ICEF2025 Steering Committee Statement

October 9, 2025 | Tokyo, Japan

Under the main theme of **"Innovation for Green Transformation (GX) and Security"**, the twelfth annual meeting of the **Innovation for Cool Earth Forum (ICEF2025)** was convened on October 8–9, 2025, in Tokyo and online. More than 3,000 parsons from over 100 countries and regions registered this year's discussions.

ICEF remains unique in its decade-long dedication to advancing innovation across technology, policy, institutions, finance, and society to accelerate the global transition toward a carbon-neutral, resilient, just, secure, and affordable future. ICEF2025 was organized as part of Tokyo GX Week, a series of 20 international conferences addressing energy, climate, and environmental challenges.

1. Where We Stand

- **The urgency is undeniable.**
  The IPCC underscores the imperative that global emissions must peak by 2025, and bend down the emissions curve by nearly half within this decade to preserve a livable climate and reach net zero by 2050. With the world already surpassing 1.5°C of warming, escalating climate impacts - from record-breaking heatwaves and catastrophic floods to prolonged droughts - make clear that the window for effective action is closing rapidly. Decisions and investments made today will define whether we achieve this milestone or face irreversible setbacks.
- **Progress and challenges coexist.**
  For the first time, global wind and solar generation surpassed coal in 2025, signaling a historic turning point in the power sector. Global energy investment exceeded USD 3 trillion in 2024, with two-thirds directed toward clean energy technologies and infrastructure. Costs of solar, wind, and battery systems have been reduced by 60% to 90%/ over the past decade. Yet, progress is uneven. Misalignment between policy, finance, governance and innovation, combined with geopolitical and geo-economic fragmentation, is slowing down the scaling of infrastructure and complicating international cooperation.
- **Climate ambition remains insufficient.**
  While nearly 120 countries and the EU have submitted their 2035 targets under the NDC 3.0 cycle, collective ambition remains off track from a Paris-aligned trajectory. The missed February 2025 NDC deadline by many countries highlights the persistent ambition–implementation gap. At COP30 in Brazil it is expected to focus on adaptation, the multilateral process risks fragmentation without renewed coordination.
- **Security and GX are inseparable.**
  Energy security, supply chain resilience, and access to critical minerals are now front-line concerns. These are amplified by geopolitical tensions and market nationalism. A new paradigm of innovation must therefore couple green transformation with security resilience, ensuring pathways to carbon neutrality also deliver reliability, affordability, and stability.

- **In addition to COP, new innovation ecosystems are needed.**
  Global decarbonization cannot rely solely on multilateral negotiations. Regional cooperation frameworks, city-level innovation ecosystems, and public–private coalitions are emerging as vital complements to the UNFCCC process - enabling faster experimentation, deployment, and scale.

2. Next Steps Needed

ICEF2025 recognized that triple breakthroughs - in emissions reduction, economic growth, and energy security - are essential to align innovation with global action. Discussions emphasized the following priorities:

1）. Renewable Energy: From Decarbonization to Security

Renewables now underpin energy security, fuel independence and affordability. The dramatic fall in the levelized cost of electricity (LCOE) for solar and wind power has created a historic opportunity. However, this headline figure belies a critical barrier: significant system costs of integration, including grid modernization, storage and flexible load, which remain prohibitively high in many markets. Participants called for an integrated system approach that aligns policy, finance, digital innovation, and governance to accelerate scaled deployment while actively managing and valorizing the entire energy system. And effective and efficient policy becomes crucial to reshape the market architecture, unlock and scale demand, ensuring that cost-effective, clean electricity being generated is fully utilized to decarbonize our economies.

2). Hydrogen for Hard-to-Abate Sectors

Hydrogen remains central to decarbonizing steel, cement, chemicals, and shipping. ICEF highlighted growing cost competitiveness, industrial demand, and cross-border demonstration projects (e.g., Japan–Australia corridor, EU Hydrogen Bank). Standardization, certification schemes, and de-risking mechanisms such as offtake agreements and blended finance are essential to unlock large-scale investment. To achieve scale from pilots requires five integrated pillars – efficient policy sending clear signals; innovation delivering scaled solutions; financing reducing first-mover cost penalty; infrastructure enabling physical flow across sectors and borders; and cooperation connecting these into a trusted, global market.

3). Small Modular Reactors (SMRs) and Nuclear Innovation

SMRs offer flexibility, scalability, and regional resilience. ICEF emphasized the importance of cooperation and collaboration to accelerate the development and scaleup of the next generation of reactors with harmonized safety and cybersecurity regulation, transparent community engagement , and next-generation nuclear innovation as part of a balanced energy mix for countries pursuing net zero.

4). Carbon Dioxide Removal (CDR) Technologies

Carbon Dioxide Removal (CDR) is indispensable for achieving net zero emissions. ICEF2025 highlighted breakthroughs in Direct Air Capture (DAC) systems, CO_2-to-fuels pathways, and mineralization for reuse in building materials. To accelerate deployment, carbon markets and climate finance mechanisms must evolve to recognize and reward verified removals.

5). Circular Economy and Resource Security

The Asia–Pacific region is becoming a hub for circular innovation, driven by AI-enabled collection, recycling, and traceability systems. Circular economy models offer opportunities for local employment, regional resilience, and industrial upgrading. However, gaps persist in infrastructure, capital, and regulatory coherence. ICEF2025 underscored the need for blended finance, innovation ecosystems, and interoperable standards to globalize circular systems

6). Sustainable Data Centers Roadmap

ICEF2025 released a Sustainable Data Centers Roadmap covering data centers' energy use, greenhouse gas emissions, water use and related topics, including data center cooling technologies, waste heat and policies around the world. The Roadmap equips governments, businesses and other stakeholders with actionable guidance to align the digital economy with climate goals — helping transform data infrastructure into a driver of decarbonization.

7). Adaptation and the Global South

ICEF reaffirmed that adaptation is no longer optional. Scaling resilient infrastructure, climate-smart agriculture, and early warning systems in vulnerable regions requires technology transfer, concessional finance, and long-term capacity building. Innovation partnerships must ensure that no region is left behind in the transition.

3. Conclusion

- **Inclusion and diversity fuel innovation.**
  ICEF reaffirms its belief in the vital role of women leaders, youth innovators, and Global South voices. Innovation flourishes when all perspectives are engaged.
- **Institutions and governance safeguard innovation integrity.**
  Strong governance systems are essential to de-risk investment, enforce fair competition, and ensure accountable, trustworthy innovation. Institutions anchor stability and confidence in the fast-evolving innovation ecosystem.
- **Security and GX define the next decade.**
  The convergence of green transformation and multifaceted security - encompassing energy, food, water, critical minerals, supply chains, and cybersecurity - will shape global trajectories. ICEF identifies three strategic imperatives for the decade ahead:
    I. Energy System Transition and Resilience – balancing decarbonization with reliability, affordability, and accessibility.
    II. Supply Chain and Resource Security – strengthening policy efficiency and resilience across minerals, technology, infrastructure, and food–water–energy systems.

III. Technological Innovation and Global Standards – scaling breakthroughs while harmonizing global rules and norms.

- **AI as the Catalyst for the Next Frontier of Innovation.**
  Artificial Intelligence is emerging as a general purpose toolkit for green transformation. From optimizing renewable grids, industrial operations, and carbon removal systems, to enabling predictive climate analytics and new governance transparency tools, AI can unlock unprecedented efficiency, foresight, and accountability. ICEF calls for global collaboration to develop trustworthy, secure, and inclusive AI ecosystems that accelerate the GX–security nexus while upholding ethical and sustainability principles.

ICEF will continue to explore pathways in addition to COP, building coalitions that connect policy, finance, institutions, and innovation to realize the goals of the Paris Agreement - and to shape a future where innovation drives both transformation and security.