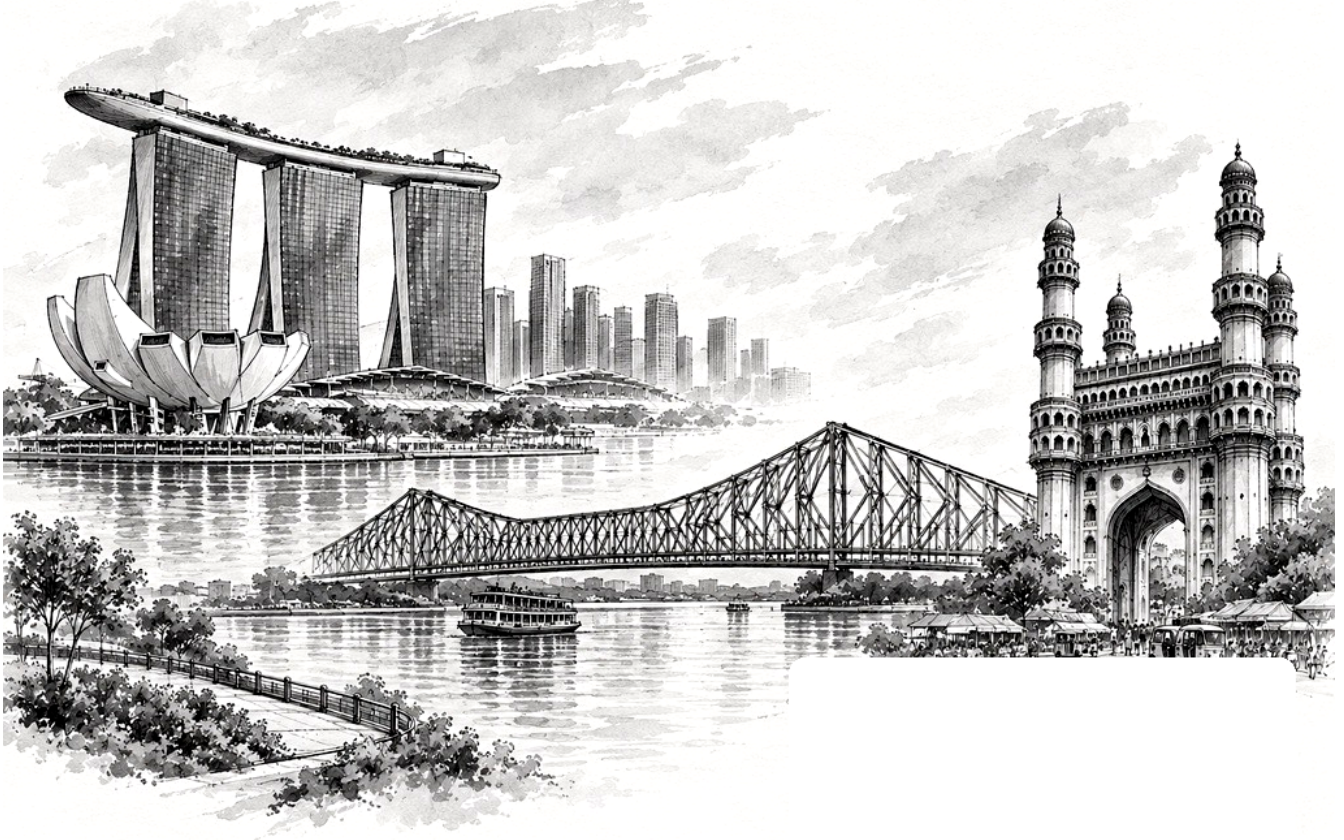




Can Jugaad Meet Stewardship in the Middle?

A reflective paper on urban systems, translation and contextual stewardship

AUTHORS

Dr. T K Sreedevi
Sreedipto Bhattacharyya

CAN JUGAAD MEET STEWARDSHIP IN THE MIDDLE?

We came to the NUS Cities expecting to learn about Singapore's urban success. We left with something deeper: a sharper way of thinking about cities as living systems — shaped not only by land, transport, housing, water and greenery, but by institutions, trust, stewardship and the discipline of execution.

Over five days, through lectures, fireside conversations, workshops and field visits, Singapore became more than a case study. It became a lens. It forced us to ask not simply, "What did Singapore do right?" but "What can any city learn from Singapore without blindly copying it?"

That distinction became one of our most important takeaways. Singapore is not a template. It is a provocation.

For international readers, the word *jugaad* carries a particular significance in the Indian context. It is often used to describe resourceful improvisation — the ability to find practical, low-cost and context-sensitive solutions under constraints. At its best, *jugaad* reflects agility, creativity and local intelligence. Yet cities also require something more durable: stewardship, institutional memory, long-term coordination and the discipline of maintenance. The question, therefore, is not whether *jugaad* should give way to stewardship, but whether the two can meet in the middle.

That provocation travelled back with us into Indian contexts — into questions of Telangana's infrastructure transitions, Hyderabad's river challenges, Kolkata's living heritage and the ecological systems that quietly sustain older cities. The issue was not how to copy Singapore, but how to translate stewardship into very different urban conditions.

It is a city-state with unusual administrative clarity, land constraints, institutional discipline and long-term political continuity. Not everything is transferable. But many things are translatable. And in urban systems, contextualisation is not optional. It is the core discipline.

The programme itself was designed around the Centre for Liveable Cities' Liveability Framework, which connects three desired outcomes — high quality of life, competitive economy and sustainable environment — with three enabling systems: integrated master planning, dynamic urban governance and a collaborative ecosystem. This framework slowly became the spine through which we began to understand the Singapore story.

The programme gave a recipe to bring essential elements of urban affairs together in a Systems approach and to hatch an immensely desired liveable and competitive city. Each one of the participants came from a different city and different vocation and through each provocation of the Course, started contextualizing the same as a citizen, as a policy enabler, as an interested researcher to name a few. The Q and A after the session was the real melting pot of ideas that validated or rejected our thought process during the lectures and by large the best learning experience.

01

Seeing the City as a System



The first major shift was conceptual. Cities are not machines to be optimised in isolation; they are systems of systems. Housing affects transport. Transport affects land values. Land values affect equity. Drainage affects health. Greenery affects heat. Institutions affect everything.

The programme's learning outcomes explicitly emphasised applied systems thinking, policy-to-practice learning, immersive learning journeys and strategic workshops. This mattered because Singapore's success was not presented as a collection of disconnected achievements. It was presented as the result of alignment: between planning and delivery, between policy and land, between infrastructure and behaviour, between long-term intent and daily maintenance.

This was also when we began noticing one of Singapore's deepest strengths: academia, industry and government do not appear to operate as separate worlds. They interact as part of a larger learning-and-delivery ecosystem. NUS Cities itself reflects this ambition — combining education, research and advisory work in what it calls a "closed loop of knowledge and action."

That was striking. In many contexts, academia analyses, government regulates, and industry executes — often in sequence and sometimes in silos. In Singapore, the boundaries seemed more porous. Government officials,

academics, planners, infrastructure leaders and industry practitioners seemed to speak a shared language of implementation.

Even more interesting was the idea that many officials rotate across departments and sectors. That rotation creates something rare: institutional empathy. A transport official can understand land constraints. A housing official can appreciate ageing and social policy. A water leader can understand climate, finance and public trust. This is not just career mobility. It is systems literacy.

Our first reflection was therefore not about buildings or infrastructure. It was about people inside institutions learning to see beyond their own department. It was great shift toward collaborative efforts between partners and legal framework for a common objective. Singapore's approach to sustainability in water security is worth a mention in their Four Taps Strategy. They are circumventing adversity and resource poverty through innovation and technology.

It cautioned that any project developed in isolation can only bring sub-optimal outcomes. For example, if roads construction is seen as only carriage ways and ignore the sidewalks and trees we only end up adversely affecting pollution and decrease the pedestrian rights and make the city less inclusive. Many a times since each item of work is under different wings of the government and having a different budget line makes it only makes each one tunneled vision. Systems approach require institutional reforms and capacity building to align with the overarching goals.

02

Competitiveness, Governance and the Discipline of Execution



Singapore's competitiveness story is often told through its skyline, airport, port, financial district and global rankings. But the programme made clear that competitiveness is not just an economic outcome. It is an urban capability.

The Liveability Framework session described Singapore's transformation from a country facing severe urbanisation challenges in the 1950s and 1960s into a global city and endearing home. It highlighted dramatic improvements in income, unemployment, home ownership and access to clean water. But what stayed with us was not the data alone. It was the operating philosophy behind the transformation.

Singapore had to be more organised, more efficient and more reliable than its neighbours because it lacked a large domestic market and natural resources. The Garden City material cited Lee Kuan Yew's idea that Singapore had to be "more rugged, better organized and more efficient" to attract business despite its constraints. This reframed greenery, roads, cleanliness and reliability as economic signals. Trees were not only trees. They were evidence of competence.

In one memorable example, Lee Kuan Yew described how visiting multinational CEOs would be driven from the airport through neat roads lined with trees and shrubs, arriving at the Istana through a green oasis. Without a word being said, they would understand that Singaporeans were competent, disciplined and reliable. That insight stayed with us: the city itself can become a résumé.

But competitiveness was not built through aesthetics alone. It required institutions that could execute. The collaborative systems session later explained Singapore's machinery through ministries that set policy direction and statutory boards that implement and deliver. This separation — policy clarity combined with operational flexibility — seemed central to Singapore's ability to move fast without losing accountability.

The hardest urban problems, we realised, are often not technical. They are institutional. A city may know that it needs better drainage, housing, transit, public realm or greening. But knowing is not the same as doing. The real questions are: Who owns the problem? Who coordinates? Who pays? Who maintains? Who is accountable? Who has the authority to cut across silos? And who is trusted by citizens?

Singapore's lesson was that institutional design is infrastructure.

A lot of developing countries including India have taken up Public Private Partnerships in Development. They also experimented with corporatization of Government by incorporating institutions such as Industrial Infrastructure Corporations as a subsidiary for delivery of projects. This had mixed results. The lessons from failed efforts are the lack of Systems Approach in some cases and, Trust and lack of arbitration options are others. The significant notable feature of Singapore is robust legal framework and unitary command. Multi-disciplinary Agencies such as UMTA (Urban Mobility and Transportation Agency) have remained largely sub-optimal. Bureaucracy should go through systematic induced attitudinal changes in order to align with the political vision. Informed Political leadership seldom work in silos. It is the bureaucracy in the name of operational convenience creates walls that they themselves cannot surmount eventually.

03

Housing, Inclusion and the Architecture of Everyday Life



The session on public housing made one of Singapore's boldest choices visible: housing was not treated merely as shelter, but as nation-building infrastructure.

Public housing in Singapore is integrated with parks, schools, healthcare, transit and daily amenities. The programme materials repeatedly used the language of "Live, Work, Play, Learn," showing how homes are planned as part of complete urban environments rather than isolated residential blocks.

What struck us most was the deliberate link between housing and social policy. Our notes captured references to public housing, proximity housing grants, ageing, seniors monetising assets, community living and intergenerational arrangements. The housing story was not only about built form. It was about how the state uses spatial planning to influence social cohesion, family proximity, ageing and security.

This made us think of India. In India, the home is often an emotional, multigenerational, financial and social asset all at once. Housing policy cannot simply be imported from elsewhere. Singapore's model may not transfer directly, but the deeper lesson does: housing is never only real estate. It is a social contract.

The health and ageing discussions pushed this further. The Health District, Queenstown session raised questions around loneliness, dementia, suicide rates, "blue zones," healthy longevity and the idea of creating small neighbourhood care teams of caregivers, handymen, nurses and walkers.

This was one of the most human moments of the programme for us. A liveable city is not only one where people can commute efficiently. It is one where ageing does not become isolation, where care is not invisible, and where neighbourhoods help people remain socially connected.

The idea of "healthy longevity" changed the frame from treating old age as a problem to designing urban life around dignity, familiarity and support. It reminded us that some of the most important urban infrastructures are not made of concrete. They are made of relationships.

04

Sustainability, Water and the Intelligence of Nature



The sustainability sessions were among the most powerful parts of the programme because they showed how Singapore converted scarcity into strategy.

Prof. Khoo Teng Chye's water journey traced Singapore's early water challenges: insufficient catchment, seasonal floods and dependence on external water sources. The slides showed how flood-prone areas reduced

from 3,178 hectares in 1970 to 49 hectares by November 2011 — despite more urbanisation.

The Singapore water story is often described through the Four National Taps: imported water, local catchment water, NEWater and desalinated water. But what we found most compelling was the idea of “closing the water loop.” Water was not treated as a linear supply problem. It became a circular systems problem — collect, treat, reuse, price, conserve, educate and integrate.

The phrase “water as an environmental asset” was especially memorable. Through ABC Waters, canals and waterways were not merely drainage infrastructure. They became active, beautiful and clean public spaces. Bishan-Ang Mo Kio Park illustrated how a concrete canal could be transformed into a naturalised river landscape that also manages stormwater.

Marina Barrage brought this systems thinking together. It delivers three benefits: water supply, flood control and recreation. One piece of infrastructure became reservoir, tidal barrier and public place.

That is Singapore at its best: making scarce land and infrastructure work harder.

The greening story had a similar arc. Singapore moved from Garden City to City in a Garden to City in Nature. The journey began with tree planting in the 1960s and evolved through the Garden City Action Committee, streetscape greening, park connectors, skyrise greenery, biodiversity, nature ways and digitalisation through NParks’ MAVEN system.

The most important shift was from beautification to ecology. Trees first signalled discipline and attractiveness. Later they provided shade, thermal comfort, biodiversity, carbon sequestration, identity and even diplomacy through orchids.

This widened our view of sustainability. Sustainability is not only about reducing harm. It is about increasing urban resilience, comfort, beauty, biodiversity and trust.

Seen from an Indian lens, climate resilience efforts in Telangana and across India are also beginning to move beyond infrastructure creation alone, towards the enabling conditions required for long-term sustainability. The Atal Mission for Rejuvenation and Urban Transformation, commonly known as AMRUT, has focused on water supply and sewage management, while also allocating resources for waterbody rejuvenation, rainwater harvesting, citizen engagement in water-quality management, sanitation and tree plantation. Importantly, performance incentives have started being incorporated into what would otherwise have been treated largely as conventional urban infrastructure projects.

This shift is also visible in the rollout of the Urban Challenge Fund, which nudges cities to access market capital in order to leverage government subsidy for urban infrastructure projects. It marks a gradual movement from grant-based investment to performance-based investment, although it is still too early to fully assess the results of such a paradigm shift.

Warangal city in Telangana offers an illustrative example of this emerging approach. As a million-minus city, Warangal would typically have received an allocation of around INR 500 crore over five years under one of the Government of India schemes. Under the Urban Challenge Fund, however, a sanction of around INR 5,200 crore could be considered for its city-wide underground sewage system, once the project was reframed around the use of treated water as a resource, potential revenue generation, and the introduction of water circularity into the system. In an earlier paradigm, the same project might have been viewed simply as another urban infrastructure project involving 2,700 kilometers of sewer lines, a few pumping stations and the discharge of treated water into canal systems, without adequately building in operation and maintenance costs.

This example shows how the Singapore lesson on circularity and systems thinking can travel meaningfully into the Indian context — not by replication, but by reframing infrastructure as a long-term resource, revenue and resilience system.

Kolkata offers another powerful application lens through the East Kolkata Wetlands. If Singapore’s water story shows how scarcity can be converted into strategy through engineered circularity, the East Kolkata Wetlands

show how ecological systems can quietly perform city-scale work when they are protected and managed deliberately. As a natural wastewater treatment and sewage-fed aquaculture system, the wetlands function not only as an environmental asset, but also as a living sponge and flood-buffering landscape for the city. The lesson here is not to replace such systems with hard infrastructure, but to recognise them as infrastructure in their own right — requiring governance, protection, monitoring and long-term stewardship.

In that sense, Kolkata's opportunity is not only to build new resilience systems, but to preserve and strengthen the resilience systems it already has. A similar logic can extend into dense historic neighbourhoods such as North Kolkata, where small-scale blue-green interventions — shaded walking streets, green verges, micro-greens, restored water edges and climate-sensitive street design — could bring ecological value into intensely built-up areas without erasing their social and cultural fabric.

05

Planning, Governance and the Art of Scaling



The final day brought the institutional story into sharper focus.

Singapore's integrated planning system links long-term plans, master plans, government land sales and development control. The URA presentation showed how long-term plans map possibilities over 50 years and beyond, while master plans guide development over the next 10 to 15 years. This planning system is not abstract. It is connected to land ownership, development control, public engagement and implementation.

The Singapore River case study was one of the clearest examples of turning vision into reality. Once a polluted trading river, it was cleaned through multi-agency efforts involving sewerage, drainage, relocation of industries, dredging and reconstruction of river walls. But the story did not end with cleaning. The river was repositioned as a commercial and activity corridor, with heritage preservation, public-private collaboration, promenades, adaptive reuse and place management.

This case resonated deeply with our thinking about cities like Kolkata. It showed that old urban fabric can be renewed without being erased — but only if conservation, infrastructure, economic incentives and public realm are planned together.

Seen through Kolkata, the Singapore River lesson acquired another layer. Kolkata and Singapore share certain historical echoes as former British imperial port cities shaped by trade, colonial institutions and strategic riverine or maritime geography. Yet their post-colonial trajectories have been very different. Singapore evolved as a city-state global hub, while Kolkata remained a major metropolitan centre within a larger state and national system. The value of the comparison, therefore, is not in asking how Kolkata can become Singapore, but in asking how Singapore's discipline of stewardship can help Kolkata become more deliberately itself.

North Kolkata offers a powerful application lens for this question. Its ageing urban fabric, fine-grain streets, craft economies, neighbourhood memory and everyday intensity are not obstacles to development; they are assets that require a more careful renewal model. The challenge is how the old city can absorb development pressure without heritage loss, car-led sprawl or erosion of street life. This points towards heritage-led renewal through adaptive reuse, anti-displacement safeguards, shaded walking spines, vendor-sensitive street design, green verges and a dedicated mechanism capable of coordinating finance, conservation, public realm and delivery.

Hyderabad is dealing with similar situation in rejuvenating Musi River. The informal settlements on the bank of the river make it very cumbersome. If only land resource was finite like Singapore, our stakeholders would drop their differences and work together towards the overarching goal.

Marina Bay offered another lesson: long-term planning requires patience before visible success. The area was imagined decades before it became today's financial and civic waterfront. The presentation showed

progressive reclamation, master planning by I.M. Pei and Kenzo Tange, extension of the CBD, mixed-use zoning, public waterfront access, district cooling, common services tunnels, design-led procurement and a dedicated place-management structure.

This was not accidental urbanism. It was orchestrated urbanism.

But what we appreciated most was that Singapore did not treat planning as drawing a map. Planning was connected to governance, finance, design quality, land release, public realm and long-term maintenance. The output was not a plan; it was a delivery system.

Prof. Yeo Siew Haip's session on collaborative systems captured this beautifully. Collaboration is not cooperation. Cooperation is working alongside each other. Collaboration is shared ownership of outcomes, shared risk, shared credit and shared accountability across institutional lines.

That distinction is vital. One inter-agency meeting is not a collaborative system. A collaborative system requires durable structures: shared data, joint mandates, common metrics and feedback loops that persist beyond individual leaders.

This brought us to one of our strongest reflections: a pilot is not success. A pilot proves that something can work once. The real test of an urban solution is whether it scales reliably and equitably.

Scaling is where institutional weakness becomes visible. Can the solution work across neighbourhoods, income groups, agencies and political cycles? Can it preserve quality while expanding? Can it avoid serving only the privileged? Can it be maintained after the excitement of launch fades?

That is the real test.

Viewed from an Indian governance lens, the lesson on scaling carries particular relevance. Five-year political cycles can sometimes create pressure for visible early wins, leaving limited space for deeper planning, institutional alignment and long-term maintenance. Bureaucratic procedures, while important for accountability, can also slow implementation when they become overly rigid, fragmented or siloed. The Singapore experience therefore reinforced an important learning: public interest must remain the organising principle, and administrative systems need the capacity, incentives and trust to work across departments, sustain decisions beyond individual tenures, and translate political vision into durable urban outcomes.

06

The Field Visits: Seeing Stewardship in Built Form



The learning journeys were important because they turned ideas into evidence. Singapore was not only explained in classrooms; it was experienced through its urban spaces.

URA City Gallery made planning visible. It showed how the city imagines itself before building itself. Marina Bay showed the power of long-term land and water planning. The Singapore River showed how polluted infrastructure can become civic memory and public life. HDB Gallery showed how housing became a national system. Punggol Digital District showed the emerging integration of digital platforms, live-work-learn-play environments and district-scale innovation. Marina Barrage showed how engineering, climate resilience and public space can coexist.

The Hooghly riverfront offers a useful parallel reflection from Kolkata. Like the Singapore River, it is not merely a water edge; it is a corridor of memory, economy, mobility, ecology and public life. Its future renewal cannot be treated only as beautification or real estate improvement. It requires a stewardship model that connects heritage buildings, ghats, promenades, ferry access, ecological repair, informal livelihoods and long-term maintenance. In that sense, the Singapore lesson is not to sanitise Kolkata's complexity, but to give it a more deliberate institutional and spatial framework.

These visits made one idea tangible: stewardship is not an abstract virtue. It is visible in paving, shade, signage, maintenance, water edges, transit connections, public seating, housing layouts, conservation guidelines and the quality of everyday interfaces. Singapore's success is not only that it builds. It maintains. And maintenance, we realized, is one of the most underrated forms of governance.

07

Returning with Better Questions



The cities programme left us with admiration for Singapore, but also with a deeper appreciation of context. Singapore's story is not one to be copied mechanically; it is one to be studied carefully, translated thoughtfully and adapted with humility. Its greatest lesson lies not only in world-class infrastructure, but in the discipline of stewardship — the ability to align vision, institutions, planning, finance, technology and maintenance over time.

In places such as North Kolkata, this means recognising that old cities do not need nostalgia alone; they need renewal models. They do not need less development, but more deliberate development.

For Indian cities, the opportunity is not to abandon the instinctive creativity of *jugaad*, but to strengthen it with systems thinking, institutional trust and long-term accountability. *Jugaad* brings agility, improvisation and local intelligence. Stewardship brings continuity, coordination and scale. If the two can meet in the middle, they may offer a powerful way forward: cities that are not only more efficient, but more liveable, inclusive, resilient and deeply rooted in their own contexts.

About the Authors

TK Sreedevi is a member of Indian Administrative Services and has vast experience in Urban Policy and Governance. Her pursuit is to evolve citizen centric governance and improved services delivery. Participated in preparing the Telangana Municipal Act 2019. She engages in learning from examples across the globe, abstract good practices and conduct policy reviews of Urban Governance and formulate Policy framework to implement them in the context of Telangana, India. Her vivid interest is in ensuring the true spirit of Third Tier of Government and robust Municipal Finance.

Sreedipto Bhattacharyya is a senior executive working within the healthcare industry based in Singapore and has spent over a decade designing incentive systems that shape how people behave, contribute and thrive within complex organisations. His pursuit is to understand how systems thinking, behavioural design and data-driven decision-making can be applied beyond organisations to larger urban and city-scale challenges. Having lived and worked across Asia Pacific, the Middle East and Europe, he brings a cross-regional lens to governance, multi-stakeholder coordination and human-centred transformation. His interest lies in translating lessons from organisational systems into ideas that can strengthen liveability, resilience and inclusion in cities.

Both authors were part of the 2026 cohort of the NUS Cities Executive Programme, where this reflective paper emerged from their shared learning on liveability, stewardship, governance and the translation of urban lessons across contexts.