

FINAL Announcement



UNDER THE PATRONAGE OF
HIS EXCELENCY DR MOHAMED BIN MUBARAK BIN DAINA
Minister of Oil and Environment, SPECIAL ENVOY FOR CLIMATE AFFAIRS



WREC/WREN
WORLD RENEWABLE ENERGY CONGRESS - WREC-23
MEETING CLIMATE CHANGE, RENEWABLES and
ACHIEVING CARBON NEUTRALITY
12-15 January 2025
CROWNE PLAZA, MANAMA, KINGDOM OF BAHRAIN

Mission Statement

World Renewable Energy Network, (WREN) is honoured to work with the Kingdom of Bahrain to encourage the use of Renewable Energy globally and aiming to achieve NET ZERO carbon emission. Renewables are the cornerstone and foundation of a truly sustainable and safe energy future. More than 35% of world countries have achieved 50% of their electricity supply from renewables. Join us to increase this percentage to be 50% before 2030.

Congress Topics

- * Photovoltaic Technology
- * Solar Thermal & Geothermal
- * Sustainable Cities & Low Energy Architecture
- * Biomass & Waste to Energy
- * Policy, Finance, Education & Conservation
- * Meteorology and Solar Data
- * Wind & Hybrid Energy
- * Hydropower & Ocean Energy
- * Hydrogen Technology, Fuel cells & Transport
- * Renewable large Schemes & System Integration
- * Carbone capture, Utilization and Storage (CCUS)
- * The use of Artificial Intelligence to optimize the use of renewables
- * Energy and Gender



ABSTRACT: Abstracts should not be more than one page, A4, 300-500 words only, single spacing, Ariel font-12. It should contain, title, author/s names, full addresses, email and 6- keywords. It should be sent as soon as possible. Please send your abstract to Prof Ali Sayigh, email: asayigh@wrenuk.co.uk, or Prof Nader Al-Bastaki, email: nalbastaki@ku.edu.bh. You will have an answer within one week. Full paper is required before 15 December 2024. Again, to be sent to Prof Ali Sayigh.

Full Paper: Single column, A4, including, Title, full address, and email, abstract, 6- keywords, graphs and photo should be within the text, conclusions, and references. Please number the references in the text in brackets (), and list them in sequence in the References. If you have an Appendix, then put it at the end of the paper. Papers are needed by 5 January 2025, certainly not later than 15 January 2025.

Registration online. <https://WREC23.ku.edu.bh/>

Please note that due to local administrative circumstances and more demand, the Congress has been postponed to 12-15 January 2025.

Abstracts Titles from Invited Speakers and Participants received to date:

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- 1- **The role of the sustainable use of biomass, bioenergy and biorefining in a circular economy**

Prof Anastasia Zabaniotou
Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece



- 2- **Photovoltaic Technology: Pathways Toward a 100% Solar Electricity Future**

Prof Lawrence L. Kazmerski
Renewable and Sustainable Energy Institute, University of Colorado Boulder, Colorado, USA.



3- Recent Developments in Photovoltaics

Prof Martin A. Green
SPREE, University of New South Wales, Sydney, Australia



4- Application of Micro-Structured Sunlighting Systems in Different Buildings

Prof Helmut F.O. Mueller
Green Building R&D GmbH, Duesseldorf, Germany



5- Increasing the Gain of Bifacial Photovoltaics by Redirection of Solar Radiation

Prof Helmut F.O. Mueller
Green Building R&D GmbH, Duesseldorf, Germany

6- Estimating the Rooftop Potential Solar Power using Remote Sensing and GIS for Tala Island at the Kingdom of Bahrain

Naser W. Alnaser^{1*}, Roaya Bubshait², Aysha Alhajeri² and Waheeb E. Alnaser³

¹Department of Architecture and Interior Design, College of Engineering, University of Bahrain, Kingdom of Bahrain.

²National Space Science Agency, Kingdom of Bahrain.

³Department of Natural Resources and Environment, College of Graduate Studies, Arabian Gulf University, Kingdom of Bahrain.



7- Challenges Facing Renewable Energy Potential in The GCC Countries Due to Future Climate Change

Waheeb E. Alnaser^{1*}, Marlene Tomaszkiwicz², Hussein A. Kazem³ and Lawrence Kazmerski⁴

¹ Department of Natural Resources and Environment, College of Graduate Studies, Arabian Gulf University, Kingdom of Bahrain.

²United Nations Economic and Social Commission for Western Asia (UN-ESCWA), Beirut Governorate, Lebanon.

³ Sohar University, Electrical and Computer Engineering, Faculty of Engineering, Sohar, PCI 311, Oman

⁴ National Renewable Energy Laboratory (NREL), Renewable and Sustainable Energy Institute (RASEI), University of Colorado, Boulder, Boulder, USA.

8- USE OF CLEAN ENERGY TECHNOLOGIES IN IMPROVING WALKABILITY, NEW HOUSING DEVELOPMENTS AND ORIENTED TOWARDS SUSTAINABLE FUTURE ENERGY SCENARIO

V.K. Sharma* and G. Braccio
Biorefinery and Green Chemistry, ENEA Research Centre Trisaia, Italy



9- Green Buildings and Renewable Energy are the solutions in reducing, Carbon Footprints in UAE

Prof. Riadh H. AL-Dabbagh
International Environmental Expert, Ajman, UAE



10- Optimizing Grids Demand Reduction through Enhanced Heat Transfer in Low-Temperature Waste Heat Driven ORC System

Cheng Wang^{1*}, Zizeng Gao², Liwei Wang²

¹Shanghai Leadership Refrigeration Technology Company, Shanghai, China,

²Institute of Refrigeration and Cryogenics, Shanghai, China,

³Institute of Refrigeration and Cryogenics, Shanghai, China, email



11- Offshore Wind Energy Improved Technology: A Potential Solution for Bahrain's Energy Security and Sustainability

Prof Abdul Salam K Darwish
University of Bolton, Bolton – UK



12- Investment in Renewable Energy & Environmental Sustainability: Analytical Study for Selected Models

Naghm Hussein Neama^{1*}, Rasha H. Abbood^{2*}, Karrar Azeez AlDaham¹
(1): Dept. of Investment & Business Management, Al-Nahrain University, Baghdad, Iraq
(2): Ministry of Higher Education & Scientific Research, Baghdad, Iraq
(1): Dept. of Investment & Business Management, Al-Nahrain University, Baghdad, Iraq
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13- Digital transition in higher education for the experience of DIGITAL DECATLON Competition to Cooperation partnerships in higher education

Antonella Trombadore*, Gisella Calcagno*, Giacomo Pierucci*, Matteo Bertelli*
*University of Florence Architectural Department, Florence, Italy



14- Modelling the Power Generation of Microbial Fuel Cell Using Machine Learning Based Super Learner Algorithms

S. M. Zakir Hossain^{1*}, Nahid Sultana², Shaker Haji¹, Shaikha Talal Mufeez¹, Sara Esam Janahi¹, Nouf Adel Ahmed¹

¹Dept. of Chemical Engineering, College of Engineering, University of Bahrain, Bahrain.

²Dept. of Computer Science, College of Computer Science and Information Technology, Imam Abdulrahman Bin Faisal University, Saudi Arabia.



15- Case study analysis of improving environmental ethics in Bahrain, using a collaboration toolkit from a UK University

Dr Jason Challender
Director of Estates and Facilities, Salford University, Manchester, UK



16- An examination of dust buildup and mitigation techniques for solar photovoltaic installations

Hussein A. Kazem^{1*} Waheeb E. Alnaser², and Lawrence Kazmerski³
¹Sohar University, Faculty of Engineering, Sohar, Oman
²Department of Natural Resources and Environment, Arabian Gulf University, Bahrain.
³National Renewable Energy Laboratory (NREL), University of Colorado, Boulder, USA.



17- Policies for upgrading and rehabilitating slum areas, in order to achieve their sustainability – a case study: the city of Damascus.

Wael Al Muhanna, *Manuel Correia Guedes
*Prof. Manuel Correia Guedes, Coordinator of the Course of Architecture
Department of Civil Engineering and Architecture, Instituto Superior Técnico
Lisbon, Portugal



18- High Temperature Heat Pumps for Industrial Applications

Professor Neil J Hewitt
Ulster University, Belfast School of Architecture & The Built Environment, Centre for Sustainable Technologies, Belfast, Northern Ireland, UK



19- An experimental study on the impact of porous media in improving the heat-transfer performance characteristics of photovoltaic panels.

Amjad H. Hamzaw¹, and Qahtan A.Abed²
¹Engineering technical college/ Najaf, Al - Furat Al- Awsat Technical University, Najaf, Iraq
²Technical Institute/ Al-Rumaiitha, Al - Furat Al- Awsat Technical University, Iraq



20- A Global Renewable Energy Target – Gamechanger for the Global Transformation towards Renewable Energy? –

Rainer Hinrichs-Rahlwes
Vice-President, European Renewable Energies Federation (EREF), BELGIUM
Board Member, German Renewable Energy Federation (BEE), Berlin, GERMANY



21-RENEWABLE ENERGY APPLICATIONS IN AGRI- AND HORTICULTURE

Dr Márta Szabó
Hungarian University of Agriculture and Life Sciences,
Institute of Engineering,
Gödöllő, Hungary



22-The use of Artificial Intelligence to optimize the use of Renewable Energy

Prof Saad Znad Darwish
Kingdom University, Bahrain



23- Sources of error in the testing and evaluation of photovoltaic/thermal systems

Ali H A Al-Waeli^{1,*}, Hussein A Kazem², Miqdam T. Chaichan³, Kamaruzzaman Sopian⁴

¹Engineering Department, American University of Iraq, Sulaimani, Iraq

²Energy and Renewable Energies Tech. Center, University of Technology, Baghdad, Iraq

³Faculty of Engineering, Sohar University, Oman

⁴Dept. of Mechanical Eng., Universiti Teknologi PETRONAS, Malaysia



24- Graphene and carbon nanotube hybrid structure (GNHS) is one of the promising graphene derivate: Geoexchanger System for Buildings Heating and Cooling

Abdeen Omer
Energy Research Institute (ERI)
Nottingham, United Kingdom

25- Identification, prioritization, and co-development of stakeholders for the transition towards Solar Energy Storage (SES) in Australia

Nikhil Jayaraj
School of Marketing and Management
Faculty of Business and Law
Curtin University
Perth, Western Australia.

26- RESEARCH OF MECHANICAL PROPERTIES FOR BIO COMPOSITES WITH DAMMAR MATRIX

Maria Alexandra IVAN^{1*}, Alexandru BOLCU², Ion CIUCĂ¹, Dumitru BOLCU²,
Marius Marinel STĂNESCU²
Bucharest, Romania

27- Nigeria's energy future: Why investors should look to hydrogen

I. H. Zarma^{1*}, E. J. Bala², A. S. Sambo³, G. O. Unachukwu⁴

^{1,2}.. Energy Commission of Nigeria, Abuja, ³Usmanu Danfodiyo University Sokoto and University of Nigeria Nsukka, Nigeria, Nigeria



28- Photovoltaic Application in Buildings will be a reality globally by 2030.

Prof Ali Sayigh
Chairman of World Renewable Energy Congress
And Director General of WREN, Brighton, UK



29- Net-Zero Buildings in the Broader Context: Exploring New Boundaries and Opportunities

Derya Oktay¹, James Garrison²
¹Faculty of Architecture and Design, Maltepe University
Istanbul, TURKEY
²School of Architecture, Pratt Institute, Brooklyn, New York, USA



30- Resorption cycles for heat pumps and heat transformers

Prof R.E.Critoph, Dr. G.H. Atkinson, Dr. S.J.Metcalf, School of Engineering,
University of Warwick, UK.



31- Roadmap to Carbon Neutrality: Harnessing RDF from Municipal Solid for Renewable Energy Transition in Nigeria

Muazu Sani^a, Mirzaii Hossein^a, Andy Augousti T.^b, Benhadj-Djilali Redha^b,
a, * Renewable Energy Engineering, Kingston University, London, UK
b School of Engineering and the Environment, Kingston University, London, UK

32- From Tradition to Transformation : Green Roofs in the Era of Climate Resilience

Maryam Singery,
School of Architecture and Planning, University of Texas at San Antonio,
San Antonio, Texas, USA, and
Erik Murray,
AIA, WJE, San Antonio, Texas, USA



33- Micro-Scale Sustainability: Investigating Envelope Roofing Strategies; Case Studies in Texas

Erik Murray, AIA, WJE, San Antonio, Texas, USA
Maryam Singery, School of Architecture and Planning, University of
Texas at San Antonio, San Antonio, Texas, USA



34- PRODUCTION OF GREEN HYDROGEN IN MOROCCO FROM SOLAR AND WIND ENERGY: REALITY AND FEASIBILITY

Hassan NFAOUI¹ and, Ali SAYIGH²

1. Solar Energy & Environment lab., Sciences Faculty, Mohammed V University, Morocco,
2. Chairman of WREC & Director General-WREN, Brighton, UK.



35- Biomimetic methods used for BIPV-PCM/EG system thermal regulation enhancement

Ming Jun Huang^{*1}, Gerard Obasi¹, Neil J. Hewitt¹
¹ Belfast School of Architecture and the Built Environment, Ulster University, UK



36- Environmental Determinants of Health: Environmental Threats & Climate Change Adverse Impacts on Health.

Dr Jazla Fadda.
Dubai, UAE



37- EXPLORING THE USE OF BIOBASED FATTY AMIDE AS A TETRAALKYLAMMONIUM SALT PRECURSOR FOR PEROVSKITE SOLAR CELLS: SYNTHESIS CYTOTOXICITY INVESTIGATIONS

N. M. Mustafa¹, F.N. Jumaah², N.A. Ludin¹, M. Akhtaruzzaman¹, N.H. Hassan^{3,4},
A. Ahmad^{3,4}, K.M. Chan⁵, M.S. Su'ait^{1*}

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⁴Battery Technology Research Group (UKMBATT), Universiti Kebangsaan Malaysia

⁵Product Stewardship and Toxicology, (PETRONAS), Kuala Lumpur, Malaysia



AND

38- A- Passive Redirection of Solar Radiation by Micro Optics to Increase the Bifacial Gain of Photovoltaics

Helmut F.O. Müller, Prof. Dr.-Ing.
Green Building R&D GmbH, Düsseldorf, Germany



B- Application of Micro-Structured Sunlighting Systems in Different Buildings

Helmut F.O. Müller, Prof. Dr.-Ing.
Green Building R&D GmbH, Düsseldorf, Germany.
And Jan de Boer, Dr.-Ing.
Fraunhofer-Institut für Bauphysik, Stuttgart, Germany
And Jörg U. Lensing, Prof.
University of Applied Sciences and Arts, Dortmund, Germany

39- Circular Economy Geopolymer Concrete for Renewable Energy

Martin Anda¹, Maheswaran Arumugam, Garry Baverstock, Greg Blasiak,
Stewart Dallas,

Om Dubey, David Goodfield, Goen Ho, Biji Kurup, Kuruvilla Mathew,
Amitha Varghese, Aridaman Walia

School of Engineering and Energy,
College of Science, Technology, Engineering and Mathematics
Murdoch University, WA 6150, Australia



40- Thermal Resilience and Adaptation in Urban Environments

Runming Yao ^{a, b, c} and Baizhan Li ^{a, b}

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Environments (Ministry of Education), Chongqing University, Chongqing, China

^c National Centre for International Research of Low-carbon and Green Buildings
(Ministry of Science and Technology), Chongqing University, Chongqing, China



41- Enhancing Indoor Air Quality for Residential Building in Hot Arid Regions

Prof. Dr Ghanim Kadhem Abdul Sada*, Dr Tawfeeq Wasmi M. Salih
*Biomedical I Engineering Dept. / University of wraith Alanbiyaa Karbala Iraq
**Materials Engineering Dept. / Al Mustansiriyah University, Baghdad Iraq



42- Adsorption technology for cooling applications: A review of evaporator behaviour and performance challenges

Mr Ibrahim J.M. Mwasubila
College of Engineering and Tech., University of Dar es Salaam, Tanzania



42A- African University collaboration on renewable energy technology for distributed energy systems

Mr Ibrahim J.M. Mwasubila

43- Preparation, Characterization, and Performance Optimization of $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) Absorber Layer Deposited by Sol-Gel Spin Coating Technique.

S. Abdullahi, M. Momoh and A. U. Moreh

Department of Physics Usmanu Danfodiyo University Sokoto, Nigeria

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44- The role of Grid-Connected RES and BSS Systems using PLL Techniques in Environmental Sustainability

Mohammad A. Bany Issa, Zaid A. Al Muala, Pastora M. Bello Bugallo*

TECH-NASE Research Group, Department of Chemical Engineering

Universidade de Santiago de Compostela, Campus Vida, 15782 Santiago de Compostela, Spain

45- Modelling the Impact of Uncoordinated Plug-In Electric Vehicles' Charging Patterns on the Low Voltage Distribution Network

Tebogo Mongale

Kanzumba Kusakana

Patric Manditereza

Dept. of Electrical, Electronic and Computer Engi., Central University of Technology, Bloemfontein, South Africa



46- The influence of gender on academic leadership for women in the built environment in Nigeria, the United Kingdom and Egypt

Amina Batagarawa^{1*}; Komali Yenneti²; Mohamed Farid Almetwaly Alsaid Ahmed³; Rukayyatu Bashiru Tukur¹; Louis Gyoh²; Megan Lawton²; Rasha Hamed Sayed Hassan Bondok³

¹Centre for Clean Energy and Climate Change (CLEANE), Baze University, Nigeria

²Wolverhampton University, UK

³Ain Shams University, Egypt



47- Double Quantum Dots: Nucleation Features, Characterization and Application for New Generation Up- and Down Conversion of Radiation

Prof. Dr. Karen M. Gambaryan

Head of the Department of Physics of Semiconductors, and Microelectronics, Yerevan State University, 1 Alex Manoogian, Yerevan 0025, ARMENIA



48- Experimental investigations on dual tank energy storage system: A solar photovoltaic indoor clean cooking solution for Sub-Saharan Africa

Jimmy Chaciga^a, Denis Okello^a, Karidewa Nyeinga^a, Ole Jorgen Nydal^b

^a Department of Physics, College of Natural Sciences, Makerere University, P.O. Box 7062, Kampala, Uganda.

^b Department of Energy and Process Engineering, Norwegian University of Science and Technology, P.O. Box 7491, Trondheim, Norway.



49- Feasibility of anaerobic digestion as an option for biodegradable and sewage sludge waste management in the Kingdom of Bahrain

Dr Sumaya Yusuf Hasan

Chairperson, Dept. of Natural Resources & Environment, Arabian Gulf University, Kingdom of Bahrain



50- Positive Energy Districts

Prof. DSc Dr Dorota Chwieduk
Institute of Heat Engineering, Faculty of Power and Aeronautical Engineering
Warsaw University of Technology, Warsaw, Poland



51- Opportunities of Using Renewable Energy Resources in Water Desalination

Tarik R. AlKhateeb^{a†} and Ali Al Karaghoul^b
^aMedical Instrumentation Techniques Engineering Department, College of Engineering and Engineering Techniques, Al-Mustaqbal University, 51001, Babylon, Iraq
^bAmerican - Iraqi Coordinating Office (AICO)
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52- BIOGAS GENERATION POTENTIAL AND ITS ANALYSIS FROM COW DUNG CO DIGESTED WITH COMMONLY FOOD AND VEGETABLE WASTE FOUND IN DAMATURU, NORTH - EAST NIGERIA

ENGR. MUSA AHMED JATTO
Senior Lecturer, Department of Renewable Energy Engineering Technology,
Federal Polytechnic Damaturu, Yobe State Nigeria



53- An Innovative Approach of Energy Conservation by Micro Power Generation using wastewater

Prof Dr Nisam Rahman A
Chairman, Innovation & Research Society, KERALA.INDIA

54- FEASIBILITY STUDIES ON WIND ENERGY POTENTIAL OF DAMATURU, YOBE STATE NIGERIA USING WEIBULL AND RALIAGH STATISTICAL DISTRIBUTION MODEL

¹AMEH S.E, ²MUSA A.J, ¹SHUAIBU A.Y and ¹JANGA A. A
¹Department of Mechanical Engineering Technology, Federal Polytechnic Damaturu, Yobe State Nigeria
² Department of Renewable Energy Engineering Technology, Federal Polytechnic Damaturu, Yobe State Nigeria

55- Waste-to –Energy in Nigeria: Present Situation, Obstacles, and Future Prospect

Hauwa Lawan Badawi,
Department of Geography, Borno State University, North-East, Nigeria,

56- Theoretical calculations and simulation of main parameters of Cu (In_xGa_{1-x}) (Se)₂ thin-film photovoltaic solar cell

- Prof. Dr. Wagah F. Mohammad: Faculty of Engineering, National University of Science and Technology, Nasiriya, Iraq.
- Eng. Ramy T. Abuhashhash: GHERAS Trading & Investment, Amman, Jordan
- Prof. Dr. Salwan K.J. Al - Ani, FlnstP Radiation Expert, P.O. Box: (25777), Doha – Qatar.



57- Simplifying Building Thermal Modelling: A Novel Approach Using Online Local Weather Forecast Data.

Abdullah Zaheer¹, Dr Zhengyu Lin², Dr James Fleming³

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3-Senior Lecturer in Intelligent Control Systems, School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University, Loughborough, UK



58- Experimental evaluation of a small storage cooking pot using a 12 V battery-powered solar DC cooking stove.

Ashmore Mawire

North-West University, Material Science, Innovation and Modelling (MaSIM) Research Focus Area, Department of Physics, Mmabatho 2745, Mahikeng, South Africa



59- The use of waste heat in various thermodynamic cycles

Dr A. Kaabi nejadian

President

Iranian Society of Heating, Refrigeration, and Air Conditioning Engineers, Iran Energy Authority, Tehran, Iran



60- Renewable Energy for Low Carbon Economic Growth

Mr Pradeep Chaturvedi

Chairman

Indian Association for the Advancement of Science
Delhi, India



61- Experimental Study of Enhancement the Piezoelectric Energy Harvesting from Raindrop Impact by Employing Bioinspired Membrane

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