



# The 12th International Conference on Energy and Environment Research

*"Towards Sustainable Geographies with Net Zero  
Carbon Economy"*

*July 22– 25, 2025 | Budapest, Hungary*

**ISEP** INSTITUTO SUPERIOR  
DE ENGENHARIA DO PORTO



## ICEER 2025

The 12th International Conference on Energy and Environment Research  
"Towards Sustainable Geographies with Net Zero Carbon Economy"

## Publisher

Instituto Superior de Engenharia do Porto

## Editors

Nídia de Sá Caetano  
Carlos Felgueiras

## Printing

e-Book

## Number of copies

43

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## Thursday July 24th/ Technical Tour (Pending)

# Welcome Message

Dear participants of ICEER 2025,

Under the theme "Towards Sustainable Geographies with Net Zero Carbon Economy", the 12th International Conference on Energy and Environment Research, ICEER 2025, is being held in Hungary during July 22-25, 2025.

The growing population in the World, is causing increasing needs of water, food, goods and, above all, of energy. Energy is used in the production of fertilizers, in agricultural activities, all sort of industrial activities, home conditioning, lighting, communications, water and wastewater treatment, waste management, and transportation, among other. The energy requirements are huge and coal, oil and natural gas have been the most important sources, causing the release of greenhouse gases to the environment. These emissions are known to be the main cause of climate changes, with extreme weather events such as floods and droughts.

Policymakers, the common citizen and researchers are urged to plan strategies, change their practices and find alternative sources of energy that are less stressful to the environment, readily available, affordable and above all, that have a lower carbon footprint. Renewable energy can, at least partially, contribute to achieving such goals. However, there are still many challenges to address before renewable energy can be used in hard to decarbonize sectors, such as e.g. maritime transportation and aviation. Energy security relies on a complex energy mix, efficient distribution and storage, with critical materials reaching also risk of shortage. Thus, a thorough analysis of different scenarios considering the whole life cycle within a circular economy perspective is fundamental to allow taking informed decisions to adopt technologies and processes that do not reveal in the future to cause more negative impacts than the present options. In addition, the contribution of energy decarbonization to Sustainable Development relies on better and global education of the current and future generations towards a more efficient and rational use of energy, reducing energy poverty.

After ten editions, the ICEER series has been serving as a platform able to promote the active collaboration and discussion among professionals and experts in the field of Energy and Environment Research. Innovative solutions able to address the challenges of our always changing World will be presented and discussed at ICEER 2025, in a friendly, multicultural and casual environment, which we anticipate will stimulate further developments and discoveries by the participants.

The recognition of the relevance of these works is their publication in the conference Proceedings, a volume of the Springer book series "Environmental Science and Engineering", contributing to the broader dissemination of knowledge and research results.

We hope ICEER 2025 is up to your expectations and may serve as a representative flag of research in the field of energy and environment.

Welcome to

ICEER2025 – Towards Sustainable Geographies with Net Zero Carbon Economy @  
Budapest

The Conference Committee

# PROGRAM AT A GLANCE (GMT+2)

**Tuesday, 22th July, 2025 (GMT+2)**

**Exe Budapest Center @ Lobby**

<b>16:30-17:30</b>	Registration & Conference Kits Collection
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**Wednesday, 23th July, 2025(GMT+2)**

**Exe Budapest Center @ Danube 1&2**

**HOST:**

**Prof. Nídia Caetano, LEPABE/FEUP & CIETI/ISEP**

<b>09:00-09:10</b>	<b>Opening Remarks</b> <b>Prof. Carlos Felgueiras, CIETI/ISEP</b>
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<b>09:10-09:50</b>	<b>Keynote Speech 1</b>
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<b>09:50-10:30</b>	<b>Keynote Speech 2</b>
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<b>10:30-11:10</b>	<i>Group Photo &amp; Coffee Break &amp; Poster Session</i>
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<b>11:10-12:25</b>	<b>Oral Session 1</b>
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<b>12:25-14:00</b>	<i>Lunch</i>
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**Danube 1**

**Danube 2**

<b>14:00-15:15</b>	<b>Oral Session 2</b>	<b>14:00-15:15</b>	<b>Oral Session 3</b>
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<b>15:15-16:00</b>	<i>Coffee Break</i>	<b>15:15-16:00</b>	<i>Coffee Break</i>
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<b>16:00-16:45</b>	<b>Oral Session 4</b>	<b>16:00-17:00</b>	<b>Poster Session 1</b>
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<b>17:00-17:15</b>	<b>Oral Flash</b>	<b>17:00-17:45</b>	<b>Poster Session 2</b>
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		<b>17:45-18:00</b>	<b>Poster Session 3</b>
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<b>18:30-20:00</b>	<i>Conference Dinner (&amp; Awards)</i>
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**Thursday, 24th July, 2025 (GMT+2)**

**City Tour (Pending)**

## SESSION INFORMATION

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Oral Session 1	<b>Clean Energy Development and Utilization</b>	21
	E060, E076, E097, E110, E108	
Oral Session 2	<b>Environmental Quality Monitoring and Pollutant Control</b>	22
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Oral Session 3	<b>Energy System and Environmental Engineering</b>	23
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Poster Session 1	<b>Renewable Energy</b>	27
	E007-A, E040-A, E059-A, E058-A, E073-A, E098-A, E074-A, E099-A	
Poster Session 2	<b>Energy Policy, Economics, Planning &amp; Regulation</b>	29
	E024-A, E028-A, E063-A, E070-A, E072-A, E075-A, E077-A, E102-A	
Poster Session 3	<b>Natural Ecological Construction and Environmentally Sustainable Development</b>	31
	E021-A, E047-A, E033-A, E078-A, E094-A	

# GENERAL INFORMATION

## Conference Registration

The conference registration fee includes admission to all keynote sessions and parallel sessions. It also includes lunch, coffee breaks and the dinner on the 23<sup>th</sup> July, 2025.

## Check-in & Information Desk

You will be able to pick up your name badge at the Conference Check-in & Information Desk at the times listed below:

**16:30-17:30, Tuesday, 22th July, 2025 (GMT+2), Exe Budapest Center @ Lobby.**

## Name Badges

Wearing your badge is required for entrance to the sessions. You must wear your badge at all times.

## Personal Belongs Safety

Please take care of your safety and all personal belongings and wear your name tags during the whole conference and lock the door when you leave the room or take a break. No responsibility or liability is accepted by the conference organizer in respect of any loss or damage.

Please turn your mobile phone silent before the meeting starts to keep the venue quiet.

## Photo/Recording Waiver

ICEER values networking and knowledge sharing as a key part of our conference. To document the event, we take photos and record select sessions at the venue. These materials highlight key moments, support our outreach, and may appear in online or printed materials, including social media.

We respect your privacy, and if you prefer not to be photographed, you may opt out at any time.



## Transportation Guide

### ✧ Budapest Ferenc Liszt International Airport

#### MK Skygateshuttle

Bus: take Airport Express 100E to Deák Ferenc tér, then transfer to bus 15 or 115 to Kossuth Lajos tér and walk 100m

Car: 24km.

### ✧ From Budapest Nyugati Railway Station

Bus: take bus 15 or 115 from Nyugati pályaudvar to Kossuth Lajos tér and walk 100m

Car: 4.5km

## Dress Code

All participants are required to dress formally.

Casual wear is unacceptable. National formal dress is acceptable.

## Weather

### The Weather Situation of Budapest in July

Average daily minimum temperature	Average daily highest temperature
16°C	30°C

## Power



230V

## Social Media



iceer\_eu@outlook.com

iceer\_conference@outlook.com



<http://www.linkedin.com/in/danica-cong>



iconf-ee-1



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# ONSITE CONFERENCE NOTICE

## Conference Venue



### Exe Budapest Center

Address: Kossuth Lajos utca, 7-9 Budapest 1053, Hungary



## Conference Rooms Information

LOBBY	Danube 1&2	Danube 1	Danube 2
Sign-in & Conference Kits	Keynote Speech Oral Session 1	Oral Session 2 Oral Session 4 Oral Flash	Oral Session 3 Poster Session

# ONSITE PRESENTATION GUIDELINE

## Oral Presentations

- A maximum of 15 minutes total, including 3 minutes for Q&A. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
- You can use USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each presenter is required to copy the slide file (PPT or PDF) to the computer in the corresponding session rooms 10 minutes before the session starts.
- It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
- If your Power Point files contain videos or audios, please make sure that they are well formatted and connected to the main files.

## Oral Flash Presentations

- Presenters shall prepare printed posters or PPT for oral flash presentation.
- The allotted time per each presenter is 5 minutes including Q&A, highlighting the key results presented in the poster.
- Poster size: A0, approximately (84 cm × 119 cm – W x H) in color print. Posters must be in portrait format(height>width). This cannot be modified. The poster should include Paper ID, Conference Name's Acronym, Significance of the research, the methods used, the main results obtained, and conclusions drawn
- Presenters shall arrive at the meeting room 15 minutes before the session starts.
- Please take your poster to the conference by yourself. The conference organizer won't send/keep any posters after the conference.

- After the Oral Flash session, presenters can discuss the works they presented.

### Poster Presentations

- Each poster is for 3 minutes, highlighting the key results presented in the poster. Flash could be presented by poster or slides.
- Language: English. Color printing.
- Poster Size: A0 page (84.1 cm x 118.9 cm) or US Arch E page (36 in x 48 in) in PORTRAIT orientation. The poster should include: Paper ID, Conference Name's Acronym, Significance of the research, the methods used, the main results obtained, and conclusions drawn.
- The number of slides should be restricted to 3 content slides (excluding the title slide and acknowledgment slide).
- Posters are required to be condensed and attractive.
- Please take your poster to the conference by yourself. The conference organizer will not send/keep any posters after the conference.

# CONFERENCE COMMITTEE

## Conference Chair

**Carlos Felgueiras**  
*CIETI/ISEP*

PT

## Program Chair

**Florinda Figueiredo Martins**  
*ISEP*

PT

## Scientific & Technical Committee Chairs

**Nídia Caetano**  
*LEPABE/FEUP & CIETI/ISEP*

PT

## Scientific & Technical Committee Members

Adriano Péres	Universidade Federal de Santa Catarina - Blumenau	BR
Adriano Santos	INESC/ISEP	PT
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Ambra Giovanelli	University of Roma Tre	IT
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Ana Cláudia Dias	University of Aveiro	PT
Ana I. Palmero-Marrero	INEGI/FEUP/U.Porto	PT
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	Biskra	
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	Low Carbon & Resource Efficiency, R&Di,	
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Magdalena Ligus	Wrocław University of Economics	PL
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Mara Madaleno	University of Aveiro	PT
Maria Isabel Nunes	University of Aveiro	PT
Maria Leonor Carvalho	RSE SpA	IT
Marta Ferreira Dias	University of Aveiro	PT
Melih Onay	Van Yuzuncu Yil University	TR
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Nelson Miguel Lopes Soares	University of Coimbra	PT
Nídia S. Caetano	LEPABE/FEUP & CIETI/ISEP	PT
	South Dakota School of Mines and	
O. Parthiba Karthikeyan	Technology	USA
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Ramiro S. Barbosa	GECAD/ISEP	PT
Ricardo Jorge Costa	ISEP	PT
Rosa M. B. R. Pilão	ISEP	PT
Rui A. R. Boaventura	LSRE-LCM/FEUP/U.Porto	PT
Rui Calejo Rodrigues	CONSTRUCT/FEUP	PT
Sónia A. Figueiredo	ISEP	PT
Soteris Kalogirou	Cyprus University of Technology	CY
Teresa Fidélis	University of Aveiro	PT
Vijai Gupta	School of Biotechnology, Dublin City University	IE
Vítor António Ferreira da Costa	University of Aveiro	pt
Weihaio Hu	University of Electronics Science and Technology of China (UESTC)	CN
Zita Vale	ISEP	PT



# HISTORY OVERVIEW (2014-2024)

**ICEER 2014 Madrid, Spain | July 13-14, 2014**

July 18-19, 2014, Madrid, Spain

**ICEER 2014, as the workshop of ICMAE 2014**



**ICEER 2015 Lisbon, Portugal | July 13-14, 2015**



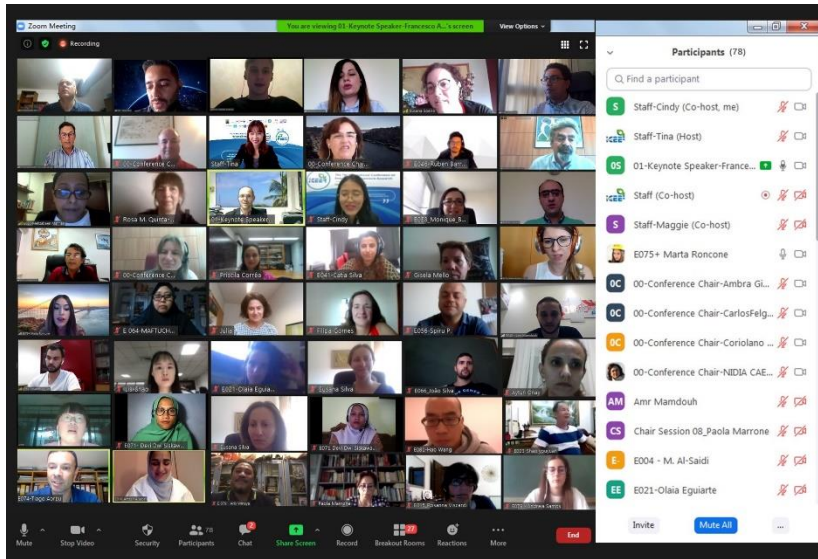
**ICEER 2016 UPC, Spain | Sep. 9-11, 2016**



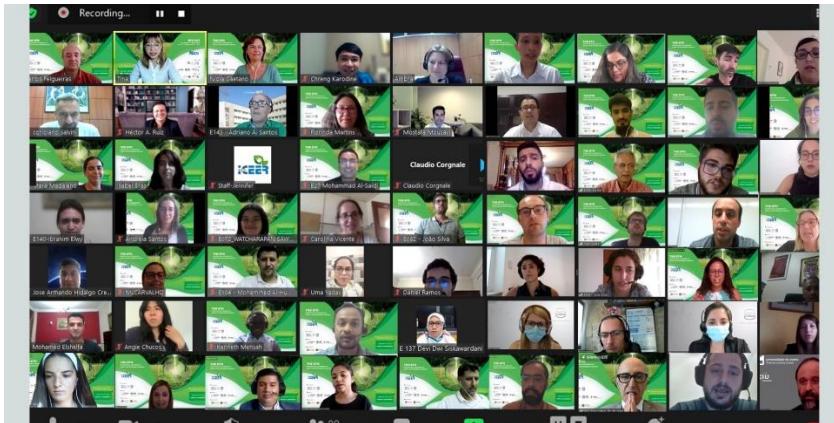


**ICEER 2017 Porto, Portugal | July 17-20, 2017****ICEER 2018 Prague, Czech Republic | July 23-27, 2018****ICEER 2019 Aveiro, Portugal | July 22-25, 2019**

## ICEER 2020 Virtual | Sep. 14-17, 2020



## ICEER 2021 Virtual | Sep. 13-16, 2021



## ICEER 2022 Porto, Portugal | Sep. 12-16, 2022





## ICEER 2023 Madrid, Spain | Oct. 7-9, 2023



## ICEER 2024 Coimbra, Portugal | July 24-26, 2024



# CONFERENCE CHAIR



## PROF. CARLOS FELGUEIRAS

Department of Electrical Engineering, School of Engineering (ISEP), Polytechnic Institute of Porto (IPP), Porto, Portugal

Orcid: <https://orcid.org/0000-0002-4202-5551> E-Mail : [mcf@isep.ipp.pt](mailto:mcf@isep.ipp.pt)

Research Interests: energy quality; energy and buildings; energy and environmental Indicators; renewable energy systems; sustainable energy systems; engineering education

Carlos Felgueiras achieved a bachelor's degree and a PhD in Electrical and Computer Engineering from the Faculty of Engineering-University of Porto, Portugal, in 1987 and 2008. His PhD addressed the development of mechanisms to support testing and debugging operations in mixed-signals circuits. Professional career activities included (1) testing of products, (2) developing test equipment and machinery automation, (3) a maintenance of electronic equipment, (4) training teacher at Texas Instruments plant, (5) supervisor of a testing laboratory to verify the compatibility of European Standards in thermoelectric household appliances, (5) Sectorial Standardization team Portuguese Electrotechnical Institute. He started teaching in 1993 and is currently a Coordinator Professor in the Department of Electrical Engineering at ISEP, Polytechnic of Porto, and is an Integrated Researcher at CIETI since 2001. He worked as Deputy Director of the Electrical Department between 2018-2019 and was Director of the master's degree in Sustainable Energies between 2018-2021.

His areas of research include Design for Debugging and Testing Mixed Signal Circuits, Remote Experimentation, e-learning, Renewable Energy Sources and Smart Buildings. He has participated in the organization of conferences (Conference Chair, Track Chair, Scientific Committee Chair), at various events, such ICEER, TEEM and TAEF). He is co-author of around 130 articles, as well as co-editor of several scientific publications.

Prof. Felgueiras was part of a team of 9 national and European research projects, in the areas of Remote Laboratories, Smart Grids, Sustainability Education. Prof. Felgueiras is a member of (1) Portuguese Association of Engineers, (2); GOLC, (3) Asociación TAEF; (4) SPEE - Portuguese Society for Engineering Education, (5) ACM community.

## PROGRAM CHAIR



### PROF. FLORINDA FIGUEIREDO MARTINS

School of Engineering (ISEP), Polytechnic Institute of Porto (IPP), Porto, Portugal

E-Mail : [ffm@isep.ipp.pt](mailto:ffm@isep.ipp.pt)

Research Interests: Sustainability, Environment, Energy and Optimization

**Florinda Figueiredo Martins** has a PhD in Chemical and Biological Engineering, a Master in Environmental Engineering and a degree in Chemical Engineering from the Faculty of Engineering, University of Porto, Porto, Portugal, obtained in 2007, 1998 and 1989, respectively.

Florinda Martins worked in industry as a process engineer and in the development of engineering projects. Further she was the director of a wastewater treatment plant.

Nowadays is Adjunct Professor at Instituto Superior de Engenharia do Porto (ISEP), School of Engineering, Polytechnic Institute of Porto (IPP), Porto, Portugal. She has supervised several Master thesis. She was sub director of the degree of Chemical Engineering in ISEP (from 2009 -2018). Member of of several EURACE accreditation processes of Chemical Engineering department's courses. Team member of national projects and projects in collaboration with the Portuguese Industry and Public Organizations . Coordinator by REQUIMTE/ISEP of 2 projects. Chair of conference EES 2012 (Energy, Environment and Sustainability 2012). Member of the Organizing/Scientific Committee of several international conferences in the areas Environment, Energy and Sustainability. Reviewer of several scientific journals in the areas of Environment, Energy, Bioresources, etc. . Author/co-author of 1 book, an e-book and several book chapters. Author/co-author of more than 40 publications in conferences and journals. She has presented several oral and poster communications in conferences. Her research interests include sustainability, environment, energy and optimization.

# SCIENTIFIC & TECHNICAL COMMITTEE CHAIR



## PROF. NIDIA DE SA CAETANO

Coordinator Professor at the School of Engineering (ISEP) of the Polytechnic Institute of Porto (P.Porto); Associate Editor for Biomass section of *Renewable Energy* (Elsevier); Editorial Advisory Board of Algal Research (Elsevier); Review Editor in Sustainable Energy Systems and Policies (Frontiers); Editorial Board of Green Technology, Resilience, and Sustainability (Springer); Guest Editor of Special Issues in *Frontiers, Energies, Waste and Biomass Valorization, Sustainability* and *ChemEngineering* journals. Editor of Conference Proceedings in *Energy Reports* and *Energy Procedia*.

<b>Research Unit</b>	LEPABE – Laboratory for Process Engineering, Environment, Biotechnology and Energy
<b>Nationality</b>	Portuguese
<b>Institutional Address</b>	Department of Chemical Engineering ISEP-Instituto Superior de Engenharia do Porto Rua Dr. António Bernardino de Almeida 4200-072 Porto
<b>Academic qualification</b>	PhD
<b>Professional category</b>	Coordinator Professor@ISEP
<b>Current positions</b>	Coordinator Professor, Researcher at LEPABE, Collaborator at CIETI
<b>Ciência ID</b>	1F1D-73E2-BFBF
<b>ORCID</b>	0000-0002-2185-6401
<b>ResearcherID WoS</b>	I-3934-2012
<b>SCOPUS</b>	55901684900

- Nídia de Sá Caetano is Coordinator Professor at the School of Engineering (ISEP) of the Polytechnic of Porto, senior researcher with LEPABE/FEUP, collaborator researcher with CIETI/ISEP. Sub-Director of the Master in Sustainable Energies of ISEP (MSE) from 2018; Director of the MSE from 2013-2018.
- Holding a PhD in Chemical Engineering, her scientific track record is: (1) 125 papers in WoS, (2)

6395 citations (in 5789 citing articles) in WoS, (3) H-index 28 in WoS, (4) PI of 4 projects funded by competitive calls (1 as coordinator of LEPABE), (5) researcher of 10 projects, supervision of (6) 5 doctoral and (7) >100 master theses concluded.

- Major research interests are: Biofuels from Waste; Bioethanol; Biodiesel; Waste-to-Energy; Microalgae for wastewater treatment; Microalgae for CO<sub>2</sub> mitigation; Biorefineries; LCA; Sustainable buildings.
- Subject Editor for Biomass of Renewable Energy from March 2020. Member of the Editorial Board, of Green Technology, Resilience, and Sustainability. Lead Guest Editor of 12 Special Issues in indexed journals (Energy Reports; Energies; Sustainability; Energy Procedia, Waste and Biomass Valorization, Processes) and Guest Editor of many other Special Issues (Frontiers; Climate; ChemEngineering). Conference and Program Chair of several International Conferences (ICEER series); Member of the STC of International Conferences (WASTES, CCESG, TEEM, REEE, ENASB, JTIR, etc.). Keynote and Invited Speaker for International and National Conferences. Treasurer of APESB (Portuguese Association of Environmental and Sanitary Engineering) from March 2021 (Vice-President from March 2020 to March 2021). Project evaluator for the EC (H2020 MSCA-ITN) from 2019, USDOA and ANI/AdI from 2006, Israeli Science Foundation, among other international and national agencies.

# Oral Session 1

## Clean Energy Development and Utilization

11:10-12:25 | 23<sup>th</sup> July 2025 | Wednesday

Room-Danube I & II

**Session Chair: Prof. Florinda F. Martins, ISEP, Portugal**

<b>E060</b> 11:10-11:25	<i>Renewable Energy, Smart Grids and Internet of Things: Turkiye Perspective</i> Atıl Emre COŞGUN, Hasan DEMİR <b>Presenter: Atıl Emre COŞGUN</b> Aksaray University, Turkey
<b>E076</b> 11:25-11:40	<i>Lithium Role in the Clean Energy Transition: Challenges and Prospects</i> Joana Almeida, Fátima Pedrosa, Maria João Plancha, Ana Gonçalves and Carlos Nogueira <b>Presenter: Joana Almeida</b> Laboratório Nacional de Energia e Geologia (LNEG), Portugal
<b>E097</b> 11:40-11:55	<i>Numerical Study on Regenerative Combustion and Stabilization Characteristics of Ultra-Low-Concentration Methane in a Particle-Packed Bed</i> Sheng Xue and Guiyun Zhang <b>Presenter: Sheng Xue</b> Anhui University of Science and Technology, China
<b>E110</b> 11:55-12:10	<i>Wind Energy Performance in Europe</i> Florinda F. Martins, Carlos Felgueiras and Nidia de Sá Caetano <b>Presenter: Florinda F. Martins</b> ISEP, Portugal
<b>E108</b> 12:10-12:25	<i>Feasibility Study of Renewable Dual Cooling Sources Air Conditioning System</i> Hong Li, Pengxiao Lv, Libo Zhang <b>Presenter: Hong Li</b> Yanshan University, China



## Oral Session 2

### Environmental Quality Monitoring and Pollutant Control

14:00-15:15 | 23<sup>th</sup> July 2025 | Wednesday

Room-Danube I

**Session Chair: Prof. Rui Calejo Rodrigues, GEQUALTEC, CONSTRUCT – Instituto de I&D em Estruturas e Construções, Portugal**

<b>E048</b> 14:00-14:15	<i>Multi-scale Analysis of Urban Air Pollution in London's ULEZ: A 2024 Study of Particulate and Gaseous Pollutants</i> Lixuan Zhu <b>Presenter: Lixuan Zhu</b> University of Birmingham, UK
<b>E050-A</b> 14:15-14:30	<i>Medium and Long-term Methane Emission Projections and Emission Reduction Pathways in China based on LEAP Model</i> Shanshan Li, Sheng Xue <b>Presenter: Shanshan Li</b> Anhui University of Science and Technology, China
<b>E104</b> 14:30-14:45	<i>Stakeholder Perceptions in the Wine Sector Regarding a Climate Change Mitigation Project</i> Pilar Gargallo, Nieves Garcia-Casarejos, Alexy Apolo Romero <b>Presenter: Nieves Garcia-Casarejos, Pilar Gargallo</b> University of Zaragoza, Spain
<b>E113</b> 14:45-15:00	<i>Assessing the environmental impacts of valorization of industrial saline residues: A comparative LCA approach</i> Luana Sarinho, Mariana Pinho, Maria Isabel Nunes, Pedro Carvalho, Ana Cláudia Dias <b>Presenter: Luana Sarinho</b> University of Aveiro, Portugal

<b>E120</b> 15:00-15:15	<i>Multicriteria Model for Prioritizing Urban Noise Reduction Interventions Considering Energy Consumption and Noise</i> Rui Calejo Rodrigues <b>Presenter: Rui Calejo Rodrigues</b> GEQUALTEC, CONSTRUCT – Instituto de I&D em Estruturas e Construções, Portugal
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# Oral Session 3

## Energy System and Environmental Engineering

14:00-15:15 | 23<sup>th</sup> July 2025 | Wednesday

Room-Danube II

**Session Chair: Prof. Nídia Caetano, LEPABE, Portugal**

<b>E016</b> 14:00-14:15	<i>Enhancement of Thermal Conductivity and Heat Storage in Polyamide Phase Change Materials via Reduced Graphene Oxide (rGO) Incorporation</i> Akram Fadhl Al-mahmodi, Patmashini Saii, Yamuna Munusamy <b>Presenter: Yamuna Munusamy</b> Universiti Tunku Abdul Rahman, Malaysia
<b>E066</b> 14:15-14:30	<i>Revolutionizing Solar Water Heating: A Hybrid Machine Learning Approach with Real-Time Weather Forecasting for Energy Efficiency and Environmental Sustainability</i> Kourdani Amina, Semmar Djaffar, Bendjebbas Hichem <b>Presenter: Amina Kourdani</b> Saad Dahlab University Blida 1, Algeria
<b>E068</b> 14:30-14:45	<i>Early-decision Support Tool for Smart Building Retrofits Towards Smart Readiness Indicator Enhancement</i> Anna Figueroa-Lopez, Noelia Vicente-Gómez, Sheila Puente Blanco, David Ciro Sierra García, Imanol Ordóñez, Alba Rocío Pérez Soto, Ignacio Hernández Antolín, Matteo Porta and Antonio Garrido-Marijuan <b>Presenter: Anna Figueroa López</b> TECNALIA Basque Research and Technology Alliance (BRTA), Spain
<b>E100</b> 14:45-15:00	<i>Exploring Microalgae Used in Wastewater Treatment as A Potential Feedstock for Biofuel</i> Nídia Caetano, Sónia Costa, João Ferreira, João Vilaça and Sónia A. Figueiredo <b>Presenter: Nídia Caetano</b> LEPABE, Portugal

<b>E101</b> 15:00-15:15	<i>High Performance Mixed-potential Hydrogen Sulfide Sensor based on A Three-dimensional Three-phase Boundary</i> Hong Zhang, Yumeng Wei, Haowei Zhu <b>Presenter: Hong Zhang</b> Anhui University of Science and Technology, China
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# Oral Session 4

## Energy Policy, Economics, Planning & Regulation

16:00-16:45 | 23<sup>th</sup> July 2025 | Wednesday

Room-Danube I

**Session Chair: Prof. Carlos Felgueiras, CIETI - LABORIS, Portugal**

<b>E080</b> 16:00-16:15	<i>Economic and Social Perspective for a Holistic Sustainability Assessment of Insect Production – A Systematic Review</i> Marta Ferreira Dias, Fernando Reis, Herminio Alves, Margarita Robaina, Mara Madaleno, Sara Moreno Pires, Paula Quinteiro <b>Presenter: Marta Ferreira Dias</b> GOVCOPP, University of Aveiro, Portugal
<b>E090</b> 16:15-16:30	<i>Achieving National Energy Efficiency in A Developing Country - A Case Study</i> Paulo Silva, Carlos Felgueiras and Adriano Santos <b>Presenter: Paulo Silva</b> CIETI - LABORIS, Portugal and Adriano Santos, CIDEM, Portugal
<b>E093</b> 16:30-16:45	<i>The Power of Education in Circular Economy</i> Diego Fonti, Margarita Robaina, Marta Ferreira Dias <b>Presenter: Marta Ferreira Dias</b> GOVCOPP, University of Aveiro, Portugal

# Oral Flash Session

## Drilling Model and Environmental Quality Monitoring

17:00-17:15 | 23<sup>th</sup> July 2025 | Wednesday

Room-Danube I

**Session Chair: Prof. Yamuna Munusamy, Universiti Tunku Abdul Rahman, Malaysia**

E055 17:00-17:05	<i>Research and Application of Intelligent Gas Drainage Borehole Design Theory Based on 3D Geological Model</i> Yaobin Li <b>Presenter: Yaobin Li</b> Anhui University of Science and Technology, China
E061-A 17:05-17:10	<i>The Evolution of Dust Distribution Characteristics with Varying Dust Mass During Hydraulic Support Movement in Fully Mechanized Mining Faces</i> Xingxing Xu, Qingyi Tu, Fei Xing, Sheng Xue <b>Presenter: Qingyi Tu</b> Anhui University of Science and Technology, China
E069-A 17:10-17:15	<i>Experimental Study on the Influence of Adsorption Pressure on Particle Size Distribution of Drilling Cuttings under Briquetted Coal Drilling</i> Lei Zhang, Xiaoliang Zheng, Sheng Xue, Shilong Liu, Chuanyin Gao <b>Presenter: Lei Zhang</b> Anhui University of Science and Technology, China

# Poster Session 1

## Renewable Energy

16:00-17:00 | 23th July 2025 | Wednesday

Room-Danube II

**Session Chair: Prof. Byeong-Kyu Lee, University of Ulsan, Republic of Korea**

**E007-A**  
1

*Fabrication of Reinforced Membrane Using Hydrophilic Porous Substrate for Vanadium Redox Flow Battery Application*

Dong-Joo Jeong, Kanalli V. Ajeya, Sang-Yoon Lee, Sung-Chul Park, Ho-Young Jung

**Presenter: Dong-Joo Jeong**

Chonnam National University, Korea

**E040-A**  
2

*A Study on the Fuel Characteristics of Automotive Diesel Blended with Hydrotreated Vegetable Oil (HVO) and Fatty Acid Methyl Ester (FAME) for Fuel in Korea.*

Jaedong Kim, Shin Kim, Jae-Kon Kim

**Presenter: Jaedong Kim, Shin Kim**

The Korea Petroleum Quality & Distribution Authority, Republic of Korea

**E059-A**  
3

*Effect of Microbial Electrochemical Technology with Granular Activated Carbon on Methane Production Efficiency under High and Low Organic Load Conditions*

Hironosuke Imai, Hikaru Kaneko, Hiroyuki Daimon

**Presenter: Hironosuke Imai**

Toyohashi University of Technology, Japan

**E058-A**  
4

*Time-Series Based Operational Risk Management for Liquefied Hydrogen Refueling Stations Using Temporal Fusion Transformer*

Ji-Wook Kim, Dong-Yong Park, Yoojeong Noh, Jin-Seok Jang

**Presenter: Jin-Seok Jang**

Korea Institute of Industrial Technology, Korea

<b>E073-A</b> 5	<i>Exergoeconomic Analysis of a Biomass-based Multi-generation Energy System Integrated with CO<sub>2</sub> Capture and Utilization</i> Reza Shirmohammadi and Fèlix Llovell <b>Presenter: Reza Shirmohammadi</b> Universitat Rovira i Virgili, Spain
<b>E098-A</b> 6	<i>Enhancement of Biogenic Methane Production from Coal by Microbial Electrolysis</i> Xun Zhang, Sheng Xue and Bingjun Liu <b>Presenter: Xun Zhang</b> Anhui University of Science and Technology, China
<b>E074-A</b> 7	<i>High Performance Carbon Nitride Photocatalyst for Gaseous Acetaldehyde Degradation and Hydrogen Production</i> Byeong-Kyu Lee, Mahdieh Razi Asrami, Milad Jourshabani <b>Presenter: Byeong-Kyu Lee</b> University of Ulsan, Republic of Korea
<b>E099-A</b> 8	<i>Method for Determining Coal Seam Gas Content through Fixed-Point Closed Sampling while Drilling</i> Xiaoliang Zheng, Lei Zhang, Shilong Liu, Chuanyin Gao <b>Presenter: Xiaoliang Zheng</b> Anhui University of Science and Technology, China



## Poster Session 2

### Energy Policy, Economics, Planning & Regulation

17:00-17:45 | 23th July 2025 | Wednesday

Room-Danube II

**Session Chair: Assoc. Prof. Aleksandra Komorowska, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland**

**E024-A**  
9

*Materials Life Cycle Assessment on CNT-added LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Cathode*

San Kang, Jong-Tae Son

**Presenter: Jong-Tae Son**

Korea National University of Transportation, Korea

**E028-A**  
10

*Quantitative Relationship between Image Processed-Phosphide on the Brazed Joints of SUS304/MBF60 and Brazing Temperature in Printed Circuit Heat Exchanger*

Dongyong Park, Jinseok Jang, Hyeonjeong Park

**Presenter: Dongyong Park**

Korea Institute of Industrial Technology, South Korea

**E063-A**  
11

*Optimizing Diagnosis and Sales Strategies for End-of-Life EV Batteries Using Reinforcement Learning*

Saedaseul Moon

**Presenter: Saedaseul Moon**

Seoul National University, South Korea

**E070-A**  
12

*Time Series Analysis of COVID-19 Confirmed Cases by Administrative Districts in the Southern Region of Seoul*

Yuna Kim, Siyeon Kim, Woong-Kyoo Bae

**Presenter: Yuna Kim**

Chung-Ang University, Korea

**E072-A**  
13

*Environmental Life Cycle Assessment of Sodium-Ion Batteries for Mobility Applications*

Luis Alfredo Carmona Arrieta, David Parra Mendoza

**Presenter: Luis Alfredo Carmona Arrieta**

Iberian Centre for Research in Energy Storage, CIIAE, Spain

<b>E075-A</b> 14	<i>Rural Decarbonisation Pathways: Outcomes of a Deliberative Process in Poland</i> Komorowska Aleksandra, Kowalik Wojciech, Hubert Wit, Gawlik Lidia <b>Presenter: Aleksandra Komorowska</b> Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland
<b>E077-A</b> 15	<i>Analysis of Hydrogen Transport/Storage R&amp;D Investment and Strategy for Securing Overseas Hydrogen Import Technologies in South Korea</i> Kibong Kim, Semi Oh, Jihye Kang <b>Presenter: Kibong Kim</b> Korea Institute of S&T Evaluation and Planning (KISTEP), Korea
<b>E102-A</b> 16	<i>Investigating the Way for Decarbonization of China's Urban Water System</i> Hao Xu, Guangtao Fu, Qian Ye, Shuning Shi, DanYang Gao, Yinchun Liu, Xiaoyu Yan. <b>Presenter: Hao Xu</b> University of Exeter, United Kingdom

## Poster Session 3

Natural Ecological Construction and Environmentally Sustainable Development

17:45-18:00 | 23th July 2025 | Wednesday

Room-Danube II

**Session Chair: Prof. Marta Ferreira Dias, GOVCOPP, University of Aveiro, Portugal**

E021-A  
17

*Grain Size Characteristics of Hard Clay Layers in the Yellow River Delta Region and Their Implications for Climate Change*

Shujian Xu, Min Zhao, Fanbiao Kong

**Presenter: Shujian Xu**

Linyi University, China

E047-A  
18

*A Framework for Life Cycle Sustainability Assessment of Insect-Derived Products*

Sara Silva, Ana Fonseca, Marta Ferreira Dias, Mário Martin-Gamboa, Rui A. dos Reis, Daniel F. Bruno, Emanuel J. Lourenço, Ana Cláudia Dias, Paula Quinteiro

**Presenter: Paula Quinteiro**

University of Aveiro, Portugal

E033-A  
19

*Digital Rock Reconstruction of Multi-component Carbonate Rocks based on WGAN-GP*

Wei Lin, Liang Wang, Guodong Wang

**Presenter: Wei Lin**

Linyi University, China

E078-A  
20

*Distribution characteristics of WCI along the Han River according to LANDSAT-8 image-based LST: Targeting the southern side of the Han River*

Siyeon Kim, Yuna kim, Woong-Kyoo Bae

**Presenter: Siyeon Kim**

Chung-Ang University, Korea

E094-A  
21

*Experimental Study on The Crushing Specific Work of Single Particle Coal Rock*

Zhao Zuheng, Tu Qingyi, Yuan Liang, Xue Sheng, Huang Jiasheng

**Presenter: Zhao Zuheng**

Anhui University of Science and Technology, China