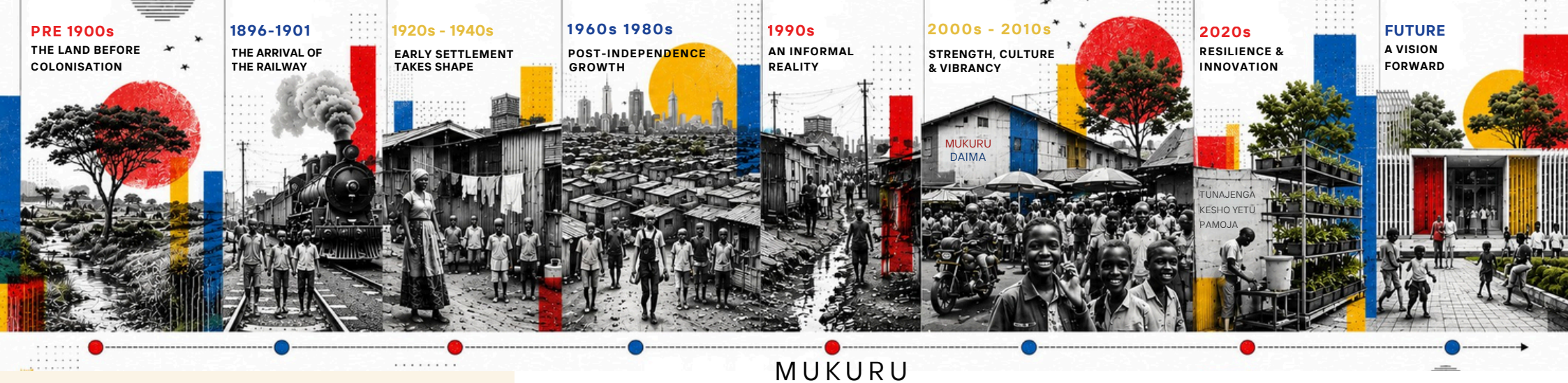
mukuru
COMMUNITY CENTRE

BY TEAM CONFLUENCE

NAIROBI KENYA





MUKURU

OUR PAST. OUR PRESENT. OUR FUTURE.

Our Manifesto:

WHY THE NAME TEAM CONFLUENCE?

The name "*Confluence*" is inspired by the rivers that pass through Mukuru. And just like rivers converging at a confluence so is our team a convergence of thoughts, ideas and personalities, all working towards expressing our vision of what Mukuru's future could be.

WHAT ARE OUR PROJECT OBJECTIVES?

Inspired by Matthew Carmona's theory of designing for the temporal dimension, one of the goals we aim to achieve is designing to meet current needs while also forecasting to meet future needs.

Sustainability also implores that current interventions should not hinder future generations from attaining their needs and as such our conceptual ideas aim to:

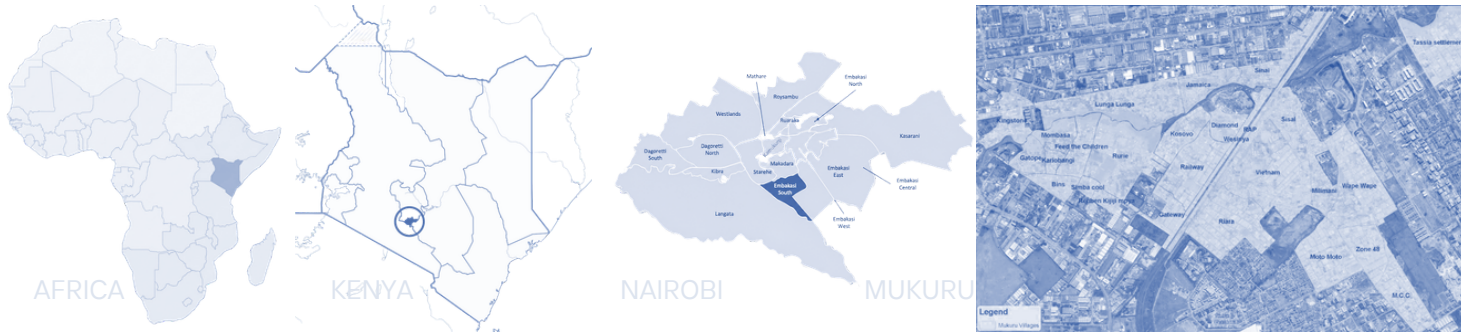
- Address local challenges
- Ensure community well being
- Achieve environmental sustainability
- Empower economic growth
- And leave a legacy of exemplary people centered design

Introduction:

MAARIFA COMUNITY CENTRE

Mukuru, 20 minutes from the CBD, is one of Nairobi's most densely populated informal settlements. where strong community networks coexist with increasing climate vulnerability, including flooding, poor sanitation, and limited public infrastructure. In response, the proposed community center reimagines social infrastructure as a resilient and regenerative urban catalyst integrating public space, climate adaptation, and community empowerment to support everyday life and strengthen long-term resilience within the community.

SITE LOCATION

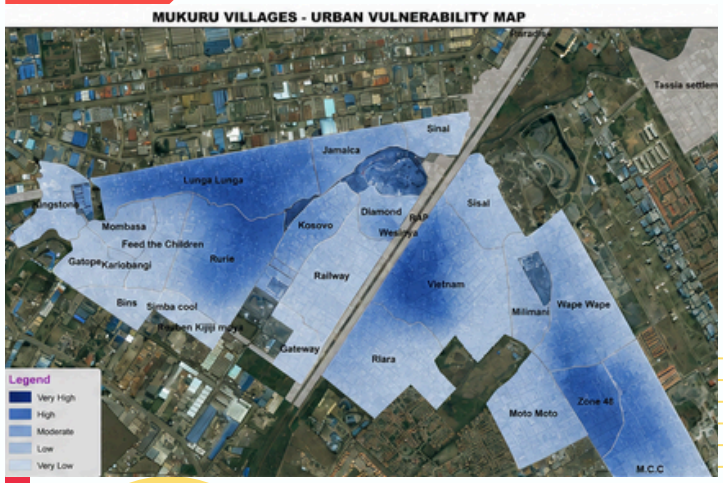


The site of intervention is located in Nairobi, Kenya bound by the constraints of Embakasi South. Mukuru Community Centre is located within Imaara Daima, and with Mombasa Road acting as a landmark, it can be accessed from Catherine Ndereba Rd, via Airport North Road. (see maps above showing context)

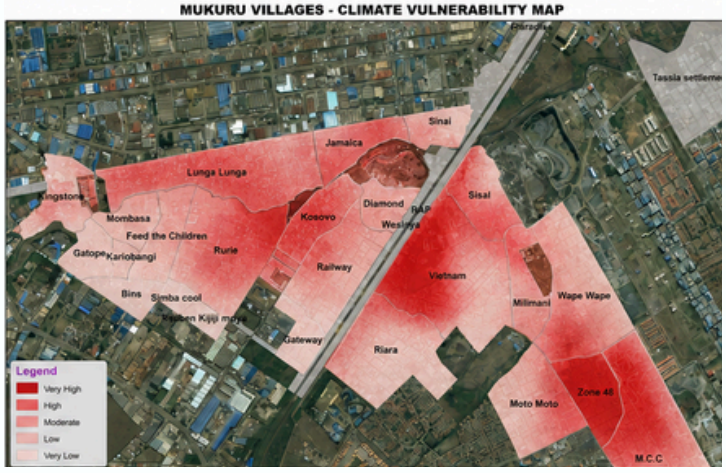


Context in focus:

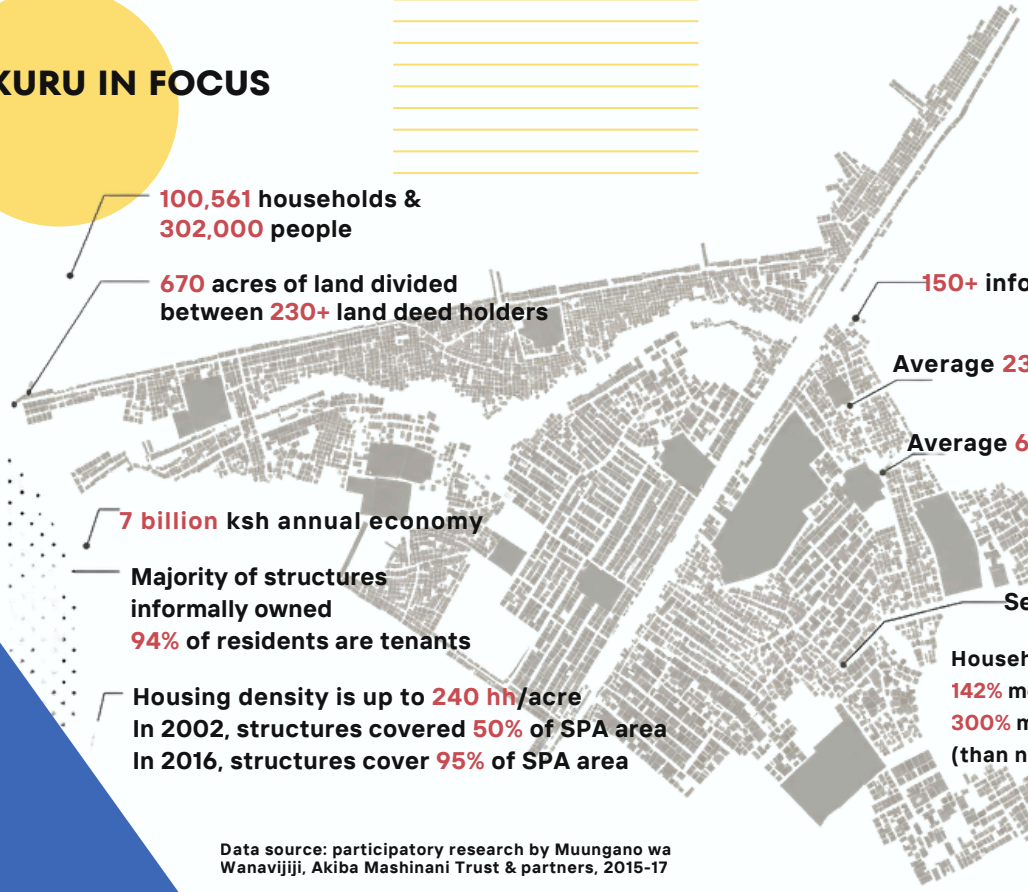
SITE ANALYSIS: NEIGHBOURHOOD SCALE







MUKURU IN FOCUS



100,561 households & **302,000** people

670 acres of land divided between **230+** land deed holders

7 billion ksh annual economy

Majority of structures informally owned
94% of residents are tenants

Housing density is up to **240 hh**/acre
In 2002, structures covered **50%** of SPA area
In 2016, structures cover **95%** of SPA area

150+ informal schools

Average **234** households share **1** tap

Average **67** people share **1** toilet

Services run by cartels

Households pay a poverty penalty of:
142% more for electricity &
300% more for water
(than nearby formal neighbourhoods)

Data source: participatory research by Muungano wa Wanavijiji, Akiba Mashinani Trust & partners, 2015-17



- **Economic issues:**

Income Instability: The local economy is entirely street-based and fragmented, forcing residents to rely on unpredictable, low-yield daily casual wages. 27% of all structures host small businesses

- **Environmental issues:**

-: Chronic Flash Floods
-: Pollution Crisis:

- **Socio-Economic:**

-: Densification, Sprawl has compressed the settlement to 95% structural coverage
-: Financial Suffocation
-: The Poverty Penalty

Site Under a Lens

SITE ANALYSIS: AT THE MICRO SCALE



INFRASTRUCTURE

20% of structures are dilapidated

- Sanitation Gap
- Unreliable Power
- Weak & Deteriorating Structures
- Outdated Facilities



PEOPLE & FACILITIES

- **3,292 students** served by limited staff
- **93 toilets** for the entire school
- **Staff lack adequate** accommodation



CLIMATE REALITY

- **Mukuru is 2°C hotter** than Nairobi
- Average temp: **25°C** annually

COMMUNITY NEEDS

SAFE & ORGANIZED SPACES	ACCESS & OPPORTUNITY	HEALTH & WELLBEING	STRONGER COMMUNITY
Resolve congestion and activity conflicts	Expand skills training and creative spaces	Improve Heathcare access for young motherd	Support Families and local economic opportunities

INFRASTRUCTURE NEEDS

SANITATION FIRST	BUILD BETTER	LEARN & PLAY	REDUCE & REUSE
Urgently add toilets to ease severe shortage	Stabilize and adapt existing structures	Upgrade field and sports facilities	Waste sorting and recycling for income

CLIMATE ACTION NEEDS

FLOOD MITIGATION	GREEN SPACES	CLEAN AIR	WATER SECURITY	CLEAN ENERGY
Drainage & stormwater systems	More trees and shade solutions	Green buffers to reduce pollution	Rainwater harvesting & storage	Integrate renewable energy

OUR GOAL: A safe, healthy, climate-resilient school that **empowers every learner and strengthens the community.**

LEARN AS YOU GO



LEARN. WORK. SHARE. GROW.

A CENTER FOR TODAY, A FUTURE FOR TOMORROW

Design Vision and Concept:

LEARN AS YOU GO IN RIPPLES

What is the problem:

Learning is confined, exclusive, and disconnected from daily life, leaving much of the community without access to continuous growth and skills, which is a missed opportunity.

And from this, herein lies our concept statement:

We aim to transform the Mukuru Community Centre into a **flexible learning ecosystem** that integrates skill-building into everyday life, empowering the entire community to adapt, grow, and build a resilient future together, IN RIPPLES.



But why desire a ripple effect?

Because like a ripple in water, the project begins at the core and expands outward, in layers strengthening connections, creating opportunities and improving the quality of life for the surrounding community.

It addresses the problem as a system with interconnected parts **THUS BECOMING A CATALYST FOR COMMUNITY TRANSFORMATION.**

This concept has successfully enabled us to achieve a thriving neighborhood, as shown:







THE RIPPLE STRATEGY

THE CORE 01

The heart of the project. A vibrant community centre that brings people together.

THE INNER RIPPLE 02

Active programs to support daily life, learning and livelihoods.

THE OUTER RIPPLE 03

Connections to the neighbourhood that improve it.

WIDER IMPACT 04

A long term transformation for Mukuru and the greater Nairobi.

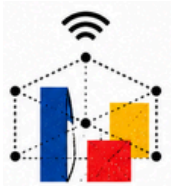
10 Green Design Principles achieved:



COMPLETE NEIGHBOURHOODS



PEOPLE CENTERED STREETS



SMART AND CONNECTED PLACES



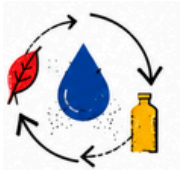
A PLACE FOR EVERYONE



CLEAN CONSTRUCTION



GREEN ENERGY BUILDINGS



CIRCULAR RESOURCES



GREEN SPACES



SUSTAINABLE LIVING



GREEN ECONOMY

LEARN AS YOU GROW

GROW FOOD. GROW FUTURES.



LEARN AS YOU PLAY

IMAGINE. ENGAGE. TRANSFORM.



MASTERPLAN



MUKURU MATERNITY CENTRE

CURRENTLY A DILAPIDATED HALL

SCHOOL ENTRY

COMMUNITY CENTRE ENTRY

LEGEND:

1. **PROPOSED COMMUNITY CENTRE SITE**
2. URBAN FARM
3. GRADE 9 BLOCK
4. ASSEMBLY AREA
5. JUNIOR HIGH BLOCK
6. TANK TOWER
7. GATEHOUSE
8. PARKING AREA
9. DISHI NA COUNTY TRUCK
10. FOOTBALL FIELD
11. MAIN CENTRE ACCESS
12. COURTS
13. SKATE PARK
14. GREEN COURT
15. SECONDARY BLOCK
16. PRE-SCHOOL & PRIMARY BLOCK
17. PLAYGROUND
18. STAFF QUARTERS
19. WASTE COLLECTION ZONE
20. PRINT FACTORY
21. CHIEF'S & POLICE CAMP
22. RESIDENTIAL BLOCKS
23. MIXED-USE BLOCKS

COMPLETE NEIGHBOURHOODS

GREEN ECONOMY

SMART AND CONNECTED PLACES

GREEN SPACES

A PLACE FOR EVERYONE

CIRCULAR RESOURCES

The Mukuru Community Centre master plan is designed as a socially connected and sustainable neighborhood model for Mukuru. Located within a school compound, the project adaptively repurposes a previously dilapidated hall into a vibrant community hub. The center includes pre- and post-natal counseling spaces that support the nearby Mukuru Maternity Centre, improving access to essential healthcare services. Guided by the principle of complete neighborhoods, the master plan promotes easy access to daily services, social interaction, vertical urban agriculture, and pocket parks. The master plan proposes revitalizing the school's sports facilities while adding inclusive recreational spaces for girls and boys of all ages.

LEARN AS YOU WALK

DISCOVER. OBSERVE. EVOLVE.



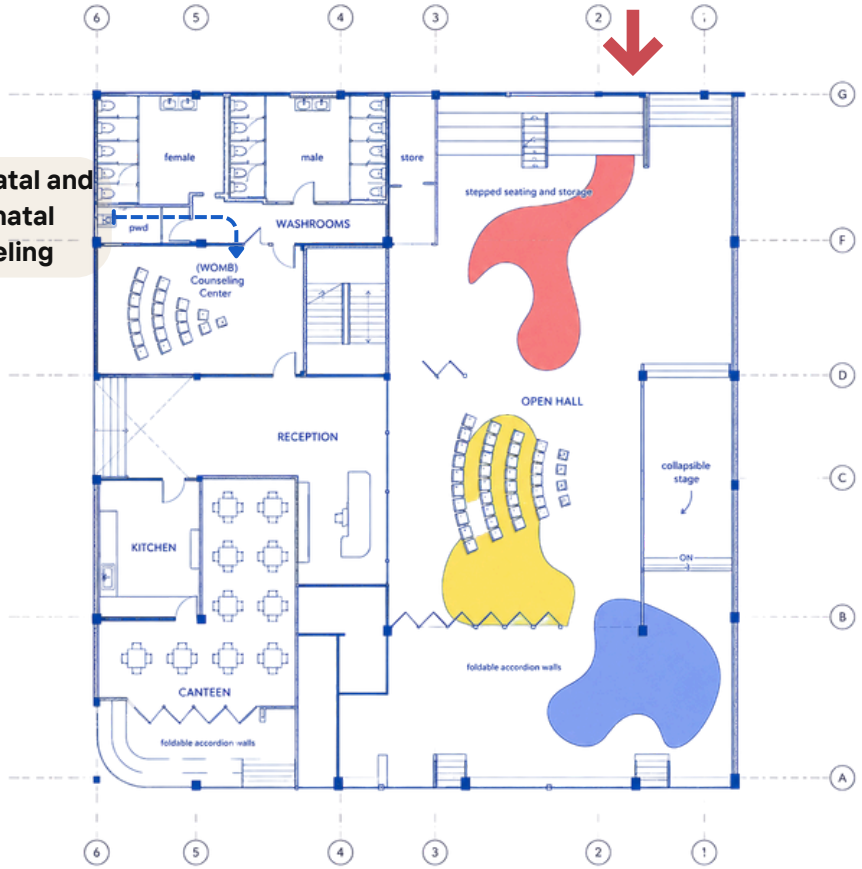
LEARN AS YOU UPCYCLE

REUSE. REDUCE. RECYCLE.



Acess from the Chief's Camp

Pre natal and post natal Couseling



GROUND FLOOR

COMMUNITY SPACE

- Three-storey community centre
- Double-volume ground-floor hall
- Foldable accordion walls for flexible use
- 15 washrooms, 1 accesible washroom, 9 urinals
- Ground floor includes WOMB centre with Pre- and post-natal care services as well as counseling for young mothers
- Supports Mukuru Maternity Centre
- Connection to the Chief's office



46 New toilets

9 New urinals

1 Accessible washroom

Addressing the school's sanitation shortage.





SMART AND CONNECTED PLACES

CLEAN CONSTRUCTION

GREEN ENERGY BUILDINGS

LEARN AS YOU EARN

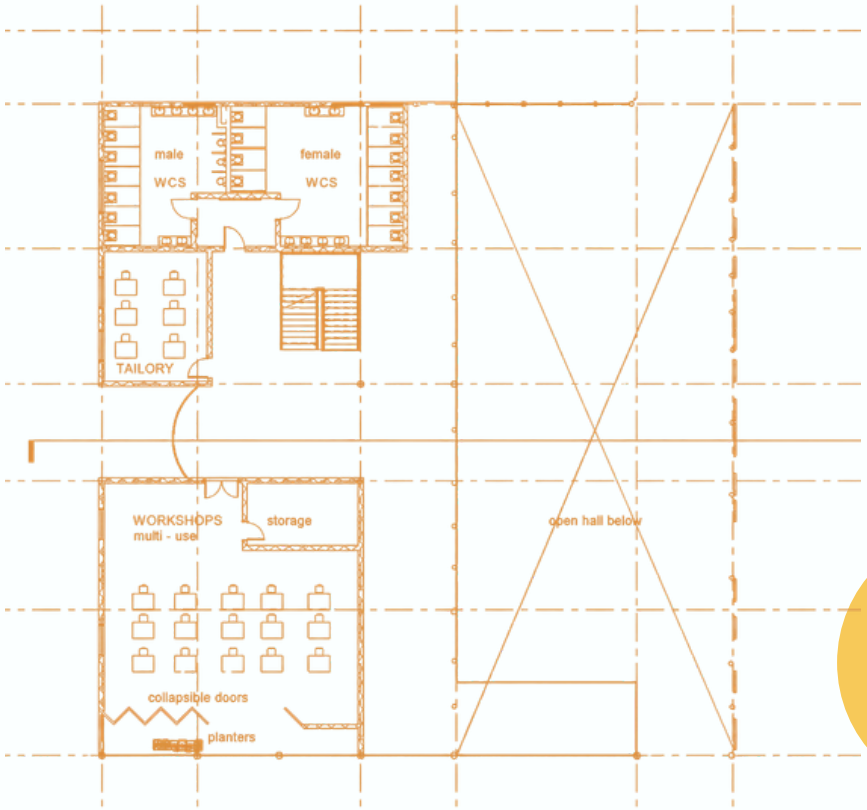
LEARN SKILLS. BUILD FUTURES.



LEARN AS YOU CREATE

MAKE. INNOVATE. INSPIRE.





FIRST FLOOR

MAKERS SPACE

- 18 WC stalls & 3 urinals
- Tailoring studio
- Flexible workshop spaces
- General storage area
- Balcony viewing deck

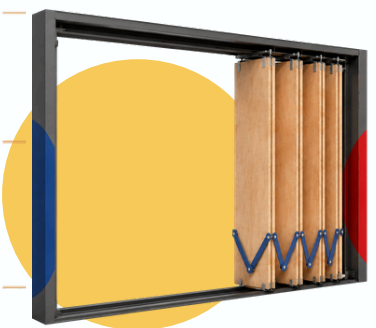


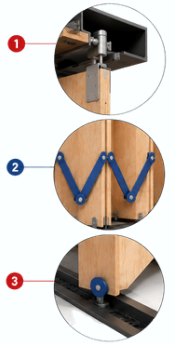
GREEN ECONOMY



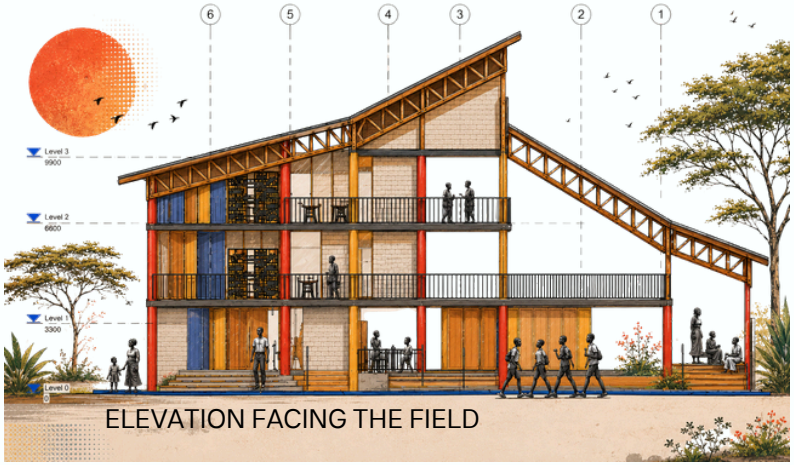
SMART AND CONNECTED PLACES

FOLDABLE WALLS FOR ADAPTABLE SPACES

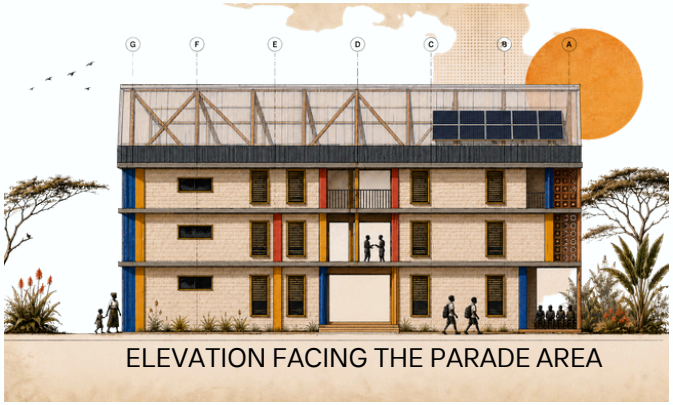




1 — Overhead sliding track
2 — Scissor linkage mechanism
3 — Floor guide roller



ELEVATION FACING THE FIELD



ELEVATION FACING THE PARADE AREA

LEARN AS YOU CONNECT

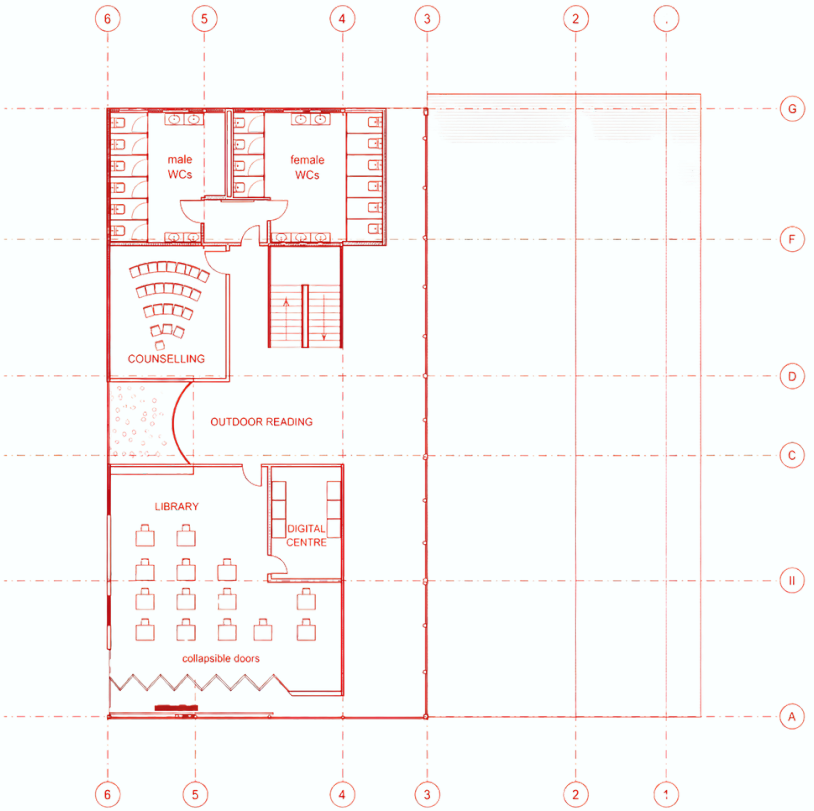
SHARE. COLLABORATE. BELONG.

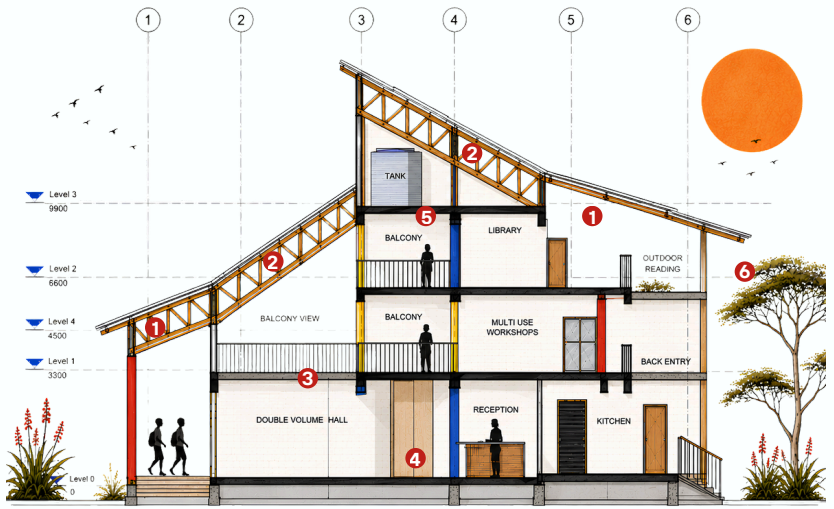


LEARN AS YOU REST

REFLECT. CONNECT. GROW.







SECTION OF THE COMMUNITY CENTER

SECOND FLOOR

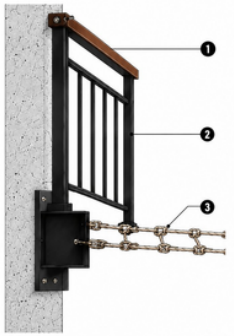
WELLNESS SPACE

- 18 WC stalls & 3 urinals
- Counselling cente
- Outdoor reading space
- Digital centre
- Balcony viewing deck



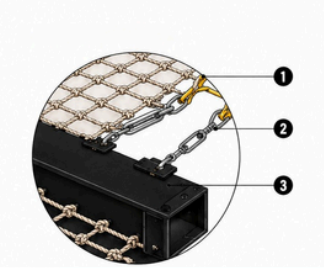
SUSPENDED OUTDOOR READING

SECTION DETAIL



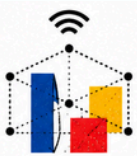
1 — Steel Handrail
2 — Protective Balustrade
3 — Suspended Reading Net

NET FIXING DETAIL

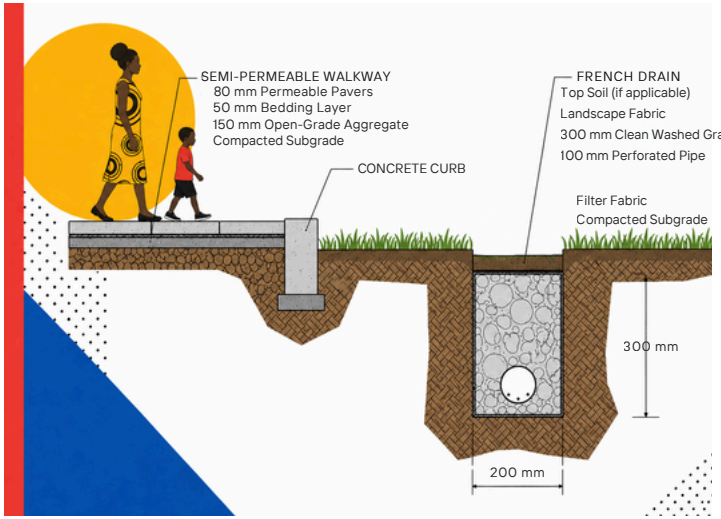


1 — Stainless Steel Net
2 — Turnbuckle Tensioner
3 — RHS Steel Frame

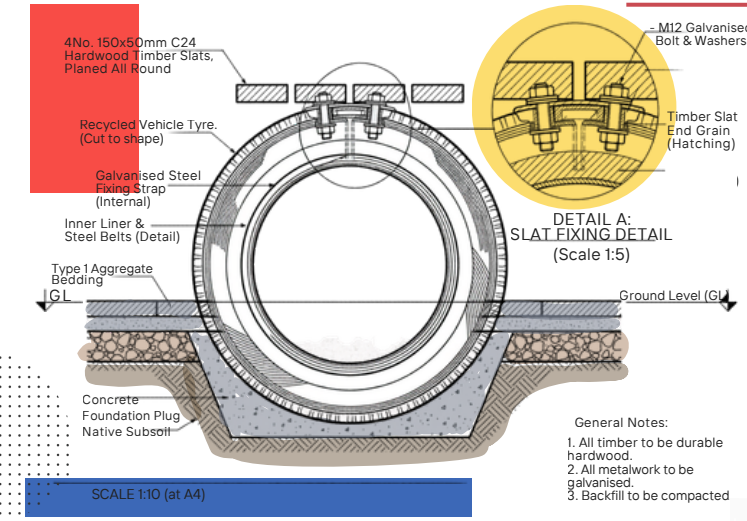
1 — Stone coated cgi roof
2 — Translucent polycarbonate roof
3 — Steel Handrail
4— Foldable wooden partition
5 — Rainwater storage in the attic
6 — Steel gutter



SMART AND CONNECTED PLACES



FRENCH DRAIN DETAIL WITH SEMI-PERMEABLE WALKWAYS



SECTION THROUGH TYRE- TIMBER BENCH RECYCLING TYRES TO SEATING



Nature-based strategies implemented in the design

NATURE-BASED STORMWATER DRAINAGE

Permeable walkways, bioswales & French drains reduce flooding and recharge groundwater

EXPANDED RAINWATER HARVESTING

Rooftop collection network for cleaning, irrigation and stotage

INTERGRATE URBAN AGRICULTURE

Community gardens, vertical farming & micro-green pockets

CIRCULAR WASTE SYSTEMS

Upcycle plastics into planters & transform organic waste into fertilizer

STRATEGIC GREEN ECO-BUFFERS

Dense tree lines filter air pollution from nearby industry & transit

PASSIVE MICROCLIMATIC COOLING

Building Structure is open to maximizes natural wind for cross-ventilation

Place-based strategies implemented in the design

GRASSROOTS PARTICIPATORY CO-DESIGN

Workshops with students, teachers, local traders & healthcare workers inform site layout, uses & zoning

ADAPTIVE REUSE INFRASTRUCTURE

Repurpose underused buildings into community amenity anchors

SKILL-AS-A-COMMODITY ECOSYSTEM

Vocational workshops & digital media training create local economic opportunities

RECYCLING & REUSE SYSTEMS

Sort, reuse & repurpose waste through community recycling & KOMB Green initiative

CULTURAL & YOUTH EXPRESSION SPACES

First-floor music & dance studios for Mukuru's creative youth culture

Future Reslience strategies

LOW-CARBON ADAPTIVE REUSE

Avoid new carbon-heavy construction;
retrofit & repurpose existing structures
into context-responsive assets



CIRCULAR WASTE ECONOMY

Incentive-driven sorting & separation system turns organic waste into fertilizer & plastics into vertical planters



TOWARDS A RESILIENT MUKURU 2036

LESS FLOODING MORE ABSORPTION & RETENTION

COOLER, MICRO CLIMATE & SHADE

STRONGER COMMUNITIES

HEALTHIER ECOSYSTEMS & BIODIVERSITY

MORE STABLE LIVELIHOODS & OPPORTUNITY

Environmental Impact Assessment:

LEARN AS YOU UPCYCLE



Learn as you upcycle introduces RECYCLING to students from a young age thus inculcating said discipline within them from a young age.
The presence of a paper factory nearby presents a unique opportunity to recycle paper waste thus REDUCING BURNING and CARBON EMISSIONS by over 60%.
Food waste is then turned into compost and used in the vertical gardens shown below.

LEARN AS YOU GROW:



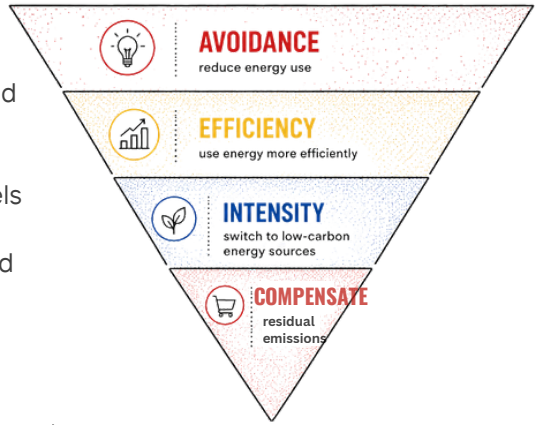
Learn as you grow, an exciting project takes used plastics deemed as trash and upcycles them into vessels of vertical farming. Projects that can be done by both learner and parent due to the new CBC Curriculum.
Innovation from learners in environmental studies creates awareness for need to go GREEN thus aiding the CARBON SEQUESTRATION CAMPAIGN.

Our proposal reduces environmental degradation and regenerates ecological systems through integrated green infrastructure, circular resource systems and low impact design
Apart from strategies like:

- Presence of renewable energy sources through use of solar powered panels

Carbon emission reduction is being achieved through:

- Sustainable waste management through recycling and composting to avoid burning
- Adaptive reuse in construction (through reuse of material and minimal demolition) thus achieving low embodied energies



EXISTING ENVIRONMENTAL CHALLENGES

POLLUTED WATERWAYS
Rivers are highly polluted by waste and sewage

POOR DRAINAGE
Flooding is frequent due to blocked drains and low infiltration

LACK OF GREEN COVER
Little vegetation exists in the area and its poor in quality

BIODIVERSITY LOSS
The degraded habitat has reduced the biodiversity

WASTE ACCUMULATION
Uncollected waste is bad for public health

OUR ENVIRONMENTAL STRATEGIES

NATURE B. SOLUTIONS
Rain gardens and french drains to clean and absorb water

URBAN GREENING
Tree palnting and green corridors to cool and restore the habitat

CIRCULAR WASTE SYSTEMS
Recycling hubs and composting to reduce waste sent to dumpsites

CLEAN WATER SYSTEMS
Rainwater harvesting as well as cleaning and fixing existing drainages for storm water to flow

EXPECTED POSITIVE IMPACT

FLOOD RISK
Upto 70% reduction in surface run off through nature based systems

HEAT ISLAND EFFECT
Upto 2degrees cooler microclimate with more trees and shade

BIODIVERSITY
Restored habitats that support birds

WASTE RECYCLING
Upto 60% RECYCLING and composting

COMMUNITY HEALTH
Cleaner air, safer water and green spaces improve well being

ENVIRONMENTAL PERFORMANCE PROJECTION BY 2036

70% REDUCTION IN SURFACE RUNOFF

40% INCREASE IN CANOPY COVER

60% WASTE IS RECYCLED

50% IMPROVEMENT IN WATER QUALITY

+50% ACCESS TO PUBLIC SPACE

Appendix A: THE CREATIVE PROCESS

THE TEAM, THE PROCESS, CONCEPT SKETCHES AND FIELDWORK IMAGES

FIELDWORK



THE PROCESS

01 RESEARCH AND SITE ANALYSIS
Site visits, site analysis and synthesis as well as research for solutions

02 CONCEPT DEVELOPMENT
Reviewing of case studies for inspiration from local institutions (see appendix B)

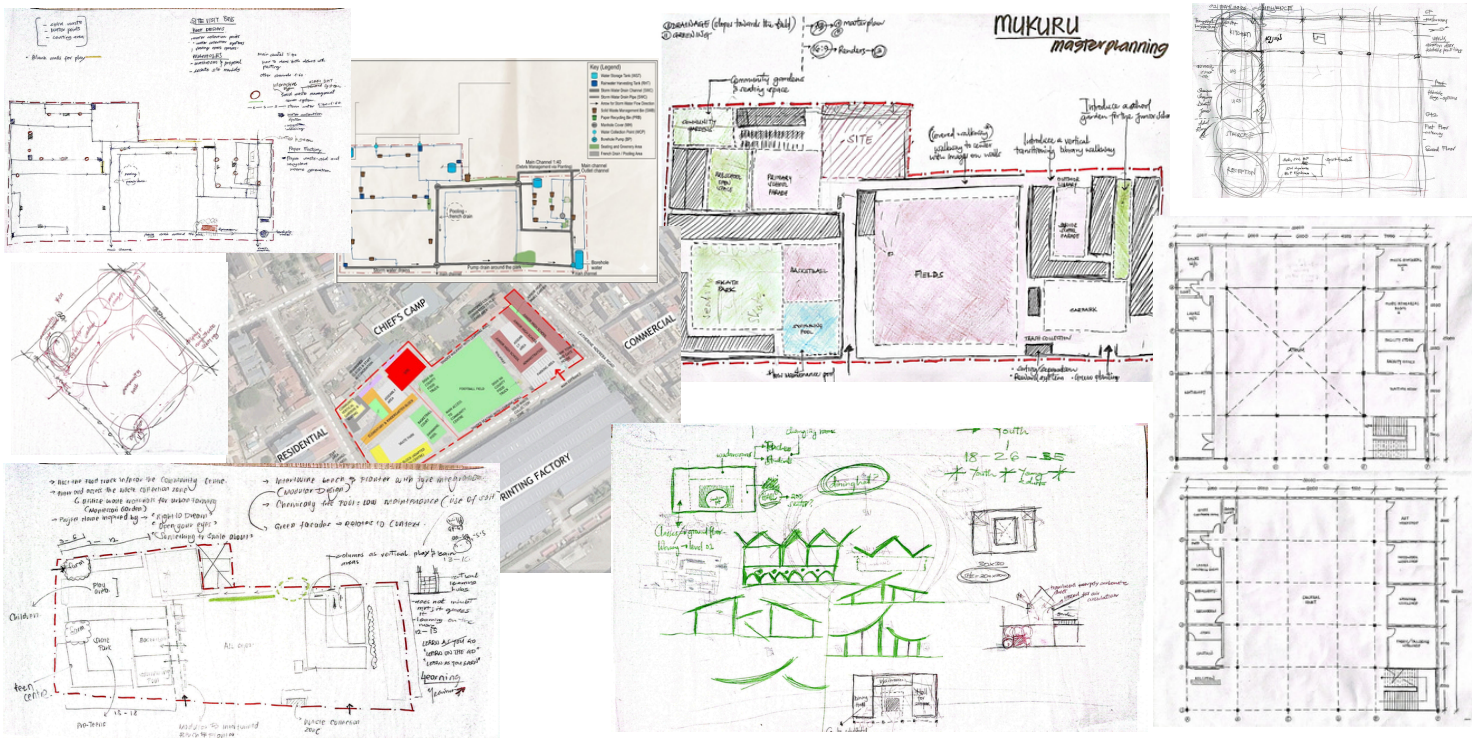
03 DESIGN DEVELOPMENT
Development of brief and schedule of accommodation as well as schematic design

04 PROFESSIONAL FEEDBACK
Crit sessions with team advisor (see Team Form) as well as the C40 Workshop Sessions

05 PRESENTATION PREPARATION
Preparation of documents as required by the C40 Team

06 SUBMISSION
Subsmission of the design proposal before the deadline

CONCEPTUAL SKETCHES AND DESIGN DEVELOPMENT



USER TYPOLOGY OF MUKURU, NAIROBI

Existing Users

Targeted Users

Community and social cohesion

Livelihood and opportunity

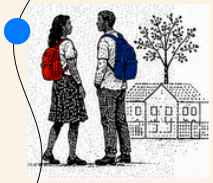
Learning and growth



LOCALS
(Age: All Ages)
Local residents from the surrounding areas who frequent the space daily.



CHILDREN
(Age: 5 - 12 years old)
These are children from Mukuru who actively use the play areas and open spaces.



STUDENTS
(Age: 13 - 30 years old)
Students who commute to schools, colleges and training centres seeking safe spaces to grow.



WORKERS/ TRADERS
(Age: 25 - 50 years)
Informal workers and traders from nearby industrial zones and local markets.



VISITORS
(Age: All Ages)
These are visitors drawn to Mukuru either because of family, reasearch or personal initiatives

KEY THEMES EXTRACTED:

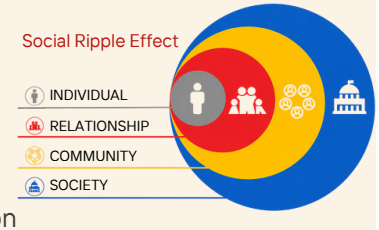
Community Partcipation

Ecological Resilence

Public Space

Livelihood Creation

Social Inclusion



Appendix B: CASE STUDIES

WHO HAVE WE LEARNT FROM

PRECEDENTS INFORMING RESILIENT COMMUNITY URBANISM IN MUKURU

WHAT WAS THE PURPOSE OF THIS EXERCISE?

To draw inspiration from initiatives and projects that promote community led development, ecological resilence and inclusive public spaces.

KOMBGREEN solutions



KEY LESSON
Community-led ecological restoration and urban farming can transform vulnerable settlements into productive green networks

APPLICATION IN MUKURU
Integration of urban agriculture, composting systems and green learning spaces to build food resilience and environmental stewardship.

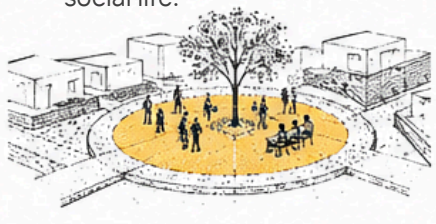


PUBLIC SPACE NETWORK



KEY LESSON
Small-scale, well-designed public space can catalyse community interaction, safety and collective ownership.

APPLICATION IN MUKURU
Creation of safe shaded and inclusive public spaces for learning, play and dialogue. This will ultimately strengthen community bonds and everyday social life.

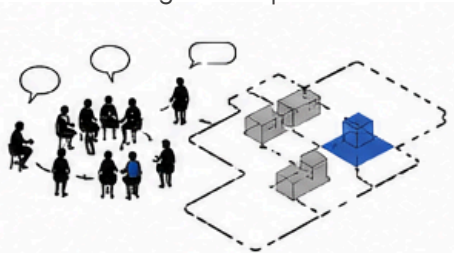


nairobi kenya



KEY LESSON
Participatory upgrading processes strengthen social resilence and ensure that development reflects community needs and identity.

APPLICATION IN MUKURU
Active community engagement in design, planning and implementation to ensure contextual relevance, ownership and long term impact.



FINAL CASE STUDY: Kamwokya Community Centre, Kampala Uganda by DIÉBÉDO FRANCIS KÉRÉ

Appendix C: CALCULATIONS

DELIVERY OF TECHNICAL SYSTEMS: SOLAR POWER AND WATER SOLUTIONS

DRINKING WATER



The school has insufficient watering points to get fresh water to drink and for sanitation purposes like washing hands

Proposal: Add more watering points across the SITE

"SANITATION SOCIAL ENTERPRISE"



A company called Sanergy manufacturers latrines called ''Freshlife'' - local residents who purchase & operate the sanitation facilities.

The problem: Mukuru Community Centre has a low washroom-to-student ratio. The current ratio is 1 toilet : 40 students as opposed to the required 1:25 for girls and 1:30 for boys

PROPOSAL: To design a community centre with more washrooms to help alleviate the pressure of insufficient infrastructure

MUKURU LIFESTYLE SYSTEMS:



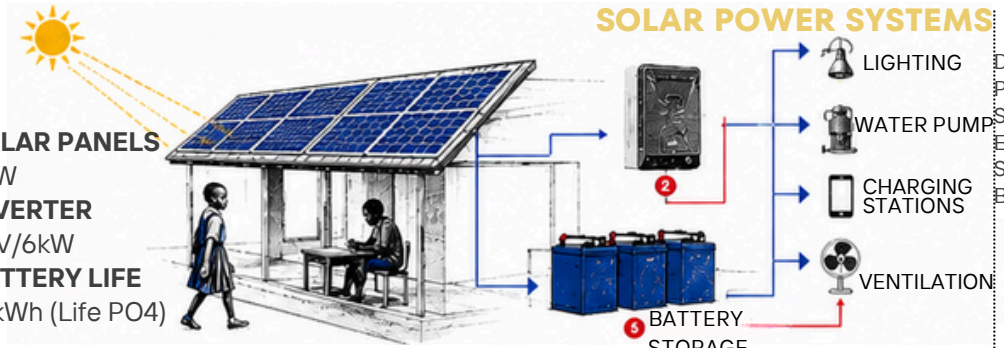
the KADOGO ECONOMY:

Survival Micro Economy

Informal system of selling goods in very small, affordable quantities that responds to low and irregular incomes in informal settlements enabling daily survival instead of bulk buying.

PROPOSAL: To reactivate the existing shop on the boundary wall of Mukuru Community Centre

SOLAR POWER SYSTEMS



01 **SOLAR PANELS** 6kW
02 **INVERTER** 48V/6kW
03 **BATTERY LIFE** 10kWh (Life PO4)

ENERGY CALCULATIONS

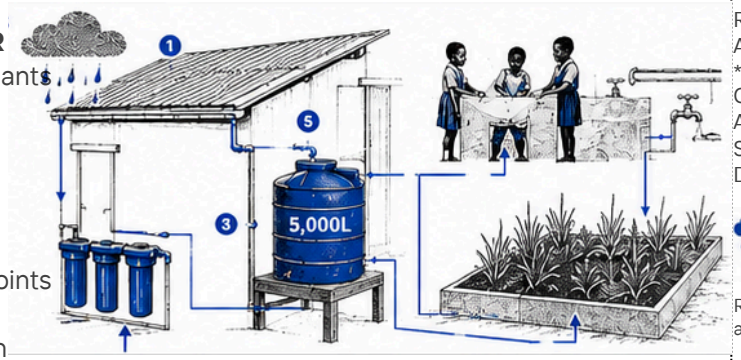
Daily energy demand= 18kWh/day
Proposed PV capacity = 6kW
Solar peak sun hours = 4.5h/day
Estimated daily output = 24kWh/day
System autonomy = 2 days
Battery Bank = 10kWh usable



*Based on Davis and Shirtliff system data

WATER SYSTEMS

01 **RAINWATER HARVESTING** From roof catchment
02 **FIRST FLUSH DIVERTER** Removes initial contaminants
03 **FILTRATION** Multi storage filter unit
04 **STORAGE** 5000L tank
05 **DISTRIBUTION** To taps / handwashing points
06 **GREYWATER REUSE** For flushing and irrigation



WATER CALCULATIONS

Roof catchement area = about 900sqm
Annual rainfall (Mukuru avg) = 850mm
**subject to change with recent floods*
Capture efficiency = 80%
Annual water harvested = ~ 170,000L
Storage tank capacity = 5000L
Daily water availability = 465L/Day

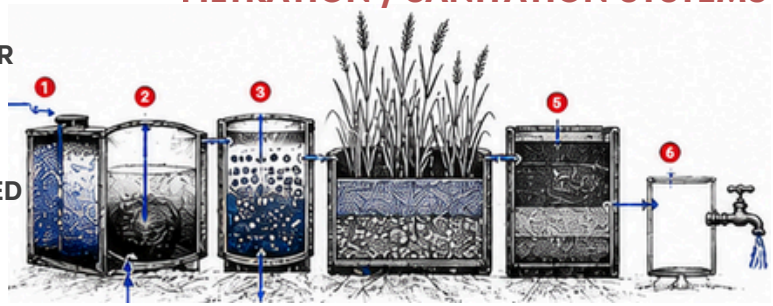


Rainwater harvesting only supplements the already present borehole system

*Based on Davis and Shirtliff guidelines

FILTRATION / SANITATION SYSTEMS

01 **INLET** From toilets
02 **SETTLING CHAMBER** Solids separation
03 **ANAEROBIC FILTER** Digetsion of waste
04 **PLANTED FILTER BED** Natural bio filtration
05 **POLISHING FILTER** Sand and charcoal
06 **CLEAN WATER OUTLET** For reuse



SYSTEM BENEFITS

- Improved sanitation and public health
- Low energy, nature based system
- Water reuse reduces fresh water demand
- Community ownership and operation





SYSTEMS THAT SUPPORT DAILY LIFE

40% RENEWABLE ENERGY CONTRIBUTION

65% REDUCTION IN WATER DEMAND

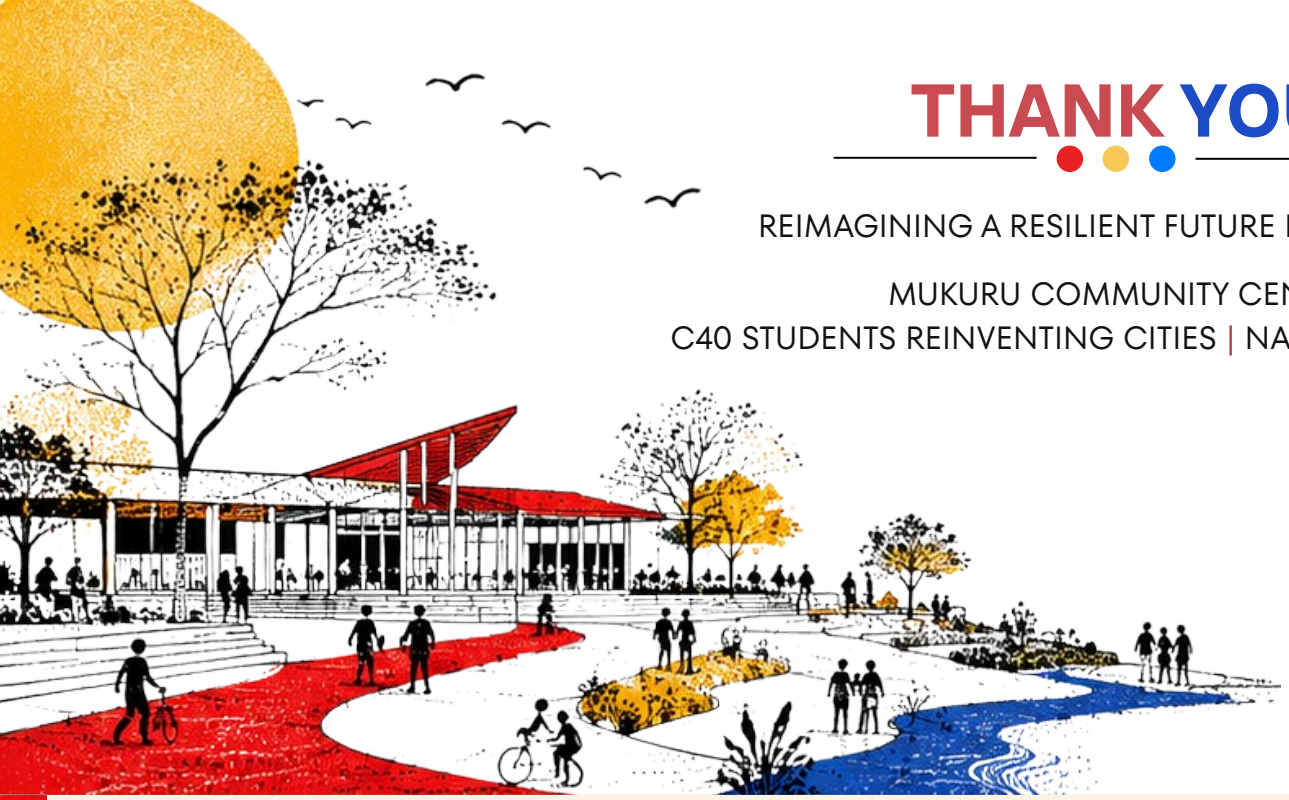
OVER 2000 STUDENTS SERVED DAILY

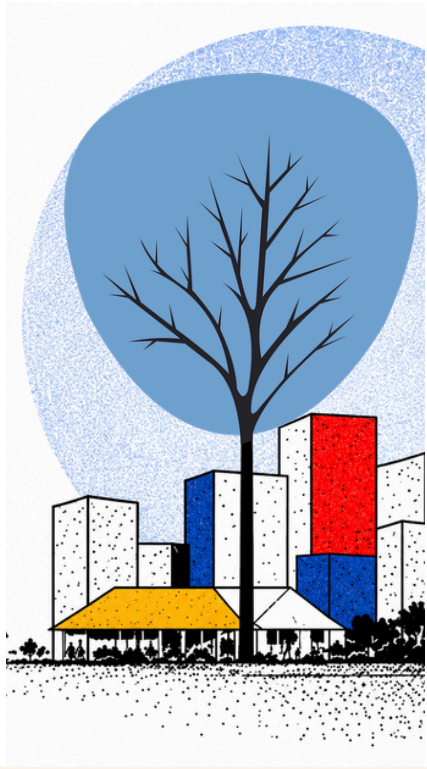
30% REDUCTION IN HEAT GAIN

THANK YOU

REIMAGINING A RESILIENT FUTURE FOR MUKURU

MUKURU COMMUNITY CENTRE
C40 STUDENTS REINVENTING CITIES | NAIROBI FORUM 2026





REFERENCES

- Africa Habitat Review (2025) – Vulnerability & spatial analysis
- BMC Public Health (2023) – Climate & health in Mukuru
- IDRC (2025) – Upgrading improvements
- Kenya News Agency (2025) – Housing challenges
- MDPI Urban Studies (2022) – Density, economy, demographics
- Muungano wa Wanavijiji – Mukuru SPA documentation
- Safari254. (2017, September 7). A homage to Mukuru Kayaba. Safari254. Safari254
- Scientific Research Publishing. (n.d.). Paper information. SCIRP. SCIRP Paper Information
- YouTube. (n.d.). [Video]. YouTube. YouTube Video

IMAGE SOURCES

- Google Earth Pro 7.3 - Site Context and Aerial Imagery
- Authors' Archive - photographs from site visit documentation, Mukuru, Nairobi (2026)
- Safari254. (2017, September 7). A homage to Mukuru Kayaba. Safari254. Safari254

MAPPING AND DATA

- Flood Hazard Mapping - Nairobi County GIS Department
- Slum Dwellers International - SDI Kenya https://www.sdikenya.org/

SOFTWARES USED

- REVIT 2025
- Lumion
- Enscape
- Adobe Illustrator
- Adobe InDesign
- Adobe Photoshop
- Canva
- Neural rendering
- Microsoft PowerPoint
- Microsoft Word

*This project is a **collective** vision for a **healthier, greener** and **more resilient Mukuru***

Designed by: **TEAM CONFLUENCE**