TECHNOLOGY FOR PRODUCTION, EMPLOYMENT AND DEVELOPMENT IN THE ANIMAL INDUSTRY (SPEDA)
SCHOOL OF FOOD TECHNOLOGY, NUTRITION AND BIO-ENGINEERING	PRODUCT, TECHNOLOGY AND ENTERPRISE DEVELOPMENT FOR FOOD VALUE ADDITION AND JOB CREATION
COLLEGE OF ENGINEERING, DESIGN, ART AND TECHNOLOGY	BOOSTING TECHNOLOGICAL EDUCATION AND INNOVATION FOR UGANDA'S INDUSTRIALIZATION

OBJECTIVES OF THE PRESIDENTIAL INITIATIVE

- Harnesing Technological innovations;
- Rehabilitation and Modernization of Laboratories;
- Increased relevance and practical experience from graduates;
- Improved relationship with all sectors of industries and private sector;
- Utilisation of indigenous materials in the production of home based products
- Job Creation

CEDAT PROJECTS

- Technology Development and Transfer Centre
- Academic Records Management System
- Low Cost Irrigation Technologies
- Innovative Clusters Programme
- Community Wireless Resource centre
- iLabs Development
- Vehicle Design Project (CRTT)
- Solar Technologies for Rural Transformation
- Industrial Parks Development
- MakaPads Project

FTBIC PROJECTS

- Infrastructure development
- Pilot plant equipment
- Laboratory equipment
- Incubation (in-house and virtual)
- Research and development
- Services to SMEs (Consultancy, Contract processing and laboratory services)
- Product prospecting and services to the community
- Skills training and entrepreneurship.

COVAB PROJECTS

- Enhancement Of Skills And Technology For Production, Employment And Development In The Animal Industry (SPEDA) Through Blended Education
- Infrastructure Development- skills centre at Nakyesasa
- Animal production value chains

SPEDA incubation centre designed as a hub for youth and farmer Innovations in leather, feed, fish, meat, poultry, honey, dairy industries and value chains among others.

PICTORIAL OF SOME OF THE PROJECTS

SOCIO-ECONOMIC IMPACT OF THE PROJECTS

- Rural Technologies Developed
- Innovative Business Clusters Developed leading to improved productivity, profitability and competitiveness as well as job creation;
- A number of food value addition technologies that can be adopted by private enterprises nurtured
- SPEDA has targeted skilling the youth with production, processing and entrepreneurial skills
- Quality of Student Projects improved

FUNDING

- The University has received an annual allocation of 10 billion over the past four years for the presidential initiative at Mak
- Another allocation of ugx 10 billion per year has been dedicated to the crtt for development of the kiiraev- total initial cost is ugx 154 billion

CONCLUSION

- Makerere will continue to be the leading research institution in Uganda for many years to come
- The Presidential Initiative has enable the University conduct cutting edge applied research for the first time
- The Presidential Initiative at Mak can truly be the engine for Uganda's technological advancement as we move towards 2040

OUR PRAYER

- The Government, through the MoFEP should consider the extension and scaling up of the Presidential Initiative for Science, Technology and Innovation at Mak
- Support for Research at Universities (especially Makerere University) should be institutionalised for the benefit of Uganda's socio-economic development;

ACKNOWLEDGEMENTS

- H.E. THE PRESIDENT
- THE HON. MINISTER OF FINANCE, PLANNING AND ECONOMIC DEVELOPMENT
- THE HON. MINISTER OF EDUCATION AND SPORTS
- THE UNIVERSITY COUNCIL
- THE GALANT RESEARCHERS

Makerere University and Government of Uganda: Partners in Development

THANK YOU!

AS WE BUILD FOR THE FUTURE!