

## Flash Report

### Circular Economy & Sustainable Infrastructure



**Date:** Thursday, 5<sup>th</sup> May, 2022|14:30 – 16:00 PM (GMT +7 BANGKOK TIME)

**Venue:** Live Broadcasting via zoom

Disclaimer:

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## Table of Contents

<b>List of Acronyms:</b> .....	3
Background: .....	4
Logistical information about the event.....	4
Objective:.....	4
Review on Participants: .....	4
<b>Summary of Key Messages:</b> .....	5
Opening Session .....	5
Panel discussion .....	8
Policies, Regulations, and Practices: Perspectives, Challenges and Key Success Factors .....	8
Capacity Development and Knowledge Transfer .....	8
Incentivization and Financing for Sustainable Infrastructure .....	8
Q&A.....	8
Closing remark .....	9
Snapshots of the Event .....	10
Annex:.....	12
Annex 1: The Final Agenda.....	12

## List of Acronyms:

<b>AIT</b>	Asian Institute of Technology
<b>CE</b>	Circular Economy
<b>EPR</b>	Extended producer responsibility
<b>EV</b>	Electric Vehicle
<b>NGOs</b>	Non-Governmental Organizations
<b>PV</b>	Photovoltaic (Solar Panels)
<b>RE</b>	Renewable Energy
<b>SDGs</b>	Sustainable Development Goals
<b>SI</b>	Sustainable Infrastructure
<b>UNEP</b>	United Nations Environment Program

## Background:

With the looming treat of climate change, lost of biodiversity and habitat destruction, global organizations, business leaders, and activists from around the world are coming together to create opportunities for real changes through the development of Circular Economy (CE) solutions that maximized value out of materials through the repairing, reusing and repurposing concept.

With the rapid speed of urbanization, business leaders, investors and governments have a responsibility now more than ever, to ensure that comprehensive policy and planning are in places to ensure a solid circular economy infrastructure.

This 1.5-hour webinar will dive into three case studies in Thailand, China, and South Korea, and will create a clearer understanding of the possible applications of a Circular Economy in infrastructure development, helping to identify policy planning and regulatory aspects to materialized Circular Economy infrastructure and the sustainability framework in Thailand.

## Logistical information about the event

The event was organized by UNEP in partnership with Asian Institute of Technology (AIT) through zoom and was live streamed on AIT's Facebook page.

## Objective:

The objective of the webinar is to broaden knowledge and created a clear understanding on possible applications of a Circular Economy in infrastructure development and to help identifications of policy, planning and regulatory aspects to materialized Circular Economy in infrastructure. Furthermore, we hope to highlight key success factors and driving forces that drive Circular Economy practices and policy change.

## Review on Participants:

One hundred sixty-one (161) participants were registered prior to the event, and 54 viewers (25 Female and 29 Male) joined online which was assessable through Zoom and Live broadcast on the Facebook's page of AIT Extension Center and their networks.

## Summary of Key Messages:

### Opening Session

#### **Ms. Elisa Tonda**

Head of Consumption and Production Unit, UNEP)

This webinar will concentrate the pressing issues and addressing the infrastructure that exist especially the gap for achieving CE and SI. There are great opportunities and great transformation that need to happen. For achieving SI, we understand that there is a 500 billion dollar per year funding gap for the Asia and Pacific region. We can choose to continue the same economic model, or we need to embrace a sustainable lifestyle model. It can do so by extending the lifetime of product and locally sourcing following the circular model, rather than the linear one. For us to move to new economic models for us to better utilized and improved efficiency, is a key benefit of SI and CE. The changes to a sustainable lifestyle study have shown that it can reduce GHG impact. Using recycle materials in the context of residential building could reduce 15 to 20 percent of GHG. We cannot ignore the need for improving and must not miss the opportunities to make a change. We are here to take up the challenges and make a change. We have a choice to shift us to circularity.

#### **Dr. Naveed Anwar**

Vice President of Knowledge Transfer, AIT

The life cycle of the infrastructure can extend from 50 to 100 years and throughout the lifecycle many resources are consumed. The development of infrastructure consumes extensive natural resources and often the consumption of resources continues after the end of the infrastructure lifetime. We did not consider enough in the past on how design and develop structures to be both sustainable and efficient. So having regulations, policy and codes is a key to enabling the designing and planning of sustainable structures. Especially at the end of the life of the structure, where the structure will no longer be in used and how do we convert or return it back to the resources that we obtained from. The difficulty lies in the existing structures are build before the idea of sustainable and circular lifestyle was realized. Another part that we need to consider is the operational aspect which consumes a considered amount of energy. Focusing on streamlining it; so, we reduce resources used. We need to think how to be reused already extracted resources. We have a lot of research to support sustainable and circular mindset and it's best to develop the help to apply it to designing and planning.

## Keynotes Speech

### Mr. Rowan Palmer

Lead, Sustainable Infrastructure Investment Team, UNEP

Infrastructure systems includes built, natural and hybrid systems and they can range from water management, food systems, housing, telecommunications, energy, healthcare and etc. Sustainable infrastructure is planned, designed, constructed, operated, and decommissioned in a manner that's economic financial and social environment sustainable. Sustainable infrastructure does not mean any infrastructure or sectors, but it is referring to the outcome of infrastructure development. Being a sustainable 'sector' does not equate to sustainable infrastructure. Also, it is important that we understand that the lifecycle is the from the policy, regulation, planning, and project pipelines are also part of the good sustainable practice. We are focusing on the enabling environment "upstream" interventions as in policy and regulations.

There are 10 main principles published February 2021 and it was recognized by all of UN states. Today, we focus on principal number 5, resource efficiency and circularity. Resource efficiency and circularity should include a plan and design for minimizing footprint and reduce emission, waste, other pollutants. The first key idea is a need-based principle which refers to being people center, data and demand driven. This may also include thinking of alternatives to building new gray infrastructure. The second key idea is the system level interventions emphasis early planning and enabling environment. If we consider sustainable as early as possible, there are more options that are available. Examples can be simply like using recycle materials; they need to be included in the building codes. The third key idea is the integrated approach that considers nature, economic synergy which will lead to a better investment.

## Case Studies:

### Dr. Hoseok Kim

Chief Research Fellow, Korea Environment Institute

Titled: Transition to Electric Mobility and Renewable Energy in the Republic of Korea

Establish innovative green energy transitions in South Korea has been a key task for building a sustainable infrastructure to enable a green economy. Korea recognized that the shift to green economy, like RE and EV, will substantial and increase volumes of used PV panels and EV batteries which will need to be recycled. So, the focus how can they build a green economy with circularity in mind. The vision that was created was to focus on innovation in demand management, supply shift to clean and safe energy, system to decentralized energy, industry to increase global competition, and infrastructure to accelerate energy transition. Used PV panels and EV batteries can bring negative impact to the population and the environment. Korea's Green New Deal 42.7 trillion KRW fund was introduced to support the new deal. Used EV batteries and PV panels are complex pieces of technology which make the recycling process also complex. EV batteries are flammable; so, need to take care and technical skilled workers to follow protocol. There is a lack of technical skills for recycling PV panels and EV batteries.

Korea developed future waste resource collection centers and used an integrated approach to enable sustainable goal.

### **Dr. Sujitra Vassanadumrongdee**

Senior Researcher Environmental Research Institute, Chulalongkorn University

In Thailand, we are fighting the plastic pollution. Plastic packaging is a relatively large market, especially for goods and food packaging. Many of the products are multi-layer materials which is hard to recycle. After COVID-19, the problem was aggravated due to deliver packaging. Thailand's lack the infrastructure for plastic recycling, consumers' behavior is just consumed and throw. There is lack of recycling or separating mindset for the population at large. The government policy says that it is the local government responsibility to manage waste which is based on the linear approach. In 2019, Thailand started to add waste separation to their policy but still no local enabling ordinance. Thus, they do have law for enforcement and most rely on volunteer approach. Central government cannot regulate and don't have budget for investing in the infrastructure for waste segregation. The government need to reform and develop a plan. Thailand focusses on downstream but should focus on the upstream segregation. Lack of EPR and laws in Thailand in comparison to other ASEAN and developed countries need to be changed. Change should come from policy development and regulations.

### **Ms. Yichuan Song**

Research Specialist, Chinese Academy for Environment Planning

Green policy and green recovery. Green building incentive has seen benefits on energy savings, waste management, GHG Emissions, water saving and recycling, green and recycled building materials. Shenzhen has developed an application to track progress in real-time for monitoring energy consumptions for 599 public buildings. The work was done with professional development and capacity building of local experts and the recruitment of 300 experts. Economic incentive for green building is needed. While major challenges such as mixing of construction waste and other garbage makes the reuse process inefficient. Construction waste plants are small and power consumption is high; thus, making the recycling process costly. In the past 15 years, the development of green buildings in Shenzhen has created multiple synergy in the economic growth, social inclusion, job creation and environmental protection. The change from linear business model to circular one allows for the economy to be more resilient. This is allowing for replication to other cities within China and beyond.

## Panel discussion

**Moderator: Dr. Mushtaq Memon**

Programme Management Officer, UNEP

### Policies, Regulations, and Practices: Perspectives, Challenges and Key Success Factors

**Dr. Kim** – Strong institutional frameworks are needed to be established and strengthen continuously year by year. First, strengthen the regulations and focus on how to return the used battery and decommission PV Panels. As we continue to develop, we applied EPR to the PV panels from the next year. The market is also important, we need to have more collection centers. Those recycling centers may need to be led by government to build such recycling centers. It is possible to have market failures leading to insufficient investment in public goods.

### Capacity Development and Knowledge Transfer

**Dr. Sujitra** – I work at two levels, one at the national level to share the knowledge to the policy makers which hopes to lead to a reform. With the leaders of Pollution Control Department to push for the reform and for them to be the leaders in the pollution policy development. Also, I work with the local Bangkok Metropolitan Administrations to help develop an action plan on solid waste management and knowledge transfer to various universities and schools.

### Incentivization and Financing for Sustainable Infrastructure

**Ms. Song** – Shenzhen finance department has a special fund for SI. They also have an event every 3 year to reward Shenzhen's green building development and technology innovation. They also have green building evaluations is done free of charge for applicants. Green buildings that pass the assessment can apply the financial subsidies from both the national level and the municipal level. Furthermore, China is promoting post evaluation which have been found to improve the efficiency and tackle the challenges.

## Q&A

**Fund Usage:** the usage of fund should be allocated following the efficiency and the effect of the fund. There are guidelines to follow. Policy evaluation is important scientific support for analyzing the effectiveness of policy.



Waste Policy: Thailand focus on having more rewards/bonus for the local government who can reach zero waste that can be followed through and improved the waste management. After that, it can be moved to penalize system. They need additional fund and pay to trash idea. Also, we need EPR laws for producers to start to consider their responsibilities to follow CE model.

Wastewater reused: The capacity is needed. For example, recycling market people are not skilled enough to recycle electrical waste in most countries. The technical need and variables are high. UNEP and KEI talked to about capacity building for electrical recycle program.

Future Webinar: UNEP and AIT have developed a comprehensive report on wastewater. Integrated report on the wastewater and COVID-19 impact were reviewed and can be found in two webinars on wastewater and COVID-19 in May.

What are the most important factors for Thailand to have a systematic change to CE based on your different experience?

1. Government needs to take the lead and make a transformation. Some may say, “just burn it” but not all waste can be burnt, and many can cause pollution and chemical by product after burning.
2. The usefulness of collection centers are my main recommendations. All countries will experience the excessive waste of PV panels and EV batteries. We can build centers in partnership with Korea in ASEAN.
3. A comprehensive measure that includes finance, policy, regulation, and knowledge transfer is needed.

## Closing remark

### **Dr. Christopher Garnier**

Executive Director, AIT Extension, AIT

The challenges that we have are how do we reduce carbon emissions and carbon neutral by 2025. Diversity breathes innovation. This is important that we need this webinar to spread the information. Experts from all over the world, to discuss the importance of SI and CE.

**Moderator: Dr. Orathai Pongruktham**

## Snapshots of the Event

**UN** environment programme | 50 1972-2022 | **ASIAN INSTITUTE OF TECHNOLOGY** 1959

# Webinar on Circular Economy & Sustainable Infrastructure

Thursday, 5<sup>th</sup> May 2022  
14:30 – 16:00 (GMT+7)

Participant list (from top-left to bottom-right):  
- Rohan Palmer - UNEP  
- AIT Extension  
- Chaitan TE, Modera  
- AIT Extension  
- Huseok Kim - KE  
- Eisa Tonda - UNEP  
- Eongkarok Japart  
- Dr. Suphik Ussahangkul  
- Dr. Naveed Anwar - AU  
- Yichuan Song - CAE  
- Mulyatag Memon - UTK  
- Chengchen Qian - U  
- AIT Extension  
- Nahman al  
- AIT Extension  
- chahutorn.katawanee  
- Meechai.singhphatra  
- AIT Extension  
- AIT Extension

## The International Good Practice Principles for Sustainable Infrastructure

**UN** environment programme

Speaker: Rohan Palmer - UNEP

Future Waste Recycling System

### Collection center workflow

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    graph TD
      A[Appearance Inspection] --> B[Performance evaluation]
      B --> C[Warehouse storage]
      C --> D[Web based electronic auction platform]
  
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**Appearance Inspection**  
<https://www.joongang.co.kr/article/25062370#home>

**Performance evaluation**  
<https://www.etnews.com/20210830000212?m=1>

**Warehouse storage**  
<https://www.etnews.com/20210830000212?m=1>

**Web based electronic auction platform**  
<https://www.ro.or.kr>

Kim, Hosook      Circular Economy & Sustainable Infrastructure      14

CIRCULAR ECONOMY & SUSTAINABLE INFRASTRUCTURE

Participants: Mustafa Memon, UBE; Hosook Kim, KE; Yichuan Song, CAEP; Hosook Kim, KE.

Meeting controls: Audio, Start Video, Participants (54), Q&A, Polls, Chat, Share Screen, Raise Hand, Pause/Stop Recording, Interpretation, Leave.

## Annex:

### Annex 1: The Final Agenda

Time	Programme
14.30-14.40	<b>Opening Session</b> <i>Ms. Elisa Tonda</i> , Head of Consumption and Production Unit, UNEP <i>Dr. Naveed Anwar</i> , Vice President of Knowledge Transfer, AIT
14.40-14.50	<b>Keynote Speech</b> International good practice principles and Sustainable Infrastructure <i>Mr. Rowan Palmer</i> , Lead, Sustainable Infrastructure Investment Team, UNEP
14.50-15.20	<b>Case Studies</b> 1. Transition to Electric Mobility and Renewable Energy in the Republic of Korea <i>Dr. Hoseok Kim</i> , Chief Research Fellow, Korea Environment Institute 2. Waste Management Reform for Thailand Circular Economy <i>Dr. Sujitra Vassanadumrongdee</i> , Senior Researcher, Environment Research Institute, Chulalongkorn University 3. Green Building in Shenzhen, China <i>Ms. Yichuan Song</i> , <i>Research Specialist</i> , Chinese Academy for Environmental Planning
15.20-15.40	<b>Panel Discussion</b> Moderator: <i>Dr. Mushtaq Memon</i>  Guiding questions: <ul style="list-style-type: none"><li>- Policy, Regulations, and Practices: Perspective, Challenges and Key Success Factors</li><li>- Capacity Development and Knowledge Transfers</li><li>- Incentivization and Financing for Sustainable Infrastructure</li></ul>
15:40-15:55	<b>Q&amp;A</b>
15.55-16.00	<b>Closing</b> <i>Dr. Christopher Garnier</i> , Executive Director, AIT Extension, AIT
<b>Programme Ends</b>	