



**EES Lab**

Energy&Environmental Systems



**KYUSHU**  
UNIVERSITY

# Aligning Climate Change and Sustainable Development Policies in Asia

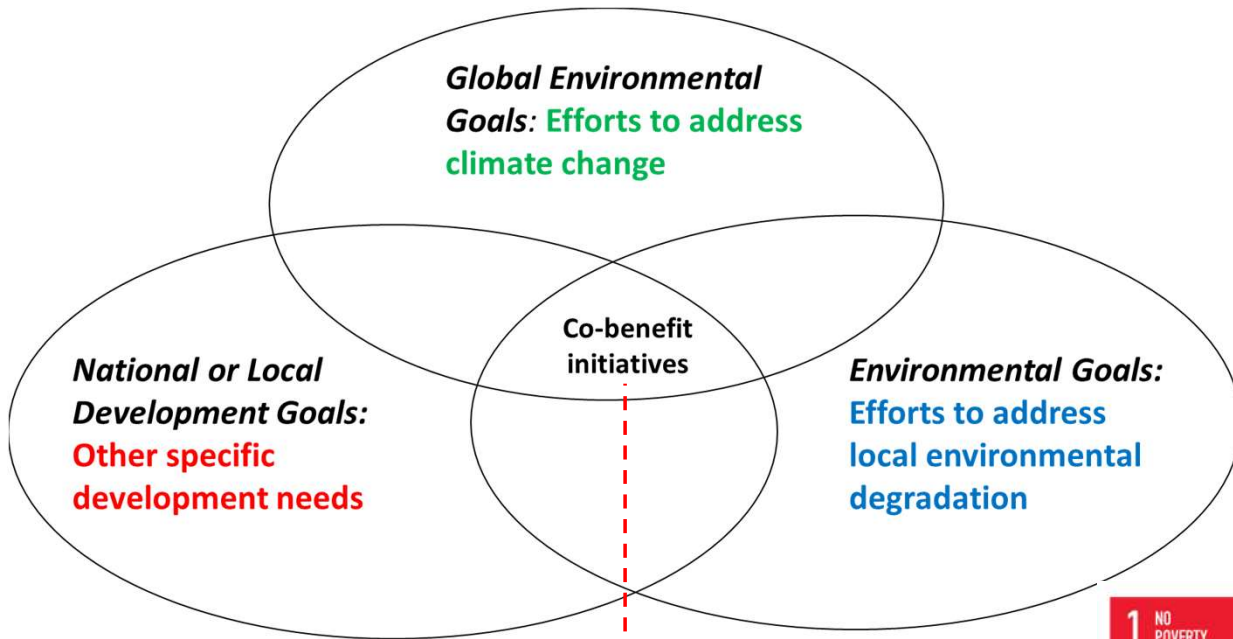
**Hooman Farzaneh**

**Interdisciplinary Graduate School of Engineering Sciences  
Kyushu University**

**ACP/ IIASA International Webinar**

**Feb 2022**

# Co-benefits approach and sustainable development



## Development objectives

- Mass Transit Development
- Upgrading Waste Process
- Construction of Power Plants



# Need for the Co-benefits assessment

A tool to be used as a first order screening for understanding the relative magnitude of emissions reduction of local and global scale pollutants

The tool uses a case study approach to evaluate:

- How much?
- How come?

**Technical dimension of  
co-benefits [T]**

**Total co-benefit  
assessment  
= [G][T]**

**Institutional dimension acts as a multiplier of effectiveness to the  
technical analysis [G]**

# The Book project (2021)

**Hooman Farzaneh**

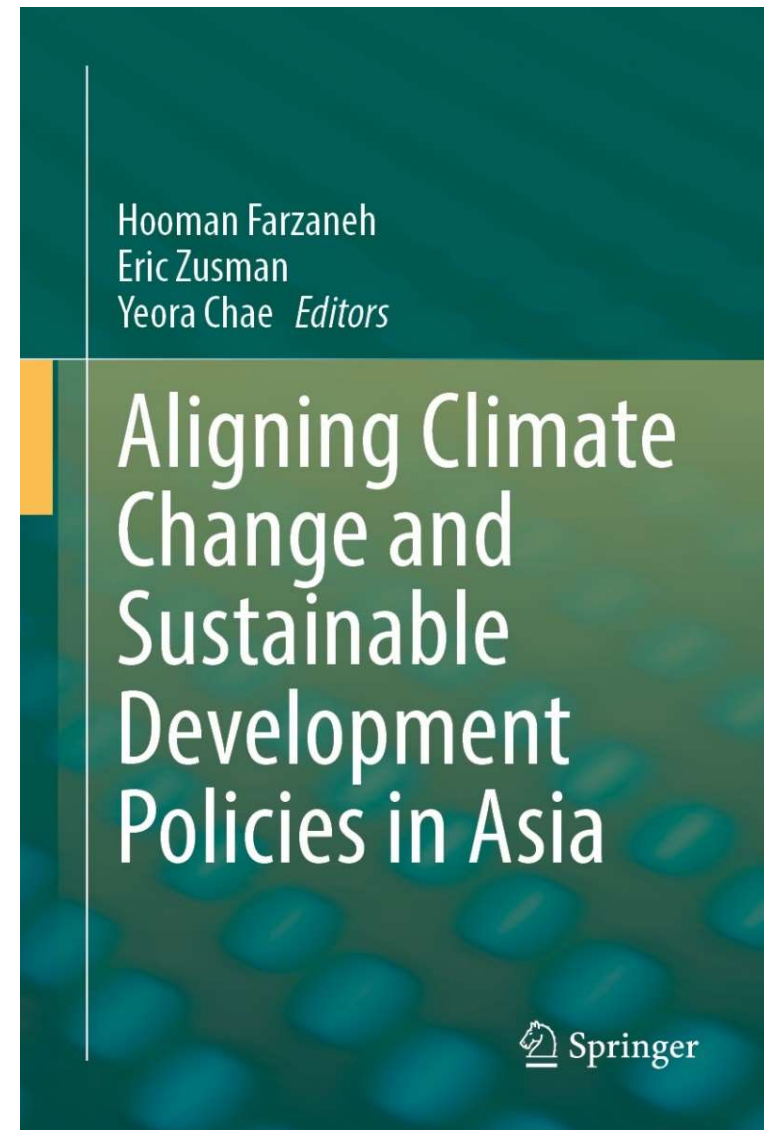
*Kyushu University, Japan*

**Eric Zusman**

*Institute for Global Environmental Strategies, Japan*

**Yeora Chae**

*Korea Environment Institute, Korea (Republic of)*



# Subject matter and content

Providing comprehensive methodological guidance on the quantification of co-impacts and their integration into climate-related decision making based on real case studies

***An Introduction to Co-benefits: Core Concepts and Applications***

*Eric Zusman, Yeora Chae, Hyunkyu Kim, Hooman Farzaneh*

***i) Analytical Methods:*** An overview of recent advances in the techniques and tools that can be used to quantify co-benefits.

- 1. The Urban Sustainable Development Index: A Comparative Analysis of Low Emission Strategies in Urban Areas:*** *Ayas Shaqour, Hooman Farzaneh*
- 2. A Quantitative Model for Forecasting Energy Demand and CO2 Emissions in Pakistan: Toward a Sustainable Energy System:*** *Sajid Abrar, Hooman Farzaneh*
- 3. A Multiple Benefits Assessment of the Utilization of High-Efficiency Heat Only Boilers in Ulaanbaatar, Mongolia:*** *Hooman Farzaneh, Eric Zusman*

# Subject matter and content

**ii) Case Studies:** Illustrating how to use different analytical methods in a range of case studies from countries in Asia.

1. *Quantifying and Integrating Co-benefits of Renewable Energy Policies in South Korea* : [Ho-Cheol Jeon](#), [Yong Jee Kim](#), [Yeora Chae](#)
2. *The Co-benefits of Renewable Energy Policies in Japan: Barriers and Ways Forward*: [Takai Etsujiro](#)
3. *Quantifying the Co-benefits of Solar Energy in China: Opportunities and Barriers*: [Mao Xianqiang](#), [Xing Youkai](#), [Eric Zusman](#)

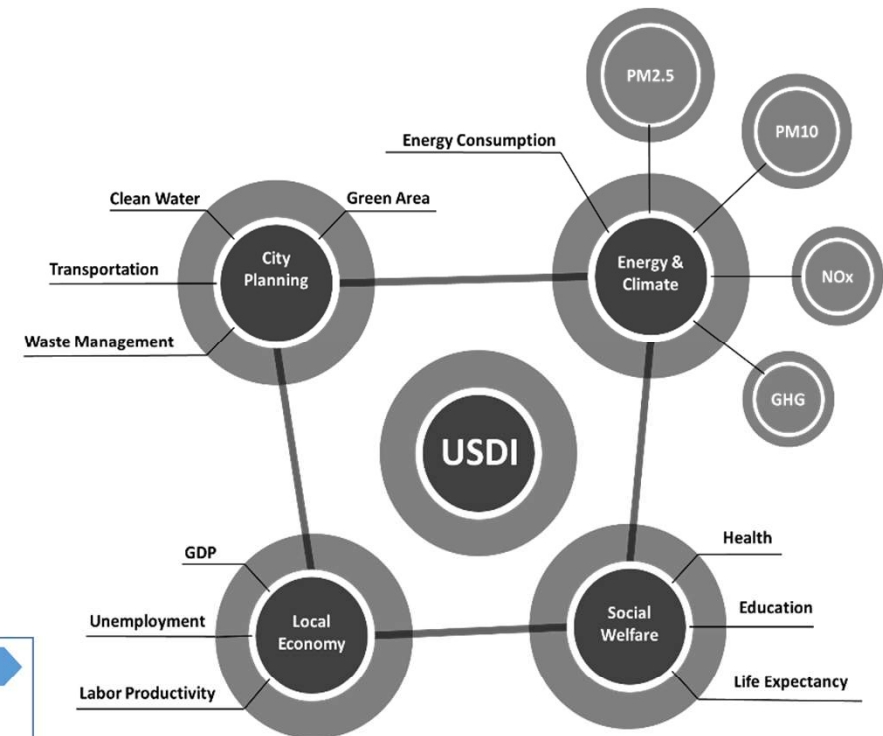
**iii) New Perspectives on Co-benefits:** Describing new perspectives on biodiversity and social co-benefits as well as how the concept of co-innovation can help deliver co-benefits.

1. *Biodiversity Co-benefits: Narrowing the Gap Between Analysis and Action*: [Kaoru Akahoshi](#), [Eric Zusman](#)
2. *Creating Social Co-benefits for Sustainable and Just Society*, [So-Young Lee](#)
3. *Enabling Japan's Low Emissions Technology Collaboration with Southeast Asia: The Role of Co-innovation and Co-benefits*: [Nandakumar Janardhanan](#), [Ngoc-Bao Pham](#), [Kohei Hibino](#), [Junko Akagi](#)

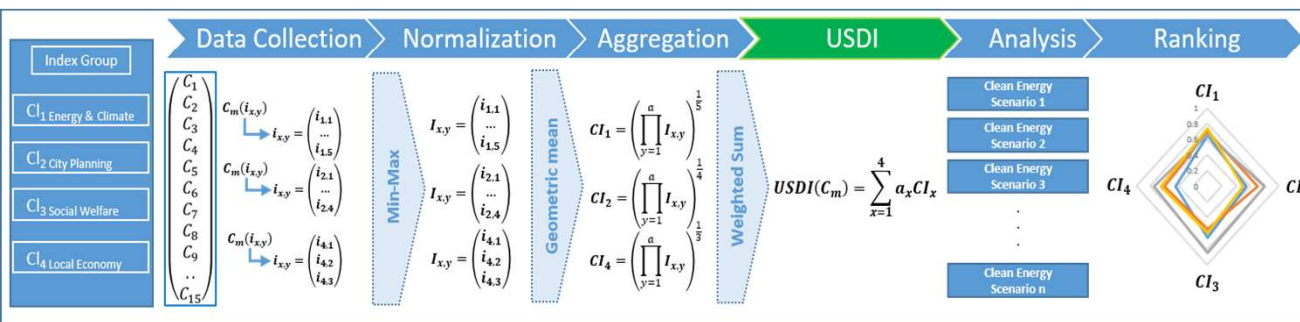
# Urban Sustainable Development Index

## Comparative Analysis of Low Emission Strategies in urban areas

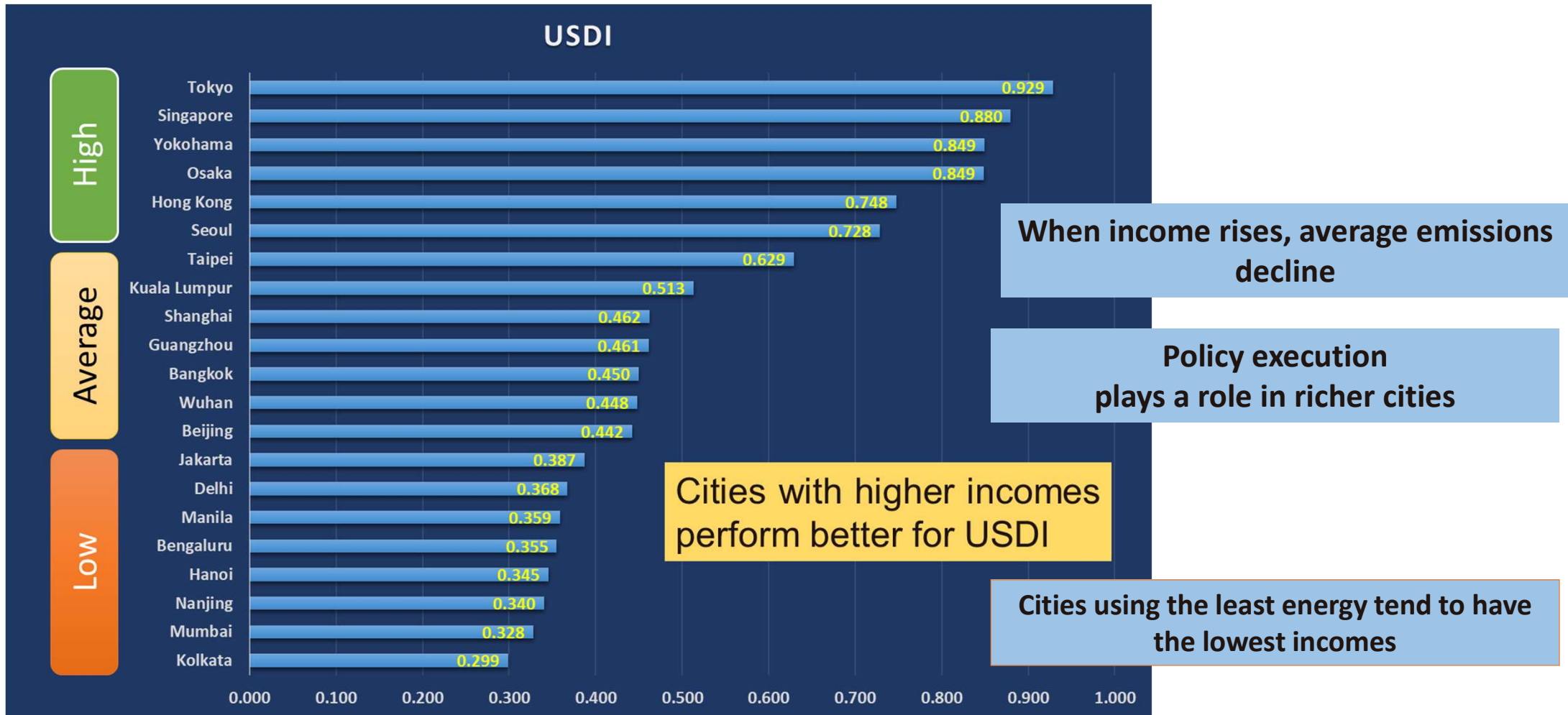
- ❖ USDI is a composite index, that is used to measure the comparative sustainable development performance for urban areas in the Asia-Pacific region
- ❖ Based on 13 indicators related to energy and climate, city planning, local economy, and social well-fare.



*Shaour and Farzaneh, 2021*



# Urban Sustainable Development Index

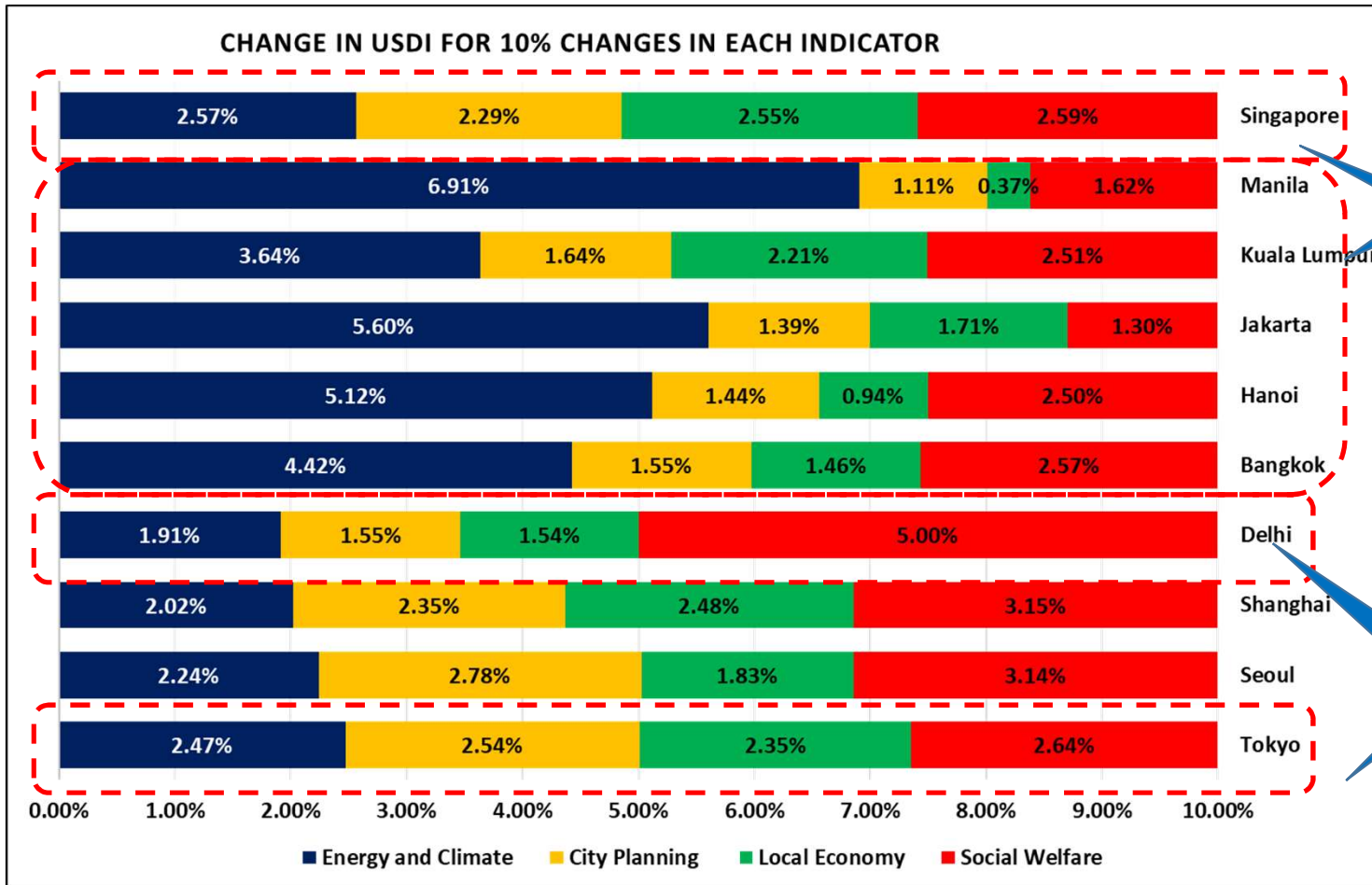


*Shaqour and Farzaneh, 2021*



# Urban Sustainable Development Index

## Factors affecting the USDI in the different Asian cities



**Air pollution and the environmental concerns**

**Well-organized governance and community participations**

**Infrastructural Problems**  
Health, education and income

*Shaqour and Farzaneh, 2021*

# Urban Sustainable Development Index

## 1. Delhi Clean Transport Scenario

- Augmenting public transport, by adding compressed natural gas (CNG) buses in the transport sector and the restructuring of the bus system.
- Promoting urban transport infrastructures, such as early adoption of BSES V and BSES VI auto fuel norms, allocating financial subsidy on newly purchased Battery Operated 4 & 2 wheelers,
- Increasing ridership in Delhi metro were other useful options to promote seamless and clean mobility

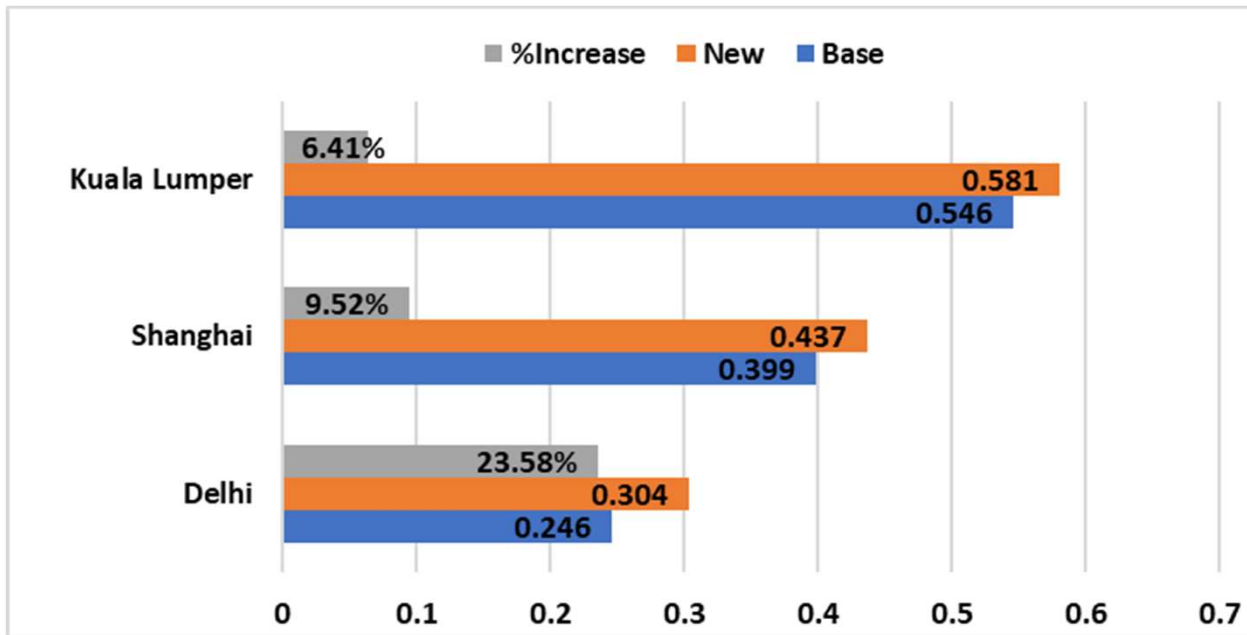
## 2. Shanghai Master Plan Scenario

The city will take measures to control construction and population growth better and protect the environment and improve urban safety

## 3. Kuala Lumpur Sustainable urban energy system Scenario

- Solar energy utilization,
- Waste-to-Electricity
- End-use Energy Efficiency (EEE) improvement

# Urban Sustainable Development Index

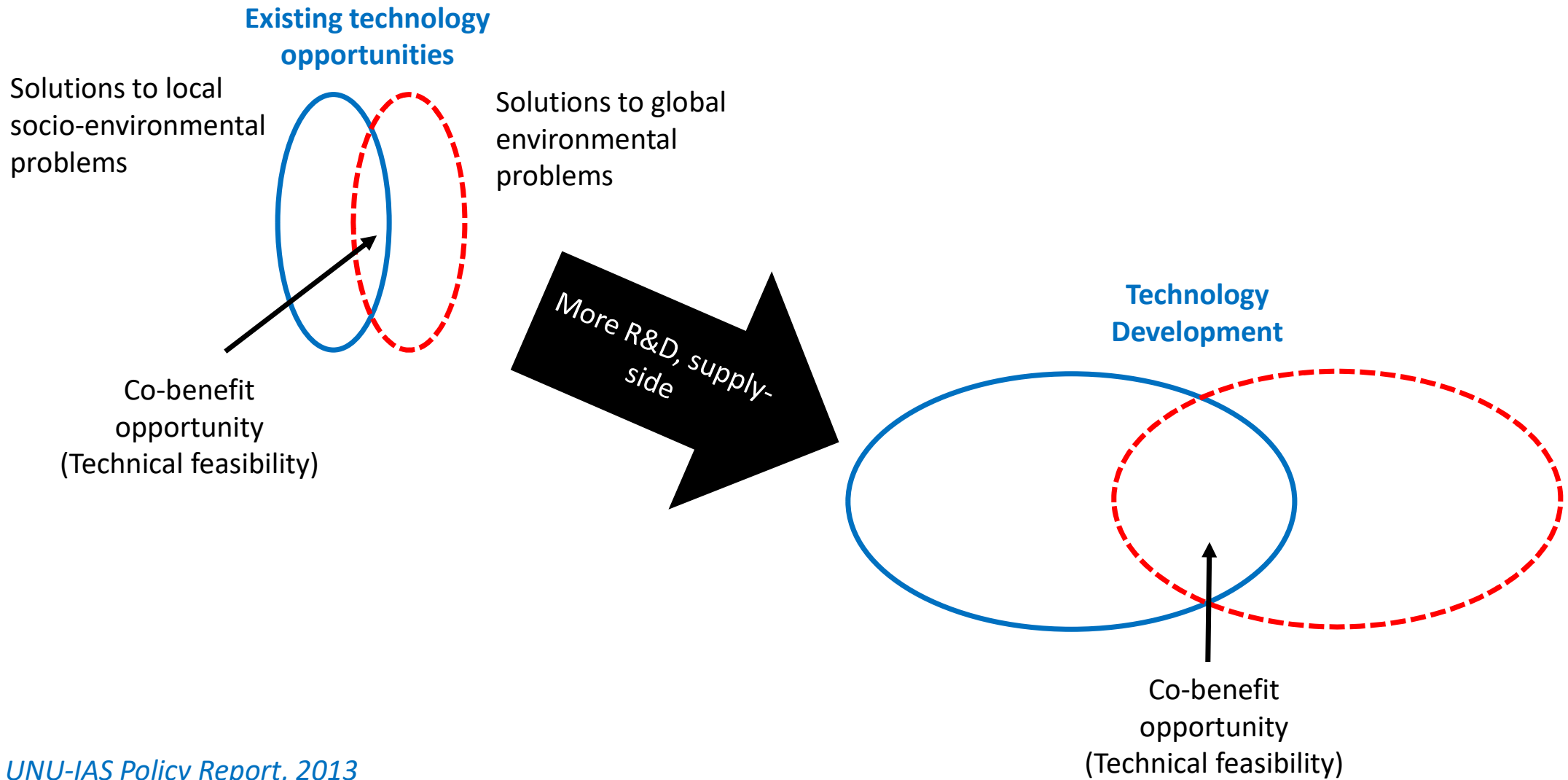


*Shaqour and Farzaneh, 2021*

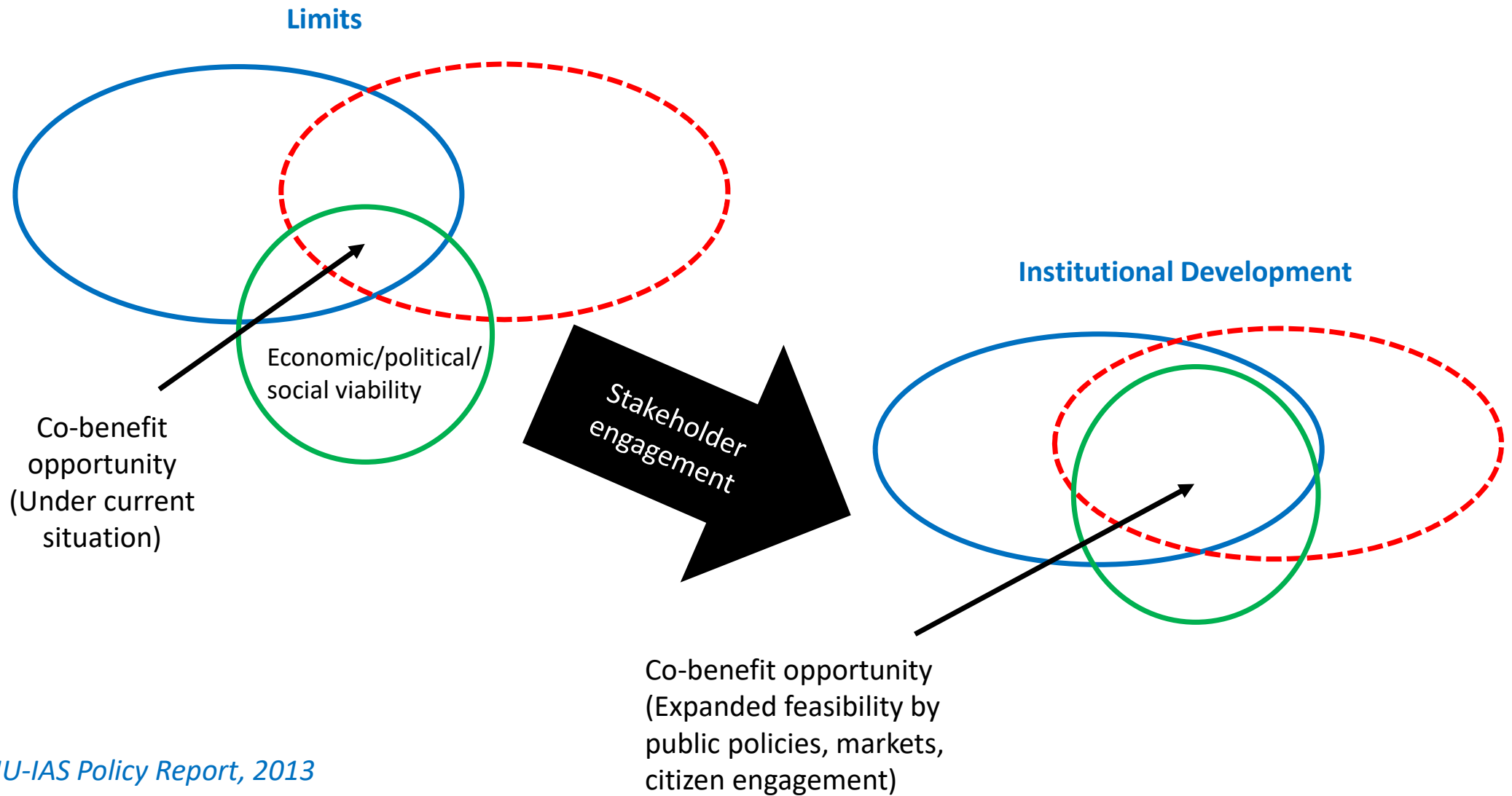
The insight obtained from the evaluation of the USDI in Delhi, Kuala Lumpur and Shanghai, emphasized the urgency of bold and timely LEDS coupled with the social, environmental, and economic opportunities

**The USDI represents an interest-oriented approach to mobilizing multiple benefits and argue that multiple benefits assessments can be important drivers of ambitious and effective social policy**

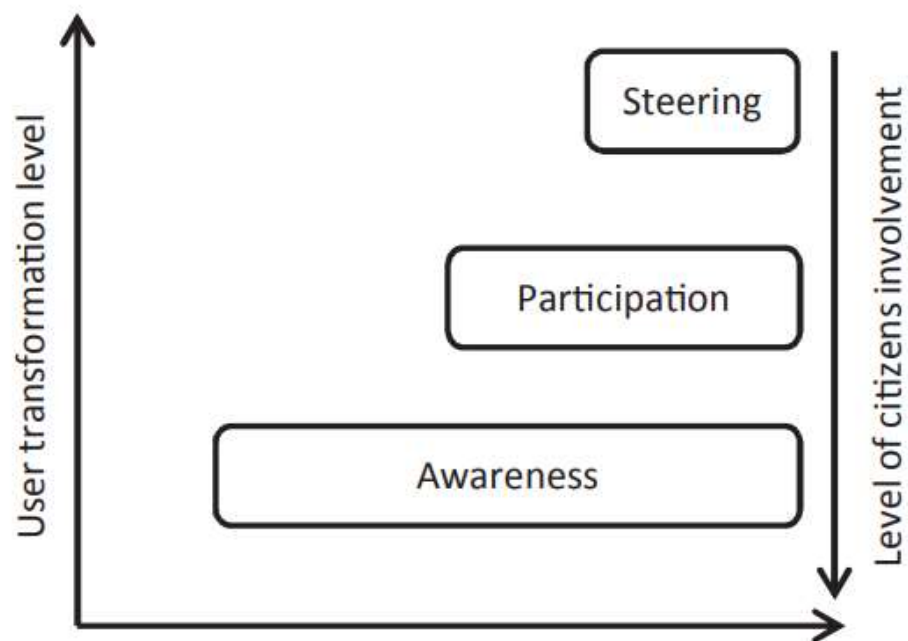
# Scaling up climate co-benefits



# Scaling up climate co-benefits



# Climate change policies and willingness of participation



*Koirala et al., 2018*

## Factors affecting willingness of participation:

### ■ Demographic factors

- ✓ Gender, age, education and income level

### ■ Socio-economic factors

- ✓ Ownerships and energy bills

### ■ Socio-institutional factors

- ✓ Sense of community and trust

### ■ Environmental factors

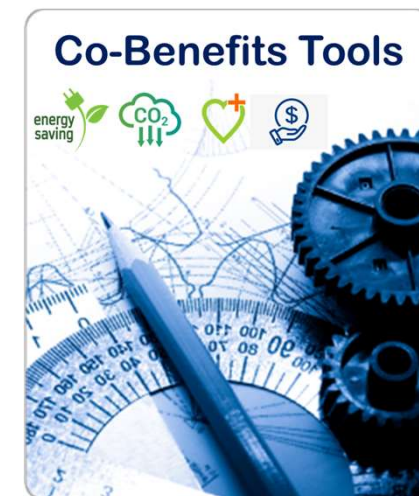
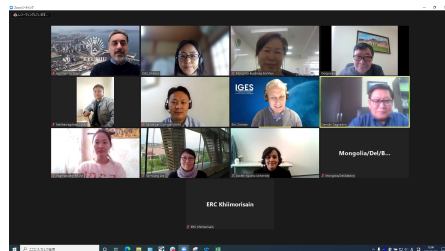
- ✓ Environmental concern and desire to reduce CO2 emissions

**User engagement in implementation of local energy systems supports acceptance and implementation of clean energy policies in Asian cities**

# Fostering regional Collaboration through stakeholder engagement



Indonesia and Mongolia 2021-2022



## Fostering Regional Collaboration

- ❖ Exchange regional knowledge
- ❖ Investing in high-quality training & tools and research & analysis.
- ❖ Co-creating regional solutions through joint production

**Thank you very much  
for your attention**

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Yeora Chae *Editors*

**Aligning Climate  
Change and  
Sustainable  
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Policies in Asia**

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