

Science, Technology and Innovation (STI) for Low Carbon and Resilient Cities: Training Workshop

December 16-17, 2021

Hybrid: Ulaanbaatar, Mongolia & Zoom

(Draft: 15 December)

Objective

North-East Asia accounts for more than one-third of the world's carbon emissions. While countries in the subregion have committed to reducing greenhouse gas (GHG) emissions and building resilience to climate change, local governments need to keep up with ambitious and well-defined targets in order to meet the national commitments and accelerate transition to low-emission resilient development pathways in line with the Paris Agreement's 1.5-degree climate goal. Moreover, the increasingly frequent extreme-weather-lead disasters and the COVID-19 pandemic have underscored the urgency to restore the relationship between human societies and nature. While returning to business-as-usual would be bound for another system meltdown for the next crisis, transformative and structural changes are needed to build back better and greener.

Mongolia updated its Nationally Determined Contribution (NDC) to achieve 22.7% reduction in GHG emissions from its business as usual scenarios by 2030 through domestic efforts, and to further reduce the target to 27.2% based on international support. The country needs support in financing, technology transfer including indigenous knowledge of local communities, and capacity building and knowledge sharing for the successful implementation of its NDC. Science, technologies and innovation (STI), key means of implementation for the 2030 Agenda for Sustainable Development, is a key driving force for advancing climate change mitigation, building resilience and accelerating the transformation towards carbon neutrality. For example, while the Government of Mongolia aims to be more adaptive to new frontier technologies, the country faces various challenges, such as low high-tech penetration, limited support on new technology and lack of responsive STI policy and regulation, as diagnosed in the "Digital Readiness Assessment of Mongolia".

While the low emission and resilient pathways differ from localities due to various reasons, such as industry and energy structures and capacity limitations, there is no doubt that technological solutions and innovative urban governance are key pillars for inclusive and sustainable development. Building on the existing work on low carbon urban development in North-East Asia, UNESCAP and its collaborating partners are committed to cross-fertilizing the vast regional experience and expertise and facilitate knowledge sharing of sustainable innovation and technology solutions for collaborative action.

Developing low carbon resilient cities serves as an important pathway for realizing national and local mitigation targets while assuring growth and improving the quality of life. Hence, as part of the capacity building project developed by UNESCAP in collaboration with the Government of Mongolia, this training workshop aims to take a case-study based approach to introduce good practices emerged in and beyond North-East Asia on applying STI to achieve low-carbon and resilient development at local level.

Outcomes

- Introduce a general framework on STI for low carbon and resilient development.
- Share relevant good practices in different sectors for advancing sustainable, inclusive, and resilient societies through STI application.
- Raise awareness on technological and governance innovation for cost-effective emission reduction and climate change adaptation.
- Respond to the priority needs of local stakeholders regarding:
 - Reducing GHG emissions and building climate resilient cities;
 - Improving the energy efficiency in public transportation and urban accessibility;
 - Integrating Nature-based Solutions (NbS) and adaptation strategies in urban planning, redevelopment and renewal;
 - Utilizing ICT and smart technologies to improve building energy performance; and
 - Applying innovative urban governance to support mid- to long-term transition.

Expected participants

40 participants physically participating and 35 participants joining online from Mongolia

Organizers

- Ministry of Environment and Tourism of Mongolia (MET)
- Climate Change Research and Cooperation Centre (CCRCC)
- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)
- ICLEI - Local Governments for Sustainability
- innovative Green Development Program (iGDP)

Language

English, Chinese, Korean and Mongolian simultaneous interpretation provided

Platform

Zoom	https://us06web.zoom.us/j/85123235955?pwd=SCtIRFAvVzByd0tVbUVNaGVYVVFNZz09 Meeting ID: 851 2323 5955 Passcode: 445643
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Provisional program

09:00 - 17:00 (GMT+8)// 10:00 - 18:00 (GMT+9), 16 - 17 December 2021

Day 1 (GMT+8)	Agenda
09:00 – 09:30// 10:00 - 10:30 KST (30 mins)	Registration <ul style="list-style-type: none"> • <i>The meeting will be organized in hybrid format. Participants who attend in person will need to register at the meeting venue, following social-distancing requirements.</i> • <i>Housekeeping for on-site and zoom participants.</i> • <i>Participants are encouraged to actively participate and reflect their views throughout the workshop on how some of the case studies can be replicable and transferred to the local context.</i>
Moderator	Ms. Davaasambuu U., Climate Change Research and Cooperation Centre of Mongolia
09:30 – 10:00// 10:30 - 11:00 KST (30 mins)	Welcoming remarks <ul style="list-style-type: none"> • [EN] Mr. Ganbold Baasanjav, Head of UNESCAP East and North-East Asia Office • [MN] Ms. Ariuntuya D., Senior officer of International Cooperation Division, Ministry of Environment and Tourism of Mongolia • [EN] Mr. Yeruult ENG, Director of Climate Change Research and Cooperation Centre of Mongolia (CCRCC) • [EN] Mr. Shu ZHU, ICLEI East Asia Regional Director



Moderator	Ms. Beatrice Chng, Program Manager, ICLEI East Asia
10:00 – 10:10// 11:00 - 11:10 KST (10 mins)	Ice-breaking <i>Online interactive tool will be used to encourage active participation among workshop attendees</i>
10:10 – 10:40// 11:10 - 11:40 KST (30 mins)	Session 1: The role of STI in building low-carbon and resilient cities <i>This session will introduce a conceptual framework and emerging technologies in key sectors to provide the participants an overview on STI as a means of implementation and source of solution to low-carbon resilient urban development. In addition, a presentation from Mongolia is invited to set the scene for the training.</i> Speakers: <ul style="list-style-type: none"> ● [EN] Introductory presentation by Ms. Qian Cheng, Associate Environmental Affairs Officer, ESCAP (15 mins) ● [MN] UB introductory presentation by Ms. Enkhee, Officer of Environmental Department of Ulaanbaatar City (15 mins)
10:40 – 12:10// 11:40 - 13:10 KST (90 mins)	Session 2: Innovative tools for urban planning <i>This session will introduce two case studies on the application of ICT technologies to support citizens and local communities to be informed and engaged in urban planning processes as well as the planning process of a housing complex to reduce the building energy consumption to lower local GHG emissions.</i> Speakers: <ul style="list-style-type: none"> ● [EN] Data-informed urban planning in Singapore, Mr. Daniel Hii, Research Fellow, School of Design and Environment, National University of Singapore (30 mins) ● [EN] Low-Carbon Projects in Korea, Ms. Myoungju LEE, Chief, Zero Energy Architecture Center, Myongji University (45 mins)



	<p>Joint discussion (15 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> • <i>What are the main challenges faced by urban planning?</i> • <i>Have any ICT measures been applied for urban planning in cities?</i> • <i>How can building efficiency be considered in the planning process of a housing complex?</i> • <i>How to address specific urban challenges through a long-term urban planning process?</i> • <i>What are some of the active and passive technologies that can be considered for the locality?</i>
<p>12:10 – 13:20// 13:10 - 14:20 KST (70 mins)</p>	<p>Lunch break</p> <p><i>All participants should be back by 13:15 (UB)</i></p>
<p>13:20 - 14:50// 14:20 - 15:50 KST (90 mins)</p>	<p>Session 3: Sustainable mobility and ICT</p> <p><i>This session will set the tone for sustainable urban mobility planning by looking at the public transportation planning journey of Seoul city. The session will focus on the public transportation reform, public bike-sharing system, and the role of technology in urban mobility in Seoul city.</i></p> <p><i>Speakers:</i></p> <ul style="list-style-type: none"> • [KR] Seoul public bike-sharing Ttareungyi, Mr. Jin Woo JUN, Operation Team Manager, Public Bicycle Management Office, Seoul Facilities Corporation (15 mins) • [EN] Hydrogen-use in transportation, Mr. Young In KWON, The Korea Transport Institute (KOTI), Sejong City, Korea (15 mins) • [KR] Seoul Advanced Traffic Management System, Ms. Soo Jin LEE, Director, Traffic Information Division, Seoul Metropolitan Government (45 mins) <p>Joint discussion (15 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> • <i>What are the main challenges and opportunities faced by implementing ITS in transport planning?</i>



	<ul style="list-style-type: none"> • <i>What is the current thinking on public bike-sharing systems in major cities in Mongolia?</i> • <i>Compare the different transportation modes and what makes sense for UB (the different transport mix and the cost-benefit analysis)?</i> • <i>How to address transport emissions in terms of GHG and air pollution?</i>
<p>14:50 - 15:00// 15:50 - 16:00 KST (10 mins)</p>	<p>Tea Break</p>
<p>15:00 - 16:00// 16:00 - 17:00 KST (60 mins)</p>	<p>Session 4: Clean energy solutions to sustainable living environment</p> <p><i>This session will introduce two distinct case studies that both transformed the urban space – one from land degradation into a sustainable and eco-friendly oasis in the desert region in Kubuqi, Inner Mongolia, China, and the other is 100% solar energy powered houses in Seoul.</i></p> <p><i>Speakers:</i></p> <ul style="list-style-type: none"> • [EN] Elion Group Three-in-One PV Project for Clean Energy and Eco-Restoration, Kubuqi Desert, Mr. CAI Mantang, Associate Professor and Deputy Director, Beijing Development Institute, Peking University (20 mins) • [KR] Sungdaegol’s Local Energy Transition Drive, Ms. Soyoung KIM, President, Seongdaegol Maeul Dot Cooperative (20 mins) <p>Joint discussion (20 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> • <i>How to plan for a long-term climate action plan in cities?</i> • <i>How does the energy transition support low-carbon and resilient development, with focus on coal transition?</i> • <i>What are some of the specific interventions in looking at energy and energy efficiency e.g., the building sector, solar energy</i>



<p>16:00 – 17:00 //17:00 - 18:00 KST //09:00 - 10:00 CET (60 mins)</p>	<p>Session 5: Transformation from coal to green city</p> <p><i>Coal production and steel manufacturing featured heavily in Essen’s past. The city is now transformed into the third greenest city in Germany, winning the European Green Capital 2017 for their impressive work on climate change mitigation and adaptation, local transport, and wastewater, amongst others. This session will dive into Essen’s urban transition process at city and district-levels, including the design and operation of the transcitiy emission trading scheme (ETS).</i></p> <p><i>Case studies to be introduced:</i></p> <ul style="list-style-type: none"> ● From Grey to Green Transition, Essen, Germany ● TRANSCITY Social Emission Trading Scheme, Essen, Germany <p><i>Speaker:</i></p> <ul style="list-style-type: none"> ● [EN] Mr. Sebastian Schleht, Strategic Management, Environment Department, City of Essen, Germany (30 mins) <p>Joint discussion (30 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> ● <i>Where can cities in Mongolia start on low-carbon development?</i> ● <i>How did Essen consider SDGs in the planning process?</i> ● <i>How did Essen address the economy and socio-economic challenges in the urban transition process?</i> ● <i>How to encourage cross-sectoral collaboration and the institutional structure that made it work?</i>
<p>Day 2 (GMT+8)</p>	
<p>Moderator</p>	<p>Mr. Merlin Lao, Senior Program Manager, ICLEI East Asia</p>
<p>9:00 – 9:30// 10:00 - 10:30 KST (30 mins)</p>	<p>Arrival of participants and registration</p>
<p>9:30 – 10:30// 10:30 - 11:30 KST</p>	<p>Session 6: Innovative urban governance</p>



<p>(60 mins)</p>	<p><i>This session will look at innovative urban governance approaches to mainstream low carbon and climate resilience planning into different sectoral- and city-level planning by looking at the urban renewal process in Chengdu.</i></p> <p><i>Speaker:</i></p> <ul style="list-style-type: none"> ● [CN] Chengdu Urban Renewal, Mr. Rui DING, Chief Engineer of Urban Planning, Director General, Office of Technical Consultation and Quality Assessment, Chengdu Institute of Planning and Design, Chengdu, China (30 mins) <p>Joint discussion (30 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> ● <i>Through the different case studies, what are the main challenges and takeaways in terms of urban governance structure?</i> ● <i>What are the main challenges faced by Mongolia?</i> ● <i>How can the “park city” concept be replicated to Mongolia in terms of innovative urban governance and integrated planning?</i>
<p>10:30 – 10:50// 11:30 - 11:50 KST (20 mins)</p>	<p>Tea Break</p>
<p>10:50 – 12:20// 11:50 - 13:20 KST (90 mins)</p>	<p>Session 7: Innovation on solid waste management</p> <p><i>This session will introduce two cases of local governments achieving low carbon and resilient development through innovation in the waste management sector.</i></p> <p><i>Case studies to be introduced:</i></p> <ul style="list-style-type: none"> ● <i>Xuzhou Solid Waste Utilization, Xuzhou City, China (how to use low carbon tech to recycle and reuse as building materials)</i> ● <i>Biogas from food wastes to electricity, Incheon, South Korea</i> <p><i>Speakers:</i></p> <ul style="list-style-type: none"> ● [CN] Circular Economy of Bulk Solid Waste Utilization as Building Materials and Analysis of Carbon Reduction Benefits In Xuzhou, Mr. Hao CUI, Chinese Academy of



	<p>Sciences University, Jiangsu Zhenfeng Environmental Protection Group Co., Ltd. (30 mins)</p> <ul style="list-style-type: none"> ● [EN] Waste to Energy Facilities in Sudokwon Landfill Corporation, Mr. Heedong Kwon, Head of Climate Change Department, SUDOKWON Landfill Site Management Corp. (30 mins) https://olc.worldbank.org/content/solid-waste-management-swm-korea-learning-4-waste-energy-facilities-sudokwon-landfill <p>Joint discussion (25 mins)</p> <p>Guiding questions:</p> <ul style="list-style-type: none"> ● What are the technologies to address solid waste? ● How to apply circular economy approaches to waste management? ● What are some of the challenges faced by Mongolia on solid waste management? ● What are other international best practices?
<p>12:20 – 13:30 13:20 – 14:30 KST// (70 mins)</p>	<p>Lunch break 13:20 – 14:30 KST// (70 mins)</p>
<p>13:30 – 15:00// 14:30 - 16:00 KST (90 mins)</p>	<p>Session 8: Enhancing climate resilience in urban systems</p> <p><i>This session will highlight key STI approaches for making cities resilient. It will first introduce the overall Sponge City Program in China so that participants will be able to see how to leverage on STI to create a practical solution and governance structure. It will then introduce relevant case study in Guangming New District of Shenzhen City, China, on how the Sponge City program enhances the resilience and adaptability in the built environment as well as strengthening nature-based infrastructure (NbS):</i></p> <p>Speakers:</p> <ul style="list-style-type: none"> ● [EN] Sustainable urban water management strategies in Chinese cities: the Sponge City Program in China, Mr. Faith Ka Shun Chan, Associate Professor, University of Nottingham (30 mins) ● [CN] The Sponge City Pilot programme in Guangming District, Mr. Weizhen TANG, Water Affairs Bureau of Guangming District, Shenzhen, China (25 mins)



	<p>Joint discussion (30 mins)</p> <p><i>Guiding questions:</i></p> <ul style="list-style-type: none"> ● <i>What is climate resilience in urban systems?</i> ● <i>What are the key resilience challenges that participating cities face in Mongolia?</i> ● <i>How can green and blue infrastructure be applied to strengthen climate resilience? Examples of NbS and adaptation strategies</i> ● <i>What are the institutional structure and financing mechanisms that worked in Chinese cities that can be transferable?</i>
<p>15:00 – 15:10// 16:00 - 16:10 KST (10 mins)</p>	<p>Tea Break</p>
<p>15:10 – 16:40// 16:00 - 17:40 KST (90 mins)</p>	<p>Brainstorm: Way forward</p> <p><i>This session will reflect on the key conclusions and learnings from the two-day discussion and discuss what are the practical short-, mid-, and long-term actions that can be addressed together with the stakeholders presented. The session will also introduce the North-East Asian Low Carbon Cities Platform (NEA-LCCP) and brainstorm the areas of interest and modalities for engaging Mongolian cities in NEA-LCCP.</i></p> <p><i>Brainstorm areas of focus for future action: via Menti survey (15 mins)</i></p> <p><i>Moderated discussion based on the survey results (60 mins):</i></p> <ul style="list-style-type: none"> ● <i>Presentation of the results</i> ● <i>What are some of the 2022 goals that cities presented at the training want to achieve?</i> ● <i>What are the long-term goals and what are the main challenges to achieve?</i> ● <i>How can international partners support?</i> ● <i>What are the priority areas of interest for city-to-city cooperation?</i>
<p>16:40 – 17:10// 17:40 - 18:10 KST</p>	<p>Closing session</p> <p><i>Speakers from:</i></p>



CLIMATE CHANGE RESEARCH AND
COOPERATION CENTRE



UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific



Local Governments
for Sustainability
EAST ASIA



绿色创新发展中心
Innovative Green Development Program

(30 mins)

[MN] Ms. Otgontsetseg L., Secretariat of the Joint Crediting Mechanism, Climate Change Research and Cooperation Centre of Mongolia (CCRCC)

- **[EN] Mr. Sangmin Nam**, Deputy Head, UNESCAP East and North-East Asia Office