Editorial

Inaugural Issue for Smart Energy Systems

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Welcome to the inaugural issue of *Smart Energy Systems* (*SES*), a gold open-access, peer-reviewed international journal committed to pioneering scholarship that transforms how we design, operate, and govern power and energy infrastructure in our rapidly digitalizing world. Published quarterly online by Scilight Press, our mission advances comprehensive, intelligent, and equitable solutions that merge breakthrough technologies, interconnected networks, and people-centered policies to achieve carbon-neutral infrastructure while maintaining reliability, affordability, and resilience.

Contemporary power infrastructure is undergoing an unprecedented transformation—shifting from centralized, single-purpose facilities to decentralized, big data-driven, and interconnected ecosystems. These innovative systems must coordinate multiple energy vectors and energy carriers, including electricity, thermal, hydrogen, and transportation—while responding to real-time power fluctuations and withstanding cyber threats, extreme weather, and market volatility. This evolution necessitates a scholarly platform that not only disseminates cutting-edge technological advancements but also fosters interdisciplinary research and facilitates practical implementation strategies.

Smart Energy Systems emerges to address this critical need, enabling dialogue and collaborative partnerships among power engineers, data scientists, economists, and policymakers to tackle fundamental challenges in infrastructure transformation. We aspire to establish *SES* as the premier scholarly venue for researchers, industry leaders, and policymakers working on global transformation initiatives.

The journal operates under six fundamental principles, as illustrated in Figure 1, that define our mission and scope:

● Accelerate Technological Innovation: Promote breakthroughs in intelligent grid architectures, artificial intelligence, machine learning, and quantum computing to enhance system operations, strengthen renewable integration, and facilitate real-time decision-making. Advance research on adaptive protection mechanisms,

self-healing networks, and cyber-physical security to counter emerging threats from digital attacks, climate extremes, and grid instability.

- Bridge Sectors and Disciplines: Foster cross-disciplinary partnerships among power engineers, data scientists, economists, and policymakers to address complex challenges in sector integration (electricity-transportation-hydrogen-thermal nexus), distributed markets, and multi-vector grid coordination. Emphasize connections between digital twins, blockchain, and IoT technologies for streamlined management of distributed resources, virtual power plants, and transactive ecosystems.

- Drive Sustainable and Inclusive Transitions: Champion research that harmonizes infrastructure with global climate objectives through lifecycle sustainability evaluations, circular economy frameworks, and equity-focused design. Encourage studies on power justice, community-owned microgrids, and off-grid innovations for underserved regions, ensuring universal access to clean transformation.

- Empower Data-Driven Decision-Making: Develop methodologies for precise forecasting (demand, pricing, renewables), grid-edge analytics, and AI-driven policy modeling. Investigate ethical AI frameworks to eliminate biases in access models and ensure transparency in algorithmic grid governance.

- Bridging Theory and Real-World Applications: Support applied research with concrete societal benefits, including industrial decarbonization demonstrations, grid modernization analyses, and policy assessments of carbon pricing, subsidy reforms, and green hydrogen strategies. Promote submissions showcasing scalable solutions for urban smart districts, rural electrification, and cross-border trading.

- Foster Global Knowledge Exchange: Function as a hub for international dialogue on emerging developments such as space-based systems, bio-inspired algorithms for grid resilience, and automation technologies. Encourage comparative analyses of regional transitions, from European hydrogen corridors to Asian offshore wind developments and African solar mini-grid innovations.
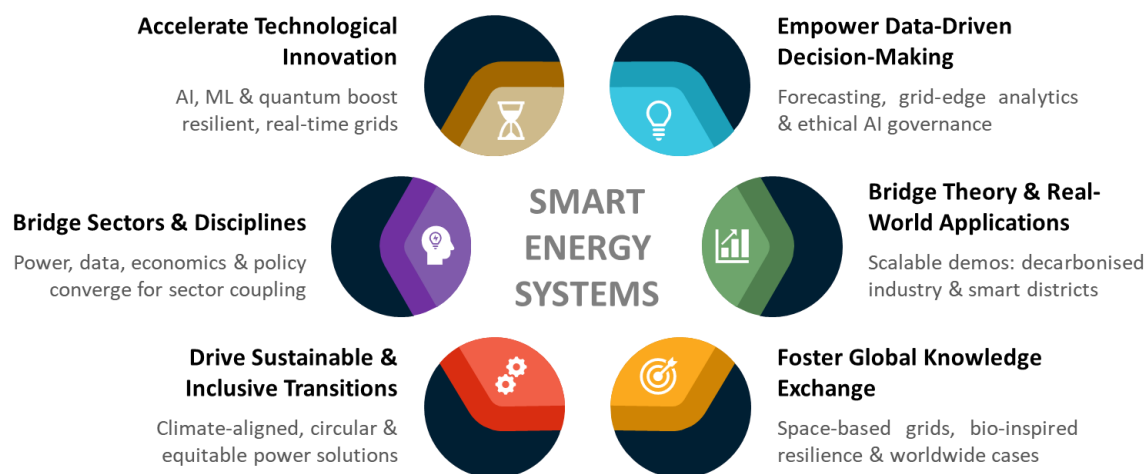

Figure 1. Six fundamental principles shaping SES's mission and scope.

Smart Energy Systems examines advancements in electric power infrastructure and its integration with other carriers, digital technologies, and socio-economic frameworks. Our scope covers intelligent grid design and operation, AI-driven forecasting and optimization, sector integration/coupling, energy justice, climate resilience, digitalization, and novel market frameworks. Whether investigating renewable integration in remote microgrids, blockchain-enabled carbon trading, quantum computing applications in grid security, or circular economy principles in asset management, *SES* connects innovation with real-world implementation.

We welcome original research articles, comprehensive reviews, case studies, methodological papers, and perspective pieces that:

- Present novel methods in power and energy system modeling, forecasting, control, and optimization
- Explore AI, ML, digital twins, and IoT applications in power, thermal, and multi-energy networks
- Evaluate policies and mechanisms for enabling flexibility, resilience, and equity
- Bridge theoretical advances with real-world impact through case studies and pilot projects
- Highlight intersections of technical, social, and environmental dimensions

We particularly encourage submissions that reflect partnerships among power engineers, computer scientists, economists, social scientists, and policymakers.

With scientific contributors and readers worldwide, *SES* promotes international exchange spanning diverse geographies, contexts, and perspectives. The transformation is global, and so is our vision. We invite our community to participate not only by submitting high-quality research but also by engaging through special issues, editorial contributions, and outreach activities.

Smart Energy Systems aims to be a leading platform for researchers, industry leaders, and policymakers shaping tomorrow's power landscape. By connecting theoretical innovation with practical and scalable solutions, the journal catalyzes a paradigm shift toward intelligent, interconnected, and socially responsible infrastructure that enables inclusive growth in a net-zero emissions world.

The inaugural issue marks the beginning of an exciting journey. As editors, we are committed to upholding the highest standards of academic integrity, inclusivity, and scientific relevance while ensuring rigorous yet efficient peer-review processes for timely publication and widespread dissemination.

Reflecting this commitment, the inaugural issue features pioneering research on intelligent grid operations, community-based energy solutions, and innovative market mechanisms that embody the journal's interdisciplinary spirit.

We encourage the global research community to contribute to this vital endeavor and anticipate fostering meaningful partnerships that advance smart infrastructure development. Together, let us use this platform to co-create knowledge that guides us toward a more intelligent, cleaner, and equitable future.

Finally, we would like to thank the associate editors, editorial board members, peer reviewers, contributing authors, and Scilight Press for making this inaugural issue possible.

Conflicts of Interest

The authors declare no conflict of interest.