EAI
EUROPEAN ALLIANCE FOR INNOVATION

INTERSOL

EAI INTERNATIONAL CONFERENCE ON INNOVATIONS AND INTERDISCIPLINARY SOLUTIONS FOR UNDERSERVED AREAS

EAI 4TH INTERNATIONAL CONFERENCE
ON INNOVATIONS AND INTERDISCIPLINARY SOLUTIONS FOR UNDERSERVED AREAS

ONLINE 12-13 APRIL 2021

http://interdisciplinarysolutions.org/**2020/free-sign-up**

Nature-based solutions, gender equity and interconnectivity for climate resilience in Africa

Dr. Jessica Thorn
General chair,
InterSol 2020/1

Welcome Message

A heartfelt welcome to the fourth EAI International Conference on Innovations and Interdisciplinary Solutions for Underserved Area, InterSol2020/1!

After Dakar, Kigali and Cairo, I am delighted to welcome you, on behalf of the organizing committee, to the virtual conference of InterSol2021, following the postponement due to COVID 19 which was due to be held in Nairobi, Kenya.

Interdisciplinary Solutions (InterSol) is an international conference dedicated to the advancement of interdisciplinary research that addresses needs in what is referred to as ‘underserved areas’ (i.e., limited research and development, along with service delivery). Working in Africa, central objectives are to: (1) establish an interdisciplinary research and development community, (2) encourage education in Africa and around the world, and (3) incentivize members of the community to initiate trans-/inter-disciplinary research projects with real-world decision-making impact.

The year of 2020 was a momentous one for sustainability, biodiversity and climate change policy. It represents the deadline for 21 Sustainable Development Goal targets, the year a new post-2020 framework to replace the Aichi Biodiversity Targets will be agreed, and a turning point for climate change, according to the UNFCCC. This trilemma of policy issues represents a set of globally interlinked challenges, which are particularly significant for Africa. In addition, the issues of gender inequality, the education of women and the progress of women in STEM and leadership positions across all sectors in Africa is also a prescient challenge to the future of African development. Consequently, the theme for this year's edition is **“Nature-based solutions, gender equity and interconnectivity for climate resilience in Africa”**. We have also chosen to **Celebrate International Women’s Day,** and situate our discussion in the context of post-COVID recovery.

Continued>>

Welcome Message

Dr. Jessica Thorn
General chair,
InterSol 2020/1

Intersol2021 has attracted diverse, inter– and trans-disciplinary researchers from 18 countries across Africa, Europe and North America. Approximately 40% of these scientists are women. The conference represents a true confluence of diverse disciplines, from nuclear science, engineering, mathematics and physics, to geography, conservation, and climate change and onto religious studies, economics, gender, education, anthropology and many more. As in previous years, we hope to showcase the best in research from across the continent to industry practitioners, government officials, think tanks, research organizations, NGOs, CBOs and private companies and African Institutions of Higher Education, Science and Technology.

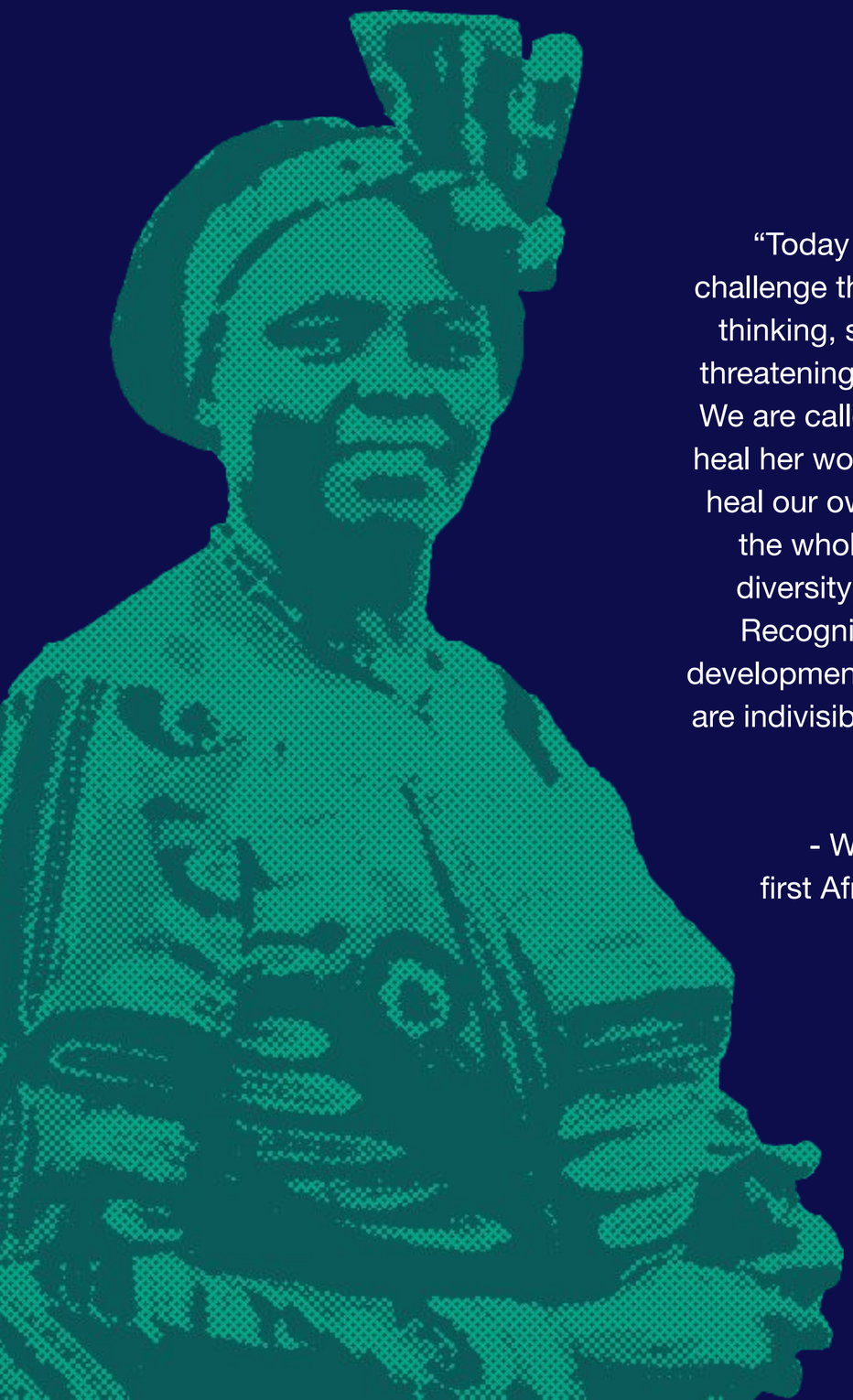
The program offers stimulating paper and poster presentations, keynote speakers, interactive panel discussions, display tables and a variety of sessions covering themes such as: climate change and health; corporate environmental and social governance; land use change; disaster risk reduction; nature-based solutions; challenges and barriers faced by women in research; environmental pollution; information communication technology for development, amongst other topics.

Two interactive tutorials address topics including: how to measure science communication and write opinion editorials for policy and press; and how to implement a distance training program in African universities. A Zumba Gala Dance and networking event will allow us to informally interact in a virtual setting.

InterSol2021 is held partnership with the University of York, University of Cape Town, Stockholm Environment Institute, University of Nairobi, African Academy of Sciences with the support of the Next Einstein Forum, IDRC, the African Institute of Mathematical Sciences, and Google AI Africa. Through the support of our sponsors, we had fundraised for the travel of sponsored 25 international presenters—more than any previous event but unfortunately this was cancelled due to the ongoing pandemic.

We wish you an excellent interdisciplinary gathering to foster long term collaborations for evidence based decision making towards a sustainable African future.

Dr. Jessica Thorn - General chair, InterSol 2020/1



“Today we are faced with a challenge that calls for a shift in our thinking, so that humanity stops threatening its life-support system. We are called to assist the Earth to heal her wounds and in the process heal our own - indeed to embrace the whole of creation in all its diversity, beauty and wonder. Recognizing that sustainable development, democracy and peace are indivisible is an idea whose time has come”.

- Wangari Maathai,
first African woman to win
Nobel Prize

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ABOUT INTERSOL

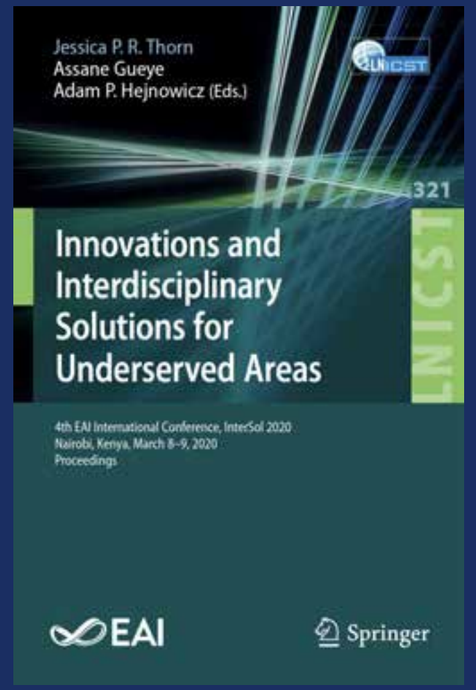
Today, there is a consensus that such challenges require solutions that are not amenable to separate single discipline investigation but require collaboration between many types of traditional disciplines. There is a need for more transdisciplinary practice: where research has a real-world impact.

An international conference intended to

(1) encourage innovative interdisciplinary research, development, and education that focus on solving problems in underserved areas in Africa and beyond

(2) create an international research and development community around “interdisciplinary solutions,” which meets annually, publish in international fora, and incentivize members of the community to initiate interdisciplinary research projects that address needs.

Editions:
Dakar, Senegal, 2017
Kigali, Rwanda, 2018
Cairo, Egypt, 2019
Viritual/Nairobi, Kenya 2020/1

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Dr Rocio A. Diaz-Chavez

Dr. Arame Tall

Dr. Eucharia Nwaichi

Jan Vandenabeele

Jessica Kavonick

Lucy Muchoki

Prof. Ghada Bassioni

Sarah Chiles

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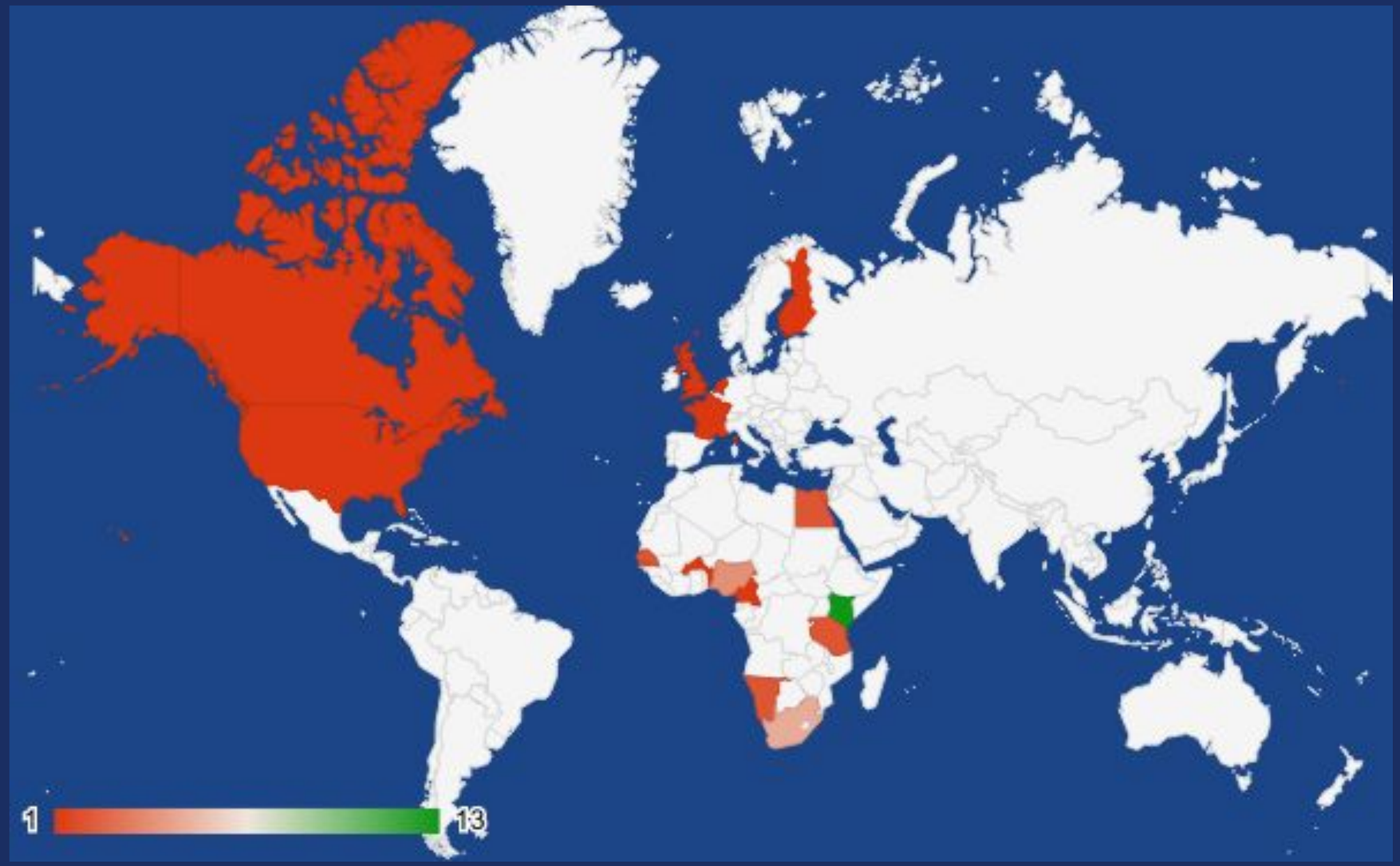
COUNTRIES REPRESENTED

Moderators
Panelists
Paper presenters
Ignite Talk presenters
Workshop facilitators



CONFERENCE PROGRAM: DAY 1

12 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
08:00 - 08:10	Opening ceremony	**Welcoming remarks**	**Dr Jessica Thorn** **Prof Assane Gueye** (InterSol 2020 Technical Programme Committee)
08:10 - 08:20	NEF address	**Next Einstein Forum**	**Dr Charles Mberi Kimpolo** (Next Einstein Forum, Rwanda)
08:20 - 08:28	EAI address	**European Alliance for Innovation, Conference Manager and Community Manager**	**Elena Davydova** and **Michal Dudic** (EAI, Slovakia)
08:28 - 08:35	Partner address	**Department of Environment and Geography, University of York**	**Prof Robert Marchant** (University of York, UK)
08:35 - 08:40	Funder address	**Google Artificial Intelligence Africa**	**Dr Moustapha Cisse** (Google AI Africa, Ghana)
08:40 - 09:10	Keynote address	**Bioeconomy: tapping natural and human resources to achieve sustainability in Sub-Saharan Africa**	**Dr Rocio-Diaz Chavez** (Stockholm Environment Institute Africa, Kenya)

CONFERENCE PROGRAM: DAY 1 **12 APRIL 2021**

Time	Aim	Details and guiding notes	Presenter/Facilitator
09:10 - 10:10	Paper presentations	**What are development impacts on social-ecological systems?**	Moderated by: **Dr Adam Hejnowicz** (Living Deltas, Newcastle University, UK)
		Mainstreaming nature based solution for climate adaptation in peri urban settlements	**Rebeca Biancardi** (University of Cape Town, South Africa)
		Environmental protection in Nigerian democracy: The Ogoni clean-up in perspective	**Harrison Idowu** (Obafemi Awolowo University, Nigeria)
		Preliminary assessment of water resources in the SGR corridor: Impacts and options	**Dr Catherine Sang** (University of Nairobi, Kenya)
		Licensing Namibia: Intersecting an ecosystem with an oil rig	**Dieter Brandt** (AEDI, Germany/ Namibia)
10:10 - 10:20	Break	**Coffee break and stretch**	

CONFERENCE PROGRAM: DAY 1

12 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
10:20 - 11:10	Paper presentations	**How can ICT and innovative connectivity enable for sustainable development?**	**Prof Ghada Bassioni** (Ain Shaims University, Cairo)
		An opportunistic communication and computing infrastructure for End-2-End support to agriculture in rural Africa	**Prof Assane Gueye** (Carnagie Mellon University Africa, Rwanda)
		Consolidating the right to data protection in the information age: A comparative appraisal of the adoption of the OECD guidelines into the EU GDPR, the Ghanaian Data Protection Act 2012 and the Kenyan Data Protection Bill 2019	**Dr Rogers Alunge** (INTERPOL Office of Legal Affairs, France)
		Assessing the e-readiness of marginalised communities for E-government services: A case of Oniipa, Namibia	**Dr Karin Fröhlich** (Aalto University, Namibia/Finland)
		Vulnerability analysis in mobile banking and payment applications on Android in African countries	**Didier Bassolé** (Universita Joseph Ki-Zerbo, Burkina Faso)

CONFERENCE PROGRAM: DAY 1 **12 APRIL 2021**

Time	Aim	Details and guiding notes	Presenter/Facilitator
11:10 - 12:10	Plenary session	**How African women can lead STEM, conservation and climate research?** **Dr Caroline Ngugi** (Jomo Kenyatta University, Kenya) **Dr Arame Tall** (World Bank, USA) **Sarah Chiles** (Grevy Zebra Trust, Kenya) **Dr Rocio Diaz-Chave**z (SEI-Africa, Kenya) **Dr Eucharia Mwaichi** (University of Port Harcourt, Nigeria) **Prof Ghada Bassioni** (Ain Shams University, Egypt) ***Cynthia Erivo performs "I'm Here"***	**Dr Jessica Thorn** (University of York/Cape Town, South Africa/UK)

CONFERENCE PROGRAM: DAY 1

12 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
12:10 - 12:55	Workshop tutorial	**E-learning: How to implement a distance training program in African universities**	**Dr Narcisse Talla Tankam** (University of Ngaoundere, Cameroon)
12:55 - 13:00	Closing remarks	**Summary of key messages**	**Dr Jessica Thorn** (InterSol2021 General Chair)
13:00 - 13:30	Zumba Gala Dance	**Professional dance class**	**Claudia Iskandar** (Canada/ Egypt)

CONFERENCE PROGRAM: DAY 2

13 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
08:00 - 08:10	Welcome	**Welcome, summary of Day 1 and objectives for the day**	**Dr Jessica Thorn** (General Chair, InterSol2021, University of York, University of Cape Town, UK/South Africa)
08:10 - 08:40	Keynote address	**Edge federation as a key driver for environmental data processing**	**Dr Charif Mahmoudi** (Siemens, Egypt / USA)
08:40 - 09:40	Plenary session	**In a social and ecological compact, what is the role of the private sector?** **Jan Vandenbeele** (Better Globe Forest, Kenya) **Akshay Vishwanath** (Maliasili, East Africa Portfolio Manager, Kenya) **Jessica Kavonik** (ICLEI Africa, South Africa) **Lucy Muchoki** (CEO, Pan African Business Consortium, Kenya)	**Dieter Brandt** (Advanced Environmental Design Initiatives, Germany/Namibia)

CONFERENCE PROGRAM: DAY 2

13 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
09:40 - 10:35	Ignite presentations	**How can nature build resilience?**	Moderated by: **Prof Abdulhameed Mambo** (Nile University, Nigeria
		Future cities are already here, if you know where to look	**Dr Jessica Thorn** (University of Cape Town/ University of York, South Africa/UK)
		Informality, ecosystem services and climate change: a look at Windhoek, Namibia	**Amayaa Wijesinghe** (UNEP-WCMC/University of Oxford, UK/Sri Lanka)
		Informing community-based conservation of key biodiversity and restoration of ecosystems affected by locust invasion in Northern Kenya	**Anthony Karani** (University of Nairobi, Kenya)
		Indirect ecological impacts of commercial gold mining on adjacent ecosystems	**Hamidu Seki** (University of York, UK/Tanzania)

CONFERENCE PROGRAM: DAY 2

13 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
09:40 - 10:35	Ignite presentations	Kenya's regulatory framework on the integration principle	**Emmaqulate Kemunto Morang'a** (University of Nairobi, Kenya)
		Climate change impact on runoff regime in Kinyasungwe-Mkondoa catchment of Wami River Basin, Tanzania	**Donald Limbe** (International Labour Organization, Tanzania)
		Participatory mapping of livestock keeping systems and migratory resilience pathway routes across Kilosa and Mvomero districts Tanzania	**Edmund Githoro** (Mshiriki Research Consultancy Hurlingham Nairobi, Kenya)
		Innovations in adapting to water scarcity and abundance: Christian-Muslim perspective	**Dr Hassan Omari** (University of Nairobi, Kenya)
10:35 - 10:45	Break	Coffee break and stretch	

CONFERENCE PROGRAM: DAY 2

13 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
10:45 - 11:45	Paper presentations	**Human food, energy and construction impacts and monitoring**	Moderated by: **Prof Assane Gueye** (Carnegie Mellon University of Africa, Rwanda)
		Mangroves under demographic pressure and salt production threats in the Municipality of Ouidah (Benin)	**Sehouevi Mawuton David Agoungbome** (AIMS, Benin)
		Supervisory strategy of a PV system with storage for injection to the electrical network / Experimental validation of an Artificial Neural Networks MPPT controller of an installed solar panel at Polytechnic High School	**Amadou Ba** (Universite Alioune Diop, Bambey, Senegal)
		Variation with depth of physico-chemical, mineralogical and physical properties of overburden over Gneiss Basement Complex in Minna Metropolis Nigeria	**Prof Abdulhameed Mambo** (Nile University, Nigeria)
		A multi-level smart monitoring system by combining an e- nose and image processing for early detection of FAW pest in agriculture	**Semevo Arnaud Ahouandjinou** (University of Abomey-Calavi, Benin)

CONFERENCE PROGRAM: DAY 2

13 APRIL 2021

Time	Aim	Details and guiding notes	Presenter/Facilitator
11:45 - 12:30	Workshop tutorial	**How to measure science communication and write opinion editorials for policy and press communication?**	**Joy Owango** (Training Centre for Communication, University of Nairobi, Kenya)
12:30 - 13:00	Networking	**Breakout rooms**	**Dr Jessica Thorn and Dr Assane Gueye** (InterSol 2020 Technical Programme Committee)
13:00 - 13:30	Next steps	**Discussion on the future of InterSol2021** **Closing and award ceremony**	**Dr Jessica Thorn and Dr Assane Gueye** (InterSol 2021 General Chair and Founder)

ORGANISING COMMITTEE

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Jessica Thorn
University of York, UK, University of Cape Town, South Africa

Technical Program Committee Co-Chairs

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Carnegie Mellon University Africa, Rwanda

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Newcastle University , UK

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University of Ngaoundere, Cameroon

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Hamidu Seki
University of York, UK

Panel Chair

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Conference Manager

Elena Davydova
European Alliance for Innovation, Slovakia

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Ghada Bassioni Ain Shams
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Edmund Githoro
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Senghane Mbodji
Alioune Diop, University of Bambey, Bambey, Senegal

Dieter Brandt
Advanced Environmental Design Initiatives, Germany/ Namibia

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Committee Members

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Université Cheikh Anta Diop, Dakar/ Ecole Supérieure Polytechnique, Senegal

Assane Gueye
University of Maryland College Park-USA/Universite Alioune Diop, Bambey-Senegal

KEYNOTE SPEAKERS

Dr Rocio Diaz-Chavez

(Deputy Director for Research/ Climate Change Programme Leader, Stockholm Environment Institute Africa)

Bioeconomic, circular economy and sustainability in Sub-Saharan Africa

@RocioDiazChave5
SEIresearch

Dr Rocio A Diaz-Chavez is the Deputy Director for Research at the Stockholm Environment Institute Africa Centre and the Energy and Climate Change Programme Leader. She is also a Senior Research Fellow at the Centre for Environmental Policy at Imperial College London. Her research area focuses on sustainability assessment and deployment of bioeconomy, land use and natural resources and the synergies with energy, sustainability and SDGs. She has participated in different EU funded projects in Europe, Africa, Asia and Latin America. She contributed with FAO developing the indicators for the Global Bioenergy Partnership and acted as Chair of the Social Group of the ISO Bioenergy Standard. She was the co-chair of the International Energy Agency for the UK Task 40 (Biomass trading) for four years 2013-2017. She received the SCOPE 2010 Young Scientist Award in Environmental Management for her work on sustainable development indicators and standards.

KEYNOTE SPEAKERS

Dr Charif Mahmoudi

(Software Architect for intelligent systems, Siemens, USA)

Dr. Charif Mahmoudi received the MSc and PhD degrees in computer engineering from the University of Paris-EST (France) in 2009 and 2014, respectively. After His Post-Doc at the National Institute of Standards and Technology, he joined Siemens Corporate Technology as a Software Architect for Intelligent Systems. He participated as consultant then software architect to several successful telecommunication projects within France Telecom and Bouygues Telecom and contributed to several research projects with deployments in several countries. His areas of research are on distributed systems, cloud computing, mobile computing and Internet of things

Edge federation as a key driver for environmental data processing

@charifus @Siemens

MODERATORS

Dr Adam Hejnowicz

(Research Associate, Department of Biology, University of York and Department of Animal and Plant Sciences, University of Sheffield)

As an interdisciplinary social-ecological scientist, Adam’s principal research interests reside in the connections and interactions between human social, economic and ecological systems. Specifically, in relation to agriculture, land management, ecosystem services,sustainability policy and environmental governance across water, energy and food systems. In this regard, his work spans the boundaries of the natural and social sciences, and he has interests in the applications of complex systems thinking and mixed method approaches to the science policy interface and co-productive and transdisciplinary modes of engagement and participation.

@HejnowiczAP

MODERATORS

Prof Ghada Bassioni

(Professor, Technical University Munich, Germany)

@GhadaBassioni

She is a Professor and the Head of the Chemistry Division at the Faculty of Engineering, Ain Shams University in Cairo and is currently a visiting professor at the Technical University in Munich. She is a member of the Egyptian National Committee of Pure and Applied Chemistry and has been elected to the Bureau of the International Union of Pure and Applied Chemistry (IUPAC) in 2019. She is the manager of the project Energy Efficiencies in Egyptian Universities, Supreme Council of Universities, Egyptian Ministry of Scientific Research and Higher Education and has been a member of the Global Young Academy from 2013-2018. She has over 116 scientific publications in peer reviewed journals and conference proceedings and has been recognized with several national (like the Egyptian State Incentive Award in Chemistry, 2013), regional (like the LEWA Leadership Excellence for Women runner up award, 2013) and international awards (like the Young Scientist Award at the World Economic Forum in Dalian, 2013) and was selected as an academic visitor and panelist at the Nobel Laureates meetings in Lindau, Germany, in 2012 and 2014, respectively. In 2016, she has been awarded the Next Einstein and the Fulbright fellowships as well as the L.A.B. fellowship of three organizations: Nobel Laureate Meetings in Lindau, the European Forum in Alpbach and the Falling Walls in Berlin.

MODERATORS

Dr Jessica Thorn

(General Chair InterSol2020/1, Research Associate and NEF Fellow, 2019-2021, University of York, UK and African Climate and Development Initiative, University of Cape Town, South Africa)

@JessicaPRThorn
@YorkEnvironment @ACDI_UCT

Jessica is a Namibian ecologist with a background in human geography, with 13 years' research experience traveling to over 57 countries. She is a Senior Research Fellow the University of Cape Town African Climate and Development Initiative, Research associate at the University of York Department of Environment and Geography, African Women in Climate Change Fellow and Next Einstein Forum Fellow (2019). Jessica uses probabilistic social-ecological modeling and scenario analysis to measure impacts of development on land use change, social ecological systems, biodiversity and wellbeing. Her current research focuses on infrastructural development corridors in East Africa, and climate resilience in peri-urban areas. Jessica has been involved in various NSF, NERC, NRF, DFID, CGAIR, IDRC, ESRC, UNECA, and USAID funded projects, conducting field research in twelve countries. Professional activities have been affiliated with the UN, World Bank, Conservation International, WWF, Red Cross, CIFOR, CCAFS, the Global Environmental Facility Kew, Cambridge, Oxford, London School of Economics, and Brown University. She completed her BSocSci(Hons) at UCT, MSc and DPhil at Oxford, and postdoctoral studies at Colorado State University and ETH Zurich. She currently a contributing author to the International Panel on Climate Change Sixth Assessment report, is a coordinating lead author of the Global Environmental Outlook brief on future proofing infrastructure and infrastructure services, currently supervises two PhD and three MSc students.

MODERATORS

Dieter Brandt

(Founder, Advanced Environmental Design Initiatives (AEDI) UG, Germany/Namibia)

@dieterbrandt

Namibian-born Dieter Brandt is a leading creative and environmental consultant and an experienced architect. Dieter, who graduated from the University of Cape Town with distinction in 2002 specializes in spatial sciences and creates places that are a provocation for African futures. Such design provocation was key when he served as project architect for Freedom Park Museum and pan-African Archive, South Africa from 2006 - 2012, and the new Mathematical Sciences building at the University of Witwatersrand in 2014. He was also the lead design consultant for Mmabatho Precinct, a proposal for an original, public, shared-space precinct – part of the repositioning and rebranding of the capital of North West province in 2016. In 2018 Dieter founded Advanced Environmental Design Initiatives (AEDI) UG in Germany and South Africa. AEDI is an environmental advisory that specialises in climate and spatial services and develops fundable environmental design initiatives that mediate selected technologies to advance and climate-proof complex adaptive systems within the water, energy, and food security nexus. Dieter consults in circular economies, climate-risk management, environmental design, identity communication, and spatial strategies, and has a special interest in carbon-neutral growth strategies that help climate-proof systems, or offset carbon emissions and help reduce GHG emissions, incorporating this into new urban and rural development strategies that facilitate sustainable social-ecological integration.

MODERATORS

Dr Abdulhameed Mambo

**(Associate Professor/ HOD,
Department of Civil Engineering,
Nile University of Nigeria, Nigeria)**

@admambo

Dr. Abdulhameed Danjuma Mambo is currently an Associate Professor and HOD of Department of Civil Engineering, Nile University of Nigeria Abuja. Dr. Abdulhameed obtained his Bachelor of Engineering degree in Civil Engineering. with a Second Class Upper from Federal University of Technology Minna in January 2006. He completed his Msc and PhD in Civil and Building Engineering December 2009 and December 2013 respectively. He took up a Post-Doctoral Research Associate position in Loughborough University. His research areas include, General Civil Engineering, Sustainable Infrastructure, Energy Efficiency, Building Energy Management Systems and Artificial Intelligent Building Systems. He had published two books, several peer-reviewed journal articles and presented papers in reputable local and international conferences in the UK, France, Sweden, Cameroon, Rwanda, Ivory Coast and Nigeria. Engr. Dr. Abdulhameed Danjuma Mambo is a corporate member of the Nigerian Society of Engineers, European Energy Centre, World Society of Sustainable Energy Technologies, Nigeria Institution of Civil Engineers and is fully registered as a Civil Engineer with the Council for the Regulation of Engineering in Nigeria (COREN). Dr Mamadou Lamine Mbaye (Assistant Professor, University Seck of Ziguinchor, Senegal)

MODERATORS

Prof Assane Gueye

(Carnagie Mellon University Africa, Rwandal)

Prof. Assane Gueye is a faculty member at the ICT Department at the University Alioune Diop of Bambey (UADB), Senegal. He also holds a Guest Researcher position with NIST, Gaithersburg. Assane completed his Ph.D in Electrical Engineering and Computer Sciences from UC Berkeley in March 2011. He previously received a master's degree in communication systems engineering from EPFL (2004). His research interest focuses on two main areas: (1) performance evaluation and security of large-scale communication systems (PERF&SEC), in which he aims at establishing theories,models, and algorithms to enable the design, implementation, and operation of large-scale systems for which the global behavior can be predicted and the risks of catastrophic events can be managed and mitigated, and (2) information and communication technologies for development (ICT4D) where he aims to develop solutions that are good enough, cheap enough, and well suited to issues faced by people in the developing world.

@gazoussly @CMU_Africa

PANELISTS - DAY 1

Dr Caroline Ngugi

(Senior Lecturer, Jomo Kenyatta University of Agriculture and Technology, Kenya)

Caroline is a senior lecturer and researcher with over 15 years in both academia and research at different levels. She is currently the Chairman, Department of Medical Microbiology, Jomo Kenyatta University of Agriculture and Technology, Kenya. She has a strong background in Medical Microbiology and Molecular Epidemiology with strong interest in creating research ideas that will enhance the nation's efforts in the management and control of cancer, infectious and other related diseases as well improving maternal health care. She is a member of the Task force of the Africa-ai-Japan project and currently the chairperson of the Innovation Center for Molecular Biology and Biotechnology (ICMOB) under the Africa-ai-Japan Project in JKUAT. She is a Founder Member and Treasurer of Kenya National Young Academy of Sciences, committee member of the Infectious and Parasitic Disease programme-KEMRI. She is also an affiliate of the African Academy of Sciences. Caroline is married and a proud mother of four children.

PANELISTS - DAY 1

Dr Arame Tall

(Senior Adaptation and Resilience Specialist, Climate Change Group World Bank, USA, Senegal)

Arame Tall is a Senior Adaptation & Resilience Specialist in the Climate Change Group of the World Bank. Dr. Tall leads coordination of the Bank's work on Adaptation & Resilience and is the team leader for the World Bank Group's first of its kind Action Plan on Climate Change Adaptation & Resilience. The new plan significantly boosts support for adaptation and resilience, and also represents significantly ramped up ambition from the World Bank Group in this area. Before joining the Bank in 2017, she worked for 15 years in climate adaptation and development, holding senior positions with the World Meteorological Organization (WMO), the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the Red cross/Red crescent Climate Centre. She holds a PhD from the Johns Hopkins University-SAIS in Climate Adaptation and African Studies, an MA from Columbia University's Climate & Society Program, and a BA from Smith College in Anthropology and Environmental Policy.

@dr_arametall

PANELISTS - DAY 1

Sarah Chiles

(Landscape Infrastructure Advisor, Ewaso Lions and Grevy's Zebra Trust, Kenya)

Sarah Chiles specialises in environmental governance with the aim of harmonising grey and green infrastructure (built and ecological infrastructure) in economic growth corridors in Africa. She has nearly seven years' experience in East Africa working on conservation strategies and programs for areas of high biodiversity value experiencing significant investment in agriculture and infrastructure. These include the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) and the Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) Corridor in northern Kenya. She has further experience in landscape-level planning in Uganda, Ethiopia and Zimbabwe. Sarah is South African and previously worked on urban and peri-urban conservation projects in Durban, KwaZulu-Natal. She is passionate about furthering the restoration agenda. She is also co-author of Growing Our Reach – An Intergenerational Leadership Toolkit for Conservation, and is committed to optimising organisations to support young environmental professionals.

@EwasoLions

PANELISTS - DAY 1

Dr Rocio Diaz-Chavez

(Deputy Director for Research/ Climate Change Programme Leader, Stockholm Environment Institute Africa

@RocioDiazChave5
SEIresearch

Dr Rocio A. Diaz-Chavez is the Deputy Director for Research at the Stockholm Environment Institute Africa Centre and the Energy and Climate Change Programme Leader. She is also a Senior Research Fellow at the Centre for Environmental Policy at Imperial College London. Her research area focuses on sustainability assessment and deployment of bioeconomy, land use and natural resources and the synergies with energy, sustainability and SDGs. She has participated in different EU funded projects in Europe, Africa, Asia and Latin America. She contributed with FAO developing the indicators for the Global Bioenergy Partnership and acted as Chair of the Social Group of the ISO Bioenergy Standard. She was the co-chair of the International Energy Agency for the UK Task 40 (Biomass trading) for four years 2013-2017. She received the SCOPE 2010 Young Scientist Award in Environmental Management for her work on sustainable development indicators and standards

PANELISTS - DAY 1

Dr Eucharia Oluchi Nwaichi

(Senior Lecturer, University of Port Harcourt, Nigeria)

Dr. Eucharia Oluchi Nwaichi is a Senior Lecturer at the University of Port Harcourt Nigeria with vast work experience in diverse industries. Eucharia has contributed significantly to the understanding of the soil – plant – biota interactions and the influences of various soil amendments at remediation of contaminated soil and promotes green chemistry. Dr. Eucharia is poised with influencing policies with her science and increasing the space for women in science. She is the President of Organization for Women in Science for the Developing World (OWSD) University of Port Harcourt Branch and has organised several developmental events for colleagues and students, and written and reviewed several technical reports. Notable awards and recognition to her credit include 2019 Fellow of Next Einstein's Forum, 2015 University of Port Harcourt Merit Award, Affiliate of African Academy of Science, International Fellow to Commonwealth (2015) and UNESCO LO'real FWIS (2013).

@EuchariaN

PANELISTS - DAY 1

Prof Ghada Bassioni

(Professor, Technical University Munich, Germany)

@GhadaBassioni

She is a Professor and the Head of the Chemistry Division at the Faculty of Engineering, Ain Shams University in Cairo and is currently a visiting professor at the Technical University in Munich. She is a member of the Egyptian National Committee of Pure and Applied Chemistry and has been elected to the Bureau of the International Union of Pure and Applied Chemistry (IUPAC) in 2019. She is the manager of the project Energy Efficiencies in Egyptian Universities, Supreme Council of Universities, Egyptian Ministry of Scientific Research and Higher Education and has been a member of the Global Young Academy from 2013-2018. She has over 116 scientific publications in peer reviewed journals and conference proceedings and has been recognized with several national (like the Egyptian State Incentive Award in Chemistry, 2013), regional (like the LEWA Leadership Excellence for Women runner up award, 2013) and international awards (like the Young Scientist Award at the World Economic Forum in Dalian, 2013) and was selected as an academic visitor and panelist at the Nobel Laureates meetings in Lindau, Germany, in 2012 and 2014, respectively. In 2016, she has been awarded the Next Einstein and the Fulbright fellowships as well as the L.A.B. fellowship of three organizations: Nobel Laureate Meetings in Lindau, the European Forum in Alpbach and the Falling Walls in Berlin.

PANELISTS - DAY 2

Jan Vandenabeele

(Executive Director of Forestry, Better Globe Forestry, Kenya)

@JanVdAbeele

Jan is a Belgian citizen living since 1997 in Kenya, and has an MSc Agriculture with specialization in forestry (Ghent University, Belgium, 1979) and Teaching Qualification (Secondary School), Ghent University, 1980. He is a forester/agronomist with 40 years of experience in management and technical implementation of locally and internationally financed projects in Europe, Africa, South America and Asia. After a brief stint in the Belgian Forestry Department, employed in international aid (FAO, Belgian Technical Cooperation) and since 2006 working for Better Globe Forestry Ltd (BGF) with HQ in Nairobi, Kenya, in the capacity of Executive Director of Forestry, overseeing plantation forestry and out-grower programmes for high-value tree species in Kenya and Northern Uganda. Known for promoting an indigenous mahogany tree species (Melia volkensii) apt to grow profitably in semi-arid countryside. BGF's farmers programmes currently cover 17,000 farmers, and plant trees in agroforestry lay-out. Coordinating the "Green Initiative Challenge" with the KenGen Foundation and LafargeHolcim, an award-winning programme for tree planting with schools in dry areas. He is the Founding Editor (2008) and Editor-in-Chief (2015) of "Miti" magazine, a high-quality quarterly with information on forestry in the East African region, with Editorial Boards in Kenya, Uganda and Tanzania. He has been a Director of Kibwezi Mukuyu Farm Ltd since 2003, producing horticultural crops (mainly mangoes) on 40 acres in SE Kenya.

PANELISTS - DAY 2

Akshay Vishwanath

(Maliasili, East Africa Portfolio Manager, Kenya)

Akshay Vishwanath has wide-ranging experience in the fields of water resource management, landscape and wildlife conservation, community participatory approaches, advocacy and lobbying, and strategic planning. Applying the principles of inclusive dialogue and genuine stakeholder participation, Akshay constantly strives to find solutions to environmental challenges that are both socio-economically viable and beneficial to ecosystem health and biodiversity. Akshay combines his experience with a background in environmental studies and a business education to mainstream effective natural resource management approaches in the general development discourse in sub- Saharan Africa.

@akvish8

PANELISTS - DAY 2

Jessica Kavonic

(Senior Professional Officer, Urban Natural Assets Programme, ICLEI Africa, South Africa)

Jess Kavonic is part of ICLEI's Cities Biodiversity Center as well as ICLEI Africa's Climate Change and Resilience team. She has a background in atmospheric science with a more specialised knowledge of climate change and its relationship with a sustainable approach to development. She has experience working with and for local governments, working to improve urban human well-being, build climate resilience, strengthen local sustainability and protect the urban natural asset base in cities through influencing development policies and planning systems.

@ICLEIAfrica

PANELISTS - DAY 2

Lucy Muchoki

(CEO, Pan African Agribusiness and Agroindustry Consortium – PanAAC)

@lucymuchoki2

Lucy Muchoki is the chief Executive Officer of Pan African Agribusiness and Agroindustry Consortium, PanAAC, a Pan African Private Sector organization represented across the continent in various countries, created to support the African Agribusiness through enhanced productivity and competitiveness in the regional and Global market. Lucy is also the coordinator of Kenya Agribusiness and Agroindustry Alliance, KAAA the national chapter of PanAAC. She's a social scientist with master's degree in strategy and business management. She is currently a member of the recently formed task force by African Union to support the organization of Regional Agribusiness platform for mobilizing and supporting the domestic private Sector in Africa both at national and continental. She has also served as a member of the advisory council that was tasked with guiding the UNDP report on inclusive business model. Lucy is also an accomplished entrepreneur and trades in horticultural products, Tea and Herbs. Notably, she was the first person to pack African herbs in Kenya and sell them to the local retail shops dominated by imported herbs. She serves in the board of Micro Small Enterprises Authority, MSEA, the only institution mandated under the act of parliament authority in supporting the development of the below pyramid companies in Kenya.

PAPER PRESENTERS - SESSION 1

Rebeca Biancardi

Researcher, African Climate and Development Initiative, University of Cape Town, South Africa

@RebecaBiancardi
@ACDI_UCT

Rebeca holds a master's degree (MSc) in African Politics from SOAS, University of London and a bachelor's degree (BA with honours) in Politics and International Relations from Royal Holloway, University of London. Her masters' dissertation is a political analysis of the DR Congo's Electoral Glissement and Presidential Term Limits.

Before joining ACDI, she worked as a Guest researcher at the Stockholm Environment Institute (SEI) in Sweden on the ongoing project Enhancing trust in government for effective water governance (EnTruGo) – jointly coordinated by SEI HQ, African Climate and Development Initiative (ACDI), Wageningen University (WUR) and The Arctic University of Norway (UiT). The objective of her study was to examine how participatory processes in water governance affect Indigenous and marginalised groups and how, in turn, these affect their relationship with the state.

In 2019 she worked as an intern and researcher at the African Climate and Development Initiative (ACDI) in South Africa. She was part of the IFAD multi-country climate risk analysis investigating the effects of national policies and plans on climate sensitive sectors in Angola, Botswana, Mozambique, Zambia, Zimbabwe, Rwanda, Uganda, eSwatini and Lesotho. During her studies, she worked as a human rights researcher at Commonwealth Human Rights Initiative (CHRI) in London, United Kingdom.

PAPER PRESENTERS - SESSION 1

Harrison Idowu

(Lecturer, Adekunle Ajasin University, Nigeria)

Harrison Idowu is a lecturer at Adekunle Ajasin University, Nigeria and a researcher at the Department of Political Science, Obafemi Awolowo University, Ile-Ife, Nigeria. His research interests include democratization and democracy, electoral politics, comparative studies and development studies. Harrison has written articles published in both local and international outlets, including chapter contributions in books. One of his recent publications is the article “Global Geo-Political Power and African Political and Economic Institutions: When Elephants Fight.” Canadian Journal of African Studies. DOI: 10.1080/00083968.2020.1720943. He has been privileged to win several fully funded grants to attend local and international conferences. Harrison also serves as a reviewer for several reputable journals.

@Harrison_Idowu

PAPER PRESENTERS - SESSION 1

Dr Catherine Sang

(Environmental Scientist, Development Corridors Partnership, University of Nairobi, Kenya

@cathysang9

Dr Catherine Sang is an Environmental Scientist with an experience of over 10 years in teaching, research and consultancy in water resources planning and management, hydrological modelling, applied Geographic Information Systems (GIS) and Remote Sensing in Environmental Planning and Management, and Environmental Impact Assessment. She is currently a Postdoctoral Research Fellow for the Development Corridors Partnership (DCP) project and is based at the Institute for Climate Change and Adaptation (ICCA), University of Nairobi. She is a lecturer at the Department of Environmental Planning and Management at University of Eldoret, Kenya. She holds a PhD in Environmental Information Systems from University of Eldoret, Kenya. Her doctoral research involved the assessment of the impacts of watershed dynamics on river flows. Her research interests focus on the impacts of land-use changes, socio-economic dynamics and climate change on water resources. Her ultimate goal is to come up with the best practices in water resources management that are inclusive, sustainable and resilient to economic development, climate change and other risks. She has published a number of papers in peer-reviewed journals. She is an EIA expert and a Member of Environment Institute of Kenya.

PAPER PRESENTERS - SESSION 1

Dieter Brandt

(Founder, Advanced Environmental Design Initiatives (AEDI) UG, Germany/Namibia)

@dieterbrandt

Namibian-born Dieter Brandt is a leading creative and environmental consultant and an experienced architect. Dieter, who graduated from the University of Cape Town with distinction in 2002 specializes in spatial sciences and creates places that are a provocation for African futures. Such design provocation was key when he served as project architect for Freedom Park Museum and pan-African Archive, South Africa from 2006 - 2012, and the new Mathematical Sciences building at the University of Witwatersrand in 2014. He was also the lead design consultant for Mmabatho Precinct, a proposal for an original, public, shared-space precinct – part of the repositioning and rebranding of the capital of North West province in 2016. In 2018 Dieter founded Advanced Environmental Design Initiatives (AEDI) UG in Germany and South Africa. AEDI is an environmental advisory that specialises in climate and spatial services and develops fundable environmental design initiatives that mediate selected technologies to advance and climate-proof complex adaptive systems within the water, energy, and food security nexus. Dieter consults in circular economies, climate-risk management, environmental design, identity communication, and spatial strategies, and has a special interest in carbon-neutral growth strategies that help climate-proof systems, or offset carbon emissions and help reduce GHG emissions, incorporating this into new urban and rural development strategies that facilitate sustainable social-ecological integration.

PAPER PRESENTERS - SESSION 2

Prof Assane Gueye

(Assistant Professor, Carnegie Mellon University Africa, Rwanda)

@gazoussly @CMU_Africa

Dr. Assane Gueye joined CMU Africa on August 1st, 2020. He previously was a faculty member at the ICT Department at the University Alioune Diop of Bambey, Senegal, where he also led the research group “Technologies de l’Information et de la Communication pour le Développement” (TIC4Dev). Dr. Gueye also holds a Guest Researcher position with the National Institute for Standards and Technology, Gaithersburg, USA. He completed his PhD in Electrical Engineering and Computer Sciences from UC Berkeley in March 2011. He previously received a master’s degree in communication systems engineering from Ecole Polytechnique Fédérale de Lausanne, Switzerland. His research interest focuses in two main areas: performance evaluation and security of large-scale communication systems, and information and communication technologies for development (ICT4D). Assane is a Fellow of the Next Einstein Forum (Class of 2016). In 2019 he was nominated as a member of the European Alliance for Innovation (EAI) inaugural Fellow Class.

PAPER PRESENTERS - SESSION 2

Rogers Alunge

(INTERPOL Office of Legal Affairs (intern), France)

@RogersAlunge

Rogers Alunge is an Erasmus Mundus PhD candidate currently at the University of Bologna, with prior research fellowships at the University of Turin, Mykolo Romeris University (Lithuania) and the University of Tilburg (Netherlands). His research interests cut across personal data protection, digital privacy, cybersecurity law and artificial intelligence. He is particularly interested in the legal relationship and interplay between European and African data protection law. Before his PhD programme, he worked as a paralegal in a law firm in Mutengene, Cameroon, and has been a part-time lecturer in Information Technology Law in the Catholic University Institute of Buea. He holds a Masters in International Disputes and Conflict Resolution from the International Relations Institute of Cameroon, a Maitrise en Droit in Business Law from the University of Yaounde II, and a Bachelor of Laws from the University of Buea. He is equally a trained French-English translator with over eight years' experience of in-house and freelance translation, following the acquisition of a Master of Arts in Translation from the Advanced School of Translators and Interpreters in Cameroon. Amadou Ba (PhD Candidate, Alioune Diop University of Bambey, Senegal) 🇸🇳 Amadou Ba is a PhD student at Alioune Diop University of Bambey, Senegal. Co-author of the paper entitled "Supervisory strategy of a hybrid system PV with storage for injection to the electrical network" and the poster entitled ''Experimental validation of an Artificial Neural Networks (ANN) MPPT controller of an installed solar panel at Polytechnic Higher School''.

PAPER PRESENTERS - SESSION 2

Dr Karin Fröhlich

(Postdoctoral Researcher, Department of Computer Science, Aalto University, Finland)

Karin is a post-doctoral fellow at Aalto University, School of Science, Department of Computer Science Finland. The theme of her post-doctoral research is about “User-centered e-government services”. She currently work on the Fusion Grid research project. The Project aims is to extend digital transformation to Namibian rural areas such as providing electricity, connectivity and digital services to sparsely populated and under-served but developing areas, with electricity and internet access, education, work and business activities. The consortium has been developing, and most recently since December 2019 rolling out a comprehensive solution for introducing a full digital service platform for under-served surroundings. The core of the design and recently piloted solution is the photo-voltaic (PV) off-grid electricity production and micro-grid distribution system that delivers power to household and other customer load. Her interest is in Human Computer Interactions. “To my fellow women in computing, remember that computing is too important to be left to men alone.

@AaltoUniversity

PAPER PRESENTERS - SESSION 2

Dr Didier Bassole

(Researcher, Mathematics and Computer Science Laboratory, University Joseph Ki-Zerbo, Ouagadougou, Burkina Faso)

Didier holds a doctoral thesis in Computer Science obtained in 2018 at University Joseph KI-ZERBO of Ouagadougou. His thesis work focused on analyzing impact of fault injection attacks on security software components. Now, he is interested in software security, including application security on Android systems. His paper submitted to Intersol 2020 is about “Vulnerability analysis in mobile banking and payment applications on Android in African countries” in which, they analyse vulnerability of some mobile banking and payment applications on Android platforms. Their study aims at performing vulnerability assessments, facilitating an informed assessment of the information security and privacy risks that mobile banking and payment applications face in African countries, and creating awareness in the research and practice communities.

@DBASSOLE

PAPER PRESENTERS - SESSION 3

Sehouevi David Agoungbome

(PhD Candidate, Delft University of Technology, Netherlands)

Sehouevi M. David Agoungbome is a PhD student in the Water Resources Management Department at Delft University of Technology. His main focus is on analyzing the dynamics of the onset of rainy seasons in West Africa. The final goal of this project will be on one hand to provide in any season, valuable information service to farmers in their crop management planning (the best moment to start sowing their crops) and on the other hand help financial institutions collaborate more effectively with farmers (giving loans to farmers with less risk). As a Delft Global Initiative Fellow, he is also working to make sure that the outcomes of his research contribute to the development of sustainable and affordable solutions for societal challenges and local impact in Low and Middle-Income Countries.

@DavidAgoungbome

PAPER PRESENTERS - SESSION 3

Amadou Ba

(PhD Candidate, Alioune Diop University of Bambey, Senegal)

Amadou Ba is a PhD student at Alioune Diop University of Bambey, Senegal. Co-author of the paper entitled "Supervisory strategy of a hybrid system PV with storage for injection to the electrical network" and the poster entitled ''Experimental validation of an Artificial Neural Networks (ANN) MPPT controller of an installed solar panel at Polytechnic Higher School''.

@uabdsn

PAPER PRESENTERS - SESSION 3

Prof Abdulhameed Mambo

**(Associate Professor/ HOD,
Department of Civil Engineering,
Nile University of Nigeria, Nigeria)**

@admambo

Dr. Abdulhameed Danjuma Mambo is currently an Associate Professor and HOD of Department of Civil Engineering, Nile University of Nigeria Abuja. Dr. Abdulhameed obtained his Bachelor of Engineering degree in Civil Engineering with a Second Class Upper from Federal University of Technology Minna in January 2006. He completed his Msc and PhD in Civil and Building Engineering December 2009 and December 2013 respectively. He took up a Post- Doctoral Research Associate position in Loughborough University. His research areas include, General Civil Engineering, Sustainable Infrastructure, Energy Efficiency, Building Energy Management Systems and Artificial Intelligent Building Systems. He had published two books, several peer-reviewed journal articles and presented papers in reputable local and international conferences in the UK, France, Sweden, Cameroon, Rwanda, Ivory Coast and Nigeria. Engr. Dr. Abdulhameed Danjuma Mambo is a corporate member of the Nigerian Society of Engineers, European Energy Centre, World Society of Sustainable Energy Technologies, Nigeria Institution of Civil Engineers and is fully registered as a Civil Engineer with the Council for the Regulation of Engineering in Nigeria (COREN). Dr Mamadou Lamine Mbaye (Assistant Professor, University Seck of Ziguinchor, Senegal).

PAPER PRESENTERS - SESSION 3

Prof Semevo Arnaud Ahouandjinou

**(Associate Professor,
Abomey-Calavi University, Benin)**

Arnaud is an Associate Professor in computer science in the Institute of Research Training in Computer Science of Abomey-Calavi University from Benin. He is also research associate member of LISIC laboratory, ULCO, France. He received his MSc in Computer and Network Engineering at ESGI, Paris, France, and the research Master's degree in Digital Engineering, Signal Image processing and Industrial Computer Science and the PhD thesis in Computer Engineering, Automatic, Image Processing and signal at University of the Littoral Opal Coast from France, in 2008, 2010, and 2014, respectively. His current research deals with the design of digital smart system for human activities monitoring in natural and farming environment. The proposed approaches and tools are used in the context of human activity monitoring applications in the medical and agricultural fields and has helped to set up bilateral research projects such as "Iot4FAW" with the LORIA and the International Institute of Tropical Agriculture) representation of Benin with the Norwegian Institute of Bioeconomy Research (NIBIO), we have developed the FIA (Farmer Interface Application) Project which is a digital solution implementing “scouting” which is an intelligent technique for detecting the level of infestation of a field by pests.

WORKSHOP FACILITATORS - DAY 1

Dr Narcisse Talla

(Head of Department, Department of Computer Science, Higher Teacher Training College Bertoua, University of Ngaoundere, Cameroon)

@UnivNdere

Narcisse Talla is Head of Department of Computer Science of the Higher Teacher Training College Bertoua, University of Ngaoundere, Cameroon. He has a PhD in Computer Science from the University of Yaounde 1 (Cameroon) and a Doctorate in Computer Science and image instrumentation from the University of Burgundy (France). He has participated as pedagogical and steering committee member of several distance learning programs, notably the Master in Telecommunications (http://gager-undere.auf-foad.org) of the National Advanced School Polytechnic (NASP) of Yaounde-Cameroon, the Master in ICT systems Security (http://gager-undere.auffoad.org) of the NASP and the Master in Geomatics, Planning and Resource Management (http://gager-undere.auffoad.org) of the University of Ngaoundere. He is the Deputy Director in charge of Technologies and infrastructures of the Calasanz institute of right to education (www.icalde.org) that offers a distance learning Master program in Right to Education. As expert of the “Agence Universitaire de la Francophonie (AUF)”, he has conducted dozens of workshops and seminars in almost a dozen of universities in Cameroon and other countries. He is Associate Chief Editor of the online International Journal of Geomatics, Planning and Resources Management (RIGAGER), http://acager.org/index.php/revue-scientifique.

WORKSHOP FACILITATORS - DAY 2

Joy Owango

(Executive director, Training Centre in Communication, University of Nairobi, Kenya)

@JoyOwango

Joy Owango is an experienced award-winning Founding Director with a demonstrated history of working in the professional training and coaching industry. Her strengths come in creating and building collaborations using the triple helix in industry, academia and government. She has created such collaborations with the set up of the Training Centre in Communication (private/ Non-Governmental Organization), with, the University of Nairobi. Through working with Clarivate Analytics, a private research intelligence providing company, she successfully created foundational national access to partnerships in six countries, namely Kenya, Tanzania, Rwanda, Mauritius, Ghana, Senegal and Burkina Faso. For this to happen she created Government discussions and collaborations so that research and academic communities in the respective countries may access the research intelligence for evidence-based research decisions and policy. For this to be effective she equally forged partnerships with stakeholders and government regulators in the respective countries to act as influencers to the creation of the national partnerships. Her Government Relations initiative opportunities are valued at USD 1,300,000. She has excellent donor relations and from 2010 to date has raised upto USD 900,000 in grants from various donors and foundations for research capacity and support.

IGNITE TALK PRESENTERS

Dr Jessica Thorn

(General Chair InterSol2020/1, Research Associate and NEF Fellow, 2019-2021, University of York, UK and African Climate and Development Initiative, University of Cape Town, South Africa)

@JessicaPRThorn @devcorridors
@YorkEnvironment @ACDI_UCT

Jessica is a Namibian ecologist with a background in human geography, with 13 years' research experience traveling to over 57 countries. She is a Senior Research Fellow the University of Cape Town African Climate and Development Initiative, Research associate at the University of York Department of Environment and Geography, African Women in Climate Change Fellow and Next Einstein Forum Fellow (2019). Jessica uses probabilistic social-ecological modeling and scenario analysis to measure impacts of development on land use change, social ecological systems, biodiversity and wellbeing. Her current research focuses on infrastructural development corridors in East Africa, and climate resilience in peri-urban areas. Jessica has been involved in various NSF, NERC, NRF, DFID, CGAIR, IDRC, ESRC, UNECA, and USAID funded projects, conducting field research in twelve countries. Professional activities have been affiliated with the UN, World Bank, Conservation International, WWF, Red Cross, CIFOR, CCAFS, the Global Environmental Facility Kew, Cambridge, Oxford, London School of Economics, and Brown University. She completed her BSocSci(Hons) at UCT, MSc and DPhil at Oxford, and postdoctoral studies at Colorado State University and ETH Zurich. She currently a contributing author to the International Panel on Climate Change Sixth Assessment report, is a coordinating lead author of the Global Environmental Outlook brief on future proofing infrastructure and infrastructure services, currently supervises two PhD and three MSc students.

IGNITE TALK PRESENTERS

Hamidu Seki

(PhD Candidate, University of York, UK/ Tanzania)

@sekihamidu151
@YorkEnvironment

Hamidu Seki has interest in ecology and has extensive experience in biodiversity, ecosystem services and carbon assessment. He is currently a PhD student at the University of York, UK researching on the Impacts of mining activities on biodiversity and ecosystem services. He is investigating his area of research from the past and present perspectives to picture future scenarios of mining activities against biodiversity and ecosystem services in key biodiversity areas (KBAs). He has worked on several projects in the past, including Forest Restoration and Climate Experiment (FoRCE) project located in the Udzungwa Mountains National Park; REDD+ pilot project: Enhancing Tanzanian Capacity to Deliver Short and Long-Term Data on Forest Carbon Stocks across the Country (Tanzania) and Integrating Livelihoods and Multiple Biodiversity Values in Wetlands Management; Quantification and Mapping of Carbon Stocks and Plant Diversity in Different Land Cover Types in Tanzania as part of the Climate Change Impact Adaptation and Mitigation Programme (CCIAM) Tanzania and Enhancing the Revival of Homegardens for Improved Utility and Productivity through the Use of Proven Agroforestry Technologies in the Northern Highlands of Tanzania.

IGNITE TALK PRESENTERS

Amayaa Wijesinghe

(Research Assistant, Urban Ecolution Research Programme, University of Cape Town, South Africa and UN Environment Programme World Conservation Monitoring Centre, UK)

@Amayaa_W

Amayaa is an environmental scientist who is investigating climate adaptation and nature based solutions, and the synergies that exist within this nexus for overall sustainable development in the Global South, with a particular focus on Sub-Saharan Africa and South Asia. She is also interested in the socio-political mechanisms and barriers that hinder climate adaptation, necessitating the development of context-specific interventions. While reading for her MSc in Biodiversity, Conservation and Management at the University of Oxford, she worked with the Urban Ecolution project (based at the Africa Climate and Development Initiative, University of Cape Town) to explore the scope for using Ecosystem-based Adaptation (EbA) to increase the climate resilience of informal settlements in Windhoek, Namibia. She also holds a BSc in Environment Sciences (Hons) from the University of Colombo, Sri Lanka.

IGNITE TALK PRESENTERS

Anthony Mwangi Karani

(Founder, Gold Kenya/ MSc candidate, University of Nairobi, Kenya)

@amkarani @profkarani
@goldkenya

Anthony was born and raised at the foothills of Kirinyaga (Mount Kenya), a world heritage site renowned for its unique culture and biodiversity. He did environmental studies and community development from Kenyatta University (2015). While in College, he participated in many events like Youth Community based adaptation and Youth Tunza at the inaugural United Nations Environmental Assembly. In 2013, received Mazingira Awards, a prestigious challenge hosted by the East Africa Wildlife Society and partners. The same year, he co-founded Gold Kenya (Green Operations in Leadership and Development), a youth led environmental conservation organisation. As a student at the School of Biological Sciences, University of Nairobi, he undertakes research in ecology and environmental sciences. His MSc project was on the population, habitats and behavior of endangered Heperolius cystocandicans. He is a licensed expert, member of Environment Institute of Kenya, member of Society of Conservation Biology and British Ecological Society. He is self-motivated, passionate for nature, guided by love for humanity and believes in utilising local indigenous knowledge to achieve global conservation objectives.

IGNITE TALK PRESENTERS

Emmaqulate Kemunto Morang’a

(MLaws Candidate, University of Nairobi, Kenya)

Emmaqulate Kemunto is a Master of Laws student at the University of Nairobi, pursuing environmental law and international human rights. Driven by curiosity and passion, she is writing her LLM Project Paper on the place of environmental justice and human rights in economic sustainable development. A girl from a remote village in somewhere Kenya, Ms. Kemunto is also an Advocate of the High Court of Kenya, a trained professional mediator, a writer, a poet and, occasionally a photographer. She has been published in professional law magazines and poetry anthologies. She believes that the environment and human rights conversation has never been more important in natural resource exploitation, especially in the current Kenya. With her specializing in environmental law, she hopes to contribute towards further policy formulation on integration of the environment, development and human rights, both nationally and internationally.

@EmmahKemunto @uonbi

IGNITE TALK PRESENTERS

Donald Limbe Mpuya-Peng

(International Labour Organization, Tanzania)

Eng. Donald Limbe Mpuya-Peng is a Tanzanian who completed his graduate studies in B.Sc. Agricultural Engineering from Sokoine University of Agriculture (SUA)-Tanzania in 2011. He also graduated with a Master's degree (M. Tech Hydrology) major in surface water hydrology from Indian Institute of Technology-Roorkee, Department of Hydrology. He is currently working at International Labour Organization (ILO) as a National Project Office (NAO). He also worked as Policy Specialist at Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Centre LTD, from 2018 to 2020. Also worked in the Ministry of Water and Irrigation, National Irrigation Commission (NIRC) as an Agricultural/Irrigation Engineer from 2012 to 2018. His areas of interests are irrigation and water resources development and management, surface water modeling, simulation, and climate change.

@limbedonald

IGNITE TALK PRESENTERS

Edmund Githoro

(Independent consultant, Kenya)

@edigithoro

Edmund is a Kenyan independent research consultant working with Mshiriki research consultancy on baseline studies, monitoring and evaluation projects/programs with a passion for improving the lives of the poor through research and development for poverty alleviation. I've a wide exposure in various surveys about climate change, mitigation, adaptation, shocks and risks, nutrition, livelihoods, culture diversity, education, health, water, agriculture systems, environment and many more in Kenya, Uganda, Tanzania and Rwanda where I've gained immense skills as well as information, experience networks and exposure. My background is information systems technology and GIS combining it with vast field experience while working in Research. I've mainly been involved in social economics demographic surveys with skills in community mobilization, community participatory, data collection, data management, electronic data templates creation, data analysis, GIS mapping and field works. I'm out going with a passion for nature, conservation, livelihoods and participatory research across.

IGNITE TALK PRESENTERS

Hassan Omari

Dr. Hassan Kinyua Omari is a lecturer in Religious Studies at the University of Nairobi. He holds a Ph.D (Religious Studies) M.A (Religious Studies) UoN,PGD (Islamic Banking and Insurance-IIBI-UK), B.A (Arabic Language and Religious Studies) University of Nairobi, LLB(Bachelor of Laws), UoN . Diplomas: Public Relations and Customer Service - RCTFL; Arabic language -WAMY;Islamic Shariah-KIFLAPS; Translation and Interpretation-LCC.

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ABSTRACTS OF CONFERENCE PAPERS: SESSION 1

Mainstreaming nature based solution for climate adaptation in peri urban settlements

Rebeca Biancardi [1] , Amayaa Wijesinghe[1] , Rob Marchant [2] ,Jessica P. R. Thorn [1,2] et al.

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Planners and municipal authorities in peri-urban areas are challenged with increasingly diminishing space constraints, contested land tenure, costs of effective participation, diffuse pollution, rapid growth rates and the backdrop of increasingly variable climatic conditions. Green urban infrastructure, also known as ecological infrastructure, encompasses nature-based solutions to adapt to the impacts of climate change and provides essential ecosystem services for peri-urban residents. Yet, peri-urban residents are among the most vulnerable to climate impacts. Despite a growing recognition of the importance of designing, rehabilitating and maintaining green infrastructure, many decision-makers in sub-Saharan Africa continue to adopt pro-grey path dependence that favours engineered solutions and short-term economic growth, often in more affluent suburbs, inadvertently perpetuating historic inequalities and degrading landscapes. This is in part because there remains a lack of fine-grained, comparative evidence on the barriers and enablers to mainstreaming green infrastructure in peri-urban areas. Here, we developed an analytical framework based review of 155 studies, screened to include 29 studies in 24 countries. Using a combinatorial approach, we surveyed households in nine settlements in drought-prone Windhoek (n=330) and seven settlements in flood-prone Dar es Salaam (n=502) and conducted key informant interviews (n=118). Results suggest eight overarching categories of interconnected barriers to UGI in peri-urban areas: design, performance and maintenance; legal and institutional barriers; financial barriers; complementarity and integration; ecosystem disservices; land-use and spatial trade-offs; climate change and socio-cultural values, traditions and perceptions. Key enablers to get solutions to scale include co-designed futures; capacity building; integrated landscape management; accelerated tenure reform; financial instruments; coordination, evaluation and experimentation; long-term maintenance; reduced pressure on natural capital; ecosystem-based adaptation; shared responsibility and community in-situ upgrading.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 1

Environmental protection in Nigerian democracy: The Ogoni clean-up in perspective

Harrison Adewale Idowu[1] and Ismail Sano[1]

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Over the years, the people of Ogoniland, arguably the most devastated and exploited community in the Niger Delta region, has suffered severe and unimaginable environmental crisis. Despite the fact that Ogoni has produced and continue to produce the country's largest export resources, its environment has suffered from mining activities and the people continue to wallow in environmentally induced sicknesses and diseases. Governments and regimes (military and democratic) have neglected the community. Nonetheless, in 2016, the government of President Buhari set in motion, the environmental clean-up of Ogoniland. Relying on the exploratory research design and primary data sourced from semi-structured interview, the paper critically appraises the Ogoni clean-up exercise. Findings show that no significant progress has been made over the past three years, the project continues to face series of challenges and that the prospect does not look bright. The paper concludes that Ogoni clean-up is best described as an abstraction at the present. Recommendations were directed to the government, HYPREP, Shell and the Ogonis.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 1

Preliminary assessment of water resources in the Standard Gauge Railway corridor: Impacts and options

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Development corridors are often linear, geographical areas identified as priority for investments aimed to promote economic growth. These corridors consist of linear infrastructure and associated ‘nodes’ such as cities which account for substantial proportion of the world’s freshwater withdrawals, and cause water pollution. The socioeconomic development and climate change in the corridors often lead to a decline in water accessibility and hence have some implications for food security and the economy. Despite the long history of corridors, there is still a lack of coherent guidance on how to plan, design, and assess the potential impacts of corridor projects. We therefore assess the water resources in the SGR corridor with a view of setting a basis for further evaluation of the impacts of development corridors, climate change and intersecting impacts of land use & demographic change on water resources. The findings of the study will be used to recommend adaptive, nature-and people-sensitive intervention measures in the development corridors that will contribute towards sustainable, resilient and inclusive economic growth.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 1

Licensing Namibia: intersecting an ecosystem with an oil rig

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As demonstrated by overlapping system boundaries and territories within the Okavango Delta Basin, we review competing socio-economic interests. What are the potential environmental impacts, social costs and economic benefits of a new oil exploration licence in the North East of Namibia?

ABSTRACTS OF CONFERENCE PAPERS: SESSION 2

An opportunistic communication and computing infrastructure for end-2-end support to agriculture in rural Africa

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The goal of this project is to develop a sustainable communication and computing infrastructure to support agriculture in rural Africa. It is composed of four components:(1)The core component is an opportunistic connectivity and computation architecture. It is based on the principle: “at any given time, use the best communication solution available”. The architecture will be augmented with a computing infrastructure by building an edge layer whose main use will be to mine data collected in the fields. On top of this opportunistic network architecture are built the three other components that are: (2) The system for early detection of the presence of plant beasts and parasites: it uses data collected via a sensor network enabled by the network architecture. The data is then used to infer the presence of parasites in the farms, in which case farmers are informed and provided with additional advices. (3) The plant monitoring system: it helps improve farmers’ decision making by providing access to timely and accurate soil and environmental data. This will include information on the status of plants, soil as well as environmental parameters, which is of key importance. (4) The rural online market: it serves as information system that enables people in rural areas to push/pull information about needed/offered products prior to the day of the markets. The project’s expected outcomes include population empowerment and economic growth across rural Africa. The early detection of plant parasites will help save cultures and prevent the use of pesticides that are often harmful. The timely monitoring of farms will enable optimized intervention and boost production. Finally, the rural online market will connect buyers and sellers in rural area and help develop the local economy.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 2

Consolidating the right to data protection in the information age: A comparative appraisal of the adoption of the OECD (Revised) Guidelines into the EU GDPR, the Ghanaian Data Protection Act 2012 and the Kenyan Data Protection Bill 2019

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The proliferation of ICTs and computational power in processing personal information has long been documented to expose individuals to risks of privacy violations and other fundamental rights abuse. This prompted calls, about five decades ago, for the development of a legal regime to ensure that processing of personal information, especially using ICTs, follows certain rules in order to protect other fundamental individual rights. Deliberations in this direction were undertaken at the OECD, and led to the adoption of the OECD Guidelines of Privacy Protection in September 1980 (revised in July 2013), which listed eight principles of data processing around which national and supranational regimes were expected to build their data protection laws. It is in this light that this paper attempts a comparative review on how these principles are consolidated in EU GDPR on the one hand and the Ghana and Kenyan data protection instruments on the other hand. It uses the GDPR, being a more advanced legal regime, as a measuring rod to examine how the basic OECD Principles are reflected in the personal data processing rights and obligations provided in the Ghana Data Protection Act of 2012 and the Kenyan Data Protection Bill of 2019. The paper concludes with a general note that while the Kenyan legislation appears mostly copied from and consolidates OECD data protection principles more or less like the GDPR, the Ghanaian Act offers comparatively less rigorous protection in some areas.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 2

Assessing the e-readiness of marginalised communities for e-government services: A case of Oniipa, Namibia

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Community networks are highly regarded as an alternative method for extend-ing services to marginalized communities. However, the success of community networks remains low as the host community often fails to take the ownership of such projects in a sustainable way. The literature recommends the use of baseline surveys and needs assessment to identify fundamental roles that could be played by a community network within a given society. It is argued that aligning community networks to the needs of the community could potentially contribute to their success. This study conducts a baseline survey with the aims of understanding key roles that a proposed community network could play within the context of e-Government and m-Government. Community in Oniipa Town in Namibia was selected as a case study. It was found that the identified community had a poor electricity infrastructure, but an encouraging growth of mobile phone adoption, even though mobile phone credit is considered too ex-pensive. Despite these challenges, the community showed a keen interest in m-Government and e-Government services. Accordingly, the proposed community network shall engage the community through a human-centered design methodology in an effort to develop e-Government services suitable for the community

ABSTRACTS OF CONFERENCE PAPERS: SESSION 2

Vulnerability analysis in mobile banking and payment applications on Android in African countries

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In this paper, we analyze vulnerability of some mobile banking and payment applications on Android platforms. This analysis aims at performing vulnerability assessments, facilitating an informed assessment of the information security and privacy risks that mobile banking and payment applications face in African countries, and creating awareness in the research and practice communities. We especially try to assess the risks of attacks related to privacy and data confidentiality by checking access permissions and code vulnerability of these applications. Another purpose of our work is to enable users, businesses and governments to take advantage of the opportunities offered by mobile banking and payment applications while minimising the information security risks to which they are exposed.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 3

Mangroves under demographic pressure and climate change effects in the Municipality of Ouidah (Benin)

Sehouevi Mawuton David Agoungbome[1], Estelle Gbenontin[2], and Moussa Thiam[3]

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Three coastal villages in the municipality of Ouidah (Djegbadji, Avlekete, and Houakpe-Daho), well-known for their salt production activities, are experiencing a big challenge regarding protection and conservation of the mangrove forest, a key component of their ecosystem. The increasing growth (more 200% between 1992 and 2016) of these communities has led to the systematic destruction of the mangrove trees needed for firewood. This situation has dramatically threatened the sustainability of the whole ecosystem on which rely many others species. In this work, we investigated the situations from the historical view and its possible consequences for the communities and future generations. Finally, actions have then been put in place to reduce the impact of these activities on the ecosystem, and empower the salt producers with alternative solutions such as improved stoves that use palm nut hulls as the source of energy for their main activity.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 3

Supervisory strategy of a PV system with storage for injection to the electrical network

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In photovoltaic system (PVS) hybrid, battery are often used for energy storage in order to ensure a permanent operation. Our system consists of solar panels a boost converter which serves as an interface between the PVS and the load and a buck-boost converter between the battery and the load. To ensure proper operation of the system the DC bus voltage must be maintained constant. The batteries are sensitive to charging phenomena and deep discharge more PVS have a low conversion efficiency Faced with these problems the objective of this study is to maintain constant voltage bus, optimize performance of the PVS and to control the state of charge and discharge battery. The control strategy is a combination of an MPPT control based on artificial neural networks (ANN) and an algorithm against the battery charge state. Simulation results show that the bus voltage is held constant with the PI and PID correctors. There is also an improvement in conversion efficiency and control of the state of battery charge.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 1

Variation with depth of physico-chemical, mineralogical and physical properties of overburden over Gneiss Basement Complex in Minna Metropolis Nigeria

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Soil engineers generally pay no attention to variation in the mineralogical and consequently, the geotechnical properties of overburden with depth on basement complexes, a situation which can lead to sudden failure of civil engineering structures. In this work, soil samples collected at depths ranging from 0.5m to 4.0m at 0.5m intervals, from a trial pit dug manually to depth of 4.0m was evaluated for physico-chemical, mineralogical and physical properties. This is to determine the variation of these properties with depth within the profile of the strata. Results showed that sodium amphibolite and feldspar, which are both primary minerals, dominate the overall profile of the overburden. Carbon which dominates the lower profile of the strata was observed to alter to gregorite at upper section of the profile. Organic matter contents and cation exchange capacity reduces with increase in depth while lost on ignition and pH were relatively constant with depth. The index properties as well as natural moisture contents increases from 0.5m to between 1.0m to 1.5m depth after which the values reduced to constant values at 3.0m depth. The grain size analysis shows high composition of sand sized particles with silts of low to non-plasticity. The maximum Dry Density (MDD) values are generally relatively high and increases from 2.262g/cm3 at 0.5m depth to 2.410g/cm3 at 4.0m depth while the Optimum Moisture Content (OMC) reduced from 9.8% at 0.5m depth to 6.7% at 4.0m depth.

ABSTRACTS OF CONFERENCE PAPERS: SESSION 3

A multi-level smart monitoring system by combining an e-nose and image processing for early detection of FAW pest in Agriculture

Sèmèvo Arnaud R. M. Ahouandjinou[1], Probus M. A. F Kiki[1], Prince E. N Amoussouga Badoussi[1], and Kokou M. Assogba[1]

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Fall Armyworm whose scientific name is Spodoptera frugiperda is a pest which have a large destructive activity of cornfields in sub-Saharan Africa. Fall Armyworm is a pest causing significant economic harm in Africa. In this work, we proposed to develop a smart monitoring system through several level. Each level of the proposed monitoring system is used to control and to detect the pest early. The aim is therefore to develop a system for the early detection of fall armyworm, these eggs, larvae and its adult form on image in order to anticipate the damage it can cause and to prevent its proliferation. First of all, the proposed monitoring system is based on an e-nose to analyze the odors that are released in the environment by fall armyworm. Then, we use image processing techniques based on image segmentation to detect the presence of the caterpillar through the damage caused to the plants and leaves its environment. We offer through this work, a smart monitoring system for Early Detection of FAW (EDFaw) using an e-nose and the plant leaf image segmentation. Several experiments have been done to test the proposed system and the results of the image segmentation.

WORKSHOP 1

E-Learning – How to implement a distance training program in African Universities?

Moderated by: Narcisse-Talla Tankam (University of Ngaoundere, Cameroon)

Abstract: Each year, millions of secondary schools graduated students knock at the doors of African universities. Especially in Cameroon, dozens of thousands of students are graduated in secondary schools and most of them register for the university studies. Unfortunately, the development of infrastructures and the recruitment of lecturers don't follow the recruitment of students. This is why these universities are exponentially congested each year and the number of students per lecturer is also exponentially increasing each year. To tackle this problem some African universities try to implement distance training with more or less success. Surely, Information and Communication technologies are today an opportunity for Africa to reduce the gap of quality education Vis à Vis the foreign universities.

Indeed, thanks to ICT, African teachers recruited in foreign continents universities can easily contribute to the development of education in Africa. Unfortunately, most of the time, distance learning programs start in African universities, but never graduate students on time. This is why African students are obliged to follow distance training programs developed by foreign universities. The aim of this tutorial is to vulgarize and communicate some skills required for the success of distance learning programs in African context. The proposal is based on the experience of three distance learning programs

Motivation: As educational technologies Expert of the "Agence Universitaire de la Francophonie (AUF)", I've had the privilege to follow-up lecturers from many African universities in Cameroon and abroad, in developing distance training programs. I've noticed the reasons of failure of many of distance programs initiated locally. Participants of Intersol, by the end of the tutorial, should be able to develop and follow-up successfully a distance learning program in any domain in their respective universities. This tutorial has never been presented in any other event.

Activity 1. Necessity of promoting Distance learning in Africa. Aim: Present globally the state of the art of distance learning in Africa and arouse in the audience the desire to set up distance learning programs. Objectives: What is the state of distance learning program in Africa? What are the opportunities? What are the consequences?
Activity 2. How to succeed in implementing a distance training in Africa? Aim: Present the process for setting up successfully a distance learning program. Objectives: What are the actors? What are the requirements? What are the challenges? What is the roadmap?
Activity 3. How to implement successfully an online course under a Learning Management System (Moodle)?Aim: To demonstrate how to successfully implement an online course using a distance learning platform such as Moodle. Objectives: What is the difference between a classical course and an online course? What are the components of an online course? How to implement each component using the platform Moodle?

WORKSHOP 2

Highlight of science communication and engagement

Moderated by: Joy Owango (Training Centre for Communication, University of Nairobi, Kenya)

Participants will be taken through an introduction and trends in science communication. Metrics used in measuring output from research paper to various science communication outputs. Practical sessions on how turn opinion editorials and introducing the participants to science editors they can work with to present and publish their opinion editorials(eligible for only PhD researchers)

An introduction to science and society with an emphasis on how science communication contributes to it. An overview of research metrics used to measure science communication outputs and why researchers today should look at beyond writing scientific papers . An overview of various ways one can communicate with media, with an introduction to writing opinion editorials, features and news articles. Participants must come with their published academic
papers.

On the whole, the online workshop is designed to be:

- Research-based, in taking as its starting point the lessons learned from an extensive review of the experiences, gaps, concepts and perspectives of scientific publishing and research communication;
- Experience-based, in building upon the field experiences of individuals and organizations who have planned,
- designed, written, reviewed, refereed and evaluated different types of research and communication products;
- Participant-focused, in soliciting the identification by each participant of the key challenges he or she faces in
- publishing and developing agricultural research communication materials, synthesizing these and integrating them into the modular Framework of the workshop; and
- Action-oriented, in having each participant make a “pledge” outlining a specific and realistic plan of action to be initiated on his or her return home; in sensitizing colleagues and superiors and continuing with publishing.
- Output-based, in encouraging each participant to work around a manuscript and or other research communication product to step-by-step improve it, share it and eventually produce a publishable piece at the end of the workshop as an output

ABSTRACTS OF IGNITE TALKS

Indirect ecological impacts of commercial gold mining on adjacent ecosystems

Hamidu A. Seki[1,2], Jessica P. R. Thorn[1], Andrew Marshall[1,3], and Rob A. Marchant[1]

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While mining can be vital sector to economic development, it poses serious threats to biodiversity through direct impacts of mining operation and indirect impacts of associated with societal and economic changes around the mine site. Most of the mining investment is oriented towards managing and mitigating the negative (direct) impacts of mining at the site of extraction neglecting extensive impacts of mining on biodiversity beyond operational lease boundaries. We used three taxonomic indicators (tree, bird and butterfly species) and changes in above ground carbon (AGC) stock, to explore species richness, ecosystem impacts with distance from three gold mining sites of different production time scales, ranging from zero to nineteen years. Generalized linear models (GLMs) and multivariate analysis were used to understand the variation in AGC, species richness and composition along a gradient extending out from mining areas. The oldest mine site (19 years in production), showed strong negative nonlinear relationship between AGC, tree and butterfly species richness with significant amount of AGC stock and tree species richness within the lease area. The second oldest site with 8 years in production shows negative linear relationship between distance from the mine and AGC and a very weak nonlinear relationships between distance from mine and tree species richness. AGC, tree, birds and butterfly species richness were not influenced by the presence of the mine lease or distance from the mine in the new mining site. The lease boundary accounted for 67.5% of the total variation in tree species composition for the oldest site and just 17% of the total variation in tree species composition for the second oldest site. Tree species composition in the new site was not accounted by the presence of the lease boundary but was accounted by presence of different habitat types by 79.2% of the total variation. The timing of mineral extraction is a potential influence of the indirect impacts of mining on biodiversity and ecosystem services in large mining areas. The ecology of extractive landscapes should be studied beyond the lease boundary to understand the biodiversity potential areas to be affected before the beginning of the mining operation and suppress anthropogenic degradation and overexploitation of natural ecosystems from mining activities.

ABSTRACTS OF IGNITE TALKS

Exploring the nexus of informality, ecosystem services and climate adaptation in Windhoek, Namibia

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In Windhoek, the capital of Namibia, nearly one third of the urban population live in informal settlements. The lack of basic services and infrastructure, as well as myriad socio-economic and governance barriers, lower the resilience of residents in these areas to the predicted impacts of climate change for Namibia. The City of Windhoek, as the local authority, is now in the process of drafting Namibia's first city-specific Integrated Climate Change Strategy and Action Plan. This study assessed the benefits and trade-offs attached to ecosystem services from Urban Green Infrastructure in and around informal settlements, and the opportunities of leveraging these assets for Ecosystem-based Adaptation (EbA) in peri-urban areas, using a mix of key informant interviews, focus groups, and analysis of data from a household survey. The contribution of ecosystem services to the informal economy, as well as myriad synergies between equitable growth and EbA measures were observed, meriting mainstreaming into policy. In particular, the study showed that the reimagining of the use of riverbeds within the informal settlements could have diverse benefits for Disaster Risk Reduction, better sanitation, food security, and recreation for residents.

ABSTRACTS OF IGNITE TALKS

Informing community-based conservation of key biodiversity and restoration of ecosystems affected by locust invasion in Northern Kenya

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The Northern Kenya is part of the Horn of Africa biodiversity hot-spot, which is renowned for its unique fauna, entirely dry climate and least proportion of remaining extant floral diversity. The invasion of desert locust swarms in Eastern Africa in Early 2020 will have unwarranted damage to vegetation and plant communities in the region. As a matter of consequence, sensitive habitats including entire populations of plants, livestock and wildlife will be severely impacted. These effects will interrupt ecosystems and adversely modify landscapes. In order to ensure recovery of such a vast and biodiversity rich landscape, there is need to inform economically attractive solutions. The aim of this study was to 1) identify species and habitats in the path of locust invasion and 2) evaluate the community-based conservation solutions available in literature for the restoration of degraded ecosystems. The methodology used is systematic literature review with meta-analysis of keywords determined a priori covering terminologies used in research, policy and practice. The study identified numerous endemic plant species and habitats affected some of which vulnerable, threatened and endangered species. Although locusts primarily attack vegetation, it was inferred that these effects will reciprocate in livestock and wildlife who depend on these habitats and subsequently people through food webs and nutrients flow. There was a positive correlation between pasture scarcity and human wildlife conflict through competition for natural resources which is detrimental for biodiversity conservation. Majorly, future restoration will be possible by integrating 1) site-based actions of vegetation restoration, 2) management of rangelands and grasslands for livestock and wildlife, 3) diversification of livestock economies, 4) participatory planning and cost-benefit sharing and; 5) adequate biodiversity assessment and informed policy development. It was concluded that while degraded ecosystems may slowly recover on their own, community-based conservation offers a wide range of solutions viable for the restoration of ecosystems affected by locust invasion in Northern Kenya.

ABSTRACTS OF IGNITE TALKS

Future cities are already here, if you know where to look

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Fifty-nine percent of Sub-Saharan African urban populations live in informal settlements, expected to triple by 2050. Despite an increase in improved housing from 11% to 23% between 2000-2015, 53 million urban Africans were still living in unimproved housing in 2015, often in highly overcrowded conditions, with large deficits in city infrastructure and public service provision, and in hazardous sites such as riparian corridors and on steep slopes. These complex natural and socio-cultural dynamics, combined with climate variability, severe and persistent drought, extreme rainfall and heatwaves, expose much of the population to high levels of risk, and threaten an irreversible collapse in ecosystem diversity and functioning. Ecosystem-based solutions in the form of ecological (or green) infrastructure have emerged as spatial planning tools for ensuring functional networks of natural and semi-natural areas. They demonstrate the importance of ecological systems as part of the infrastructural fabric that supports and sustains society and builds resilience. This presents ongoing research on green urban infrastructure in peri urban settlements in Tanzania and Namibia.

ABSTRACTS OF IGNITE TALKS

Innovations in adapting to water scarcity and abundance: Christian-Muslim perspective

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Water plays a critical role in human life. It's a key component for human survival as in the socio-economic and cultural development. From the health benefits that come with access to clean and safe water, house construction, enabling proper sanitation especially in urban areas and to agriculture development, water is key. Thus, lack of access to water has a direct effect to the well-being of human being. This paper will discuss the innovations in adapting to water scarcity and abundance in a Christian Muslim perspective. First it will describe what Innovations in adapting to water scarcity and abundance entails. Secondly, it will discuss both the positive roles of innovations in adapting to water scarcity and abundance. Thirdly, it will examine what the Holy Qur'an and the Holy Bible teach regarding Innovations in adapting to water scarcity and abundance. Finally, the paper will conclude emphasizing the importance Innovations in adapting to water scarcity and abundance and the role of religious leaders in this process.

ABSTRACTS OF IGNITE TALKS

Kenya's regulatory framework on the integration principle

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In the recent past, environmental conservation has shifted from a purely eco-centric approach, towards an anthropocentric approach. The realization by the international community that human economic development and conservation are intertwined was the basis of the 1992 United Nations Conference of Environment and Development. The Rio Declaration on Environment and Development was adopted at the Conference, and the need for integration of environmental conservation in development agenda incorporated as Principle 4 of the Declaration. Balancing development and conservation agendas is essentially what is referred to as sustainable development, which was first defined in the 1987 Brundtland Report as development that meets present needs without compromising the ability of future generations to meet their own use. Instead of completely restricting resource exploitation, sustainable development enables states to exploit natural resources, but with an obligation of sustainable use. Sustainable development as a principle is contained in Principle 27 of the 1992 Rio Declaration. With Kenya arguably being at the verge of its economic development peak, the conservation talk has never been more necessary. The Constitution of Kenya, 2010 contains principles for conservation. It provides for the principles of intergenerational equity, environmental democracy, equity, sustainable utilization, among others. These principles have been incorporated in subsequent legislation with the aim of meeting the international and Constitutional threshold of sustainable economic development. This research aims at analyzing how effective Kenya's regulatory framework on the extractives industry and other natural resource development is in balancing development and conservation agenda.

ABSTRACTS OF IGNITE TALKS

Climate change impact on runoff regime in Kinyasungwe-Mkondoa Catchment of Wami River Basin, Tanzania

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Modelling and simulation in river basins and catchments is very useful. Nevertheless, utilization of simulation models in Tanzania is still a challenge. This paper expounds the use of MIKE 11 hydrological model to predict the impact of climate change on runoff potential of the catchment. The model was calibrated using hydro-meteorological data of four years (2006-2009) and then validated using three years of data (2011-2013). Model efficiency was tested using Root Mean Square Error, the Nash-Sutcliffe efficiency and Percentage Bias tests and their values were 10.10, 0.76, - 0.02 in calibration and 2.14, 0.86, and -0.81 in validation phases, respectively. With these efficiency parameters which were found in acceptable range, observed and simulated discharges were in agreement during calibration and validation periods in terms of the overall shape of the hydrograph, overall water balance, maximum flows, and minimum flows. For generating future climate scenario, Statistical Down Scaling Model (SDSM) was used to downscale rainfall and temperature data under A2 and B2 emissions scenarios. Future rainfall and temperature time series were found random and Mann-Kendal test was used for performing the trend analysis. Rainfall and Temperature shows an increasing trend of 10% and 2.5% for A2 emission scenario, and 33% and 2.4% for B2 scenario respectively by 2048. The downscaled data of the A2 scenario was used to assess the impact of climate change on the runoff potential of the catchment. The result shows a maximum increase in August (+ 39%) and a maximum decrease in February (-17%) discharges by 2048. Based on the results obtained, it has been found useful to use MIKE 11 model as a tool for planning, monitoring and management of water resources in the catchment.

ABSTRACTS OF IGNITE TALKS

Mapping of livestock keeping systems and migratory resilience

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Participatory pathway routes across Kilosa and Mvomero districts Tanzania, describes the results of an assessment of livestock keeping systems in Kilosa, Mvomero areas in Morogoro region of Tanzania targeting pastoralists. The exercise involved using Participatory Geographical Information System (PGIS) tool. The exercise and data was captured using participatory mapping (PGIS, Cinderby et al 2011, Elwood 2006) in small participatory group discussions. It yielded a wealth of relevant information especially useful because it was developed by the stakeholders who know and operate in the landscape, and who manage the associated natural resource base through their activities by assessing the impact of dairy interventions on the surrounding environmental resources. Short term improvements in livestock dairy-related livelihoods are less beneficial if the environmental resources cannot sustain such improvements, or if other livelihood activities are negatively impacted by environmental degradation. In the assessment, local experts were able to describe, locate and map, the dairy livestock and feed production systems across the district and assess the distribution of production in relation to available resources. In addition, the experts explored several scenarios of interventions to alter the production systems and discussed the associated environmental impacts. Participating experts came from the Kilosa, Mvomero and Morogoro districts. Participants represented a number of different stakeholder groups; pastoralist's farmers, regional policy and decision makers such as livestock officers, wildlife experts, milk traders and researchers. It yielded a wealth of relevant information, especially useful because it was developed by the stakeholders who know and operate in the landscape, and who manage the associated natural resource base through their activities. A participatory map showing some of the paths and routes was created and a new friendly terminology derived "harvesting" of mature livestock to stop land degradation, pasture scarcity and loss of livestock during reoccurring drought seasons due to climate change.

POSTER PRESENTATIONS

Does sampling and analytical approaches for soil organic carbon estimation matter? Implications to climate change mitigation

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Antifungal investigations of Tephrosia vogelii Hook. F. Towards development of antifungal agents

Stephano Hanolo Mlozi [1, 2]*, Musa Chacha1 and Juma A. Mmongoyo [2]
[1] Nelson Mandela African Institution of Science and Technology, School of Life Science and Bioengineering, Arusha, Tanzania
[2] University of Dar es Salaam, Mkwawa University College of Education, Department of Chemistry, Tanzania

Enhancing knowledge among smallholders on pollination services for sustainable food production

[12]Filemon Elisante, [1] Patrick A. Ndakidemi and [3] Phillip Stevenson
[1] Nelson Mandela African Institution of Science and Technology, Tanzania
[2] Department of Biology, The University of Dodoma, Tanzania
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Energy and income cost of crop raiding to subsistence homesteads abutting Hluhluwe Game Reserve, South Africa

Tlou D. Raphel[1] and Neville Pillay[1]
[1]School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, South Africa

Optimising malaria control strategies through mathematical modelling tools

Paterne Gahungu [1]
[1]University of Burundi, Burundi

Reducing the crop yield gap in acidic soils of northern Tanzania using local liming materials

Deodatus Stanley Kiriba[1], Kelvin Mark Mtei [1], Florian Wichern [2] and Patrick Alois Ndakidemi [1]
[1] Nelson Mandela African Institution of Science of Technology, Tanzania
[2] Soil Science and Plant Nutrition Rhine-Waal University of Applied Sciences, Germany

Farmers' knowledge, perceptions and practices in managing weeds and insect pests of common bean in Northern Tanzania

Hudon Lazier[1,2] Musa Chacha[1] and Patrick A Ndakidemi[1]
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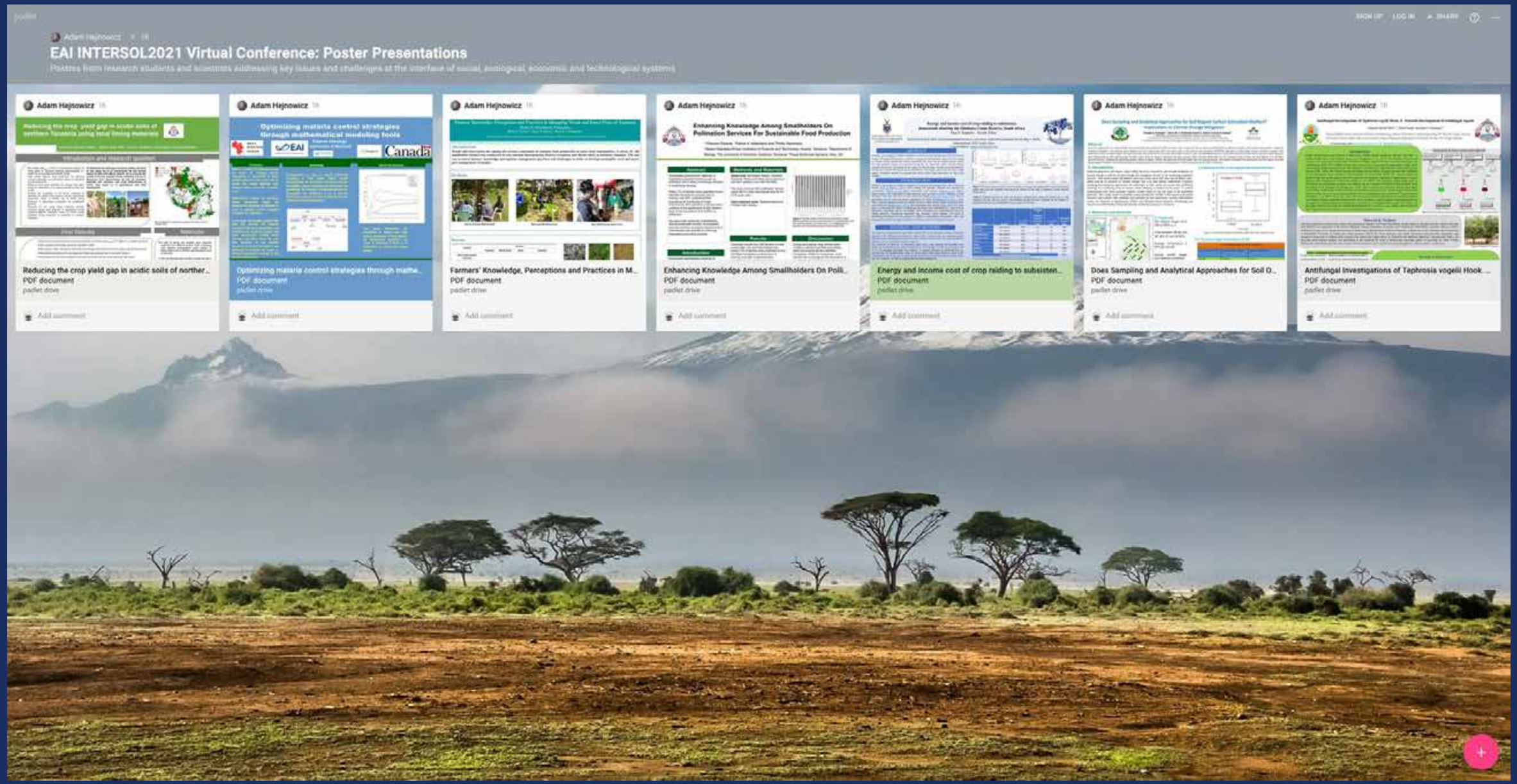
POSTERS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ZUMBA CLASS

Claudia Iskandar

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My name is Claudia Iskandar, 48 years old, born in Bavaria, Germany to my German mom; and raised in Cairo, Egypt, the homeland of my dad.I grew up in a multi-cultural society and went to a German school where I was taught 4 languages. At the age of 24, I married into an Armenian-Greek family and moved 5 years later with my husband and my 2 young sons to Montreal, Canada. A decade and a half later, when my sons were about to go their own ways, I discovered my passion for dancing. Over the years, sports and workout have been constantly included into my busy weeks, even before immigrating to the West. The times spent exercising have always served as a positive mean to control my stress and enhance my mood. When Zumba came along, I fell in love with it on “second” sight. It was the spark to a completely new journey for me. I became a certified Zumba instructor and a member of the ZIN (Zumba Instructor Network), and suddenly I found myself teaching instead of attending classes. A few years after, I started talking lessons in Salsa, Bachata and Social Dance in general. The whole Latin culture with its music and its dances became so fascinating to me, that I decided 3 years ago to learn the language itself. My enthusiasm for dancing, sports and mental wellness are so immense, that I feel an unwavering urge to share it. Before the pandemic I was teaching at several gyms in Montreal which are now not fully open yet. Currently I teach Zumba and Toning classes from home instead. Zumba and sports will remain a part-time occupation for me, just to keep my own passion aflame.

About the class?

Zumba fitness classes incorporate Latin and International dance steps along with Aerobics to music for a fun cardiovascular and muscular workout. The routines of Latin and International songs feature aerobic/fitness interval training with a combination of fast and slow rhythms that tone and sculpt the body. On my playlist I will include Latin, Oriental, Indian and Fusion Songs that also include African beats. Sports and Dance have always united countries; and now Music is tending towards the same direction. Recently, we have been seeing songs that combine different beats from different countries. Those songs became very trendy. A good example is one of the songs that I will be instructing during the event. The song is called “Salsa”. It is a Fusion of House, Afro, HipHop and Salsa. I am looking forward to sharing my passion with you.

TECHNICAL PROGRAMME COMMITTEE

Mouhamadou Lamine Ba	Université Alioune Diop de Bambey
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