

CURRICULUM VITAE OF TEAM MEMBERS

The Team is made up of Academics from USL and NU with a combined total of over 150 years of teaching and research experience. The participating industry implementation partners have a combined experience of 20 years in the industrial sectors of water, energy, agriculture and general engineering services.

Dr Salmatta Abiodun Ibrahim – Project Team leader

Dr. Salmatta A Ibrahim is a distinguished geologist, hydrogeologist, engineering scientist, environmental geologist, gender and human rights activist, humanitarian worker, and a passionate advocate for scientific solutions to environmental challenges. Dr. Ibrahim's journey in the realm of education and research began in 1993, when her profound interest in the intersections of environmental science, sustainable energy engineering, engineering geology, and climate change emerged. As a postgraduate teaching assistant in the United Kingdom, Dr. Ibrahim passionately imparted knowledge to PhD, Masters, and Undergraduate candidates, specializing in Sustainable Engineering and Sustainable Energy. Her commitment to education is underscored by her dedication to shaping the next generation of leaders in the field of agricultural sustainability. Throughout her career, she has consistently strived to find innovative and practical solutions to scientific complications within her environment.

As a gender and human rights activist, Dr. Ibrahim has consistently advocated for equality and inclusivity within the scientific community. She firmly believes in the power of diversity and recognizes the urgent need for more women to pursue careers in STEAM (Science, Technology, Engineering, Agriculture, and Mathematics). Dr. Ibrahim tirelessly works to inspire and empower young girls and women to break barriers and embrace scientific professions, fostering a more balanced and inclusive scientific landscape.

In addition to her remarkable professional achievements, Dr. Ibrahim has also made a significant impact as a humanitarian worker. She has actively participated in numerous humanitarian missions, providing critical aid and relief to communities affected by natural disasters and other crises.

Dr. Salmatta Abiodun Ibrahim's comprehensive education, diverse experience, and commitment to innovation makes her a valuable asset to any academic institution seeking to advance the frontiers of Agricultural and Sustainable Engineering. Her passion for education, coupled with her leadership in the agricultural and energy projects, sets her apart as a dynamic and influential figure in the field. Dr. Ibrahim envisions a future where agriculture harmonizes with environmental sustainability, and communities thrive through resilient and efficient farming practices. Her dedication to addressing climate change challenges aligns with her overarching goal of fostering a sustainable and equitable future for agriculture.

Dr Salmatta Abiodun Ibrahim, as one of two female participants on this project Team, is the Project Team Leader.

Prof Felixina Jonsyn-Ellis – Project Co Team Leader

Degree: BSc. General Biology Nazareth College, Kalamazoo, Michigan, USA .

Degree: MSc. (Hons) Microbiology University of Muenster, Muenster, West Germany,,

Degree: Ph.D. Environmental Microbiology University of Liverpool, Liverpool School of Tropical Medicine,

Scientific positions:

Principal contact or the Partnership of Aflatoxin Control in Africa (PACA) for Aflatoxin elimination in the food chain.

Programme Leader –Microbiology- Sierra Leone Agricultural Research Institute (SLARI)

Part of a team to collect representative sewage samples from capital cities across the globe and other sentinel sites and analyze them for occurrence of antimicrobial resistance genes and other hazards using amongst others, metagenomics analysis. :

Partnership with Friedrich-Loeffler Institut, German Federal Institute for Animal Health- Collaboration in Infectious Disease Research and Training

National Project Coordinator for FAO/University of The Gambia project to strengthen the Agriculture Programme

National Project Coordinator for EU project on Environmental and Socio-Economic contribution of Palm Geotextiles to Sustainable development and soil conservation.

Member of the Steering Committee of the Reduction of Emissions from Deforestation and Forest Degradation (REDD+)

Empowerment of rural women (Community Based Organisations) to practice sustainable agriculture, agro-forestry, soil conservation and biodiversity-Global Environment Fund (GEF) Small Grants Mushroom cultivation techniques (after Training Workshop on Mushroom cultivation-Mutare, Zimbabwe

Designing & Using Geotextile mats to prevent soil Erosion- EU-BORASSUS. Research focus on Sustainable Development ,Soil Conservation and Preservation-issues

Lecturing and supervisory Experience (1st to final year) in various topics of Biology, Microbiology, Immunology and Parasitology. Supervised several Undergraduate, Masters and PhD students (locally and internationally).

Published several articles in the field of mycotoxicology and the following in the field of soil conservation, biodiversity and ecosystem conservation

The potential contribution of palm mat geotextiles to soil conservation and sustainable development, p. 303-306 In: J.A. Martinez-Casanovas, I. PlaSentis, M.C.R. Martin and J.C.B. Solanes (Eds) Soil and Water Conservation under Changing Land Use, Universitat de Lleida, Spain 2006

Contributions of biogeotextiles to sustainable development and soil conservation in developing countries: the Borassus Project p 123 – 141 In: E. Tiezzi, J.C. Marques, C.C. Brebbia and S.E. Jorgensen (Eds) Ecosystems and Sustainable Development VI. WIT Transaction on Ecology and the Environment, Vol. 106, 2007

The BORASSUS Project: aims, objectives and preliminary insights into the environmental and socio-economic contribution of biogeotextiles to sustainable development and soil conservation, p 601-610 In: A. Kungolas, C.A. Brebbia and E. Beriatos (Eds) Sustainable Development and Planning III, Vol. 2, Wessex Institute of Technology (WIT Press), Southampton, UK -2007 The potential contribution of palm mat geotextiles to soil conservation and sustainable development, p. 303-306 In: J.A. Martinez-Casanovas, I. PlaSentis, M.C.R. Martin and J.C.B. Solanes (Eds) Soil and Water Conservation under Changing Land Use, Universitat de Lleida, Spain 2006

Contributions of biogeotextiles to sustainable development and soil conservation in developing countries: the Borassus Project p 123 – 141 In: E. Tiezzi, J.C. Marques, C.C. Brebbia and S.E. Jorgensen (Eds) Ecosystems and Sustainable Development VI. WIT Transaction on Ecology and the Environment, Vol. 106, 2007

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Prof Felixina Jonsyn-Ellis, as one of two female participants on this project Team, is the project Co-Team Leader and will play the critical role of microbioanalysis of the oils at the agricultural model demonstration site.

Prof Kelleh Gbawuru Mansaray – DVC of FBC/USL

Prof Kelleh Gbawuru Mansaray is an Engineer and one of the leading pioneers in the design and development of renewable energy programmes in Sierra Leone. He holds a Bachelor of Science degree in Physics from the University of Sierra Leone, Master of Science degree in Renewable Energy Technologies from Carl von Ossietzky University in Germany, a Doctor of Philosophy degree in Biological Engineering (with specialization in Bioenergy Systems) from Dalhousie University in Canada and a one-year experience as a postdoctoral researcher in Chemical Engineering at the University of British Columbia in Canada among other qualifications. He is currently the Deputy Vice Chancellor of Fourah Bay College, University of Sierra Leone.

Prior to his appointment as Deputy Vice Chancellor, Prof. Mansaray served in a number of administrative leadership positions including Officer-In-Charge of the United Nations Industrial Development Organization in Sierra Leone (2013 – 2016) and Dean of the Faculty of Engineering and Architecture at Fourah Bay College, University of Sierra Leone (2017 - 2022). Prof. Mansaray has impeccable record in the University of Sierra Leone and has brought to the University his breadth and depth of experience both as an Academic and an application-focused researcher with several publications. He has supervised many undergraduate and postgraduate student projects which have resulted in prototypes and public installations especially in the areas of applied technology and renewable energy.

Prof. Mansaray has received several recognitions and awards at national and international levels including a recognition in the coveted global 2023 AD Scientific Index for his passionate contribution to the furtherance of Academia, recipient of a University of Sierra Leone award in recognition of his contribution to research, a United Nations award in recognition of his special contribution to the South-South and Triangular Cooperation and a meritorious candidate of the Natural Sciences and Engineering Research Council of Canada. He is a member of the International Association for Solar Energy Education, a member of the Professional Engineers Registration Council of Sierra Leone and a Fellow of the Sierra Leone Institution of Engineers.

The wealth of experience of Prof Kelleh Gbawuru Mansaray in the field of renewable energy will be of valuable contribution to this project as a key Team member.

Prof Alieu Mohamed Bah – DVC of NU

Prof Alieu Mohamed Bah was born in Moyamba town, Kaiyamba Chiefdom, Moyamba District. He attended the Seven Days Adventist (SDA) Primary School Moyamba and proceeded to the Moyamba Boys

Secondary School, where he obtained his GCE 'O' level. In 1989 he gained admission in Njala University College where he pursued his BSc in Agricultural Education and graduated in 1993. He also obtained his Master's degree in 2007 in Agricultural Education. He did his PhD at Zhejiang University PRC from 2008 to 2011 where he obtained his doctorate degree in Crop Science.

In 1999 he was appointed as Principal for Kulafai Rashideen Islamic Secondary School in Moyamba town till February 2012. In 2012 he joined the Njala University as lecturer 1 in the Crop Science Department. In 2015 he was promoted to the rank of Senior Lecturer and in 2019 promoted to Associate Professor. In 2015 he was appointed as Head of the Crop Science Department till August 2022. In 2020 he was elected as the Dean for the School of Agriculture and Food Sciences till August 2022. In September 2022 he was appointed as the Deputy Vice Chancellor for Njala Campus and a position he still carries

He has been a member of the Senate and University Court since 2014. He was appointed into various University committees and conducted various investigation. He was also the Acting Radio station manager FM 92.5 for almost two years. He has supervised students at Undergraduate, Master's, MPhil and PhD. He has a lot of publications and has in 2022 released three rice varieties using mutation induction technology. He is a member of various organizations both within and outside the University. He has attended so many international trainings and conferences. He is married with children.

Prof Alieu Mohamed Bah is a key Team Member and he will advise the team on aspects of agriculture and how to improve farming practices in Sierra Leone.

Prof Daramy Vandi Von Kallon – Associate Professor at University of Johannesburg:

Prof Daramy Vandi Von Kallon is a Sierra Leonean holder of a PhD in Computational mechanics obtained from the University of Cape Town (UCT) in 2013. He holds a year-long experience as a Postdoctoral researcher at UCT during 2013. At the start of 2014 Prof Kallon was formally employed by the Centre for Minerals Research (CMR) at UCT as a Scientific Officer. In May 2014 Prof Kallon transferred to the University of Johannesburg (UJ) as a full-time Lecturer, Senior Lecturer and later Associate Professor in the Department of Mechanical and Industrial Engineering Technology (DMIET). He currently teaches simulation-based modules at this Department to final year of Bachelors and Honours students and serves as Head of the Quality Assurance Committee of the Department. Prof Kallon has more than twelve (12) years' experience in research and ten (10) years of teaching at University level, with industry-based collaborations. He is widely published, has supervised from Masters to Postdoctoral and has graduated two (2) PhDs and twenty (20) Masters Candidates. Prof Kallon's primary research areas are Acoustics

Technologies, Design and Development, Water and Energy Technologies and Vibration Analysis. Prof Daramy Vandi Von Kallon will provide expert consultancy support for this intervention project as a representative of the University of Johannesburg.

Prof Evelyn Pwen Carew

Prof. Carew attended the Prince of Wales School, the Sierra Leone Grammar School, and Fourah Bay College (FBC), all in Freetown, Sierra Leone. He graduated from FBC with B.Sc. (Hons) in Mathematics. His postgraduate research was in *Numerical Solution of Differential Equations* (M.Sc. Reading, UK) and *Computational Fluid Dynamics* (CFD) using the *Finite Element Method* (FEM) to model *viscoelastic flow* (Ph.D. Wales, UK). The latter involved advanced programming and computational techniques. His research interests are in numerical solution of differential equations, computational fluid and solid mechanics, viscoelasticity, soft-tissue biomechanics, mathematical modelling of biological materials and systems, evaluating key parameters of disease epidemics, and mathematics pedagogy. He has over forty peer-reviewed publications, conference proceedings and abstracts; one book Chapter and one book Review. He currently serves as the Dean of the Economics Faculty at FBC.

Prof Evelyn Owen Carew is a Team Member and will be responsible for the economic analysis of the agricultural model to be developed and installed.

Prof. Patrick Andrew Sawyer

Professor Patrick Andrew Sawyerr was born on 24th March 1959 to Edward and Matilda Sawyerr, a middle-class family, on Njala University campus. He attended the Njala Experimental Primary School, the Njala University Secondary School, and Njala University College (University of Sierra Leone) where he studied Agriculture General at the BSc Level. This qualified him for a scholarship to Iowa State University in the USA where he studied Soil Morphology and Genesis at the MSc level in 1986. He returned to Njala University to teach and study for a PhD degree in Soil Science, where his research focused on soil and water conservation. He has taught for 30 years, supervised the thesis of several students (undergraduate and postgraduates) in Soil Science and Engineering, published over 10 papers in peer review journals and produced several soil survey technical reports in consultancies dating back to 1986.

Professor Sawyerr is currently the Dean of the School Agriculture and Food Sciences, Njala University and Coordinator of the EU funded National Comprehensive Soil Survey project which will wind up this year. Professor Sawyerr is married to Frances Bailey with three children, all boys, now men, Arnold, Kevin, and Edward. He has been happily married for 40 years.

Prof Patrick Andrew Sawyer is a Team Member and will lead the aspect of agriculture related to this project.

Dr Michael A Conteh

Dr Michael A. Conteh is a Senior Lecturer and currently the Dean, Faculty of Engineering and Architecture (FEA), Fourah Bay College, University of Sierra Leone. He received his PhD in Mechanical Engineering at the Southern Illinois University, Carbondale, USA, in 2016. He obtained his MSc from the University of Cape Town, South Africa, in 2003. He joined the FEA in 1999 as a Research Teaching Assistant after his BEng (Hons) degree and has served the Department of Mechanical Engineering in various positions from 2004 to date. He possesses over 18 years of research and teaching experience at University level. His primary research interests are in the fields of mechanical engineering design, energy recovery and storage, energy efficiency, renewable energies, and operations research and statistics. He is a member of the Professional Engineering Regulatory Council (PERC) of Sierra Leone.

Dr Michael A. Conteh is a Team Member of this project and together with Prof Kallon from South Africa will design the water chilling mechanism.

Dr Victor Kabba

Victor Tamba Simbay Kabba was born in Koidu City, in the diamond rich district of Kono. He began his primary education in the Roman Catholic Boys School in Koidu City and later completed in R. C. BOYS primary School in Lunsar, Port Loko district. He entered the then Miatta Stevens (now Murialdo) Secondary School where he obtained a Division One at the G.C.E O'levels at first attempt. He later proceeded to the Sierra Leone Grammar School in Freetown to do his Sixth form. Dr. Kabba entered Njala University College University of Sierra Leone in 1996 and graduated with a Division One in Geography/Biology in 2001. He was then recruited by the Department of Geography and Rural Development that same year as Research and Teaching Assistant. Dr. Kabba Obtained his MSC Education in Geography the following year. In 2007 he was awarded a scholarship to pursue a PhD in Land Resource Management at China University of Geosciences(Wuhan). He returned home in 2011 and two years later was appointed as Director, Institute of Geography and Development Studies, School of Environmental Sciences, the position He held until 2021. Dr. Kabba is a Senior Lecturer. In 2020 he was appointed Dean, School of Environmental Sciences, the position he still holds. Dr. Kabba served as Senate Representative to Njala University Court. He has served on several investigation committees in the University. He has a number of

publications to his credit. He has served as Consultant for both national and international institutions, including the European Union.

Dr Victor Kabba is a Team Member and will assist the team in the area of environmental and climate impact assessment and developing mitigation strategies.

Mr Mohamed Dumbuya – Secretary to the Project Team

Mr Mohamed Dumbuya is a Lecturer at Njala University Sierra Leone for past fifteen years serving in Environmental Chemistry Department, School of Environmental Sciences now change to Basic Sciences. He is currently a doctoral candidate with the Federal University of Technology Minna Nigeria working on: *Heavy metals and Mycotoxin in soils and rice cultivated in Sierra Leone Inland Valley Swamp in all districts in Sierra Leone*. He lectures courses on Environmental Sciences, Environmental Toxicology, Soil Chemistry and Introduction to water chemistry for the past ten years. He holds a seven years membership with the International Association for Food Protection (IAFP) and currently belongs to AFoSaN Food Safety Group, Sierra Leone-European Union program on Chemical, Biological, Radiological and Nuclear (CBRN) Regional Training on High Risk Chemical facilities-Center of Excellence: With Certificates of completion as Level-1 Industrial Risk Mitigation Trainee, representing Njala University Sierra Leone as certified by EU-CBRN and UNDP/SL team of experts. Mr Dumbuya serves as core member for reputable scientific committees on standards development and networks in Sierra Leone and also the Founder of Njala Environmental Technician Sierra Leone (NETSL) consortium, a registered independent consultancy firm, that is conducting research on Environmental Impact Assessment and industrial safety management for work places in Sierra Leone since 2011 to date with the EPA SL. He has experience in supervising and assessing of industrial risk of pollution, contaminants and work place exposure management for both wet and dry working environments including national environmental auditing for project sustainability.

Mr Mohamed Dumbuya will serve as Secretary to the project Team for this project.

International Partner

Mr Martin Charles Paulsen – CEO of Gem Water:

Martin Paulsen is a multifaceted individual with a diverse career spanning law, trade unions, and business ventures. Born with a passion for legal studies, he earned his Law Degree from the University of Western Cape in 1988, setting the foundation for his future endeavors. After completing his education, Martin delved

into the world of law, specialising in contract law and dispute resolution. His expertise in these areas laid the groundwork for a successful career in advocacy and negotiation.

In 1991, Martin made a significant shift in his career by joining the National Union of Metal Workers, where he aimed to advocate for workers' rights and fair labor practices. His dedication and leadership abilities did not go unnoticed, and he later moved on to the South African Clothing and Textile Workers Union. As he progressed in the trade union movements, Martin's skills as a chief negotiator came to the fore, allowing him to play a crucial role in various sectors of the trade unions. Martin's journey continued to evolve, and he later assumed the esteemed position of Secretary General of the National Union of Leather Workers. In this capacity, he made significant contributions to the welfare of leatherworkers, striving to improve their working conditions and ensure their rights were protected.

Expanding his reach beyond national boundaries, Martin was appointed as the International Labour Organisation (ILO) coordinator for Sub-Saharan Africa. This role gave him the opportunity to work on a broader scale, addressing labor issues and promoting better working standards throughout the region.

After an impressive 15 years in the Trade Union Movements, Martin decided to explore the world of business. Drawing upon his experiences, knowledge, and entrepreneurial spirit, he ventured into various enterprises. As a Director of several companies like DAUBO INVESTMENT HOLDING COMPANY, LEAPRO PROPERTIES, and LEAFUND PROPERTIES, Martin demonstrated his acumen in managing businesses and navigating complex corporate landscapes.

Beyond his directorial roles, Martin's ingenuity and innovation led him to found several companies of his own. Quad Lock Building Systems and International Concrete Forms were construction companies specialising in alternative building technologies, GEM WATER MANAGEMENT SOLUTIONS, company that specializes in the manufacturing in the technology of Atmospheric Water Generators (AWG), and GEM HYDROPOWER are some of the ventures he pioneered. Each of these companies catered to different sectors, reflecting his commitment to environmental sustainability and infrastructure development.

Throughout his remarkable journey, Martin Paulsen has been a driven and dynamic force, making an indelible impact on the Labour Law, and business landscapes. His dedication to justice, fair labor practices, and innovative entrepreneurship has left a lasting legacy, inspiring many to follow in his footsteps.