Meeting Report

SIDE EVENT

"Harmonizing Innovation Growth and Climate Resilience: AI-based NBI Platform for Climate Technology Cooperation in the Asia-Pacific Region"

23 April 2025, UN Conference Center, Bangkok and online

Organized by

Science and Technology Policy Institute (STEPI), National Institute of Green Technology (NIGT), Asian and Pacific Centre for Transfer of Technology (APCTT)
Hosted by the Ministry of Science and ICT, Republic of Korea, Embassy of the Republic of Korea in Thailand, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

I. Opening session

Dr. Ji Woong Yoon, President, STEPI

- Highlighted the long-standing tension between environmental health and industrial/ digital growth (Tragedy of the Commons, declining natural capital, AI energy use).
- Raised the issue of striking a balance between innovation and the environment rather than stopping advancement.
- Presented the idea of Nature-Balanced Innovation (NBI), which aims to achieve two goals: maximize innovation and minimize threats to nature. The framework can be used to assess climate technologies in order to promote innovations that are balanced with nature and to create useful connections between climate technologies and finance.
- Argued for a fundamental change in the way that R&D questions are asked so that they take into account both natural and industrial ecosystems (e.g., developing ammonia fuel and mitigating its by-products).
- Suggested a "Twin Engines" strategy that combines risk reduction, Climate Tech development, and Deep Tech innovation.
- Proposed extending the idea of growth capital to encompass "New Nature Capital" in addition to knowledge, financial, and human capital.
- Urged funding for "balance with nature" in R&D in the conclusion.
- Supported facilitating collaborations to promote climate technology solutions for inclusive and sustainable future of the region and for innovation-led climate resilience and sustainable development.

Dr. Preeti Soni, Head, APCTT

- Reiterated that integration of nature-based solutions with advanced technologies and systems is key to achieving climate resilience.
- Noted that AI-based systems offer promising opportunities for optimization of NbS, climate technology solutions, ensures accuracy, unlocks financial opportunities among others

Dr. Sanghyup Lee, President, NIGT

- Underscored the necessity of adopting scalable models that effectively integrate climate technology advancements with financial frameworks.

H.E. Yongmin Park, Ambassador of the Republic of Korea to the Kingdom of Thailand

- Acknowledged that climate change posed a critical challenge.
- Highlighted that integrating AI and data-based systems with climate action will enhance mitigation potential of climate technologies.
- Alignment of innovations with sustainability and finance would offer low-carbon pathways towards climate resilience and sustainable development.
- Stressed the importance of aligning innovation with sustainability goals and leveraging regional solidarity and multilateral cooperation, underpinned by scientific innovation.

II. Technical session

Dr. Soo J. Sohn, Senior Research Fellow, STEPI

- Climate change is a result of industrialization and urbanization treating nature as a free resource ("tragedy of the commons"). Energy and water consumption are two environmental costs of the digital revolution (deep tech, generative AI). The question is: Should we pursue innovation that is in harmony with nature, or should we avoid it altogether?
- The idea is to strike a balance between "growth engines" and the "natural environment." Dual values ("Twin Engines") are the goal of the proposed NBI: minimizing environmental risks while maximizing innovation. calls for a fundamental change in thinking to take into account both natural and industrial ecosystems at the same time (for example, R&D for ammonia fuel must also address reducing harmful byproducts).
- Presented the "Twin Engines" model, which connects the development of Deep Tech and Climate Tech.
- In addition to traditional human, financial, and knowledge capital, the proposed NBI calls for taking "New Nature Capital" into account. urged the inclusion of "investment for balance."
- Stressed that "investment for balance with nature" be incorporated into R&D initiatives.

Dr. (Mrs.) Anandavalli N. CSIR-Structural Engineering Research Centre, India

- Nature-based solutions are examples where innovative solutions ensure maintain equilibrium with nature.
- Showcased AI-algorithms for building design. Examples including SECROBUILT technology for housing (Lightweight Block, Rapid Assembly), Jut cavity bricks (using industrial waste), Laced Steel-Concrete Composites (blast resistance), Bio-Inspired Functionally Graded Cementitious materials (impact resistance), and Floating offshore structures for wind turbines.
- Emphasized AI's role in handling uncertainties in structural engineering. Presented AI applications in design optimization (e.g., solar farms), corrosion prognosis, SHM via Acoustic Emission, wind load assessment, and the concept of Digital Twins for predictive assessment.

Prof. Junbeum Kim, Associate Professor, University of Technology of Troyes

- Developed an AI-based carbon reduction assessment system for climate technologies

- Showcased global climate R&D priorities and funding, raising the critical question: How much carbon emission reduction is actually achieved by these technologies and investments?
- Introduced an AI-driven system using LCA and Leontief Input-Output models (adapted with environmental data) to assess both direct and *indirect* carbon reductions across industry sectors.
- Detailed the AI-based system's workflow. The system can be used and applied for 1) carbon reduction potential of national R&D on carbon neutrality, 2) categorization of high/low carbon reduction contribution R&D projects, 3) carbon reduction potential estimation for climate technologies, and 4) investment decision assessment tool for climate technologies. Mentioned Korean patent and plans for international collaboration (e.g., P4G, Vietnam) requiring country-specific modifications.

Mr. Hee Jin Shin, Director Kyobo Securities Co., Ltd.

- Contrasted Korea's low carbon credit prices (KAU/KOC near $10) and sluggish market with the higher prices and activity in the EU/UK. Proposed a new scheme to revitalize the market.
- Presented a "Climate-Finance Integration Trading Platform" that uses Simulation (new approach for indirect effects) -> LCA -> IP Value Estimation / Carbon Credit generation -> STO (Security Token Offering) Trading Platform.
- Described tokenizing carbon credits directly or as Stablecoins (backed by credits) to attract ESG investors. Target assets include Renewable Energy, Real Estate, and Intellectual Property (Climate Tech & Carbon Credits).
- Introduced Kyobo's ST Platform and its goals for collaboration, tokenization of Korean content/assets, and future product expansion (fixed income, MMFs).

III. Panel Discussion

Dr. Minsu Son, Research Fellow, KICT

- Need to make and analyze actionable AI-based data sets through simulation for applications at regional and local levels for climate adaptation.
- Climate- and socioeconomic data could be analyzed by AI-driven system to determine impacts of industries with an objective to ensure local-level carbon reductions.

Mr. Jae H. Lee, General Partner, Zeitgeist Capital, USA

- Adoption of AI-based assessment of climate technologies at scale would help enhancing climate action and resilience.
- Emphasized the importance of cross-continental VC perspectives and PPP strategies to effectively align technology, finance, and climate goals, noting significant interest and changes happening especially in the US at state/local levels despite federal shifts.
- Mentioned the potential of tokenization and stablecoins in finance.

Dr. Pham Tran Hai, Principal Advisor, IRUS, Viet Nam

- VN is embarking on ambitious plan for green energy transition through relevant policies, financial mechanisms, carbon credit markets, capacity building, awareness, infrastructure building, etc.
- The new AI-based evaluation system would be useful for Vietnamese projects related to electric mobility, carbon reduction, tech parks, etc.

IV. Key Themes & Takeaways

- AI as a Core Tool: AI is essential for quantitative evaluation, prediction, optimization, and integration in climate finance and technology.

- Nature-Balanced Innovation (NBI): This concept requires a shift from NbS to a framework that actively strikes a balance between minimizing adverse environmental and climate impacts and optimizing innovation benefits, incorporating "Nature Capital."
- Bridging Tech & Finance: There is an urgent need for tools and systems (such as stablecoins, STOs, and simulation-based valuation) that clearly connect technological performance (carbon reduction) with investment and financial markets.
- Measuring Impact: Special attention is paid to creating reliable, standardized techniques (using AI, LCA, and I-O models) to quantify the direct and significant indirect carbon reduction effects of R&D and technologies.
- Collaboration and Context: International (particularly regional Asia-Pacific) and public-private partnerships are essential, and it is acknowledged that models and solutions must be tailored to the needs of individual countries.

V. Closing Remarks

- Dr. Eun Joo Kim (STEPI): Expressed gratitude to speakers, panellists, organizers, and attendees. Reaffirmed the commitment to continued collaboration and dialogue on advancing NBI and climate technology cooperation in the Asia-Pacific region. Invited continued interest and participation in future initiatives.