



WREC Lisbon 26th – 30th July 2021

Monday 26th

09:00 – 10:30	Opening Ceremony	<i>Chair: Prof. Ali Sayigh, UK</i>
09:00 - 09:15	Chairman Welcome: Prof. Ali Sayigh <i>Chairman of WREC & DG of WREN – Brighton, UK</i>	
09:15 - 09:20	WREC Lisbon Chairman Welcome: Prof. Manuel Correia Guedes <i>Instituto Superior Tecnico – Lisbon, Portugal</i>	
09:20 - 09:25	<i>Deputy Chairman of WREN: Lawrence L. Kazmerski, Renewable and Sustainable Energy Institute (RASEI), University of Colorado, USA</i>	
09:25 - 09:35	IST Welcome: Prof. Rogério Colaço, President of IST <i>Instituto Superior Técnico – University of Lisbon, Portugal</i>	
09:35 - 10:00	World Renewable Energy Honorary Chairman: His Excellency the Minister of Environment <i>Dr. João Pedro Matos Fernandes</i>	
10:00 - 10:30	Climate Change and Renewable Energy – 2021 <i>Prof. Ali Sayigh Chairman of WREC & DG of WREN, Brighton, UK</i>	
10:30 – 11:00	- Coffee Break -	
11:00 – 12:30	Plenary 1, Main Theatre	<i>Chair: Rainer Hinrichs-Rahlwes, Germany</i>
11:00 – 11:20	EDP - the Leadership of Energy Transition <i>Eng. Miguel Stilwell d'Andrade – CEO da EDP e da EDP Renováveis</i>	
11:20 – 12:00	Innovation in Solar Technology: Toward a 100% Renewable Electricity Future <i>Lawrence L. Kazmerski, Renewable and Sustainable Energy Institute (RASEI), University of Colorado, Boulder, USA</i>	
12:00 – 12:20	Zero emission economy by 100% Renewables for the world is necessary, possible and economic <i>Rt. Hr. Hans Josef Fell, President Energy Watch Group, Berlin, Germany</i>	
12:20 – 12:40	Energy Knowledge Base and Global Sustainability: Linking the Agenda's <i>Osman Benchikh, ex - Head of Energy Programme – UNESCO, Paris, France</i>	
12:40 – 14:00	- Lunch Break -	

14:00 – 15:30	Plenary 2, Main Theatre	<i>Chair: Prof. Ali Sayigh - UK</i>
14:00 – 14:30	Advances in Linear Concentration- towards low cost, dispatchable and competitive STE <i>Prof. Manuel Collares Pereira, University of Évora, Portugal</i>	
14:30 – 15:00	Hydrogen: from a breakthrough innovation towards a wide adoption <i>Dr. Paulo Partidário, Senior Researcher, IEA Hydrogen Technology Collaboration Programme National Delegate; DGEG Directorate-General of Energy and Geology - Research & Renewables Division, Portugal</i>	
15:00 – 15:30	Portugal´s track record in Marine Renewable Energy <i>Prof. António Sarmiento, IST – Lisbon, Portugal</i>	
15:30 – 16:00	- Coffee Break -	
16:00 – 18:00	Plenary 3, Main Theatre	<i>Chair: Prof. Manuel Correia Guedes, IST</i>
16:00 – 16:30	The Solar XXI building <i>Dr. Helder Gonçalves, LNEG - National Laboratory for Energy and Geology, Lisbon, Portugal</i>	
16:30 – 17:00	Research on Renewable Energies in Portugal <i>Prof. Paulo Ferrão, IST, Lisbon, Portugal</i>	
17:00 – 17:30	Financing Renewable Energy in Emerging Markets <i>Isabel da Costa Mendes, Delphos International, Lisbon, Portugal</i>	
17:30 – 18:00	The Opportunities and Challenges for 100% Renewable Energy <i>Dr. David S. Renné, Dave Renné Renewables, Boulder, Colorado USA</i>	

09:00 – 10:30	Plenary 1, Main Theatre	Chair: Prof. Ali Sayigh, UK
09:00 - 09:30	Effects of atmospheric discharges on energy projects: wind farms <i>Gisela Mello*, Marta Ferreira Dias, Margarita Robaina (GOVCOPP), Department of Economics, Management, Industrial Engineering and Tourism (DEGEIT), University of Aveiro, Portugal</i>	
09:30 - 10:00	Application of Renewable Energies in a University Building with Complex Topology <i>Eusébio Z. E. Conceição FCT-Universidade do Algarve, Campus de Gambelas, Faro, Portugal</i>	
10:00 - 10:30	The European Green Deal – Unlocking the EU’s Potentials of Renewable Energy? <i>Rainer Hinrichs – Rahlwes European Renewable Energy Federation (EREF), Belgium, German Renewable Energy Federation (BEE), Germany</i>	
10:30 - 11:00	- Coffee Break -	
11:00 – 12:40	Plenary 2, Main Theatre	Chair: Rainer Hinrichs-Rahlwes, Germany
11:00 – 11:20	Modelling of a solar thermal energy system for energy efficiency improvement in a ceramic plant <i>Miguel Castro Oliveira*, Muriel Iten, Ulisses Fernandes Low Carbon & Resource Efficiency, Instituto de Soldadura e Qualidade, Portugal</i>	
11:20 – 11:40	Urban renewable energy feasibility challenges: a new integration frontier <i>Pinheiro, Manuel Duarte; Correia Guedes, Manuel; Mello, Martim Instituto Superior Técnico, Universidade de Lisboa; Lisboa, Portugal.</i>	
11:40 – 12:00	An experimental infrastructure for testing solar components and facades for Net Zero Energy Buildings in Portugal <i>Helder Gonçalves, Laura Aelenei LNEG - Department of Renewable Energy and Energy Efficiency, Lisbon, Portugal</i>	
12:00 – 12:20	Ground Source Heat Pumps (GSHP) in heating and climatization of the Military Academy (Portugal): Amadora Quatering case study <i>Diogo Gonçalves 1, Rui Costa Neto 2, José Marques *3, Paula Figueiredo 4, Paula Carreira 4, Maria Orquídia Neves 3 1 Instituto Superior Técnico, Portugal; 2 IN+ Center for Innovation, IST; 3 Department of Civil Eng., Arch. IST; 4 Academia Militar, Portugal; 5 Centro de Ciências e Tecnol. Nucleares, Inst. Superior Técnico, Portugal</i>	
12:20 – 12:40	JEE- design a high-performance eco-efficient window <i>Miguel Veríssimo*1, Manuela Almeida2, Luís Bragança2 1 Architect at Solar Trap _ architecture, PORTUGAL 2 Professor at the Department of Civil Engineering, Univ. of Minho, Portugal</i>	
12:40 – 14:00	- Lunch Break -	

09:00 – 10:30	Plenary A, Virtual Theatre 1	Chair: Tony Book – UK
09:00 – 09:15	<p>The Energy Performance of Hospital Buildings in the South Balkan Region. The prospects for Zero Energy Hospitals</p> <p><i>Dimoudi A. *1, Kantzioura A.1, Toumpoulides P. 1, Zoras St. 1, Serghides D.2, Dimitriou St. 2, Thravalou St2, Metaj M.3, Mara E.3, Dorri A.4</i> <i>1Lab of Environmental and Energy Design of Buildings and Settlements, Dept. of Environmental Eng., Democritus Univ. of Thrace, Xanthi, Greece</i> <i>2 Energy, Enviro. & Water Res. Center (EEWRC), the Cyprus Inst, Cyprus; 3 ALBAFOREST, Albania; 4 Polytechnic University of Tirana, Albania</i></p>	
09:15 – 09:30	<p>Optimising Building Energy Consumption Using Energy Monitoring and Management: Case Study in University of Reading, UK</p> <p><i>Shan Zhou 1,2, *, Baizhan Li 1,2, Hong Liu 1,2, Yuxin Wu 1,2, Runming Yao 1,2,3</i> <i>1Joint International Research Laboratory of Green Buildings and Built Environments (Ministry of Education), Chongqing University, China; 2 National Centre for International Research of Low-carbon and Green Buildings (Ministry of Science and Technology), Chongqing University, China; 3 School of the Built Environment, University of Reading, UK</i></p>	
09:30 – 09:45	<p>Contribution to the improvement of oscillating water column efficiency using L- shape front wall</p> <p><i>Mahmoud M. Samak*¹, Hassan Elgamal¹, Ahmed M.Nagib Elmekawy¹</i> <i>¹Dept. of Mech. Eng., Faculty of Engineering, Alexandria University, Egypt</i></p>	
09:45 – 10:00	<p>Development of a Hydrogen Production from Solar Thermal Energy Application Model for The GCC Region</p> <p><i>Abdulrahman Joubi*¹, Yutaro Akimoto¹, Keiichi Okajima¹</i> <i>¹Gradu. Sch. of Science and Techno., Univ. of Tsukuba, Tsukuba, JAPAN</i></p>	
10:00 – 10:15	<p>Promoting Energy-Efficient Neighborhoods: Learning from BedZED</p> <p><i>Derya Oktay, Faculty of Architecture and Design, Maltepe University, Istanbul, Turkey.</i></p>	
10:15 – 10:30	<p>Air pollution by fuel and energy complex and prospects for wind power production development in Belarus</p> <p><i>Alexandra Kurachkina</i> <i>Lomonosov Moscow State University, Faculty of Geography, Dept. of World Physical Geography and Geoecology, Russian Federation</i></p>	
11:00 – 12:30	Plenary B, Virtual Theatre 1	Chair: Dr. Salam Darwish – UK
11:00 - 11:20	<p>Performance Analysis of Offshore Monopile Wind Turbine Co-located with Floating Photovoltaic Systems in Peniche, Portugal</p> <p><i>Morteza Bahadori *1, Mohammad Sadegh Bahadori 2</i> <i>1 Department of Maritime Eng., AmirKabir Univ. of Technology, Iran.</i> <i>2 Dept. of Civil Engineering, Instituto Superior Técnico, Portugal</i></p>	
11:20 - 11:40	<p>Walking with the climate: Technologies and methodology on intermediate urban open space design</p> <p><i>Alessandra Battisti, Dipartimento PDTA La Sapienza, Rome, Italy</i></p>	

11:40 - 12:00	<p>Innovative urban farming techniques for sustainability of cities: from Farm to Fork – Case of the city Lanuvio, Rome, Italy</p> <p><i>M. Shehata^{1*}, A. D'Aprile^{2*}, G. Calore³, L. Ginot⁴, M. Correrella⁵, M. Elia⁶, N. Aly⁷, O. Sangodoyin⁸, S. Aboughanema⁹, S. Ali¹⁰, Mohsen Abounaga¹¹</i> ^{1*, 6, 7, 10, 11} Faculty of Engineering, Cairo University, Egypt; ^{2*}, ^{3, 4, 5} Univ. of Bologna, Italy; ⁸ Ladoke Akintola Univ. of Tech., Nigeria; ⁹ Cairo University, Department of Architecture, Egypt</p>
12:00 - 12:20	<p>Buildings' Thermal Insulation Materials' Market and Drivers: Global Outlook and Assessment in the Context of SDGs</p> <p><i>Sarah A. GadAllah^{1*}, Mohsen M. Abounaga²</i> ¹R. Student, Dept. of Architecture, Faculty of Eng., Cairo University, Egypt, ²Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt</p>
12:20 – 12:40	<p>Evaluation of dust elements on photovoltaic module performance: an experimental study</p> <p><i>H. A. Kazem^{1,2}, M. T. Chaichan³, Ali H. A. Al-Wael², K. Sopian², Abdul Salam Darwish⁴</i> ¹Sohar University, Oman; ²Solar Energy Research Institute, Universiti Kebangsaan Malaysia, Malaysia, ³Research Center, University of Technology, Iraq, ⁴University of Bolton, Bolton – UK</p>
11:00 – 12:30	<p>Plenary C, Virtual Theatre 2 <i>Chair: Prof. Mohsen Abounaga – Egypt</i></p>
11:00 – 11:20	<p>Evaluation of Omani experience in using grid connected photovoltaic stations</p> <p><i>Hussein A Kazem^{*1,2}, Miqdam T Chaichan³, Ali H. A. Al-Wael², K Sopian²</i> ¹Sohar University, Sohar, Oman; ²Solar Energy Research Inst., Univ. Kebangsaan Malaysia, ³E. & R Energy Technology Research Center, Univ. of Technology, Iraq</p>
11:20 – 11:40	<p>Analysis of a novel thermochemical De-NO_x cycle with composite multi-halide sorbent</p> <p><i>C. Zhang, G.L. An, L.W. Wang[*],</i> <i>Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, China</i></p>
11:40 – 12:00	<p>Energy analysis of a Hybrid Wind-Wave Solution for Remote Islands</p> <p><i>Spyridon Trikalitis¹, George Lavidas², John K. Kaldellis^{*1}</i> ¹Lab of Soft Energy App. & Env. Protection, Univ. of West Attica, Greece ²Dept. of Civil Eng. And Geosc., Delft Univ. of Tech., The Netherlands</p>
12:00 – 12:40	<p>Waste2Bioenergy: Simulation and Economic Assessment of a Gasification-Based Bioenergy System Fueled with Rice Husks</p> <p><i>D. Almpantis and A. Zabaniotou[*]</i> <i>Biomass G., Dept. of Chemical Eng., Aristotle Univ., Thessaloniki, Greece</i></p>
14:00 – 16:00	<p>Plenary 3, Main Theatre <i>Chair: Dr. Arthur Williams, Germany</i></p>
14:00 – 14:15	<p>Modelling of a solar thermal energy system for energy efficiency improvement in a ceramic plant</p> <p><i>Miguel Castro Oliveira[*], Muriel Iten, Ulisses Fernandes</i> <i>Low Carbon & Resource Efficiency, Instituto de Soldadura e Qualidade, Portugal</i></p>
14:15 – 14:30	<p>Urban renewable energy feasibility challenges: a new integration frontier</p> <p><i>Pinheiro, Manuel Duarte; Correia Guedes, Manuel; Mello, Martim</i> <i>Instituto Superior Técnico, Universidade de Lisboa; Lisboa, Portugal.</i></p>

14:30 – 14:45	<p>An experimental infrastructure for testing solar components and facades for Net Zero Energy Buildings in Portugal</p> <p><i>Helder Gonçalves, Laura Aelenei</i> LNEG - Department of Renewable Energy and Energy Efficiency, Lisbon, Portugal</p>
14:45 – 15:00	<p>Ground Source Heat Pumps (GSHP) in heating and climatization of the Military Academy (Portugal): Amadora Quartering case study</p> <p><i>Diogo Gonçalves 1, Rui Costa Neto 2, José Marques *3, Paula Figueiredo 4, Paula Carreira 4, Maria Orquídia Neves 3</i> 1 Instituto Superior Técnico, Portugal; 2 IN+ Center for Innovation, IST; 3 Department of Civil Eng., Arch. IST; 4 Academia Militar, Portugal; 5 Centro de Ciências e Tecno. Nucleares, Inst. Superior Técnico, Portugal</p>
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15:15 - 15:30	<p>Sustainability, environment and architecture in Montenegro: An overview</p> <p><i>Katarina Ukropina, Dept. of Civil Eng. and Arch., H. Technical Institute (IST), Lisbon, Portugal</i></p>
15:30 – 16:00	<p>JANUS: A comprehensive national modelling tool to support energy-emissions planning in Portugal</p> <p><i>Ricardo Aguiar, R.P. Borges, Paulo Martins, Ana Andrade, Isabel Cabrita</i> Res. & Renewable, Directorate-General for Energy and Geology, Portugal</p>
16:00 – 16:30	- Coffee Break -
14:00 – 15:30	<p>Plenary D, Virtual Theatre 1 <i>Chair: Dr Amina Batagarawa - Nigeria</i></p>
14:00 – 14:15	<p>Energy and Gender Dialogue for a better world</p> <p><i>Rabia Ferroukhi, Director of the Knowledge, Policy and Finance Center (KPFC), International Renewable Energy Agency (IRENA), Abu Dhabi.</i></p>
14:15 – 14:30	<p>What lessons we can take from the COVID-19 experience on women academics and researchers in the Mediterranean Engineering Education through the lens of TARGET project</p> <p><i>Anastasia Zabaniotou, Chemical Eng. Dept., Aristotle University, Thessaloniki, Greece</i></p>
14:30 – 15:30	- Workshop Energy and Gender -
14:00 – 15:30	<p>Plenary E, Virtual Theatre 2 <i>Chair: Prof Mohsen Aboulnaga – Egypt</i></p>
14:00 – 14:15	<p>Data-driven modeling of thermal solid sorption storage systems</p> <p><i>Harald Kirchsteiger* and Nayrana Daborer-Prado</i> Univ. of Applied Sciences Upper Austria, ASIC, Wels, Austria</p>
14:15 – 14:30	<p>On-Site Focus Alignment of a Fresnel Mirror Field</p> <p><i>Alois Resch *, Thomas Aigenbauer</i> University of Applied Sciences Upper Austria, ASIC, Austria</p>

14:30 – 14:45	<p>Development and application of a thermal comfort model in buildings</p> <p><i>Andrés Vilaboa Díaz ^{*1}, Pastora M. Bello Bugallo ²</i> <i>Dept. of Chemical Eng., Univ. de Santiago de Compostela, Spain.</i></p>
14:45 – 15:00	<p>Public lands, traditional communities and wind corridors</p> <p><i>Carolina Silva Ribeiro, Gilca Garcia de Oliveira</i> <i>Federal University of Bahia, Brazil</i></p>
15:00 – 15:15	<p>Effect of natural and forced ventilation on drying of kiwi in an indirect solar dryer</p> <p><i>Hajar Essalhi*, Mohammed Benchrifa, Rachid Tadili</i> <i>Lab. of Solar Energy and Environment, Mohammed V University, Rabat, Morocco</i></p>
15:15 – 15:30	<p>Evaluation of renewable energy system for sustainable development</p> <p><i>Shoeib Faraji Abdolmaleki*¹, Pastora M. Bello Bugallo²</i> ^{1,2}<i>Dept. of Chem. Eng., Universidad de Santiago de Compostela, Spain</i></p>
16:00 – 18:00	<p>Plenary F, Virtual Theatre 1 <i>Chair: Dr. Salam Darwish – UK</i></p>
16:00 – 16:15	<p>Energy Performance of Healthcare Facilities in three Climatic Zones in Cyprus</p> <p><i>D. Serghides, S. Dimitriou, I. Kyprianou, S. Thravalou</i> <i>Energy, Environment and Water Research Centre (EEWRC), The Cyprus Institute, Cyprus</i></p>
16:15 – 16:30	<p>Development of Innovative Technologies for Solar Assistant Heat Pump for Residential Heat Supply</p> <p><i>Ming Jun Huang*¹, Sarah McCormack², Jian Yao³, Yanjun Dai³, Neil J. Hewitt¹</i> ¹ <i>Belfast School of Architecture and the Built Env., Ulster University, UK;</i> ² <i>Trinity College Dublin, Ireland</i> ³ <i>Institute of Refrigeration. & Cryogenics, Shanghai Jiao Tong Univ., China</i></p>
16:30 – 16:45	<p>Preliminary results on experimental modelling of an Adsorption Chiller</p> <p><i>Nayrana Daborer-Prado ^{*1}, Alois Resch ¹</i> <i>University of Applied Sciences Upper Austria, Energy Research Group ASIC, Austria</i></p>
16:45 – 17:00	<p>Advancements in High Performance Hybrid Photovoltaic/ Thermal Solar Collector Technology</p> <p><i>Kamaruzzaman Sopian^{1*}, Ali H. A. Al-Waeli¹, Hussein A. Kazem</i> ¹ <i>Solar Energy Research Institute, Universiti Kebangsaan, Malaysia,²Sohar University, Oman</i></p>
17:00 – 17:15	<p>Developing Sustainable Cities for Climate Change Mitigation</p> <p><i>Despina Serghides¹, Stella Dimitriou¹, Ioanna Kyprianou¹, Elias Giannakis¹ George Zittis²</i> ¹<i>Energy, Env. & Water Res. Center (EEWRC), the Cyprus Institute, Cyprus</i> ²<i>Climate and Atmosphere Research Center, the Cyprus Institute, Cyprus</i></p>

16:00 – 18:00	Plenary G, Virtual Theater 2	Chair: Prof. Marta Szabo - Hungary
16:00 – 16:15	Energy and exergy performance comparison of three different solar cookers using different loads	<i>Ashmore Mawire, Sibongiseni Simelane, Patrick O. Abedigamba Dept. of Physics and Electronics, North-West Univ. Mmabatho, South Africa</i>
16:15 – 16:30	Wake Models' Evaluation for Different Downstream Locations	<i>Panagiotis Triantafyllou, John K. Kaldellis* Laboratory of Soft Energy Applications & Environmental Protection, Department of Mechanical Engineering, University of West Attica</i>
16:30 – 16:45	Sustainable-Business Waste Management: The case the Emirate of Ajman – UAE	<i>Khaled M. AlHosani & Dr Pouria Liravi University of Derby, Derby, UK</i>
16:45 – 17:00	Temperature studies of the effect of glazed facades and vegetation on urban heat islands in Brasilia	<i>Gustavo Cantuaria, University Centre of Brasilia (UniCEUB), Brazil</i>
17:00 – 17:15	Compound Parabolic Concentrator Design: Assessment of Performance Enhancement for Building-Integrated Photovoltaic Systems	<i>Sander Saers, Dr Anita Ortega*, Subhash Chandra, Sarah J. McCormack Solar Energy Applications Group, Dept. of Civil, Structural & Enviro. Eng., School of Engineering, Trinity College Dublin, Ireland</i>
17:15 – 17:30	Implementation and Optimization of a Luminescent Down-Shifting Photovoltaic System for use in a Compound Parabolic Concentrator	<i>Aaron Glenn*, Subhash Chandra, Bill Cass, & Sarah J. McCormack SEA G., School of Eng., Trinity College Dublin, Ireland</i>
17:30 – 17:45	Housing Energy Equivalence: A Graphical Approach	<i>Anna Pages-Ramon*, Judit Lopez-Besora, Carlos Alonso-Montolio School of Architecture, Universitat Politecnica de Catalunya, Spain</i>
17:45 – 18:00	Barriers for Wind Farm Expansion in the Brazilian Territory	<i>Mário Joel Ramos Júnior*1, Paulo Soares Figueiredo2, Xisto Lucas Travassos Júnior 3 1 Dept. of Ind. Manag. and Tech., Senai Cimatec University Center, Brazil 3 Department of Mecatronics, Federal University of Santa Catarina, Brazil</i>

09:00 – 12:30	Plenary 1, Main Theatre	Chair: Prof. Ali Sayigh – UK
09:00 - 09:30	Mediterranean University as Catalyst for Eco-Sustainable Renovation: the experience of Med EcoSure Cross Border Living Lab <i>Antonella Trombadore*¹, Gisella Calcagno²</i> <i>^{1,2} Department of Architecture (DIDA), University of Florence, Italy</i>	
09:30 - 10:00	Arundo Donax L. as sustainable building material <i>Nadia Amarone¹, G. Iovane¹, D. Marranzini¹, R. Sessa¹, M. Correia Guedes*², Beatrice Faggiano¹</i> <i>¹Dept. of Structure for Eng. and Arch., Univ. of Naples Federico II, Italy</i> <i>²Department of Civil Engineering, Instituto Superior Técnico, Portugal</i>	
10:00 - 10:30	About the role of geothermics in the energy transition <i>Ana Zugazabeitia¹, Ayaz Abachi¹, Bruno Almeida¹, Daniel Conrads¹, Daniela Almeida¹, Diansambo Masembo¹, Diogo Miranda¹, Hamanene Kuvingua¹, Joana Armés¹, João Senra¹, Maria Pires¹, Miguel Grego¹, Sérgio Ten Jua¹, Vasco Águia¹, José Marques*²</i> <i>¹ CU “Hydromineral and Geothermal Resources”, Instituto Superior Técnico, Portugal</i> <i>² Department of Civil Engineering, Architecture and Georesources, IST /CERENA, Portugal</i>	
10:30 - 11:00	- Coffee Break -	
11:00 – 12:30	Plenary 2, Main Theatre	Chair: Rainer Hinrichs-Rahlwes, Germany
11:00 - 11:20	Living inspired by nature: two scenarios of green buildings in Sri Lanka <i>Antonella Trombadore*¹, Marco Paolini¹, Matteo Torracchi¹</i> <i>Department of Architecture DIDA, University of Florence, Italy</i>	
11:20 - 11:40	Building Integrated Solar Energy Systems (BI-SES) for façades – a literature review <i>Karol Bot¹, Laura Aelenei¹, Maria da Glória Gomes², Carlos Santos Silva³</i> <i>¹ Laboratório Nacional de Energia e Geologia (LNEG), Lisbon, Portugal</i> <i>² CERIS, Dept. of Civil Eng., Architecture, IST, Lisbon, Portugal;</i> <i>³ IN+, Center for Innovation, Tech. and Policy Res., Dept. of Mech. Eng., IST, Lisbon, Portugal</i>	
11:40 - 12:00	Analyses of the concept of sustainability in the Cape Verdean architecture from Jean Denis’s House, in Santo Antão, Cape Verde <i>Felisberto Cortês*: Dept. of Civil Eng. and Arch., IST, Portugal</i>	
12:00 - 12:20	Using raw earth construction systems on contemporary buildings: Reflections on Sustainability and thermal efficiency <i>Bruno Marques¹, Humberto Varum¹: LESE-CONSTRUCT – FEUP;</i> <i>Helena Corvacho: LFC-CONSTRUCT – FEUP; and</i> <i>Manuel Correia Guedes: IST, Lisbon, Portugal</i>	
12:20 - 12:40	Promoting Energy-Efficient Neighborhoods: Learning from BedZED <i>Derya Oktay, Faculty of Architecture and Design, Maltepe University, Istanbul, Turkey.</i>	
12:40 – 14:00	- Lunch Break -	

09:00 – 10:30	Plenary A, Virtual Theatre 1	Chair: Prof. Marta Szabo, Hungary
09:00 – 09:30	<p>Enhancing higher education buildings performance through energy audit and retrofitting: Climate action to mitigate CO₂ emissions and attain SDGs</p> <p>Mohsen Aboulnaga^{1*}, Abdulrahman Amer² and Radwa Ahmed³ ¹, Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt, ², ³ Res. – Environ. Design and Energy Efficiency Program, Dept. of Arch., Cairo Univ., Egypt</p>	
09:30 – 10:00	<p>The Role of Circular Economy in Mitigating Climate Change Impacts: Thermal Insulation Materials' Assessment in Developing Countries</p> <p>Sarah A. GadAllah and Mohsen M. Aboulnaga Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt</p>	
10:00 – 10:30	<p>Urban farming as an innovative tool for generative and sustainable cities – the case of Galliera city in Bologna, Italy</p> <p>Y. Ragab^{1*}, E. Durante^{2*}, B. Di Giovanni³, Luca Gialli⁴, P. Marisca⁵, L. Gabrielli⁶, M. Lapomarda⁷, M. Shahwan⁸, S. Elhaggan⁹, Mohsen Aboulnaga¹⁰ ^{1*}, ^{8, 9} R. student, Arch. and Tech. Eng. P., Faculty of Eng., Cairo University, Egypt ^{2*}, ^{3, 4, 6, 7} R. student, Alma Mater Studiorum Univ. of Bologna, Italy ⁵ Research Student, Humboldt University of Berlin, Germany and ¹⁰ Dept. of Architecture, Faculty of Eng., Cairo Univ., Egypt</p>	
09:00 – 10:30	Plenary B, Virtual Theater 2	Chair: Prof. Donald Swift-Hook, UK
09:00 – 09:15	<p>SO₃H functionalized mesoporous carbon as a potential catalyst to obtain glycerol oleate esters from crude glycerol</p> <p>Maria Rosiene A. Arcanjo¹, Isabela A. dos Santos¹, Solange A. Quintella¹, Eduardo Rigoti², Sibebe B. Castella Pergher², Enrique Rodríguez-Castellón³, Célio L. Cavalcante Jr.¹, Rodrigo Silveira Vieira^{1*} ¹ Dept. of Chemical Eng., Federal University of Ceara, Brazil ² Inst. of Chemistry, Federal Univ. of Rio Grande do Norte, Brazil ³ Dept. of Inorganic Chem., Faculty of Sciences-Univ. of Malaga, Spain</p>	
09:15 – 09:30	<p>Towards sustainable re-construction systems: from waste ruins to Eco - efficient buildings</p> <p>Alexandra Del Castillo Llamosas, Shoeib Faraji Abdolmaleki*, Pastora M. Bello Bugallo Dept. of Chem. Eng., Univ. de Santiago de Compostela, Spain</p>	
09:30 – 09:45	<p>Effect of building fabric on the electricity demand for space cooling for attaining thermal comfort in a South Indian community building</p> <p>Kumar Biswajit Debnath*, David P. Jenkins School of Energy, Geoscience, Infrastructure and Society (EGIS), Heriot-Watt University, UK</p>	
09:45 – 10:00	<p>Overview of Wind Resource Assessments with Special Reference to the Emirate of Ajman-UAE</p> <p>Kais Muhammed Fasel, Abdul Salam Darwish, Peter Farrell, University of Bolton, Bolton – UK Hussein A. Kazem, Sohar University, Oman</p>	
10:00 – 10:15	<p>Study of the influence of solar shading devices in the solar inputs in buildings</p> <p>Andrés Vilaboa Díaz*, Pastora Bello Bugallo Dept. of Chemical Engineering, Univ. of Santiago de Compostela, Spain</p>	

10:15 – 10:30	<p>Performance of Roof Solutions for Social Housing in Portoviejo, Ecuador.</p> <p><i>Dania González Couret*¹, José Fabián Véliz Párraga²</i> ¹ <i>Technological University of Havana, Cuba</i> ² <i>Technical University of Manabí, Ecuador</i></p>	
11:00 – 12:30	<p>Plenary C, Virtual Theatre 1</p>	<p><i>Chair: Dr Amina Batagarawa – Nigeria</i></p>
11:00 - 11:22	<p>The Transition in Solar and Wind Energy Use in Gulf Cooperation Council Countries (GCCC)</p> <p><i>Naser Waheeb Alnaser*, Hanan M. Albuflasa+ and Waheeb Essa Alnaser+</i> * <i>Dept., of Arch. and Interior Design, College of Eng., Univ. of Bahrain</i> + <i>Department of Physics, College of Science, Univ of Bahrain, Bahrain</i></p>	
11:22 - 11:45	<p>Some aspects of photovoltaic/thermal systems operation in central European climate</p> <p><i>Dorota Chwieduk, Jaroslaw Bigorajski</i> <i>Institute of Heat Engineering, Warsaw University of Technology, Poland</i></p>	
11:45 - 12:08	<p>Zero Carbon World[™]: Opportunities and Threats for New and Old National Economies because of Energy and Industry Transition</p> <p><i>Winfried Hoffmann, Applied Solar Expertise - ASE, Hanau, Germany</i></p>	
12:08 - 12:30	<p>Roof-Mounted Photovoltaic Generator - Temperature Modelling Based on Common Brazil Roofing Materials</p> <p><i>¹Bernardo Guimarães, ¹Lucas P. P. Farias, ²Delly O. Filho, ³L. L. Kazmerski, ^{1,*}A. Sônia A. C. Diniz</i> ¹<i>GREEN Solar-IPUC, PPGEM, Mech. Eng., Pontificia Universidade, Brazil</i> ²<i>Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brasil</i> ³<i>University of Colorado Boulder, RASEI, Boulder, Colorado, USA</i></p>	
11:00 – 12:30	<p>Plenary D, Virtual Theatre 2</p>	<p><i>Chair: Prof. Kamaruzzaman Sopian, Malaysia</i></p>
11:00 – 11:15	<p>The visual representation of urban contexts for the education to the sustainability: the app VISOSMapping</p> <p><i>Paola Puma, Department of Architecture, University of Florence, Italy</i></p>	
11:15 – 11:30	<p>The Impact of Efficient Insolation on Thermal Performance of Building Elements in Hot arid Region</p> <p><i>Ghanim Kadhem Abdulsada¹ and Tawfeeq Wasmi Mohammed Salih²</i> ¹<i>Mechanical Engineering Department, Dijlah University, Iraq,</i> ²<i>Materials Engineering Dept., Al-Mustansiriyah University, Iraq</i></p>	
11:30 – 11:45	<p>Characterization of Photovoltaic (PV) Modules under Real Operating Conditions</p> <p><i>Abdul Q. Malik; Dept. of Phys., College of Eng., Science and Tech., Fiji National Univ., Fiji.</i></p>	
11:45 – 12:00	<p>The value of CSP with thermal energy storage in providing flexible electric power</p> <p><i>Giancarlo Gentile, Giampaolo Manzolini</i> <i>Politecnico di Milano, Dipartimento di Energia, Milano, Italy</i></p>	

12:00 – 12:15	<p>Design, Realisation and Preliminary Tests of a Three-Dimensional Compound Parabolic Concentrator (CPC) Solar Cooker in Abidjan (Côte d'Ivoire)</p> <p><i>Siaka Touré and Modibo Sidibé</i> Solar Energy Laboratory, FHB University Abidjan Abidjan, Côte d'Ivoire</p>	
12:15 – 12:30	<p>Blockchain-based Consumer Stock Ownership Plans (CSOP) as a Catalyst for Impact Investments in Sustainable Energy Infrastructure</p> <p><i>Martin Fortkort, Sebastian Finke, Semih Severengiz</i> Department of Electrical Eng. and Computer Science, Bochum University of Applied Sciences Bochum, Germany</p>	
14:00 – 15:30	<p>Plenary E, Virtual Theatre 1</p>	<p><i>Chair: Prof. Marta Szabo – Hungary</i></p>
14:00 – 14:20	<p>Dubai, The sustainable, Smart City</p> <p><i>Riadh H. AL-Dabbagh, Univ. of Ajman, Institute of Environment, Water & Energy, Ajman UAE</i></p>	
14:20 – 14:40	<p>Climate Change Adaptation: Renewable Energy and Climate Actions in Cities to Mitigate Climate Change and Enhance Liveability – a Diagnostic and Strategic Study</p> <p><i>Mohsen Aboulnaga^{1*}, Naguib Amin², Bruno Rebelle³</i> ^{1*} Department of Architecture, Faculty of Engineering, Cairo Univ., Egypt, ² Project CES-MED, Beirut, Lebanon and Rabat, Morocco, ³ Transitions, CES-MED SECAP Consultant, Paris, France</p>	
14:40 – 15:00	<p>Floating Offshore Wind Technology Development: Current State and Future Vision</p> <p><i>Abdul Salam Darwish</i> School of Civil Engineering, University of Bolton, Bolton, UK.</p>	
15:00 – 15:30	<p>Impacts of ecological and psychological human behaviour: Assessment of selected buildings in New Cairo, Egypt to attain livability and mitigate climate change</p> <p><i>May Barakat¹ and Mohsen Aboulnaga^{2*}</i> ¹Dept. of Arch., Faculty of Eng., Misr Univ. for Science and Tech., Egypt. ²Dept. of Architecture, Faculty of Eng., Cairo Univ., Egypt</p>	
14:00 – 16:00	<p>Plenary F, Virtual Theater 2</p>	<p><i>Chair: Prof. Tony Book, UK</i></p>
14:00 – 14:15	<p>Experimental Investigation of Solar Still with Corrugated Absorber Surface for Domestic Desalination Use</p> <p><i>A. Idrissi^{*1}, M. Benchrifa¹, R. Tadili¹, M. Naciri¹, S. El Madrab¹</i> ¹Lab. of Solar Energy and Env., Mohammed V University, Rabat, Morocco</p>	
14:15 – 14:30	<p>Identifying Optimal Nanofluid Synthesis Conditions for Applications in Solar Thermal Concentrators</p> <p><i>Anurag Pramanik ^{*1}, Harjit Singh ¹, S. Suresh ², Ram Chandra ³, Virendra Kumar Vijay ³</i> ¹Institute of Energy F., Brunel University London, UK ²Dept. of Mech. Eng., National Institute of Technology, Tamil Nadu, India ³ Centre for Rural Dev. and Tech., Indian Institute of Tech. Delhi, India</p>	
14:30 – 14:45	<p>Mechanical Biological Treatment Facility: Energy Recovery Assessment</p> <p><i>Muazu, S.¹, Mirzaii, H.², Benhadj-Djilali, R³, Augousti, A⁴,</i> ^{1,2}Renewable Energy Engineering, Kingston University, London ^{3,4}School of Engineering and the Environment, Kingston Univ., London</p>	

14:45 – 15:00	<p>Transition towards Full-Scale Self-Sufficiency through Photovoltaic Systems Integration for Sub-Saharan Africa. A Technical Approach for a Smart, Decentralized, Blockchain-Based Mini-grid. <i>Sebastian Finke^a, Michele Velenderić^b, Semih Severengiz^a, Oleg Pankov^c, Christof Baum^d</i></p> <p>^a Sustainable Techno. Laboratory, Bochum Univ. of Applied Sciences Bochum, Germany ^b Green Power Brains, Jörg-Hube-Str. 159, 81927 Munich, Germany ^c Nishi Ward Nishino 7 Jo 8 Chome 11-10, 0630037 Sapporo, Japan ^d Don Bosco Solar & Renewable Energy Center, P.O. Box 776, Ashaiman, Ghana</p>
15:00 – 15:15	<p>Estimation of daily direct solar radiation for Rabat</p> <p><i>Mohammed Benchrifa, Hajar Essalhi, Rachid Tadili, Hassan Nfaoui</i> <i>Lab. of Solar Energy and Env. Mohammed V Univ. Rabat, Morocco</i></p>
15:15 – 15:30	<p>Characterisation of Luminescent Downshifting Layer effects on Silicon Solar Cells</p> <p>Bill Cass*, Subhash Chandra, Arunima Sethi & Sarah J. McCormack Solar Energy Applications Group, Dept of Civil, Structural and Environmental Engineering, Trinity College Dublin, Ireland</p>
15:30 – 15:45	<p>Blockchain-based Consumer Stock Ownership Plans (CSOP) as a Catalyst for Impact Investments in Sustainable Energy Infrastructure</p> <p><i>Martin Fortkort, Sebastian Finke, Semih Severengiz</i> <i>Department of Electrical Engineering and Computer Science, Bochum University of Applied Sciences Bochum, Germany</i></p>
15:45 – 16:00	<p>Performance-Based Comparative Study of Building Orientation and External Shading Devices in Egypt</p> <p><i>Ayman Wanas (1) and Khaled Mansy (2)</i> <i>1 Prof. Dept. of Arch. Design, Arab Acad. for Science, Cairo, Egypt</i> <i>2 Prof. of Arch., Oklahoma State University, Stillwater, USA.</i></p>
16:00 – 18:00	<p>Plenary G, Virtual Theatre 1 <i>Chair: Prof. Mohsen Aboulnaga, Egypt</i></p>
16:00 – 16:30	<p>Sustainable Buildings for Sustainable Community in Ajman - UAE</p> <p><i>Yasser Omar Rajab Kayed, Abdul Salam Darwish, Peter Farrell</i> <i>School of Civil Engineering, University of Bolton, Bolton, UK.</i></p>
16:30 – 17:00	<p>Towards Carbon Neutral Operating Buildings</p> <p><i>Helmut F.O. Mueller</i> <i>Green Building R&D GmbH, Duesseldorf, Germany</i></p>
17:00 – 17:30	<p>Proposed Solar kiosk for COVID-19 and other infectious disease screening in Nigeria</p> <p><i>Amina Batagarawa¹, and Yakubu Aminu Dodo</i> <i>Department of Architecture, Ahmadu Bello University, Zaria, Nigeria</i></p>
17:30 – 18:00	<p>Photovoltaics vs fossil fuels: financial feasibility model for expansion of access to electricity in off-grid rural regions</p> <p><i>Judith A. Cherni^{1*}, Maritza Jimenez^{2,3}, Carlos J. Franco², Isaac Dyer⁴</i> ^{1*} CEP, Imperial College London, UK, ² Facultad de Minas, Univ. Nacional de Colombia; Medellin, Colombia ³ Escuela de Ingenierías, Univ. Pontificia Bolivariana, Medellín, Colombia; ⁴ Facultad de Ciencias Naturales e Ingenierías, Univ. de Bogotá, Colombia</p>

16:00 – 18:00	Plenary H, Virtual Theater 2	Chair: Prof. Anastasia Zabaniotou– Greece
16:00 – 16:15	Solar-to Work Conversion from Meteorological Data <i>José Luis Duomarco: A.I.U., Montevideo, Uruguay</i>	
16:15 – 16:30	Modelling of Heat Pump System with Air and Solar Heat Sources Including Latent Thermal Energy Storage <i>Fran Torbarina*, Kristian Lenic, Anica Trp, Mateo Kirincic, Boris Delac University of Rijeka, Faculty of Engineering, Rijeka, Croatia</i>	
16:30 – 16:45	Test of a series of solar panels set on a parabolic roof <i>Carlos V. M. Labriola*¹, Jorge Lassig², Ubaldo Jara², Juan Valle Sosa² National University of Comahue, Nequen, Argentina</i>	
16:45 – 17:00	Investigation the effect of annealing temperature of perovskite layer on performance of perovskite solar cells <i>Kamil M. Yousif *¹, Issa M.Aziz ², Naseem S.Abdel ² ¹ Dept. of enviro., Faculty of Science, University of Zakho, Iraq ² Department of Physics, Faculty of Science, University of Zakho, Iraq</i>	
17:00 – 17:15	Energy Recovery in Waste Water Treatment Plants: Utilization of Hydro and Biogas Energy <i>*Prof Dr Serhat Kucukali¹, Prof Dr Irfan Ar²Mr Asiye Güna²; and Dr Mümtaz Ak³ ¹Hacettepe University, Ankara; ²Gazi University, Ankara, and ³Netsu Eng., Ankara</i>	
17:15 – 17:30	Design and Characterization of a Roof-Mounted Compound Parabolic Concentrator <i>Anita Ortega*, Subhash Chandra, Sarah J. McCormack Solar Energy Applications Group, Department of Civil, Structural and Environmental Eng., School of Eng., Trinity College Dublin, Ireland</i>	
17:30 – 17:45	On-site renewable systems to enhance the energy performance of the net-zero emission hotel building integrated with electrical shuttle buses <i>Ziyu Shu* ¹, Ruixuan Zhu ², Runming Yao ¹ ¹ Department of Civil Engineering, Chongqing University, China ² China SW Arch. Design and Res. Inst. Corp., Ltd., Chengdu, China</i>	
17:45 – 18:00	Standalone Photovoltaic System for Boys Hostel at Fiji National University, Natabua Campus, Fiji <i>Abdul Q. Malik and Host T. W. Karakaua Dept. of Phys., Sch. of Pure sciences, College of Eng., Fiji N. Univ., Fiji.</i>	

09:00 – 10:30 **Plenary A, Virtual Theatre 1** *Chair: Prof. Anastasia Zabaniotou– Greece*

09:00 - 09:30 **Mass Transit: An Integrated Approach to Sustainable Urban Development - The Case of Greater Cairo Region**

*Khalid Z. El Adli¹, and Abdullah Al-Attar
Faculty of Urban and Regional Planning, Cairo University, Cairo, Egypt.*

09:30 - 10:00 **The Environmental Impacts of Coronavirus Pandemic: Lessons Learned from Pandemic in Climate Change - Building Post-Crisis Sustainable initiatives**

Jazla Fadda, Alfurjan, Dubai, United Arab Emirates.

10:00 - 10:30 **Heading towards democratic and sustainable electricity systems – the example of Austria**

Reinhard Haas, Hans Auer:Energy Economics Group, TU Wien, Austria

09:00 – 10:30 **Plenary B, Virtual Theatre 2** *Chair: Prof. Mohsen Aboulnaga, Egypt*

09:00 - 09:23 **Nanostructured P-N Junctions and Photoconductive Cells for Thermal Energy Conversion**

Karen M. Gambaryan, Vladimir M. Aroutiounian, Martin K. Gambaryan
Dept. of Physics, Sem. & Microelectronics, Yerevan State Univ., Armenia*

09:23 - 09:45 **Battery Storage: An Enabler for Utility and Grid Dynamics**

Debmalya Sen: Customized Energy Solutions, Pune, Maharashtra, India

09:45 - 10:08 **Energy management & savings in the domestic situation: A Case Study**

*Tony Book
Hove, East Sussex, UK*

10:08 - 10:30 **Buildings' Morphology, Solar Rights and Zero Energy in High Density Urban Areas**

*Isaac Guedi Capeluto
Faculty of Architecture and Town Planning, Technion - IIT, Israel*

11:00 – 12:30 **Plenary C, Virtual Theatre 1** *Chair: Prof Dorota Chwieduk – Poland*

11:00 - 11:22 **The Scope of Advanced Smart Vacuum Insulation Technologies for Net-Zero Energy Buildings**

Saim Memon, Solar Thermal Vacuum Eng. R. Group, London Centre for Energy Eng., School of Eng., London South Bank University, London, UK.

11:22 - 11:45 **Mediterranean Hospital Energy Performance Mapping – The energy auditing as a tool towards Zero Energy Healthcare facilities**

*Despina Serghides¹, Stella Dimitriou¹, Ioanna Kyprianou¹
¹Energy, Environ. & Water R. Centre (EEWRC), the Cyprus Inst., Cyprus*

11:45 - 12:08	Renewables in road transport: Prospects and Impediments <i>Amela AJANOVIC, Vienna University of Technology, Vienna, Austria</i>	
12:08 - 12:30	Estimation of Surplus Energy in Off-Grid Solar Home Systems <i>Satyam Bhatti *, Dr. Arthur Williams Dept. of Electrical and Electronic Eng., University of Nottingham, UK</i>	
11:00 – 12:30	Plenary D, Virtual Theatre 2	<i>Chair: Prof. Riadh Al-Dabbagh - UAE</i>
11:00 – 11:15	Comparison Analysis of Potential and Distribution of Photovoltaic Power in Five Open-pit Mines in North Korea <i>Myeongchan Oh¹, Aran Yang², Yebin Kim², Han Jin Kim², Ji Yoon Ku³, Hyeong-Dong Park^{*2,4} ¹New and Renewable Energy Resource Map Laboratory, Korea Institute of Energy Research, South Korea. ² Department of Energy Systems Engineering, Seoul National University, South Korea ³ Department of Environmental Science and Engineering, Ewha Women University, Seoul, Korea ⁴ Research Institute of Energy and Resources, Seoul National University, South Korea</i>	
11:15 – 11:30	Ammonia - carbon adsorption domestic gas heat pump <i>R.E. Critoph*, S.J. Metcalf, A.M. Rivero-Pacho, School of Engineering, University of Warwick, Coventry, UK</i>	
11:30 – 11:45	Temperature studies of the effect of glazed facades and vegetation on urban heat islands in Brasilia <i>Gustavo Cantuaria¹, Manuel Correia Guedes² ¹Univ. Centre of Brasilia (UniCEUB), Brasil, ² Instituto Superior Técnico, University of Lisbon, Portugal</i>	
11:45 – 12:00	Electricity Use for Hotel Facilities in Northern Nigeria <i>Aminu Bn Musa, & Amina Batagarawa. Department of Architectural Technology, Waziri Umaru Federal Polytechnic, Nigeria Baze University Abuja, Nigeria</i>	
12:00 – 12:15	Understanding Vulnerability of Renewable Energy Systems for Building Resilience to Climate Change Hazards: Key Concepts and Assessment Approaches <i>Georgia Sarma and Anastasia Zabaniotou* Dept. of Chemical Eng., Aristotle University, Thessaloniki, Greece</i>	
12:15 – 12:30	Defining critical parameters in a luminescent downshifting layer for PV enhancement <i>Maria F. Ayala Barragan, Subhash Chandra, Bill Cass, Sarah J. McCormack* Dept. of Civil, Structural and Enviro. Eng., School of Eng., Trinity College Dublin, Ireland</i>	
14:00 – 16:00	Plenary E, Virtual Theater 1	<i>Chair: Prof. Robert Critoph - UK</i>
14:00 – 14:15	Bespoke Method for Installation of VIPs on Building Walls and their Performance <i>Jose Tavares*, Harjit Singh, Maria Kolokotroni Institute of Energy Futures, Brunel University London, United Kingdom</i>	

14:15 – 14:30	<p>Vacuum insulation panels for thermal energy storage systems</p> <p>Sankarshan Verma ^{*1}, Harjit Singh ¹</p> <p>¹ Institute of Energy Futures, College of Engineering, Design and Physical Sciences, Brunel University London, UK</p>
14:30 – 14:45	<p>Performance, Modeling, Measurements and Simulation of Energy Efficient for Heat exchanger, Refrigeration and Air Conditioning</p> <p>Abdeen Mustafa Omer</p> <p>Energy Research Institute (ERI), Nottingham, UK</p>
14:45 – 15:00	<p>Directly absorbing Nanofluid based solar thermal collectors for Cairo</p> <p>Vishal Bhalla¹, Mohamed M. Sabry², Ahmed Ghitas², Harjit Singh^{*1}</p> <p>¹ IEF, College of Eng., Design and Phys. S., Brunel Univ., London, UK</p> <p>² National Res. Ins. of Astronomy and Geophysics, Helwan, Cairo, Egypt</p>
15:00 – 15:15	<p>The Effect of Colored Transparent Filters in Transmission of Solar Radiation of Building Facades</p> <p>Bahar Sultan Qurraie, Maryam Singery[*]</p> <p>Department of Architecture, Karabuk University, Karabuk, Turkey</p> <p>Dept. of Architecture, Tabriz Branch, Islamic Azad University, Tabriz, Iran</p>
15:15 – 15:30	<p>Thermal energy storage technologies for utilisation of Renewable energy sources & EU project HEART</p> <p>Assoc. Prof. Dr. Uroš Stritih,</p> <p>University of Ljubljana, Faculty of Mechanical Eng., Ljubljana, Slovenia</p>
15:30 - 15:45	<p>Integrating Building Information Modeling Tool for Enhancing Energy and Daylighting Performance in Buildings' Retrofit and Attaining Sustainability</p> <p>Maryam Elsharkawy^{1*}, Mohsen Abounaga², and Ayman Mahmoud³</p> <p>^{1*} Teaching Assistant, Faculty of Engineering, Cairo University, Egypt,</p> <p>^{2, 3} Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt,</p>
15:45 - 16:00	<p>Energy status and the importance of wind energy resources in Sri Lanka</p> <p>Vidya Amarapala, Abdul Salam Darwish, Peter Farrell</p> <p>School of Engineering, the University of Bolton, Bolton, UK</p>
14:00 – 15:30	<p>Plenary F, Virtual Theater 2</p> <p style="text-align: right;"><i>Chair: Prof. Anastasia Zabaniotou– Greece</i></p>
14:00 – 14:15	<p>Energy poverty and policy implications in two Mediterranean countries</p> <p>Ioanna Kyprianou^{*1}, Anaïs Varo², Salvador Martí I Puig², Despina Serghides</p> <p>¹Energy, Envir., Water Research Centre, The Cyprus Inst., Cyprus</p> <p>²Political Science Area, University of Girona, Spain</p>
14:15 – 14:30	<p>Development of a Tool to Analyze the Economic Viability of Energy Communities</p> <p>Fernando Carreras [*], Gerald Steinmaurer</p> <p>University of Applied Sciences Upper Austria, Energy Research Group ASIC, Wels, Austria</p>
14:30 – 14:45	<p>Sustainable Prefabricated Buildings: a holistic approach</p> <p>Katerina Tsikaloudaki[*], Theodore Theodosiou, Stella Tsoka, Panagiotis Chastas</p> <p>Civil Engineering Department, Aristotle University of Thessaloniki, Greece</p>

14:45 – 15:00	<p>Achieving Sustainable Electricity through Renewable Energy Development in the Gambia: Regulatory and Policy Considerations</p> <p><i>Nana Asare Obeng-Darko*</i> Center for Climate Change, Energy and Environmental Law (CCEEL) at the UEF Law School, University of Eastern Finland, Joensuu, Finland</p>	
15:00 – 15:15	<p>Efficient energy system modelling for multi-objective optimisation</p> <p><i>Nathanael Dougier*¹, Pierre Garambois¹, Julien Gomand¹, Lionel Roucoules¹</i> Arts et Metiers Institute of Tech., LISPEN, HESAM Université, France</p>	
15:15 – 15:30	<p>Micromobility and Smart Cities: Efficiency, Energy Consumption and Range Analysis for Electric Vehicles</p> <p><i>Désirée Alcázar-García* , Luis Romeral Martínez</i> Universitat Politècnica de Catalunya, Barcelona, SPAIN</p>	
16:00 – 18:00	<p>Plenary G, Virtual Theater 1</p>	<p><i>Chair: Prof. Riadh Al-Dabbagh - UAE</i></p>
16:00 – 16:15	<p>Sustainable Development of Higher Education Institutions – An Analytical Study for SD projects' Retrofitting of Selected Global Universities' Buildings</p> <p><i>Tahany Abdelmawgood^{1*} and Mohsen Aboulnaga²</i> ¹Researcher, Env. Design & Energy Efficiency Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt; ²Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt</p>	
16:15 – 16:30	<p>Climate change adaptation amid COVID-19: sustainable transport guidelines to mitigate CO₂ emissions, enhance livability in cities, and attain SDG 7, 11, 12, and 13</p> <p><i>Mai M. Barakat¹ and Mohsen M. Aboulnaga^{2*}</i> ¹T. Assistant, Faculty of Engineering, Misr Univ. for Sc. & Techgy, Egypt, ^{2*} Dept. of Architecture, Faculty of Engineering, Cairo University, Egypt</p>	
16:30 – 17:00	<p>An Approach for Healthier, Smart and Sustainable Cities in the Time of COVID-19 Crisis: Mapping SSC Indicators with Quality of Life and SDGs</p> <p><i>Sara Tarek^{1*}, Mohsen Aboulnaga²</i> ¹Assistant Prof, Dept. of Architecture, Cairo University, Egypt, ² Prof. Dept. of Architecture, Cairo University, Egypt</p>	
17:00 – 17:15	<p>Popular Mistakes about Renewables</p> <p><i>Prof. Don Swift-Hook</i> Visiting Prof., Kingston Univ., London & Secretary of WREN, Woking UK</p>	
17:15 – 17:30	<p>Renewable Energy Technologies: Barriers and Policy Implications</p> <p><i>Jyoti Prasad Painuly¹ and Norbert Wohlgemuth²</i> ¹UNEP DTU Partnership, Technical University of Denmark, ²Department of Economics, University of Klagenfurt, Austria</p>	
17:30 – 17:45	<p>Environmental Sustainability Assessment of Small Hydropower Plants: A Case Study from Ceyhan River Basin in Turkey</p> <p><i>*Serhat Kucukali¹, Ahmet Alp², Adil Akyüz³, and, Omar Al Bayati⁴</i> 1- Prof Dr, Hacettepe University, Civil Eng. Dep, Ankara, Turkey 2- Prof. Dr, K. Maraş Sütçü İmam Univ., Fisheries Dep., K. Maraş, Turkey 3-Prof.Dr, K. Maraş Sütçü İmam Uni.,Biosystem Eng. Dep.,K.Maraş,Turkey 4- MSc, Çankaya University, Computer Eng. Dep., Ankara, Turkey</p>	

17:45 – 18:00	<p>Key Challenges for solar electrification of rural schools and health facilities in Sub-Saharan Africa</p> <p><i>Terence Cook, Visiting Research Fellow, Prof. David Elliott, Faculty of Science, Technology, Eng. & Mathematics, School of Eng. & Innovation, The Open Univ., Walton Hall, Milton Keynes, UK</i></p>
16:00 – 18:00	<p>Plenary H, Virtual Theater 2 <i>Chair: Prof. Robert Critoph, UK</i></p>
16:00 – 16:15	<p>Wind Power Resources Assessment under Varying Topography</p> <p><i>Luai M. Alhems¹, Shafiqur Rehman^{1,*}, Narayanan Natarajan², and Vasudevan Mangottiri³</i> ¹CER, King Fahd Univ. of Petro. & Minerals, Dhahran, Saudi Arabia. ²Dept. of Civil Eng., Dr. Mahalingam College of Eng. and Technology, Pollachi, Tamil Nadu, India. ³Dept. of Civil Eng., Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu, India.</p>
16:15 – 16:30	<p>Development of a Micro Horizontal Axis Wind Turbine Blade for the Semi-Arid Region of Nigeria</p> <p><i>G.M. Ngala and M. Shuwa, Department of Mechanical Engineering, University of Maiduguri, Nigeria</i></p>
16:30 – 16:45	<p>Finding the Most Suitable Irrigation Dams for Hydropower Development in Turkey Using Multi-Criteria Scoring and GIS Spatial Analysis Tool</p> <p><i>*Omar Al Bayati¹, Serhat Kucukali², and Hakan Maraş³</i> ¹ A Student, Çankaya Univ., Computer Eng. Dep., Ankara, Turkey ² Dr, Hacettepe University, Civil Eng. Dep., Ankara, Turkey ³ Dr, Çankaya University, Computer Eng. Dep., Ankara, Turkey</p>
16:45 – 17:00	<p>Darrieus turbine for applications in Urban Environments</p> <p><i>Carlos V. M. Labriola^{*1}, Jorge Lassig²,</i> ¹Department of Electrotecnia, ²Dept. of Mechanics, Eng. Faculty, National Univ. of Comahue, Nequen, Argentina</p>
17:00 – 17:15	<p>Influence of geographical factors on the transport cost on road of biomass raw material</p> <p><i>Chenshuo Ma 1,2, Yifei Zhang * 1,2</i> ¹ School of Architecture, Harbin Institute of Technology, Harbin, China ² Key Laboratory of Cold Region, Ministry of Industry and Info. Tech., Harbin, China</p>
17:15 – 17:30	<p>Paraffin as a Phase Change Material to Improve Building Performance: Application and Thermal Conductivity Enhancement Techniques</p> <p><i>Qudama Al-Yasiri^{a,b}, Márta Szabó^b</i> ^a Mechanical Eng., Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary. ^b Institute of Tech., Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary.</p>
17:30 – 17:45	<p>Community Energy: An analysis for benefits of shared Community Energy Storage for three real communities in the UK</p> <p><i>Sanjana Ahmed¹, Mark Sumner², Arthur Williams²</i> ¹Dept. of Elec. and Electronic Eng., Brac Univ., Dhaka, Bangladesh ²Dept. of Elec. and Electronic Eng., Univ. of Nottingham, UK</p>
17:45 – 18:00	<p>Benchmarking Sustainability of Megaprojects: a review</p> <p><i>Shafak Ahmed, Abdul Salam Darwish, Peter Farrell</i> <i>The University of Bolton, Bolton, UK.</i></p>

09:00 – 10:40	Main Plenary 9, Main Theatre	<i>Chair: Prof. Manuel Correia Guedes, Portugal</i>
09:00 - 09:25	Analyzing Technology Implementation Alternatives in the Portuguese Bioenergy Sector <i>Ana Andrade*</i> , <i>Carlota Duarte</i> , <i>Ricardo Aguiar</i> , <i>Isabel Cabrita R.</i> , <i>Studies & Renew. Division, Directorate-General for Energy and Geology, Portugal</i>	
09:25 - 09:50	Simulation and experimental calibration of solar potential on building Facades– application to a case study <i>Filipa Dias</i> , <i>M. Glória Gomes*</i> , <i>Ana Paula Falcão</i> <i>CERIS, Department of Civil Eng., Arch. and Georesources, IST, Lisboa, Portugal</i>	
09:50 - 10:15	Application of Greenhouse and Underground Spaces in Buildings <i>Eusébio Z. E. Conceição</i> <i>FCT-Universidade do Algarve, Campus de Gambelas, Faro, Portugal</i>	
10:15 - 10:40	Hybridization of heat pump systems with natural ventilation to improve energy efficiency in cooling dominated buildings <i>Nuno R. Martins*</i> , <i>Peter J. Bourne-Webb</i> - <i>CERIS, Instituto Superior Técnico, Portugal</i>	
10:40 - 11:00	- Coffee Break -	
11:00 – 13:05	Main Plenary 10, Main Theatre	<i>Chair: Prof. Ali Sayigh, UK</i>
11:00 - 11:25	Large Scale H2 Production by Electrolysis Based on Renewable Electricity <i>Flávia Franco^{1,2*}</i> , <i>R. P. Borges²</i> , <i>Fátima Nunes Serralha¹</i> , <i>Paulo Martins²</i> , <i>Ricardo Aguiar²</i> , <i>Isabel Cabrita²</i> , <i>Paulo Partidário²</i> ¹ <i>Escola Superior de Tecnologia do Barreiro, Instituto Politécnico de Setúbal, Portugal</i> ² <i>Divisão de Estudos, Investigação e Renováveis, Direção-Geral de Energia e Geologia, Portugal</i>	
11:25 - 11:50	Environmental life-cycle impacts of structural systems in southern European houses: prefabricated lightweight steel framing (LSF) versus conventional reinforced concrete (RC) <i>V. Tavares *¹</i> , <i>N. Soares ¹</i> , <i>N. Raposo ²</i> , <i>P. Marques ¹</i> , <i>F. Freire ¹</i> ¹ <i>Univ. of Coimbra, ADAI-LAETA, Dept. of Mech. Eng., Portugal</i> ² <i>Dept. of Civil Eng., Polytechnic Institute of Viseu, Viseu, Portugal</i>	
11:50 - 12:15	Reporting a Survey of the European Ocean Energy Sector in 2018 <i>Ana A. Andrade*¹</i> , <i>Isabel Cabrita¹</i> , <i>Ruairi MacIver²</i> ¹ <i>Division of Studies, Research and Renewables, Directorate-General for Energy and Geology, Portugal;</i> ² <i>Wave Energy Scotland, UK</i>	
12:15 - 12:40	Downdraft gasifier Imbert type and clean-up system design, for small scale power Generation using biomass <i>Miguel Mendonça*</i> , <i>Victor Mantilla</i> , <i>João Patela</i> , <i>Valter Silva</i> , <i>Fernanda Resende.</i>	
12:40 – 13:05	Energy Transition in Morocco and Covid-19 Crisis: Opportunities and Challenges <i>Hassan Nfaoui¹</i> & <i>Ali Sayigh²</i> ¹ <i>Solar Energy & Env. Team, Energy Centre, Mohammed-V Univ., Rabat, Morocco,</i> ² <i>Chairman of WREC & Director General-WREN, Brighton, UK</i>	

12:40 – 13:05

- Closing Remarks -

12:30 – 14:00

- Lunch Break -

14:45 – 18:00

- TECHNICAL VISIT -

PROGRAMME AT GLANCE

*Auditorium, Department of Civil Engineering and Architecture
Instituto Superior Técnico – University of Lisbon*

	SUNDAY 25th July	MONDAY 26th July	TUESDAY 27th July	WEDNESDAY 28th July	THURSDAY 29th July	FRIDAY 30th July
09:00 – 17:00	Reception	Registration				
09:00 – 10:30	Exhibition Setting	Opening Ceremony	Plenary 1 Plenary A	Plenary 1 Plenary A-B	Plenary A-B	Plenary 1
10:30 – 11:00		Coffee Break				
11:00 – 12:30		Plenary 1	Plenary 2 Plenary B-C	Plenary 2 Plenary C-D	Plenary C-D	Plenary 2
12:30 – 14:00		LUNCH				
14:00 – 15:30	WREN Council Meeting	Plenary 2	Plenary 3 Plenary D-E	Plenary E-F	Plenary E-F	Technical Visit
15:30 – 16:00	Coffee Break					
16:00 – 18:00		Plenary 3	Plenary F-G	Plenary G-H	Plenary G-H	