Vote:110 Uganda Industrial Research Institute

V1: Vote Overview

(i) Snapshot of Medium Term Budget Allocations

Table V1.1: Overview of Vote Expenditures

Billion Uganda Shillings		FY2016/17	FY2017/18		FY2018/19	MTEF Budget Projections			
		Outturn	Approved Budget	Spent by End Sep	Proposed Budget	2019/20	2020/21	2021/22	2022/23
Recurrent	Wage	0.000	3.720	0.916	3.720	4.092	4.297	4.512	4.737
	Non Wage	0.000	2.059	0.418	2.059	2.512	2.889	3.467	4.160
Devt.	GoU	0.000	8.173	0.427	8.173	9.971	11.965	11.965	11.965
	Ext. Fin.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GoU Total		**0.000**	**13.952**	**1.760**	**13.952**	**16.575**	**19.151**	**19.943**	**20.862**
Total GoU+Ext Fin (MTEF)		**0.000**	**13.952**	**1.760**	**13.952**	**16.575**	**19.151**	**19.943**	**20.862**
A.I.A Total		0.000	0.200	0.055	0.256	0.256	0.450	0.530	0.610
Grand Total		**0.000**	**14.152**	**1.816**	**14.208**	**16.831**	**19.601**	**20.473**	**21.472**

(ii) Vote Strategic Objective

1. To undertake applied research for the development of products and optimal production processes, for Uganda's nascent industry.
2. To develop and /or acquire appreciate technology, in order to create a strong, effective and competitive industrial sector.
3. Act as a bridge between academia, government, and the private sector with respect to commercialization of innovation and research results.
4. Spearhead value addition activities in conjunction with national development priorities.
5. Lead the national effort in technology transfer and technology diffusion, to assure the development of appropriate technologies.

V2: Past Vote Performance and Medium Term Plans

Vote:110 Uganda Industrial Research Institute

Performance for Previous Year FY 2016/17

Major UIRI Performance achievements during FY 16/17 include:
1. UIRI won first prize of US$ 50,000 at the Patient Safety Science and Technology, Innovation Summit for innovation of an Electrically Controlled Gravity Infusion Set. The summit was held on 22nd -23rd January 2016, at Dana Point resort, California, with Bill Clinton former President of the United States as Keynote Speaker. UIRI's win was out of 60 worldwide submissions from innovators and entrepreneurs.
2. UIRI won a US$ 33,000 Sustainable Vision Grant to use Columbia University's Global Technology Program as a platform to develop neonatal electronic medical monitoring and diagnostic devices in Uganda. The grant became effective on 1st June 2015.
3. Pioneering a local Vaccine against Newcastle Disease in poultry. A pilot production plant launched by H.E the President in August 2011 and is now fully operation and the vaccine is on the market. It is a first in the region in that the vaccine is thermal-stable and requires no refrigeration.
4. We have established a "Biotechnology Centre of Excellence" and a number of products have been developed therein: Domestication of button mushroom variety is an ongoing research project that is very promising-especially after the spectacular success with the oyster mushroom variety; Development of a portable electrochemical Aflatoxin B1 biosensor, which is simple, portable, and affordable with one year life time of working electrode; Production of high value Lactic acid from cassava; Production of enzymes for use in food processing, production of detergents, and manufacture of pharmaceuticals; Production of a partially purified sample of drug Actinomycin D anti-cancer drug; and a variety of cosmetic products.
5. UIRI's Instrumentation Unit is engaged in production of electronic equipment such as Inverters, Power Supply units, Signal Generators, Automatic voltage regulators, etc. We have pioneered the use of Printed Circuit Board (PCB) technology in the region. The unit is now busy revolutionizing applied electronics in Uganda by creating capacity for calibration, maintenance, repair, and service of laboratory equipment. Some of the notable projects being undertaken among others include: Development of a Low Cost diagnostic tool for Pneumonia (MUTIMA); and an Electrically Controlled Gravity Infusion Set for application of intravenous fluid in children
6. Development of a low-cost and scalable production technology for production of bioethanol. A model built at UIRI campus is undergoing tests as the institute expands its capacity for research in renewable energy options and possibilities.
7. Development of an organic fertilizer named "BIOCHAR". Initial trials have indicated that, this fertilizer protects the soil content and improves farmer's yields.
8. Development of a variety of innovative food products which include; probiotic and honey sweetened yogurt, fish and soya sausages, blended juices, peanut butter, potato chips and crisps, wines etc.
9. Design and development of a range of innovative ceramic products such as tiles, cups, plates, and ornamental products.
10. UIRI's business incubation model has offered a cocktail of services to various incubatees. The focus is to achieve excellence through training in the core business of processing while emphasizing the issue of quality of products, good manufacturing practices; entrepreneurship and management of enterprises. Also we render support in fostering marketing networks, and providing other advisory services. Some of our incubatees have been recognized by international organizations and others show a lot of promise:
11. UIRI won first prize of US$ 50,000 at the Patient Safety Science and Technology, Innovation Summit for innovation of an Electrically Controlled Gravity Infusion Set. The summit was held on 22nd -23rd January 2016, at Dana Point resort, California, with Bill Clinton former President of the United States as Keynote Speaker. UIRI's win was out of 60 worldwide submissions from innovators and entrepreneurs.
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17. Development of an organic fertilizer named "BIOCHAR". Initial trials have indicated that, this fertilizer protects the soil content and improves farmer's yields.
18. Development of a variety of innovative food products which include; probiotic and honey sweetened yogurt, fish and soya sausages, blended juices, peanut butter, potato chips and crisps, wines etc.
19. Design and development of a range of innovative ceramic products such as tiles, cups, plates, and ornamental products.
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Vote:110 Uganda Industrial Research Institute

Performance as of BFP FY 2017/18 (Performance as of BFP)

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FY 2018/19 Planned Outputs

1. Improved industrial production infrastructure, facilities and capabilities
2. Development of innovations and technologies for various sectors
3. Promote technology uptake and use for industrial development
4. Enhance and expand industrial and technological incubation services
5. Promote knowledge transfer
6. Create a large pool of skilled and certified professionals
7. Increase production of value added and competitive products
8. Development and production of veterinary vaccine solutions
9. Engage in Mineral beneficiation
10. Develop ICT products
11. Develop electronic and automated solutions for utilization by various sectors

Medium Term Plans

The following are UIRI's Medium Term Plans of NDP II, Vision 2040 and the NRM Manifesto aimed to achieve Middle Income Status by 2020
1. Establish regional value addition centers to address product prevalent in specific regions across the country
2. Promote and expand the Industrial and Technological Incubation Center and accelerate graduation of incubatees
3. Establish a Machining and Manufacturing Production and Training Center for Industrial Skills Capacity Training
4. Innovate and development technologies for uptake to foster Industrial Development
5. Establish an Essential Oil Sector in conjunction with Council for Scientific and Industrial Research
6. Develop affordable technologies for dissemination/ easy uptake to foster economic development
7. Create a pool of technically skilled professionals
8. Become a self sustaining institute in Research and Development
9. Develop a range of biomedical technologies and veterinary vaccines
10. Build capacity for Buy Uganda Build Uganda through the business incubation program

Efficiency of Vote Budget Allocations

Vote:110 Uganda Industrial Research Institute

1. Timely utilization of resources
2. Improved project planning

1. Validation of research and development results
2. Prototype functionality of fabricated machines
i) Chuffer cutter for Karubuga,
ii) Cloth material cutting machining,
iii) Fabrication of soap slicing machine,
iv) Poultry feed mill, mixer and pelletizer,
3. Equipment's fabricated
i) Hatchery for poultry agro processors,
ii) Poultry processing line,
iii) Charcoalite processing equipment
4. Promote agro processing in (Dairy, Meat, fruits and vegetable processing)
5. Prototype Electronically Controlled Gravity Feed Kit
6. Development of Mediclave - Solar powered autoclave
7. Smart Drip Irrigation System
8. MUTIMA- diagnostic device for Pneumonia
Open Source Prototyping Lab Project - remodelling PCB Lab (civil works)
Open Source Prototyping Lab Project - equipment purchase
Professional Software (subscriptions and server licences) and purchase of server to run software applications
9. Biofuel production: Production of both biodiesel and Tigernut oil. These are cheaper, clean energy product that will help in producing the environment
10. Production of Affordable cooking gas; bottled biogas from chicken droppings
11. Experimention of solar wind hybrid system . This is an on going project at the Ntungamo, Energy Systems Division Pilot site
12. Health safety and environment; Tointegratehealth, safety and environment into the core activities of UIRI.
13. Design and develop a system that uses plasma technology to recycle waste. The output products include energy (from organic waste) and metal recycling and smelting
14. Innovation
15. Development and Commercialization of Mineral-rich Poultry feeds from Fruit By-products
16. Development of a vegetable sausage
17. In-house Business incubation in the Fruits & Vegetables Sector
18. Compliance to UNBS food production regulations

Vote Investment Plans

Vote:110 Uganda Industrial Research Institute

1. Accreditation process of the chemistry laboratory
2. Purchase of 6 new chemistry equipment- Distillation unit, deionizer, Lab blenders, conductivity meter, pH meter and centrifuge.
3. Acquisition of Analytical Equipment for Product Testing and Characterization
4. Establishment state-of –the art testing laboratories
5. Modification of the batch pasteurizer in the Fruits and Vegetables Pilot Plant
6. Development of a Plasma waste processing system
7. Extra Works for Arua Savoury Classic meat processing Plan
8. Essential oils project, Luweero
9. Establishment of proposed production Palm Oil Facility, Kanungu District
10. Extra works for the TDC Engineering workshop floor
11. Proposed Fruit juice processing plant in Itojo
12. Renovation of the cafeteria block and construction of the Ecosan toilets
13. Renovate the Proposed ATCG offices at formerly occupied UNBS premises
14. Establishment of the proposed Cheese processing plant at Rubale Ntungamo district for Mr. Karuhanga Justus
15. Establishment of the proposed Lemon grass and Soap processing plant in Kabale industrial area for Yildi enterprises
16. Renovation of selected buildings at UIRI
17. Establishment of the proposed rehabilitation of Esia mixed farm, Adjumani
18. Proposed warehouse in Wakiso
19. Proposed Peanut paste Processing plant in Soroti district
20. Proposed fruit juice processing plant for Maffaco
21. Electric fence repair
22. Procurement of 100kva generator
23. Expansion of production lines in the UIRI Dairy Processing Pilot Plants
24. Procurement automatic vertical form, fill and seal pouch packing machine for fresh milk plant
25. Procurement of filling machine and spares
26. Proposed laying of drainage line from septic tank to waste water treatment plant
27. Remodeling of Printed Circuit Board (PCB) Manufacturing laboratory and procurement of requisite equipment
28. Establishment of the proposed wine factory at Nebbi
29. Procurement of Gas oven
30. Procurement of Spiral Dough Mixer
31. Procurement of cake batter mixer
32. Procurement of bowl cutter,meat mincer,sausage filler
33. Proposed Palm Oil Production Facility at Kanungu
34. Proposed wine factory at Nebi
35. Procurement of Nabusanke Juice Processing Equipment
36. Procurement of Itojo Juice Processing Equipment
37. Procurement of maffaco Juice Processing Equipment
38. Procurement of a Cheese processing line in Ntungamo
39. Procurement of a meat processing line for Arua
40. Procurement of a Fruit electric dryer
41. Procurement of a wine filter
42. Procurement of a small scale wine filling machine
43. Procurement of 6 baits for the fruit processing pilot plant
44. Procurement of packaging materials for in-house business incubatees
45. Procurement of an automatic vertical form seal packaging machine
46. Procurement of a bowl cutter
47. Procurement of a standby generator for the bakery pilot plant
48. Procurement of laboratory testing instruments for the production facility: (Refractometer, pH meter, Digital weighing scale
49. Procurement of a homogenizer for the production facility
50. Procurement of drum polythene liners
51. Procurement of Soap dispenser

Major Expenditure Allocations in the Vote for FY 2018/19

Vote:110 Uganda Industrial Research Institute

1. Purchase of specialized Machinery and equipment
2. Establishment of Model Value Addition Centers
3. Technology Innovation Transfer & Development
4. Research and Development
5. Support to Industrial and Technology Business Incubation

V3: PROGRAMME OUTCOMES, OUTCOME INDICATORS AND PROPOSED BUDGET ALLOCATION

Table V3.1: Programme Outcome and Outcome Indicators

Vote Controller :

Programme : **04 Industrial Research**

Programme Objective : UIRI is a parastatal organization operating under the auspices of the Ministry of Science, Technology, and Innovation. It is the lead agency for spearheading Government efforts at industrialization through industrial research and technology transfer in the country.

The key objectives of this Programme include the following.
1. To undertake applied research for the development of products and optimal production processes, for Uganda's nascent industry.
2. To develop and /or acquire appreciate technology, in order to create a strong, effective and competitive industrial sector.
3. Act as a bridge between academia, government, and the private sector with respect to commercialization of innovation and research results.
4. Spearhead value addition activities in conjunction with national development priorities.
5. Lead the national effort in technology transfer and technology diffusion, to assure the development of appropriate technologies.

Responsible Officer: Prof. Charles Kwesiga

Programme Outcome: **Industrial Product Development and Technological Advancement**

Sector Outcomes contributed to by the Programme Outcome

N / A

Programme Performance Indicators (Output)	Performance Targets						
	2016/17 Actual	2017/18 Target	Base year	Baseline	2018/19 Target	2019/20 Target	2020/21 Target
• Number of Research Innovations developed	0				10	15	20
• Number of developed and transfered Technologies utilized	0				15	20	25
• Cumulative Number of Sustainable Model Value Addition Centers and Technical Business Incubation Enterprises	0				4	6	8

Table V3.2: Past Expenditure Outturns and Medium Term Projections by Programme

Billion Uganda shillings	2016/17	2017/18		2018-19	MTEF Budget Projections			
	Outturn	Approved Budget	Spent By End Q1	Proposed Budget	2019-20	2020-21	2021-22	2022-23

Vote:110 Uganda Industrial Research Institute

Vote :110 Uganda Industrial Research Institute								
04 Industrial Research	0.000	13.952	1.714	13.952	16.575	19.151	19.943	20.862
Total for the Vote	**0.000**	**13.952**	**1.714**	**13.952**	**16.575**	**19.151**	**19.943**	**20.862**

V4: SUBPROGRAMME PAST EXPENDITURE OUTTURNS AND PROPOSED BUDGET ALLOCATIONS

Table V4.1: Past Expenditure Outturns and Medium Term Projections by SubProgramme

Billion Uganda shillings	2016/17	FY 2017/18		2018-19	Medium Term Projections			
	Outturn	Approved Budget	Spent By End Sep	Proposed Budget	2019-20	2020-21	2021-22	2022-23
Programme: 04 Industrial Research								
01 Headquarters	0.000	5.779	1.318	5.779	6.604	7.186	7.978	8.897
0430 Uganda Industrial Research Institute	0.000	8.173	0.396	8.173	9.971	11.965	11.965	11.965
Total For the Programme : 04	***0.000***	***13.952***	***1.714***	***13.952***	***16.575***	***19.151***	***19.943***	***20.862***
Total for the Vote :110	**0.000**	**13.952**	**1.714**	**13.952**	**16.575**	**19.151**	**19.943**	**20.862**

N / A

Table V4.3: Major Capital Investment (Capital Purchases outputs over 0.5Billion)

FY 2017/18			FY 2018/19
Appr. Budget and Planned Outputs		**Expenditures and Achievements by end Sep**	**Proposed Budget and Planned Outputs**
Vote 110 Uganda Industrial Research Institute			
Programme : 04 Industrial Research			
Project : 0430 Uganda Industrial Research Institute			
Output: 72 Government Buildings and Administrative Infrastructure			
A Prototyping Lab Project - Remodeling PCB Laboratory established; A darkroom for screen print development and shooting; Designs of a mushroom facility; Civil Works completed for Microbiology laboratory Bulk Potato storage facility constructed; Construction of the Instrumentation Laboratory; Refurbishment of the paper plant at UIRI			
Total Output Cost(Ushs Thousand):	**1.032**	**0.020**	**0.000**
Gou Dev't:	1.032	0.020	0.000
Ext Fin:	0.000	0.000	0.000

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A.I.A:	0.000	0.000	0.000

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Output: 77 Purchase of Specialised Machinery & Equipment

Supply of spare parts and tools for repair, general servicing, periodic maintenance of Pilot Plant equipments
Briquette Making /Processing
Development of MUTIMA- diagnostic device for Pneumonia
Electronically Controlled Gravity Infusion Set-Prototype Development
Equiping in support of virtual incubation in Kabale District

Equiping Sure Dairy Farm Limited

Equipping Energy Systems Projects
Equipping Microbiology Laboratory
Equipping of the Chemistry Laboratory
Equipping of the Food Laboratory
Equipping of the Textile Technology Section
Essential Oil Pilot Project
Establishment of a Dairy Processing Facility in Namanve
Fabrication of assorted processing equipments such as a Passion Juice Extractor, Batch pasteurizer & Blending tank

Fabrication of soap slicing machines

Handmade Paper Production Project

Hatchery for poultry markmat agro-processors

Machine Fabrication of Milling and bagging machine for a Silver Fish milling Facility

Mediclave - Solar powered autoclave
Mineral Beneficiation . Adding value to Low – Value Minerals like Sand, Talc, Salt, Feldspar, Kaolin, Clay, Limestone, Bentonite, Vermiculite etc

Poultry Processing Line for KAMADIC

Procurement of equipment for Karubuga Dairy Processing Facility in Ntungamo
Purchase of a Fruit electric dryer for Product Development
Purchase of a small scale wine filling machine; ball bearings and other spare parts for the pineapple juice extractor; cartridges for the water purification system
Purchase of equipment for Kabale Potato Processing Facility;
Purchase PCB Laboratory Equipment for the Prototyping Laboratory Project
Solar Water Heater Assembly

Vote:110 Uganda Industrial Research Institute

Total Output Cost(Ushs Thousand):	**1.873**	**0.045**	**0.000**
Gou Dev't:	1.873	0.045	0.000
Ext Fin:	0.000	0.000	0.000
A.I.A:	0.000	0.000	0.000

V5: VOTE CHALLENGES FOR 2018/19 AND ADDITIONAL FUNDING REQUESTS

Vote Challenges for FY 2018/19

1. Inadequate application and utilization of scientific research and technology for development
2. Inadequate capitalization of current model processing facilities
3. Luck of funding for commercialization of research results and business incubation projects
4. Uncompetitiveness of local industries
5. Inadequate budget allocation under MTEF
6. Deficit between allocated and actual released budget funds
7. Expensive financing from financial institutions to undertake R&D projects
8. Low technical skills
9. Low technology uptake for development
10. Lack of funds to support commercialization of innovations, technologies and products (Industrialization and Innovation Fund)
11. Inadequate remuneration for retention of highly skilled scientists and engineers
12. Absence of critical technical skills
13. Weak inter-institutional cohesion and cooperation
14. Limited levels of entrepreneurial competences in our society
15. Lack of adequate infrastructure and limited connectivity
16. Governmental and societal ambivalence with regard to R&D

Table V5.1: Additional Funding Requests

Additional requirements for funding and outputs in 2018/19	Justification of requirement for additional outputs and funding
Vote : 110 Uganda Industrial Research Institute	
Programme : 04 Industrial Research	
OutPut : 01 Administation and Support Services	
Funding requirement UShs Bn : **5.200**	There is need for funding for additional recruitment UIRI requires funding for better remuneration for scientists, engineers and other technical personnel
OutPut : 02 Research and Development	
Funding requirement UShs Bn : **11.500**	1. Recruitment 2. Increment of staff salaries 3. Funds for Innovation projects 4. Increase funding for the current Inadequate funding for Research and Development 5. Provide funding for commercialization n of UIRI Research and Technological results 6. Need for increased funding to boost the Business Incubation Program 7. Need for funding for technoprenuership projects All the above will foster faster industrialization, increase in domestic consumption, export and wealth creation
OutPut : 03 Industrial and technological Incubation	

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Funding requirement UShs Bn : **4.500**	Need for additional funding for the Industrial incubation program to increase primary production and processing of Uganda's raw materials and create more ugandan made products
OutPut : 07 Technology, Innovation, Transfer and Development	
Funding requirement UShs Bn : **5.200**	Requirement for additional funding for technopreneurship