

## CURRICULUM VITAE

**NAME:** Dr. Eng. Duncan Onyango Mbuge  
**SEX:** Male  
**DATE OF BIRTH:** 28<sup>th</sup> Sept. 1971  
**NATIONALITY:** Kenyan  
**CURRENT RESIDENCE:** Kenya  
**MARITAL STATUS:** Married  
**LANGUAGES:** English, Kiswahili, Dholuo  
**PRESENT ADDRESS:** Department of Environmental and Biosystems Engineering  
University of Nairobi,  
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### EDUCATION

**2005 –2009:** Ph.D. Environmental and Bio-systems Engineering, University of Nairobi.  
Research Thesis on the application of Plastic Lining in Water Reservoirs  
**1997 - 2000:** M. Sc. in Agricultural Engineering, University of Nairobi. Thesis: ‘Mechanical Properties of Bamboo Grown in Muguga, Kenya.’  
**1990 - 1996:** B. Sc. in Agricultural Engineering, Egerton University, Kenya  
**1986 - 1989:** Alliance High School, KCSE  
**1982 - 1985:** St. Mary's Mosoch, KCPE  
**1978 - 1981:** Ong'icha Primary School

### MEMBERSHIP TO PROFESSIONAL INSTITUTIONS

- Registered Engineer, Kenya Engineers Registration Board (Membership No. A 2706)
- Corporate Member, Institution of Engineers of Kenya (Membership No. M 4086)
- Lead Expert, Environmental Impact Assessment / Audit (NEMA No. 7780)

### WORK EXPERIENCE

- Chairman, Department of Environmental and Biosystems Engineering (15<sup>th</sup> July 2017 – Present)
- Senior Lecturer, Department of Environmental and Biosystems Engineering (March 2012 – Present)
- External Examiner, Biomechanical and Environmental Engineering Department, Jomo Kenyatta University of Agriculture and Technology – JKUAT (2019 to Present)
- External Examiner, Energy Engineering Department, Kenyatta University (2020 to Present)
- Chairman, College Environmental Quality Management Committee, College of Architecture and Engineering (August 2015 – 2017) - Ensuring proper management of Environmental matters in the College.
- Project Coordinator, SAPDRY (Development of grain drying facilities that use super absorbent polymers and adjusting the properties of SAPs to optimize drying of grain and control of aflatoxin contamination from 2014 - 2017). A collaborative project between University of Nairobi, ETH Zurich, University of Kassel and University of Venda.
- Processing Engineer / Course Coordinator (Seed Drying, Processing and Storage) Seed Enterprise Management Project College of Agriculture and Veterinary Sciences, February 2010 to 2017, Involved Training seed company employees on seed drying, processing and storage as well as participation in the design of seed processing plant at Kabete Campus, University of Nairobi.

- Senior Lecturer, Department of Biomechanical and Environmental Engineering, Jomo Kenyatta University of Agriculture and Technology (June, 2011 to March 2012)
- Lecturer, Department of Environmental and Biosystems Engineering (September 2008 to June, 2011)
- Tutorial Fellow, Environmental and Biosystems Engineering (September 2002 to July 2008) - Lecturing and Research in Materials Science, Environmental management and conservation in construction, Infrastructure Engineering, greenhouse design and construction materials
- Visiting Junior Professor, University of Pavia, Italy, (October - December 2014) in the Energy Agro-Food Synergies Project. Conducted joint research on Biogas Utilization in Kenya, developed teaching modules for renewable energy and trained in student internship programme management and quality assurance in higher education
- Postdoctoral Fellow, ETH Zurich, Switzerland, Department of Food and Soft Materials (February 2012 - February 2013) - Visiting Scientist (May 2012) - Research into the use of super-absorbent polymers in drying maize to prevent aflatoxin contamination
- Kenya Rainwater Association: Information Officer on rainwater harvesting and management, (February 2001 to 2003), Information Adviser on rainwater harvesting and management (February 2003 to 2004), Design of plastic lined dams for drip irrigation system at Ndeiya Karai, Participation in the design and construction of Weruini, Sweetwaters and Mukogodo dams, Board Member, representing academic and research institutions (February 2006 to 2010)

## **PROJECTS AND RESEARCH GRANTS / AWARDS**

- 2021 - Deutsche Forschungsgemeinschaft (DFG), Characterization and utilization of solar energy in Kenya to improve agricultural productivity, food security and livelihoods, (Co-Principal Investigator)
- 2021 – Valueform Ltd. (UK), Development of tomato packaging for safe transport and storage
- 2021 – WFP, Construction of Ecofriendly Cooling and Storage structures in Wajir and Marsabit Counties
- 2020 - Siebert Foundation, Research on adapting local rice dehulling equipment to spelt wheat, (Co- Principal Investigator)
- 2019 - KCSAP Collaborative Research Grants, Climate-smart adaptive technologies for sustainable production and postharvest management and utilization of ware potato in Kenya, (Co- Principal Investigator)
- 2018 - German Academic Exchange Service (DAAD), funds to host the Innovation Exposition of Agricultural, Environmental and Biosystems Engineering, 23<sup>rd</sup> October 2018
- 2018 - WFP, Construction of Ecofriendly Cooling and Storage structures in Kakuma Refugee Camp in Turkana County
- 2016 - ETH Zurich World Food System Center Grant (Co- Principal Investigator) to Investigate Soft Matter Approach to Effective Preservation of African Leafy Vegetables (ALVs) by Drying by Desiccant / Solar Hybrid System,
- 2015 - Senior Postdoctoral Fellowship by Volkswagen Foundation to design a hybrid desiccant / solar drying system for maize
- 2014 – Project Coordinator, Research Project by ERAFRICA to design a hybrid desiccant / solar drying system for maize
- 2012 - Research Fellowship funded by the Research Fellowship Partnership Programme (RFPP) entitled “Determination of the Effectiveness of Super Absorbent Polymers (SAPs) in Drying Maize and Prevention of Aflatoxin contamination”
- 2012 – Postdoctoral Fellowship funded by the National Council for Science and Technology entitled “Postharvest Control of Aflatoxin contamination in stored maize using super Absorbent Polymers (SAPS) in improved and Affordable Designs of Storage structure”

- 2012 – Project Coordinator, Jomo Kenyatta University of Agriculture and Technology, Innovation Research Grant to investigate the use of mechanical shakers for coffee harvesting.
- 2005 – Ph.D. Fellowship, by DAAD
- 1997 – University of Nairobi, M. Sc. Scholarship
- 1990 – Barclays Bank staff scholarship scheme, B. Sc. Scholarship

## PUBLICATIONS

- Gibson P Mutuli, Duncan O Mbuge, Ayub N Gitau, 2020. Mathematical Modelling, Moisture Transport, Shrinkage and Nutrient Content Properties in Drying Selected African Leafy Vegetables, Applied Engineering in Agriculture. 36(1): 95-104. (doi: 10.13031/aea.13532) @2020, American Society of Agricultural and Biological Engineers, St. Joseph, Michigan [www.asabe.org](http://www.asabe.org)
- Gibson P Mutuli, Duncan O Mbuge, Ayub N Gitau, 2020. Convective drying modelling approaches: A review for herbs, vegetables and fruits. Journal of Biosystems Engineering, 45, 197–212 (2020). Springer, <https://doi.org/10.1007/s42853-020-00056-9>
- Muiru, W.M., P.L. Fabiola, D. Mbuge, L. M'Ragwa and S.L. Kimaru, 2020. Influence of variety endosperm type and seed moisture content on threshability and mechanical damage of sorghum seeds, Agricultural Science and Technology, Vol. 12, No 2, 2020. DOI: 10.15547/ast.2020.02.029
- John Ndisya, Duncan Mbuge, Boris Kulig, Ayub Gitau, Oliver Hensel, and Barbara Sturm, 2020. Hot air drying of purple-speckled Cocoyam (*Colocasia esculenta* (L.) Schott) slices: Optimisation of drying conditions for improved product quality and energy savings, Thermal Science and Engineering Progress, Volume 18, 1 August 2020, Elsevier, <https://doi.org/10.1016/j.tsep.2020.100557>
- L. van 't Hag, J. Danthe, S. Handschin, G. P. Mutuli, D. Mbuge and R. Mezzenga, 2020. Drying of African Leafy Vegetables for their Effective Preservation: Difference in Moisture Sorption Isotherms Explained by their Microstructure, Food and Function, Royal Society of Chemistry, 2020, 11, 955, <https://doi.org/10.1039/c9fo01175g>
- Jörg Schemminger, Duncan Mbuge, Werner Hofacker, 2019. Ambient air cereal grain drying – Simulation of the thermodynamic and microbial behaviour, Thermal Science and Engineering Progress, Volume 13, October 2019, <https://doi.org/10.1016/j.tsep.2019.100382>.
- Judith Nduku Kimeu, D.O Mbuge and M.P. Musau, 2019. Environmental Effects of Solar PV, Diesel and the Corresponding Hybrids in Kenya: Case Study of Turkana County; International Journal of Scientific and Research Publications (IJSRP) 9(6) (ISSN: 2250-3153), DOI: <http://dx.doi.org/10.29322/IJSRP.9.06.2019.p9042>
- D. Ndunge, D.O. Mbuge and C.T. Omuto, 2019. “Protocol for Evaluating Sand Dam Water Quality in Semi-Arid Areas: A Case Study of Makueni County.” IOSR Journal of Engineering (IOSRJEN), vol. 09, no. 01, 2019, pp. 01-14
- Mbuge D. O. and E.B.K. Mutai, 2018. Influence of heat treatment on Vitamin C Levels in Oyster Mushroom. Invention Journal of Research Technology in Engineering & Management (IJRTEM) ISSN: 2455 – 3689, [www.ijrtem.com](http://www.ijrtem.com) Volume 2 Issue 8 || August 2018, PP 47-52
- Franz Román, Duncan O. Mbuge & Oliver Hensel, 2018. Modeling the effect of a superabsorbent polymer material as desiccant in maize drying using CFD, Drying Technology, DOI: 10.1080/07373937.2018.1504063
- Gibson P. Mutuli, Duncan Mbuge, 2018. Effect of Drying on the Nutritional and Organoleptic Characteristics of African Leafy Vegetables, Jute Mallow (*Corchorus olitorius* L.) and

- Cowpea (*Vigna unguiculata*) Journal of Biosystems Engineering, Vol. 43, No. 3, 2018, www.jbeng.org
- A.N. Gitau, S.N. Wilba, D.O. Mbuge and S.T. Mwangi, 2018. Modelling Variable Cost of Tractors: A Case Study of Ten Tractor Models in Juba of South Sudan, Agricultural Mechanization in Asia, Africa and Latin America, Vol.49, No.2, 2018
- Jane Njenga, Duncan Mbuge, Ayub Gitau, Wambui Kogi-Makau, Maria Sassi Quality Assurance Systems in African Partner Universities within the Energy Agro-Food Synergy Project, NAF International Working Paper Series, NO. 17/02, 2017, <http://nafirn.weebly.com>
- Evans Mugeru Lusigi, Duncan Onyango Mbuge, John Paul Obiero, Stephen Conrad Ondieki, Peter Kuria Ndiba, 2017. Quality Assessment of Rain and Storm Water Runoff for Nairobi City Industrial and Sub-Urban Areas, International Journal of Innovative Research in Engineering & Management (IJIREM), ISSN: 2350-0557, Volume-4, Issue-1, January-2017.
- F.P. Langa, W.M. Muiru, D. Mbuge, L.R. M'Ragwa, F.M. Olubayo and J.W. Muthomi, 2016. Influence of Endosperm Types, Seed Moisture Content and Threshing Methods on Germination and Seedling Vigour of Sorghum, World Journal of Agricultural Sciences 12 (5): 378-383, 2016, ISSN 1817-3047
- Sylvia Injete Murunga, Duncan Onyango Mbuge, Ayub Njoroge Gitau, Urbanus Ndungwa Mutwiwa and Ingrid Namae Wekesa, 2016. Isolation and characterization of methanogenic bacteria from brewery wastewater in Kenya, Vol. 15(47), pp. 2687-2697, 23 November, 2016, DOI: 10.5897/AJB2016.15551, Article Number: E58885261761, ISSN 1684-5315.
- Franz Roman, Oliver Hensel, Duncan Mbuge, Development of Grain Drying Facilities That Use Superabsorbent Polymers (SAP) to Optimise Drying and Control Aflatoxin Contamination in Kenya, "Solidarity in a competing world — fair use of resources", Tropentag, September 18-21, 2016, Vienna, Austria
- G. P. Mutuli and D. O. Mbuge, 2016. Sorption Isotherms for Cowpea Leaves (*Vigna unguiculata*) and Jute Mallow (*Corchorus olitorius* L), African Journal of Science and Technology (AJST), Science and Engineering Series, Vol. 13 No. 2, October 2016.
- Duncan O. Mbuge, Renata Negrini, Livine O. Nyakundi, Serge P. Kuate, Ranajit Bandyopadhyay, William M. Muiru, Baldwin Torto, Raffaele Mezzenga. 2016. Application of superabsorbent polymers (SAP) as desiccants to dry maize and reduce aflatoxin contamination, J Food Sci Technol (August 2016) 53(8):3157–3165.
- Murunga, S. I., D. O. Mbuge, A. N. Gitau, U. N. Mutwiwa, and I. N. Wekesa. 2016. Characterization of brewery waste water and evaluation of its potential for biogas production. Agricultural Engineering International: CIGR Journal, 18(3):308-316.
- Odero S.O., D.O. Mbuge, E.K. Mutai and G.P. Mutuli, (2016). Evaluation of the Effectiveness of Super Absorbent Polymers (SAPs) In Air Dehumidification for Maize Drying, International Journal of Innovative Research in Engineering & Management (IJIREM), ISSN: 2350-0557, Volume-3, Issue-3, May-2016.
- Ndisya, J., A. N. Gitau, D. O. Mbuge, and A. W. Hiuhu. 2016. Investigation of the effect of rake angle on draft requirement for ripping in sandy clay. Agricultural Engineering International: CIGR Journal, 18(4): 52-69.
- Ndisya, J., Gitau, A., Mbuge, D. and Hiuhu, A. (2016) The Effect of the Operational Parameters on the Draft Requirement of Ripping in a Sandy Clay Soil. Open Journal of Optimization, 5, 1-13. <http://dx.doi.org/10.4236/ojop.2016.51001>
- Kiburi, F.G., C. L. Kanali, and D. O. Mbuge. 2015. Modeling drying of seed maize using super absorbent hydrogel under hermetic conditions. Agric Eng Int: CIGR Journal, 17(4):257-264.

- Mutuli, G. P. and D. O. Mbuge (2015). Drying characteristics and energy requirement of drying cowpeas leaves and jute mallow vegetables, CIGR Electronic Journal
- Hiuhu, A., Gitau, A.N., Mbuge, D.O. and Mulwa, J.N. (2015), Optimization of the Angle of Frog in Mouldboard Tillage Operations in Sandy Clay Soil. Open Journal of Optimization, 4, 131-140. <http://dx.doi.org/10.4236/ojop.2015.44013>
- Kiburi F.G., Kanali C.L. and Mbuge D.O. (2014). Evaluating the performance of Super Absorbent Hydrogel in drying of seed maize under hermetic conditions. Proceedings of 2014 International Conference on Sustainable Research and Innovation, Volume 5, 7th-9th May 2014
- Kalungu, J.W., Filho, W.L., Mbuge, D. O., and Cheruiyot, H.K., 2014. Assessing the Impact of Rainwater Harvesting Technology as Adaptation Strategy for Rural Communities in Makueni County, Kenya. In Handbook of Climate Change Adaptation, Pp. 1 - 17, 06 Oct 2014, ISBN 978-3-642-40455-9, Springer Berlin Heidelberg
- Tonui, K.S., E.B.K. Mutai, D.A. Mutuli, D.O. Mbuge and K.V. Too, 2014. Design and Evaluation of Solar Grain Dryer with a Back-up Heater. Research Journal of Applied Sciences, Engineering and Technology, 7(15): 3036-3043.
- Kalungu, J. W. and Mbuge, D. O., 2013. Assessing the impacts of Kenyan universities in adapting to climate change, African Regional Conference of Vice Chancellors, Provosts and Deans of Science, Engineering and Technology (COVIDSET 2013)
- Mbuge, D. O., L. O. Gumbe and G. O. Rading, 2012. Service Life of HDPE Plastic Dam Lining - Prediction Using Viscoelasticity, Lambert Academic Publishing, Saarsbrucken, Germany. ISBN 978-3-8465-4724-3.
- Too. K.V., E.B.K. Mutai, J.M. Mutua, D.A. Mutuli and D.O. Mbuge, 2012. Viscoelastic Properties of Bulk Groundnuts, Research Journal of Applied Sciences, Engineering and Technology 4(10): 1260-1267, 2012 ISSN: 2040-7467
- Alex Oduor, Kipruto Cherogony, Jane Mutune, Maimbo Malesu, Anne Karuma, Douglas Nyolei, Jacqueline Kandagor & Duncan Onyango with Chris Ajele, Wilfred Wafula, Samuel Njalale, Alphas Lusweti, Peter Maina, Erick Towett, Arjen de Vries, David Tanui, Francis Mwangi, William Kimosop, Robert Kibunja and Saina Kiptoo, 2012. Food Security Framework for Turkana County. Diocese of Lodwar, ISBN: 978-92-9059-326-3
- Mbuge, D. O., L. O. Gumbe and G. O. Rading, 2011. Predicting the Service Life of HDPE Plastic Lining for Water Reservoirs Using Viscoelasticity, Journal of Polymer Science and Engineering Vol. 51, No. 6, Pp 1198–1205, June 2011, Wiley Publications.
- Mbuge, D. O. L. O. Gumbe, and G. O. Rading, 2011. Analysis of the Weld Strength of the High Density Polyethylene (HDPE) Dam Liner, African Journal of Science and Technology (AJST), Science and Engineering Series Vol. 11, No. 2, pp. 12-24
- Mutai, E.B.K., P.O. Otieno, A.N. Gitau, D.O. Mbuge and D.A. Mutuli, 2011. Simulation of the Microclimate in Poultry Structures in Kenya, Research Journal of Applied Sciences, Engineering and Technology 3(7): 579-588, ISSN: 2040-7467
- Langat, S., D. O. Mbuge and E. B. K. Mutai, 2011. Determination of the Parameters for Design of Flexible Plastic Tank, African Journal of Science and Technology (AJST), Science and Engineering Series Vol. 11, No. 2, pp. 35-44
- Mbuge, D.O. and P.K. Langat, 2008. Principles of a Mechanical Shaker for Coffee Harvesting. CIGR Electronic Journal, Vol. X. January, 2008.
- Mbuge, D.O., 2006. Design Protocol for the Design of Flexible HDPE tanks. Southern and Eastern Africa Rainwater Network (SEARNET) Conference, Mombasa, <http://betuco.be/water/Rainwater%20management%20for%20disaster%20mitigation.pdf>
- Mbuge, D.O., D.M., 2003. Advantages of Harvesting Rainwater in Urban Areas. Kenya Society of Agricultural Engineering (KSAE) Annual Conference, Nairobi.

- Mati, B., D. Mbuge, H. Mahoo, G. Kajiru and L. Gallet, 2008. Regional Training Workshop and Write-shop to Document Lessons Learnt from Projects and Programmes in Agricultural Water Management, IMAWESA Proceedings No. 17, November 2008.
- Ngigi, S., J. Thome, K. Mutunga and D. Mbuge, 2004. Proceedings of the GHARP/USAID OFDA Project Planning Workshop, GHARP Publication No. 4.
- Adhiambo, B., A. Oduor and D. Mbuge, 2003. Rainwater Harvesting for Improved Livelihoods, Exposition Catalogue 2003, Global Water Partnership (GWP) Associated Project of the Regional Land Management Unit (RELMA) and Kenya Rainwater Association.
- Onyango, D.M., 2003. Women at the Source of Life: The Experience of Kenya Rainwater Association, FAO Dimitra Newsletter, No. 8, October 2003, Brussels.
- Obiero, J.P.O, C.O. Thine and D.O. Mbuge, 2003. Rainwater Harvesting for Crop Production in Semi-arid Areas – A Hydrology Based Teaching / Training Manual, UON / Cranfield University / HRWallingford / ITAD / DFID collaboration.
- Wanyonyi, J.S., S. Ngigi, P. Mwangi and D. Mbuge, 2001. Workshop Proceedings, GHARP Strategic Planning and Project Implementation Planning Workshops, GHARP Publication No. 1.

### **COMPLETED POSTGRADUATE SUPERVISION**

- 2020, Gibson Peter Mutuli, Ph.D. Numerical modelling of physical processes in drying of selected African leafy vegetables
- 2020, Judith Nduku Kimeu, M.Sc. Environmental Impacts of Solar PV Integration Into Existing Diesel Mini-Grid
- 2019, Frankline Muriungi Mwiti, M.Sc. Optimization of the performance of hybrid solar-desiccant drier in grain storage systems
- 2018, Nicola Saman, M.Sc. Modeling Variable Cost of Tractors: A Case Study of Ten Tractor Models in Juba of South Sudan
- 2018, Dorcas Ndunge Bernard, M.Sc. Protocol for Evaluating Sand Dam Water Quality in Semi-Arid Areas: A Case Study of Makueni County
- 2017, Sylvia Injete Murunga, PhD, Modeling and Optimization of Biogas Production from Brewery Waste Water, University of Nairobi
- 2017, Evans Mugera Lusigi, M.Sc. Quality Assessment of Rain and Storm Water Runoff for Nairobi City Industrial and Sub-Urban Areas, University of Nairobi
- 2017, Ng'eno Vincent, Assessment of Super Absorbent Polymer (SAP) on Plant Available Water (PAW) in different soil types, University of Nairobi
- 2016, Langa Fabiola Peter, M.Sc., Effects of Threshing Methods, Moisture Content and Endosperm Types on Threshability and Selected Seed Quality Parameters of Sorghum, University of Nairobi
- 2016, Peter Kimani Kangethe, M.Sc., Determination of Moisture and Temperature Variation in Wet Grain Silo over Time and Space to Effect Desiccant Drying, University of Nairobi
- 2016, Kennedy Wandera Makodiuh, M.Sc., Rake Angle Effect on Draft Power Requirement of a Sub-Soiler in Nitisols, University of Nairobi
- 2015, Hiuhu Angela Wambui, M.Sc., Optimization of the Angle of Cut of a Frog in Mouldboard Tillage Operations: Case Study of Clay Soil, University of Nairobi
- 2015, John Mulwa Ndisya, Numerical Simulation of the Resistance to Ripping in a Cohesive Soil, University of Nairobi
- 2015, Gibson Mutuli Peter, M.Sc., Determination of Effective Parameters of Drying African Leafy Vegetables (ALVs), University of Nairobi
- 2015, Shadrack Omondi Odero, M.Sc., Evaluation of the Effectiveness of Superabsorbent Polymers (Saps) in Air Conditioning for Grain Drying, University of Nairobi

- 2015, Amos Abala Wambura, M.Sc., Determining the physical properties needed for evaluating performance of glass reinforced polymer as material for solar hot water tanks in the coastal areas, University of Nairobi
- 2014, Florence Gatwiri Kiburi, M.Sc., Moisture Sorption in Seed Maize (*Zea Mays L.*) during Hermetic Drying using Super Absorbent Hydrogel, Jomo Kenyatta University of Agriculture and Technology, JKUAT
- 2014, Livine Osiemo Nyakundi, M.Sc., The Effect of Superabsorbent Polymers on Aflatoxin Contamination in Maize, University of Nairobi

## **ON GOING PROJECTS / POSTGRADUATE SUPERVISION**

### **Water, Irrigation and Environmental Engineering**

- Water use efficiency in Mwea Irrigation Scheme - M. Sc. Supervision
- Application of superabsorbent polymers in irrigation - Ph.D. Supervision
- Determination of crop water requirement for irrigation of African leafy vegetables

### **Renewable Energy**

- Characterization of comingled market waste for biogas generation - M. Sc. Supervision
- Development of solar coolers for cassava preservation - M. Sc. Supervision

### **Process and Food Engineering**

- Drying of maize using desiccant to prevent aflatoxin contamination - Ph.D.
- Postharvest handling and drying of cassava - M. Sc. Supervision
- Drying characteristics of African leafy vegetables - Ph.D. Supervision
- Preservation and processing of Arrow roots - Ph.D. Supervision

### **Power and Machinery Engineering**

- Design and optimization of potato harvester - Ph.D. Supervision
- Customization of motorcycles for tillage operations - M. Sc. Supervision

## **TRAINING, SEMINARS AND CONFERENCES**

- VW Foundation soft skills training on Scientific Communication, 1-7 March 2020, Makerere University, Kampala, Uganda
- VW Foundation soft skills training on making presentations, 2 - 5 April 2019, University of Kassel, Witzenhaussen, Germany
- Launch of the Partnership of Belt and Road for Environmental Deans and Directors, 10-11 December 2018, Tongji University, Shanghai, China
- VW Foundation soft skills training workshop on Proposal Writing, 2-7 December 2018, Sawela Lodge, Naivasha, Kenya
- African Doctoral Academy, Training on Postgraduate Supervision, 8 – 15 January 2018, Stellenbosch University, South Africa
- VW Foundation soft skills training on Leadership, 9-18 November 2017, University of Kassel, Witzenhaussen, Germany
- VW Foundation soft skills training on Project and Time Management, 12 – 19 November 2016, Arusha, Tanzania
- American Society of Agricultural and Biological Engineers (ASABE), October 24<sup>th</sup> - 29<sup>th</sup> 2016 Engineering and Technology Innovation for Global Food Security Conference, Spier Wine Estate and Hotel, Stellenbosch, South Africa

- Commission for Agricultural and Rural Engineering, CIGR-AgEng Conference, 26-29 June 2016, Aarhus, Denmark
- VW Foundation soft skills training on experimental design, 23 – 27 March 2016, Addis Ababa, Ethiopia
- Energy Agro Food Synergies Project, Staff Exchange visit to Sokoine University of Agriculture, Morogoro, Tanzania, 17 -19 January 2016
- VW Project Inaugural meeting, 4 - 7 December 2015, University of Kassel, Germany
- ERAFRICA Annual Project Meeting, September 2015, University of Venda, Thoyohandou, South Africa
- Proposal writing for VW Foundation Senior Postdoctoral Scholarships, February 2015, University of Konstanz and University of Kassel, Germany
- Network on Humanitarian Aid (NOHA) Awareness Raising Seminar, University of Pavia, 7th November 2014, Italy
- Energy Agro Food Synergies Project, Study visit to University of Pavia, Italy, 20th October - 4th December 2014
- ERAFRICA Project Coordinators' Conference of 16 - 18 September 2014, Pretoria, South Africa
- University of Nairobi, Training on Supervision of Postgraduate student, July 2013
- University of Nairobi, Training on Pedagogy, July 2012.
- East Africa Climate Innovation Network (EACIN), Sharing knowledge, experience and best practices in climate change adaptation technology innovations, 17th - 18th January 2013, Kenya School of Monetary Studies.
- DIES (Dialogue on Innovative Higher Education Strategies) Training course Part II: "Proposal Writing for International Research Projects," 09th – 14th April 2012, Sawela Lodge, Naivasha, Kenya, Nairobi. Organized by Deutscher Akademischer Austausch Dienst (DAAD), Freie Universität Berlin, in cooperation with the Universities of Bonn and Kassel
- DIES (Dialogue on Innovative Higher Education Strategies) Training course Part I: "Proposal Writing for International Research Projects," 20th – 25th November 2011, Silver Springs Hotel, Nairobi, Kenya. Organized by Deutscher Akademischer Austausch Dienst (DAAD), Freie Universität Berlin, in cooperation with the Universities of Bonn and Kassel
- 11th International Conference on Frontiers of Polymers and Advanced Materials (ICFPAM), 22nd - 27th May 2011, University of Pretoria, South Africa.
- Tenth SEARNET Conference on Rainwater Harvesting and Management in Africa, 4-8 December 2006, Mombasa, Kenya
- 7th SEARNET Conference on Rainwater Harvesting and Management in Africa, Arusha, Tanzania, 1st - 5th December 2003.

### **SELECTED CONSULTANCIES**

- September 2021, Member of Task team to review the proposal to Establish tomato processing plant by Kirinyaga county, NARIGP (joint World Bank and Government of Kenya Project that supports 21 participating Counties to establish agricultural and rural infrastructural investments that include agro-processing plants, produce markets and small-scale community-based irrigation schemes)
- December 2020, Rural Infrastructure Engineer, Consultancy to formulate and evaluate (technical, environmental and social) the program to build resilience for food and nutrition security in the Horn of Africa (HOA), The IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI)
- December 2020, Training/Induction of Graduate Engineers by National Agricultural and Rural Inclusive Growth (NARIG) on 6th – 17th December 2020 At Fk Resort - Nyeri.



December 2019, Training on Costing of Small Dams, Water Pans and Irrigation Projects, National Agricultural and Rural Inclusive Growth Project (NARIGP), Capacity Building of the County Technical Departments (POEs) on Sustainable Land Management, Kitui

October 2019, Evaluation of Project Proposals to be funded by the Makerere University, Uganda

May 2019, Tata Chemicals Magadi Limited (TCML) Factory Effluent Feasibility and EIA Study

October 2018 to Date, Design of Silos and Granaries for Mabati Rolling Mills

October 2018 to Date, Design and fabrication of charcoal cooler and brick cooler for fruit preservation for World Food Programme at Kakuma Refugee Camp

October 2017, Design and fabrication of charcoal cooler and brick cooler for fruit preservation for Rockefeller Foundation Postharvest Project at the University of Nairobi

February 2017, Evaluation of Project Proposals to be funded by the Deans' Committee, University of Nairobi

February 2016, Evaluation of Project Proposals to be funded by the Deans' Committee, University of Nairobi

April 2015, Prowater International, Food Security Master plan for Tharaka Nithi County for Trocaire International (Contribution on Renewable Energy and Agricultural Processing)

February 2015, Evaluation of Project Proposals to be funded by the Deans' Committee, University of Nairobi

January 2015, Prowater International, Food Security Master plan for Embu County for Trocaire International (Contribution on Renewable Energy and Agricultural Processing)

May 2014, Trocaire and Catholic Diocese of Lodwar, Evaluation and Documentation of Crop Resilience & Fruit Trees Project in Loima District, Turkana

October 2013, Trocaire, Technical Support in Writing a Concept Note for 'Building Resilience to Climate Extremes and Adaptation to Disaster Programme (BRACED)

August 2012, Prowater International, Food Security Master plan for Turkana County for the Catholic Diocese of Lodwar

April 2012, Presentation of rainwater technologies at the launch of Coca Cola Company rainwater harvesting initiative

April 2009, Rappporteur at the closing workshop of the Nile Basin Initiative (NBI) EUWAP project, Nairobi, Kenya

May 2008, Rappporteur at the IMAWESA write-shop on agriculture water management for managers of ADP projects in East and Central Africa, Arusha, Tanzania

August 2007, World Vision International, Training community leaders in rainwater harvesting and irrigation technologies at Ndabibi ADP, Naivasha

July 2007, Kenya Rainwater Association, Training of agricultural officers from Malawi on rainwater harvesting technology for agricultural production through including supplemental and in-situ irrigation

March 2006, World Vision International, Training community leaders in rainwater harvesting technologies including supplemental and in-situ irrigation at Ndabibi ADP, Naivasha

June 2003, World Vision International, Evaluation of rainwater harvesting and irrigation projects in Makueni ADP

2004, Participated in the supervision of design and construction of Mukogondo reservoir for rainwater harvesting for irrigation and livestock at Kenya Rainwater Association

2003, Participated in the design and supervision of the Ndeiya Karai integrated rainwater harvesting and drip irrigation project at Kenya Rainwater Association funded by DED

2001- 2002, Participated in the supervision of design and construction of Weruini and Sweetwaters rainwater harvesting reservoirs for irrigation and livestock

## **REFEREES**

Prof. Eng. L. O. Gumbe  
Professor,

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