

**1. Key Expertise & Research Interests:**

- Renewable Energy Technologies
  - i. Energy mobility and Energy Storage (Electric vehicles)
  - ii. Energy Meteorology & Energy modelling
  - iii. Solar PV, Geothermal, Biofuels, Wind and Hydro Energy technologies
  - iv. Project planning, management and energy econometrics.
  - v. Big data analytics in climate and energy related aspects
  - vi. Project management

**2. Languages** [1 – Native fluency i.e. excellent, 5 - basic]:

Language	Speaking	Reading	Writing
English	1	1	1
Swahili	1	1	1
German	3	3	3
Chinese (Mandarin)	5	5	5

**3. Research Competencies in Energy Technology:**

- SPSS, MATLAB, and Partial Least Squares Structural Equation Modelling (PLS-SEM), R and Python
- Energy planning tools – LEAP, WASP, ; Other energy tools: EnergyPlus, WASP, WindPro,

**4. Recognition, awards and honours** (Awards total to USD 137,396 i.e. KES 10,509,050)

- ✓ 2014 – 2018 – University of Nottingham, IDIC energy technologies scholarship (GBP 31,000 / RMB 372,284)
- ✓ 2007 – 2009 – German Academic Exchange Services (DAAD) (GBP 46,750 / RMB 407,290)
- ✓ 2005.11 – UNIDO and India's MNES for the SHP training / workshop (GBP 4,000 / RMB 31,000)
- ✓ 2004 – 2005 – International Capacity Building and Development (InWEnt) – now part of GIZ (GBP 9,800 / RMB 87,100)
- ✓ 2001 – 2002 – German Academic Exchange services (DAAD) (GBP 12,000 / RMB 105,000)
- ✓ 1996 – 1999 – Bursary from Higher Education Loans Board, Kenya and Rattansi Educational Fund / Trust (GBP 500 / RMB 4,400)

**5. Membership in Professional organizations / Associations**

S/No.	Name of Society / Professional organization / Professional certification	Membership / Registration Number
1	Kenya Engineering Technology Registration Board (KETRB) [formerly Kenya's Engineering Technologist and Technician Registration Board (ETTRB) ]	Am a member in Good standing, however, since Sept 2019, KETRB has not formally given out membership numbers due to board not being constituted (see attached KETRB recommendation letter)
2	Institute of Engineering Technologist and Technicians (IET-K)	6420
3	Certified Lead Expert in Environmental and Social Impact Assessment (ESIA)	2388
4	Kenya Renewable Energy Association (KEREa)	KM-67

## 6. CV Summative Highlights

- i. Attracting of Research funding: Brought in USD 746, 230 (KES 74,869,230) in last 8 years (~ KES 9.4 million per annum). Currently pursuit of a Locut radar annihilation system (worth USD 500,000) is at an advanced stage (Budget review).
- ii. 105 CUE publication points from : 2 Patent, 3 Book Chapters in university level scholarly books, 10 Peer reviewed Journal articles, 3 peer reviewed conference papers, 11 scholarly presentations at conferences / workshops / seminars and 4 consultancy / project reports
- iii. Post-graduate students supervised to graduation: 7
- iv. Peer Reviewer to 2 international Journals
- v. Teaching and researching at Research fellow and Senior research fellow level for over 14 years – evidenced by being the one in charge of the Energy section, attracting funding and engagement level of external consultancies and stakeholders
- vi. Senior international Energy consultant :- Undertaken over 30 International consultancies with organizations like World Bank, European Union (EU), African Development Bank (AfDB), IGAD, GIZ, Barefoot Power International, GIZ, ADRA Somalia, Practical Action Eastern Africa, LWF Uganda, UNEP and UNESCO [See section 9]

## 7. Academic qualifications and certifications

University Attended	Degree obtained	Date Obtained
University of Nottingham, UK	<p>PhD (Energy technologies)</p> <ul style="list-style-type: none"> <li>▪ <b>3-tiered Structural Health Monitoring Framework for Wind Turbine Blades and Masts Based on Portable Ground-Based Real Aperture Radar Damage Condition Metrics</b></li> <li>▪ <u>Funding</u> – UNNC/IDIC, UK &amp; China</li> <li>▪ <b>Big data focus</b>: Specifically, the study provided competency on Big data acquisition, analysis and visualization, in addition to utilization of IoT devices for data acquisition.</li> <li>▪ The thesis examined non-contact structural health monitoring of wind turbine (WT) masts and blades. The main innovations and contribution to knowledge were: <ul style="list-style-type: none"> <li>i. The application of a ground-based radar to an operating WT under IEC 61400-1 design loads conditions 1.1 to 1.5, something not done before.</li> <li>ii. Establishment of a proof-of-concept through the resolving of damage condition metrics from a non-contact sensor and its integration thereof into a 3-tier SHM framework.</li> </ul> </li> <li>▪ Tools &amp; Methods – MATLAB, Sammon mapping, 2D-visualization techniques</li> </ul>	Oct 2014 – April 2019
Carl von Ossietzky University, Germany	<p>M.Sc. (Renewable Energy) -- <i>First class honours</i></p> <ul style="list-style-type: none"> <li>▪ <b>A Correction Scheme for Silicon Cells Irradiance Sensors</b></li> <li>▪ <u>Funding</u> – DAAD (German Academic Exchange Service), Germany</li> <li>▪ <b>Big data focus</b>: Specifically, the study provided competency on Big data acquisition, analysis and visualization, in addition to utilization of IoT devices for data acquisition.</li> <li>▪ This dissertation addressed the lack of affordable solar irradiance sensors particularly in developing countries. It thus developed a numeric correction scheme for silicon based solar cells used as irradiance sensors. The main innovations and contribution to knowledge were <ul style="list-style-type: none"> <li>i. Development of a big data numeric correction scheme to enable solar cells provide similar accuracy as Thermal Pyranometers by correcting mainly for cosine effect.</li> <li>ii. Development of a proof-of-concept for a low-cost solar irradiance sensor.</li> </ul> </li> <li>▪ Tools &amp; Methods – MATLAB, C++, Extended correction algorithm development</li> </ul>	2001 - 2002
Kenyatta University, Kenya	<p>B.Sc. (Appropriate Technology)</p> <ul style="list-style-type: none"> <li>▪ <b>The Improved Ugandan Tyre-Rim Charcoal Stove</b></li> <li>▪ <u>Funding</u> - Higher education Loans Board (HELB) &amp; Rattansi Education Trust, Kenya</li> <li>▪ <b>Big data Focus</b>: Data analytics from Indoor Air pollution of Cooking Stoves and employing of IoT to gather the data as well as traditional methods.</li> </ul>	1995 - 1999

University Attended	Degree obtained	Date Obtained
	<ul style="list-style-type: none"> <li>This B.Sc. Research and design project addressed the demand side of over-reliance in unsustainable biomass resources in urban and rural areas through improved clean cook stove technologies, particularly in fragile and post-conflict regions.</li> </ul>	

Institutions	Professional certification	Acquired on
University of Nottingham	Structural Equation Modelling (PLS-SEM & CB-SEM)	June, 2017
Carl von Ossietzky University, Germany	Professional certification in Project Planning for Bio-digesters in Developing and Industrialised Countries	Feb 2009
Association of Energy Engineers, USA	<ul style="list-style-type: none"> <li>Certified Energy Manager International – A certification on energy efficiency for equipment's, buildings, innovations and built environment</li> <li>Certified Measurement and Verification Professional (CMVP) – a certification on undertaking energy efficiency measurements under IPMVP guidelines</li> </ul>	2012 - 2013
National Environmental Management Authority	Certified Lead expert on Environmental and Social Impact Assessment (ESIA) as well as energy audits (EA)	July, 2013
Indian Institute of Technology, Roorkee	Professional certification in Small hydropower project development in Developing Countries	November 2005
Kassel University / InWEnt, Germany	Professional certification in Wind Turbines for Decentralized Energy Supply and Grid Connected Wind farms	2004 - 2005
	Professional certification in International Management	
SMA Gmbh, Germany	Professional certification in Electric supply for off-grid locations	March 2007
Regional Centre for Mapping of Resources for Development (RCMRD), Kenya	Application of Remote Sensing, GIS, and GPS in natural resource assessment and management	
Greifzug, Germany	Theory and practice of Safe work and Rescue at elevated places of work	October, 2004

## 8. Employment history

Date	Location	Organisation	Job title / description
April 2006 to date	Kenya	Jomo Kenyatta University of Agriculture and Technology (JKUAT)	Lecturer / Research fellow in Energy and Environmental Technology
Feb 2018 – Nov 2020	Kenya	United states International University (USIU) – Africa	Project Coordinator – High performance computing (HPC) & <b>big data analytics</b>
Feb 2002 to date	International	Various international, private and government institutions	Senior International Energy technology consultant
Dec 2005 – April 2006	Kenya	University of Nairobi, Kenya	Tutorial fellow – Energy and Technology
October 2006 to date	Kenya	Energie Konsult Ltd	Chief Executive Office (C.E.O)

## 9. Teaching experience and Units taught (applied big data and energy technology)

Position	Location	Date	Units / modules taught, or research done
Graduate Assistant / Research Assistant	Carl von Ossietzky university, Germany	(2001-2002)	<ul style="list-style-type: none"> <li>Simulation and modelling of Solar resource system for product development and innovation</li> </ul>
Tutorial Fellow / Junior research Fellow	University of Nairobi, Kenya	Dec 2005 – April 2006	<ul style="list-style-type: none"> <li>Solar Technology</li> <li>introduction to computing</li> </ul>
Adjunct academic staff	Kenyatta University, Kenya	Sept 2007 – Aug 2014	<ul style="list-style-type: none"> <li>Wind energy technology</li> <li>Energy economics</li> <li><b>National Energy policy and Planning (a big data unit)</b></li> <li><b>Energy Econometrics (a Big data course)</b></li> </ul>
Research fellow (Lecturer)	Jomo Kenyatta University of Agriculture and Technology, Kenya	April 2006 – September 2014	<ul style="list-style-type: none"> <li>Wind Energy technology</li> <li>Solar Energy</li> <li>Environmental and social impact assessment</li> <li>Project management and planning</li> <li>Climate change and carbon finance</li> <li>Innovation and Technology</li> <li><b>Energy Economics and Planning (Big data unit)</b></li> <li><b>Energy Analytics (A Big Data course)</b></li> </ul>

Position	Location	Date	Units / modules taught, or research done
Graduate Teaching Assistant (GTA)	University of Nottingham	2014 - 2018	<ul style="list-style-type: none"> <li>Introduction to renewable Energy</li> <li>Architectural Engineering Design 2</li> <li>Foundation Science</li> <li>Mathematics for Civil Engineers</li> </ul>
Graduate Research Assistant (GRA)	University of Nottingham	2014 - 2019	<ul style="list-style-type: none"> <li>Assessment of Green and sponge cities in China (<b>A big data analytic module</b>)</li> <li>Novel non-contact monitoring of suspended sands on sea waves using laser system (<b>A big data analytic research unit</b>)</li> </ul>

## 10. Professional / consulting Work Experiences in Big Data and Energy Technology

- Undertaken over 30 major consultancies for the following organizations : World Bank, European Union (EU), African Development Bank (AfDB) / IGAD, UNEP and UNESCO
- Detailed information on the consultancies follow

PROFESSIONAL / CONSULTING WORK			
Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
04/2006 to date	<p><b>Departmental Manager / Team leader</b></p> <ul style="list-style-type: none"> <li>On-grid &amp; off-grid technologies, policy &amp; Regulation expert</li> <li>Capacity Assessment</li> <li>Capacity building expert</li> </ul> <p>Energy department within the institute of energy and Environmental Technology (IEET) of the Jomo Kenyatta University of Agriculture and Technology (JKUAT)</p> <p><b>Reference:</b>  <b>Name:</b> Prof Joseph Kamau  <b>Email:</b> <a href="mailto:ngugikamau@jkuat.ac.ke">ngugikamau@jkuat.ac.ke</a></p>	Kenya	<p>Project / Programme title: Lecturer / Research Fellow in Energy</p> <ul style="list-style-type: none"> <li>Development of Energy scenarios &amp; Energy balance with attendant Economic &amp; financial scenarios. These include: <ul style="list-style-type: none"> <li>a) project bankability assessment including policy, regulations, electricity tariffs &amp; feed-in-tariffs.</li> <li>b) Assessment of projects Economic [Benefit-cost ratio, Least cost planning,] &amp; Financial [Internal rate of return (IRR); Return on Investment (RoI); payback period; Net present value (NPV), Sensitivity analysis] aspects</li> <li>c) Sustainability assessment: Stakeholder mapping and engagement</li> </ul> </li> <li>Curriculum development for on-grid and off-grid energy systems</li> <li>Trained over 500 professionals from Government &amp; Private Sector on on-grid &amp; off-grid Renewable Energy technologies and their enabling environment.</li> <li>Taking stock of the energy sector, stakeholder consultation &amp; mapping, assess potential gaps and opportunities and make recommendations for possible intervention and support within SDG7</li> <li>Capacity building &amp; consulting in Climate modelling &amp; Technologies, Renewable Energy technologies, Energy Policy &amp; Energy Economics, Energy Economics, Environmental Impact Assessment, Energy audits/Energy Efficiency, climate change &amp; carbon finance</li> <li>Stakeholder engagements</li> <li>Successfully organized over 20 national energy-based stakeholder validation workshops in Kenya and 6 other Eastern Africa States</li> </ul>
12/2020 – 08/2021	<p><b>Technical Team leader</b></p> <p><b>Mapping and inventorying of renewable Energy Technologies and delivery models</b></p> <p>Rural Electrification and Renewable Energy Corporation (REREC)</p>	Kenya	<p>Project / Programme title: Baseline study on Renewable Energy in Kenya</p> <ul style="list-style-type: none"> <li>Carried out Baseline survey of Kenya's renewable energy sector</li> </ul>

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Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
	<b>Reference:</b> <b>Name:</b> Eng Ephantus M. Kamweru  <b>Email:</b> <a href="mailto:ekamweru@rea.co.ke">ekamweru@rea.co.ke</a>		<ul style="list-style-type: none"> <li>• Took stock of the energy sector using EBRD 8 point indicator and World bank -ESMAP Multi-tier energy access framework</li> <li>• Undertook stakeholder consultation &amp; mapping,</li> <li>• Assessed potential gaps and opportunities in the energy sector</li> <li>• Made recommendations for possible intervention and support within SDG7</li> <li>• Reviewing the existing studies done on renewable energy in Kenya</li> <li>• Establish the renewable energy technologies readiness level in Kenya</li> </ul>
05/2021 – 10/2021	<b>Team leader</b> <b>Development of viable Energy Technologies and delivery models (ETDM)</b>  GFA Consulting group and GIZ  <b>Reference:</b> <b>Name:</b> Deborah Ayres  <b>Email:</b> <a href="mailto:deborah.ayres@gfa-group.de">deborah.ayres@gfa-group.de</a>	Ethiopia	<ul style="list-style-type: none"> <li>• Project / Programme title: Assessment of clean cooking technologies and investment climate in Ethiopia</li> <li>• Identify bottlenecks in cook stove investment and analyse strategies to increase investment in energy resource potentials and clean cooking technologies</li> <li>• Formulate a viable intervention strategy including selection of technology options, fuel options and enabling policy options (i.e. formulate viable energy delivery model [EDM])</li> <li>• Explore different financing models for the EDM</li> </ul>
08/2020 – 08/2021	<b>Subject Matter Expert (SME)</b> <b>Curriculum and training video development for Energy delivery models in smart grid scenario</b>  Pan Africa University Institute for Water and Energy Sciences PAUWES  <b>Reference:</b> <b>Name:</b> Dr. David Tsuanyo  <b>Email:</b> <a href="mailto:david.tsuanyo@gesci.org">david.tsuanyo@gesci.org</a>	Africa	Project / Programme title: Development of graduate level training curriculum, course book and training video for Smart grid analytics as well as Regulatory and policy framework  <ul style="list-style-type: none"> <li>• Development of training based energy delivery model for Smart grids in Africa</li> <li>• Coding and practical examples implementation for smart grids</li> </ul>
10.2020 – 02.2021	<b>Kenya – Ethiopia Renewable Energy Resources Mapping &amp; Prediction expert (Hydropower Advisor)</b> <b>*Energy technology deployment modelling assignment</b> Client: UNEP-DHI centre Subcontracted through Rural Focus Kenya  <b>Reference:</b> <b>Name:</b> Eng. Michael Thomas  <b>Email:</b> <a href="mailto:mike@ruralfocus.com">mike@ruralfocus.com</a>	Kenya	Project / Programme title: Support to Sustainable Development in Lake Turkana and its Rivers Basins: Scenarios, Rehabilitation measures and Indicator Framework  <ul style="list-style-type: none"> <li>• Technical support in development of Hydropower baseline model for the Omo-Turkana Basin</li> <li>• Took stock of the Hydropower socio-economic and technical characteristics based on meta-analysis literature review and quantitative modelling</li> <li>• Scenario conceptualization for hydropower developments on the future water demands and basins sustainability</li> <li>• Final project and model review</li> </ul>
03/2021 – 04/2021	<b>Team leader</b> <b>Monitoring and evaluation of the Energy delivery model under the TEKOWA project</b> Lutheran World Federation – Uganda Program  <b>Reference:</b> <b>Name:</b> Danson G. Maina	Uganda	Project title: <ul style="list-style-type: none"> <li>• End-term review (MTR) of the ACP-EU energy facility TEKOWA in Pader, Kitgum, Lamwo and Agago in accordance with OECD/DAC 6 +1 framework</li> <li>• Carried out end of the project (final evaluation) of the TEKOWA project based on EC/EU adapted logical framework and OECD/DAC 6 approach</li> </ul>

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Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
	<p><b>Email:</b> <a href="mailto:dmaina@ipeglobal.com">dmaina@ipeglobal.com</a></p>		<ul style="list-style-type: none"> <li>• Took stock of the energy sector using EBRD 8 point indicator and Worldbank-ESMAP Multi-tier energy access framework</li> <li>• Undertook stakeholder consultation &amp; mapping,</li> <li>• Assessed potential gaps and opportunities in the energy sector</li> <li>• Assessed investment capability for project expansion</li> <li>• project bankability assessment including energy policy, energy regulations, electricity tariffs &amp; feed-in-tariffs</li> <li>• Assessment of projects Economic [Benefit-cost ratio,] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> <li>• Made recommendations for possible intervention and support within SDG7</li> <li>• Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>• Prepared and compiled project delivery reports, as well as identify and report risks on an ongoing basis</li> <li>• Continually compared project performance against plans, identify deviations from plan, and develop corrective actions to bring performance back on track</li> </ul>
01/2019 – 04/2019	<p><b>Team leader</b> <b>Energy program delivery expert</b></p> <p>European Union / Barefoot Power Africa Ltd.</p> <p><b>References:</b> <b>Name:</b> Clement Nartey <b>Email:</b> <a href="mailto:clementn@barefootpower.com">clementn@barefootpower.com</a></p>	Uganda & Sierra Leone	<p>Programme title: <b>WOMEN INCREASING SUSTAINABLE ENERGY USE AND ACCESS (WISE)</b></p> <ol style="list-style-type: none"> <li>Baseline survey:- Ssurveyed and obtained baseline information with regards to the post-harvest management and potential productive uses of sustainable energy in Kenya And Uganda</li> <li>Identification, assessment and quantification of potential productive uses of electricity, post-harvest management practises and assessment of existing end-users finance schemes.</li> <li>Capacity building of field enumerators on data collection using Internet-connected mobile phones</li> </ol>
02/2018– 01/2019	<p><b>Team leader</b> <b>Curriculum and training video development for Energy delivery models in smart grid scenario</b></p> <p>United States International University (USIU) – Africa</p> <p><b>Reference:</b> <b>Name:</b> Valerie P. Adema <b>Email:</b> <a href="mailto:vadema@usiu.ac.ke">vadema@usiu.ac.ke</a></p>	Kenya	<p>Project title: Project Coordinator – High-performance computing (HPC)</p> <ul style="list-style-type: none"> <li>• Energy and environmental planning using big data</li> <li>• Ensure effective project management including investment, economic and financial aspects as described below: <ul style="list-style-type: none"> <li>o project bankability assessment including energy policy, energy regulations, electricity tariffs &amp; feed-in-tariffs</li> <li>o Assessment of projects Economic [Benefit-cost ratio, Least cost planning,] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> </ul> </li> <li>• Development of fundraising project proposals</li> <li>• Support coordination of programme activities, stakeholder management, reporting and risk management</li> </ul>

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12/2017– 02/2018	<b>Team leader for Ethiopia Monitoring and evaluation of the Energy delivery model under the World bank EDM project</b>  World Bank / MWH (Stantec)  <b>Reference:</b> <b>Name:</b> Lamas, Rebecca <b>Email:</b> <a href="mailto:Rebecca.Lamas@stantec.com">Rebecca.Lamas@stantec.com</a>	Ethiopia	Project title: Development and updating of energy data in Readiness for Investment in Sustainable Energy (RISE) phase II for Ethiopia  <ul style="list-style-type: none"> <li>• Undertook stakeholder consultation &amp; mapping,</li> <li>• Assessed potential gaps and opportunities in the electricity power pool sector</li> <li>• Made recommendations for possible intervention and support within SDG7</li> <li>• Institutional Knowledge management of Renewable Energy, Energy Efficiency and Cross-sectoral</li> <li>• Assessment of the RISE in Ethiopia including               <ul style="list-style-type: none"> <li>o project bankability assessment including policy, regulations, electricity tariffs &amp; feed-in-tariffs.</li> <li>o Assessment of projects Economic [Benefit-cost ratio] &amp; Financial [Internal rate of return (IRR); Return on Investment (RoI); payback period; Net present value (NPV), Sensitivity analysis] aspects</li> <li>o Sustainability assessment: Stakeholder mapping and engagement</li> </ul> </li> <li>• Energy planning and data analytics</li> </ul>
07/2017 – 12/2017	<b>Team leader / key expert on Energy modelling Development of integrated EDM</b>  WS Atkins International – HCL Consultants Ltd  <b>Reference:</b> <b>Name:</b> Alexandros Grivas <b>Email:</b> <a href="mailto:alexandros.grivas@hcl-consultants.com">alexandros.grivas@hcl-consultants.com</a>	Sub-Saharan Africa  (All African countries except those in North Africa as well as South Africa)	Project Title: Determination of green jobs created in EU funded projects in East and Central Africa in the Energy and Climate sectors  <ul style="list-style-type: none"> <li>• Econometric modelling of energy consumers demand patterns and behaviour as well as market factors</li> <li>• Managing and advising the multi-sectoral international team on Energy Efficiency and technologies</li> <li>• Determined the global indicators, social and market factors to enable measuring of actual performance for a job created for EU Intervention projects</li> <li>• Post-project investment assessment whose impact was in number of jobs created. These investment bankability include:               <ul style="list-style-type: none"> <li>o project bankability assessment including policy, regulations, electricity tariffs &amp; feed-in-tariffs.</li> <li>o Assessment of projects Economic [Benefit-cost ratio] &amp; Financial [Internal rate of return (IRR); Return on Investment (RoI)] aspects</li> <li>o Sustainability assessment: Stakeholder mapping and engagement</li> </ul> </li> <li>• Prepare and compile project delivery reports, as well as identify and report risks on an ongoing basis</li> </ul>
11/2016– 01/2017	<b>Team leader On-grid &amp; off-grid Policy, regulation and Technical evaluation of solar, clean cooking &amp; ICS systems</b>  Lutheran World Federation – Uganda Program  <b>Reference:</b> <b>Name:</b> Andrew Masaba <b>Email:</b> <a href="mailto:Andrew.masaba@lwf.or.ug">Andrew.masaba@lwf.or.ug</a>	Uganda	Project title: Mid-term review (MTR) of the ACP-EU energy facility TEKOWA in Pader, Kitgum, Lamwo and Agago in accordance with OECD/DAC 6 +1 framework <ul style="list-style-type: none"> <li>•</li> <li>• Carried out baseline study of the TEKOWA project based on EC/EU adapted logical framework and OECD/DAC 6 approach</li> <li>• Took stock of the energy sector using EBRD 8 point indicator and Worldbank-ESMAP Multi-tier energy access framework</li> <li>• Post-project assessment whose impact was in sustainability, bankability and Economic &amp; financial</li> </ul>



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			<p>metrics. These aspects include: These investment bankability include:</p> <ul style="list-style-type: none"> <li>• project bankability assessment including policy, regulations, electricity tariffs &amp; feed-in-tariffs.</li> <li>• Assessment of projects Economic [Benefit-cost ratio] &amp; Financial [Internal rate of return (IRR); Return on Investment (RoI)] aspects</li> <li>• Sustainability assessment : stakeholder consultation &amp; mapping</li> <li>• Assessed potential gaps and opportunities in the energy sector</li> <li>• Made recommendations for possible intervention and support within SDG7</li> </ul>
08/2016–11/2016	<p><b>Team leader</b></p> <p><b>Curriculum development for Energy delivery models</b></p> <p>ECA International , UK</p> <p><b>Reference:</b> Name: <b>Guénolée Leguyader</b> Email: <a href="mailto:eguyader.ecagerant@gmail.com">eguyader.ecagerant@gmail.com</a></p>	Eritrea	<p>Project title: Development of capacity building programs to be integrated into the National indicative plan and the 11th European Development Fund programs for Eritrea</p> <ul style="list-style-type: none"> <li>• Provision of technical and institutional knowledge on Energy Efficiency and Renewable Energy technologies</li> <li>• Development of Capacity Building programme incorporating public and private sector players</li> <li>• Managing and advising the multi-sectoral international team on Energy Efficiency and technologies. These included : <ul style="list-style-type: none"> <li>o Establishing project bankability indicators particularly on energy policy, energy regulations, electricity tariffs &amp; feed-in-tariffs.</li> <li>o Establishing Economic and financial metrics. These were constrained to certain Economic metrics [Least cost planning,] &amp; Financial metrics [Return on Investment (RoI); Net present value (NPV)] aspects</li> <li>o Establishing a matrix of energy efficient technologies</li> </ul> </li> <li>• Integration of future energy demand patterns, consumer behaviour and energy choices in the capacity development plans</li> </ul>
06/2015–09/2015	<p><b>Team leader</b></p> <p><b>Development of integrated EDM</b></p> <p>Lutheran World Federation – Uganda Program</p> <p><b>Reference:</b> Name: <b>Andrew Masaba</b> Email: <a href="mailto:Andrew.masaba@lwf.or.ug">Andrew.masaba@lwf.or.ug</a></p>	Uganda	<p>Project title: Prefeasibility / Baseline survey for ACP EU energy facility project Phase II in Northern Ugandan districts of Pader, Kitgum, Lamwo and Agago</p> <ul style="list-style-type: none"> <li>• Carried out end of project (end-term evaluation) of the ACP-EU energy facility phase II project based on EC/EU adapted logical framework and OECD/DAC 6 approach</li> <li>• Took stock of the energy sector using EBRD 8 point indicator and Worldbank-ESMAP Multi-tier energy access framework</li> <li>• Undertook stakeholder consultation &amp; mapping,</li> <li>• Assessed potential gaps and opportunities in the energy sector</li> <li>• Made recommendations for possible intervention and support within SDG7</li> <li>• Undertook stakeholder mapping, market assessment, &amp; mapping and value chain analysis</li> <li>• Assessment of overall project strategy and proposing of a market/commercialization strategy for ACP-EU project including institutional setup</li> <li>• The assessment of the market / commercialization strategy was in part based on</li> </ul>



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Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
			<ul style="list-style-type: none"> <li>o project bankability assessment including policy, regulations and electricity tariffs.</li> <li>o Assessment of projects Economic [Benefit-cost ratio] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> <li>o Sustainability assessment : stakeholder consultation &amp; mapping</li> </ul>
05/2015–06/2015	<b>On-grid &amp; off-grid Policy, regulation and Energy sector investment expert</b>  USAID/Tetrattech  <b>Reference:</b> Name : Anna Perkinson E-mail: <a href="mailto:anna.perkinson@tetrattech.com">anna.perkinson@tetrattech.com</a>	Africa & Asia	Project title: Energy Expert and Evaluator in a Technical Evaluation Committee (TEC) for the Powering Agriculture Energy Grand Challenge for Development (PAEGC)  <ul style="list-style-type: none"> <li>• Reviewed 7 windows 1 project for funding (pre-feasibility &amp; feasibility projects based on proof of concept, technology refinement, pilot field tests and adaptation of technologies/business models for new markets) . This also included the bankability aspects including: Economic [Benefit-cost ratio] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> <li>• Reviewed 6 Window 2 (market creation, expansion &amp; scaling up) projects. This also included the bankability aspects including: Economic [Benefit-cost ratio] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> <li>• Support the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>• Assessment of project tracking systems including project milestones as well as facilitating and supporting the coordination of events and meetings</li> <li>• Comparison of project performance against plans, identification of deviations from plans and development of corrective actions</li> <li>• Support coordination of stakeholder follow-ups, tracking project progress and quality reporting</li> </ul>
09/2013–11/2013	<b>Development of integrated EDM</b>  EU Delegation in Ethiopia subcontracted to MWH SA/NV  <b>Reference</b> <b>Name:</b> Abreha Misghinia <b>Email:</b> <a href="mailto:Abreha_mi@yahoo.com">Abreha_mi@yahoo.com</a>	Ethiopia	Project title: SE4ALL Technical energy expert to the Government of Ethiopia – MoWIE  <ul style="list-style-type: none"> <li>• Supported coordination of early programme activities, including stakeholder follow-ups, tracking the progress of relevant projects and quality reporting</li> <li>• Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> <li>• Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>• Assessment and analysis of Renewable Energy standards</li> <li>• Updating the Rapid Gap Assessment</li> <li>• Production of SE4ALL Action Agenda and investment prospectus for Ethiopia</li> </ul>
09/2013 – 11/2013	<b>Deputy Team leader</b>  <b>Energy access level expert</b>  <b>EU/MWH SA -NV</b>  <b>Reference</b>	Ethiopia	Project title: <b>SE4ALL Technical energy expert to the Government of Ethiopia – MoWIE:</b>  <ul style="list-style-type: none"> <li>▪ Supported coordination of early programme activities, including stakeholder follow-ups, tracking the progress of relevant projects and quality reporting.</li> </ul>

PROFESSIONAL / CONSULTING WORK			
Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
	<b>Name</b> Laurent De Block Email <a href="mailto:Laurent.DeBlock@mwhglobal.com">Laurent.DeBlock@mwhglobal.com</a>		<ul style="list-style-type: none"> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> <li>Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots.</li> <li>Assessment and analysis of Renewable energy standards;</li> <li>Updating the Rapid Gap Assessment</li> <li>Production of SE4ALL Action Agenda</li> <li>Production of SE4ALL investment prospectus</li> </ul>
10/2013–12/2013	<b>Team leader</b>  <b>Development of integrated EDM</b>  United Nations Industrial Development Organization (UNIDO)  <b>Reference:</b> Name: Ulvinur Dolun Bora Email: <a href="mailto:U.dolun@unido.org">U.dolun@unido.org</a>	Kenya	Project title: Development of Renewable Energy Quality Infrastructure (REQI) under the Renewable Energy Efficiency program in Kenya <ul style="list-style-type: none"> <li>Assessment and analysis of Renewable Energy standards</li> <li>Development of Renewable Energy Quality Infrastructure (REQI) under the Renewable Energy Efficiency program in Kenya</li> <li>Managing and advising the multi-sectoral international team on Energy Efficiency and technologies</li> <li>Development of Renewable Energy Quality Infrastructure (REQI) under the Renewable Energy Efficiency program in Kenya</li> </ul>
09/2013–12/2013	<b>Team leader</b>  <b>Development of integrated EDM</b>  World Bank subcontracted to Energy4Impact  [Formerly Global Village Energy Partnership (GVEP)]  References <b>Name: James Wakaba</b> <a href="mailto:James.wakaba@gvepinternational.org">James.wakaba@gvepinternational.org</a>	Kenya	Project title: The market study of small hydro systems in Kenya (Funded by the World Bank) <ul style="list-style-type: none"> <li>Took stock of the hydropower energy sector in Kenya</li> <li>Undertook stakeholder consultation &amp; mapping,</li> <li>Assessed potential gaps and opportunities in the energy sector</li> <li>Made recommendations for possible intervention and support within SDG7</li> <li>Produced a market study report covering stakeholders, value chains, priority actions and challenges</li> <li>Developed a policy brief for small hydro stakeholders</li> <li>Supported coordination of early programme activities, including stakeholder follow-ups, tracking the progress of relevant projects and quality reporting</li> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> <li>Prepared and compiled project delivery reports, as well as identify and report risks on an ongoing basis</li> </ul>
10/2013–11/2013	<b>Team leader</b>  <b>Development of integrated EDM</b>  World Bank subcontracted to ADRA Somalia  <b>Reference</b> Name: <b>Samuel Muthamia</b> Email: <a href="mailto:s.muthamia@adrasom.org">s.muthamia@adrasom.org</a>	Somalia	Project Title: Design for a livelihoods fish processing plant under Renewable energy access for Somalia: Tsunami livelihoods recovery project <ul style="list-style-type: none"> <li>Provision of technical and institutional knowledge on Energy Efficiency and Renewable energy technologies</li> <li>Managing and advising the multi-sectoral international team on Energy Efficiency and technologies</li> </ul>

PROFESSIONAL / CONSULTING WORK			
Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
			<ul style="list-style-type: none"> <li>Econometric modelling of energy demand and consumption patterns including factors influencing consumer behaviour towards energy</li> <li>Support the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>Establishment of project tracking systems including project milestones as well as facilitating and supporting the coordination of events and meetings</li> </ul>
11/2011–10/2013	<p><b>Team leader</b></p> <p><b>Development of integrated EDM</b></p> <p>AfDB/African Water facility and Hydro Plan Germany</p> <p><b>Reference:</b> Name: Tameezan Wa Gathui Email: <a href="mailto:tameezanwagathui@yahoo.com">tameezanwagathui@yahoo.com</a></p>	Ethiopia	<p>Project Title: Wind resource mapping and Wind turbine/pump design</p> <ul style="list-style-type: none"> <li>Designed technical and economic specification for wind pumps based on wind resource assessment at the national level</li> <li>Managing and advising the multi-sectoral international team on Energy Efficiency and technologies</li> <li>Provision of technical and institutional knowledge on Energy Efficiency and Renewable Energy technologies</li> <li>Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>Supported coordination of early programme activities, including stakeholder follow-ups, tracking the progress of relevant projects and quality reporting</li> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> <li>Prepared and compiled project delivery reports, as well as identify and report risks on an ongoing basis</li> </ul>
03/2011–08/2011	<p><b>Team leader</b></p> <p><b>Development of integrated EDM in (liquid biofuels including Biogas)</b></p> <p>United Nations Educational, Scientific and cultural organization (UNESCO) Sub-contracted to Practical Action – Eastern Africa</p> <p><b>Reference:</b> Name: Tameezan Wa Gathui Email: <a href="mailto:tameezanwagathui@yahoo.com">tameezanwagathui@yahoo.com</a></p>	Kenya	<p>Project title: Sub-regional Capability and capacity assessment of Liquid Biofuels Science and Technology Development in Kenya</p> <ul style="list-style-type: none"> <li>Took stock of the liquid biofuels in Sub-Saharan Africa (SSA)</li> <li>Assessed potential gaps and opportunities within the liquid biofuels sector in SSA.</li> <li>Made recommendations for possible intervention and support within SDG7</li> <li>Assessed liquid biofuels access in households and institutions based on stakeholder analysis, market mapping, participatory community interviews, technology review, policy and regulatory instruments assessment among others</li> <li>Produced a capacity assessment report that included a list of key technologies, costs, stakeholders and future outlooks</li> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> <li>Prepared and compiled project delivery reports, as well as identify and report risks on an ongoing basis</li> <li>Continually compared project performance against plans, identify deviations from plan, and develop corrective actions to bring performance back on track</li> </ul>
05/2012	<p><b>Team leader</b></p> <p><b>Development of integrated EDM</b></p>	Somaliland	Project title:

PROFESSIONAL / CONSULTING WORK			
Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
	<p>EU / ADRA Somalia</p> <p><b>Reference:</b> Name: Slessor A., <a href="mailto:s.ooko@adrasom.org">s.ooko@adrasom.org</a></p>		<p>Final Evaluation of the Somaliland Energy and Livelihoods Programme (SELP) in accordance with OECD/DAC 6 +1 framework</p> <ul style="list-style-type: none"> <li>Carried out End of the project (Final evaluation) of the SELP project based on EC/EU adapted logical framework and OECD/DAC 6+1 approaches</li> <li>Took stock of the energy sector using EBRD 8 point indicator and Worldbank-ESMAP Multi-tier energy access framework</li> <li>Undertook stakeholder consultation &amp; mapping,</li> <li>Assessed potential gaps and opportunities in the energy sector</li> <li>Made recommendations for possible intervention and support within SDG7</li> <li>Undertook stakeholder mapping, market assessment, &amp; mapping and value chain analysis</li> <li>Continually compared project performance against plans, identify deviations from plan, and develop corrective actions to bring performance back on track</li> <li>The assessment of the technologies was done based in part on <ul style="list-style-type: none"> <li>project bankability assessment including policy, regulations and electricity tariffs.</li> <li>Assessment of projects Economic [Benefit-cost ratio] &amp; Financial [Return on Investment (RoI); payback period] aspects</li> <li>Sustainability assessment : stakeholder consultation &amp; mapping</li> </ul> </li> </ul>
11/2010–05/2011	<p><b>Team leader</b></p> <p><b>Scaling up EDM in CA/CD</b></p> <p>GIZ – Regional Advisory Energy Platform (GIZ-REAP)</p> <p><b>Reference:</b> Name: Michael Franz <a href="mailto:Michael.franz@giz.de">Michael.franz@giz.de</a></p>	Kenya, Uganda, Tanzania, Rwanda, Burundi	<p>Project title: Scaling up EAC energy access policy in East Africa</p> <ul style="list-style-type: none"> <li>Undertook a CA/CD assessment of the energy sector for each of the individual East African Community countries to identify the barriers, opportunities, challenges and resources that can be tapped to enhance energy access in the region</li> <li>Validated the Program strategy and Implementation Document (PSID) in the light of existing capacities of Key stakeholders institutions including EAC, energy ministries and various grassroots organisations</li> <li>Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders</li> <li>Prepared and compiled project delivery reports, as well as identify and report risks on an ongoing basis</li> <li>Continually compared project performance against plans, identify deviations from plan, and develop corrective actions to bring performance back on track</li> </ul>
09/2012–11/2012	<p><b>Team leader</b></p> <p><b>Economic development experts for EDM system</b></p> <p>European delegation in Kenya (EU Framework contract)</p> <p><b>Reference:</b></p>	Somalia	<p>Project title: Formulation and design of the Infrastructure for Economic development programme for Somaliland and Puntland</p> <ul style="list-style-type: none"> <li>Formulated programme strategy and implementation (PSID) for Energy sector specifically looking at specific technologies to form the Action Agenda (AA) i.e. sustainable energy interventions</li> </ul>

PROFESSIONAL / CONSULTING WORK			
Period	Employing Organisation, Title/Position & References	Country	Project name and activities done
	Name: Ines Ameur <a href="mailto:Ines.ameur@ttco.fr">Ines.ameur@ttco.fr</a>		<ul style="list-style-type: none"> <li>Supported the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>Supported coordination of stakeholder follow-ups, tracking the progress of relevant projects and quality reporting</li> <li>Facilitated and supported the coordination of events and meetings, liaising with stakeholders for scheduling, procurement and minutes and reports</li> </ul>
08/2010–04/2011	<b>Team leader</b>  <b>EDM for bioethanol</b>  UNDP & Ministry of Energy – Kenya  <b>Reference:</b> Name: Tameezan Wa Gathui Email: <a href="mailto:tameezanwagathui@yahoo.com">tameezanwagathui@yahoo.com</a>	Kenya	Project title: Technical expert on Piloting Bio-ethanol as household energy in western Kenya  <ul style="list-style-type: none"> <li>Provided technical advice on project implementation, technologies and market access on the UNDP funded, PISCES project</li> <li>Establishment of project tracking systems including project milestones as well as facilitating and supporting the coordination of events and meetings</li> <li>Support coordination of stakeholder follow-ups, tracking project progress and quality reporting</li> </ul>
11/2010–02/2011	<b>Team leader</b>  <b>EDM for Biogas systems</b> GIZ, Regional Advisory Energy Platform (REAP)  <b>Reference:</b> Name: Michael Franz <a href="mailto:Michael.franz@giz.de">Michael.franz@giz.de</a>	Kenya	Project title: Nationwide biogas assessment in Kenya  <ul style="list-style-type: none"> <li>Field Assessment of Plastic Tubular biogas digesters in Kenya</li> <li>Support the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> </ul>
04/2010 and 07/2010	<b>Team leader</b>  <b>Capacity building for Renewable Energy systems EDM</b> International Organization for Migration (IOM)  <b>Reference:</b> Name: Stephen Matete <a href="mailto:smatete@iom.org">smatete@iom.org</a>	Kenya	Project title: Capacity building of IOM – TICAD Livelihoods staff <ul style="list-style-type: none"> <li>Undertook Capacity Building of TICAD Staff members on               <ul style="list-style-type: none"> <li>Energy access and sustainable energy technologies in post-conflict / refugee camps</li> <li>Practical design, planning and implementation of Solar, Wind and Biomass energy technologies and also Energy Efficiency</li> <li>Energy planning, policy and economics and also Energy Efficiency</li> </ul> </li> </ul>
03/2003–10/2003	<b>Team leader</b>  <b>Project design and delivery expert under EDM</b>  United Nations Environmental Programme (UNEP)  <b>Reference:</b> Name: Asenath Omwega,	Kenya	Project title: Data analysis in UNEP 2003 annual sustainable environmental and energy development projects review  <ul style="list-style-type: none"> <li>The key task was the acquisition of strategic parametric data for validation of the UNEP development projects in Kenya based on their log-frames and activity schedules</li> <li>Above involved</li> <li>Support the in-country programme lead in the design and delivery of a select number of initial small-scale activities and pilots</li> <li>Comparison of project performance against plans, identification of deviations from plans and development of corrective actions</li> <li>Support coordination of stakeholder follow-ups, tracking project progress and quality reporting</li> </ul>

## 11. Quality teaching and learning in Big data and Energy Technology

**a. Supervision of Post-graduate Students (graduated)**

Year of graduation	Student	Level	Thesis / Dissertation Title
2015	Ngure, S. M.	M.Sc	Fuel Consumption model for Road distribution of Petroleum products in Kenya
2015	Akello, P. O.	M.Sc	Performance Analysis of a direct drive permanent Magnet generator for small wind energy applications
2016	Kasera, Alice Achieng	M.Sc	Design and testing of an efficient savonius Wind turbine rotor blade for low wind speed applications
2016	Abiero, David Odeyo	M.Sc	An energy approach to evaluation of carbon dioxide emissions from Kenya's Road freight transport
2017	Onchoke Ismail	M.Sc	Conversion of Rice husks into an energy source through gasification Technology
2017	Haroub, Haroub Ahmed	M.Sc.	Development of a low-cost Rotor blade for an H-Darrieus Wind turbine
2018	Ndirangu Benson	M.Sc.	Of wind turbines on Radar Systems and mitigation measures: The case of Ngong Wind farm in Kenya.

**b. Supervision of M.Sc & PhD Post-graduate Students (Ongoing)**

M.Sc (Energy Technology)

1. Lee Alubala Okombe - Analysis of the impact of Solar Water heating Systems uptake on electricity demand
2. Kennedy Gakage Kibetu – Optimum design configuration of small Savonius wind turbine through computational fluid analysis

PhD (Electrical Engineering)

1. Oichoe Victor Marege – Development of Energy based green procurement model for cement production in Kenya.

**c. University Administrative posts:**

- Institute of Energy and Environmental Technology of Jomo Kenyatta University of Agriculture and Technology – Head of Budget, Procurement and Work planning (2019 -2020)
- University of Nottingham, Hall tutor's leader (2018 – 2019)
- University of Nottingham Ningbo China - DANN student representative (2017 – 2019)

**d. Peer reviewer of International Journals:**

- Renewable & Sustainable Energy Reviews (Impact factor : 10.556)
- Journal of Wind Energy (impact factor : 3.125)

**12. Community engagement and other contributions**

**a. Attracting research funds for Technology and innovation**

Date	Location	Amount	Organisation	Research funds outcomes
October 2021 – September 2023	Nairobi, Kenya	Kes 50 million	National Research Fund (NRF), Kenya	<ul style="list-style-type: none"> <li>■ Development of a portable, non-contact locust destroying Radar (LDR) system</li> </ul>
April 2021 - March 2022	Nairobi, Kenya	KES 2 million	AI-Africa Jica Japan Project, JKUAT	<ul style="list-style-type: none"> <li>■ Category 1 Research Project</li> <li>■ An innovative integrated approach to sustainable community waste management for improved livelihoods and economic empowerment (I-2-SWaM2021)</li> </ul>

## Francis Xavier O. - Résumé

October 2020 – December 2021	Nairobi, Kenya	Kes 8 million	Rural Electrification and Renewable Energy Corporation (RREC)	<ul style="list-style-type: none"> <li>Thematic 2 leader on Biogas systems</li> <li>Mapping and inventory of nationwide energy systems in Kenya</li> </ul>
April 2020 – March 2021	Nairobi, Kenya	KES 600,000	AI-Africa Jica Japan Project, JKUAT	<ul style="list-style-type: none"> <li>Category 3 research Project</li> <li>Development of a Pay As You Go Predictive Wind resource map for productivity and resilience improvement in food, health, transport and energy sectors</li> </ul>
2014 – 2019	UK, China	KES 4,123,000 (USD 41,230)	University of Nottingham	<ul style="list-style-type: none"> <li>Structural health monitoring of Wind turbines using radar</li> </ul>
April 2011 to 2014	Kenya	KES 6,500,000 (USD 65,000)	National council of Science and Technology, Kenya	<ul style="list-style-type: none"> <li>Development of low wind, affordable vertical axis wind turbine</li> </ul>
October 2011 to 2015	Kenya	KES 9,000,000 (USD 90,000)	Japan international cooperation Agency (JICA)	<ul style="list-style-type: none"> <li>Development of an affordable horizontal axis wind turbine</li> <li>Development of Numerical wind resource map</li> </ul>
October 2011 to 2015	Kenya	KES 5,000,000 (USD 50,000)	Japan International Cooperation Agency (JICA)	<ul style="list-style-type: none"> <li>Successfully fundraised for the construction of the IEET Wind and Hydro Laboratory at JKUAT, Juja under the JICA BRIHT project</li> </ul>

### b. Community Service and outreach –

- University of Nottingham – Students hall Tutor
- Rimpa Seventh Day Adventist Church – Church elder in charge of Tinga Sabbath school in Kajiado county, Kenya
- Advent hill primary school – Grade 2 Parents-Teachers Association (PTA) assistant class representative
- Head of Research, the Association of Energy Engineers East Africa (AEPEA)

### c. Affiliations in Professional Associations:

Membership	Affiliation description	Since
Association of Energy Engineers, USA	Certified energy efficiency Measurement and Verification professional (CMVP)	2013
Association of Energy Engineers, USA	Certified Energy efficiency and management expert (CEMI)	2012
National Environmental Management Authority (NEMA), Kenya	Certified National Lead expert in Environmental <b>Social</b> Impact Assessment and Energy Audits (ESIA/EA) studies	2009
Kenya Bureau of Standards (KEBS)	Technical committee member <ul style="list-style-type: none"> <li>Solar and Wind Technologies</li> <li>Biomass</li> <li>Hydro power</li> </ul>	

## 13. Publications

### a. Book chapters in university level scholarly books

- ✓ Francis Xavier Ochieng, Craig Mathew Hancock, Gethin Wyn Roberts and Julien Le Kernec (2019). Optimal design and operational monitoring of Wind Turbine blades – the practice In Optimization of Wind energy conversion systems. Edited by Maalawi Karam. ISBN 978-1-78984-408-5
- ✓ Ochieng, F. X., (2011). Application of Grid Computing for meteorological assessment of wind and solar resources in Sub-Saharan African countries, In Computational and Data Grids: Principles, Designs, and Applications. Ed. Nikolaos Preve, IGI Global Publishers. ISBN: 1613501137
- ✓ Ochieng, F.X., (2004) Potential for the use of geothermal energy in rural electrification in Kenya: A case study of geothermal renewable energy technologies in Kenya as technology in Rural Electrification. In Renewables and Rural electrification. Ed. Chakravarthy, G., Shukla, A., Misra, A., Carl Von Ossietzky University. ISBN 3-8142-0928-1
- ✓ Ochieng, F.X., (2004). E-Acquisition and Dissemination:- Procedural Issues on the Use of the Cyberspace to Disseminate, Share and Acquire Research Findings and Methodologies, In “Research Management - Data Acquisition, Analysis, Interpretation and Dissemination”, Proceedings of Workshop for DAAD Scholars, 25th -



26th March 2004, Jomo Kenyatta University of Agriculture and Technology (JKUAT), Juja-Kenya. Ed. Etzold, C., Agong, S., Masinde, P., Nairobi, Deutscher Akademischer Austauschdienst (DAAD).

- ✓ Ochieng, F.X., (2004). E-Ethics:- Emerging Issues of Ethics in Internet based Research in Kenya, In "Research principles and guidelines", Proceeding of First Workshop on Research Ethics for DAAD scholars, 11th – 12th February 2004, Maseno University, Maseno-Kenya, Nairobi, Deutscher Akademischer Austauschdienst (DAAD)
- ✓ Ochieng, F.X., (2002). Renewable Energy Dissemination of Pico-hydro in Kenya: Some Key Issues in using a Participatory Scheme, In "Renewable Energy for Sustainable Development", Ed. Shuckla A., Misra, A., Mazharul, I., Oldenburg, Carl von Ossietzky University. Available at <http://www.ppre.uni-oldenburg.de/15286.html> last accessed 07.12.2010

#### **b. Patents, innovation and inventions**

- ✓ Ochieng, F.X., Hancock, Configurable Multi-sensor Multi-platform equipment and a novel method for validating non-contact unbalanced parameters. China patent Office, submitted January 28<sup>th</sup>, 2019. (传感器的调试设备) {China patent office, Patent No:- 210769157}
- ✓ Localised System and method for variable plant selection and harvesting based on predicted wind-weather matrix (Kenya Intellectual Property Institute) (Patent no: KE/U/2021/1533)

#### **c. Peer reviewed Journal articles**

1. Ochieng, Francis Xavier, Craig Matthew Hancock, Gethin Wyn Roberts, and Julien Le Kernec. "A review of ground-based radar as a noncontact sensor for structural health monitoring of in-field wind turbines blades." *Wind Energy* 21, no. 12 (2018): 1435-1449 <http://dx.doi.org/10.1002/we.2252>
2. Ochieng, Francis X., Haoyang Jiang, Craig M. Hancock, Gethin W. Roberts, Julien Le Kernec, Xu Tang, and Huib de Ligt. "Deflection characterisation of rotary systems using ground-based radar." *The Journal of Engineering* 2019, no. 20 (2019): 7215-7219. <https://doi.org/10.1049/joe.2019.0503>
3. Onchoke Ismail, Mutwiwa Urbanus, Hunja Murage, Ochieng Francis, (2016) "Conversion of Rice Husks into an Energy Source through Gasification Technology", *International Journal of Science and Research (IJSR)*, <https://www.ijsr.net/archive/v5i9/v5i9.php>, Volume 5 Issue 9, September 2016, 1264 - 1268, DOI: 10.21275/ART20161814
4. Ngure, S., M., Ochieng, F. X., Mailutha, J., T., (2014), Fuel Consumption model for Road Distribution of Petroleum products in Kenya. *OSR Journal Of Environmental Science, Toxicology And Food Technology (IOSR-JESTFT)* e-ISSN: 2319-2402 p-ISSN: 2319-2399. Volume 8, Issue 1 Ver. IV (Feb. 2014), PP 56-60.. Available at <http://www.iosrjournals.org/iosr-jestft/papers/vol8-issue1/Version-4/I08145660.pdf>
5. Philip Oketch Akello, Francis Xavier Ochieng, Joseph Ngugi Kamau, (2014), Performance Analysis of a Direct Drive Permanent Magnet Generator for Small Wind Energy Applications. *Journal of Sustainable Research in Engineering*. Vol 1 (3) 2014 PP 1 – 9, Available at: <http://www.jkuat-sri.com/ojs/index.php/sri/article/download/250/176>
6. Alice Achieng Kasera, Francis Xavier Ochieng, Robert Kinyua, (2015), Design and testing of an efficient savonius wind turbine's rotor blade for low wind speed applications, *Journal of Sustainable Research in Engineering* Vol. 2 July 31(2) 2015, PP 23-35. Available at: <http://www.jkuat-sri.com/ojs/index.php/sri/article/download/263/250>
7. Abiero, D., Xavier Francis Ochieng, and Josiah Ochieng Odalo. "An energy approach to evaluation of carbon dioxide emissions from Kenya's road freight transport." *Journal of Energy Technologies and Policy* 5, no. 2 (2015): 1-6. Available at: <http://www.iiste.org/Journals/index.php/JETP/article/view/20152/20584>
8. Haroub HA. Ochieng Francis Xavier, Development of a Low Cost Rotor Blade for an H-Darrieus Wind Turbine. *Journal of Sustainable Research in Engineering*. 2016 Feb 17;2(3): pp 92-9.
9. Ndirangu, B., F.X. Ochieng, J. N., Kamau and C. Mburu. Of Wind turbines on Radar systems and mitigation measures: the case of Ngong Wind farm in Kenya. (2017) <http://journals.jkuat.ac.ke/index.php/jscp/article/view/1096/900>
10. Wanjiru H., Ochieng F.X. (2014) – Underpinning factors for the development of a commercialization strategy for small wind systems in Kenya. *Journal of Sustainable Research in Engineering*, 2013 Nov 15, 904-910 <http://journals.jkuat.ac.ke/index.php/jscp/article/view/1135/937>

**d. Peer reviewed conference papers**

1. Xavier Francis Ochieng, Paul Okanda, "Mapping of HPC Clusters in Africa and Model to improve Access", IST-Africa 2019 Conference, Nairobi, Kenya, May 8th – 10th, 2019
2. Paul Okanda, Valerie Adema, Xavier Francis, "High performance computing (HPC): A tool to improve research quality and Africa's work force development (WfD)", Graduate ICT Research and Education Summit 2018 (GIRE III), Carnegie Mellon University Campus, Kigali, Rwanda, November 16th – 17th, 2018
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