

MAKERERE UNIVERSITY

Innovations for National Development - Government Support to Makerere University

Makerere University joins the rest of Uganda to celebrate this day in the history of Uganda with different individuals and/or groups whose conviction was to bring out what was good for the country and her people. Makerere University as a companions in the struggle is grateful for its contribution in the country's human resource development of the country and generating new knowledge through research to improve the welfare of the Ugandan society.

I. Infrastructure Development; addressing the longstanding problem of limited teaching facilities

The Government through the African Development Bank secured a loan of US\$100m to improve science and technology in Higher Education Institutions. Makerere University's benefit is US\$29.2m infrastructure rehabilitation, refurbishment of laboratories, merit based scholarships at PhD, Masters and undergraduate level. US\$12.8m of US\$29.2m is supporting the university's infrastructure development. The infrastructure development project is comprised of two four-floor buildings to address the problem of limited teaching spaces especially in the Colleges with big student numbers. The buildings facilities will have centralized teaching spaces, a 1,000 seater auditorium and an E-learning Centre.

The institutional allocation will also cover renovation of the: Physiology Lab in the College of Health Sciences (CHS), Chemistry Lab and centralized Diagnostics Lab based in the College of Natural Sciences-CoNAS, centralized Biotechnology Lab based in the College of Agricultural and Environmental Sciences-CAES, Science Labs in CEES, Materials and Hydraulics Lab in the College of Engineering, Design, Art and Technology-CEDAT and Dairy Value Chain at the Makerere University Agricultural Research Institute (MUARIK). The funding will also cover the setting up of the initial facility at MUARIK as well as commencing the movement of CAES to the MUARIK Campus.

II. The Presidential Initiative in Makerere University; Reviving Innovations through Science and Technology

In the last ten years of the NRM Government, the University has received considerable financial support through the Presidential Initiative to support innovations in Science and Technology. The University is most grateful to His Excellency the President and Government of Uganda for this support. Research is a key stimulus for national development. It is through research that innovations are born. The Initiative has been the engine towards which the university has realigned itself to take the lead in knowledge generation and production. As Makerere University, we have demonstrated that with seed financing, we can come up with practical innovations that solve real world challenges and the research outputs so far realised a loud testimony that more can be done with increased funding.

Prior to the Presidential Initiative support, funding for research was solely in the hands of the development partners. The Presidential Initiative on Science and Technology at Makerere has since enhanced the platform for the University to contribute to national development through knowledge generation, innovations and technology transfer by integrating the community the academia and research for a common good. We therefore commend the efforts of government to support universities as partners in the development of the nation in this area.

Three colleges are at the helm of this initiative and these are; the College of Engineering, Design Art and Technology (CEDAT), the College of Agriculture and Environmental Sciences (CAES), specifically the School of Food Technology, Nutrition and Bio-engineering; and the College of Veterinary Medicine, Animal Resources & Bio-security (COVAB).

Several achievements and impacts have been realized

through this initiative. The research and innovation profile of the university has greatly improved the university ranking nationally and internationally to current position where Makerere is ranked number 3 July 31, 2015 by Times Higher Education (<https://www.timeshighereducation.com/news/top-30-african-universities-times-higher-education-reveals-snapshot-university-ranking>). The research infrastructure has improved with modern and well equipped laboratories and online laboratories. This has greatly improved the quality of graduates with relevant skills to meet the country's development needs. There are business incubation facilities that have set up to support commercialization of student and staff ideas. This will lead to improved productivity of graduates, competitiveness and job creation. It has helped build a national human capacity in agro-processing, value-addition and entrepreneurship. The University relationship with the Private sector is now on equal footing because there is trust that graduates coming out of the university are well equipped. The skilling programmes have empowered the rural communities with production, processing and entrepreneurial skills addressing unemployment of the youth and contributing to positive rural transformation. The role of the University in the development process, especially among the young generation is being understood and appreciated.



Reviving innovations; the Kiira EV

The car project which started as a proof of concept was designed and launched in 2011 by H.E. the President of the Republic of Uganda. The research and innovation in the area of technological advancement of automotive manufacturing has advanced to establish the pioneer Automotive Original Equipment Manufacturer in Uganda, Kiira Motors Corporation (KMC).

The first attempt was a 2-seater Electric Vehicle that demonstrated that there was talent, discipline, and leadership to contribute meaningfully towards the development of high-tech transportation solutions. This has since been redefined as a flagship production vehicle in form of Kiira EV SMACK which is a 5-seater sedan, front-wheel drive vehicle.



The Kiira EV SMACK is a hybrid powered by both electric energy and fuel. Kiira Motors intends to produce the car

in three versions: the full Electric Vehicle for enthusiasts, Internal Combustion Engine (ICE) or normal fuel engine and the hybrid that combines both fuel and electric systems. The first production of cars from Kiira Motors Corporation are expected to be rolled off the assembly line by 2018 if all the necessary infrastructure and human resources are put in place. The Government has promised to fully fund this project.

MV Mulimi; the Affordable Multipurpose Tractor



The MV Mulimi Launch, 31st December 2015, MUARIK, Makerere University, Wakiso Uganda

Farm operations like threshing, pumping water and aspects of tilling remain a major challenge to farmers. This demonstrates a need for low cost technologies in farm field and postharvest handling operations. The Presidential Initiative on Science and Technology sponsored the design and development of MV Mulimi. The vehicle MV Mulimi is able to thresh maize, pump water from a depth of 7 metres to a height of 33m, plough gardens, transport 20 adults and their goods over a reasonable distance, as well as charge a mobile phone. The vehicle's design is the ultimate value addition, as it attempts to solve farmers' problems at the source. This project has proved that Makerere is able to resolve the farmers' problems with practical solutions. Makerere is moving to solve these problems, which tie up the farmers in poverty.

The MV Mulimi was developed by a team led by Prof. Noble Banadda as the Principal Investigator. MV Mulimi is a great achievement for Makerere as it practically addresses issues of agriculture and the environment.

Agricultural Challenges; enhancing the marketability of agricultural products



The Presidential Initiative has helped build a national human capacity in agro-processing, value-addition and entrepreneurship. The Food Technology and Incubation Centre is training graduates in food technology and incubating enterprises. The Centre offers an opportunity for small scale processors to obtain technical support in food processing, marketing and management from the University staff. This has greatly improved the linkage between the University and small scale farmers and processors and facilitated the translation of research into ready to use products.

Through the Presidential Initiative support funding was provided to put up a Food Technology and Incubation Centre. The Food Technology and Business Incubation Centre is championing the cause of adding value to agricultural products. It is addressing the challenges of agriculture including low productivity, high post-harvest losses, price fluctuations, low prices and low export earnings which have characterised the agricultural sector. The centre is raising hopes of people whose products could not find the market. The people in Yumbe and Nakaseke Districts have a reason to smile because their fruits can now be processed on site using the mobile fruit processing facility at the centre. There are efforts through the Presidential Initiative to have a rural industrial center in Kapeeka and a mango processing plant in Yumbe District.

The mobile fruit processor

The centre is equipped with a state-of-the-art food technology and incubation facilities to handle research and production. It has all it takes to handle processing operations of most foods. It is through here that innovations, knowledge, and skills are being transformed into viable enterprises. This has fostered entrepreneurship amongst university researchers and graduates. It has enabled students to carry out industrial training in-house and attachment for students from other Universities and colleges. At the centre, there is commercial production of value added foods based on technologies developed through student and staff research.

The Dairy and Meat processing lines



The Centre offers an opportunity for small scale processors with technical support in food processing, marketing and management. The youths, particularly women and young graduates have been trained to turn their ideas into productive enterprises. The mentoring programme in food processing has engaged a number of virtual incubatees with on-site and off-site services.