

# Green Energy Today



First Issue 2024



INTERNATIONAL ASSOCIATION FOR GREEN ENERGY

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XiaoYu Wu (committee co-chair)

Yiji Lu

Yan Yin

Jian Zhao

Hongxia Li

Munur Sacit Herdem

Front and back cover designed by Munur Sacit Herdem

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# EDITOR'S LETTER

Dear readers,

I am pleased to introduce the first issue of 2024 for Green Energy Today Magazine. First and foremost, I thank Dr. XiaoYu Wu for his invaluable assistance in assembling this issue.

For this edition, I have invited four authors to offer their perspectives on energy access. This theme was chosen due to the critical insights I gained regarding the importance of energy access during the earthquake in Turkiye on February 6th, 2023. Energy access emerges as not just a crucial issue in specific regions but a global challenge. The earthquake, among other situations, highlights our dependence on energy access. Moreover, relying on fossil fuels to meet energy needs, especially when access is limited, poses significant environmental concerns.

Dr. Jatin Nathwani and Dr. Daniel M. Kammen contribute their expertise on universal energy access in this issue. Additionally, Dr. Catherina Cader and Dr. Phillip Blechinger have composed an outstanding article on smarter grid electrification.

We also continue with regular sections in previous newsletters, including energy news, updates from the International Journal of Green Energy, and job opportunities for our readers.

In conclusion, thanks go to everyone who contributed to this issue for their continuous support.

I trust you will enjoy the first issue of 2024 of Green Energy Today!

Sincerely,

Munur Sacit Herdem



MUNUR SACIT HERDEM, PhD

*Editor-in-chief  
Green Energy Today  
March 2024*

*Associate professor, Department  
of Mechanical Engineering,  
Adiyaman University, Adiyaman,  
Turkiye*

*Fellow, Balsillie School of  
International Affairs, Waterloo,  
ON, Canada*

[herdem@adiyaman.edu.tr](mailto:herdem@adiyaman.edu.tr)

# Welcome to the 1st issue of 2024 IAGE magazine, Green Energy Today

Dear IAGE members,

I am writing with great pleasure to warmly welcome IAGE members and the communities of interested parties to this first issue of 2024 IAGE publication, **Green Energy Today**.

Continuing with our effort in the previous years, IAGE is on the track for fast expansion of its networks, services, opportunities and impacts, with the establishment of increasing number of national/regional chapters, technical divisions, and associated activities. IAGE welcomes all interested parties, individual researchers and related organizations, to work together for our common goals of energy sustainability and climate change mitigation through pioneering research, advanced technologies and innovations.

It's also with delight to announce that IAGE Board of Directors recently approved in its meeting the establishment of a new technical division, **Sustainable Energy Materials**. This division's leadership include Dr. Xiaolei Wang from the University of Alberta as the division chair and Zheng Chen from the University of California, San Diego, as the vice chair, and Jie Ying from Zhongshan University as the secretary; supported with the division's board members from Canada, China, India, Korea, United Kingdom and the United States.

IAGE's flagship activity is the annual International Green Energy Conference (IGEC), which will be the 16<sup>th</sup> this year, to be held in Ningbo, China, from June 30 to July 4, 2024; joining forces with two other events, the 5<sup>th</sup> International Conference on Energy and AI, and Symposium on Chemical Engineering and AI, an example of partnership and collaboration that we are embarking on for escalated outcome and impact. The City of Ningbo is located at the southern economic center of the Yangtze Delta megalopolis, convenient for access from air, land (either by high-speed bullet trains or buses and vehicles) and sea. All contributions and submissions are highly welcome. If anybody is interested in getting involved in the organization and delivery of the conference program or other IAGE activities, please do not hesitate to get in touch with us.

Both IAGE and I are looking forward to hearing from you, and meeting many of our members and colleagues at this year's 16<sup>th</sup> IGEC in Ningbo as well.

Sincerely,



**Xianguo Li**, Ph.D., P.Eng., FCAE, FEIC, FCSME



**XIANGUO LI, PH.D., P.ENG., FCAE, FEIC, FCSME**  
President, International Association  
for Green Energy (IAGE)

*Professor, Mechanical and  
Mechatronics Engineering  
Director, Laboratory for Fuel Cell  
and Green Energy, University of  
Waterloo, Waterloo, Ontario N2L  
3G1 Canada*

[xianquo.li@uwaterloo.ca](mailto:xianquo.li@uwaterloo.ca)



# The 16<sup>th</sup> International Green Energy Conference (IGEC2024)

June 30 - July 4, 2024  
Ningbo International Conference Center (NBICC)  
Ningbo, Zhejiang, China



As multi-disciplinary international conferences, the 16th International Green Energy Conference (IGECXVI), the 5th International Conference on Energy and AI (ICEAI-V), and the Symposium on Chemical Engineering and AI join forces together to promote pioneering research and innovation in the fields of energy, environment, and AI (artificial intelligence) as well as their mutual impact and interaction. The conference aims to provide a forum for the exchange and sharing of latest technical information, dissemination of high-quality research results and new developments in the relevant fields. The conference will also provide ample opportunities for the debate and shaping of future directions and priorities in energy sustainability and security, and for the promotion of the R&D and application of AI technologies for advancing green energy, access to affordable and cheap clean energy, decarbonization and net-zero emission.

The conference will be of value and interest to researchers, scientists, engineers and practitioners working in the relevant fields of energy, environment and AI, from policy making, technical development to management and marketing.

## CONFERENCE VENUE (ON-SITE)

The 16th International Green Energy Conference and the 5th International Conference on Energy and AI will be jointly held on-site at Ningbo International Conference Center (NBICC) in Ningbo, China on June 30 - July 4, 2024. Ningbo is the southern economic center of the Yangtze Delta megalopolis and is also the core city and center of the Ningbo Metropolitan Area. To the north, Hangzhou Bay separates Ningbo from Shanghai; to the east lies Zhoushan in the East China Sea. (Source: <https://en.wikipedia.org/wiki/Ningbo>)

## CONFERENCE FORMAT

The conference will be composed of the following events and activities:

- General contributed abstracts/papers that will be presented orally in technical sessions.
- Keynote lectures by invited speakers.
- Panel sessions on special topics of particular interest.
- General contributed poster presentations.
- Book/Journal/Industry exhibitions.
- Social events for the conference delegates.

## CONFERENCE PROCEEDINGS

All papers will be reviewed by the conference Technical Committee under the direction of the International Advisory Committee. Eligible papers will be published in the Conference Proceedings, which will be available to the conference registrants.

## JOURNAL PUBLICATION

High-quality original papers of archival value will be considered for publication in Special Issues of prestigious international journals, including

- [International Journal of Green Energy](#) (Taylor & Francis)
- [Frontiers in Thermal Engineering](#) (Frontiers)
- [Energy and AI](#) (Elsevier)
- [Energy Storage and Saving](#) (Elsevier)

## IMPORTANT DATES (BEIJING TIME)

**Feb. 28, 2024:** Abstract/Paper submission due

Submission website: <https://www.iage-net.org/igec2024-submission>

**April 30, 2024:** Revised abstract/paper due

**April 30, 2024:** Early bird registration due

## CONTACT

**Website:** <https://www.iage-net.org/igec2024>

**Conference Secretary:** Drs. Bowen Wang or Jian Zhao

**Email:** igec\_iceai@outlook.com

# Call for nominations

## IAGE association awards

More information on Page 19 in this issue of Green Energy Today

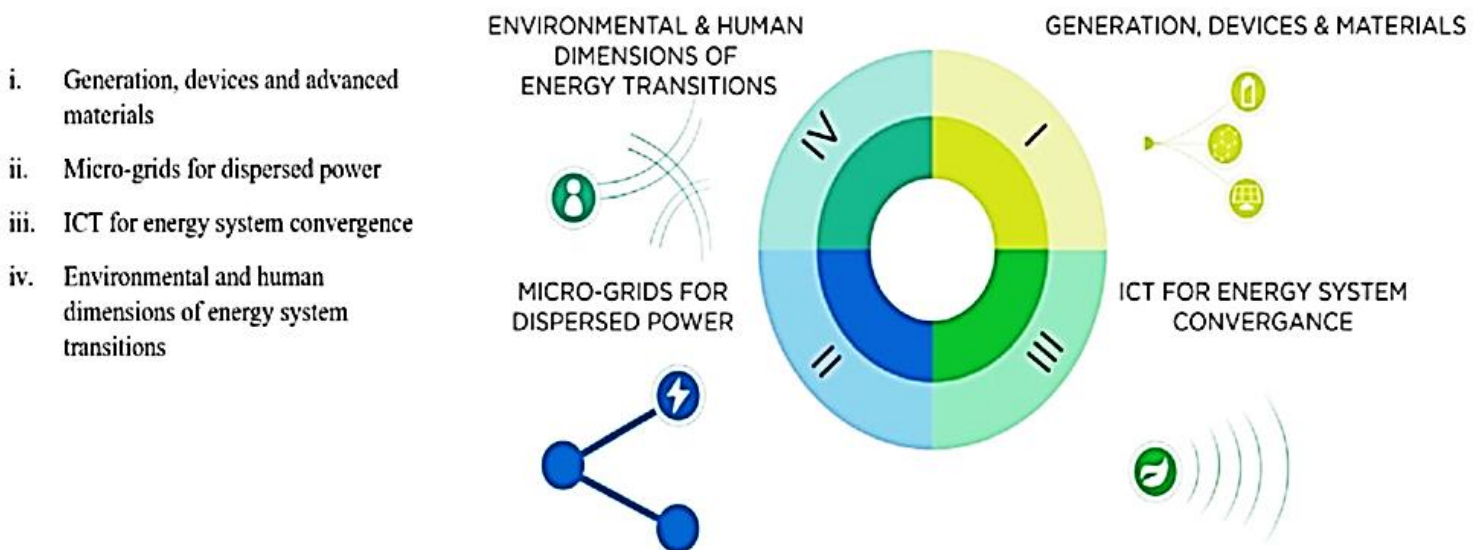
# Bridging the Divide: Unlocking the Potential of Universal Energy Access

Jatin Nathwani, University of Waterloo & Daniel M. Kammen, University of California, Berkeley

Energy serves as the lifeblood of societal progress, where access to it is synonymous with opportunities for growth and equity. The quest for universal energy access stands as a formidable challenge, calling for an annual global investment of an estimated \$50 billion. This financial commitment is not just a number—it represents a lifeline to the over 800 million individuals who currently navigate life without electricity and, by extension, without certain basic human rights [1]. Energy poverty is a barrier to health, education, and the opportunity to break free from the cycle of poverty.

Beyond its direct impacts, the traditional reliance on fossil fuels deepens economic divides. It poses severe health risks, with more than 4 million premature deaths each year linked to indoor air pollution from biomass combustion. The transition to reliable energy sources can potentially transform lives, particularly in regions where gender disparities are most pronounced, offering emancipation from the time-intensive tasks of daily survival.

An integrated approach that harnesses Energy Generation, Microgrids, Information and Communication Technologies (ICT), and the Environmental and Human Dimensions emerges as a beacon of hope. Sustainable and culturally sensitive solutions can be crafted through this confluence of disciplines. These solutions must resonate with the specific realities of remote communities, reflecting a deep understanding of their unique contexts (see Figure 1).



**Figure 1.** Knowledge creation, integration, and dissemination across multiple disciplines (taken from Ref. [1])

The journey to energy access requires a disciplined focus on cost for affordability navigation through a terrain of complex, interwoven barriers. Financial acumen innovative business relevant to the context in the global south, adequate technical proficiency, and social insight are the compass points necessary for effective outcomes. Remote monitoring capabilities, the cultivation of markets tailored to low-income communities, and a profound grasp of the end-users needs are all critical in charting the course toward energy sovereignty. In this landscape, microgrid technologies and the fusion of Artificial Intelligence (AI) with Data Science stand out as promising navigational tools, offering pathways to energy systems that are both adaptable and resilient.

A novel approach comprises an open access platform for design solutions exploiting generative AI for global scale deployment and interdisciplinarity to address critical gaps in the knowledge base to support an integrated global 'energy extension service' (modeled on the CGIAR<sup>1</sup>). Such a multi-faceted strategy that is inclusive, innovative, practical, and adaptable. By *leveraging the synergies of technological innovation* and policy reform, a new architecture for design solutions 'fit-for-purpose' to meet the energy services needs of the poorest global citizens has excellent potential. *Generative AI technologies* and data science analytics offer the potential for massive cost reductions. A '*global energy extension service*' capable of responding dynamically to changing technical, economic, social, and behavioral data in 'real-time' could solve a problem that has frustrated policymakers over decades.

A nuanced, methodical approach is paramount in crafting these off-grid systems. It begins with a thorough assessment of population clusters and their current access to electricity, followed by a projection of their future energy demands. The evaluation of supply options—be it solar, wind, or hybrid systems—must be carried out with an eye toward cost-effectiveness and sustainability. A phased implementation strategy ensures that these systems can grow and evolve with the communities they serve [2].

The ripple effects of smarter off-grid electrification are manifold. Rural communities gain the ability to leapfrog to cleaner energy alternatives, catalyzing improvements in healthcare and education while opening doors to economic advancements. This transition fortifies these communities' resilience and serves as a cornerstone for climate action, contributing to reducing greenhouse gas emissions and fostering a greener future [2].

The link between energy access and quality of life is indisputable, with the Human Development Index as a stark indicator of this relationship. A radical progression in scientific and technological innovation is required to mitigate global inequality. This progression must be balanced with affordability and accessibility to ensure no one is left in the dark.

Electrification through existing grid systems has its place, but the conversation is incomplete without recognizing the transformative potential of off-grid solutions. Microgrids, in particular, offer hope to the poorest regions, where the population growth rate surpasses the spread of traditional electricity access.

Energy Access Innovation Centers (EAICs) embody the collaborative spirit needed to address the multifaceted challenges of energy access. These centers draw inspiration from proven research and outreach frameworks, prioritizing practical research that can be rapidly translated into tangible solutions. Positioned as knowledge hubs, EAICs are envisioned to expedite the innovation pipeline, from ideation to deploying sustainable energy solutions.

As we pivot towards 2030, the urgency to bridge the energy gap intensifies. Achieving universal energy access is more than a lofty ideal; a concrete objective can be realized through a concerted mix of governance, innovative business models, and scientific ingenuity. This goal, central to the Sustainable Development Goals, is within our grasp, and with committed action, it can illuminate the lives of millions, heralding a new era of equity and sustainability.

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<sup>1</sup> 'Consultative Group for International Agricultural Research.'



## References

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**Jatin Nathwani** is currently a Professor cross-appointed to the Faculty of Engineering and Environment. He is also the Founding Executive Director of the Waterloo Institute for Sustainable Energy (WISE) and a Fellow with the Balsillie School of International Affairs (BSIA), University of Waterloo, Waterloo, ON, Canada. Professor Nathwani is currently leading a 'Global Change Initiative - Affordable Energy for Humanity' to address the challenge of enabling universal access. The focus of this global collaborative effort involves leading universities around the world. He has held 30 years experience in the Canadian power sector as a Professional Engineer.



**Daniel M. Kammen** is the Class of 1935 Distinguished Professor of Energy at the University of California, Berkeley, with parallel appointments in the Energy and Resources Group, the Goldman School of Public Policy, and the department of Nuclear Engineering. He was appointed the first Environment and Climate Partnership for the Americas (ECPA) Fellow by Secretary of State Hilary R. Clinton in April 2010. Kammen is the founding director of the Renewable and Appropriate Energy Laboratory (RAEL), Co-Director of the Berkeley Institute of the Environment, and Director of the Transportation Sustainability Research Center. He has founded or is on the board of over 10 companies and has served the State of California and US federal government in expert and advisory capacities.

# Smarter Off-Grid Electrification for Energy Access

Catherina Cader & Phillipp Blechinger, Reiner Lemoine Institute, Berlin, Germany

Energy access remains a critical issue worldwide, with Sustainable Development Goal 7 (SDG7) at the forefront, striving to ensure affordable, reliable, sustainable, and modern energy for all. With the deadline of 2030 approaching, over 1.2 billion people still require access to electricity, predominantly in rural areas where the grid does not reach [1] or in regions where grid access is dominated by planned and unplanned outages. In this context, off-grid electrification systems with high shares of renewable energy emerge as a vital solution for rural electrification and the achievement of SDG7.

## The Need for Smarter Off-Grid Systems

Traditional approaches to electrification often overlook rural communities' unique challenges and needs. Smarter off-grid systems offer a tailored and sustainable solution that considers the local environment, community needs, and available resources. To design these systems, a systematic approach is essential, comprising the following steps [2]:

1. **Assessing Population Clusters:** This involves mapping the population clusters within rural areas and determining their current electrification status.
2. **Demand Projection:** Estimating the expected electricity demand of each cluster is essential to ensure that the system designed will meet future needs.
3. **Optimization of Supply Options:** Simulation of different supply options, such as solar, wind, or hybrid systems, including storage options, can help optimize cost-effectiveness and efficiency for each cluster.
4. **Phased Implementation Planning:** Developing a phased approach for implementing off-grid systems allows for scalability and adaptability over time.

## Socioeconomic Impacts and Climate Action

The adoption of smarter off-grid electrification has far-reaching benefits. It enables rural populations to access clean energy, which translates into improved healthcare, education, and economic opportunities, thereby enhancing the overall standard of living [1, 3].

Including local stakeholders in the process and creating “Communities of practice” strengthens the overall ownership and thereby long-term sustainability. It also enables a just transition, where people benefit locally and allow for a just transition.

Moreover, while grid extensions can fail to provide reliable energy, especially in regions with weak grids, off-grid solutions offer a dependable and flexible energy source for diverse rural applications. Experience indicates that off-grid systems tend to be more resilient to climate disasters compared to large-scale systems. Furthermore, by leveraging renewable energy, off-grid systems contribute significantly to climate action, reducing greenhouse gas emissions and supporting sustainable local development [1].

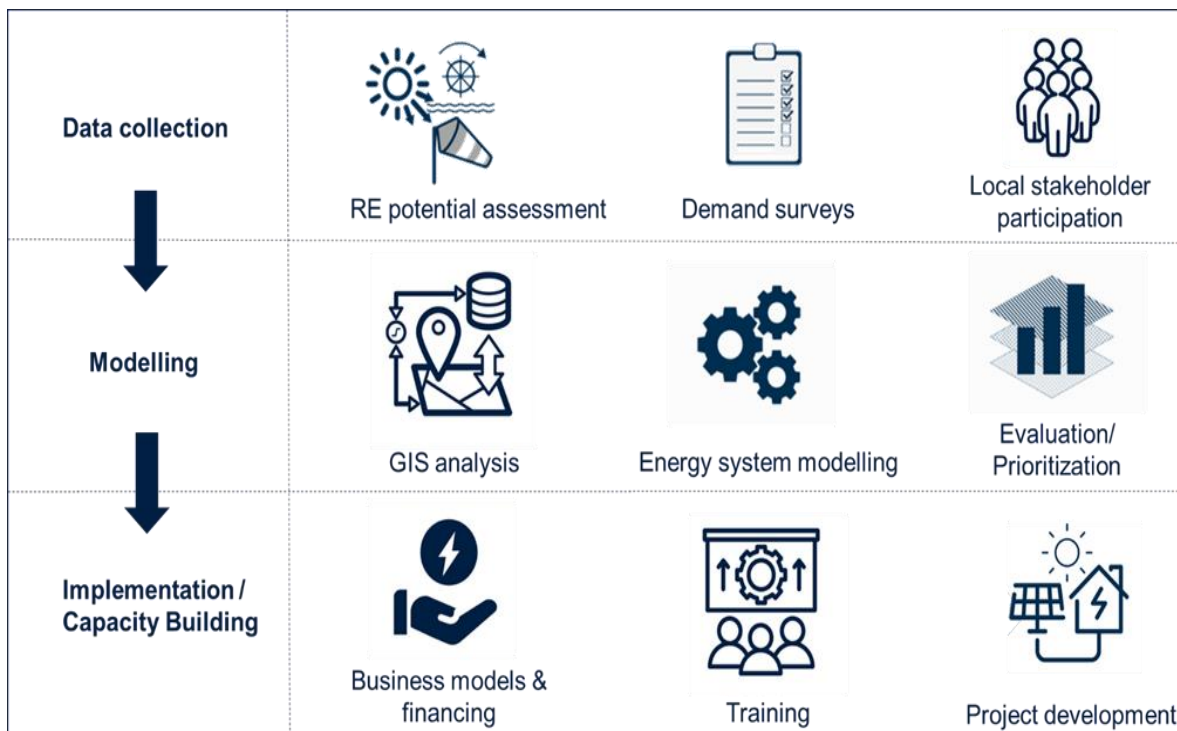
## Integrating Technology and Innovation

For the effective design and implementation of off-grid systems, energy system modeling, geospatial studies, and scenario development based on technological and economic viability are indispensable. Incorporating productive applications is essential to leverage synergies, such as those arising from the interconnection of water, energy, and food (e.g. water pumping, desalination, agricultural processing, cooling, and transportation). This not only enhances the willingness and ability to pay but also boosts the overall feasibility of the off-grid solution.

Using open source energy system models and simulations incorporating solar, wind, biomass, and hydro resource data is crucial for evaluating potential power generation capacities and operational strategies. Projects such as PeopleSun, E-land, and EnerSHelf demonstrate innovative approaches to off-grid system design, emphasizing improved demand analysis [4], sizing tools, delivery models, and energy self-sufficiency, with a focus on both technical and socioeconomic aspects [5][6]. These initiatives, alongside datasets and platforms for global electrification scenarios, offer valuable insights and tools for planning, financing and executing rural electrification projects [7][8][9][10].

## Conclusion

In conclusion, as illustrated in the attached figure, smarter off-grid electrification involves a multi-faceted approach that integrates planning, policies, technology, financing, and human resources. Strategic planning and robust policies provide the framework for sustainable electrification, while innovative financing and business models ensure the economic feasibility of off-grid solutions. Technological advancements enable the deploying of efficient and reliable systems tailored to rural areas' specific energy needs and resource availability. Lastly, developing human and institutional resources ensures the long-term operation, maintenance, and evolution of off-grid systems, creating resilient and empowered rural communities. Thus, smarter off-grid solutions address the immediate need for energy access and foster long-term socioeconomic development and environmental stewardship.



**Figure 1.** Ecosystem to support off-grid RE

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**Dr. Catherina Cader**, an expert in rural electrification planning, joined RLI in 2012 as a researcher and currently co-heads the Off-Grid Systems research unit. Specializing in GIS-based methods, she integrates spatial elements into RLI research through the development of open-source software and interactive webmaps. With field visits, stakeholder discussions, and self-developed GIS training, Catherina navigates political, geographical, economic, and technical challenges to advance energy access through renewable energy integration, e.g. in countries like Ghana, Nigeria, Tanzania, Zambia, Myanmar, Nepal, and the Philippines. She disseminates research through publications and conferences, serves as a journal reviewer, and contributes as an evaluator and independent expert for funding agencies, while also supervising academic research projects.



**Dr. Philipp Blechinger** is an international expert in renewable energy and rural electrification. In 2011, he joined the RLI and started to develop the off-grid systems research group, which he is currently representing as co-team leader.

He managed and conducted a wide range of international projects on energy access and island energy supply. Philipp regularly publishes and shares research results at conferences and in scientific journals (>70), also acting as reviewer and co-editor. In 2019 Philipp was appointed Visiting Scholar in the Renewable and Appropriate Energy Laboratory (RAEL) of the University of California, Berkeley as part of the [C-BEAR+ project](#) and a selected member of the [Arab-German Young Academy of Sciences and Humanities \(AGYA\)](#) at the Berlin Brandenburg Academy of Sciences and Humanities.



XiaoYu initially launched this section. I have also compiled some news about green energy for you. In the future, we plan to bring even more compelling news about green energy. Please continue to follow us!

## Net zero emissions

- Geothermal heat pumps (GHPs) are emerging as a key tool in combating climate change. [A joint report by Oak Ridge National Laboratory \(ORNL\) and the National Renewable Energy Laboratory \(NREL\)](#) highlights the benefits of widespread GHP use in the U.S. for building heating and cooling. The report projects a significant reduction in CO<sub>2</sub> emissions, with an estimated decrease of around 7,351 million metric tons from 2022 to 2050.
- [Wisconsin's Gundersen Health System](#) has joined forces with Xcel Energy to develop a renewable microgrid in a pioneering move toward sustainable energy at its Onalaska campus. This innovative project, part of Xcel's EMPOWER Resiliency program, will integrate a new battery energy storage system and existing solar panels and harness renewable energy from biogas produced at the La Crosse County Landfill.
- Recent studies have concentrated on enhancing the safety and energy capacity of Electric Vehicle batteries. An innovative approach, [detailed in a recent Nature journal article By Wan et al.](#), successfully inhibits the formation of lithium dendrites—harmful structures that form in solid-state lithium batteries and have hindered their widespread adoption. This breakthrough could pave the way for the broader commercialization of this promising green energy technology.

## Hydrogen

- [TECO 2030 and its 13 partners](#) have initiated the second €2.3m EU Horizon project, the Zero Emission Adriatic Ship (ZEAS), which focuses on advancing hydrogen fuel cell technology for maritime use. The company is set to receive a portion of the grant to deliver 1.2MW of fuel cells for ship propulsion, featuring a full-scale demonstration to showcase the viability of hydrogen fuel cells in maritime settings.
- [During the Bharat Mobility Expo 2024, Tata Motors](#) demonstrated its commitment to eco-friendly transportation solutions. The company showcased its lineup of hydrogen-powered vehicles, including the Prima H.55S, an internal combustion engine truck powered by hydrogen. This innovative truck was designed to support sustainable freight movement. Additionally, Tata Motors introduced the Tata Starbus Fuel Cell EV, a significant step forward in the company's green mobility initiatives.

## International Journal of Green Energy a year in review

Here's an overview of how *International Journal of Green Energy* has performed over the past 12 months, using data from a range of metrics.

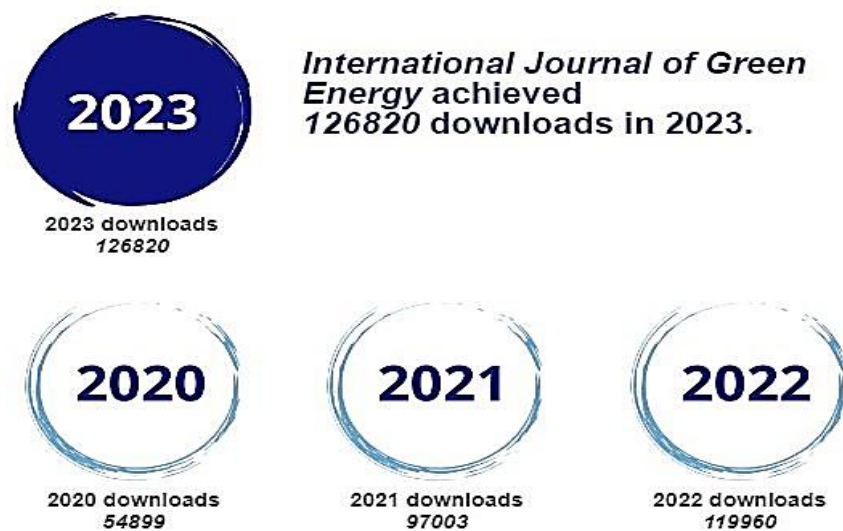
Please note, any instances of 'N/A' below reflect a time period before the journal was launched in partnership with Taylor & Francis.

### Readership in 2023 by quarter



### Annual readership numbers compared

We now show you data back to 2020, giving you more insight into comparative performance of the journal. This follows requests for additional benchmarking.



# Empowering Global Change: IAGE's International Expansion and Green Energy Mission

We are pleased to announce the opening of 14 country/regional Chapters for the International Association for Green Energy (IAGE) in the following locations: Canada, China, Denmark, Hong Kong, Italia, Korea, Lithuania, Malaysia, Serbia, Singapore, Spain, Turkiye, the UAE, the UK, and the USA. Following the release of the first issue of Green Energy Today Magazine in 2024, we will host our inaugural meeting with all chapters. We aim to feature news about this initial gathering in the second issue of our 2024 newsletter. In this edition, I will provide an overview of the goals of our international chapters and outline our strategy for sustainable growth.

The mission, vision, and objectives of IAGE are pivotal, with all chapters committed to facilitating their achievement. The objectives include:

- Advocating for and promoting green energy systems and technologies to foster a cleaner world.
- Pursuing sustainable environmental, social, and economic development to ensure prosperity and health for ourselves today and for future generations.
- Offering a multidisciplinary forum for exchanging the latest technical information, new ideas, and developments, disseminating high-quality research findings, and discussing and shaping future directions and priorities.
- Educating and enhancing the public's understanding of green energy and its significance through courses, seminars, conferences, and meetings and collecting and disseminating relevant information.

As international chapters, we are dedicated to working across various countries to meet these goals. Our plans include organizing international conferences, workshops, and short courses in different locations. Additionally, all chapters are set to collaborate with talented individuals and organizations within the green energy sector to expand IAGE and achieve our objectives. Furthermore, the chapters are eager to cooperate on international green energy projects to significantly contribute to developing innovative green energy technologies.

If you have any questions about the chapters, do not hesitate to contact me at [hikmetkarakoc@gmail.com](mailto:hikmetkarakoc@gmail.com).



Professor Hikmet Karakoc  
Chair of IAGE International  
Committee

*Faculty of Aeronautics and  
Astronautics, Eskisehir  
Technical University,  
Turkey*

## The First National Doctoral Academic Forum on Energy Storage Science and Engineering was successfully held in Wuxi, China

Professor Kui Jiao, Tianjin University

The First National Doctoral Forum on Energy Storage Science and Engineering was successfully held in Wuxi, Jiangsu Province, China, from 3<sup>rd</sup> to 5<sup>th</sup> November 2023. It was jointly hosted by Tianjin University, the Energy Storage Technology Branch of the Chinese Society for Internal Combustion Engines, the Wuxi Huishan Economic and Technological Development Zone Administrative Committee, and the Wuxi Research Institute of Tianjin University.



The forum was supported by all the National Innovation Platform for Industry-Education of Energy Storage Technology, Wuxi Automobile and Parts Science and Technology Mayors, related industry associations, Bosch Power, Jiangsu Hydrogen Conduction Intelligent Equipment Co., LTD., Tianjin Deshun Technology Co., LTD., Dekar Technology (Tianjin) Co., LTD., Acolife (Wuxi) Fuel Cell Technology Co., LTD., and other units. The conference attracted expert scholars and doctoral students in the field of energy storage from 26 universities, including Tsinghua University, Shanghai Jiao Tong University, Xi'an Jiao Tong University, Harbin Institute of Technology, Zhejiang University, Southeast University, Hong Kong Polytechnic University, Tianjin University, etc., and expert representatives of more than 10 companies, such as Bosch Power, Jiangsu Hydrogen Conduction Intelligent Equipment Co., LTD., with a total of more than 250 participants.





During the two-day meeting, six parallel sub-forums were held simultaneously on electrochemical energy storage, fuel energy storage application, energy storage equipment, system, energy storage safety and operation and maintenance, energy storage economy and policy, and other key energy storage technologies. A total of 84 doctoral students made reports with the latest research. Commented by a review expert group composed of universities and enterprises, 14 of the best reports were selected at this conference.



After the closing ceremony, the experts and doctoral students went to Bosch Power and Jiangsu Hydrogen Conduction Intelligent Equipment Co., LTD. to make an in-depth visit to establish an exchange and cooperation platform between universities and enterprises.



## IAGE Announces Establishing a New Technical Division- Sustainable Energy Materials

IAGE Board of Directors in its recent meeting held on March 10, 2024 approved the establishment of a new technical division, **Sustainable Energy Materials**. This new division will be led by Dr. Xiaolei Wang of the University of Alberta as its chair, and Dr. Zheng Chen of the University of California, San Diego, as its vice chair, and Dr. Jie Ying of Zhongshan University as the division Secretary; and supported by other division board members from institutions around the world, including Canada, China, India, Korea, United Kingdom and the United States. Further details about the division are as follows:

### The Objectives of the IAGE Sustainable Energy Materials Division

- IAGE Sustainable Energy Materials Division is established and managed under the administration of the IAGE Scientific Committee.
- To develop, maintain, and update the operating guidelines of the Division.
- To promote IAGE related to the themes of the Division.

### Duties and Responsibilities

- The Division will conduct activities to enhance research and development, and information dissemination in their sub-areas, by organizing meetings, short courses, workshops, symposia, and conferences.
- The Division will support the Scientific Committee with their best knowledge and expertise upon the request of the Scientific Committee.
- The Division Chair shall submit an annual report of the Division to the Scientific Committee.
- The Division Chair shall sit on the Scientific Committee.

### Academic Scope

The Division traces and encourages the advances in energy materials design, development and application with special consideration of sustainability, for achieving the long-term goal of making a sustainable economy and society. The special focuses of the Division include but are not limited to:

- Experimental developments of novel energy materials
  - a. materials with new morphology, structure, composition, phase, and/or form for clean energy applications;
  - b. new synthetic approaches/routes that are more efficient, lower energy consuming, and/or greener;
  - c. emerging materials and/or materials research platforms, e.g., high/medium entropy materials, MXene materials, etc.;
- Theoretical understanding of novel materials/materials chemistry
  - a. analysis of materials structure and composition using calculation/simulation;
  - b. prediction of materials, materials structures/properties, and/or materials synthetic approaches;
  - c. life cycle analysis and life cycle cost analysis of materials;
- Mechanism analysis of energy materials in chemical, electrochemical, and/or photoelectrochemical processes
  - a. advanced characterization techniques, approaches, and facilities;
  - b. correlation of energy materials microstructure with their properties and/or performance;
  - c. new *in-situ*, operando operations;
- Critical minerals around energy conversion/storage technologies
  - a. recycling of critical mineral elements materials from spent energy technologies, e.g., recycling of Ni, Co, Fe, Mn, Zn, graphite from spent lithium-ion batteries using metallurgical approaches, direct relithiation, etc.;
  - b. upcycling of critical mineral elements materials from spent energy technologies, e.g., upcycling electrode/electrode materials, upcycling spent battery materials for fuel cells, water splitting, etc.;
  - c. upgrading of current technologies, e.g., upgrading primary batteries into rechargeable batteries;
- Scaling up technologies and prototype/device development.

# IAGE Announces Establishing a New Technical Division- Sustainable Energy Materials

## Division Leadership

### Chair:

Prof. Xiaolei Wang, University of Alberta, Canada

### Vice Chair:

Prof. Zheng Chen, University of California, San Diego, US

### Secretary:

Prof. Jie Ying, Zhongshan University, China

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Prof. Gaixia Zhang, École de technologie supérieure, Canada

Prof. Zhengyu Bai, Henan Normal University, China

Prof. Ge Li, University of Alberta, Canada

The International Association for Green Energy (IAGE) is pleased to announce the Call for Nominations for 2024 IAGE society level awards. For full consideration, nominations must be received by **March 31, 2024**. Award winners will be announced at the 16th International Green Energy Conference venue and will be listed after the conference on the IAGE website.

Nominations should be emailed to the Honours and Awards Committee Chair, Dr. Jing Shi at [jing.shi@uc.edu](mailto:jing.shi@uc.edu). The entire nomination package (completed nomination form, and the required documents applicable to the award category) should be submitted in one single email. For more information about the awards, refer to the IAGE website: <https://www.iage-net.org/>.

The IAGE society level awards include the following categories:

- **Lifetime Achievement Award** recognizes an individual who has made extraordinary contribution to the advancement of green energy over his/her lifetime. The Lifetime Achievement Award is the highest honor bestowed upon an individual by IAGE.
- **Distinguished Service Award** is an honor bestowed to an individual who has provided exemplary service to the Association. It recognizes the individual's outstanding contribution to the IAGE, IGEC, IJGE, and the professional communities at large.
- **Outstanding Researcher Award** recognizes outstanding scientific work in green energy research by a world-leading scientist or engineer. The award recipient must have demonstrated exceptional contribution to the green energy research community.
- **Technology Innovation Award** recognizes and celebrates the researchers and/or inventors from the industry, academia, or individuals regarding their innovative ideas, products, or concepts. The Award is intended to encourage individuals or parties to think about "Technology Innovation" benefits.
- **Young Researcher Award** recognizes outstanding scientific work in green energy research by a young scientist or engineer. The award recipient must show exceptional promise as a developing leader and make outstanding and continuing contribution to green energy research



## Call for Bids

### Call for bids to host the 18th International Green Energy Conference in 2026

The International Green Energy Conference (IGEC) is a multi-disciplinary conference on energy systems and technologies with no/reduced environmental, economic and social impact, and provides a forum for the exchange of technical information, for the dissemination of high-quality research results, and for the debate and shaping of future directions and priorities in energy sustainability and security. IGEC is held annually typically in July and is organized by International Association for Green Energy (IAGE).

IAGE Conference Committee (CC) is calling for bids to host the **18<sup>th</sup> IGEC in 2026**. For full consideration, bids should be submitted by email with subject line “Bid to host the 18<sup>th</sup> IGEC” to the CC chair SeongDae Kim ([seongdae-kim@utc.edu](mailto:seongdae-kim@utc.edu)) by **March 31, 2024**.

To be eligible to host the 18<sup>th</sup> IGEC,

- The proposed conference city should not have hosted the IGEC within the past 5 years.
- The organizer should have experience in conference organizing.
- The proposed conference city should be able to attract new participants and have good accessibility.

Bids should be brief and include the following information:

1. **Organizers.** List the following organizer(s) with contact info and affiliation:
  - a. Organizing committee chair(s)
  - b. Organizing committee members
  - c. Hosting institution
2. **Institutional support and commitments.**
  - a. Relevance of the organization to green energy
  - b. Letter(s) of support from upper administration with detailed commitments, such as release time, secretarial support, and financial commitment
  - c. Professional conference services that will be available and considered to execute the conference – general description of what is available and whether or not they have been contacted prior to submitting proposal.
3. **Conference site.** Provide the following:
  - a. Brief description of the conference city
  - b. Brief description of possible conference venues
  - c. Site access and travel options: air travel and/or ground transportations with associated cost estimates
  - d. Conference facilities
  - e. Weather/climate
  - f. Local attractions
  - g. Accommodation: lodging options and cost estimates
  - h. Tentative conference schedule
  - i. Technical tours
  - j. Conference finance: estimated revenue and expenses, plan for securing sponsorships
  - k. Plan for conference promotion

The winning bid is expected to be announced by **May 31, 2024**.

Bidders may contact any IAGE CC members before submitting the bid to discuss any aspect of the bid.

IAGE Conference Committee

Seong Dae Kim, Ph.D. ([seongdae-kim@utc.edu](mailto:seongdae-kim@utc.edu))

Zhibin Yu, Ph.D. ([Zhibin.Yu@glasgow.ac.uk](mailto:Zhibin.Yu@glasgow.ac.uk))

Chong Wen Tong, Ph.D. ([chong\\_wentong@um.edu.my](mailto:chong_wentong@um.edu.my))

Zhongchao Tan, Ph.D. ([zhongchaotan@eias.ac.cn](mailto:zhongchaotan@eias.ac.cn))

Rúnar Unnpórsson, Ph.D. ([runson@hi.is](mailto:runson@hi.is))

### Feature: Tenure Track / Tenured Faculty Position at the University of Delaware

The Department of Mechanical Engineering ([www.me.udel.edu](http://www.me.udel.edu)) at the University of Delaware (UD) invites applications for a tenure-track/tenured faculty position at the Assistant or Associate Professor level in the field of renewable energy with emphasis on areas including but not limited to the following: fuel cells, renewable hydrogen production and utilization, vehicle electrification, batteries, and wind turbine design and manufacturing. While maintaining high-quality teaching and mentoring activity, the candidate is expected to be ambitious, creative, and innovative, with interdisciplinary spirit and vision; to have demonstrated excellence in research and leadership in their fields; and to potentially lead as the director of the Center for Fuel Cells and Batteries.

More details can be found via: <https://careers.udel.edu/en-us/job/500593/tenure-track-tenured-faculty-position-renewable-energy-mechanical-engineering>

### Feature: University Professor at Graz University of Technology (TU Graz)

Graz University of Technology is seeking candidates for a University Professor role in Sustainable Propulsion Systems and Applied Thermodynamics, a position previously held by Prof. Dr. H. Eichlseder at its Institute of Thermodynamics and Sustainable Propulsion Systems. This full-time, permanent role begins March 1, 2025, and requires candidates with outstanding achievements in sustainable propulsion systems and applied thermodynamics, demonstrating international presence in research and teaching. The appointment will comply with Sec. 98 of the Austrian University Act 2002.

More details can be found via: <https://jobs.tugraz.at/en/jobs/3a610f9a-146a-d1b6-9885-65251727a1bb>

### Feature:

There is also a list of openings in industry and academia on the IAGE website: <https://www.iage-net.org/careers-and-job-postings>

**Have openings related to green energy?  
You can post them here for free!**

Please contact Dr. XiaoYu Wu ([xiaoyu.wu@uwaterloo.ca](mailto:xiaoyu.wu@uwaterloo.ca))

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### EXECUTIVE COMMITTEE

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Secretary	Jing Shi	<a href="mailto:shij3@ucmail.uc.edu">shij3@ucmail.uc.edu</a>
Treasurer	XiaoYu Wu	<a href="mailto:xiaoyu.wu@uwaterloo.ca">xiaoyu.wu@uwaterloo.ca</a>

### COMMITTEE CHAIRS

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Communication Committee	Alper Dalkiran	<a href="mailto:alperdalkiran@sdu.edu.tr">alperdalkiran@sdu.edu.tr</a>
Conference Committee	SeongDae Kim	<a href="mailto:seongdae-kim@utc.edu">seongdae-kim@utc.edu</a>
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International Committee	Hikmet Karakoc	<a href="mailto:hkarakoc@eskisehir.edu.tr">hkarakoc@eskisehir.edu.tr</a>
Membership Committee	Zhibin Yu	<a href="mailto:zhibin.yu@glasgow.ac.uk">zhibin.yu@glasgow.ac.uk</a>
Nominating Committee	Xianguo Li	<a href="mailto:xianguo.li@uwaterloo.ca">xianguo.li@uwaterloo.ca</a>
Scientific Committee	Zhongchao Tan	<a href="mailto:zhongchao.tan@uwaterloo.ca">zhongchao.tan@uwaterloo.ca</a>

### TECHNICAL DIVISION CHAIRS

Energy storage division	Kui Jiao	<a href="mailto:kjiao@tju.edu.cn">kjiao@tju.edu.cn</a>
Fuel cell and Electrolyzer	Samaneh Shahgaldi	<a href="mailto:samaneh.shahgaldi@uqtr.ca">samaneh.shahgaldi@uqtr.ca</a>
Sustainable Energy Materials	Xiaolei Wang	<a href="mailto:xiaolei.wang@ualberta.ca">xiaolei.wang@ualberta.ca</a>

Website: <https://www.iage-net.org/>

Twitter: @the\_IAGE

LinkedIn: <https://www.linkedin.com/company/the-iage/>



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