MAKERERE UNIVERSITY

CEDAT

College of Engineering, Design, Art and Technology

ANNUAL REPORT 2020

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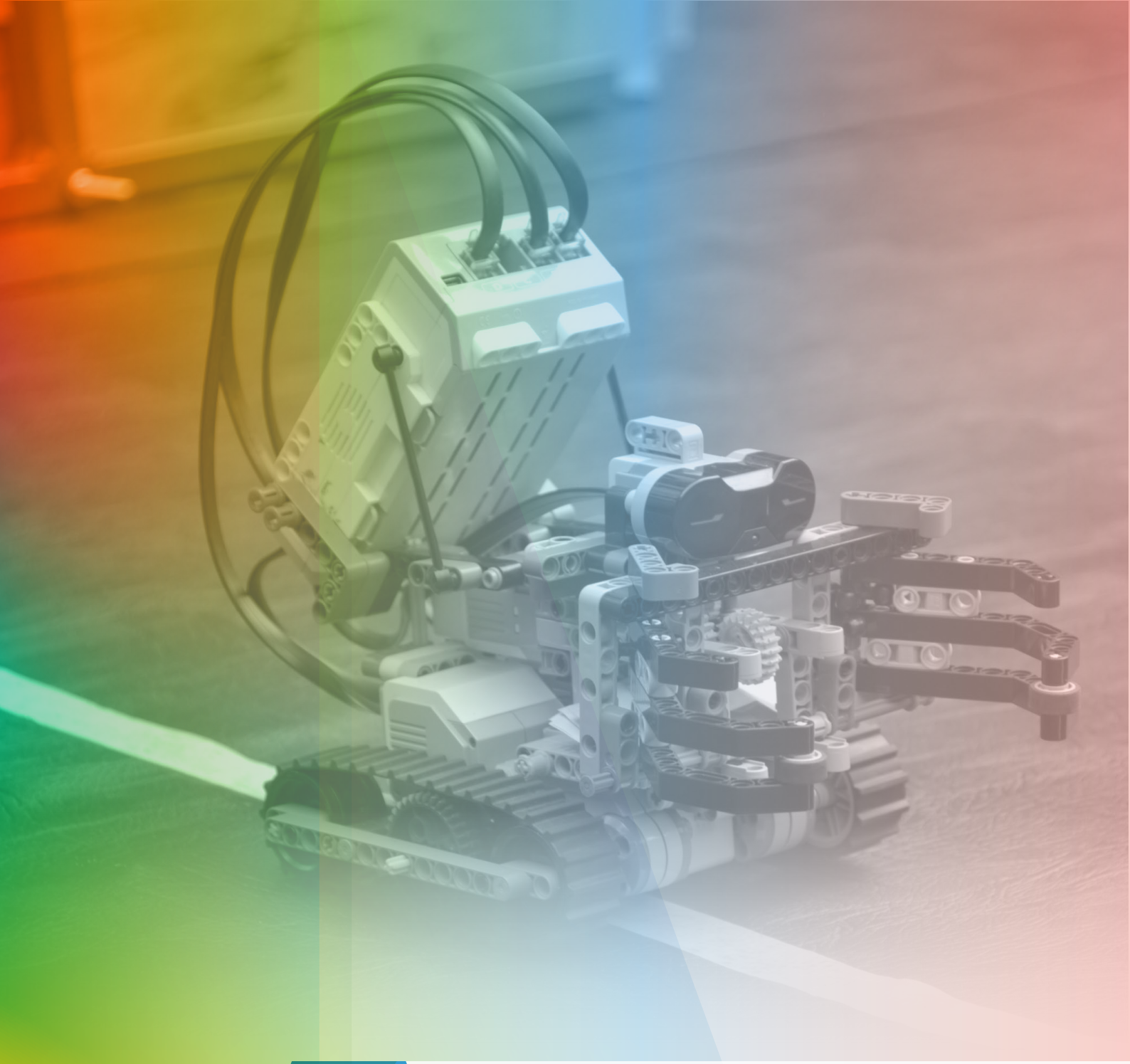


A

College Information and structure

Background information

On 13th December 2010, Makerere University Council approved the merger of the former Faculty of Technology (FOT) and the Margaret Trowell School of Industrial and Fine Arts (MTSIFA) into the College of Engineering, Design, Art and Technology (CEDAT). The college started operating on 1st February 2011 and has been operational over the last 10 years.

CEDAT Mandate

- The mandate of CEDAT falls within the overall mandate of Makerere University, i.e. a) the provision of higher education - teaching and learning, research and knowledge transfer partnerships in Engineering, Design, Art and Technology; and
- Dissemination of knowledge and giving opportunity of acquiring higher education to all persons including persons with disabilities wishing to do so regardless of race, political opinion, colour, creed, or sex;
- The provision of accessible physical facilities to the users of the Public University

CEDAT Mission Statement

To provide transformative innovative teaching, learning, research and outreach services responsive to dynamic national, regional and global needs in Engineering, Design, Art and Technology.

MAK Vision

Makerere University is a thought leader of knowledge generation for societal transformation and development.

MAK Mission

Makerere University is committed to providing transformative and innovative teaching, learning, research and services responsive to dynamic national and global needs.

Core Values

- Accountability
- Professionalism
- Inclusivity
- Integrity
- Respect

CEDAT structure and administration in 2020

The college is headed by a Principal who is deputized by a Deputy Principal. Currently, Professor Henry Alinaitwe is the Principal while Dr. Venny Nakazibwe is the Deputy Principal

Professor Henry Alinaitwe
Principal

Dr. Venny Nakazibwe
Deputy Principal

Schools, Departments and administrative offices

CEDAT is made up of three (3) schools and (9) departments.

Dr Dorothy Kabagaju Okello
Dean, School of Engineering

Assoc. Prof. Moses Musinguzi
Dean, School of the Built Environment

Assoc. Prof. Kizito Maria Kasule
Dean, Margaret Trowell School of Industrial and Fine Arts

School of Engineering

Prof. John Baptist Kirabira
Department of Mechanical Engineering

Dr Robinah Nakawunde Kulabako
Department of Civil and Environmental Engineering

Dr. Jonathan Serugunda (Acting)
Department of Electrical and Computer Engineering

School of the Built Environment

Dr Lydia Florence Mazzi Kayondo Ndandiko.
Department of Geomatics and Land Management

Dr. Amin Tamale Kiggundu
Department of Architecture and Physical Planning

Dr Nathan Kibwami
Department of Construction Economics and Management

Margaret Trowell School of Industrial and Fine Arts

Dr. Amanda Tumusiime
Department of Visual Communication, Design & Multimedia

Mr. Mwesigwa Stephen
Department of Industrial Art and Applied Design

Dr. Ifee Francis Xavier
Department of Fine Art

Institute and Centres

CEDAT has one (1) Institute and six (6) Centres. Four of the centres are on the establishment and two are externally funded centres.

Assoc. Prof. George Kyeyune, Head,
The Institute of Heritage Conservation and Restoration

Ms. Mary Suzan Abbo (External staff)
Centre for Research in Energy and Energy Conservation

Dr. Hilary Kasedde
Centre for Research in Transportation Technologies

Dr. Michael Lubwama
Centre for Technology Development and Design

Dr Lydia M. F. Kayondo Ndandiko
Centre for Geographical Information Systems (GIS)

Dr Mackay Okure is the Interim Executive Director - The East African Centre of Excellence in Renewable Energy and Energy Efficiency (EACREEE) – This centre is funded by UNIDO, ADA and supported by the East African Community.

Prof. J. B. Kirabira is the Centre Leader - The Africa Centre of Excellence for Materials, Product Development and Nano Technology (MAPRONANO). This centre is funded by the World Bank.

Some of the other key administrative and support offices

Registry	Dr. Alfred Tingo (College Registrar)
School Registrars	Ms Esther Kyomukama (School of Engineering) Ms Anne Auma Namoah (MTSIFA) Mr Moses Kasujja (School of the Built Environment)
Bursar's office	Mr. Stephen Kayima Mr. Joram Tugumisirize Ms. Christine Ninsiima
Human Resources Office	Ms. Rachel Ikiriza
Procurement Office	Mr. Tadeo Ibanda
Communications Office	Ms Betty Kyakuwa
Web Administrator	Mr. Mark Rujumba
System Administrator	Mr. Hadadi Kigozi
Senior Administrative Assistant	Ms Madinah Namakula
Custodian	Mr. Elias Nuwagaba, Mr. Yorokamu Muhangi & Ms Juliet Oundo
Administrative Secretary	Ms Ruth Namusisi

Challenges

- The College has not been provided with a Grants Officer. This has affected the performance of the college in grants and proposal writing.
- The Institute of Heritage Conservation and Restoration lacks staff.
- Tha college lacks records clerks to manage records and archives.
- The college students archive is in a sorry state and needs lots of money to be re-organised and kept safe.

Recommendations

- The University should deploy a Grants Officer at CEDAT just like it was done for some other colleges.
- The University should appoint staff for the Institute of Heritage Conservation and Restoration.
- The university should deploy at least two record clerks to handle students' records.

B Teaching and learning

Teaching and examinations for Semester II, 2019/2020

Just like the rest of the University, the college stopped teaching on 20th March 2020 due to COVID19. All staff amd students were restricted from travelling and so there was almost no activity for the first two months of the lockdown.

Around May 2020, some activities resumed after the public transport and private cars were allowed on the roads. Some members of staff resumed research activities and others started teaching students on line in the hope that the university would soon be re-opened.

On 5th October 2020, online teaching started for the continuing students. Full scale teaching started mid October 2020 when final year students and Masters students were allowed back. The college conducted exams from 16th November to 30th December 2020 for the final year students. The college conducted exams from 3rd December to 18th December 2020 for the continuing year students.

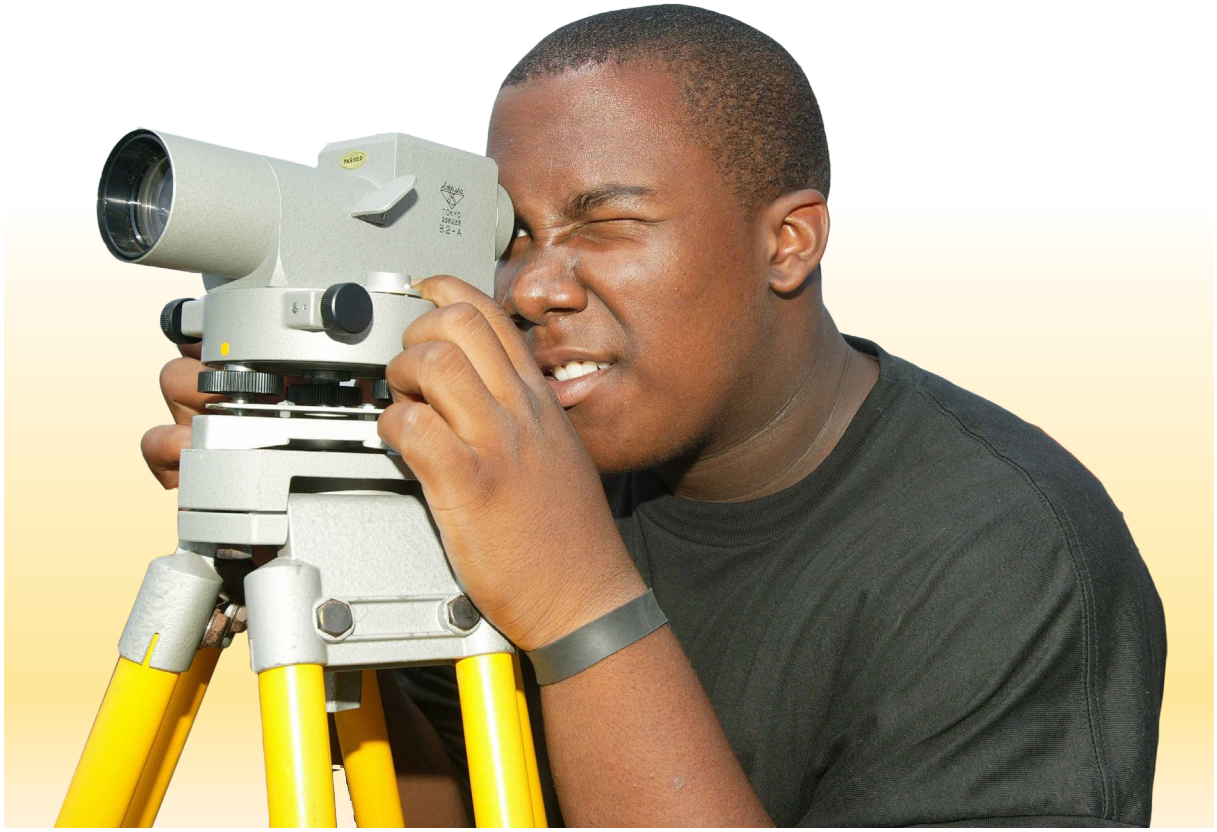
Student numbers (by registration as of semester II 2019/2020 Academic Year)

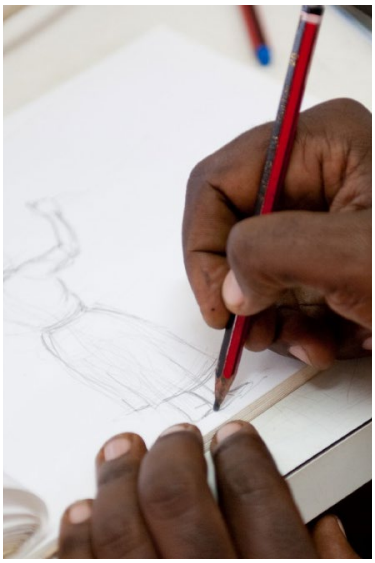
No.	School	Total Number
1	MTSIFA	473
2	School of Engineering	1437
3	School of the Built Environment	1141
	TOTAL	**3051**

Summary of students who graduated in 2020

S/No.	PROGRAMMES	No. of Graduands
1	Doctor of Philosophy	03
2	Bachelor of Architecture	24
3	BSc. in Computer Engineering	28
4	BSc. in Construction Management	32
5	BSc. in Land Surveying and Geomatics	33
6	BSc. in Mechanical Engineering	54
7	BSc. in Quantity Surveying	56

8	BSc. in Telecommunications Engineering	45
9	Bachelor of Urban and Regional Planning	64
10	BSc. in Electrical Engineering	75
11	BSc. in Civil Engineering	92
12	BSc. in Land Economics	44
13	Bachelor of Industrial and Fine Arts	160
14	MSc. in Electrical Engineering	1
15	MSc. in Mechanical Engineering	5
16	MSc. in Technology Innovation and Industrial Development	4
17	MSc in Urban Planning and Design	1
18	MSc. in Construction Management	31
19	MSc. in Power Systems Engineering	6
20	MSc. in Civil Engineering	5
21	MSc.in Geo- Information Science and Technology	7
22	Master of Architecture	1
23	Post Graduate Diploma in Urban Planning and Design	1
24	Post Graduate Diploma in Construction Project Management	21
	TOTAL	**793**





Results for Semester I 2019/2020 Academic Year

The College Academic Board received and considered results for Semester I, 2019/2020 as follows:

A) School of Engineering

S/N	Department/ Program	Year	Total No.	NO. NP	No. PP
	Mechanical Engineering Dept.				
	BSc. Mechanical Engineering	1	77	41	36
		2	67	41	26
		3	61	28	33
		4	59	38	21
	MSc. Mechanical Engineering	1	7	3	4
	MSc Technological Innovation and Industrial Development	1	13	10	3
	ECE Dept.				
	BSc. Electrical Engineering	1	74	48	26
		2	67	26	41
		3	71	33	38
	BSc. In Computer Engineering	1	38	21	17
		2	27	9	18
		3	33	10	23
		4	29	16	13
	BSc. In Telecommunication Engineering	1	48	35	13
		2	35	8	27
		3	44	18	26
		4	29	15	14
	MSc. In Power System Engineering	1	9	7	2
	MSc Telecommunications Engineering	1	7	6	1
	Msc. In Renewable Energy	1	14	6	8
		2	10	3	7
	Civil and Environmental Engineering Dept.				
	BSc. In Civil Engineering	1	96	77	22
		2	98	57	41
		3	76	22	54
		4	65	25	40
	MSc Civil Engineering	1	51	25	26

B) School of the Built Environment

	Program	Year	Total No.	NO. NP	No. PP
	Architecture and Physical Planning Dept.				
	Bachelor of Urban and Regional Planning	1	31	28	3
		3	31	22	9
		4	29	18	11
	Bachelor of Architecture	1	32	12	10
		2	29	10	19
		3	28	15	13
		4	23	9	14
		5	36	18	18
	MSc. in Urban Planning and Design	1	4	4	-
	Master of Architecture	1	2	0	2
	PGD. In Urban Planning and Design	1	1	1	-
	Geomatics and Land Management Dept.				
	BSc. Land Surveying and Geomatics	1	32	27	5
		2	29	19	10
		3	68	33	35
		4	32	15	17
	MSc. Geo- Information Science and Technology	1	30	14	16
	Construction Economics and Management Dept.				
	BSc. In Land Economics	1	60	34	26
		2	36	14	22
		3	72	17	25
		4	27	21	6
	BSc. In Construction Management	1	58	44	14
		2	51	21	30
		3	31	10	21

21 BSc. Quantity Surveying 1 56 33 23

	Program	Year	Total No.	NO. NP	No. PP
		2	39	27	12
		3	56	26	29
		4	47	26	21
	MSc. Construction Management.	1	29	18	11
		2	23	12	11
	PGD Construction Management	1 **Total**	15 **1055**	10	5

C) Margaret Trowell School of Industrial and Fine Art

S/N	Program	Year	Total No. NO. NP		No. PP
24	B.A in Fine Art	1	159	70	89
		2	149	48	101
		3	133	55	78
25	Master of Arts in Fine Art	1 **Total**	7 **448**	7	-

Note that these numbers do not include students who were doing research only and did not sit written examinations in Semester I, 2019/2020.

C Research and Innovations

Ongoing Projects

Project	Principal Investigator	Funder	Country	CURRENCY	BUDGET
Volkswagen Foundation Grant No.96659	Dr.Peter Wilberforce Olupot	Volkswagen Foundation Germany	Germany	USD	USD 32,677.40
AFRIWATSAN Project	Dr.Kulabako Robinah	The Royal Society UK	Uk	USD	USD 64,340
Higher Education Partnerships For Sub Sahara Africa	Prof.Henry Alinanitwe	Royal Academy Of Engineering Uk	Uk	UKP	200,000
Ruforum Projcet	Dr.Akol Roselyn	RUFORUM Project	Uganda	USD	USD14,000
PBL Project	Dr. Venny Nakazibwe	Finland Alto University	Finland	USD	EUR 902,500
Improving Tenure Security Of Small Holder Farmers In Uganda	Dr.Musinguzi Moses	UN Habitant	Germany	USD	USD 315,000
Volkswagen Foundation Grant No.96655	Dr. Lubwama Michael	Volkswagen Foundation Germany	Germany	USD	USD 40,000
T-Group	Dr.Kulabako Nakawunde Robinah	Newcasttle University	Uk	USD	EURO 299,706
Transfer of Delft Based MSc/GPDP/OLC/OCC Program On Non-Sewered Sanitation	Dr. Swaib Semiyaga	Ihe Delft Foundation	Netherlands	USD	USD 343,000
CAWESDEA Project-Capacity Water Eng.Sustainable Development Goals In East Africa	Dr.Jotham Sempewo	Tanzania Water Partnership	Tanzania	USD	USD 27,538
RCMRD/GEMES & Africa Project Global Monitoring For Environment & Security	Dr. Anthony Gidudu	European Union & European Space Agency	Kenya Nairobi	USD	USD 85,227

Project	Principal Investigator	Funder	Country	CUR-RENCY	BUDGET
Building Innovative Delivery Systems For Water, Sanitation & Energy In Urban Africa(Off Grid Proj.)	Dr.Robinah Kulabako	Economic And Social Research Council(Esrc)	Uk	GBP	GBP 307,397
GCRF Africa Catalyst	Dr.Dorothy Okello	Royal Academy Of Engineering	Uk	GBP	GBP100,000
Tum Seed Centre	Dr.Nabuuma Betty	Bayern Podewilsstr			USD 69323.98
Africa Center Of Excellence On Materials, Product Development And Nano Technology	J B Kirabira	World Bank	New York	USD	6,000,000

New grants

No	Project	PI	Period	Amount	Funding Agency
1.	Upcycling plastic wastes by incorporation of agricultural residues for the development of environmentally friendly packaging products	Dr. Michael Lubwama	November 2019 – October 2020		Makerere University Research Innovation Fund
2.	Investigating the relationship between charcoal/ firewood emissions and ongoing changes in climate	Dr. Michael Lubwama	November 2020 – June 2021		African Institute for Mathematical Sciences (AIMS). Small Research Grants in Climate Change Research
3.	Bioplastics development from agricultural residues in Uganda.	Prof. Minna Hakkaraine n, Department of Fiber and Polymer Technology , KTH Internationa l Project Leader: Dr. Michael Lubwama	2021 - 2023	720,000 SEk	Swedish Research Links

No	Project	PI	Period	Amount	Funding Agency
4	Enhanced flame retardancy of bio composite plastics developed with rice husks and clay fillers	Dr. Michael Lubwama	March 2019 – March 2022		Volkswagen Foundation Senior Post doctoral Fellowship
5	Beyond the networked city: building innovative delivery systems for water, sanitation and energy in urban Africa (Off grid Project)	Dr Robinah Kulabako (Co-PI)	1 April 2020 to 2023	UK Global Challenges	Research Fund
6	Sustaining low cost urban water supply and sanitation systems in Africa (AfriWatsan Project)	Dr Robinah Kulabako (Co-PI)	Nov 2015 to 2021		Africa capacity building initiative of the Royal Society and Department for International Development (DfID, UK)
7	Socially accepted evidence-based intervention strategies for reducing solid wastes in pit latrines in Kampala	Dr. Swaib Semiyaga			Makerere University Research and Innovations Fund (RIF)
8	Transfer of the Delft based programs and courses in Sanitation as part of the project "Transfer of the New MSc Program in Sanitation to South Asia and Sub-Saharan Africa – Global Sanitation Graduate School (GSGS)	Dr. Swaib Semiyaga			Bill & Melinda Gates Foundation
9	GIS backed Big Data analytics for land value prediction for compensation and taxation purposes (Case Study of Wakiso District)	Mr. Nassir Mwanje		UGX 100,000,000	RIF Makerere University

No	Project	PI	Period	Amount	Funding Agency
10	Harnessing Satellite Imagery to Improve the Monitoring of Microplastics and Optical Water Quality	Dr. Anthony Gidudu	June 2020 - June 2021	UGX 157,429,800	Makerere University Research and Innovations Fund (RIF)
11	Antiviral and Antibacterial Nano coated Cloth Mask to Limit the Spread of COVID-19.	Edmund Tumusime	July 2020- June 2021	USD 20,500	Makerere University Research and Innovations Fund (RIF)
12	Methodology to inform compensation on road infrastructure projects	Dr. Lydia Mazzi Kayondo	July 2020 - July 2021	193,607,000 UGX	Makerere University Research and Innovations Fund (RIF)
	Development of a machine learning aided ultrasound system for diagnosis of breast cancer	Dr. Cosmas Mwikirize		USD 35,800	Supporting Early Career Scientists (SECA) post doctoral fellowship, Makerere University, supported by Carnegie Corporation of New York
13	Development of Decontamination Equipment for Masks Toward Safe Reuse	Dr. Cosmas Mwikirize		USD 16,000	Makerere Research and Innovation Fund COVID-19 track
14	Smart Portable Ultrasound System For Guidance of Minimally Invasive Procedures;	Dr. Cosmas Mwikirize		USD 21,000	Makerere Research and Innovation Fund
15	Linking the Artisanal Industry with Academia: A Multidisciplinary Design and Technology Approach for Innovation and Industrial transformation in Uganda	Raymond Nsereko	Nov 2020 - -Nov 2021	39,440,000 UGX	Makerere Research and Innovation Fund
16	Gender and Utilization of Briquettes as a Replacement fuel for Charcoal and Firewood	Edmund Tumusiime (Co-PI)	July 2020- June 2021	USD 50,100	Makerere Research and Innovation Fund

D Publications

Journal papers

01 McConville, J.R., Kvarnström, E., Nordin, C. A., Jönsson, H., Niwagaba, B. C., 2020. Structured Approach for Comparison of Treatment Options for Nutrient-recovery from Fecal Sludge. Frontiers in Environmental Science, Vol. 8., Article 36, Page 1-12; doi: 10.3389/fenvs.2020.00036

02 Dalahmeh, S., Björnberg, E., Elenström, A-K., Niwagaba, C. B., Komakech, A. J., 2020. Pharmaceutical pollution of wastewater and water resources in Nakivubo water system in Kampala, Uganda. Science of the Total Environment, 710, 25 March 2020, 136347.

03 Ouga, D., Alinaitwe, H. M. amd Mwesige, G. (2020) Modelling Block layering productivity on building sites in Kampala. Journal of Construction in Developing Countries, 25(1), 109 - 128.

04 Nuwagaba, F.; Köberlein, M.; Mass, P.; Semiyaga, S. & Madrid, F. (2020). Sanitation For Millions - WASHaLOT 3.0 - An innovative handwashing technology in Uganda. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

05 Twinomucunguzi, F. R., Nyenje, P. M., Kulabako, R. N., Semiyaga, S., Foppen, J. W., & Kansiime, F. (2020). Reducing Groundwater Contamination from On-Site Sanitation in Peri Urban Sub-Saharan Africa: Reviewing Transition Management Attributes towards Implementation of Water Safety Plans. Sustainability, 12(10), 4210.

06 Menya E., Olupot P.W., Storz H., Lubwama M., Kiros Y. Synthesis and evaluation of activated carbon from rice husks for removal of humic acid from water. Biomass Conversion and Biorefinery (2020). https://doi.org/10.1007/s13399-020-01158-2

07 Yiga V.A., Lubwama M., Pagel S., Benz J., Olupot P.W., Bonten C. Flame retardancy and thermal stability of agricultural residue fiber reinforced polylactic acid: A review. Polymer Composites (2020). https://doi.org/10.1002/pc.25835

08 Lubwama M., Yiga V.A., Lubwama H.N. Effects and interactions of the agricultural waste residues and binder type on physical properties and calorific values of carbonized briquettes. Biomass Conversion and Biorefinery (2020). https://doi.org/10.1007/s13399-020-01001-8

09 Yiga V.A., Lubwama M. Thermogravimetric analysis of agricultural residue carbonized briquettes for domestic and industrial applications. MRS Advances 5 (20) (2020) 1039 – 1048 https://doi.org/10.1557/adv.2019.485

10 Yiga V.A., Pagel S., Lubwama M., Olupot P.W., Bonten C. Development of fiber reinforced polypropylene with NaOH pretreated rice and coffee husks as fillers: Mechanical and thermal properties. Journal of Thermoplastic Composite Materials 33 (9) (2020) 1269-1291 https://doi.org/10.1177%2F0892705718823255

11 Ssekatawa K., Byarugaba D.K., Kato C.D., Ejobi F., Tweyongyere R., Lubwama M., Kirabira J.B. Wampande E.M. Nanotechnological solutions for controlling transmission and emergence of antimicrobial-resistant bacteria, future prospects, and challenges: a systematic review. Journal of Nanoparticle Research 22, Article number 117 (2020) https://doi.org/10.1007/s11051-020-04817-7

12 Lubwama M., Yiga V.A., Muhairwe F., Kihedu J. Physical and combustion properties of agricultural residue bio-char bio-composite briquettes as sustainable domestic energy sources. Renewable Energy 148 (2020) 1002 – 1016

13 Yiga V.A. Lubwama M., Olupot P.W. Investigation of char residues and mean reactivity of compression molded rice and coffee husks bio-char reinforced polypropylene. 5th Termal and Flyids Engineering Conference. April 5-8, 2020. American Socieity for Thermal and Fluid Engineering 2020 pp 49 – 62 http://dx.doi.org/10.1615/TFEC2020.cbf.032093

14 Menya E., Olupot P.W., Storz H., Lubwama M., Kiros Y., John M.J. Optimization of pyrolysis conditions for char production from rice husks and its charactierization as a precursor for production of activated carbon. Biomass Conversion and Biorefinery 10 (1) (2020) 57 – 72

15 Menya E., Olupot P.W., Storz H., Lubwama M., Kiros Y., John M.J. Effect of alkaline pretreatment on the thermal behavior and chemical properties of rice husk varieties in relation to activated carbon production. Journal of Thermal Analysis and Claorimetry 139 (3) (2020) 1681 - 1691

16 Felix R.B. Twinomucunguzi, Philip M. Nyenje, Robinah N. Kulabako, Swaib Semiyaga, Jan Willem Foppen, Frank Kansiime (2020). Reducing groundwater contamination from on-site sanitation in peri-urban sub-Saharan Africa. Reviewing Transition Management attributes towards implementation of Water Safety Plans. Sustainability 2020, 12, 4210;DOI: https://doi:10.3390/su12104210

17 Jean H Humphrey, Joseph Brown, Oliver Cumming, Barbara Evans, Guy Howard, Robinah N Kulabako, Jonathan Lamontagne, Amy J Pickering, Evelyn N Wang (2020). The potential for atmospheric water harvesting to accelerate household access to safe water. The Lancet, Planetary Health 4 (3), E91-E92. DOI: https://doi.org/10.1016/S2542-5196(20)30034-6

18 J. G. Nayebare, M. M. Owor, R. Kulabako, L. C. Campos, E. Fottrell, R. G. Taylor (2020). WASH conditions in a small town in Uganda: how safe are on-site facilities? Journal of Water, Sanitation and Hygiene for Development, 10 (1): 96–110; DOI: https://doi.org/10.2166/washdev.2019.070

19 Egeru A., Magaya J.P., Kuule D., Siya A., Gidudu A., Barasa B., and Namaalwa J., 2020. Savannah phenological dynamics reveal spatio-temporal landscape heterogeneity in Karamoja Sub-region, Uganda. Frontiers in Sustainable Food Systems https://doi:10.3389/fsufs.2020.541170

20 Mazimwe, A., Hammouda, I., Gidudu, A., Barasa B., 2020. A Pattern Driven Approach to Knowledge Representation in the Disaster Domain. SN Computer Science 1, 353 (2020). https://doi.org/10.1007/s42979-020-00342-5

21 Ssengendo Ronald and Gidudu Anthony, 2020. Towards a New Height Datum. South African Journal of Geomatics, Vol. 9. No. 2; http://dx.doi.org/10.4314/sajg.v9i2.8

22 Balaji Bhaskar Maruthi Sridhar and Anthony Gidudu, 2020. Effect of Landscape Changes on the Water Quality of Murchison Bay. International Journal of Advanced Remote Sensing and GIS, Volume 9, Issue 1, pp. 3350-3363 ISSN 2320 – 0243, : https://doi.org/10.23953/cloud.ijarsg.474

23 Tumusiime, E., Kirabira, J.B., Musinguzi, W.B., 2020. Performance evaluation of cellulose fiber's effectiveness as a thermal insulation material for productive biogas systems. Energy Rep. 6, 3390–3398. https://doi.org/10.1016/j.egyr.2020.12.014

24 Tumusiime, E., Kirabira, J.B., Musinguzi, W.B., 2019. Long-life performance of biogas systems for productive applications: The role of R & D and policy. Energy Rep. 5, 579– 583. http://dx.doi.org/10.1016/j.egyr.2019.05.002

Book Chapters

1. McConville, J., Niwagaba, C., Nordin, A., Ahlström, M., Namboozo, V. and Kiffe, M., 2020. Guide to Sanitation Resource-Recovery Products & Technologies: A supplement to the Compendium of Sanitation Systems and Technologies. 1st Edition. Swedish University of Agricultural Sciences (SLU). Uppsala, Sweden. ISBN: 978-91-576-9801-8.

2. Alinaitwe H M, 2020. Improving Performance of Uganda's Construction Industry. In Pantaleo Rwelamira and Rashid Abdul-Aziz. Improving the Performance of Construction Industries for Developing Countries, pp 349 - 371. Routledge, London.

3. Okwel, M, Alinaitwe, H. M. and Kalumba, D. (2020) Health and Safety Performance in the Ugandan Construction Industry. In Patrick Manu, Fidelis Emuze, Tarcisio Saurin and Bonaventura H. W. Hadikusumo (eds) Construction Health And Safety in Developing Countries, pp 103 - 115. Routledge, London

Conference Proceedings

1. Billger, M., Kain J.-H., Niwagaba C.B. & J.R. McConville, 2020. Lessons from co-designing a resource-recovery game for collaborative urban sanitation planning. BEYOND 2020 – World Sustainable Built Environment conference. IOP Conf. Series: Earth and Environmental Science 588 (2020) 042041, IOP Publishing. doi:10.1088/1755-1315/588/4/042041.

Policy Briefs

1. Okello-Juma, E., Niwagaba, C., Simiyu, S., Mberu, B., 2020. Fecal Waste Management (FWM) in Mbarara Municipality, Uganda. Policy Brief.

E

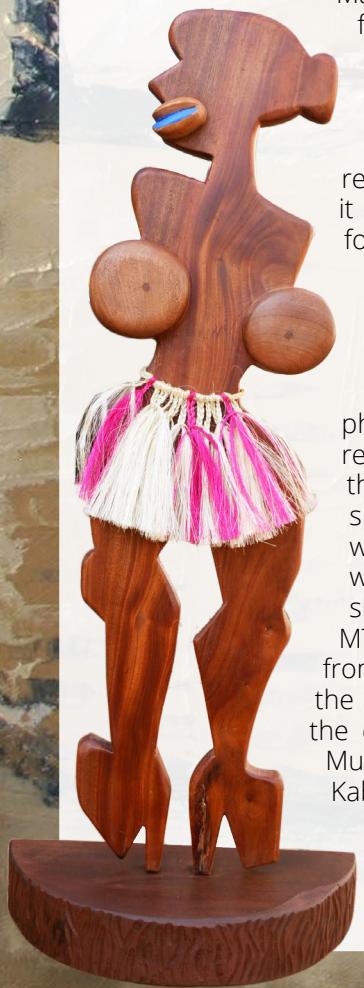
Art Exhibition

Art Exhibitions

The Institute of Heritage Conservation and Restoration/ Gallery 20202 activities

2020 will go down in history as a year where routines, plans, projections and strategies were hugely disrupted. The Corona Virus which started in China in 2018 quickly became a pandemic bringing the world to its knees. In March 2020, a total national lock down constrained the activities of the Makerere Institute of Heritage Conservation and Restoration/Gallery. The constraints notwithstanding, there were some activities that were carried out as I elaborated in the following paragraphs.

January 2020, was a month to prepare for 2020. Indeed as planned, the annual Different But One exhibition (24) of MTSIFA staff went ahead. Scheduled for 2 months, Covid 19 intercepted it and we went into a nation-wide lock down. The easing of the lockdown in May 2020 was good news for all of us. However the Gallery experienced it in a unique way. First, its exterior and its roof underwent a major refurbishment and second, it became a storage space for furniture and files from office and studio spaces which also underwent major renovations, from May to October 2020. Although as a physical space, the Gallery remained dormant for all that time, other activities spearheaded by IHCR were going on else-where. The gallery staff, supported by the Dean MTSIFA and members from other departments of the University, embarked on the creation of the Muteesa Museum. Muteesa, a former Kabaka of Buganda and the first president of Uganda was a student at Makerere College on the 1940s.



Located on the northern side of College of Science, the first phase of Muteesa Museum was concluded. It entailed renovation of Muteesa House itself, and there-after, production and display of text and images about Muteesa's life, in the Muteesa House. The Katikkiro of Buganda presided over the conclusion of phase one and starting of phase two. His support for the Muteesa Museum Project resulted in a donation of over 62 million UGX (Seventy million Uganda Shs). This money is now being used to complete phase two of the Muteesa II Museum. In this phase, we are enhancing the Museum surroundings with concrete pavers, chain link, a gate and a bronze bust. We have also bought a computer and some basic furniture. We hope to complete phase II in the middle of February 2021. Following from this, the Muteesa II Museum should be ready to open to the public.

In November 2020, the gallery recovered its space and exhibitions resumed. Sarah Nakisanze, a MTSIFA PhD student shared her ongoing research with a major virtual exhibition she named, My Granary My Home- Haute Couture, a Reinterpretation as a Framework for intellectual Knowledge Dissemination. The physical exhibition continued from 13th November to 27th December 2020. It was a highly acclaimed exhibition which combined both audio and visual material.

Sticking issues

Despite its centrality in terms of visual culture the Makerere Art Gallery is surviving on a skeletal staff. Both its curator Peters Klaphake and Gallery Assistant, Hasifa Mukyala resigned. It is only the Director and one Gallery Assistant running it. We urgently need to fill the gaps left behind by those who left. Secondly, whereas we appreciate the effort of CEDAT Principal for renovating the Gallery and its surroundings, we need more physical space to manage the growing number of activities. We also need to have our allocations increased from three million a year to at least 10 million. This will go a long way in improving the visibility of this vital institution.

F

Research Centres and Institutes

Africa Centre of Excellence in Materials Product Development and Nanotechnology (MAPRONANO)

Africa Centre of Excellence in Materials Product Development and Nanotechnology (MAPRONANO). The Center was developed out of the need to strengthen research and training in the thematic areas of materials science and engineering, nanotechnology and nanomedicine in order to develop human resource capacity in applied science engineering disciplines for the development of the great lakes region.

MAPRONANO ACE offers highly specialized short courses in welding technology, health safety engineering, Oil & gas, Monoclonal and Nanobodies generation, Bioinformatics & Next Generation sequencing techniques. Nanomedicine Program is implemented in partnership with College of Health Sciences (MakCHS).

The centre is supported by the World Bank to the tune of USD 6 million.

The centre has registered a number of success/ achievements during the last 3 years, some of which include;

Student Training

- 01 PhD student & 110 MSc students were enrolled in the academic year 2019/2020.
- 50 students attended the Short Course in Tablet development of which 22 were regional students from University of Nairobi.

MOUs generated

- 3 MOUs with Vaal University, Sefako Makgatho University of health Sciences South Africa and industrial partner CODEK Engineering Ltd have been signed, budgets and work plans submitted.

Peer Reviewed publications

- 7 peer reviewed publications in high impact journals have been published and 4 conference papers have been presented by the faculty and students.

Industry Engagement

- MAPRONO ACE conducted industry engagement and student placements in the Eastern and Western region to promote University-private partnerships. A total of 30 manufacturing industries have participated and over 20 internship placements have been secured for the students.

Gender Awareness and Career Guidance in High School

- MAPRONANO ACE conducted career guidance and gender awareness in high schools in Eastern and Western Uganda to encourage students mostly girls to take up STEM subjects. Over 35 high schools and over 1,500 students participated.

Revenue Generation (Grants/ Contracts at Various Stages)

- MAPRONANO ACE won several grant awards from Makerere University Innovation Fund (MakRIF) and COVID19 Emergency Fund for:-
- Viral load determination and antibody profiling among Covid-19 patients UGX 60,000,000 ($16,216.2), Prof. Charles Ibingira (PI)
- Perfecting the design and testing the feasibility of disinfecting gloves (D-Gloves) UGX 60,000,000 ($16,216.2) Prof. John Baptist Kirabira (PI)

- Valorization of cassava peels for abatement of active pharmaceutical contaminants from water systems in Uganda UGX 219,720,000 ($59,383.7) Prof. John Baptist Kirabira (PI)
- Up-cycling plastic wastes by incorporation of agricultural residues for the development of environmentally friendly packaging products, UGX 104,310,000 ($28,191.9) Dr. Michael Lubwama (PI)
- Nanobody based point of care diagnostic kit for cervical cancer UGX 194,000,000 ($52,432) Prof. Charles Ibingira (PI)

East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE)

Annual Report 2020 Summary

The East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) is a quasi-intergovernmental institution of the East African Community (EAC) Partner States mandated by EAC Partner States to promote renewable energy and energy efficiency in the region. As a regional platform for collaboration on renewable energy and energy efficiency, EACREEE programs, projects and activities are designed to propel renewable energy and energy efficiency initiatives within the region on behalf of EAC. The Mission of EACREEE is to promote an integrated and inclusive energy market as an engine for socio-economic development and improved livelihoods.

In line with its mission, EACREEE implemented several programmes and activities in 2020. The achievements are highlighted below:

Developing of EACREEE Business Plan

EACREEE finalized the development of its Business Plan (2020-2024), which was approved by the Board of Directors during their meeting held on 27th April 2020. The final version of the document was submitted by the consultant at the end of July 2020. The Business Plan (2020-2024) sets out EACREEE's vision for the future – listing priorities, setting out a programme of activities, and articulating the ideas and means that underlie and will drive those activities. The Plan was prepared following extensive consultation with the wider EAC community.

Energy Efficient Lighting and Appliances (EELA) in Eastern and Southern Africa.

The Energy Efficient Lighting and Appliances (EELA) project aims to create market and institutional conditions to enable a transformation of the sector to stimulate increased diffusion of energy efficient lighting products and appliances across all sectors in East African Community (EAC) and Southern African Development Community (SADC) Regions. The EELA project will bring regional support to private sector led activities that will lead to increased use of energy efficient high-quality lighting and appliances through regional regulatory and trade harmonization interventions.

The project is funded by the Swedish International Development Cooperation Agency (Sida) and implemented by the United Nations Industrial Development Organization (UNIDO) in collaboration with EACREEE and SADC Centre for Renewable Energy and Efficiency (SACREEE).

One of the key components of the EELA project is supporting the development of minimum energy performance standards (MEPS) for Lighting for the EAC. Draft MEPS have been developed and several consultation meetings were held at national and regional level during the year.

Regulations for Refrigerators and Air Conditioners

EACREEE collaborated with the UN Environment under the United for Efficiency (U4E) Initiative to implement the project 'Rwanda Cooling Initiatives'. Under the

project, model regulations for refrigerators and air conditioners as well as Rwanda Cooling Strategy has been developed.

In Q2, 2020 EACREEE entered into a contract with UN Environment to promote widespread adoption with the aim of enhancing policy harmonization and market oversight and enforcement in East Africa. Under the contract, UN Environment agrees to co-operate with EACREEE in respect to the project/ programme entitled "Building High-Level Support and National Capacities to enhance Climate and Ozone Protection through Cooling Efficiency", which includes a focus on the East Africa Community (EAC) region. With this support, EACREEE is developing minimum energy performance standards for cooling appliances.

Micro-Grid Academy (MGA)

The Micro-Grid Academy (MGA) is a vocational capacity building project led by the RES4Africa Foundation, which aims at creating skilled and conscious workforce to deploy decentralized renewable energy solutions within and beyond the East-Africa region, thus enhancing access to energy in rural communities while strengthening local enterprises and job creation. EACREEE has been collaborating with RES4Africa and other partners in the implementation of MGA since its initiation in 2018.

Participants at the 13th MGA Session

The 13th Session of the MGA was held in Nairobi 20th to 24th January 2020, covering topics like: (i) Microgrids, Rural Community needs and Demand Assessment, (ii) Basic components of Decentralized Energy Systems, (iii) Renewable and non-renewable sources, Mini-grid design and development, (iv) Safety in O&M of small-scale renewable energy systems, (v) Microgrids Engineering, Procurement and construction and (vi) Economics on mini-grid, business models and micro project financing, policy and regulatory framework.

EACREEE in collaboration with RES4Africa and other partners to restructure the MGA to make it become an accredited vocational training programme. As part of the process to ensure this, a Training of Trainers (ToT) programme for the MGA took place virtually from 29th June to 31st July 2020. The ToT programme was scheduled for 2- 3 hours a session, 3-times a week through a 5 weeks' period. It featured experts from RES4Africa Partners, Strathmore University and EACREEE – covering topics like mini-grids rural community needs, basic components of decentralized energy systems, Site selection, Demand Assessment, Mini-grid design preliminary design, etc. EACREEE participated in all the training sessions and also delivered a session on regional legal landscape to activate adoption of mini-grid technologies.

After successful completion of the MGA ToT, the participants who undertook the training engaged in reviewing the training materials and develop a harmonized MGA training curriculum to be adopted in subsequent trainings, starting with a virtual training scheduled before end of 2020.

Capacity Building on Solar PV

Since 2019, EACREEE has been working with the International Solar Alliance (ISA) and the French National Institute for Solar Energy (INES) to develop and implement the Solar Academy for East Africa within the framework of the ISA's Solar Technology Application Resource Centre (STAR-C). A series of training courses were expected to be implemented in 2020 following a successful implementation of the first session which was held in Nairobi Kenya 16-27 September 2020. However, the COVID-19 pandemic made it impossible to organize face-to-face training as was expected. Hence, the partners decided to implement the programme as a series of webinars. From May to August 2020, three webinars have been implemented as indicated below:

- Level 1: Solar PV Global and East African Regional Market Overview, held on 27th May 2020, with 66 participants attending from across the world.
- Level 2: Solar Resource and PV Components, was held on 12th June 2020 with 63 participants attending from across the world.
- Level 3: PV Off-Grid Systems Design and Sizing was broken into two sessions delivered on 21st and 23rd July 2020, with each session lasting 2 hours (with 1 hour 30 minutes of content delivery and 30 minutes of questions and answers). Each session was attended by a total of 16 participants.

G Research and collaboration events

MAPRONANO ACE wins UGX 5 billion in research grants

The Africa Center of Excellence in Materials Product Development and Nanotechnology (MAPRONANO ACE) has attracted grant funding to the tune of Shs5,348,380,719 towards research and post doctoral studies for students.

- MAPRONANO ACE received UGX 2,812,803,300 funding under Presidential scientific initiative for Evaluation of nanoscale materials as candidate adjuvants and delivery systems for SARS Cov-2 (COVID-19) sub-unit vaccine. These funds will also support the purchase of the state-of the art Field Emission Scanning Electron Microscope (FE-SEM) the first of its kind in Sub-Saharan Africa.
- MAPRONANO ACE received UGX 1,031,939,998 funding under Presidential scientific initiative for development of saliva test kit for COVID-19. This will solve the issue of lack of cheap testing services in Uganda and hence facilitating massive testing hence effective Covid-19 surveillance and patient management.
- Nanobody based point of care diagnostic kit for cervical cancer – UGX, 194,770,000
- Volkswagen foundation Post-doctoral fellowship for African researchers in the Engineering sciences UGX 795,999,500
- Antibacterial and antiviral nanocoated cloth mask to limit the spread of Covid-19 – UGX, 75,000,000
- Green synthesis of graphene from coffee husks and other agro-wastes for energy storage applications – UGX, 156,445,850
- Development and validation of lateral flow based multiplex test device to detect and differentiate SARS CoV-2 from other human coronaviruses – UGX, 157,130,071 Determination and characterisation of viral load and antibody profiles in samples from multiple sites of Covid-19 patients in Uganda – UGX, 60,000,000. This is in partnership with Makerere University College of Health Sciences and Uganda Virus Research Institute.
- Perfecting the design and testing the feasibility of Disinfecting Gloves (D-Gloves) – UGX, 60,000,000
- Multimorbidity and lifestyle prevention in low and middle income countries – UGX, 4,292,000

MAPRONANO ACE's innovative technologies to fight COVID-19

Development of low cost Alcohol Based Hand Sanitizers

MAPRONANO ACE in partnership with Makerere University College of Health Sciences (MakCHS) have developed low cost hand sanitizer for use in resource-limited settings and use in institutions and communities for effective hygiene and infection control. This is an alcohol hand sanitizer with 99.9% alcohol and is made from locally available materials and effective to kill the pathogens such as fungi, bacteria and viruses. The manufacture and preparation processes are done in the college of health sciences in partnership with Ryatumwa Ltd a marketing company. The instant hand sanitizers are packaged in the following quantities (100mls, 60mls, 500mls, 1000mls/1Liters, 5 litters and 20 Litres)

Figure 1: MAPRONANO ACE Covi-Mak Instant Hand Sanitizers (UNBS Certified)

Development of Saliva Diagnostic Kit for detection of Covid -19 in Saliva

Saliva is a comfortable and quick mass sampling option [Wang et al, 2004] with demonstrated high accuracy for COVID-19 diagnosis. We have started development of COVID-19 diagnostic rapid test kit for detection of the virus in saliva in Partnership with Makerere University College of Health Sciences and Uganda Virus Research Institute. Expected impact: Cheap, safe, non-invasive, and rapid turnaround time for detection of active Covid-19 including individual self-collection of the sample. This intervention minimizes transmission risk faced by health care practitioners and facilitates effective diagnosis, efficient contact tracing and community surveillance ■

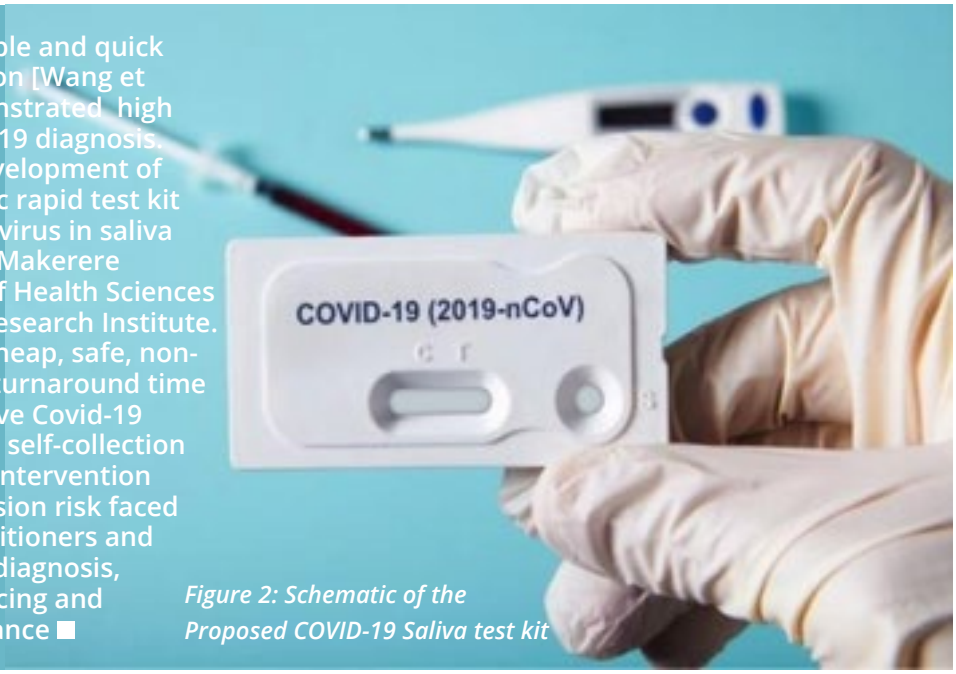


Figure 2: Schematic of the Proposed COVID-19 Saliva test kit

Development of Portable Mask Sterilizing Pod

The mask sterilization technique being presented here utilizes a pod with heat sources powered by electricity from the on-board batteries. The rechargeable Lithium ion batteries provide the DC current needed by the heating element to raise the pod temperatures up to 100 degrees Celsius enough to kill the Corona virus. Figure 1 shows the mask inside the pod and the associated user interfaces such as charging port and switch button.

Solar Powered Sanitizer Booth for Highly infectious Pathogens (Covid-19)

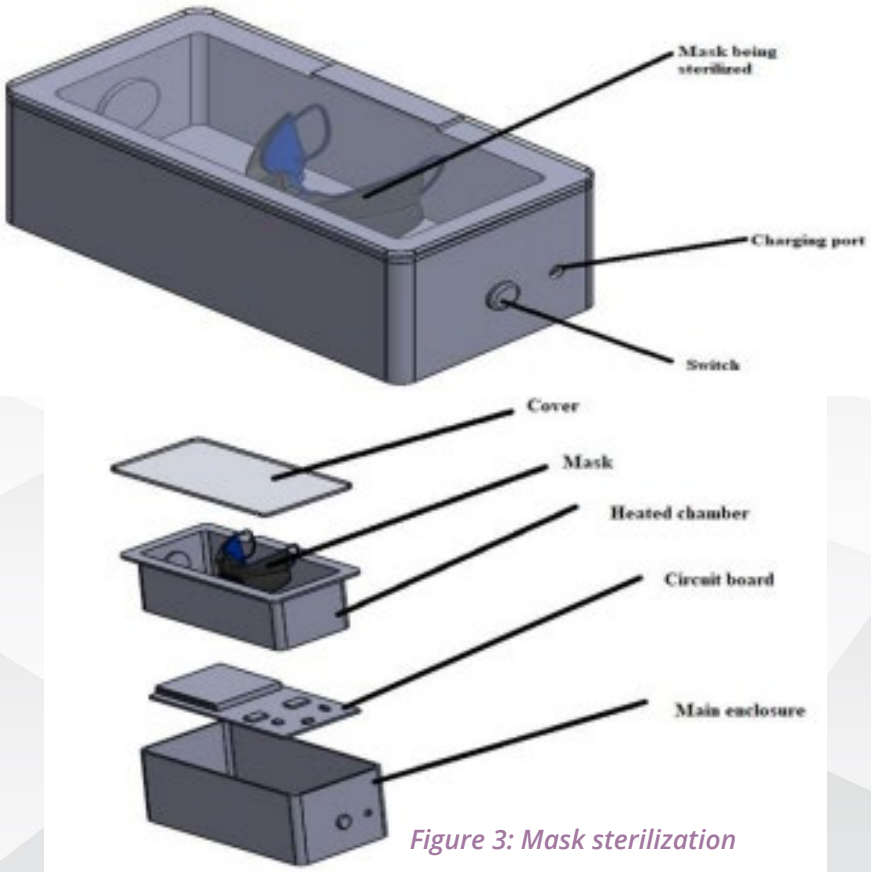


Figure 3: Mask sterilization

MAPRONANO ACE at Makerere University in partnership with CODEK ENGINEERING CO LTD, private company have jointly developed a walk-through solar powered sanitization booth to enable instant sanitization as the people walk through it. The booth is designed with entrance proximity sensors, which detect a person walking through and release fog or atomized disinfectant. The justification of designing and producing this machine is that it can work on all emerging and re-emerging highly infectious pathogens. The heating element has a built-in thermostat to control its temperature and prevent self-destruction under extreme heat. The booth is also built with a temperature sensor that records the temperature of anyone or entering a public place ■

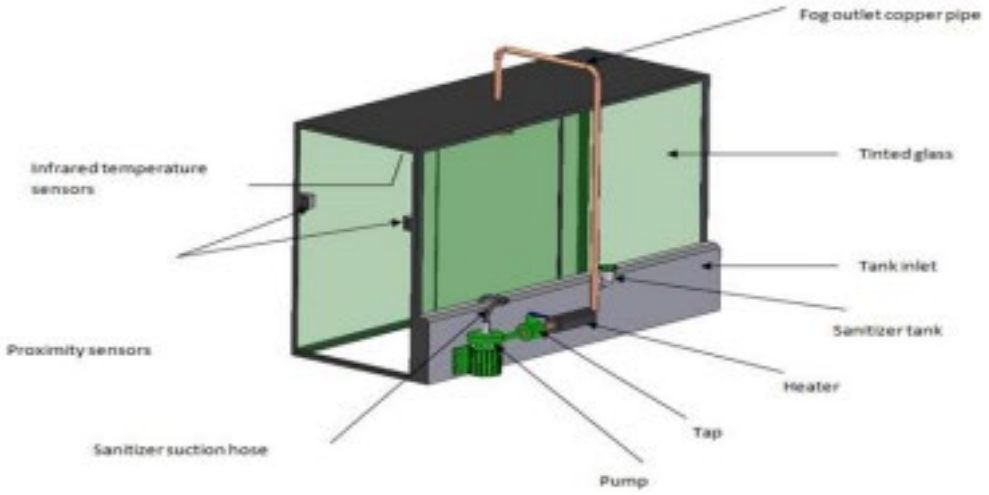
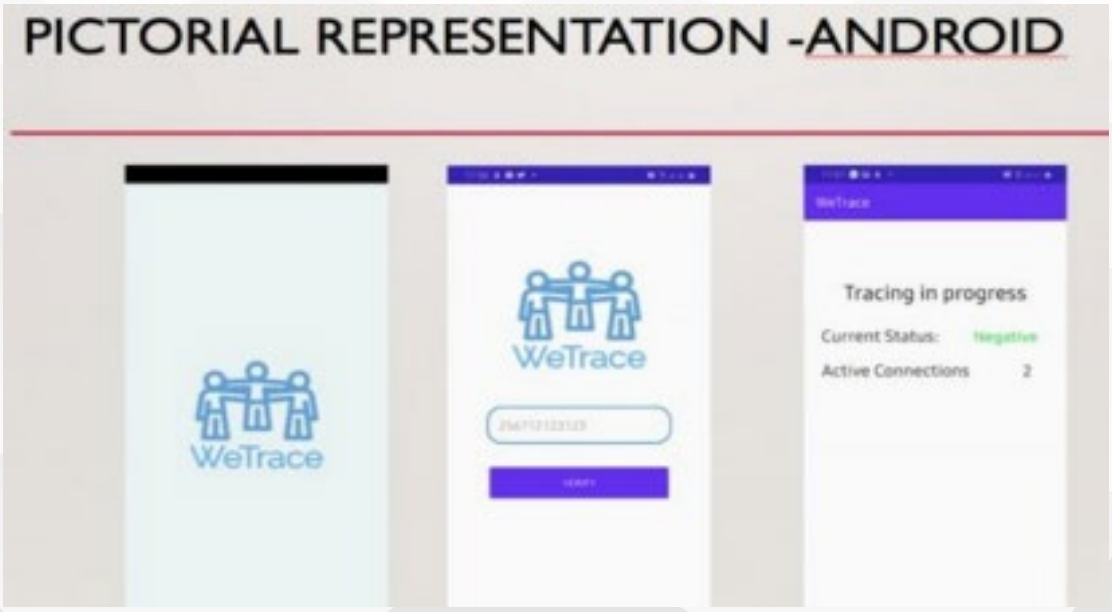


Figure 4: Design Model of the Solar Powered Sanitizer Booth

We Trace: Mobile contact tracer application for Covid-19 in Uganda

MAPRONANO ACE, Makerere University in partnership with Nanobits has developed a contact-tracing App for surveillance and real-time detection of Covid-19 positive cases named "We Trace". The application publishes the user's phone number in form of an encrypted message in intervals of 30 seconds and then listens continuously for incoming messages published by other phones with the same application. The mobile app is accessible by both Android and IOS users this mobile app keeps tracing the people that a single user has come into contact with using Data over sound. (See schematic of Mobile app on Android Phones).



Demonstration of mobile contact tracker application – Android Phone

Project outcomes/Results;

The contacts of the confirmed cases of covid 19 cases will receive instant communication and will be able to immediately self-isolate themselves as they await the ministry of health to contact them. 2) The rate of spread of the infections will be reduced. 3) The costs of tracing contacts will reduce significantly 4) Time spent on tracing the contacts by the response emergency teams will be reduced. Project Outputs. Over 80% of the population with smartphones and other mobile devices will install the application ■

Reusable self sanitizing Mask

The product was developed out of the need to prevent the medical workers battling communicable diseases like covid-19 from being infected in risky environment because covid 19 requires frequent self-sanitization especially for medical workers who are exposed to an undoubtedly a highly contagious environment. The mask is designed with instant self sanitization capability and allows frontline healthcare worker to sanitize in real time in risky environments. The mask is designed with a transparent glass face to prevent sneezed or coughed sputter from directly landing onto the medical workers' face. The mask has a built in nose and mouth protection device to prevent breathing in disease contaminated air. The mask has a built-in sanitizer container and spray that enables instant occasional sanitization of garments, hands, face and body. The medical worker can re-use the mask indefinitely hence save money in buying disposable ones. The masks can remain at the various hospitals even after covid-19 and used in other medical emergencies like Ebola.

Determination and characterization of Viral load and Antibody Profiles in samples from multiple sites of COVID-19 patients in Uganda – Funded by Makerere Research Innovation Fund

The detection of antibodies specific to COVID-19 in specimen from Covid-19 patients can inform better patient care and management. This can also inform patients with antibodies with neutralising activity critical for vaccine development and use of convalescent plasma for treatment in Uganda ■

GIS Fundamentals and Spatial Analysis Course – GIS Centre short Course

SIDA in collaboration with Makerere University GIS Centre organised another cross-cutting course on Fundamentals of GIS and Spatial Data Analysis on Monday 14th to Friday 18th December 2020. In order to blend in with the new normal, the course was conducted both online and physically at the University GIS Centre.

The course was aimed at equipping students with knowledge and skills of Geographical Information Systems (GIS) as an enabling technology to handle spatial data. Location has increasingly been identified as a major component of research data and hence the need of knowledge on how locational data manifests. This course provided researchers with a fundamental understanding of spatial data models, data collection methods, database systems and manipulation of this data within software platforms all together composing a GIS ■

Land Tenure System: A Challenge for Urban Development and Service Delivery in GKMA

The opening remarks were given by Dr Lydia Florence Mazzi Kayondo-Ndandiko who represented Professor Moses Musinguzi, the Dean School of the Built Environment, Makerere University. Dr Lydia Mazzi Kayondo is the Chair, Department of Geomatics and Land Management, a senior lecturer and a Geographical Information System (GIS) specialist. She welcomed the participants and appreciated them for making it for the dialogue. In her opening remarks, the emphasis was put on the impact of the land tenure system in the Great Kampala Metropolitan Area (GKMA).Dr Kayondo also acknowledged her department's influence in training and churning out planners to both private and government organisations. 60% of the urban development in Kampala is informal and land tenure is one of the key factors in it. "Tenure of land defines the relationship of how rights are accessed and how to influence development," Dr Kayondo said.

Group photo of participants at the workshop

Ms. Amanda Ngabirano, the acting chair National Physical Planning Board and also a senior lecturer at Makerere University was the guest speaker at the public dialogue. In her presentation she referred to the land tenure system as a 'white elephant'. "We are stuck with it" she emphasized. She said that land tenure system is the reason why planners are not delivering. Ms Ngabirano also added that urban development is not only glamorous but is about balanced growth, that is to say equity and distribution of services and amenities.

Ms Ngabirano emphasised the fact that land tenure is bigger than we can imagine. She called upon the participants to identify and open discussion with people on the land, and also to identify areas with partnerships and opportunities and be able to work with them. Other issues raised by Ms Ngabirano are funding and compensation which were also affecting development. She, however, pointed out that the land tenure system may not be the only thing affecting development. She challenged participants to identify all the factors and find solutions to them.

To further digest the theme, the panel comprised of urban development experts, specialists and researchers such as Mrs Rehema Nanvuma an urban planner currently working with the Buganda Land Board, Mr Samuel Mabala, a representative from Cities Alliance and a senior urban development expert, Ms Anitah Kusiima, a physical planner working with KCCA and Dr Fredrick Omolo Okalebo, an urban planner and researcher at Makerere University.

The issues tackled by the panellists included the following; gender concerns regarding the complex tenure system and physical planning, good land ownership practices for urban development, steps taken to improve physical planning in GKMA and the forms of tenure and its effects on service delivery in GKMA.

Ms Kusiima focused on the good practices of landownership such as transparency and access, need for legal frameworks and a better face lift following policies such as the UN Habitat i.e. the fit for purpose social tenure domain model. She called upon the Ministry of Lands to also focus on the development of rural areas as well. "We need to understand what is in it for each and everyone's share of land at the end of it all," she emphasised.

She also addressed the issue of differentiating between land tenure and land use, she said that without formalised tenure situation, land use planning is hindered. In Kampala only 10% of land owners have land titles, the land is developed.

There was consensus that there are other problems that needed to be considered apart from the land tenure problem. The other factors that need to be looked at include; government's failure to buy land and develop it, and the good will of the policy makers to have problems solved.

Mr Samuel Mabala emphasised the need for a Betterment levy as a legal framework. He said that this would make sure the owners own but at a cost. According to him, the betterment levy would be the best legal framework especially when dealing with compensation. Dr Okalebo pointed out the influence of the emergence of the real estate developers; he termed it as the 'new craze.' They do not care about certain issues such as narrow roads.

Kule Yosiah, a participant showed his discomfort with the discussion being focused at Kampala alone instead of the great metropolitan area. "We would be working on pieces if we focused on Kampala alone," he noted. In his closing remarks, Dr Amin Kiggundu, the Head Department of Architecture and Physical Planning, College of Engineering, Design, Art, and Technology, Makerere University applauded the significance of the dialogue and called for more future dialogues and engagements with the stakeholders. "It is important that the key stakeholders are engaged to share experience on various issues and ideas," he emphasised. He further noted how the college is focusing on research to address issues such as the ones continuously raised in dialogues ■

Mak Teams Win Gold & Silver at Efficiency for Access Design Challenge

Two teams of students from Makerere University's College of Engineering, Design, Art and Technology (CEDAT) have won Gold and Silver at the Efficiency for Access Design

Challenge for their projects entitled 'Standalone solar load management system' and 'Solar energy efficient fish dryer' respectively. The Grand Final event held on Monday 29th June 2020 saw UK teams from the University College London and University of Strathclyde win Gold and Silver respectively alongside the aforementioned CEDAT teams.

The team that won Gold was made up of Mr. Sibo Derrick, Mr. Weredwong Innocent, Mr. Obeti Silivio and Mr. Mukasa Peter, all Fourth Year students of the Bachelor of Science in Electrical Engineering. The Silver award winning team was made up of Mr. Ivan Musingo, Mr. Fred Wanjala, Mr. Reagan Masembe and Mr. Evarest Ampaire, all Fourth Year students of the Bachelor of Science in Mechanical Engineering. The Bronze award was jointly won by Strathmore University (Kenya) and University of Bath (UK).

According to the press release published on the Efficiency for Access website, the

Design Challenge is a global, multi-disciplinary competition that empowers teams of university students to help accelerate clean energy access. It is funded by UK aid and the IKEA Foundation.

Mr. Wanjala, a member of the Silver award winning team shared that the challenge started in September 2019 with a total of 20 teams from nine universities competing. "Out of the 20, only 14 teams managed to reach the Grand Final where Makerere took both gold and silver. Funds to prototype these projects will be sent."

It is worth noting that three other teams from Makerere University made it to the Grand Final. These presented projects on; 'Design of a solar powered evaporative cooler', 'Design of a solar powered clay refrigerator' and 'Design and Implementation of a Solar Powered Smart Irrigation System'.

We congratulate the teams from CEDAT for flying Makerere University's flag high on the global stage ■

MTSIFA students design Communauts' Logo

It is always a crucial and exciting moment in the history of a company: the creation of the logo. So it was for Communauts. They needed one wanted one that reflected their core values, their mission and which was created in Uganda. So here is how it evolved

All the participants of the contest with Communauts Director Reto Urech (left), MD Anne Kalinzi (third from left) and lecturer Raymond Nsereko (third from right).

Communauts wants to create opportunities for Ugandan people wherever possible. That is why the organization partnered with Makerere University School of Industrial and Fine Arts and lecturer Raymond Nsereko. Communauts announced a design contest for his students and thus offered them their first real-life design challenge. After being briefed they started to work on it, some in teams, others individually. On the day of presentation and ceremony, communauts was excited to see so many different approaches, to experience the efforts and passion the students put into their work and designs.

The winning design was drafted by a team of four: Egessa Dervin, Nakazibwe Caroline, Namisi David, Makumbi James. The design reflects an African village, showing togetherness and the warmth of African culture.

The Communauts team expressed their excitement and appreciation for the new logo and were glad they engaged the MTSIFA students on this task.

About Communauts

Communauts is a social enterprise which aims at facilitation of livelihood improvement for rural communities while conserving the environment. Together with these communities, they develop attractive, sustainable and high quality products and market them to hotels, lodges, souvenir shops and other buyers ■

The 9th CEDAT Open Day: An exhibition of Passion and Innovation

The College of Engineering, Design, Art and Technology (CEDAT) held its 9th Annual Open day on 28th and 29th February 2020. The Open Day, which was launched in 2012 aims at exhibiting and promoting the innovative research ideas of students at the College. This year, the guest of honour at the event was Hon Florence Nakiwala Kiyingi, The Minister for State in charge of Youths and Children's Affairs under The Ministry of Gender, Labor and Social Development.

The College Principal, Professor Henry Alinaitwe in his remarks appreciated the Honorable Minister for sparing time to visit the college despite her busy schedule. He said that the students are youths and they are full of ideas and need the government's support to promote their talent and innovations. He also showed his sincere appreciation to the government of Uganda for continually supporting the university most especially through the presidential initiative fund.

Honorable Nakiwala Kiyingi in her remarks credited the College administration for a job well done. She expressed how humbled and privileged she was to attend the CEDAT Open Day. "I will tell it to the mountains" Honorable Nakiwala said. "I am fully recruited to advocate and follow the cause of CEDAT", she added.

The CEDAT Open Day event was the Minister's first engagement with the College of Engineering, Design, Art and Technology. She mentioned that she had no idea how much energy and wisdom is put into innovation at the College. The Minister

pledged to support research at the college.

The Minister went on to mention that the Ministry of Gender, Labour and Social Development has many partnerships such as the one with the World Bank and other notable organizations that are very willing to fund such innovations under the youth docket.

The 9th CEDAT Open day, which was held under the theme "Transforming Lives through Innovations and Technology", closed on the evening of Saturday 29th February 2020 with a Fashion show from the Students of the Margret Trowell School of Industrial and Fine Arts ■

Experts call for integration of Land use and transport planning for Kampala

Researchers from Makerere University and officials from the Ministry of Lands, Housing and Urban Development have called on the government to integrate land use and transport planning if we are to develop the urban centres around the city.

Speaking at a public dialogue, researchers noted that there was need to decongest the city and also demarcate Kampala City boundaries. "The city is expanding yet the planning is stagnating," Prof. Henry Alinaitwe, the Principal of the College of Engineering, Design, Art and Technology said.

Dr Wilson Kayom, an official from the Ministry of Lands, Housing and Urban Development said there was need to be concerned about the unprecedented population growth of the Greater Kampala Metropolitan Area.

Other challenges affecting the Greater Kampala Metropolitan Area (GKMA) include the development of slum cells, congestions on the roads and building and unplanned development.

Lack of proper transport system affecting health of the population, the ecological system, and an acceptable urban environment for the residents of Kampala

Traffic congestions has for years been a big problem in Kampala. A typical urban road in Kampala is a single carriageway, about 4 meters wide, designed as a two-way road with each side carrying traffic in opposite direction.

The city, Dr Kayom said is affected by the unregulated taxi operations, the many Taxi parks/stages in the CBD, lack of separated walkways for pedestrians, lack of organized pedestrian crossings, Illegal parking along the main streets and Lack of enough traffic signals.

According to research, traffic jam costs Uganda over US$800m (over sh2.8trillion) in lost GDP annually. The country also loses 10 people per day in road accidents, according the traffic report, the highest in East Africa.

The panel discussants called for an integration of politics, economics with land use and transport planning. This is because for success to happen, there must be political will.

The experts called for a mitigation of the effects of urbanization, because this has to happen whether we like it or not.

The Mayor of Jinja, Mr Majid Batambuze, called for integrated planning of kampala City with the neighboring cities of Mukono, Wakiso, Kira and Gayaza among others.

The experts called for drafting of the national Transport Policy which will offer holistic planning for the country.

Mr Batambuze called for creation of satellite cities in different areas such as Jinja, Gulu, Nakasongola, among others so that people do not find the need to travel to Kampala. These cities would require infrastructure development such as schools, hospitals, roads, markets, water and airports among other social services.

The Mayor decried the resource allocation model used by the government. He said Jinja Town had industries that contribute greatly to the government tax revenue; however, the city gets only a small fraction of this money, which is not sufficient for service delivery to the people of Jinja.

Dr Ian SSenkatuka called for planned housing in the city, saying that it has to be high density and high rise. Dr SSenkatuka noted that water transport had been ignored by the planning authorities. "Uganda and her neighbouring countries of Tanzania and Kenya need to plan for water transport especially for cargo. This will reduce the load on the roads as well as decrease the cost of trade," he said.

He said there was need to work with big land owners to develop the city. These include the Buganda government, which owns big chunks of land.

"Uganda and her neighbouring countries of Tanzania and Kenya need to plan for water transport especially for cargo. This will reduce the load on the roads as well as decrease the cost of trade,"

Ms Geraldine Kabami, an official of Friedrich Ebert Stiftung, called on the government not only to plan for the people but rather to plan with the people. She also called for integrating of land use planning and transport planning to avoid scenarios where we build roads and later break them to put water pipes ■

Knowledge Transfer Partnership activities

MoUs SIGNED IN 2020

No.	Institution signed with	Period	Effective date
1.	Global Green Growth Institute	Until the obligations from this Agreement have been fulfilled. Project plan shows 30th March 2022	Effective on the last date of signature by the parties which is 16th December 2020.
2.	Ardhi University, Tanzania and Makerere University	5 years	With effect from date of signature. Awaiting completion of signing of Ardhi university.
3.	Uganda Electricity Transmission Company ltd (UETCL) and CEDAT, Makerere University.	5 Years (but not yet signed)	
4.	MOU between CEDAT and National Conference on Communication	7 months	With effective date of signature i.e 25th Nov. 2020 until 30th June 2021
5.	MOU between UMEME Limited and Makerere University	2years	With effective date of signature.
6.	MOU between the university of Newcastle upon Tyne and Makerere University	1 or more years	
7.	MOU between Power for All and Makerere University.	Until December 2022 and may be extended.	15th December 2020
8.	MOU between Technical University of munich on the center for sustainable energies and entrepreneurship in the global south	From 01.01.2020 to 31.12.2024	From 01.01.2020

1 Human Resources

Staff that Obtained New Academic Qualifications (2020)

NO.	Name	QUALIFICATION	DEPARTMENT
1	Dr. Doreen Karungi	PhD	Architecture and Physical Planning
2	Mr. John Bosco Mulwana	Masters Degree	Architecture and Physical Planning
	3 Dr. Cosmas Mwikirize	PhD	Electrical and Computer Engineering
	4 Dr. Matovu Wasswa	PhD	Electrical and Computer Engineering
	5 Dr. Wokulira Miyingo	PhD	Electrical and Computer Engineering
	6 Dr. Jane Namaganda	PhD	Electrical and Computer Engineering

Staff Promoted in The Year 2020

NO.	NAME	DEPARTMENT	FROM	TO
1	Dr. John Baptist Kirabira	Mechanical Engineering	Associate Professor	Full Professor

Newly Appointed Staff in the University Services

No	Name	Department	Position
1	Obali Godwin	Construction Economics and Management	Assistant Lecturer-Valuation Surveying
2	Kaweesi Ronald	Construction Economics and Management	Assistant Lecturer-Valuation Surveying
3	Kayondo Bagenda Naome	Construction Economics and Management	Assistant Lecturer-Valuation Surveying
4	Nankunda Charity	Construction Economics and Management	Assistant Lecturer-Quantity Surveying
5	Arinaitwe Grace	Construction Economics and Management	Assistant Lecturer-Quantity Surveying

No	Name	Department	Position
6	Wesonga Racheal	Construction Economics and Management	Assistant Lecturer-Quantity Surveying
7	Edimu Milton	Electrical and Computer Engineering	Lecturer-Power Engineering
8	Oketch Innocent	Electrical and Computer Engineering	Assistant Lecturer-Electrical and Power Engineering
9	Amitu David Martin	Electrical and Computer Engineering	Assistant Lecturer Telecommunications/ Compute r Engineering
10	Turyagyenda Agatha	Electrical and Computer Engineering	Assistant Lecturer Telecommunications/ Compute r Engineering
11	Musa Timbitwire	Architecture and Urban Planning	Assistant Lecturer-Physical Planning
12	Buyinza Ambrose Wabwire	Architecture and Urban Planning	Assistant Lecturer-Physical Planning
13	Arinaitwe Lynda Mutesi	Architecture and Urban Planning	Assistant Lecturer Architecture
14	Accellam Benard	Architecture and Urban Planning	Assistant Lecturer Architecture
15	Dinyato Richard	Mechanical Engineering	Technical Assistant
16	Kule Mujungu Wilson	Civil Engineering	Technical Assistant

Transfer of Services

NO	Name	Position	From	To
1	Mr. Samuel Wataka	Cleaner	Lumumba Hall	CEDAT
2	Mr. Fredrick Jn. Tamare	Head Cleaner	Cedat	Lumumba Hall

Dismissed

NO	NAME	POSITION	DEPARTMENT
1	Francis Nturanabo	Lecturer	Mechanical Engineering

Reinstated

NO	NAME	POSITION	DEPARTMENT
1	Dr. Charles Niwagaba	Associate Professor	Civil And Environmental Engineering

Staff Who Retired

NO	Name	Position	Department
1	Ms. Barbra Nakamanya	Cleaner	Office Of The Principal
2	Ms. Robinah Namembwa	Sanitary Cleaner	Office Of The Principal
3	Mr. Okware John Ikwa	Lecturer	Mechanical Engineering
4	Ms. Dorothy Nanyonjo	Cleaner	Office Of The Dean (Mtsfa)

Staff Offered Post Retirement Contracts

No.	Name	Rank	Department
1	Prof. Philip Kwesiga	Professor	Visual Communication, Design And Multimedia
2	Dr. Mackay Akoori Ecuman Okure	Associate Professor	Mechanical Engineering
3	Francis Xavier Ifee	Associate Professor	Fine Art
4	Dr. Anthony Kerali	Associate Professor	Construction Economics And Management

Staff Who Died

NO	NAME	POSITION	DEPARTMENT
1	Mr. Godfrey Mwesige	Lecturer	Geomatics and Land Management

Staff Who are Confirmed in the University Services

NO	NAME	RANK	DEPARTMENT
1	Mr. Hosea Lutaaya	Driver	Office of the Principal
2	Ms. Connie Birungi	Messenger	Office of the Principal
3	Ms. Winfred Koyesiga	Messenger	Office of the Principal
4	Mr. Godfrey Zzibu	Messenger/Cleaner	Office of the Principal
5	Mr. Godfrey Niyibirizi	Messenger/Cleaner	Office of the Principal
6	Mr. Micheal Kikwaya	Cleaner	Office of the Principal
7	Mr. David Kabengwa	Cleaner	Office of the Principal
8	Ms. Pamela Mayuya	Sanitary Cleaner	Office of the Principal
9	Ms. Cissy Nakku	Cleaner	Civil and Environmental Engineering
10	Mr. Lawrence Ssemata	Driver	Architecture and Physical Planning
11	Mr. Patrick Nsamba	Laboratory Attendant	Office of the Principal
12	Ms. Susan Namuddu	Cleaner	Electrical and Computer Engineering
13	Ms. Noelina Ndagire Nansubuga	Pool Stenographer	Office of the Deputy Principal

Budget Performance in 2020

ACTIVITIES DONE in July - Dec 2020:

CODE	ITEM	AMOUNT (UGX)
211103	Part time teaching/Extra load	293,600,000
221008	Computer supplies (Toners,etc)	5,521,999
221009	Welfare(Tea and lunch during Presentations, Examinations, marking, wedding gifts)	22,318,850
221011	Stationery/Printing	25,291,455
224004	Cleaning materials	14,340,680
227004	Fuel	15,000,000
282103	Scholarships(Teaching mat.,Examinations, Externals,Marking,Recess)	622,787,539
213002	Incapacity (Death of students and staff)	1,891,895
221017	Subscriptions	925,000
221001	Telecommunication(Air time to departments)	13,870,000
228001	Maintenance civil	6,911,960
228003	Maintenance Furniture/Equipment	19,106,360

- All the departments have been paid the following: Teaching materials; Internship materials. Recess term materials and Fuel and Air time.
- We have catered for end of semester two exams for both continuing and final year students. -We have catered for Centralized marking for all teaching staff.
- We have catered for 13 External examiners for the undergraduate programmes. - We have also paid for 44 part timers who taught semester two.
- We have also ensured that students/Staff with Disabilities facilities are well maintained. -The College lost 2 students and 1 staff member, hence spent on incapacity by giving some condolences.
- We have catered for Cleaning materials, Stationery, Repairs and Maintenance. -We have catered for COVID 19 requirements to ensure safety of staff and students as well as maintaining SOPs.
- We have catered for Staff Welfare, by providing to staff, Eats and drinks during meetings and students' presentations. 2 staff wedded and we presented some gifts to them.

Challenges:

- Due to lack of University transport officer, we have found it difficult to repair College vehicles since there is no one to approve.
- Payment to casual staff due to lack of appointment letters.

Recommendations

The University should recruit more staff so that the part time staff are minimized.

Report on Procurements made in 2020

Improvements made

- Procurement plan put in place F/Y 2019-20
- Early proper procurement planning in coordination with user Units
- Procurements strictly done in according with the plan and College budgets

We were able to ensure the following:

- Timely acquisition of various/ assorted teaching materials for user units.
- Quality delivery of materials with zero defects
- Proper and meticulous relationship building throughout the supply chain achieving win win objectives thus reducing costs and achieving value for money to the College

The summary of procurements

Month	Supplies	Services	Works
January, 2020	418,552,391	20,664,420	
February 2020	11,468,706	4,520,980	9,499,000
March 2020	440,501,550	91,922,000	
April 2020			
May 2020	174,235,495		
June 2020	-	-	-
July 2020	-	-	-
August 2020	-	-	-
September 2020	-	-	-
October 2020	-	8,288,960	
November 2020	-	-	-
December 2020	458,720,680	218,312,031	-
Totals	**1,503,478,822**	**343,708,391**	**9,499,000**

Total Amount Spent on Procurement Activities: UGX; 1,856,686,213

Impediments during the year in achieving stated goals and objectives

- Some departments need constant reminders to submit procurement requisitions
- Un- realistic market surveys prices submitted on Procurement form 5
- Poor statement of requirements (Specifications and Terms of references)
- Delay of payments glossily affecting buyer supplier relationship

The challenges have been handled by:

- Constantly reminding user units to submit requisitions through formal circulars
- Liaising with departmental heads, reduce material quantities to fit within planned budgets
- Advising and guiding user units to properly prescribe the requirements
- Using IFM System and constantly engaging the College Bursar on settlement of payments

Suggestions on way forward

- All requisitions for procurement of teaching materials must be submitted in the second week of the beginning of the semester to avoid delays and failure to achieve intended objectives!
- All ICT related requirement MUST be in line with the University directive of liaising with the Technical arm- DICTS! To help in development of proper specifications
- All units are advised to make use of framework contract prices posted on the University Intra-net! I.e. for most commonly used item and ICT equipment's
- Increased engagements with various stakeholders to iron out communication gaps/ lacunas on procurement related matters.

L Infrastructure

Buildings

Most of the buildings at MTSIFA that were in a sorry state were rehabilitated. The new building at Technology was redecorated by Assissi Technical Services.

Challenges

- Funds were not enough to rehabilitate the old Technology building yet it requires urgent attention.
- The College lacks some key pieces of equipment.

Recommendations

The University should prioritize funds for painting the Old Technology building. Equipping of laboratories should also be prioritized.


CEDAT
Library

Progress in implementing the 2018/2019 strategic plan for 2020.

Objective 1: To increase and sustain library resources by the end of 2020: ·

- The library received new books:
- 126 undergraduate dissertations
- 9 masters dissertations and 1 PhD dissertation from the Department of Architecture. · We received 111 titles and 123 copies of new book bank books.
- We received a new spine labeling machine for labeling books from the Book bank section of the main library.

Objective 2: To ensure optimal utilization of library resources by the end of 2020.

- A total of 107 books were bar coded and entered in the virtual library database system of Makerere University library.
- Because of COVID student group trainings was not done e.g user education. There were no library interns to supervise and train.
- A total of 36 students from CEDAT have been given submission rights to submit their dissertations/theses in MAK IR. We have edited 29 dissertations/theses in MAK IR. · A total of 38 final year students were offered library clearance.

Challenges faced in Managing the College Library.

The work plan set for CEDAT library for 2020 was not fully met because of the COVID 19 pandemic. Most of the activities planned were not acomplished. For instance: Stock taking for 2020 was not done; user education and library orientation was not done; and training of first year students on how to use physical and electronic information was not done.

a) Shortage of staff: There are only 4 full time staff in the college managing two libraries. Originally there used to be 7 full time staff.

b) As the information materials increase the library users increase the library space is getting smaller. There is need for expansion of the library with time.

a) There are hardly any computers available for use by students and the staff of the library. The 5 computers for library users all broke down. Non is working. Students can't access the online library databases and catalogue anymore. The desktop given by the IT department in the main library is also non-functional. The 4 computers for staff members have very slow internet connectivity and very frequently they breakdown. It makes virtual library system not to be readily available for use. Therefore processes like data entry into the virtual library database, online circulation of books and clearance of students are carried out with difficulty or are carried out at a much slower rate.

b) The chairs for the students and the staff of CEDAT library are in very bad shape.

Recommendations

1. There is a need to increase the library staff in CEDAT.
2. The library is growing and there is need for a bigger place.
3. The library needs to be given more computers both the students and the staff of CEDAT library.
4. Both the students and staff of CEDAT library need better chairs.

ICT services

Status of Computer Labs

The College has 10 designated computer labs including;

- Main-computer (3034) Lab with a total of 65 machines (20 standalone and 40 N-computing); The 20 stand-alone machines obtained from ADB Hest Project, installed Oct/2019 and all still in good condition. The Lab also host 40 Ncomputing gadgets, installed but as of now they are off because the hosting server experienced technical issues during lockdown. We're trouble shooting to rectify for restoration of the Ncomputing gadgets.
- E-lab old building located in room 240 with 55 Desktops computer, in good working condition.
- Main-lab Old building designated at room 245 with 50 Desktops, 30 in good working conditions and 20 PCS await installation and software updates.
- MTSIFA Computer Lab: Mtsifa Computer lab currently has 20 desktop computers including 3 IMAC state of art PCs majority being used, with 12 UPS. The major challenge is most of the Computers at Mtsifa Lab have served beyond life time (5 years), slow at processing and difficult to be use currently.
- GIS Comp Lab: State of art Computer Lab for with 38 power workstations all in good condition.
- Architecture Lab: It's on level one of the new building, administered by Mr. Kapasa with 15 stand-alone Computer and 10 APC-750 UPS, in good working conditions.
- Graduates Computer Lab; Its designated in old building formed after emerge of two computer lab that is, Mechanical and Civil Labs. This lab is over seen by a volunteer called Mr. Hassan Bulega, it serves graduate students on BYOD basis. The lab has 9 desktop computers, 6 in good working condition.

In total the college has to about 250 computing PC devices in all the 8 designated computer labs. Our goal is to have 500 desktop computer to reliably serve students and staff needs including; internet access, research, teaching and learning.

Status of the College projectors

NO.	ROOM NO.	BRAND	MODEL	SERIAL NO.	LAMP HRS	STATUS
1	163	EPSON	EB-95	P9GF230043L	529	Signal cable needed
2	161	EPSON	EB-95	P9GF230046L	915	Signal cable, truckline (16x16m) replacement needed.
3	160	EPSON	EB-95	P9GF230087L	1027	Working
4	158	EPSON	EB-95	P9GF230086L	1501	Projector screen needed
5	149	EPSON	EB-95	P9GF23005/6L	1448	Signal Cable needed
6	142A	EPSON	EB-95	P9GF230042L	417	Signal cable and cable trucking is needed
7	141	EPSON	EB-95	P9GF230048L	1705	Signal cable and trucking is needed

NO.	ROOM NO.	BRAND	MODEL	SERIAL NO.	LAMP HRS	STATUS
8	MEC3	INFOCUS	IN126a	BNDT40300210		Signal cable needed
9	MEC4	OPTOMA		Q8WR541AAA AAC0192		Not mounted
10	M4	EPSON	EB-95	P9GF230083L	605	Signal cable needed
11	M1	EPSON	EB-95	P9GF230094L	902	Signal cable needed
12	M2	EPSON	EB-96	P9GF230047L	930	Signal cable needed
13	Studio 2	EPSON	EB 485Wi	QUFY2X0211L	495	Signal cable needed
14	Studio 4	EPSON	EB 475Wi	QUFF2X0219L	475	Signal cable needed
15	Studio 5	EPSON	EB 485Wi	QTVF2Y1000L		Not mounted
16	NEW BOARD ROOM	EPSON	EB-X31	WE8K6Z02738	691	Signal cable needed
17	CONF EREN CE HALL	EPSON	EB-S41	X4HJ7X03648X F	290	Signal cable needed second projected not mounted
18	MAIN LAB	DELL	1210S	42305M1		Not powering
19	LAB 3034	EPSON	EB-			Working

- Rooms without overhead projectors,
- Newbuilding; 4033, 4034, 4035, 3033, 3003, 3004, 3005, Studio 1, Studio 3 Old-building; 142B, 168, 169, 105
- 15 Signal cables are needed to replace the faulty ones in all lecture rooms as mentioned in the table above.
- 12 not working projectors, with various technical issues, some beyond repairs are in ICT store Room 3035

University information systems

1. Academic Information Management System (AIMS); The two portals for both staff(aims.mak.ac.ug) and students(student.mak.ac.ug) are being supported at College level. For students; we basically sensitize and guide students to enrollment and registration proceedings. Staff members are supported by enabling access to staff accounts through coordinating

their account creation requests to the vendors.

2. Webmail: University collaboration platform, Online studies as measure to curb the spread of COVID-19 prompted the University to ensure that every valid student is given an institution email as per university policy to support progress of the studies through online platform. As per the directives, the college system Administration office was directed to manually create email for each and every student who requested for the email. Dicts should rectify the automatic means for student mail account creation, the manual way is time consuming and hectic.

3. Makerere University Electronic learning environment (MUELE). To access MUELE, each university student and lecturer needs to create an account in this platform. You will need a University email address. Through the system administration office all staff and students who requested for these accounts acquired them.

4. Continued maintenance of WIFI signals access to staff and students. To about 70 percent of the college premises are covered with WIFI signals (CEDAT-AIR & MAR AIR). Through the practice of bring your own device, many users have accessed internet resource supporting teaching and learning for College members.

5. Continued End-user support: We are required to attend to any technical support call, where we troubleshoot and rectify ICT technical issues from all users at College.

6. Internet access: All College users are enabled and able to access internet. No major internet access downtime experienced let it be in administration offices, WIFI OR Computer Labs.

7. Maintenance and servicing of the Air Conditioners: 12 Air conditioners in including 2 ACs in the server room, 4 ACs in Computer-Lab 3034, 2 ACs E-lab and 2 ACs in the ilabs data center where serviced and spare parts replaced. Now in good working condition however, the regular servicing contract for the air conditioners at the college entirely should be re-activated.

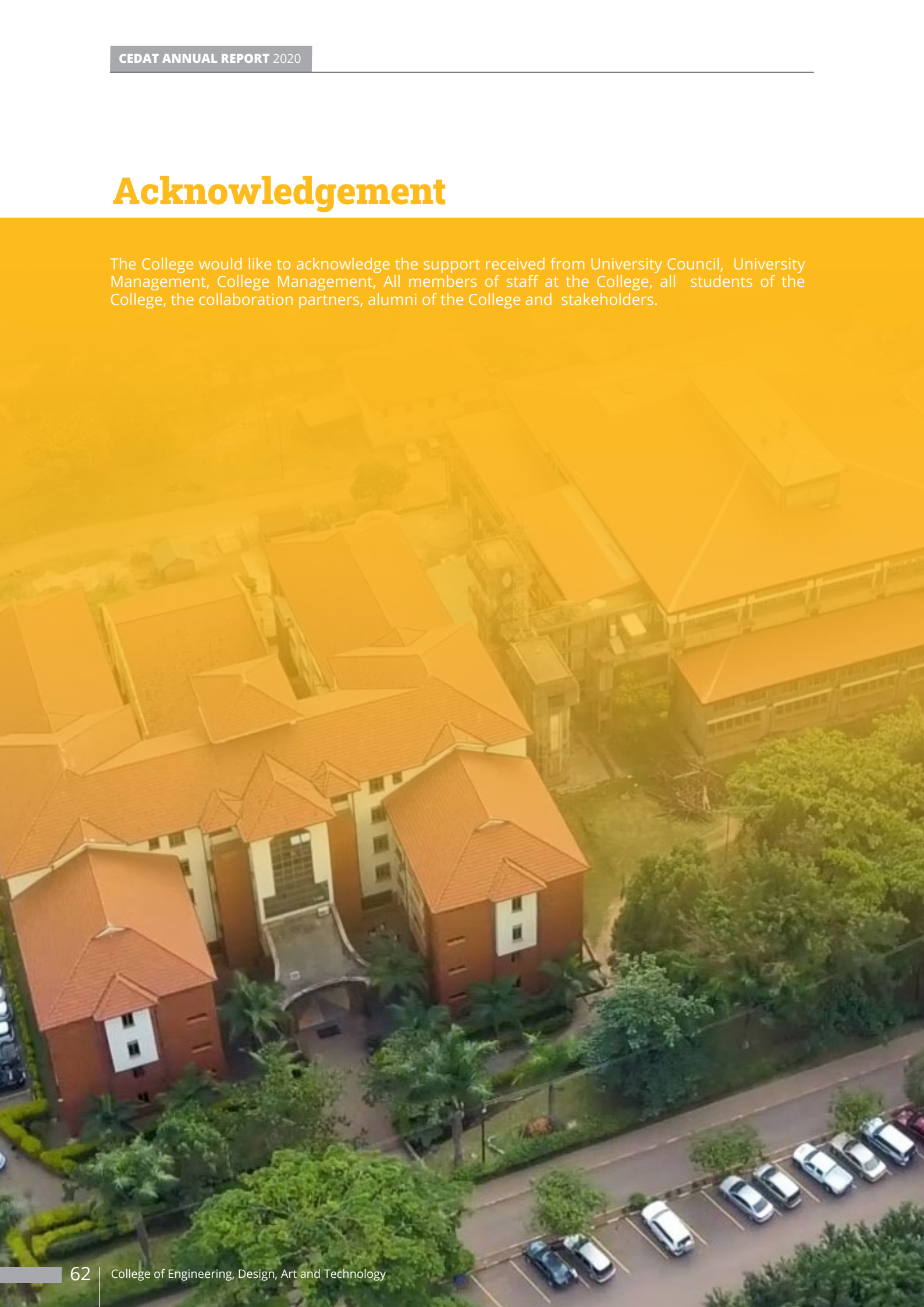
Challenges

1. Inadequate financial support to College ICT activities

2. Under staffed, all system administration duties and the 8 designated computer labs are manned by a team of only 4 members that is; a system Administrator, 2 Lab technicians (David and Julius-MTSIFA), 1 lab attendant (Patrick Nsamba) and a volunteer (Hassan Bulega). 3. Human Resource issues, including short contracts obtained at hustle. 4. COVID -19 pandemic led to a lockdown, some of the ICT facilities were antagonized during the lockdown period. The college E-noticeboard got stolen during this period and other devices like UPS break fast when are not put to use.

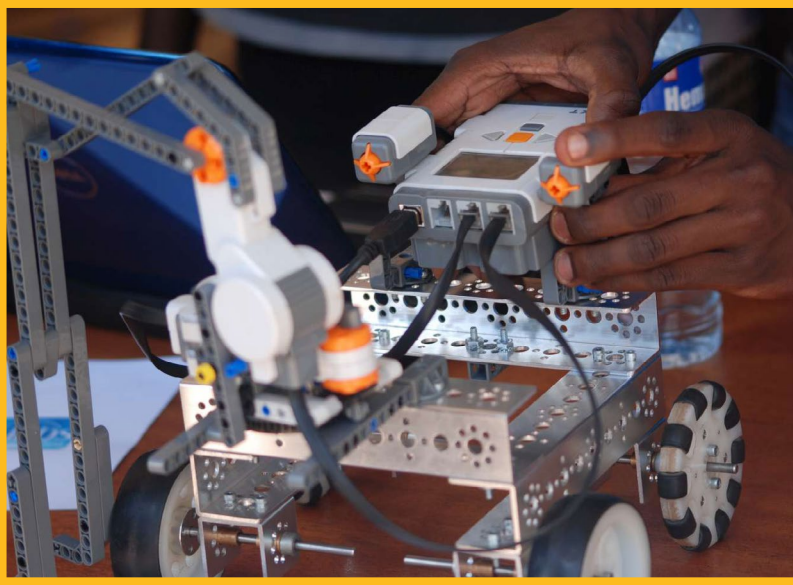
Acknowledgement

The College would like to acknowledge the support received from University Council, University Management, College Management, All members of staff at the College, all students of the College, the collaboration partners, alumni of the College and stakeholders.



MAKERERE UNIVERSITY

CEDAT



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