ASHAR URBAN FUTURES LAB

CORE PROBLEM MAP

Cities are the largest operating system humans have built - yet much of that system still runs on informal processes. Urban Futures Lab builds startups that fix the invisible infrastructure of cities.

10 Structural Inefficiencies Hiding in the Urban Operating System

1. Real Estate Has No Operating System After Handover

Developers disengage after handover.

After possession, millions of buildings and homeowners rely on fragmented vendors, WhatsApp groups, and informal networks to manage repairs, upgrades, and services. No entity owns the **post-occupancy lifecycle of buildings**.

₹50K-₹5L jobs - the most common category of building work - remain unstructured, untracked, and unreliable.

The UFL Advantage:

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2. Construction Waste Is Trapped Working Capital

Construction projects routinely over-order materials to avoid site delays.

Surplus cement, steel, tiles, fixtures, and fittings accumulate across warehouses and sites - typically written off as waste. In reality this is **billions of dollars of idle working capital**.

India spends ~$385B annually on construction materials. Even a **5-10% surplus** represents one of the largest hidden secondary markets in the industry.

Yet **no trusted marketplace exists to verify, price and redeploy surplus inventory.**

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3. Tenants Have No Reputation, Only Landlords Do

Every time renters move homes, they restart their credibility from zero. Despite millions of tenants building good behaviour, paying timely rent and maintaining responsible upkeep, there is no portable tenant reputation layer or rent history infrastructure. Landlords rely on large security deposits, brokers and informal references

India has **100M+ urban renters**, yet **18% of landlords cite tenant reliability as one of their biggest uncertainties.**

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4. Cooling is the Next Urban Infrastructure Crisis

India's cooling demand will grow dramatically as temperatures rise and incomes increase.

Air conditioner penetration is currently **~8%**, compared to near universal adoption in developed economies.

Rapid adoption of air conditioning could strain electricity grids and increase emissions while leaving lower-income households without access to cooling, thereby driving the need for affordable, efficient cooling solutions

5. India Wants to Age at Home, but the Home is not Ready

*Most seniors want to remain in their homes as they age. However, Indian housing is not designed for **progressive aging***. Critical layers remain fragmented:

- home safety retrofits
- remote monitoring
- medical response systems
- daily care services

India will have **~350M seniors by 2050**, yet institutional elder-care capacity remains extremely limited. The future of aging in India will happen **inside existing homes**, not retirement facilities.

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6. Waste Is the Only Household Utility Without an Appliance

*Every major utility in a home has an **appliance layer***: water → purifier, laundry → washing machine, cooking → stove / microwave, cooling → AC. But waste is still treated like **a civic logistics problem**.

India's households generate **~55,000–60,000 tonnes of wet waste every day**, yet most of it is transported across cities before being processed - an inefficient and costly logistics problem.

If every household had a compact appliance that converts food waste into compost within hours, waste could then be processed and managed **at the point of generation.**

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7. Urban Parking Is an Invisible $50B Asset

Cities suffer from parking shortages even while thousands of private parking spaces remain unused.

Residential parking sits idle during working hours while commercial districts face shortages.

Parking allocation today **relies on stickers, guards, and manual enforcement** rather than digital access and dynamic pricing.

India's parking market is projected to exceed $50B by 2035 driven by vehicle growth, urban congestion, and smart city programs, yet most of the asset base remains offline.

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8. Buildings are Climate Liabilities Waiting to be Repriced

Climate risk will reprice buildings long before most owners are prepared.

Flooding, heat stress, water scarcity, and energy inefficiency will make certain buildings significantly more expensive to operate.

Yet most buildings lack:

- climate risk assessments
- retrofit strategies
- performance monitoring

Since **70% of buildings that will exist in 2050 already exist today**, climate adaptation will depend largely on **retrofitting existing structures**.

9. Land Intelligence is Locked in Human memory

Land feasibility should be a data product, not insider knowledge.

Understanding development potential in Indian cities requires navigating fragmented information across zoning rules, FSI regulations, ownership records, transaction history. Developers rely heavily on consultants and insider networks to interpret feasibility.

India manages **140M land parcels and $120–180 billion in annual land transactions**, yet there is no unified intelligence layer translating land data into actionable development insights.

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10. Energy Efficiency Cannot Scale Without Measurement

You cannot manage what you do not measure.

Buildings install energy upgrades - LEDs, solar, HVAC retrofits - but the savings are rarely measured or verified after installation

Without measurement and verification systems, building owners cannot confidently evaluate return on investment or optimize operations. A standardized M&V layer would allow energy savings to be verified and monetized across large building portfolios.

India's emerging carbon markets and **$160B energy efficiency transition** require reliable measurement systems, yet **over 90% of commercial and industrial facilities lack automated MRV infrastructure.**

Want to go a step further? Here are a few moonshots we are exploring that could redefine how cities are built and operated.

1. Decentralized Wastewater Systems Fail Silently

More than 80% of current STPs within Indian housing societies don't function as intended.

As a result, billions of litres of untreated wastewater either bypass treatment systems or are discharged with poor quality output. India generates **~72 billion litres of sewage daily**, yet less than **30% is effectively treated**.

The current STP model assumes buildings can operate mini treatment plants - a task that is technically demanding and operationally fragile.

The next generation of urban water infrastructure requires **modular, autonomous wastewater systems** designed to function like appliances rather than industrial plants. If solved, buildings could become **self-contained water recycling ecosystems**, dramatically reducing urban water stress.

2. Buildings are Data Black Holes. Can they have a Digital Twin?

Once constructed, buildings quickly lose their operational memory.

Critical information is scattered across drawings, vendor files, emails, and human recollection including structural data, MEP systems, maintenance history and retrofit plans.

Without a structured data layer, building operations become reactive rather than predictive creating massive inefficiencies across maintenance, retrofits, insurance underwriting, and climate resilience.

Global real estate alone is worth **~$393 trillion**, making it the **largest asset class in the world**.

Digital twins - living data models of buildings - could transform how infrastructure is operated, maintained, insured, and upgraded.

Over time, these building twins could connect into **urban-scale digital twins**, enabling cities themselves to operate through software where infrastructure, compliance, and planning become programmable rather than manually coordinated.

In that future, the built world could run on **a cloud layer for physical infrastructure - the equivalent of AWS for cities.**

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3. Buildings as Logistics Infrastructure

India is expected to exceed **10 billion parcel shipments annually within the next decade**, putting enormous pressure on last-mile delivery systems.

Today, logistics relies heavily on centralized warehouses and dark stores. Future buildings require **dedicated logistics infrastructure** - including parcel storage, delivery routing, vertical transport, and secure pickup systems.

In this model, buildings evolve from passive structures into **active nodes in the urban logistics network**, embedding last-mile infrastructure directly into the built environment.

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4. Real Estate Is Sold Like Retail, Not Traded Like Capital

Real estate is one of the largest asset classes in the world.

Yet it is still sold unit-by-unit through brokers and retail buyers rather than traded through liquid financial markets. Once projects launch, unsold inventory often becomes illiquid capital, locking developer balance sheets and slowing project cycles.

India holds **$5–7 trillion in land assets**, yet less than **3% of this value trades annually**, and almost none of it is structured through capital markets infrastructure.

If land and real estate inventory could trade like financial assets, property markets could evolve from slow retail transactions into **liquid capital markets - effectively creating a stock exchange for the built world.**