



A Third Way of Building Asian Cities

Building Unique and Sustainable Asian Cities Today

The program A Third Way of Building Asian Cities was launched by UNICITI in 2019 at the 55th ISOCARP World Urban Congress in Jakarta and is led by UNICITI's Founding Director Olga Chepelianskaia. It is supported by 16 international experts and 100+ volunteers from over 38 countries. The program's mission is to reconcile the need for rapidly building affordable urban fabric with the need for sustainable, liveable and unique urban fabric in Asian cities. To achieve this aim, the program brings together local knowledge and cutting-edge technologies through innovative practice-oriented research, pilot projects and outreach.

Asian cities are undergoing a process of rapid urbanisation. They hosted 0.3 billion urban dwellers in the late 1950s, 2.1 billion in 2015 and are projected to host 3.3 billion by 2050. **This urbanisation, however, came at the cost of significant vulnerabilities.** As per the UN-Habitat, Asia is home to nearly 70% of the world's urban poor and 64% of the urban population live in slums. Over 50% of Asian urban dwellers have no direct access to water supply and over 25% have no access to improved sanitation. In addition, **Asia is the most climate-vulnerable region in the world**, which further worsens living conditions in cities. Out of 10 most climate affected nations, 6 are in Asia-Pacific.

These challenges are likely to exacerbate further if the business as usual (BAU) way of building cities continues. The World Bank estimates that over 60% of the infrastructure the world will see in 2030 is yet to be built, and a large part of it will be built in Asia. According to ADB estimates, USD 26 trillion need to be invested in developing infrastructure in Asia between 2016 and 2030 (ADB, 2017). If the BAU scenario dominates new constructions, Asian urban dwellers will be locked into a low quality and unsustainable lifestyle for decades.



The global skylines of Hong Kong and Ho Chi Minh. Source: Word Press

Conventional and niche ways of building cities failed to tackle the challenge

Current building practices are highly dependent on commercially mass-produced building materials and designs (first way of building), except for niche sustainable and local context tailored building solutions that represent less than 1% of a city's urban fabric (second way of building). As a result, most Asian cities' urban fabric is composed by identical homogenised buildings, and related negative consequences go far beyond the loss of an aesthetic appeal.

Conventional and predominant way of building cities today (first way of building)

Today's conventional building materials and construction techniques have **high carbon footprints**, and often are unsuitable to the local context. Building materials such as concrete, steel, glass or aluminium have highest **embodied energy**. The manufacturing of such materials alone represents 25% of the current global final energy demand and 20% of global CO2 emissions (UN Environment & International Energy Agency, 2017). More so, the **operational energy** of such buildings is also very high due to the lack of suitability of the materials to the local context. Finally, these materials also have a shorter life span compared to traditional materials such as mud and bamboo (when treated appropriately).

The ability of cities in the developing countries' to take on more lucrative roles in global value chains depends upon their ability to **attract talent and businesses**. Indeed, the digital revolution and globalised economies offer more remote work opportunities that may soon lead cities to compete over retaining businesses, investors and intellectual capital (JLL & the Business of Cities, 2015). Qualified individuals are more likely to settle in liveable cities, which makes it essential for a city to offer such an environment if it wants to be attractive and competitive.

Alternative contextualised niche solutions (second way of building)



Vernacular 'Bhunga' Huts of Kutch, India. Source: Gujarat tourism

Structures characterised by contextualised, sustainable and often vernacular approach, usually fully respond to the local context and address the social, economic, environmental and emotional needs of users. **These niche solutions are usually stand-alone or small scale innovative architectural and urban design practices.** However, these could not yet be upscaled and account for **less than 1% of the current Asian cities' urban fabric**. Major reasons for this drawback are gaps in knowledge and skills, technical limitations, time and cost constraints, and lack of supportive policies and regulations.

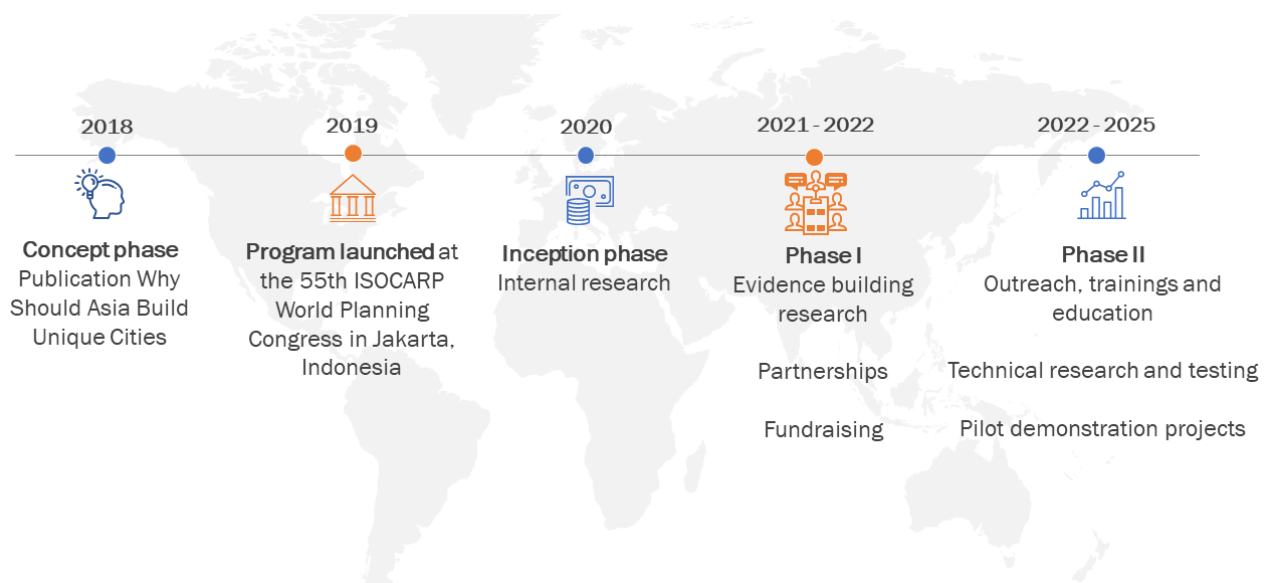
Need for developing a **Third Way** of building Asian cities today

In this context, **we urgently need to identify an alternative third way of meeting today's infrastructure and housing needs** that equally responds to the need of building fast and affordable

in a dense urban environment and to the need of building unique, sustainable and liveable cities. We at UNICITI believe in the necessity for a **third holistic way of building** grounded into **appropriate technology** that combines the efficiency of globalised manufacturing processes and the ingenuity of local context tailored spatial practices and craftsmanship.

The program is working with prominent international experts identifying and developing **breakthroughs** in alternative building materials, alternative design techniques, alternative urban development models, and alternative policies and regulations, along with economic and financial models that will help build Asian cities in a sustainable, resilient, inclusive, liveable and unique way.

Timeline of the program



Phase 1: Practice oriented research

This phase aims to develop break-through solutions which will allow to upscale and mainstream alternative ways of building urban fabric at the building, neighbourhood and city levels.

1. **Identify upscalable alternatives building materials** which reduce embodied energy, operational energy, GHG emissions, and construction and demolition waste. **Identify pioneering construction technologies** to upscale construction processes using these materials. Examples of research topics carried under this segment:

- **Strengthening naturally available materials** such as mud and bamboo by improving their suitability in urban low to medium rise structures, so that they can replace carbon intensive materials such as concrete and glass. This research aims to mitigate global climate change while reviving local identity and cultural vibrancy.
- Creating an assessment **tool to analyse building materials for their sustainability** based on parameters which positively impact the ecology (reduced embodied energy and carbon emissions, pollution, waste disposal), users of the structure (improved indoor air quality, thermal comfort, visual variance), social structure

(increased local employment and skilled labour availability) and, economical structure (scalability of the materials, reduced material and installation costs).

- **Repurposing construction & demolition waste and waste from parallel industries** with a cradle – to – cradle approach. For example, using discarded shipping containers for social housing to favour circular economy against dumping of the waste into landfills.
- **Passive construction technologies** to maintain the ambient indoor atmosphere using net zero or minimal conventional energy. These principles of passive construction are grounded into the local context further highlighting the unique character of a city.
- **Modular construction** and implementation of **3D printing** with alternative construction materials to speed up the construction while keeping it local context tailored.

2. **Identify alternative urban development models** to not only create sustainable neighbourhoods but to also revive city's identity. Examples of research topics covered under this component:

- **Urban Morphometrics: a data driven toolkit** which creates sensitive and inclusive urban patterns and building typologies seamlessly woven into the local context.
- **Reducing negative impact of urban heat island effect**, especially around highway regions, focusing on 3 aspects: distribution of natural open land, compactness of neighbourhoods and building materials used in open spaces.
- **Fostering high density low rise neighbourhoods** for more liveable, culturally vibrant, sustainable and visually unique cities. This approach leads to a low energy intensity urban fabric making it more affordable for the urban poor and more environment sensitive while maintaining high density required in Asian cities.
- **Repurposing abandoned structures** to revive neighbourhoods or cities culturally, socially and economically. A multi-purpose approach towards functionality of a structure is developed.

3. **Alternative policies, regulations and economic/financial models:** In a context where real estate developers and builders majorly lead the market, development projects require policies and regulations along with incentives for these players to change their paradigm. Hence, this component also focuses on:

- **Economic and financial policies** to deploy use of sustainable materials such as bamboo and its construction techniques in the development market.
- **Form - based codes** derived from successful case studies to make liveable cities. Using parametric modelling to derive form-based codes with a focus on local context.
- **An economic toolkit** derived from understanding the pain points of commercial practitioners when implementing sustainable materials and techniques on ground.

- A socio – economic toolkit to enhance cultural vibrancy, social structure and visual identity of a city.
- Using block chain technology for a standardised evaluation of embodied energy in building materials forming a basis for issuing incentives for developers.

Phase 2: outreach and pilot projects

The phase 2 runs parallel to the phase 1 with mature research teams transitioning from phase 1 to 2 disseminating the outputs on ground. Other teams nearing completion of the targeted research outputs and teams onboarded for new topics will continue in phase 1. The dissemination is being carried out in the following ways:

- Prototypes: on ground testing and sampling of the research outputs.
- Training and workshops: targeting policy makers, real estate developers, contractors, urban practitioners and students.
- Collaborations and partnerships with research, think tank, international development institutions as well as national and municipal governments.
- Outreach on social media: UNICITI has over 20,000 direct and 200,000 indirect followers on various social media platforms and international professional networks.

Selected events and publications

- [Encoding good urban form-The use of Urban Morphometrics in the elaboration of Local Design Codes for Asian cities](#), March 2022
- [Urban Heat Islands from highways-Advancing city planning and design with support of the 15-minute city concept to reduce climate change negative effects](#), December 2021
- [Building Unique Cities: a Paradigm Shift in the Global South](#), 57th ISOCARP World Planning Congress: New Times, Better Places, Stronger Communities, 8 to 11 November 2021 (Doha, Qatar)
- [Urban Morphometrics and the intangible uniqueness of tangible heritage. An evidenced-based generative design experiment in historical Kochi](#), November 2021
- [Building Unique Cities: an Imperative for Sustainability and Livability in the Global South](#) working group session, TRACK 6: Changing Environment and Risks, 55th ISOCARP World Planning Congress: Beyond the Metropolis, 9 to 13 September 2019 (Jakarta, Indonesia)
- [Why Should Asia Build Unique Cities?](#), September 2019
- [Building Unique Cities](#), TEDxFMS talk, 5 August 2018 (New Delhi, India)

International Working Group of Experts

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Founding Director, UNICITI

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- International Expert
- Volunteers and Interns

UNICITI is an international consultancy and think tank, based in France, founded in 2017. It brings in-house, future-oriented design-based approaches towards sustainable, climate resilient, economically competitive, socially inclusive and culturally vibrant cities in Asia by reactivating the potential of their unique cultural and natural assets. Its interventions include integrated urban planning and urban design solutions; climate change adaptation and mitigation strategies; cultural and natural heritage regeneration; decision makers' and urban practitioners' knowledge and capacity building; and, placemaking rooted in community led initiatives. UNICITI's Founding Director, Olga Chepelianskaia, has worked with leading international institutions such as ADB, CDIA, ISOCARP, Rockefeller Foundation, UNDP, UNECE, UNEP, UNESCAP and UNIDO and covered over 40 countries in her 18 years of international experience.

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