

# Turn Singapore's Buildings Into a City-Scale Resource Bank

SUM

SINGAPORE URBAN MINING

An AI-powered framework for city-wide reuse · Powered by Upcyclea

60%

of all raw materials globally consumed by construction

37%

of world emissions from the built environment

2035

when Singapore's only landfill reaches capacity

## THE CHALLENGE

The construction sector is the world's largest consumer of raw materials — yet 98% of what's extracted ends in low-value 'end of life' applications. In Singapore, the built environment accounts for 20% of national emissions, of which 40% is embodied carbon. Meanwhile, Singapore's only offshore landfill, Semakau Island, is projected to run out of capacity by 2035.

Despite enormous quantities of reusable materials embedded in existing buildings, the market for reclaimed products remains fragmented and opaque. Information is unstructured and dispersed. Existing platforms rely on spot trading between strangers, producing unstable supply-demand dynamics and an artisanal approach that cannot scale. The result: valuable materials go to waste, embodied carbon goes unaccounted for, and the circular economy potential of the built environment remains largely untapped.

## WHAT IS SUM — SINGAPORE URBAN MINING?

SUM is an institutional reuse framework that brings together public bodies, asset owners, contractors, architects, manufacturers and academic institutions into a shared platform and monthly forum. Rather than a simple marketplace, SUM creates the institutional infrastructure — trust, data standards, governance and AI matching — needed to industrialise reuse at city scale.

SUM is powered by Upcyclea, a company with nearly 20 years of circular economy expertise and an AI-based circular resource management platform operational since 2019. The same model has already been deployed in France (PIRÉE), London (Romulus) and Osaka (Expo 2025), managing over 5 million sqm of assets.

## SUM OBJECTIVES

- **Digitise building audits**  
Conduct Pre-Demolition Audits (PDAs) that create transparent, structured inventories of reusable materials.
- **Standardise data**  
Use Digital Product Passports to capture product and material data within a common template — enabling comparability, trust and AI processing.
- **Build critical mass**  
Bring key industry members into a trusted forum that manages complexity, enables scale and interoperates with other marketplaces.
- **Drive evidence-based policy**  
Provide policymakers with real evidence and market signals to design targeted interventions — turning information into action and action into policy.
- **Measure impact automatically**  
Generate real-time ESG indicators: waste avoided, CO2 saved, water preserved and financial balance — per project and city-wide.

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# How SUM Works & Why You Should Join

The framework · The platform · The membership model

## HOW IT WORKS

01

### PRE-DEMOLITION AUDIT

On-site survey cataloguing materials by quantity, condition, demountability & reuse potential. Aligned with BCA standards (SS 557).

02

### DIGITAL PRODUCT PASSPORTS

Each item gets a structured passport: type, dimensions, wear, reuse potential, location, availability date & photos. Bulk-imported into SUM platform.

03

### AI-BASED MATCHING

SUM auto-matches available deposits against declared needs city-wide. Industry members declare needs free; proposals generated instantly.

04

### ESG IMPACT REPORTING

Every transaction auto-generates: kg waste avoided, kgCO<sub>2</sub>e saved, m<sup>3</sup> water preserved & financial impact — per project and city-wide.

## THE SUM PLATFORM

- **White-label Upcyclea platform**  
Purpose-built for urban mining — live in 3 countries.
- **AI Deposits x Needs matching**  
Auto-suggestions with distance filter & match score.
- **Reuse ecosystems**  
Manage recurring supplier-buyer relationships.
- **Trainings & processes**  
Forum facilitation, methodology guides & onboarding.
- **Bulk PDA import**  
Upload audit data in one go, no manual data entry.
- **Internal messaging**  
Direct communication between deposit owners & buyers.
- **Real-time ESG indicators**  
Building passport (inflow) & reuse transaction (outflow).

## ALREADY LIVE IN 3 CITIES — POWERED BY UPCYCLEA

### PIRÉE

France · Since 2023

Sponsors: Social Landlords Association & ULI France. Pioneering urban mining for social housing across French cities.

### ROMULUS

London · Since 2024

Sponsors: London boroughs & Greater London Authority. Scaling reuse across the London built environment.

### EXPO 2025

Osaka · April–Oct 2025

Sponsor: Obayashi Corporation. Temporary urban mining for Expo 2025 pavillion materials — event scale.

## MEMBERSHIP MODEL

### INDUSTRY (needs)

Free

- Declare material needs
- Purchase reclaimed products
- Access AI match proposals

### DEPOSIT OWNERS

**S\$3,000 / year + S\$200–1,000 / building**

- Building PDA imports
- AI-based reuse proposals
- ESG outflow indicators
- Priority in the forum

### STEERING COMMITTEE

Free

- Strategy & governance
- Trainings & methodology
- Resource management (Upcyclea)
- Monthly SUM Forum access

## WHY JOIN SUM?

- **Reduce risk**  
Work within a trusted industry forum — not alone in an unfamiliar market.
- **Speed up reuse**  
AI matching across a large network — no more manual sourcing.
- **Shape policy**  
Be part of the conversation that drives Singapore's circular construction policy.
- **Full transparency**  
Know exactly what materials are available, where, and when.
- **Market visibility**  
Access real-time signals on material flows and pricing trends.
- **Prove ESG leadership**  
Verifiable, automated impact data for your sustainability reporting.

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