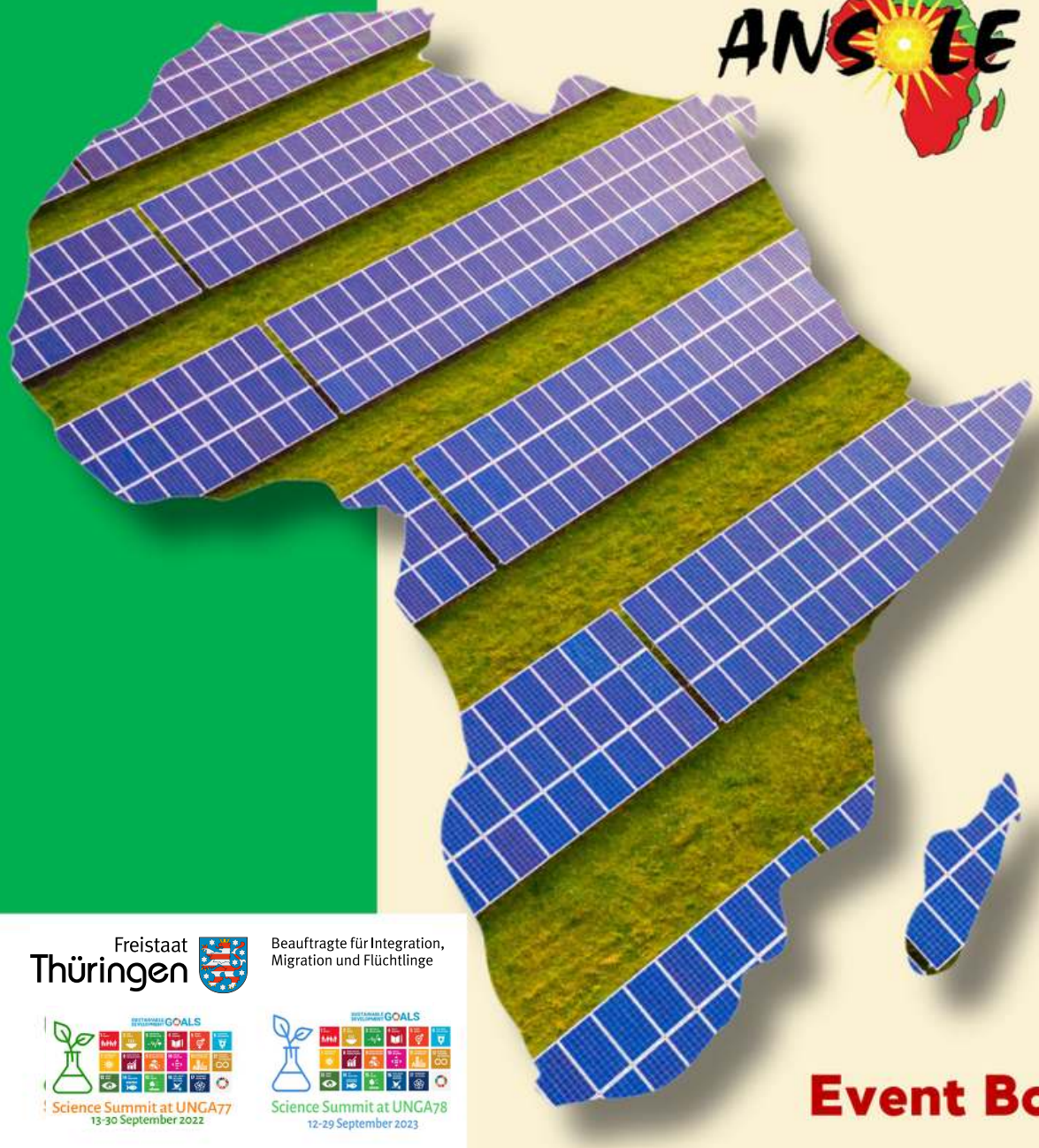
AFRICA DAY 2024

15 June, Jena, Germany

with reports from
Science Summit at United Nations
General Assembly (SSUNGA)
77 & 78

ANSOLE



Freistaat Thüringen

Beauftragte für Integration, Migration und Flüchtlinge

Science Summit at UNGA77
13-30 September 2022

Science Summit at UNGA78
12-29 September 2023

Event Book



Editor

Sabrina Zearott is a Master of Public Policy student at the Willy Brandt School of Public Policy (University of Erfurt, Germany) and an intern with ANSOLE. Her research currently focuses on the clean energy transition, particularly regarding renewable energy and critical minerals in the EU and Africa. She earned her AB (Artium Baccalaureus) in social anthropology from Harvard College and her MA in communication from Washington State University (WSU). She is an award-winning author (under a pen name) and has over a decade of communications experience, as well as several years' experience as a researcher, including at Harvard's Pluralism Project; she assisted with commercialization research on rare earth elements (REEs) at WSU and served as the main writer/editor/producer for WSU's *Physics Matters* magazine. In 2019, she was credited in a technical-writing capacity in a *Science* cover article, "Strain-programmable fiber-based artificial muscle." Long-term, she hopes to work on policy analysis/research related to the clean energy transition in Germany/the EU.

This booklet was produced as part of her internship for ANSOLE.

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ANSOLE

www.ansole.org

African Network for Solar Energy

Promoting research, education and vocational training in renewable energy (RE) among Africans and non-Africans with a special focus and relationships with Africa.

ANSOLE e. V. is committed to education, research and knowledge transfer in the field of renewable energy and clean water at various levels in Africa. In doing so, we contribute to the achievement of the United Nations Sustainable Development Goals (SDGs, Agenda 2030). ANSOLE has over 1000 members in more than 70 countries around the world. The events we organise raise awareness on environmental and climate protection, gender issues, energy efficiency, the link between clean sanitation and good education (especially for women), plastic in seas and oceans, and a general understanding of the SDGs. The strong water-energy nexus led to the creation of the BALEWARE (Bridging Africa, Latin America and Europe on Water and Renewable Energies Applications) cooperation and research platform in Curitiba, Brazil, in 2015.

Locally, in Jena and Thuringia, ANSOLE is involved in the AMAH project (German for Contact Point for People of African Origin) and the publication of the magazine *MIGRANTh* (documentation of the life stories of people with a migration background in Thuringia before and after 1990).

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UIR Université Internationale de Rabat
THE INNOVATIVE UNIVERSITY





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ANSOLE UN Energy Compact

ENERGY COMPACTS
SUPPORTED BY: UN ENERGY

Read more:
https://www.un.org/en/energycompacts/page/registry
#AfricanNetworkforSolarEnergye.V.

ANSOLE



AFRICA DAY

2024
in Jena

JUNE | 15 | 2024

ERNST- ABBE- PLATZ 8, 07743 JENA

10:00 AM - 04:00 PM | Conference on SDGs (SR 114) + african market + children's program (foyer)

07:00 PM - 00:00 AM | Gala evening (foyer): african food + fashion parade + african & latin music + dance

For registration:
https:/ / eveeno.com/ africaday2024

BALEWARE

PROGRAM

AFRICA DAY 2024

09:30-10:00
Greetings and opening remarks, *Prof. Daniel A. M. Egbe, ANSOLE e.V., Jena, Germany, & Sabrina Hug, Phyletisches Museum, Friedrich-Schiller University (FSU), Jena, Germany*

10:00-10:10
A short film on Africa: "I am Gold," *Prof. Dr. Dr. Bertram Schmitz & PhD candidate Ednah Kang´ee, FSU Jena, Jena, Germany*

10:10-10:25
Historical overview: from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs), *Prof. Daniel A. M. Egbe, ANSOLE e.V., Jena, Germany*

10:25-10:40
The Experience of the Inexperienced, *Sualah Yusif, FSU Jena, Jena, Germany*

10:40-10:50
GIF (Great International Family)-Project, *Mohsen Fazli, Jena, Germany*

10:50-11:10
The Outlook on SDG3 in Africa, *Dr. Courage Edem Kumah, FSU Jena, Jena, Germany*

11:10-11:30
Analysis of Thermal and Morphological Properties of Maize Cob Nanocellulose Reinforced HDPE and LDPE Biocomposites, *Dr. Jamila Baba Ali, Ahmadu Bello University, Zaria, Nigeria, and FSU Jena, Jena, Germany*

11:30-11:50
Biosorption of Natural and Anthropogenic Heavy Metal Effect on Mechanical Properties of Body Tissues of African Prawns (Penaeus Indicus), *Edwin Osoro Bokoo, Department of Physics and Sustainable Energy, Pwani University, Pwani, Kenya*

11:50-12:10
Coffee Break

12:10-12:30
African Youth, Migration and Mental Health: The Dynamics of 'Japaism,' *Prof. (Dr.) Erhabor Idemudia, North-West University, Mahikeng, South Africa, & FSU Jena, Jena, Germany*

12:30-12:50
Advancing Sustainable Development Goals: Accelerating Clean Energy Access in Africa for a Sustainable Future, *Veronica Nnenna Ebem, Renewable Energy and Energy Efficiency Associations – Alliance, Abuja, Nigeria*

12:50-13:10
Impact of the War to the Achievement of the Universal Energy Access in Democratic Republic of the Congo, *Janvier Kamundala, Université Libre des Pays des Grands Lacs (ULPGL) in Goma, DRCongo*

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13:10-13:30
Will Ghana be a Shining Example – A Succint Exploration of Ghana´s Agenda 2030 Achievement So Far? *Emmanuella Brown Fasinu, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, & Johannes Kepler University (JKU) Linz, Linz, Austria*

13:30-14:15
Lunch break

14:15-14.30
Simulation of Alternative Pathways towards Net Zero in Africa: Nigeria as a Case Study, *Dr. Suleiman Bello, Department of Physics, Umaru Musa Yar'adua University Katsina, Nigeria, & Society for Africa Biophysical Societies.*

14:30-14:45
Reflecting on Kenya's Sustainable Development Journey, *Enock Kiprono Ngeny, Dedan Kimathi University of Technology, Kenya, & JKU Linz, Linz, Austria*

14:45-15:00
African Strides Towards Affordable and Clean Energy (SDG7), *Geoffrey Muchiemi Mitambo, Dedan Kimathi University of Technology, Kenya, & JKU Linz, Linz, Austria*

15:00-15:20
The Extraction of Pineapple Leaf Fibers for the Production of Biodegradable Packaging Papers (Cayenne specie), *Fon Elsy Ambung, University of Bamenda, Cameroon*

15:20-16:00
Closing remarks

10:00-15:00
Kinderprogramm/Children's Program

10:00-17:00
Afrikanischer Markt/African Market

19:00-00:00
Galaabend/Gala Evening *(moderiert von/moderated by Brian Fomukong)*

19:00-19:30 Einlass/Entry
19:30-20:00 Begrüßungen und wichtige Infos/Greetings and important information, *Prof. Daniel A. M. Egbe et al.*
20:00-21.00 Essen und Getränke*/Food and drinks
21:00-00:00 Musik +Tanz + Modeschau/Music + dance + fashion parade *(DJ: Princely Awa)*

A short film on Africa: "I am Gold," *Prof. Dr. Dr. Bertram Schmitz & PhD Candidate Ednah Kang´ee, FSU Jena, Jena, Germany*

Every human being has a value within himself – and at the same time a claim to a value to the outside; both are to be granted to the person. The film is about showing the extent to which this foundation naturally also applies to sub-Saharan Africa, especially to women, and even more so to girls and their – as self-determined as possible – perspectives. The corresponding prerequisites should not be robbed, but on the contrary they should be given a corresponding self-confidence. The minimal short film *I am Gold* (Ednah Kang´ee, Bertram Schmitz, realized by Fagus Film) is conceived as a prelude. It can only knowingly show a single aspect and section of the entire topic in 90 seconds. As soon as the further possibilities are available to us, a film/medium will be further developed and executed that introduces the entire complex. It will then be aimed at and carried out by the target group of women/girls as well as those who should allow them to develop the appropriate possibilities sustainably.

Prof. Dr. Dr. Bertram Schmitz, Full Professor of Religious Studies at the FSU Jena since 2012. Books since 2021: *Religionswissenschaft – Eine Einführung*, Baden-Baden 2021; *Religion als Kunst – Von der religionswissenschaftlichen Theorie bis zum interreligiösen Kunstwerk*, Baden-Baden 2022; (mit Dr. Kristin Purfürst) *Weltreligionenkunst – Katalog zu den Ausstellungen: I Das Zentrum in den Weltreligionen, II Liebesvorstellungen, III JEnaRUSALEM*, Jena 2022; *Din A 4; Das Markusevangelium – Religionswissenschaftlich gelesen,* Baden-Baden 2022; *Weltreligionenkunst – Katalog zu den Ausstellungen II: Gestik, Gewandung, Gezeiten* Jena 2024. Interests: Religious Studies, Oriental Studies, Religions and Art; Exhibitions on the topic ART OF WORLD RELIGIONS



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Ednah Kang'ee (Ph.D candidate) is a social researcher and governance specialist from Kenya with over 17 years working with international organizations, providing policy advice, and collaborating with governments of 23 countries in the East, Central, and Northern Africa and managing qualitative and quantitative research. She is an astute researcher and has authored two publications on "Rethinking Democracy" with Konrad Adenauer Stiftung,



Transforming Land Conflicts to Sustainable Developments and *The Case of Taita Taveta of Kenya in Land Restoration Reclaiming Landscapes in Sustainable Future*, among others. She pursued a two-year research fellowship at The Institute for Global Engagement, The Center for Women, Faith & Leadership (2015/2016) in Washington, D.C. She holds a Master of Arts degree in Armed Conflict and Peace studies, a Bachelor of Arts degree in Political Science and Public Administration, and a Diploma in Public Relations from the University of Nairobi. She achieved other international training as a Caux Scholar in Switzerland and trained in Peace Mediation at the Institute for Conflict Transformation and Peace Building in Switzerland. Her research topic is "The Role of Political Parties in Electoral Violence in Africa. Is There an Opportunity for Reconciliation? A Case Study of Kenya and Ghana." Elections are practiced the world over; however, regardless of their aim or a smooth transfer of power from one regime to another, some countries find it difficult to hold competitive elections without violence. The study conceptualises violence under the concept of violence phenomena that have something very significant in common yet are adequately distinct. It subdivides violence along a facet that is theoretically important, enabling us to say something not only about the difference between the types but also about the relations between the types (Galtung 1969). It makes a comprehensive approach that not only includes war, homicide, torture, and other physical abuse, but also emotional abuse, exploitation, and oppression. Research interests: conflict transformation, democratization process in Africa, development cooperation, governance, reconciliation and peace building, religion and global development, restorative and transitional justice, women, peace, and security.

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Historical overview: from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs), *Prof. Daniel A. M. Egbe, ANSOLE e.V., Jena, Germany*

"This talk outlines the difference between the Millennium Development Goals (MDGs), which went from 2000-2015, focusing on the development of countries in the Global South, and the Sustainable Development Goals (SDGs), 2015-2030, which focus on global development."

Prof. Daniel Ayuk Mbi Egbe is presently the CEO and Chairperson of the African Network for Solar Energy e.V. (ANSOLE e.V.). He was born on 20th May 1966 in Mambanda-Kumba, South-West Region of Cameroon. He obtained a BSc in Chemistry in 1991 at the then University of Yaounde (now University of Yaounde I). He moved to Germany in October 1992, where he obtained a MSc (Diplom) and PhD in Chemistry in 1995 and 1999, respectively, from the Friedrich-Schiller University (FSU) of Jena. He completed his Habilitation in Organic Chemistry at the same institution in 2006. From 2006 to 2008, he was a postdoctoral fellow at the Max Planck Institute for Polymer Research in Mainz, Germany, the Technical University of Eindhoven in the Netherlands, and the Technical University of Chemnitz, Germany. In 2009, he





moved to the Johannes Kepler University (JKU) Linz, Austria, where he worked at the Linz Institute for Organic Solar Cells (LIOS) (2009-2016) and then at the Institute of Polymeric Materials and Testing (IPMT) (2016-2020). After the end of his contract at the IPMT, he became a visiting scientist at the IPMT and at the Institute of Polymer Chemistry (IPC) of the JKU. From October 2021 to September 2022, he worked as a senior scientist at the Energy Institute of JKU. Since November 2021, he is Honorary Professor of Organic Chemistry at the College of Science and Technology of the University of Rwanda, Kigali, Rwanda. Since June 2022, he is also Extraordinary Professor of Renewable Energy and Chemistry at North-West University, Mahikeng, South Africa. Egbe's main research interest is the design of semiconducting materials for organic solar cells and other optoelectronic applications. He is a member of the Organic Electronics Association (OE-A), a board member of the World University Service Germany e.V. (WUS-Germany), a board member of MigraNetz Thüringen e.V. (2020-2022), and a member of the Migration and Integration Council of the City of Jena. In November 2010, he initiated and co-founded ANSOLE (www.ansole.org) in February 2011 and became its international coordinator due to his multilingual skills. In September 2011, he initiated and co-founded ANSOLE e.V., a non-profit association based in Germany that legally represents ANSOLE. In 2012, he initiated the Cameroon Renewable Energy Network (CAMREN), an NGO that represents the interests of ANSOLE in Cameroon. He also initiated and coordinates the research platform BALEWARE (Bridging Africa, Latin America and Europe on Water and Renewable Energies Applications) (www.baleware.org). From 2015 till 2017, he was a member of the scientific council of the "École Supérieure des Métiers des Energies Renouvelables (ESMER)" in Benin. From 2015 till 2016, he was part of the team that developed research programs at the Pan African University Institute of Water and Energy Sciences (including Climate Change) (PAUWES) in Tlemcen, Algeria, an institution of the African Union. Since 2015 he is an Independent Evaluator for the World Bank Group and African governments in the selection process of the African Centres of Excellence (ACEs) and African Host Universities (AHUs) with corresponding eligible students in the frame of PASET (Partnership for Skills in Applied Sciences, Engineering and Technology)-RSIF (Regional Scholarships and Innovation Fund)-Programme. In 2016, he was appointed the first Distinguished Brian O'Connell Visiting Fellow of the University of the Western Cape, South Africa, in recognition of his outstanding contribution in human capacity building in higher education in Africa. He was initiator and director of the VolkswagenStiftung-sponsored Summer Schools on "Sustainable Energetics for Africa" (2015-2017). He is presently visiting lecturer/professor at various African universities. In 2022, he was appointed leader of the SDG7 working group of the World Association for Industrial and Technological Research Organizations (www.waitro.org). He has published to date more than 140 peer-reviewed articles in renowned journals and (co)supervised numerous international students from Africa and elsewhere. He has coauthored two books on renewable energy. He is the publisher of ANSOLE-*eMagazines* and of *MIGRANTh* (the *Magazine on Migration and Development* - www.migranth.de). He speaks more than five languages and is a believing Christian who enjoys dancing salsa!

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The Experience of the Inexperienced, *Sualah Yusif, FSU Jena, Jena, Germany*

Arriving in Germany to pursue my master's degree in mathematics at Friedrich-Schiller University Jena was both an exhilarating and daunting experience. Coming from Ghana, I was filled with anticipation and hope, but the initial period in Germany tested my resilience in ways I hadn't imagined.

Challenges: Accommodation; language barrier; first point of contact; difficulty in accessing relevant information; loneliness and homesickness; low social support; isolation,

community integration; mental health; stress and anxiety.

The importance of unity and networking: Reflecting on these experiences, I strongly believe in the importance of unity among Africans in Jena and Germany as a whole. Building a strong network and creating an association for African students will no doubt provide immense benefits:

Support and guidance for new students: As a first point of contact, an established network can provide prospective students with useful assistance with housing, language instruction, and cultural adjustment. This assistance can greatly lessen the initial sensations of loneliness and facilitate the transition time.



Cultural and social integration: A community of fellow Africans can provide a sense of belonging and help mitigate homesickness. Social events, cultural celebrations, and regular meetups can foster a supportive environment where students can share their experiences and learn from each other.

Resource sharing: A formal organization can make it easier for people to share resources and knowledge, including study guides, job openings, and advice on surviving in Germany. Individuals can benefit from this common knowledge, which can improve both their personal and academic life.

Advocacy and representation: A united association can represent the interests and needs of African students within the university and the broader community. This collective voice can advocate for better support services, more inclusive policies, and greater recognition of the contributions of African students.

Professional networking: Building connections with fellow students and professionals can open doors to internships, job opportunities, and collaborations. Networking within the African community can provide mentorship and career guidance, helping students to achieve their professional goals.

Conclusion: My first few months in Germany were difficult; I had trouble finding a place to live, getting over the language barrier, and getting used to a new way of life. Nonetheless, these encounters emphasized how vital community and solidarity are. Africans in Germany can build a community that supports academic achievement, personal well-being, and cultural integration by banding together and building a strong network. In addition to helping incoming students, forming an association in Jena would foster the development of a strong, cohesive community.

Sualah Yusif is a student of mathematics from Ghana's Western North Region who has shown remarkable academic proficiency and perseverance throughout his schooling. Sualah's early schooling set a solid basis for his future accomplishments; he was born and reared in an area renowned for its dynamic



communities and rich cultural legacy. Sualah started his official schooling at Yawmatwa English and Arabic School, where he developed a love of study and a knack for mathematics. In 2012, he finished his foundational schooling and became a focused and driven learner. Due to his exceptional academic performance, he was accepted into the General Science program at Atebubu Senior High School where he graduated in 2015. In 2018, Sualah was enrolled at the University for Development Studies (UDS) to pursue his academic interests in mathematics at a deeper level. He devoted the following four years to learning about the complexities of mathematical theories and applications, developing his analytical abilities and broadening his perspectives. Sualah's accomplishment of earning a Bachelor of Science degree in 2022 is evidence of his diligence, guts, and intelligence. Sualah is currently pursuing a master's degree in mathematics at the Friedrich Schiller University Jena in Germany as part of his academic pursuits. Sualah Yusif's journey from the Western North Region of Ghana to a prestigious university in Europe is a testament to his enthusiasm for mathematics and his steadfast dedication to academic excellence.

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GIF (Great International Family)-Project, *Mohsen Fazli, Jena, Germany*

Jesus once spoke to a woman from Samaria as she drew water from a well. The Jews of his time looked down on the Samaritans with contempt. There were linguistic, cultural, and religious barriers between them. Jesus asks her for (her) water and wants to give her his living water in return, even if she is not Jewish or speaks Hebrew without a dialect. Jesus dares to take the first step across cultural divides with a request. We see parallels to this story in our social environment. Especially with the current shift to the right in Eastern Germany, it would be a shining testimony of Jesus's love for others if people of all nations found a home and an offer in our community.



Mohsen Fazli, born in 1988 in Iran in a Shiite family, graduated in Electronics Device and Systems Bachelor from Azad Damavand University, Tehran, Iran. He has been living in Germany since 2018 as a student and employee at the same time. With over 10 years of experience in IT and electrical engineering, working as an electrical engineer in one of the good call companies in the field of AOI (automatic optical inspection), he dedicated his life to Christ in 2019 and is active in Christian ministry in various fields. He is a student in a future influential study, Pioneer Ministry, in FSU-Jena. He is a Persian native speaker, fluent in German and English, with basic knowledge of Arabic, Biblical Hebrew, Old Greek, and Latin. He is a leader of music teams and small groups.



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The Outlook on SDG 3 in Africa, *Dr. Courage Edem Kumah, FSU, Jena, Germany*

The Sustainable Development Goal 3, as part of the United Nations' agenda for global sustainable development by 2030, aims to ensure healthy lives and promote well-being for all at all ages. The African continent has made significant strides in this regard amid prevailing challenges. However, achieving the Sustainable Development Goal 3 calls for effective collaboration among African states and planned intentional solutions that address country-specific needs. The approach to adopt should not mirror the same old methods that yielded little results and have not delivered recovery to the mostly talked about health issues ranging from communicable and non-communicable diseases to maternal and child health. Some countries have achieved commendable progress towards reducing maternal and child mortality, improving access to health services and incorporating technology in healthcare delivery. Nonetheless, there is a clarion call to strengthen commitment to action. It is imperative for governments to develop the health infrastructure that supports the stated goals and help reduce maternal and child mortality rates. Investment in training, capacity building, and retooling is key for improved healthcare services such as vaccine delivery, obstetric and neonatal care, and nutrition. It is time for African countries to build robust surveillance structures that provide timely responses to epidemics and pandemics. The fight against infectious diseases such as HIV/AIDS, tuberculosis, and malaria should be intensified through planned early preventive measures. Health education and promotion strategies should be implemented effectively at all levels of healthcare. Access to early diagnosis and prompt treatment are suitable measures to fight against communicable and non-communicable diseases and eventually improve health outcomes. Programs that target endemic and neglected tropical diseases should also embark on extensive routine public education, research, and monitoring in these areas to facilitate effective operations and the development of novel control strategies. Key policies and programs that target the implementation of SDG 3 should be reviewed and evaluated to fit country-specific needs. Local stakeholders and internally partner organizations need to tackle rural-urban disparities and ensure that monetary allocations are disbursed to less privileged communities. Report and feedback channels can be adopted to monitor progress of events. Integration of technology and its modalities should be scaled up in most African regions to address the access gap. Telemedicine, improved communication networks, and drone delivery services are



emerging tools that can be deployed to make healthcare accessible and reliable. The need to improve access sets the stage for fostering intersectional collaboration and uniting to attain common goals that border on building proper road infrastructure and revamping health insurance systems for all African countries. Our common enemies are diseases and wars. As such, partnership should be built towards finding treatment, eradication, and elimination of diseases. Dialogue, consensus and peaceful resolutions should be established to deal with conflicts and wars since these further widen the healthcare accessibility and service gap. As the plan for global sustainable development draws to an end, the reminder to build health and wellbeing in Africa should be echoed and more discourse and action charted.

Dr. Courage Edem Kumah is a medical doctor from Ghana. He completed his medical degree from the University of Ghana Medical School in 2023. Upon completion, he got accepted into a doctoral fellowship at the Friedrich-Schiller University Hospital in Jena, Germany. He is passionate about improving health outcomes through research and innovation. As he reflects on his journey so far, he is confident of making the best of the opportunity to become a medical doctor in Germany and also contributing to the development of his country, Ghana, and beyond.



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Analysis of Thermal and Morphological Properties of Maize Cob Nanocellulose Reinforced HDPE and LDPE Biocomposites, *Dr. Jamila Baba Ali, Ahmadu Bello University, Zaria, Nigeria, and FSU Jena, Jena, Germany*

This research investigated the utilisation of the Sammaz-14 variety of maize (Zea mays spp.) cob for the extraction/isolation of nanocelluloses through chemical and mechanical methods and its potential use as filler in high-density polyethylene (HDPE) and low-density polyethylene (HDPE). Maize cob nanofibre (MC-NF) and maize cob nanocrystals (MC-NC) were extracted by treating 75 µ maize cob powder with 5 % of NaOH followed ball milling, detailed extraction method is reported by Baba Ali et al. (2020). Composites were fabricated using the extracted maize cob nano fibre (MC-NF) / polyethylene (HDPE and LDPE) / high-density polyethylene grafted maleic anhydride (HD-g-MAH) and low-density polyethylene grafted maleic anhydride (LD-g-MAH) and nanoclay (Org-MMT). The composites were compounded with a brabender two-roll mill and fabricated using the injection molding machine. The isolated maize cob nanocellulose were obtained in nanoscale range < 100 nm. TGA results showed thermal stability of maize cob nanocellulose improved. Morphological studies showed MC-NC and MC-NF have needle-like structures, while untreated maize cob (MC-UT) is plain due to the amorphous portion. The TGA for composites showed improved thermal stability in both fillers and matrices. Composites of HDPE/MC-NF recorded 19% limiting oxygen index (LOI) value and nanoclay/HDPE also has an LOI value of 20% at 5% filler content. LDPE/MC-NF and LDPE/nanoclay using LOI test were found to be 18 % and 19 % at 5% respectively.

Jamila Baba Ali, Abubakar B. Musa, Abdullahi Danladi, Musa M. Bukhari, Bemgba B. Nyakuma, Hindatu I. Umar, and Abdulkadir Suleiman

Dr. Jamila Baba Ali is a senior lecturer/research scholar at the Department of Polymer and Textile Engineering, Ahmadu Bello University, Zaria, Nigeria. She obtained her PhD in 2022 from Ahmadu Bello University under joint supervision of the University Technology Malaysia, Johor Bahru,



Malaysia. Her thesis topic was on "Effect of Nanoclay and Nanocellulose on the Properties of Maize Cob Nanocellulose on HDPE and LDPE Bio-nanocomposites." Her area of specialization includes: natural fibre polymer composites; hybrid composites; extraction of nanocellulose; extraction of bast fibres; textile testing and quality control; polymer processing; polymer characterization and composites characterization. She is involved in the supervision of PhD, master's, and undergraduate thesis, dissertation, and project for polymer and textile engineers. Jamila has over 15 peer reviewed published research articles and has participated in over 18 international and local conferences of the following affiliated bodies: Organization for Women in Science for the Developing World (OWSD); Asia International Multidisciplinary Conference (AIMC); Textile Researchers Association of Nigeria (TRAN); Polymer Institute of Nigeria (PIN); and Material Society of Nigeria (MSN). She is an active member of all the bodies. She is a beneficiary of a one-year research internship at the School of Chemical and Energy Engineering, Department of Polymer Engineering, University Teknologi Malaysia (2019-2020). She is an awardee of the Tertiary Education Trust Fund (TETFUND) - National Research Fund (NRF), a joint research (2020). She is also a beneficiary of the Indian Technical Economic Corporations (ITEC-2023 Advanced certificate training) and World Bank sponsored SPESSECE, ABU Zaria, Nigeria, Executive Certificate Course on Environmental Standards (2024). She is a TWAS-DFG Cooperate award researcher, presently doing her postdoctoral research in the area of organic polymer based battery at the Centre for Energy and Environmental Chemistry—Schubert group, Friedrich Schiller University Jena, Germany. She is married with four children.

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Biosorption of Natural and Anthropogenic Heavy Metal Effect on Mechanical Properties of Body Tissues of African Prawns, Penaeus Indicus, ***Edwin Osoro Bokoo, Department of Physics and Sustainable Energy, Pwani University, Pwani, Kenya***

Edwin Osoro Bokoo, Fanuel M. Keheze, Philip Amuyunzu Mang'are, Department of Physics and Sustainable Energy, Pwani University, Pwani, Kenya

There is increased pollution of air and aquatic environment due to natural and anthropogenic activities hence contributing to heavy metal accumulation in the air and water (ocean). These metals are absorbed by aquatic plants and animals posing a health hazard to secondary consumers. Such consumption is presumed to affect the quality of food as will be determined through the mechanical properties of the tissues. This research therefore determined the extent of biosorption of natural and anthropogenic heavy metals by African prawns, *P. indicus* and their effect on the mechanical properties of their body tissues (quality). Also, the research interrogated the presence of natural and anthropogenic heavy metals in the habitat of the African prawns, *P. indicus.*

Edwin Osoro Bokoo is 32 years of age and a Kenyan: I have a bachelor of science degree from Egerton University and a post-graduate diploma in education from Mt Kenya University. Currently, I am a recognized teacher teaching physics and chemistry. This is my 5th year as a teacher. I am also pursuing a master's degree in physics at Pwani University in material science: that is, biophysics. I am in the final stages of study. My study is about biosorption of natural and anthropogenic heavy metal effect on mechanical properties of body tissues of African prawns, *Penaeus indicus*. Thank you.



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African Youth, Migration and Mental Health: The Dynamics of 'Japaism', *Prof. Dr. Erhabor Idemudia, North-West University, Mahikeng, South Africa, & FSU, Jena, Germany*

'Japa' is colloquially used as Nigerian slang derived from the Yoruba language and widely used among Nigerian youths in popular culture. It means escaping or fleeing, often seeking a better life abroad or following the fad of relocating to a foreign country for greener pastures. The Japa syndrome is what I call 'Japaism.' Therefore, many youths in some parts of Africa believe that life in Europe and other Western countries is blissful, thinking they are lands flowing with milk and honey and full of beds of roses. As a result, they travel in droves using unsafe means such as trolleys, dinghies, and cargo ships and, in some cases, many trek through the valleys and shadows of death of the hot Sahara Desert. In the process, many of them die, resulting in world headlines. Those who succeed find on arrival that the land that was supposed to flow with 'life' flows with hardships, police harassment, racism, imprisonment, daily apprehension of deportation, and other hosts of hostile life situations. To keep 'body and soul' together, some of them engage in drug peddling and distribution, prostitution, and domestic thefts, and some end up in prisons while some engage in petty and menial jobs, often affecting their mental health. This talk will focus on the psychology of the African migrants in Germany – challenges before, during, and after migration and the responses of Africans in novel cultural environments, the core assumption being that cultural contact is inherently stressful. This topic is of utmost relevance and urgency in today's globalized world, where the mental health of African migrants in novel cultural environments is a pressing concern.



Prof. (Dr.) Erhabor Idemudia is a full Research & Clinical Psychology Professor at the Faculty of the Human and Social Sciences, North-West University, South Africa, and was formerly the Head and Subject Chair, Department of Psychology. He has a BSc with Honours (Psychology), MSc, and PhD in Clinical Psychology from the University of Ibadan, Nigeria. He is an NRF-rated established researcher/ scientist in South Africa and a recipient of the Georg-Forster Life-Time Achievement Award in Research for senior professors by the Alexander



von Humboldt Foundation, Germany. He is also an Alexander Humboldt Fellow and Alumnus, Germany (since 2003); Leventis Fellow, UK; Salzburg Fellow, Austria; STIAS Fellow, South Africa; etc. He is currently the General Secretary and Registrar of Membership, World Council for Psychotherapy (African Chapter), and a member of the Board of the World Council for Psychotherapy, Austria. He is an Associate Editor of *Heliyon* (the Netherlands) and serves as an external examiner for several universities in Africa, Europe, and North America. He has taught and researched at the University of Ibadan, Nigeria; University of London, UK; Jacobs

University, Bremen, Germany; the University of Namibia, Windhoek; University of Limpopo, South Africa; and North-West University, South Africa. Prof. Idemudia has over 450 publications in peer-reviewed journals, including books. Prof. Idemudia is a Fellow of the Nigerian Psychology Association, Fellow of the NACP, and Fellow of the World Council for Psychotherapy. He is the author (with Prof. Boehnke, Germany) of *I'm an Alien in Deutschland: A Quantitative Mental Health Case Study of African Immigrants in Germany* (2010) and *Psychosocial Experiences of African Migrants in Six European Countries: A Mixed Method Study* (2020, Springer Europe) (https://www.springer.com/gp/book/9783030483463). He is a member of OECD, Informal Advisory Group on Subjective Well-being and Measurements, and a 2023 and 2024 recipient of the FSU Excellence in Research Awards. For details: www.idemudiaerhabor.com

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Advancing Sustainable Development Goals: Accelerating Clean Energy Access in Africa for a Sustainable Future, *Veronica Nnenna Ebem, LLB. BL, ACIarb (Energy Professional), Renewable Energy and Energy Efficiency Associations – Alliance, Abuja, Nigeria*

The Sustainable Development Goals (SDGs) constitute a universal framework aimed at addressing global challenges such as poverty, education, inequality, and climate change. In Africa, the realization of these goals is essential for driving socio-economic development and improving the quality of life. SDG7, specifically focused on ensuring access to affordable, reliable, sustainable, and modern energy for all, is particularly critical in Africa. The continent faces substantial energy deficits, which hinder economic growth and exacerbate poverty and health issues. The World Economic Forum's paper, "Mobilizing Investment for Clean Energy in Nigeria," which I collaborated on, provides an in-depth analysis of the strategies required to advance clean energy access in Nigeria, offering insights that are broadly applicable across Africa. The paper emphasizes the importance of mobilizing both public and private sector investments to overcome existing financial, regulatory, and technological barriers. It recommends the establishment of enabling policies, the promotion of innovative financing mechanisms, and the strengthening of public-private partnerships to scale up renewable energy solutions. By addressing these key challenges, Nigeria, which is a case study, can make significant strides toward achieving SDG7, which in turn will support broader sustainable development objectives. Enhancing clean energy access will not only drive economic growth but also improve health outcomes, reduce environmental degradation, and contribute to a more resilient and sustainable future for the continent.

Veronica Nnenna Ebem is an experienced young lawyer with over six years of post-call practice and over five years work experience in the renewable energy and electricity industry. She works with the Alliance as a Legal/Project Advisor; the Alliance advocates for the use of renewable energy and energy efficiency. One of her numerous achievements includes her contribution in the development of a community paper, in partnership with the World Economic Forum, on "Mobilising Investment for Clean Energy in Emerging Economies." The community paper went through a series of consultations with relevant stakeholders in the sector; it proffers solutions to clean energy financing in Nigeria, which is a developing country and an emerging economy. Nnenna volunteers for a lot of youth organisations on advocacy and clean energy adoption among rural communities.



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Impact of the War to the Achievement of the Universal Energy Access (SDG 7, 13, and 16) in Democratic Republic of the Congo, ***Janvier Kamundala, Université Libre des Pays des Grands Lacs (ULPGL) in Goma, DRCongo***

More than six million people have died in the east of the Democratic Republic of the Congo following wars of rebellion since 1997. Today, the country has more than a million internally displaced people following the recent aggression suffered by the country by the M23 rebels. Furthermore, the World Bank ranked the DRC as the second top country where people live without access to electricity, more than 72 million people in 2020. Figures from the Regulatory Authority for the electricity sector demonstrated that in 2022, the rate of access to electricity was 6.67%. In this lecture, we want to demonstrate the strong correlation that exists between the situation of access to electrical energy and the multiple wars in the east of the country. We will try to answer the question: How to achieve Sustainable Development Goals (SDGs) 7, 13, and 16 in the Democratic Republic of the Congo?

Janvier Kamundala is an energy engineer, a researcher and lecturer at the Technology and



Sciences Faculty (FST) of the Université Libre des Pays des Grands Lacs (ULPGL) in Goma, DRC, since 2017. He is now working as the Technical Expert of the eastern pool of the Electricity Regulatory Authority of DRC (ARE). Janvier is visiting lecturer at Mapon University in Kindu, Institut Supérieur des Techniques Appliquées (ISTA) in Goma, and at the Université de Kinshasa (UNIKIN) in Democratic Republic of the Congo. He was the Tutor of Goma BEBUC (Bourse d' Excellence Bringmann aux Universités Congolaises) scholars. Janvier is actively involved in many organizations as volunteer: he is the national representative of the African Network for Solar Energy (ANSOLE) in DRC; he also initiated a non-profit organization working on sustainable cooking systems in DRC, the Congo Clean Cookers (CCC). He has strong experience in leadership and project management as a student and professionally. His areas of interest include power systems optimization, photovoltaic and hydroelectric mini-grids, and power systems regulation.

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Will Ghana be a Shining Example – A Succint Exploration of Ghana's Agenda 2030 Achievement So Far? ***Emmanuella Brown Fasinu, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, and Johannes Kepler University Linz, Linz, Austria***

As the 2030 target for the Sustainable Development Goals (SDGs) approaches, it is essential to maximize the Africa Day 2024 to evaluate Ghana's progress in implementing the 17 SDGs and aligning national priorities with the 2030 Agenda for Sustainable Development. This lecture examines Ghana's multi-stakeholder approach, involving civil society organizations (CSOs), the private sector, and international partnerships to drive sustainable development initiatives [6]. The 2023 United Nations Sustainable Development Goals (SDGs) Summit, held from September 18-19, 2023, at the UN Headquarters in New York, marked a pivotal milestone in the global pursuit of the 2030 Agenda. Ghana's distinguished delegation, led by President Nana Addo Dankwa Akufo-Addo, actively participated in this historic gathering, reaffirming the nation's commitment to sustainable development [1]. By analyzing the learnings from the 2023 UN SDG Summit, this lecture aims to provide a comprehensive understanding of Ghana's roadmap towards achieving the SDGs by 2030. It underscores the importance of prioritization, innovative financing, multi-stakeholder partnerships, and a coordinated, inclusive approach to sustainable development. The lecture explores Ghana's

efforts to promote inclusive economic growth, job creation, industrialization, and rural development, aligning with SDGs 8 and 9. It also highlights Ghana's commitment to environmental sustainability through renewable energy initiatives, sustainable agriculture, and biodiversity conservation, contributing to SDGs 7, 14, and 15 [1]. The lecture also explores Ghana's prioritization process, which narrowed focus to five critical targets: strengthening institutions (Target 16.6), promoting inclusive economic growth (Target 8.5), ensuring quality education (Target 4.1), achieving clean water and sanitation (Target 6.2), and increasing access to affordable and clean energy (Target 7.3) [2]. These priorities were identified through extensive stakeholder engagement, fostering ownership and buy-in [3]. Furthermore, the discussion examines Ghana's role in regional integration, peace, and security within the Economic Community of West African States (ECOWAS) and the broader African continent, aligning with SDG 16 and the African Union's Agenda 2063 [7]. The lecture will also critically examine some of the loopholes and downsides in Ghana's path towards achieving the SDGs by 2030 including financing gaps, data limitations, and the impact of COVID-19. By analyzing these challenges alongside Ghana's achievements, this lecture aims to provide a comprehensive understanding of the country's SDG journey, identifying areas for improvement and offering recommendations for accelerated and inclusive implementation strategies.

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Emmanuella Brown Fasinu is a first generation female engineering graduate with multidisciplinary background in renewable and sustainable energy, energy efficiency, energy policy and planning, clean cooking, and materials engineering. Her strong scholastic devotion right from



Mfantsiman Senior High School granted her an entry into Kwame Nkrumah University of Science and Technology, where she earned a Bachelor's Degree in Materials Engineering. Born and bred in Ghana, she has unwavering passion for the sustainable development of Ghana and Africa at large. She focuses on environmentally friendly research and engineering approaches to solve societal problems, especially ones that affect women and children, through renewable and sustainable energy. As a result of her passion to become a leading authority advocating a continent-wide shift in distributed renewables for development, climate action, and energy independence, she is currently pursuing a master's degree in Renewable Energy Technologies at the Kwame Nkrumah University of Science and Technology under the EU-ECOWAS Scholarship Program on Sustainable Energy. Her unflagging diligence facilitated an opportunity to be selected for an ERASMUS Exchange at Johannes Kepler University Linz in Austria where she is able to leverage the benefit of being exposed to cross-cultural infrastructures, technologies, thinking systems, and approaches to advancing sustainable energy and climate actions. The type of work she enjoys most involves conducting rigorous scientific research, analyzing and visualizing complex data sets, and translating findings into actionable policy recommendations. In the imminent future, she visualizes a long life's work that ensures all Africans gain access to affordable, reliable clean energy by 2050.

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Simulation of Alternative Pathways Towards Net Zero in Africa: Nigeria as a Case Study, *Dr. Suleiman Bello, Department of Physics, Umaru Musa Yar'adua University Katsina, Nigeria, and Society for Africa Biophysical Societies*

Nigeria's path to a sustainable energy future hinges on strategic decisions regarding greenhouse gas (GHG) mitigation and the country's extensive energy resources. Nigeria has committed to reducing its GHG emissions by 20% unconditionally and by 47% conditionally by 2030. In this study, the NECAL2050 model was utilized to simulate various feasible scenarios that could help Nigeria achieve its sustainable energy goals through low carbon pathways. Seven scenarios, including a reference scenario, were developed and analysed. By 2050, the total GHG emissions for the reference scenario were projected to be 604.11 tCO2e. Under scenarios 1, 2, 3, 4, 5, and 6, the emissions were estimated at 399.23, 277.42, 465.22, 274.60, 554.87, and 739.29 tCO2e, respectively. Among these, scenarios 2 and 4 align with Nigeria's emission reduction commitments, demonstrating a 54-55% reduction in GHGs and a 75-76% improvement in air quality compared to the business-as-usual scenario. These scenarios envision a future for Nigeria with significant adoption of renewable energy, enhanced energy efficiency, and bioenergy, along with limited nuclear energy integration while still utilizing fossil fuels (coal, oil, and gas).



Dr. Suleiman Bello, a lecturer and researcher specializing in radiation biophysics and environmental monitoring and protection, has over a decade of expertise gained at the University. He commenced his career as a graduate assistant in February 2013, when he secured an automatic employment at Umaru Musa Yar'adua University Katsina, having graduated with First Class honours and emerged as the best graduating student in Physics. His prolific research output includes 40 publications in esteemed national and international journals and conferences. Noteworthy achievements include attracting numerous local research grants and international travel grants. Certified as a data analyst, SDGs advocate, Atomic ambassador and project manager, Dr. Bello is an advocate for climate action, promoting nuclear and solar energy and championing quality education. As an alumnus of prestigious programs such as the Young African Leaders Initiative of USAID, Zero Carbon Africa, and UN Sustainable Development Solutions Network, he stands as a beacon of commitment to sustainable development. Beyond academia, Dr. Bello serves as the Chairman and CEO of the Sabaru Humanitarian Foundation. Actively involved in various NGO and consultancy projects, he has contributed significantly to community development, humanitarian services, data management, and the Sustainable Urban and Rural Water, Sanitation, and Hygiene Program (SURWASH).

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Reflecting on Kenya's Sustainable Development Journey, *Enock Kiprono Ngeny, Dedan Kimathi University of Technology, Kenya, and Johannes Kepler University Linz, Linz, Austria*

On Africa Day 2024, we reflect on Kenya's significant strides in sustainable development, highlighting its progress in aligning national objectives with the Sustainable Development Goals (SDGs), Vision 2030 blueprint, and the broader Africa Agenda 2063. This lecture delves into the medium-term development goals that have steered Kenya's policies and initiatives towards a sustainable and inclusive growth trajectory. Kenya's Vision 2030, the country's long-term development plan, envisions transforming Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. This blueprint is intricately linked with the SDGs, focusing on poverty eradication,

gender equality, sustainable economic growth, and infrastructure development. Significant milestones include advancements in renewable energy, Kenya becoming a leader in geothermal energy production, and substantial investments in healthcare and education. Additionally, this lecture examines how Kenya's strategies align with the Africa Agenda 2063, a strategic framework for the continent's socio-economic transformation over the next 50 years. Agenda 2063 emphasizes inclusive growth, sustainable development, and integration, aiming for a prosperous, peaceful, and integrated Africa. Kenya's regional trade, peace and peacekeeping initiatives, infrastructure development, and environmental sustainability policies reflect a commitment to these continental aspirations. Through a detailed analysis, we explore Kenya's medium-term plans, such as the Third Medium Term Plan (MTP III) 2018-2022, which operationalized Vision 2030 and prioritized the Big Four Agenda: manufacturing, universal healthcare, affordable housing, and food security. The lecture will highlight key achievements under these pillars, addressing challenges and lessons learned. The Fourth Medium Term Plan (MTP IV) 2023-2027 themed Bottom-Up Economic Transformation Agenda (BETA) will also be examined. As we celebrate Africa Day 2024, this lecture provides a comprehensive overview of Kenya's journey toward sustainable development, examining the interplay between national goals and continental frameworks. It underscores the importance of cohesive policies, robust governance, and international partnerships in achieving sustainable development and enhancing the quality of life for all Kenyans. By reflecting on Kenya's progress, this discussion aims to inspire continued commitment and innovative approaches to sustainable development across Africa.

Enock Kiprono Ngeny is a graduate student at the Dedan Kimathi University of Technology in Kenya. He is of Kenyan origin. He completed his BEng in Chemical and Process Engineering at Moi University in 2016. He enrolled for an MSc in Mechanical Engineering at the Dedan Kimathi University of Technology and is expecting to graduate in December 2024. He is participating in the ERASMUS exchange programme at the Johannes Kepler University (JKU) Linz in the 2024 summer semester, where he is attached to the Institute of Polymeric Materials and Testing (IPMT). Enock has previously worked as a technical trainer at Ol'lessos Technical Training Institute (2018-2020), The Eldoret National Polytechnic (2023-date), and as a graduate assistant at Dedan Kimathi University of Technology (2021-2023). He is passionate about environmental conservation and while working at Ol'lessos Technical Training Institute initiated the formation of the Environmental Club, where he served as a patron and led in various sensitization forums that included partnering with Kenya Forest Service in tree planting and environmental conservation. Enock's research interest is in renewable energy, polymer technology, and biomaterials. He is a registered Graduate Engineer with the Engineers Board of Kenya.



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African Strides Towards Affordable and Clean Energy (SDG7): Focus on Kenya, ***Geoffrey Muchiemi Mitambo, Dedan Kimathi University of Technology, Kenya, and Johannes Kepler University Linz, Linz, Austria***

Energy is a key driver of the economy. Energy accessibility and affordability are pivotal for economic development and improving living standards. However, mankind has realized that accessibility and affordability are not enough for the future, and hence integration of cleanness in the energy spectrum is essential for sustainable development. With Africa projected to house one-fifth of the global population by 2030, meeting energy demands while ensuring affordability and

cleanliness is imperative. Despite substantial energy potential, over 600 million Africans currently lack access to electricity. Different countries have developed different policies to boost these numbers, and in some cases recommendable work has been done. Poor electricity access is one of the biggest developmental challenges facing African countries. While some countries like Algeria, Egypt, and Morocco boast full energy access, others like South Sudan lag significantly behind, and while some countries boost full energy access, they are still lagging behind in terms of clean energy. Kenya, situated in East Africa, has made noteworthy strides towards addressing these challenges. The country's population under electrical connectivity is estimated to be 70%. This presentation delves into Kenya's energy landscape, examining energy sources, consumption patterns, regulatory frameworks, public-private partnerships, and the challenges encountered in pursuing affordable and clean energy goals. By analyzing these facets, this presentation aims to provide insights into Kenya's journey towards sustainable energy and offer recommendations for further progress.

Geoffrey Muchiemi Mitambo is currently an intern at Johannes Kepler University in Linz, Austria, pursuing a Master's degree in Management in Polymer Technologies. Hailing from Kenya, Geoffrey is a dynamic and accomplished mechanical engineer with a fervent passion for renewable energy. He earned his Bachelor of Science degree in Mechanical Engineering from Dedan Kimathi University of Technology in Kenya. Geoffrey is on the verge of completing his Master of Science in Machine Tools Design and Manufacturing, a specialized track within Mechanical Engineering, at the same university. In addition to his academic pursuits, Geoffrey holds the position of Senior Technical and Vocational Trainer under the Kenyan Ministry of Education, where he has garnered four years of valuable experience. He also boasts three years of experience as a graduate assistant in the mechanical department at Dedan Kimathi University of Technology. Geoffrey's enthusiasm for renewable energy knows no bounds. He is dedicated to exploring opportunities in this field, leveraging Africa's vast untapped potential. He eagerly seeks out opportunities for further knowledge and development, driven by his belief in a sustainable world ecosystem. Geoffrey firmly believes that clean energy is paramount to achieving this vision. As Geoffrey continues to advance in his career and academic journey, he remains committed to making a meaningful impact in the renewable energy sector, both in Africa and beyond.



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The Extraction of Pineapple Leaf Fibers for the Production of Biodegradable Packaging Papers (Cayenne specie), *Fon Elsy Ambung, University of Bamenda, Cameroon*

Packaging is a domain of technical textile which deals with the wrapping material around a consumer item that serves to contain, identify, describe, protect, display, promote, and otherwise make the product marketable. This research work was undertaken to experiment with the production of packaging papers from pineapple leaf fibers. It is aimed at resolving the problem of plastics and other non-biodegradable packaging papers that pollute the environment and take hundreds of years to degrade, and also to decongest land fields with heaps of pineapple leaves.

Fon Elsy Ambung is a teacher with the government technical college Bagmande Bamenda and a part time lecturer in the Department of Social Economy and Family Management and of option Fashion Clothing



and Textile at the University of Bamenda, Cameroon. She obtained her masters in July 2019 in the University of Douala, Cameroon. Her thesis topic was: "The production and characterization of biodegradable packaging papers from pineapple leaf fibers." Her areas of specialization include the extraction of natural leaf and bast fibers, characterization of natural fibers, screen printing, dyeing using different dyeing techniques, garment construction, and fashion accessories. She supervises students for the undergraduate thesis in textile engineering and clothing manufacture. She has had two industrial studies at the Cameroon Industrial Cotton Cooperation (CICAM), Douala, Cameroon, an industrial study at the SOLICAM Cameroon, and a three-month industrial study at the SOCOLIM Garment Construction Cooperation. She is a beneficiary of the Indian Technical Economic Corporations (ITEC-2023 Advanced certificate training) on post cocoon technology. She is married with 3 children.



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Jimmy Chaciga is a solar energy application researcher, a renewable energy scientist, and a PhD fellow of the Department of Physics, Makerere University, Kampala. He completed his Master of Science in Physics (Solar Thermal Energy) and Bachelor in Physics. Currently, he is a scholar with an Energy Technology Network project under NORHED–II funding at Makerere University in collaboration with the Norwegian University of Science and Technology, Trondheim, Norway. His main research interest has been solar cooking for rural households and institutional cooking on solar photovoltaic (PV) DC electricity integrated with heat batteries. He is a member of the African Network for Solar Energy, ANSOLE, and a program coordinator at Makerere University, Uganda.



I look forward to meeting you in Uganda. Bravo! ANSOLE, Bravo ANSOLE Africa Day.

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Madalitso Chimpeni is an award winning climate tech innovator, sustainable energy professional and co-founder of Mpepu Energy. He has a BSc. He has six years of work experience in the energy sector focusing on technology development for wind energy and campaigning for net zero in cooking. In 2022, he collaborated with an Argentine innovator to create the Helix Wind Turbine. With this innovation he won the Malawi Innovators Design Competition, the CIMPAD Youth Entrepreneurship and Innovation Award, as well as the BRICS Youth Green Economy Award in South Africa. He is currently embarking on deploying wind mini-grids in rural communities across Malawi to bridge the existing energy gap.



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Dr. Koffi Joseph Datte is a doctor in physics from the Université Félix Houphouët Boigny, Cocody-Abidjan, Côte d'Ivoire, after having obtained a master's degree in electrical and electronic systems a few years ago. He has a degree in Education Sciences from École Normale Supérieure Abidjan, Côte d'Ivoire. In 2017, he attended an ANSOLE summer school at 2IE in Burkina Faso. In 2018, he was a member of the scientific meetings of ANSOLE in Côte d'Ivoire (ASMCI). In August 2019, he participated in the photovoltaic summer school on metrology and fault analysis of solar panels at Institut National Polytechnique Félix Houphouet-Boigny (INP-HB). He was a participant in the 77th and 78th United Nations sessions with the ANSOLE network. Currently, he is a teacher-researcher at École Normale Supérieure Abidjan. His field of research is photovoltaic material conversions and he is interested in optoelectronics, organic solar cell building, and thin films.



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Asong Alabong Desmond, a dedicated and passionate engineer, was born in the Western Region of Cameroon. He is from a family of 7 and grew up in the vibrant city of Bafoussam, where he completed his primary education. Afterward, Desmond moved to the Southwest Region of Cameroon to pursue his secondary education, enrolling in a technical college. It was here that he earned his Baccalaureate in Electro-Tech, marking the beginning of his journey in the field of engineering. Driven by a growing passion for engineering, Desmond continued his studies at the Faculty of Engineering and Technology at the



University of Buea. There, he obtained his first degree in Electrical and Electronics Engineering, followed by a Master's degree in Power Systems Engineering. These achievements solidified his expertise and deepened his commitment to the field. After completing his studies, Desmond gained valuable experience working as an Electrical and Automation Engineer in a beverage production company called Source Du pays S.A for two years. His time in the industry allowed him to apply his knowledge and skills in real-world settings, further fueling his desire to advance his education. Seeking to expand his horizons and expertise, Desmond decided to pursue further studies abroad. He enrolled in a Master's program in Scientific Instrumentation at the University of Applied Sciences Jena, where he continues to build on his strong foundation in engineering. Desmond's journey reflects his unwavering dedication to his field and his ongoing pursuit of excellence in engineering and technology.

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Celine Hamze is a student at the University of Jena, where she is earning her B.Sc. in Geography;



she is currently writing her thesis. She was an intern with MIGRANTh and interviewed various people with migrant backgrounds in Thuringia. For Africa Day 2024, she helped run a shop at the African Market and made sure that guests' children had fun and were entertained. She is currently working at the University of Jena's Diversity Office as a student employee in public relations; in addition, she is an officer for the University of Jena student government's Department of Human Rights and Anti-Discrimination.

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Souleymane Mbaye

Greetings! I am Souleymane Mbaye, a native of Senegal, where I embarked on my academic journey. Holding a Bachelor's degree in Physics from Cheikh Anta Diop University in Dakar, Senegal, I developed a keen interest in the intersection of science and sustainable energy solutions. My dedication to advancing my knowledge led me to the prestigious WASCAL (West African Science Service Centre for Climate Change and Land Adapted Use) international master program in energy and green hydrogen (IMP-EGH). Grateful for the opportunity, I was honoured to receive a scholarship for this program. In 2023, I proudly graduated from the international master program under WASCAL at the University of Lomé, specializing in Bioenergy, Biofuels, and Green Hydrogen Technology. This academic journey equipped me with comprehensive insights into cutting-edge technologies that drive environmental sustainability. Beyond academia, I have actively contributed to the field as the Chief Communications Officer (CCO) of WAGEDO (West African Green Energy Development Organization). In this role, I played a pivotal part in communicating the organization's mission and initiatives, fostering collaboration, and advocating for sustainable practices in the realm of green energy development across West Africa. My passion for merging science with environmental responsibility continues to drive my endeavours, as I strive to make meaningful contributions to the ongoing discourse on sustainable energy solutions. I look forward to embracing new challenges and opportunities that allow me to make a positive impact in the realm of green energy and beyond. Thank you!!!



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Dr. Jerome Ndam Mungwe is a holder of a PhD in Science Technology Energetics and Nuclear (STEN) from Politecnico di Milano-Italy. Prior to his PhD studies, he obtained an MSc in Energy Systems and Management from the University of Flensburg in Germany. His core professional value/belief is integrity in the applications of engineering solutions to improve human living standards, especially in the rural areas of developing countries. He has professional experiences as a practitioner, researcher in renewable energy technologies, and academician. As a practitioner, he has designed and supervised the construction of micro hydropower plants in some rural areas of Cameroon and designed and installed several solar PV home systems and domestic biogas systems. His research accomplishments include nine published articles, chapter contribution to a book and a technology manual. He is currently researching on a business model of a plastic biogas digester system for rural and urban applications, as well as performance evaluation of mini grids powered by renewable energy sources – solar PV and micro hydropower. He has participated in seven international conferences. Professionally, he was a secondary school teacher (1998-2006), technical adviser in renewable energy with an NGO in Cameroon (2008-2010), and assistant lecturer with the School of Engineering at the Catholic University of Cameroon-Bamenda (2010 -2019). He was an instructor at the National Higher Polytechnic Institute of the University of Bamenda (2019-2020). He is currently a senior lecturer at the Higher Technical Teachers Training College of the University of Bamenda, where he is Head of Department of the Department of Renewable Energy Engineering and Head of Service for Training and Internship. He is also member of the Scientific Committees of the Departments of Electrical and Power Engineering, HTTTC, and Electrical and Electronic Engineering of the National Higher Polytechnic Institute of the University of Bamenda.



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Bayan Nasr

My name is Bayan Nasr. My family is from Palestine, but I was born in Damascus, Syria in 1998. I came to Germany in 2015 and have been living in Jena since 2016. In 2021, I graduated from the University of Applied Sciences (EAH) Jena with a Bachelor's degree in Biotechnology. I am currently finishing my Master's degree in Biotechnical Chemistry at the TU Ilmenau. In addition to my academic career, I have been involved in various social areas (e.g. as a language and culture mediator at Refugio e.V., AWO). Since 2023 I am honorary chairperson of the board of Amal e.V. (association in foundation). Together with my younger sister Esraa Nasr, I was in charge of the children's programme during Africa Day 2024.



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Elvis Obie is from Cameroon and has been a member of ANSOLE for two years. He has a master's in materials chemistry from FSU Jena; his bachelor's was also in chemistry, from the University of Buea, Cameroon. He is a former student research assistant in nanobiophotonics. He has been in Germany since 2019, when he arrived to attend the University of Jena after completing a Sprachkurs (language course). Although he is not yet used to the German winters, he really enjoys life here in Germany; he has learned to play guitar and piano while here, and enjoys spending time at the library even after his studies are over. At the moment, he is focusing on gathering professional experience before potentially pursuing a PhD.



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Chris Seiferth is a social worker with a passion for cultural exchange and community development. Currently, he works at ANSOLE, coordinating cultural events, drafting proposals, and handling administrative tasks for the AMAH-ANSOLE e.V. project. Prior to this, he worked for the AWO Regional Association of Central-West Thuringia in Jena, providing socio-pedagogical family support for migrant families and counselling for young people with a migration history. In particular, he helped organise Africa Day 2024. Chris holds a degree in social work from the University of Applied Sciences Jena and a master's in sociology with a focus on "Social Change and Sociological Diagnosis of Time". His studies have taken him to France and Romania, broadening his perspective on social issues and cultural diversity.



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Emmanuel Uwineza is a Rwandan educator and sustainability advocate with a passion for bridging the gap between science education and global development. Born in the Southern Province in 1986, his academic journey began with a Bachelor of Science in Physics from the National University of Rwanda (now the University of Rwanda – College of Science and Technology) in 2012. Uwineza's pursuit of knowledge extends beyond physics. In 2019, he earned a Master of Arts in International Relations from Mahatma Gandhi University, showcasing his commitment to understanding the broader context in which science is applied. This dual expertise is evident in his professional career. Since 2019, Uwineza has served as an assistant lecturer at Rwanda Polytechnics/IPRC Tumba, sharing his scientific knowledge with the next generation. Concurrently, his dedication to sustainability is reflected in his leadership roles.



He co-founded Ifatizo Organization (IO), a Rwandan NGO focused on sustainable energy projects and promoting the UN's Sustainable Development Goals (SDGs) in Africa. He is also a member of the African Network for Solar Energy (ANSOLE), an international NGO working towards similar goals. Uwineza's commitment to lifelong learning is evident in his active participation in national and international conferences, seminars, and workshops. These include The Association of Technical Universities and Polytechnics in Africa (ATUPA) conference on "The Future of Jobs" and ANSOLE events focused on sustainable energy and water. Through his dedication to science education, leadership in sustainability organizations, and continuous learning, Emmanuel Uwineza exemplifies a powerful bridge between scientific knowledge and its application for a more sustainable future in Africa.

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Cynthia Weis is originally from Kenya. She moved to Germany at the age of three and grew up near

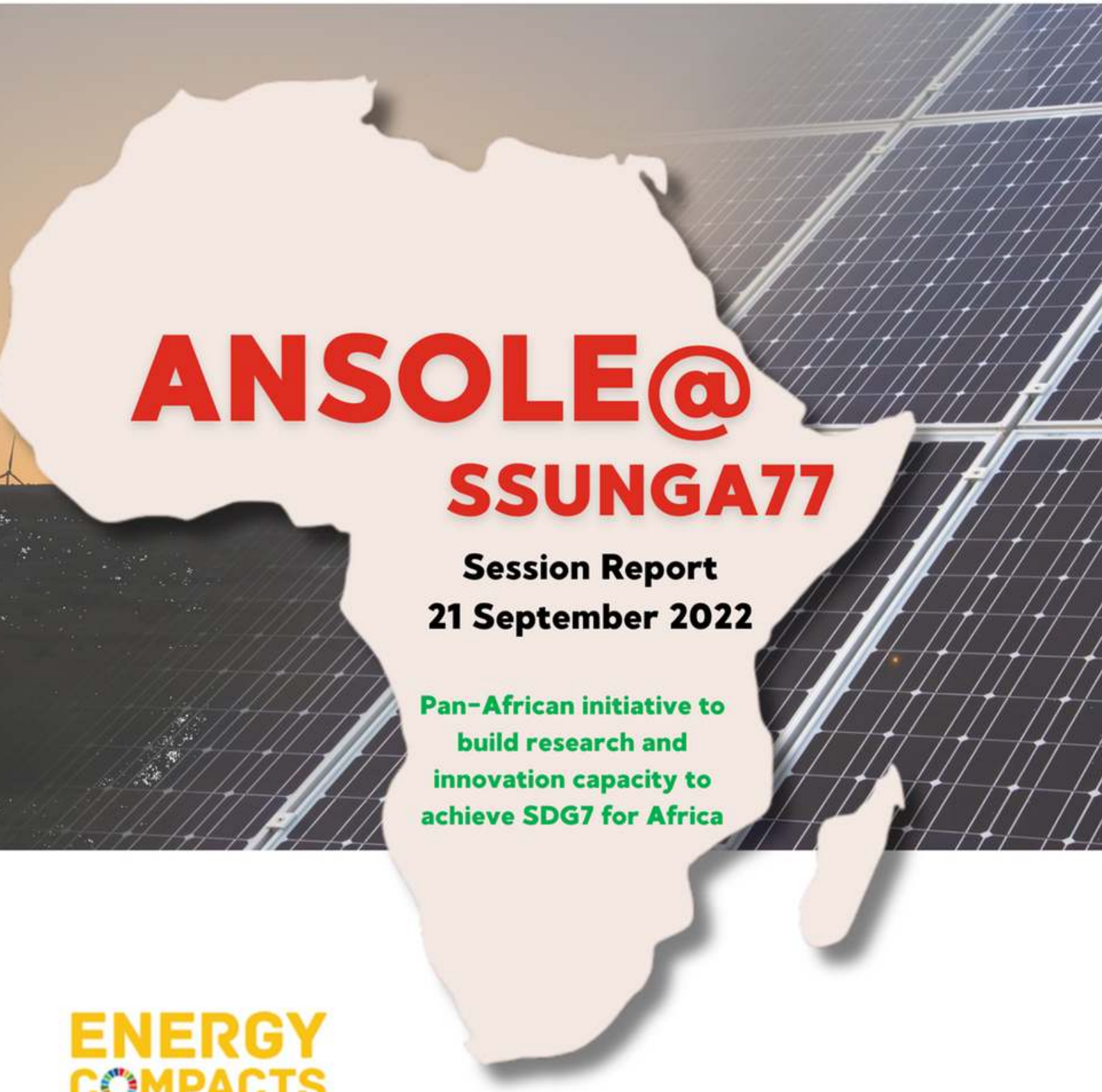


Mainz. She later moved to Jena to attend the Elite Sports High School at the age of 13 with the aim of becoming a professional athlete. Sparkasse Jena sponsored her during her athletic career and gave her the opportunity to do an internship, which inspired her to pursue a career in banking. She currently works at Sparkasse Jena as an Assistant Project Manager and Private Client Advisor, and is in the process of developing into a Branch Manager to further her career. While actively developing her career, Cynthia remains committed to sport. She started a running club with 22 members and is also involved in tennis, skating, volleyball, and swimming and regularly attends the gym. She also started a book club, which currently has four members who meet once a month to discuss the books they have read, and started a women's network. She recently joined the African Network for Solar Energy and was elected treasurer of the organization. Her future plans include studying economics and sustainability management. Meet her on LinkedIn: https://www.linkedin.com/in/cynthia-weis-b6699b203/?originalSubdomain=de

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ANSOLE@ SSUNGA77

Session Report
21 September 2022

Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa

ENERGY COMPACTS
SUPPORTED BY: UN ENERGY

SUSTAINABLE DEVELOPMENT GOALS

Science Summit at UNGA77
13-30 September 2022

ANSOLE

ANSOLE's Session at SSUNGA77
21st September 2022

Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa

Time: 2:00 PM-5:00 PM (EDT, New York), 18:00 PM-21:00 PM (Senegal), 19:00 PM-22:00 PM (Angola/Cameroon/Morocco/Nigeria), 20:00 PM-23:00 PM (CET/Egypt/ Rwanda/South Africa/South Sudan/Zambia), 21:00 PM-24:00 PM (Kenya/Latvia).

REF 21101:
https://ssunga77.sched.com/event/15tjg/pan-african-initiative-to-build-research-and-innovation-capacity-to-achieve-sdg7-for-africa

"Up to 34 participants attended the session live. It can still be viewed via:

https://diode.zone/w/92hWPwXaQMrU7DxXoiqkwa?subtitle=en&autoplay=1

Report by Dr. Ineke Malsch

Dr. Ineke Malsch, MalschValuation & ANSOLE Representative in The Netherlands

Dr. Ineke Malsch, Director of Malsch TechnoValuation, Utrecht, The Netherlands, and Dutch contact person of ANSOLE, advises and writes about responsible development of emerging technologies in their societal context emphasizing a Do-It-Yourself Ethics approach. Education: graduated in physics (Utrecht University, 1991) and PhD in philosophy (Radboud University, Nijmegen, 2011). She has been involved in EU funded projects on responsible development of emerging technologies since 2002, and is currently engaged in the RiskGONE project (www.riskgone.eu), in which she is responsible for ethics including the development and testing of guidelines and online tools supporting ethical impact assessment as part of the Risk Governance framework for nanomaterials. She is also the Dutch contact person for the African Network for Solar Energy (ANSOLE), and has been a partner in the project NMP-DeLA, where roadmaps have been developed for nanotechnology for water, renewable energy and health applications in EU-Latin American cooperation. She has published articles and contributed to books for a variety of audiences including scientists, professionals and lay persons about ethical and responsible development of nanotechnology and other emerging technologies, including the book *Future Technologies We Want (*Wolf publishers, 2018).



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PROGRAM

SSUNGA77 ANSOLE Session

Speaker/Institution	Title/Task
Vidvuds Beldavs, Riga Photonics Centre Dr. Ineke Malsch, MalschValuation & ANSOLE Representative in Netherlands	Welcome Message of the Convenors
Prof. Daniel A. M. Egbe, CEO of ANSOLE	*Moderating the First Part* Brief Presentation of ANSOLE
Prof. Peter Schubert, Indiana University-Purdue University Indianapolis	Energy Self-Sufficiency in Rural Villages
Prof. Sarah Anyang Mbi Agbor, University of Yaoundé I & Former AU Commissioner for Human Resources, Science and Technology	Opening Remarks
Prof. Adenike Boyo, Lagos State University & Cofounder of ANSOLE	Renewable Energy Situation in Nigeria
Asst. Prof. Shaimaa Mohamed, Zewail City of Science and Technology & ICTP-ANSOLE-ANEX fellow	Importance of Fellowship for the Scientific Career of Women: My Personal Experience with the ICTP-ANSOLE ANEX Scholarship
Dr. Benjamin Victor Odari, MMUST Kenya & ANSOLE Representative in Kenya	My Experience with ANSOLE Since 2013 & Renewable Energy Situation in Kenya
Prof. Nnenesi Kgabi, Research Director at NWU South Africa	Renewable Energy & Water Research in the SADC Region
Asst. Prof. Rosa Jacob Chilundo, University of Maputo & ANSOLE Representative in Mozambique	Energy Situation in Mozambique - Challenges and Opportunities
Ms. Naiole Cohen dos Santos, Agostinho Neto University & ANSOLE Representative in Angola	Renewable Energy Situation in Angola
Ms. Aban Ayik, University of Juba, South Sudan	South Sudan and SDG7: The Roadmap to Get on Track by 2030
Prof. Balla Diop Ngom, Universite Cheikh Anta Diop de Dakar, Senegal	Renewable Energy Research Within African Materials Research Society (AMRS)
Eng. Rita Clémence Mutabazi, Principal of Integrated Polytechnic Regional College (IPRC) Tumba, Rwanda	TVET on Renewable Energy at Rwanda Polytechnic
Assoc. Prof. Emelda Ngufor Samba, University of Yaounde I	Promoting SDG7 Using Theatre for Development
Vidvuds Beldavs, Riga Photonics Centre, Riga, Latvia	ANSOLE´s UN Energy Compact

PROGRAM

SSUNGA77 ANSOLE Session

Panel Discussion

Prof. Sarah Anyang Mbi Agbor *Moderating the Panel Discussion*

Panelists:

Prof. Serdar Sariciftci, Johannes Kepler University of Linz, Austria, Cofounder of ANSOLE

Pastor Daniel Mbiwan, President of the Federation of Pentecostal Churches in Cameroon

Prof. Daniel A. M. Egbe, CEO of ANSOLE e.V.

Closing Remarks

Closing Remarks by the Convenors Vidvuds Beldavs and Dr. Ineke Malsch and by Prof. Daniel A. M. Egbe

Opening Remarks
Prof. Sarah Anyang Mbi Agbor

Ladies and Gentlemen,

It is with great pleasure that I am here with you at the ANSOLE session during the Science Summit of the 77th UN General Assembly to give these few opening remarks, despite the late evening hours!

We convene today to address the great challenge that 600 million people in Africa do not have access to electricity. Regions without access to affordable and sustainable energy cannot develop. How can the 7 aspirations of the AU Agenda 2063 (The Africa We Want) become a reality if the deficit in electricity persists in Sub-Saharan Africa? How can we offer quality education to our dynamic young population (70% of the African population is below 25 years old) and conduct R&D without permanent and stable electricity?. The reality on the ground is that the available electricity is intermittent, leading to disruption of many kinds and negative effects in all sectors of the society. Especially businesses suffer a lot of the constant electricity cuts. An Africa with 600 million people without access to electricity and the rest with intermittent access is not able to exploit its potential to the fullest and effectively contribute in achieving both Agenda 2030 and Agenda 2063.

I am delighted that ANSOLE has formed an Energy Compact with the United Nations to address the root of Africa's energy access challenge, which is human resources and science and technology, my area of responsibility as former Commissioner in the African Union Commission. Africa needs to build capacity in energy research and development and in the specialist skills needed to plan, finance and deploy modern energy systems. At this stage I want to remind the African States about the pledge of 1% of country´s GDP to be allocated in Education and R&D. This pledge has remained a pledge till date. We cannot conduct quality research and innovation in Africa relying greatly on external funding. Africa needs to mobilize communities to work together to bootstrap community level energy systems to national and regional grids that unify larger territories. That is why I am happy to see Rev. Pastor Daniel Mbiwan, President of the Federation of Pentecostal Churches in Cameroon, representing the religious communities among us (note that 95% of Africans are religious and they do listen to their religious leaders!). We also have in our midst my colleague Prof. Emelda Ngufor Samba of Yaounde University I in Cameroon, who uses Theatre for Development (TDF) as an outreach tool to rural and urban communities in awareness raising for SDGs, in our case SDG7.

In the words of Kwame Nkrumah, "The community of economic life is the major feature within a nation, and it is the economy which holds together the people living in a territory." Energy systems are the foundation of a modern economy and the basis for African unity.

Africans need to be able to develop their own energy technologies suited to their needs and financed from their own resources.

The challenge of building human capacity and research infrastructures is central to meeting the SDG7 goal by 2030. All elements – from the village community level, to the member state, to regional groupings of states and at the African Union level – universal access to electricity is the central question.

I urge each speaker to address what capacity is missing in their state, or region, or university, and community. How can we work together better to use the capacities that we already have? If a university in a leading state has research equipment not available in a lagging state, can the match-making platform envisioned in the ANSOLE Energy Compact be built through staff exchanges and other action?

What ANSOLE proposes in the Energy Compact needs to be acted on with high energy and great urgency. Each village that is electrified with light for studies and electricity to power tools to build the community will be a big step forward. Advanced regions need to help lagging regions by

providing opportunities for students from other regions of Africa.

Model villages need to be developed in each access-deficient member state that can provide learning environments for community leaders in process of leading community development in their region.

A pan-African perspective enables greater cooperation and sharing that can speed progress in all communities with the resources that we already have.

I look forward to your remarks and to the questions from our audience.

Prof. Daniel Ayuk Mbi Egbe and I (the 2 Mbi's!) will lead a discussion engaging all speakers to address the urgent need for action to build human resource capacity to accelerate electrifying all of Africa.

Thank you all for listening!

Prof. Sarah Anyang Mbi Agbor, University of Yaoundé I & Former AU Commissioner for Human Resources, Science and Technology

Prof. Sarah Anyang Agbor is Vice Chairperson of the Governing Board of the UNESCO Institute for



Lifelong Learning (UIL) as well as the Vice President, Africa Board, Forum for African Women Educationalists (FAWE). She is a Trustee Board Member of the African Progress group (APG), Board Member of UNITAR, and Board Member of CAFOR. She is the AU Consultant for Policy Renaissance, leading the AU project in providing strategic support and establishing key links with the AU decision-making machinery that shapes the opportunities for current and future foundation interventions since October 2021. In 2017, Prof. Sarah Anyang Agbor was elected as the AU Commissioner for Human Resources, Science & Technology – which consists of three divisions: Education, Youth and Capacity Development, and Science and Technology – and headed several bodies. From 2017 to January 2022, she ensured the coordination of AU policies and programmes on human resource development matters, science, and technology, as well as encouraged and provided technical support to Member States and RECs in the implementation of continental strategies such as CESA 16-24, STISA 2024, and the TVET strategy. She also played key roles in promoting research and development and inter-African cooperation on education and training, encouraging youth empowerment and participation in the integration of the continent. Following the reform of February 2021, the department was renamed Education, Science, Technology, and Innovation. Professor Anyang Agbor has over 22 years' experience in the field of academia. She is a Professor of African and Commonwealth Literature. She was Inspector of Academic Affairs No 1. at the Ministry of Higher Education, Cameroon. Previously, she was the Deputy Vice Chancellor in Charge of Research, Cooperation and Relations with the Business World in the University of Bamenda, Cameroon. Professor Agbor has written several academic books and other publications. She was Fulbright Scholar-in-Residence to the University of Scranton, Pennsylvania, USA. She is from Cameroon. Moreover in 2019, she was named among the Inaugural List of 100 Most Influential African Women by Avance Media.

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Session Report

Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa

Vidvuds Beldavs welcomed the participants to this first ANSOLE session at SSUNGA77. *Next year, we hope to repeat it and report on new developments. The pan-African initiative aims for community mobilization to advance renewable energy and access to electricity in Africa. We would like to hear from the speakers how they can help and then we will discuss the strategy outlined in ANSOLE's SDG 7 Energy compact.*

Vidvuds (Vid) Beldavs, Riga Photonics Centre

Vidvuds Beldavs is Chairman of the Board of Riga



Photonics Centre advancing light sciences and technologies for Latvia; futurist. Board member of ACES Worldwide. Convenor of the following SSUNGA 77 sessions:

- Recovery of Ukraine's science and innovation capacity after the fossil fuel war
- Managing peatlands in Latvia to meet UN sustainable development goals and achieve carbon neutrality by 2050
- Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa
- Recasting the Space Agenda - Convened by Alliance for Collaboration in the Exploration of Space
- Space science, technology and sustainable civilian development

Advisor to the African Network for Solar Energy (ANSOLE), Member of Board of Directors of Alliance for Cooperation in the Exploration of Space, Co-Founder of the International Lunar Decade Working Group; Chair of the International Conference on Cooperation in Space Technologies 2014 (ICCST) that promoted cooperation in space between the Baltic Sea Region and Africa; initiator and consultant to the International Baltic Economic Commission (IBEC) organized by Hudson Institute for Estonia, Latvia and Lithuania to develop an action plan to transition to market economies in 1990-1992. Prior service included business trends advisor for Cummins, a global manufacturer of power systems, Vice President – Intelligent Resources International, Executive Director Technology Transfer Society, other roles including publishing, and founded several not-for-profit organizations – US-Africa Literary Foundation to promote African writers, New Leaf-New Life (criminal justice reform Bloomington, Indiana), Futuristics Study Group (community futures forum in Columbus, Indiana). American citizen semi-retired in Latvia.

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Prof. Daniel A. M. Egbe introduced ANSOLE, an 11-year-old pan-African platform contributing to the African Union's Agenda 2063 with its 7 aspirations and to the UN Agenda 2030 with 17 SDGs. ANSOLE aims to contribute through the actions listed in the SDG7 Energy compact. Outreach and collaboration with religious communities is also planned.

Prof. Daniel A. M. Egbe, CEO of ANSOLE

Prof. Daniel Ayuk Mbi Egbe is cofounder and Chief Executive Officer of the African Network of Solar Energy (ANSOLE), an institution that fosters education, vocational training and research in renewable energies and water-related issues in Africa and beyond. He is initiator and coordinator of the scientific platform BALEWARE (Bridging Africa, Latin America and Europe on Water and Renewable Energies Applications, www.baleware.org). He is Senior Researcher at the Energy Institute at the Johannes Kepler University (JKU) Linz, Austria, and at the same



time Privatdozent at the Institute of Polymeric Materials and Testing of JKU Linz. In November 2021 he was appointed Honorary Professor in Organic Chemistry at the College of Science and Technology of the University of Rwanda, Kigali, Rwanda. Since June 2022 he is an Extraordinary Professor of Renewable Energy at the Department of Chemistry, Material Science, Innovation and Modelling Research Focus Area, North-West University, Mafikeng, South Africa. He is a board member of the World University Service Germany e.V., an NGO that advocates for the human right to education. In 2016 he became the 1st Brian O ´Connell Distinguished Visiting Fellow of the University of the Western Cape, South Africa. Since 2014 he is consultant at African Centre for Technological Studies in Nairobi, Kenya. From 2012 till 2014 he was scientific consultant at the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy. He is an evaluator for various funding agencies (World Bank Group, PASET-RSIF, etc.) and visiting lecturer/professor at many African universities. Egbe did his BSc in Physics and Chemistry at the then University of Yaounde (presently University of Yaounde I) before pursuing his studies at the Friedrich-Schiller University of Jena, Germany, where he obtained a MSc in Chemistry (1995), a PhD in Macromolecular Chemistry (1999), and a habilitation in Organic Chemistry (2006). From 2006 to 2008, he spent postdoctoral stays at the Max Planck Institute for Polymer Research in Mainz, Germany, the Technical University of Eindhoven in the Netherlands, and at the Technical University of Chemnitz, Germany, prior to moving in 2009 to the Johannes Kepler University Linz, Austria. Egbe's main research interest is the design of semiconducting materials for organic solar cells and other optoelectronic applications. He has published more than 140 peer-reviewed articles and speaks 6 languages.

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Prof. Peter Schubert presented innovative solutions based on syn-gas technology helping remote villages be self-sufficient on biomass-fueled energy.

Prof. Peter Schubert, Indiana University-Purdue University Indianapolis

Prof. Peter J. Schubert is a professor of electrical and computer engineering. He holds 35 US patents and is the author of over 75 technical publications and is the principal investigator on research projects from the USDA,



DOE, DOD and NASA, all related to renewable energy, energy harvesting and sustainability. He is an instructor with the Society of Automotive Engineers and has taught over 1,000 engineers from 17 countries in systems engineering and mechatronics system design. Schubert is a recognized technology leader in multiple disciplines and provided consulting services to industry as the senior director for space, energy and education research at Packer Engineering Inc. in Naperville, Illinois, from 2006 until 2011. After returning to Delphi Electronics and Safety in Kokomo, Indiana, he was inducted into the Delphi Hall of Fame and promoted to Technical Fellow. Schubert received his PhD from Purdue University on a General Motors Fellowship. Areas of expertise: Renewable energy, sustainability, microgrids, fuel cells, batteries, systems integration, semiconductors, circuits, forensic engineering, artificial intelligence, machine learning, evolutionary optimization, neuromorphic devices, nanotechnology, micro-electrical mechanical systems, RF engineering, wireless power transfer, environmental engineering, nuclear science, electromagnetics, manufacturing, rocket propulsion, plasma physics, vehicle rollovers, wide bandgap semiconductors, quantum physics.

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Prof. Sarah Anyang Agbor officially opened the session, addressing the challenge that 600 million people in Africa have no access to electricity and millions of others have only intermittent access. *Energy is a key enabler of economic development, education and rural development. We should achieve the visions and aspirations of Agenda 2063 and Agenda 2030. Unity and integration must be achieved through the participation of women and youth.* [Her lecture was interrupted, demonstrating the reality of intermittent access to electricity in many African countries. Resuming her talk, she called for light and electricity for all.] *To transform industries, education and rural development, electricity is needed. The ANSOLE SDG7 Energy Compact stresses that Africa needs its own energy R&D and a model for energy education. To conduct good quality R&D, communities must be mobilized, by collaborating with religious leaders. This is needed to achieve SDG 7 in Africa. Energy systems lay the foundation to economic development. We need African solutions to African problems and appropriate energy systems at all levels, from the village to the national level and the level of regional groups. How to cooperate? Bringing electricity and light in each village is needed for the transformation of Africa. Provide an environment of collaborating community leaders. We need the pan-African perspective and to collaborate with leaders including Prof. Daniel Egbe. We hope to fulfill your vision, whereby students in universities with equipment deficits will be able to access universities with the needed research infrastructure.*

Prof. Adenike Boyo added that the unstable connection is the daily reality in Nigeria. *To achieve access to electricity, individuals should be helped to equip their houses with solar energy. This is needed because of distribution gaps of electricity. Nigeria is one of the most populous countries in Africa. We need integration of industries to provide electricity to the nation.*

Prof. Adenike Omotunde Boyo, Professor of Physics and Deputy Vice-Chancellor (Administration) of Lagos State University, Lagos, Nigeria, and co-founding member of ANSOLE.

Prof. Adenike Omotunde Boyo is Deputy Vice-Chancellor of Lagos State University (LASU) since October 2021. She is a founding member of African Network for Solar Energy (ANSOLE), member of International Solar Energy Society, Solar Energy Society of Nigeria, Nigeria Institute of Physics, Organization for Women in Science for the Developing World (OWSD), and former President of the LASU Chapter of OWSD. She is currently the Ex Officio of Material Science and Technology Society of Nigeria (MSN). Professor Boyo had her Bachelor of Science in Applied Physics, specializing in Geophysics, from University of Lagos, Nigeria, in 1986. She had her Master of Science in Applied Physics (Solar Energy) from University of Lagos, Nigeria, in 1988. She obtained her PhD at the University of Ilorin, Kwara State, Nigeria, in 2004. She joined Lagos State University as an Assistant Lecturer in 1990 and rose through the ranks, eventually becoming a professor of physics in 2011, thus becoming the first female Professor at the Department of Physics of LASU. She was seconded to Lagos State Ministry of Science and Technology as a Director of Science and Technology in Policy, Progammes and Promotion from 2005 to 2007, although the two years were spent as sabbatical and leave of absence; her schedule was to promote the electrification of rural communities by using solar energy, promoting and implementing Science and Technology policies. She was a consultant to the same Ministry from 2007 to 2010 on solar electrification of villages. Professor Adenike Boyo has won several awards and grants. Among them are TETFUND National Research grants in 2019 and award of a research grant in Gendered Design



in STEAM (Science, Technology, Engineering, Art and Mathematics) in Low and Middle-Income Countries (LMICs). Professor Boyo has authored and co-authored over 70 scientific papers, including more than 60 peer-reviewed articles. Prof. (Mrs.) Adenike Boyo is married. She was ordained as Assistant Pastor in the Redeemed Christian Church of God in 2011 and is currently the Parish Pastor of the Redeemed Christian Church of God (Amen Assembly parish) in Lagos, Lagos State, Nigeria from 2013 to date.

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Asst. Prof. Shaimaa Mohamed stressed the importance of the ICTP-ANSOLE fellowship program for helping women researchers start their careers. She benefited from the opportunity to obtain a PhD in Linz and is now an assistant professor in Egypt, co-organizing scientific conferences and hosting young African researchers in her lab. This way, she is a prime example of an ANSOLE member implementing the compact.

Asst. Prof. Shaimaa Mohamed, Zewail City of Science and Technology & ICTP-ANSOLE-ANEX fellow

Asst. Prof. Shaimaa Ali Mohamed is an Assistant Professor at Zewail City for Science and Technology, Egypt. Shaimaa conducted her PhD study at Linz Institute for Organic Solar Cell (LIOS), Johannes Kepler University Linz, Austria through the Africa-North Exchange Program (ANEX) fellowship funded by the International Centre for Theoretical Physics (ICTP), Trieste, Italy, and the African Network for Solar Energy (ANSOLE). Shaimaa obtained her PhD degree in 2015 in the field of organic and quantum dots photovoltaics. Her main research interest is organic and quantum dots photovoltaics, Perovskite solar cells, printed organic electronics and photonics, flexible transparent conducting electrodes, organic light emitting diodes (OLEDs) and supercapacitors. Shaimaa had the chance to present her research findings at many international conferences worldwide and to travel to different countries in Europe and Africa. Her academic contributions have yielded several high impact peer-reviewed scholarly scientific publications, and awards including the Best Contribution Prize, Cape Town, South Africa 2013; Best Poster and Oral Prize, Summer School for Young Scientists on Renewable Energies in Africa, Arusha, Tanzania 2015; young research award, Thessaloniki, Greece 2015; and selected as the Best ANSOLE Fellow for 2016. She has established the Organic Electronic Lab at Zewail City, Egypt. In relation to her research, she is presently enrolled in three projects: The STDF Egypt-Italy Joint Fund Project "Self-organized nanostructures for solar energy harvesting as a Co-PI," team member in Newton Musharafa STDF project "Highly-efficient nano-structure solar cells for energy security," and the Solar Energy Alliance (ASRT) project.



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Dr. Benjamin Victor Odari discussed his experiences with ANSOLE since 2013 and gave an overview of the renewable energy situation in Kenya. He is currently the ANSOLE representative in Kenya and a physics lecturer. Thanks to an ICTP ANSOLE INEX fellowship and co-funding from Prof. Malik Maaza, he was able to visit the iThemba lab in South Africa. *Kenya has developed its energy strategy since 1962. In 2015, Kenya joined the Paris Agreement. Challenges in the energy sector include lack of equity and security, such as delayed service delivery. Kenya's roadmap until 2040 should enable it to become a global leader in green energy through decarbonized economic growth.*

Dr. Benjamin Victor Odari, MMUST Kenya & ANSOLE Representative in Kenya

Dr. Benjamin Victor Odari is a Physics Lecturer in Materials Science in the Department of Physics, School of Natural and Applied Sciences. He graduated with a degree in Bachelor of Education in Science (Physics and Mathematics) in 2009 and Master of Science in Physics in 2013, both from Masinde Muliro University of Science and Technology. He obtained his PhD in Renewable Energy in September 2019 from University of Nairobi, Kenya. Part of his PhD research work was done at the Institute of Energy and Climate Change (IEK5), in Forschungszentrum Jülich, Germany, under the scholarship of DAAD. Dr. Odari is involved in research infrastructure development and capacity building in the area of Materials Science. He is a member and the country representative for Kenya of the African Network for Solar Energy (ANSOLE) (https://www.ansole.org/). He is also a co-founder and treasurer of Materials Research Society of Kenya (MRS-K) (https://mrsk.or.ke/) and was an editor of *The African Physics Newsletter*. He is a journal reviewer for *Solar Energy* (https://www.journals.elsevier.com/solar-energy) among others. His current research focuses on characterization of materials and devices for solar energy conversion. Dr. Odari is also carrying out ab initio studies of materials for solar energy conversion using the Quantum Espresso and SIESTA codes and is a collaborator in the project "Study of Photovoltaic Absorbers and Thermoelectric Materials Using Density Functional Theory," as well as the principal investigator in the project "Magneto-electric devices for future technologies: A DFT Based Study" (https://www.mmust.ac.ke/directorates/projects/index.php/research-and-innovation-projects/MMU-URF-2022-1-026), both at MMUST.



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Prof. Nnenesi Kgabi discussed the energy-equity conundrum in Southern Africa. *Electrification in the region is limited and there are few major existing and proposed lines. The alternatives are based on biomass. Proposed solutions are load shedding or load reduction, with severe impacts on some South African families, who get no electricity for cooking dinner or for doing homework in the evening. We need to achieve justice. Equity of provisions is needed. Electrification holds the key to economic growth and poverty reduction. Impact pathways of rural electrification programs illustrate the bottom line that it is necessary to consider gender and social disparities, and to impact poverty reduction. A different approach is needed to make solutions accessible and affordable to people in sub-Saharan Africa. Consider multisectoral issues and follow a multilayered and multistakeholder approach to ensure that all can access electricity, technology, health and agriculture. In the Eastern Cape, some people have no water in their house because of electricity cuts. Governance systems are needed to produce solutions respecting values including transparency, equality, accountability, effectiveness and efficiency. Tackle structural equity, not just appoint women in decision making circles, but recognize historic processes and cultural and institutional dynamics. Go back and say: bring in the social component and strengthen equity in the generation and provision of energy.*

Prof. Nnenesi Kgabi, Research Director at NWU South Africa

Prof. Nnenesi Kgabi currently serves the North-West University (NWU) in South Africa as Director: Research Support. Prof Kgabi is also an Extraordinary Professor in the Unit for Environmental Sciences and Management at the NWU, and Affiliated Professor in the Centre for Environmental Management at the University of the Free State (UFS). Nnenesi previously served



as UNESCO Chair on Sustainable Water Research for Climate Adaptation in Arid Environments, Programme Coordinator, Deputy Dean and Acting Dean at the Namibia University of Science and Technology (NUST). She holds a BSc Ed, BSc Hons and MSc from University of North West, MA from University of Birmingham, and PhD from North-West University. Prof. Kgabi has authored/co-authored more than 80 peer-reviewed publications and promoted/graduated more than 35 masters and doctoral students. She also serves the regional and international research community through executive and evaluation committees such as the Advisory Board for UNESCO Chair on Global Understanding for Sustainability, in Germany; National Science and Technology Forum (NSTF) in South Africa; SADC WaterNet; the Swiss National Science Foundation in Switzerland; Regional Focal Point for Africa in the World Association of Industrial, Technological and Research Organisations (WAITRO); and the Southern African Research and Innovation Management Association (SARIMA).

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Asst. Prof. Rosa Chilundo discussed energy in Mozambique. *The electrification rate is 37%, including 74% hydro, 15% natural gas and less other sources. The potential for solar electricity is much higher. Policies are starting to promote renewable energy. The new electricity law (March 2022) aims to use renewables to reduce greenhouse gas emissions and open up the electricity generation to the private sector. The aim is to reach universal access, by increasing electricity consumers by 60% and off-grid supply by 40%. Demand side management is a major challenge, through tariffs reflecting the real costs. The contribution of renewables in the energy mix should also be boosted with 10% by 2030 up to 600 MW. A tariff structure and feed-in tariff for on- and off-grid should also be developed.*

Asst. Prof. Rosa Jacob Chilundo, University of Maputo & ANSOLE Representative in Mozambique



Asst. Prof. Rosa Jacob Chilundo is founding member and mentor for the Engineering area of Women in Science, Engineering and Technology initiative (PMCET) in Mozambique. She is lecturer and researcher at the Engineering Department, Faculty of Engineering and Technologies, Pedagogical University of Maputo and Renewable Energy Specialist in National Power Utility. She has a PhD degree in Science and Energy Technology from Eduardo Mondlane University, Master in Renewable Energy from Federal University of Ceará, and BSc in Physics. She has certificates on Women Empowerment; Financial Modelling for Utility Tariff Setting from University of Cape Town, Energy Policy from Japan International Cooperation Agency; and Unlocking Mini-Grid Potential in Mozambique from MicroEnergy International. She has been conducting research activities and projects in the field of gender issues, gender strategy development for energy sector, sustainable development, and renewable energy. She also participated at change projects activities for sustainable development through the Life Academy initiative from the Swedish Government, implemented by SIDA. She has authored or co-authored over 15 publications on topics in sustainable development, renewable energy, and sustainable use of energy.

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Ms. Naiole Santos stressed that ANSOLE should bridge the Lusophone countries (Angola and Mozambique) with the rest of Africa. *In most fellowship programs targeting Africa, their students don't benefit. Africa faces the dilemma of food versus energy. Africa is a huge continent, and the cost of electrification is high because of the large distances. Electricity is needed for economic growth. Energy inclusion should be the African priority. How to prioritize the cooperation process? Angola's energy strategy states that by 2025, 60% of energy provision should be green. This should be achieved through 2 main projects. First, a 2 billion US$ solar project funded by the USA (Biden), aiming to diversify the energy mix. In addition, Angola just signed a contract to become the first supplier of hydrogen to Germany from 2024 onwards. We are transitioning from oil and gas to hydrogen. Poverty alleviation is urgently needed. Avoid needing to choose between energy from food and energy for adding economic value. Continue the dialogue.*

Ms. Naiole Cohen dos Santos, Agostinho Neto University & ANSOLE Representative in Angola

Naiole Cohen dos Santos, with a multiethnic and multicultural background, is a team-oriented



woman with more than twenty years of work experience in public and private institutions. In Angola, her home country, she was the only female on the board of the Angola Telecom during its restructuring process. She was the first Chairperson of Public-Private-Partnership (PPP) at Angola Cables and the first independent President of Audit Committee and internal Controls of BPC. Naiole is co-founder of Angolan Corporate Governance Association (ACGA). She holds a Master MBA in Finance (USA) and a Postgrad in Financial Strategy from University of Oxford (UK). She is an Auxiliary Professor at the University Agostinho Neto (UAN). She is author of "Beyond Inequalities." –SARDC 2000 Profile Status of Women in Angola.

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Ms. Aban Ayik from South Sudan aims to raise awareness of SDG7 and educate people. *It is an oil rich country, with a high solar energy potential. However, it is the least electrified country in the world (6.7% of the population has access), and no progress has been made towards SDG7 since 2019. The revised South Sudan national development strategy 2021-2024 aims to transition from a carbon based to a green economy, through education and research. What difference can education and research make? It is important to collaborate with foreign partners including ANSOLE, ACE-ESD, and with industry and the private sector. Also, awareness of the general public should be raised through theatre and cinema.*

Ms. Aban Ayik, University of Juba, South Sudan

Aban Ayik is an academic staff member of the School of Engineering and Architecture at the University of Juba, South Sudan. At present, she is a PhD candidate at the African Center of Excellence in Energy for Sustainable Development (ACE-ESD) at the University of Rwanda. Her research focuses on the technical and economic assessment of renewable energy sources for electricity generation (solar, wind and small hydropower). Previously, she worked for more than 10 years as a Mechanical Engineer in the transportation industry in Sudan where she gained experiences in public procurement, engineering project management, and spare parts management. Degrees held are BSc (Hons) in Mechanical Engineering and an MSc in Electrical Power Engineering, both from the University of Khartoum in Sudan. Membership of professional societies includes: IEEE (PES - Power and Energy Society, IEEE WIE - Women in Engineering), ANSOLE - African Network for Solar Energy, CIPS - The Chartered Institute of Procurement & Supply.



Aban is a registered Consultant Engineer with the Engineering Council of South Sudan.

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Prof. Balla Diop Ngom presented current materials research in Africa and how it can enable energy and electrification in Africa.

Prof. Balla Diop Ngom, Université Cheikh Anta Diop de Dakar, Senegal

Prof. Balla Diop Ngom, Nanomaterials scientist, holds an undergraduate degree in solid state physics from the University Cheikh Anta Diop of Dakar (UCAD), Dakar, Senegal. His keen interest led him to complete doctoral studies in Physics at the same University, which culminated in a Magna Cum Laude merit award. His dedication and commitment to the field has led him to pursue a second PhD with the University of the Western Cape (UWC), Cape Town, South Africa. As a result of these distinguished academic achievements, Balla has gained some 10 years of in-depth knowledge and experience in the multi-disciplinary field of Nanosciences, with a specific focus on Energy and smart Nanomaterials. Dr. Ngom is involved in numerous international co-operation programs in Nanosciences with an obvious focus on Nanophotonics and novel multifunctional materials. In an attempt to take part in the fascinating Nanoworld, and to contribute to its ambitious challenges, Dr. Ngom has conducted several postdoctoral positions: he conducted a postdoctoral position at the INRS_EMT in Canada before returning to South Africa, where he served for 2 years as a postdoctoral position at the Nanosciences Laboratories of iThemba LABS before joining the University of South Africa (UNISA) for his third postdoctoral position. Dr Ngom is an associate of the UNESCO-UNISA Chair in Nanosciences et Nanotechnologies hosted at the University of South Africa, Pretoria, South Africa, and currently employed at the University Cheikh Anta Diop of Dakar, where he is a full Professor and Director of the "Laboratoire de Photonique Quantique d'Energie & NanoFabrication." Prof. Ngom is a Future Leaders – African Independent Research (FLAIR, a project funded by the Royal Society of UK in partnership with the African Academy of Sciences) Fellow. Additionally, Prof. Ngom has also developed strong entrepreneurial instincts, which have not only led to several awards, but have also guided his research to yield devices with commercial potential. His greatest strengths match those most necessary for creating cutting-edge multi-disciplinary research in the dynamic of novel nanostructured materials/methods for applied nanotechnology. Prof. Ngom is tackling global challenges through physical sciences. His research and engagement are a way to actively participate in the pursuit of the United Nations Sustainable Development Goals and the 2030 Agenda, guided by two questions: how can science improve daily life and what can be done to increase the motivation of the Senegalese Government to allocate 1% or more of its national GDP to STIs? Prof Ngom is convinced that "Science is definitely part of the answer." He is convinced that gender equality is crucial for reaching the Sustainable Development Goals (SDGs) that he so strongly believes in.



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Eng. Rita Mutabazi presented TVET on renewable energy in Rwanda at IPRC Tumba. Rwanda's energy strategy aims to raise access to electricity from 72% in 2021 to 100% in 2024. There is a great need for workforce and skills. Her institute has graduated 921 people since 2013. They aim to contribute to community solutions through outreach activities.

Eng. Rita Clémence Mutabazi, Principal of Integrated Polytechnic Regional College (IPRC) Tumba, Rwanda

Eng. Rita Clémence Mutabazi holds a Masters of ICT, a post-graduate diploma in Managerial and Control of MIS, and a BSc in Electromechanical Engineering. She has worked with different institutions mainly involved in education and engineering projects. Passionate about TVET and engineering education, she has done several professional trainings in these sectors. In 2009 she joined KIST, where she worked on different projects in ICT in education, and later joined the academic department and taught courses related to electronics and electrical engineering at College of Science and Technology (formerly KIST). In 2013, she worked as an energy national consultant with UNIDO, working on energy efficiency projects within industries in Rwanda. She was selected among the first cohort of TechWomen in 2013 in Silicon Valley, USA, where she worked on projects related to energy efficiency and renewable energy at PG&E. After the Silicon Valley experience, she and other TechWomen alumnae initiated different projects dedicated to encouraging and inspiring girls, women, and youth to be next generation of leaders in STEM through different STEM hands-on activities. In 2014, she was appointed Vice-Principal in charge of Academics and Training at one of the Polytechnics (IPRC East) as the first woman to hold that position; later in the year 2018, she became the first female Principal of an IPRC (Integrated Polytechnic Regional College of Tumba). In March 2020, during the beginning of COVID-19, she was appointed to the Acting Position of Deputy Vice-Chancellor of Training, Institutional Development and Research at Rwanda Polytechnic until February 2021, where she worked with the academic team to successfully navigate through the pandemic and continue the training leading the initiative of a blended system. She is currently serving as the Principal of IPRC Tumba, a renowned institution fostering ICT and renewable energy use. Rita believes that getting more girls and women in TVET and STEM-related careers is the catalyst to sustainable development for Rwanda. With other TechWomen in Rwanda, she won a grant to co-lead and implement many projects to empower the youth and girls such as Youth in Polytechnics on Energy Efficiency, "The Engaged Youth in Energy Conservation," "Where to Sensitize the Youth in 5 Polytechnics in Rwanda," and "The Refugee Girls Need You," aiming at empowering refugee girls with IT skills and Her2Voice initiative. Since 2014, she organizes STEM fairs for high school girls and female university students to inspire them to embrace STEM studies as well as STEM careers sponsored by US Embassy Kigali. So far more than 1000 girls have benefited from the program. Rita is a gender advocate, STEM mentor, motivational speaker and also a member of many women empowerment organisations such as PowerHer and RAWISE, Rwandan Association of Women in Science and Engineering. She serves on the steering committee of WIRE (Women in Rwanda Energy), and others such as Institute of Engineers in Rwanda (IER) as well as OWSD (The Organization for Women in Science for the Developing World). She serves on different boards/committees and is also a member of the Board of Rwanda Energy Group (REG). A mother of 2 daughters, she loves travelling and making new connections.



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Assoc. Prof. Emelda Ngufor Samba explained how theatre for development helps promote SDG7 in Africa. This is theatre for, with and by the people. It mobilizes people to think about wellbeing and overcome limited situations. It helps express needs and data collection.

Assoc. Prof. Emelda Samba Ngufor, University of Yaounde I

Assoc. Prof. Emelda Ngufor Samba is Associate Professor of Performing Arts at the University of Yaounde I, Cameroon. She is Head of Section, Performing Arts and Cinematography,

and Coordinator, Professional Masters in Cinema, University of Yaounde I, Cameroon. She is



Founder of "People Theatre and Cinema for Social Changes," an Arts association that focuses on the communication of transformative information to indigenous and urban communities through theatre and cinema. She holds a BA in English Modern Letters and a Professional Masters in Theatre and Cinema from the University of Yaounde I, Cameroon; a Higher Teacher Training Diploma in English Modern Letters from the Higher Teacher Training College Yaounde; and a PhD in Performing Arts from the University of Bayreuth, Germany. She is a member of the African Network for Solar Energy (ANSOLE), the current Secretary General for the Cameroon Professional Women in Science Network (CaPROWN), a member of The Disability and Inclusion Africa Network, and a member of the Frontiers Research Group. Her research focuses on theatre and cinema as communication media for sustainable social change in both rural and urban settings. She has published extensively in national and international journals and in edited books. Samba is also a field worker: she has run numerous theatre and cinema for development workshops nationally and internationally on renewable energy, gender issues, disability inclusion, reintegration of prisoners into the society, etc.

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Vidvuds Beldavs presented the ANSOLE Energy Compact, discussing how to build capacity and promote staff exchanges in Africa and with other world regions. *In the short term, we need a good writing team for grant applications and partners willing to work on ANSOLE projects linking universities. We aim to prepare a strategic plan by member institutions by 31 December 2023, using the ANSOLE Energy Compact as basis for funding applications. ANSOLE offers the structure to co-facilitate the projects.*

Prof. Serdar Sariciftci remarked that many of the speakers were trained by him. *This demonstrates that if you train the right people at the right time, you can build capacity. The Theatre for Development is needed for raising awareness. The opportunity for solar energy in Africa is increasing, because the price of solar PV has dropped dramatically in recent years. Africa must avoid European mistakes of burning fossil fuel and move straight to renewables. Africa has one of the highest solar energy production potentials in the world. The future of Africa is tightly bound to the success of solar energy. Daniel Egbe has been very active to promote it, and is getting there. It is not just PV, but also heat and solar to chemicals, artificial gas, etc. But remember: academic development takes time. The universities of Oxford, Cambridge, and other leading universities took hundreds of years to become what they are now. Africa is impatient, but development takes generations, just like it took 10 generations to build medieval cathedrals. Be patient and persistent. The future is in solar energy.*

Prof. Serdar Sariciftci, Johannes Kepler University of Linz, Austria, Co-founder of ANSOLE

Prof. Serdar Sariciftci is Ordinarius Professor for Physical Chemistry and the Founding Director of the Linz Institute for Organic Solarcells (LIOS) at the Johannes Kepler University of Linz, Linz, Austria. He studied at the University of Vienna (Austria) and graduated with a PhD in physics in 1989. After two years of postdoctoral study at the University of Stuttgart (Germany), he joined the Institute for Polymers and Organic Solids at the University of California, Santa Barbara, USA, by Prof. Alan J. Heeger, Nobel Laureate 2000 for Chemistry. His major contributions are in the fields of photoinduced optical, magnetic resonance and transport phenomena in semiconducting and metallic polymers. He is the inventor of



conjugated polymer and fullerene based "bulk heterojunction" solar cells. Prof. Sariciftci has published over 600 publications, and with over 83,000 citations he is one of the most cited scientists in material science (2011, Thompson Reuters ranking No: 14 in the world in Material Science). Google Scholar ranks Sariciftci with an h-index of >125. Sariciftci has composed 8 books and educated several academic and industrial scientists. He also initiated seven spin-off companies for organic optoelectronics. He is recipient of several prizes, among them the National Science Prize of Turkey 2006 and the Austrian Scientists of the Year Prize for Research 2008. He received the Medal for Humanity of the City of Linz 2009 and the Kardinal Prize for Science of the Archbishop in Vienna 2010. In 2012, he was awarded the prestigious Wittgenstein Prize of Austria. He is a Fellow of the Royal Society of Chemistry (FRSC), Fellow of SPIE, and member of several societies, such as American Chemical Society, Materials Research Society, Austrian Chemical Society, and Austrian Physical Society. He was selected as corresponding member of the Academy of Science in Austria (ÖAW). Sariciftci has been awarded an honorary doctorate by the Abo Academy in Finland in 2011 and by University of Bucharest in Romania in 2012. Sariciftci received the TÜBA Science Prize of the Turkish Academy of Sciences (2015) and was selected as member of the Turkish Academy of Sciences in 2017. He received the Selcuk Yasar University Prize for Advancement of Science and Humanity in Turkey in 2020.

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Panel Discussion

Prof. Sarah Anyang Mbi Agbor (moderator): "Achieving SDG7 for Africa is important, considering inclusion and creating a pan-African community uniting western, eastern, central, northern and southern Africa. Africa has a huge problem of electrification. Walk the talk: how can we solve this issue? This month (September 2022), the African Union Commission decided to improve national energy supply until 2030. It is important to enhance national research and innovation. How to raise awareness? What is the role of governments and of the African Union Agenda 2063? What can civil society and religious communities contribute? Stakeholders must promote affordable reliable green energy, and promote the role of women."

Prof. Serdar Sariciftci added: "How can we achieve SDG7? By putting the right people at the right time in the right place. Start with putting solar panels on every church and mosque in Africa. The whole community around it will see the benefit. There is no need for connecting to the grid, because solar energy is everywhere. Store the electricity in batteries. Communities can start with energizing and illuminating central points. Don't wait for people to bring grids. Then it will move by itself. Let there be light! Start with the church."

Rev. Daniel Mbiwan (Pentecostal church) said: "How can we create a progressive movement? What techniques should we use? Prof Sariciftci said: 'Let there be light!' as if he started to preach by quoting Genesis. I thank ANSOLE for creating a platform and relating with the UN for contributing to the SDGs. A great idea is hatching. We can use theatre for development. How can churches contribute to the realization of this dream? Solar energy is there, free of charge. Leaders of the African continent were mostly trained in church-based or Islamic schools. 95% of Africa is religious. Most people attend church or mosque weekly. If every house had solar energy that would be great. Churches can be good practice examples. Our church has a professional training centre. We take in street children and teach them a trade. We have a carpenter centre, but power cuts are major setbacks in the training. Solar energy can help. We are in contact with Daniel Egbe and put it on the agenda of the Pentecostal and Council of Protestant churches in Cameroon. Churches are the way to begin. The second line of the Gospel stresses that nothing started without light. Life in Africa can start a new change. It will be a generational development, starting by educating church goers. Over 70% of members are young people. Educate at nurseries, primary, secondary schools and universities. Put it in the curricula. We will do our best to mobilize and sponsor children to be trained. The story will be different tomorrow for our children. Let there be light in the future of Africa. What is the place of R&D to achieve the aims of this conference and of this pan-African initiative?"

Rev. Daniel Enonchong Mbiwan is the President of the Federation of Pentecostal Churches of Cameroon.



He is the out-going General Superintendent of the Full Gospel Mission (2012-2022), one of the largest pentecostal denominations in Cameroon. He had previously served as the Assistant General Superintendent of the same movement from 2000 - 2012. Earlier on in his pastoral ministry, he taught and became the Academic Dean of the Full Gospel Bible Institute in Bamenda, Cameroon, from 1994 - 2004. He became a board member of the Cameroon Association of Bible Translation and Literacy with headquarters in Yaounde, Cameroon, between 2004 - 2016. During that period he acted as the Vice Board Chair 2012-2014 and became the Board Chair 2014-2016. He had equally served previously as the interim General Secretary of the Central African Alliance of Assemblies of God 2020/2021 then became the President in October 2021.

In 2018 he became a Member of Religious Leaders that constituted the Anglophone General Conference that began seeking for a solution to the Cameroon Anglophone Crisis. He still serves in different platforms contributing for a sustainable peace solution for the Cameroon situation. On May 20, 2022, he received national recognition and was awarded a Medal of the Cameroon Order of Valour. He is convinced of the vital role religious entities can play in facilitating the deployment of renewable energies in sub-Saharan Africa and in the mitigation of climate change. He is married to Rosemary and he is a father of three daughters - Hannah, Ruth and Esther.

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Prof. Daniel A. M. Egbe: "It is important. African governments must allocate funding to R&D. African scholars can produce and innovate if we give them a conducive environment to do research. On average, African countries allocate only 0.5% of GDP to science. Even South Africa has not succeeded in allocating 1% of GDP to research. In France, 50% of the output of research comes from African researchers. If they could work in Africa, the situation would be completely different. I plead to African governments to invest 1% or more in R&D. Compare it with China. In addition, Africans should learn to make mistakes. Africans should be employed in the solar sector, because now we look for foreigners to do research in Africa. Africans have brains! Give them a conducive environment to work and allow them to make mistakes."

Prof. Sarah Anyang Mbi Agbor: "We should address the challenge of research infrastructure to achieve SDG7 by 2030. How can we use digital platforms to train young Africans including scientists and technicians. Offer lectures and training programmes using internet reaching people all over Africa. It is dramatic that electricity access is only 7% in South Sudan. If we want to achieve Agenda 2030, we need electricity and energy. Use online tools to train as many people as possible at vocational and university level, and as technicians. ANSOLE should create an e-University. This is a new idea. Lecturers are already members of ANSOLE and can transmit their knowledge from their own office to foreign students."

Dr. Benjamin Victor Odari: "We can plan online ANSOLE summer and winter schools on particular areas of renewable energy. The ANSOLE e-University should be affiliated with several countries where students can go and be trained, and offer online filmed lectures by renowned lecturers. Students can follow the classes at their own time. Include also strong practical training on energy. Science, Technology and Innovation should be approached from a pan-African perspective. Electricity is the key for economic and agricultural development. The African Materials Research Society is already working in partnership with the US MRS to publish articles by African researchers in renowned journals."

Rev. Daniel Mbiwan is excited. "We have annual training camps. Such online courses are needed. We should also bring Prof. Saricifti to teach our youth during those summer camps. I would encourage it and do my best to convince my colleagues to join the platform."

Prof. Serdar Saricifti: "It has been an emotional evening, discussing again with so many ex-students. Nothing is more powerful than an idea if the time is right. Jesus had only 12 followers believing in him. Internet is a good platform, but without energy it is really difficult. We need to empower people to get electricity to be empowered. Solar energy is tightly bound to Africa's future. Europeans are jealous of Africa, because they are now experiencing an energy crisis. Germans would dream of having the solar irradiation of Africa. I want to stress a technical detail: creating an electricity grid takes a long time and enormous investments. Bypass this grid idea and just focus on distributed and independent electricity

through solar and storage capacity. The technology exists already. Today, no energy is produced cheaper than solar energy. A recent Indian bid was as low as 2.5 cent/KWh, while in Europe we pay 25-40 cents/KWh. Nobody will be able to stop solar energy. We have had very good long-term cooperation with good scientists all over Africa. The ball is now in the hands of Reverend Mbiwan."

Vidvuds Beldavs: "We made strong progress during this session, creating a good starting point for the next steps. We will meet again in SSUNGA78 in 2023. We will post the video of this session online so others can view it."

https://diode.zone/w/92hWPwXaQMrU7DxXoiqkwa?subtitle=en&autoplay=1


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CARL-ZEISS-STR. 3, 07743 JENA
10:00 AM - 04:00 PM | Conference on SDGs (SR 114) + african market + children's program (foyer)
07:00 PM - 00:00 AM | Gala evening (foyer): african food + fashion parade + african & latin music + dance





ANSOLE
SSUNGA78 Session

Pan-African initiative to build research, innovation and community capacity to achieve SDG7 for Africa

22 September 2023

Science Summit at UNGA78
12-29 September 2023



SSUNGA78 ANSOLE Session

Date and Time – 22 September 2023 from 9:00 AM to 1:00 PM ET

Format – Virtual

https://sciencesummitunga78.sched.com/event/1Nr7H/virtual-pan-african- initiative-to-build-research-and-innovation-capacity-to-achieve-sdg7-for-africa-220901

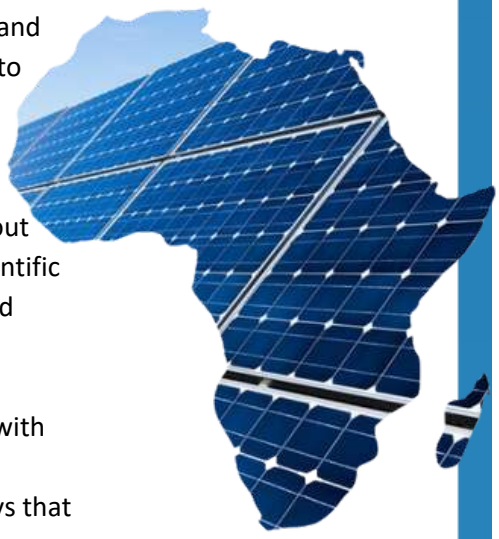
Presented by ANSOLE in cooperation with Riga Photonics Centre and other partners - Renewable Energy and Energy Efficiency Associations-(Alliance) of Nigeria (REEEA-A); University of Yaounde I (UYI), Cameroon; Masinde Mulinde University of Science and Technology (MMUST), Kenya; African Centre of Excellence in Energy for Sustainable Development (ACE-ESD), College of Science & Technology, University of Rwanda (UR-CSD); MaSIM, North-West University (NWU), Mahikeng Campus, South Africa

Sub-Saharan Africa has nearly 600 million people without access to electricity. It is urgent to speed up electrification as climate change intensifies and AI and other technological advances accelerate, widening the divides between the haves and the left behind and fueling rising costs of instability. Most alarming is that IEA forecasts show that based on present trends, nearly 600 million will still not have access to electricity by 2030 and will be poorly equipped to address worsening impacts from climate change. While the heart of the challenge is Sub-Saharan Africa, where less than 50% of the population have access to electricity, even countries with high access to electricity in Africa face power shedding and other supply disruptions frequently. This panel presented the potential for the ANSOLE Energy Compact that promotes multi-level capacity building (Africa-wide, national, university, and community-level action) to address the extremely urgent need to accelerate access to, and effective uses of, affordable electricity by communities in Sub-Saharan Africa.

The ANSOLE Energy Innovation Hub (AEI-Hub) enables multilevel capacity building to accelerate achievement of universal access to sustainable, reliable, and affordable energy and its effective use for development for all in Africa. Speakers addressed how ANSOLE and its partners across Africa are building the AEI-Hub to enable acceleration of the pace towards SDG7 in Africa.

Elements of the AEI-Hub:

- **ANSOLE-sponsored workshops** engaging experts, entrepreneurs, and mentors with specific expertise and experience to address barriers to more rapid progress towards SD7 for Africa
- **ANSOLE sponsored staff-exchanges and mobility** to enable collaborating partners to advance shared goals
- **ANSOLE knowledge exchange portal** to provide accurate data about research infrastructure and scientific and technical expertise at scientific and technical institutions across Africa to enable sharing of skills and research resources to enable acceleration of the pace towards achievement of SDG7
- **AI tools to empower community leaders and their communities** with knowledge to make effective decisions about energy and other technologies and their financing, deployment, and operation in ways that build the capacity of the community to build a better future for the community and its members



Report by Dr. Ineke Malsch



SSUNGA78 ANSOLE Session

09:00-09:15
Welcome, *Prof. Daniel A. M. Egbe & Vidvuds Beldavs*

09:15-09:30
Energy Innovation Hubs for Africa, *Vidvuds Beldavs, Riga Photonics Centre, Latvia*

09:30-09:45
Share of Solar Cells Technologies to Ethiopia's Energy Demand and Undergoing Research, *Dr. Newayemedhin Aberra Tegegne, Department of Physics, Addis Ababa University, Ethiopia*

09:45-10:00
Energy and Water Situation in Rural Communities in Côte d'Ivoire, *Dr. Joseph Datte, École Normale Supérieure, Université Félix Houphouët Boigny, Côte d'Ivoire*

10:00-10:15
Comparison of two solar cookers for off-grid decentralized rural communities, *Prof. Ashmore Mawire, Department of Physics, MaSIM, North-West University, Mahikeng, South Africa*

10:15-10:30
Energy Transition in Senegal, *Asst. Prof. Allé Dioum, Department of Physics, Cheikh Anta Diop University Dakar, Senegal*

10:30-10:45
Ghana's Energy Transition: Research & Development of Green Hydrogen as Energy Carrier, *Dr. Richard Opoku, Department of Physics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana*

10:45-11:00
Improving Solar Photovoltaic Energy Yield Using Bifacial PV Module and Tracking System: An Analytical Approach, *Dr. Rahimat Oyiza Yakubu, Department of Physics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana*

11:00-11:15
La problématique de l'accès à l'énergie au Tchad (The Problem of Energy Access in Chad), *Michel Boukar, Former Chadian Minister of Petrol and Energy, President of the NGO ACID, Djamena, Chad, https://www.ongacid.org*

11:30-11:45
Empowering African Women and Young Girls in Energy and Climate, *Zita Ngagoum Ndalloka, University of Massachusetts, Lowell, Department of Electrical and Computer Engineering, Francis College of Engineering, Lowell, MA, USA*

11:45-12:00
African Network for Solar Energy: Applying the Second Law of Thermodynamics in Real Life, *Prof. Daniel Ayuk Mbi Egbe, ANSOLE e.V. Jena, Germany/MaSIM, North-West University, Mahikeng, South Africa/College of Science and Technology, University of Rwanda, Kigali, Rwanda* + Closing Remarks

Session Report

Pan-African initiative to build research, innovation and community capacity to achieve SDG7 for Africa

Energy Innovation Hubs for Africa, *Vidvuds Beldavs, Riga Photonics Centre, Latvia*

Vidvuds (Vid) Beldavs is Chairman of the Board of Riga Photonics Centre, advancing light sciences and technologies for Latvia; futurist. Board member of ACES Worldwide. Convenor of the following SSUNGA 77 sessions:



- Recovery of Ukraine's science and innovation capacity after the fossil fuel war
- Managing peatlands in Latvia to meet UN Sustainable Development Goals and achieve carbon neutrality by 2050
- Pan-African initiative to build research and innovation capacity to achieve SDG7 for Africa
- Recasting the Space Agenda - Convened by Alliance for Collaboration in the Exploration of Space
- Space science, technology and sustainable civilian development

Advisor to the African Network for Solar Energy (ANSOLE), Member of Board of Directors of Alliance for Cooperation in the Exploration of Space, Co-Founder of the International Lunar Decade Working Group; Chair of the International Conference on Cooperation in Space Technologies 2014 (ICCST) that promoted cooperation in space between the Baltic Sea Region and Africa; initiator and consultant to the International Baltic Economic Commission (IBEC) organized by Hudson Institute for Estonia, Latvia, and Lithuania to develop an action plan to transition to market economies in 1990-1992. Prior service included business trends advisor for Cummins, a global manufacturer of power systems, Vice President – Intelligent Resources International, Executive Director Technology Transfer Society, other roles including publishing, and founded several not-for-profit organizations – US-Africa Literary Foundation to promote African writers, New Leaf-New Life (criminal justice reform Bloomington, Indiana), Futuristics Study Group (community futures forum in Columbus, Indiana). American citizen semi-retired in Latvia.

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Share of Solar Cells Technologies to Ethiopia's Energy Demand and Undergoing Research, *Dr. Newayemedhin Aberra Tegegne, Department of Physics, Addis Ababa University, Ethiopia*

Dr. Newayemedhin Aberra Tegegne: A researcher on solar cells working mainly on efficiency enhancement and photophysics of organic solar cells. Dr Tegegne graduated from Stellenbosch University and moved to Addis Ababa University to lead her research group starting from 2018. Now her group is working on different aspects of emerging renewable energy. She is the National Representative of ANSOLE in Ethiopia.



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Energy and Water Situation in Rural Communities in Côte d'Ivoire, *Dr. Joseph Datte, École Normale Supérieure, Université Félix Houphouët Boigny, Côte d'Ivoire*

Dr. Joseph Koffi Datte is a doctor in physics from the Université Félix Houphouët Boigny, Cocody-Abidjan, Côte d'Ivoire, after having obtained a master's degree in electrical and electronic systems a few years ago. He has a degree in



Education Sciences from the École Normale Supérieure, Côte d'Ivoire. In 2017, he attended an ANSOLE summer school at 2IE in Burkina Faso. In 2018, he was a member of the scientific meetings of ANSOLE in Côte d'Ivoire (ASMCI). In August 2019, he participated in the photovoltaic summer school on metrology and fault analysis of solar panels at the Institut National Polytechnique Félix Houphouët-Boigny (INP-HB). He was a participant in the 77th UN session with the ANSOLE network. Currently, he is a teacher-researcher at the École Normale Supérieure since October 2022. His field of research is photovoltaic material conversions.

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Comparison of Two Solar Cookers for Off-Grid Decentralized Rural Communities, ***Prof. Ashmore Mawire, Department of Physics, MaSIM, North-West University, Mahikeng, South Africa***

Prof. Ashmore Mawire: I am an applied physicist interested in solar thermal energy storage (TES) systems with a PhD in Applied Physics specializing in solar thermal energy storage for domestic applications. I obtained the PhD in 2010 from the North-West University, and seven peer reviewed journal articles were generated as a direct result of the PhD study. I am presently a full Professor in the Department of Physics and Electronics and the principal solar thermal researcher in that department. My current and future research interests fall into four main categories; (i) small thermal energy storage systems for domestic applications, (ii) solar domestic receivers and discharging heat exchangers, (iii) solar cookers, and (iv) cheap physics and electronics laboratory experiments for developing countries.



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Energy Transition in Senegal, ***Asst. Prof. Allé Dioum, Department of Physics, Cheikh Anta Diop University Dakar, Senegal***

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Ghana's Energy Transition: Research & Development of Green Hydrogen as Energy Carrier, ***Dr. Richard Opoku, Department of Mechanical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana***

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Improving Solar Photovoltaic Energy Yield Using Bifacial PV Module and Tracking System: An Analytical Approach, ***Dr. Rahimat Oyiza Yakubu, Department of Mechanical Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana***

Dr. Rahimat Oyiza Yakubu is a distinguished scholar with a Ph.D. in Sustainable Energy Technologies, complemented by a solid foundation in electrical and electronics engineering through her bachelor's and master's degrees. Her extensive expertise spans a broad spectrum, with research interests encompassing Renewable Energy Technologies, Energy Policy, and Power System Analysis. Notably, her doctoral research delves into the meticulous design, modeling, and technical assessment of diverse solar photovoltaic systems, ranging from monofacial to bifacial PV modules. Dr. Yakubu's focus extends to the performance evaluation of both off-grid and grid-connected PV systems, exploring various configurations such as rooftop installations, ground-mounted setups, and innovative floating PV systems. Her commitment to



advancing sustainable energy solutions is evident through her comprehensive exploration of solar technologies across different applications.

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La problématique de l'accès à l'énergie au Tchad (The Problem of Energy Access in Chad), *Michel Boukar, Former Chadian Minister of Petrol and Energy, President of the NGO ACID, Djamena, Chad*

Michel Boukar, former Minister of Petroleum and Energy of Chad, Manager at the Société des



Hydrocarbures du Tchad, is a multidisciplinary expert and doctoral student at the University of Douala. He is a former Minister of Petroleum and Energy in Chad, a former Petroleum and Mines Adviser to the President of the Republic and a former Mines, Energy and Petroleum Adviser to the Prime Minister. He has a total of 8 Master's degrees, including a Master's degree in Energy Engineering from EIER (Ouagadougou, Burkina Faso) and a Master's degree in Renewable Energy from Polytechnique-University of Maroua. He has a degree in electromechanical engineering and a bachelor's degree in mathematics from the University of N'Djamena, and other certificates from the UN Training School in peacebuilding, protection of civilians, prevention of violence against women and promoting gender equality in peacekeeping. He is the initiator of energy policy in his country Chad through the new law 036 /PR/2019 on the energy sector in Chad by defiscalising all renewable energy equipment. He has over 20 years experience in consulting, engineering and research, project management including in the environment and energy sectors, including over 10 years in the private sector, and more than 15 years in community life. He set up an association in 2003 and is now President of the NGO ACID, whose website is https://www.ongacid.org/. He works extensively in rural areas in the fields of agriculture, the environment, waste management, and the fights against climate change and violence against children. He is currently a manager at SHT (Société des Hydrocarbures du Tchad).

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Empowering African Women and Young Girls in Energy and Climate, *Zita Ngagoum Ndalloka, University of Massachusetts, Lowell, Department of Electrical and Computer Engineering, Francis College of Engineering, Lowell, USA*

Ngagoum Ndalloka Zita is a 2024 Women Leader in Energy and Climate Fellow. She is a PhD candidate in energy engineering and a research assistant at the University of Massachusetts Lowell. Her primary focus lies in the realm of solar energy, where she is engaged in solar module prototyping and characterization. Her research interests extend to solar photovoltaic (PV) recycling, circular economy, and PV reliability. Ngagoum Ndalloka's achievements include awards such as the Pan African University Scholarship, which supported her MSc in energy engineering at the Pan African University Institute of Water and Energy Sciences (PAUWES). During her master's studies, she led the Institute's Climate Change and Gender Club. This leadership position sparked her interest in helping women join the renewable energy workforce. This in turn resulted in the creation of the Career Advancement Program for African Women in CleanTech (CAPAWIC), an initiative to empower African women and young girls by equipping them with the knowledge and skills essential for their



professional integration and advancement in the clean energy sector. Ngagoum Ndalloka holds a bachelor's degree in electrical and electronics engineering from the University of Buea, Cameroon. In addition to her academic pursuits, Ngagoum Ndalloka has participated in numerous energy-oriented fellowships, training programs, and internships, including the Open Africa Power program by ENEL Foundation, the career training program and the student energy fellowship organized by Student Energy, the Rising Solar Power Fellowship sponsored by the Women of Renewable Industries and Sustainable Energy (WRISE) in partnership with Grid Alternatives, and the African Fellowship for Young Energy Leaders organized by the Renewable Energy Technology Training Institute (RETTI) in partnership with RETTI Virtual University. Ngagoum Ndalloka has also worked as a research intern at Schneider Electric in Algeria and as a program management intern with the Women for Sustainable Energies and Climate Action (W4SECA).

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African Network for Solar Energy: Applying the Second Law of Thermodynamics in Real Life, *Prof. Daniel Ayuk Mbi Egbe, ANSOLE e.V., Jena, Germany/MaSIM, North-West University, Mahikeng, South Africa/College of Science and Technology, University of Rwanda, Kigali, Rwanda* + Closing Remarks

Other Speakers

Dr. Miria Frances Agunyo, Dean of the Faculty of Engineering, Design & Technology at Uganda Christian University



Dr. Miria Frances Agunyo is an Energy and Environmental Engineer who holds a Doctorate in Economic Sciences from Europa Universität Flensburg, Germany, from where she also pursued a Master`s in Engineering in Renewable Energy and Environmental Management. She also holds a Bachelors in Engineering Environmental Engineering and Management from Kyambogo University, Uganda. Dr. Agunyo has over 13 years' experience in the areas of environmental impact assessments/audits, life cycle assessments, sanitation and waste management systems, renewable energy and process engineering with a focus on bioenergy. Her current research interest focuses on application of integrated approaches which combine thematic areas of sanitation, energy, agriculture, wastewater and solid waste, incorporating holistic aspects of such nexuses in designing systems. She has worked as a researcher, bioenergy expert, and public relations specialist on assignments related to renewable energy, sanitation, waste management and environment for various entities including the Government of Uganda, private consultancies and umbrella bodies such as Uganda National Renewable Energy and Energy Efficiency Alliance. She has also lectured at Flensburg University of Applied Sciences and Europa Universität Flensburg in Germany, Kyambogo University in Uganda and Uganda Christian University. Currently, Dr. Agunyo is the Dean of the Faculty of Engineering, Design & Technology at Uganda Christian University. She is also the Project Manager of a Nationally Appropriate Mitigation Action Project at the Ministry of Energy & Mineral Development in Uganda that focuses on production of biogas for electricity generation and feeding it into the national grid. The project aims at improving waste management practices in urban areas within Uganda through the introduction of integrated waste management, and deployment of biogas energy systems based on organic fraction of municipal solid waste, agro-processing waste and wastewater.

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Prof. Magnus Chidi Onuoha, Professor of Green Economics, University of Port Harcourt, Nigeria

Prof. Magnus Chidi Onuoha, Professor of Green Economics, University of Port Harcourt, Nigeria,



is a University of Port Harcourt-trained development economist and a Research Member of the Green Economic Institute at Hugh's College, Oxford University, UK, an Associate Research Fellow at Africa Heritage Institution (formerly African Institute for Applied Economics, Enugu), and Research Member of Africa Technology Policy Studies (ATPS) Network Kenya. He is also a Research Member of the UK government-funded Governing Inclusive Green Growth Africa (GIGGA) Network, coordinated by the University of Reading, UK. He is a professor of economics (arguably the first professor of Green Economics in Africa) at Gregory University Uturu, Abia State, Nigeria, where he combines as the Executive Director, West Africa Green Economic Development Institute (WAGEDI), and Director, Center for Transformative Advancement of Development for Africa (CTADA) of the University. Prof. Onuoha is also the President of Sustainable Energy Practitioners Association of Nigeria (SEPAN) and was recently elected as the National Vice Chairman, Steering Committee of Renewable Energy and Energy Efficiency Associations (REEEA-Alliance) where he is at the driver seat in ensuring that the Federal Government of Nigeria takes renewable and energy efficient markets as mainstream investments supported by feed-in tariffs as is obtainable in other climes. As the Executive Director, Asteven Renewable Energy Academy (ASREA), Prof Onuoha facilitated the development of curriculum for the award of National Innovation Diploma (NID) on Solar Technology and Management, sponsored by ASREA and coordinated by the National Board for Technical Education (NBTE). He also belongs to the Standard Organization of Nigeria (SON) Technical Committee seeking to ensure standards in the renewable energy and energy efficient technologies deployment in Nigeria. He actively participated in the Nigeria Energy Support Programmes (1 and 11), processes and outcomes. Between 2004 and 2015, he was a Senior Adviser at Nigeria's National Assembly, where he brought his wealth of experience to bear, especially in the areas of energy, climate change and environment, defence, and Inter-Parliamentary Union (Young Parliamentarian Forum, Nigeria chapter), amongst others. He is also a Member of the United Nations Framework Convention on Climate Change (UNFCCC) Roster of Experts on Green House Gas Inventory (GHGI) Quality Assurance. He is also a Member of Nigeria Climate Change Response Programme (NCCRP), a European Union-funded four-year programme, where he chairs the Waste Sector Work Group. Prof. Onuoha has varied research interests in the marine environment, especially with respect to blue economy paradigm, pollution control and abatement, and presently is a member of the Technical Work Group for GHG Inventory and MRV processes at Nigeria Maritime Administration and Safety Agency (NAMASA). Just recently he was part of the three-man team of African consultants commissioned by Africa Technology Policy Studies (ATPS) Network Kenya and Pan African Climate Justice Alliance (PACJA) that developed a framework for the Nationally Determined Contribution (NDC) Implementation index as well as monitoring/tracking tools for Africa. The process of turning the index into an app is ongoing. Prof. Onuoha is also a member of African Scientific Research and Innovation Council, where he is member of the Resources Mobilization sub-committee. Prof. Onuoha is the author of four books and co-authored four as well, with several published papers in national and international journals. His forthcoming books *Greening the Nigerian Economy* and *Greening the Global Economy* promise to excite and stimulate the knowledge world. He is married with children.

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Lukia Nabawanuka, National Representative of ANSOLE in Uganda, Energy Advisor – *Social Institutions and Productive Use of Energy with GIZ Uganda Energy and Climate Cluster*

Lukia Nabawanuka is currently working with GIZ Uganda's Energy and Climate Cluster as Energy Advisor for Social Institutions and Productive Use of Energy. She is a renewable energy specialist with experience working in private and development sectors. Prior to joining GIZ Uganda, she worked in the private sector with SolarNow BV as Business Development Channel Manager and later took on a technical responsibility as the Agricultural Technical Developer to develop the solar agricultural product line of the company. She holds a Master of Science degree in Renewable Energy/Solar Energy and a Bachelor of Science degree in Electrical Engineering, both attained from the University of Science and Technology Houari Boumediene (USTHB), Algiers, Algeria. Lukia is a member of the African Network for Solar Energy (ANSOLE) and was appointed as the Network's National Representative in Uganda since September 2017, where she coordinates all ANSOLE's activities in the country.



Dr. Naledi Seheri, Senior Lecturer, Chemistry Department, North-West University (Mahikeng Campus), South Africa

Dr. Naledi Seheri is a Senior Lecturer in the Chemistry Department at the North-West University (Mahikeng Campus) in South Africa. She is currently engaged in research activities in the field of Inorganic and Materials Chemistry, and her focus is on the Chemistry of the Environment vis-à-vis ground and surface water systems, climate studies, and the impact of climate change on the environment. Naledi is also actively involved in chemistry capacity projects in rural schools. She is affiliated with the following professional bodies in South Africa: The South African Council for Educators (SACE), the Institute of Waste Management of South Africa (IWMSA), The South African Chemical Institute (SACI), South African Association for Research in Mathematics, and Science and Technology Education (SAARMSTE). She is a recipient of an institutional prestige award in teaching and learning.



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