



Cities in South and South-East Asia will continue to play a key role in creating employment, lifting millions of people out of poverty and in enabling their affordability and access to essential goods and services.

But, these Cities will also further perpetuate the 'take-make-dispose' model that current urban systems, products and solutions are built on. This linear 'take-make-dispose' model will further exacerbate the wastage of expensive materials, embodied energy, water and labor. It will deepen pollution, environmental toxicity, climate change and lead to a general degradation in the quality of urban lifestyles.

There is an urgent need to reimagine how our key urban systems like energy, waste, water, food and mobility can be engineered to be regenerative, rather than exploitative; how new urban products, solutions and services can be created to keep materials and nutrients at their highest possible value; how pollution can be designed out and waste loops closed!

In other words, how can our Cities become more circular, less wasteful and more sustainable, leading to better health and quality of life for its residents!

Innovation holds the key!

Circular Cities Asia ("CC Asia") is Asia's first innovation and knowledge platform to foster entrepreneurship that makes our urban spaces more circular.

CC Asia's goal is to foster an ecosystem that helps corporations, startups, entrepreneurs and consumers identify and profitably address barriers impacting the transition to more circular urban systems, products and solutions.

CC Asia identifies three main attributes of a Circular City.

The Performance-Driven City

A key attribute of a circular city is the emergence of business models that make performance as the primary tradable good for economic transactions, rather than products.

Selling 'Performance' requires business model innovation that changes incentive structures for businesses. This could mean offering a 'pay-per-wash' service instead of selling a washing machine or dishwasher. It could mean selling 'lumens' instead of light bulbs or 'rest hours' in place of sleeping mattresses.

A Performance-Driven city extends product life, encourages product repair and incentivizes businesses to deliver the highest quality of service at the lowest cost.



The concept of the Performance City extends to offering 'access' rather than 'ownership', a model that is well-understood lately with the global success of business offerings like Uber or AirBnb.

The Performance City also optimizes utilization of urban assets such as buildings, vehicles, parking lots and roads. It makes consumption of resources such as energy, water and materials efficient.

The Nutrient-Aware City

All activity in the city can be viewed as the metabolism of various materials in the urban environment. This framework allows CC Asia to define all transactions in the context of technical and biological nutrient stocks and flow.

In a perfectly circular city, all technical nutrients are cycled in lean, infinite loops at their highest value. All biological nutrients are returned to the earth for future use.

Technical nutrients include concrete, metals, rare minerals, recyclable chemicals, wood, high quality plastics and glass.

Biological nutrients include the organic compounds contained in waste effluents from households, industries and commercial buildings; Forest (urban) and Food waste are also important sources of bio nutrients in cities.

A Nutrient-Aware City uses digital technology to create 'material passports' that document and store information about embedded technical nutrients in Urban assets.

It also extensively uses technology to track nutrients and provide assurance about their origin and quality.

Buildings, Vehicles, Printers, Refrigerators and other such urban products can be viewed as large banks of technical nutrients.

Digital Passports for these material banks allows the recovery and trading of not just the materials when the assets are de-commissioned, but also the embodied energy, water and labor in them.

A key to the re-use and upcycling of technical nutrients is to create trust about the nutrient by making it completely traceable.

Technologies like IoT and Distributed ledgers allow nutrient traceability.

Another important feature of a Nutrient-Aware city is its ability to recover and re-cycle water from waste effluent and rain water streams.



The Nature-Inspired City

There is no 'waste' or 'pollution' in nature. In natural eco-systems, the output of one sub-system serves as the input to another.

A Nature-Inspired City uses Biomimicry to design and engineer truly sustainable products that draw insights from nature's 3.8 billion years of research and evolution.

The bright colors of a peacock feather are not due to pigmentation, but due to surface patterns that reflect light and create the colors we see. Such surface patterns could replace toxic paints that color our buildings, automobiles and products.

Darkling Beetles in the Namib Desert harvest water from the moisture present in the air using nano-scale structural patterns on their body. New water harvesting technologies are using the Darkling Beetles as inspiration to harvest pure, safe drinking water.

The Nature-inspired City promotes the use of completely safe and healthy materials; It uses biology and chemistry to forge new products and contextualizes innovation based on local conditions and resources. It also draws on nature to design processes and systemic interventions in the Urban context.

How CC Asia can help

Circular Cities need precise articulation of the innovation challenges, which, if addressed profitably, can make urban systems, products and processes more sustainable.

CC Asia works closely with businesses, corporate houses, urban planners and city governments to define short and long-term circularity challenges that innovation can address. CC Asia conducts open innovation events to identify possible solutions to the challenges.

CC Asia builds a powerful ecosystem of innovators, researchers, industry experts, subject matter experts and investors to develop a common understanding and innovation 'lingo'.



About RENERGii Asia

[RENERGii Asia](#) is a Singapore-based advisory boutique that owns and manages the CC Asia platform. RENERGii is also a member of The Climate Collective, a network of companies in South Asia helping societies prepare for a climate-constrained world through innovation. RENERGii also owns and manages an in-house Urban research and modelling platform called [The Stad Lab](#).

About Shiva Susarla

Shiva Susarla is the Founder-Director of RENERGii Asia and the Director of CC Asia and The Stad Lab.

Shiva's background is in investments, policy research and innovation, all revolving around renewable energy, clean mobility, urban systems and climate.

Shiva is the Karnataka (India) partner for ClimateLaunchPad, the world's largest green business competition. He is also an innovation coach and mentor for green startups in areas of urban mobility and AgTech.

Shiva has an MBA from the Asian Institute of Management (Philippines) and an undergraduate engineering degree in Computer Science from VTU (India). He has completed the coursework for the M.Eng

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