

Recognising the informal:

an urban design for environmental
justice in Manshiet Nasser, Cairo



Motivation

Cairo



Context

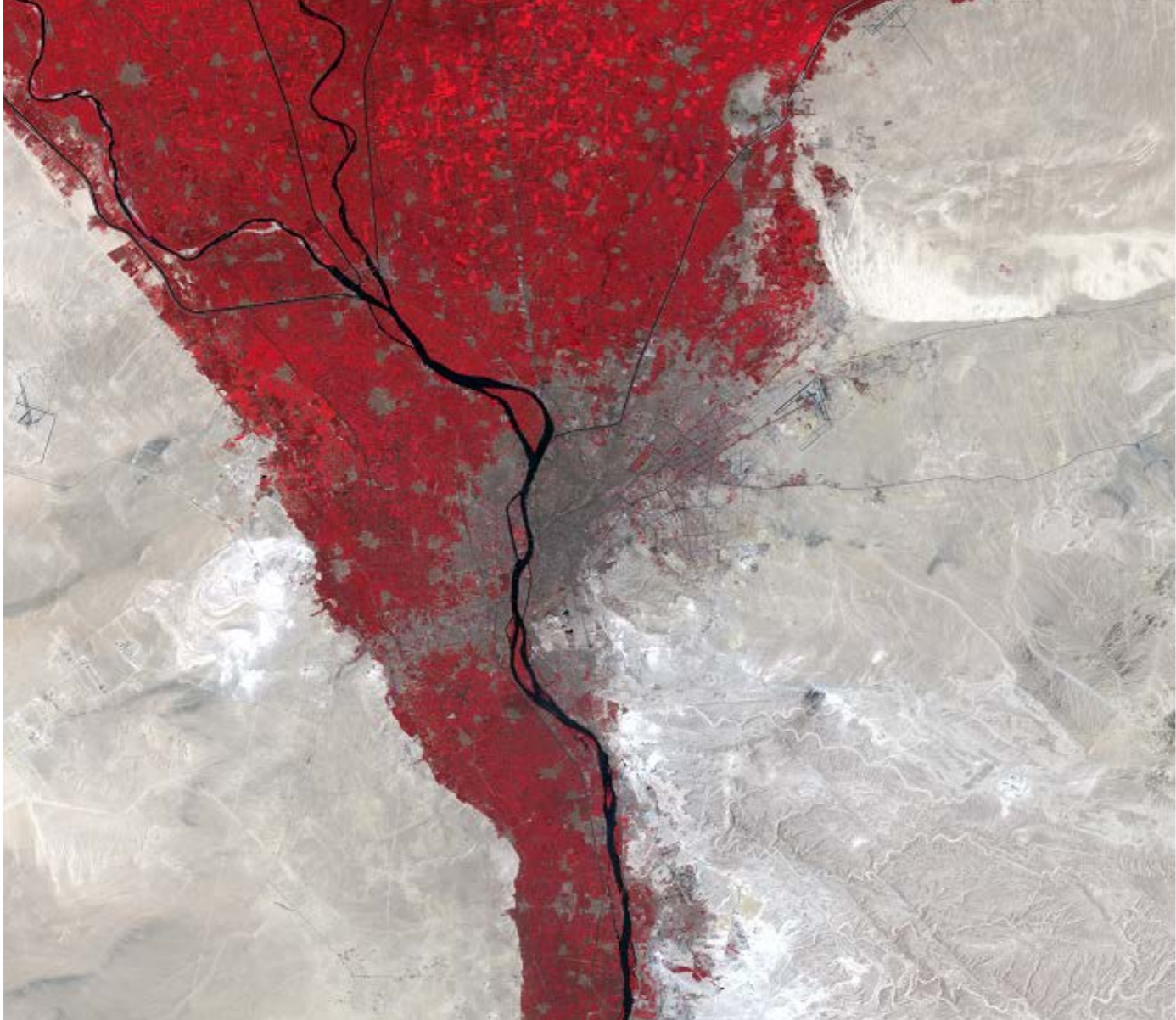
Cairo



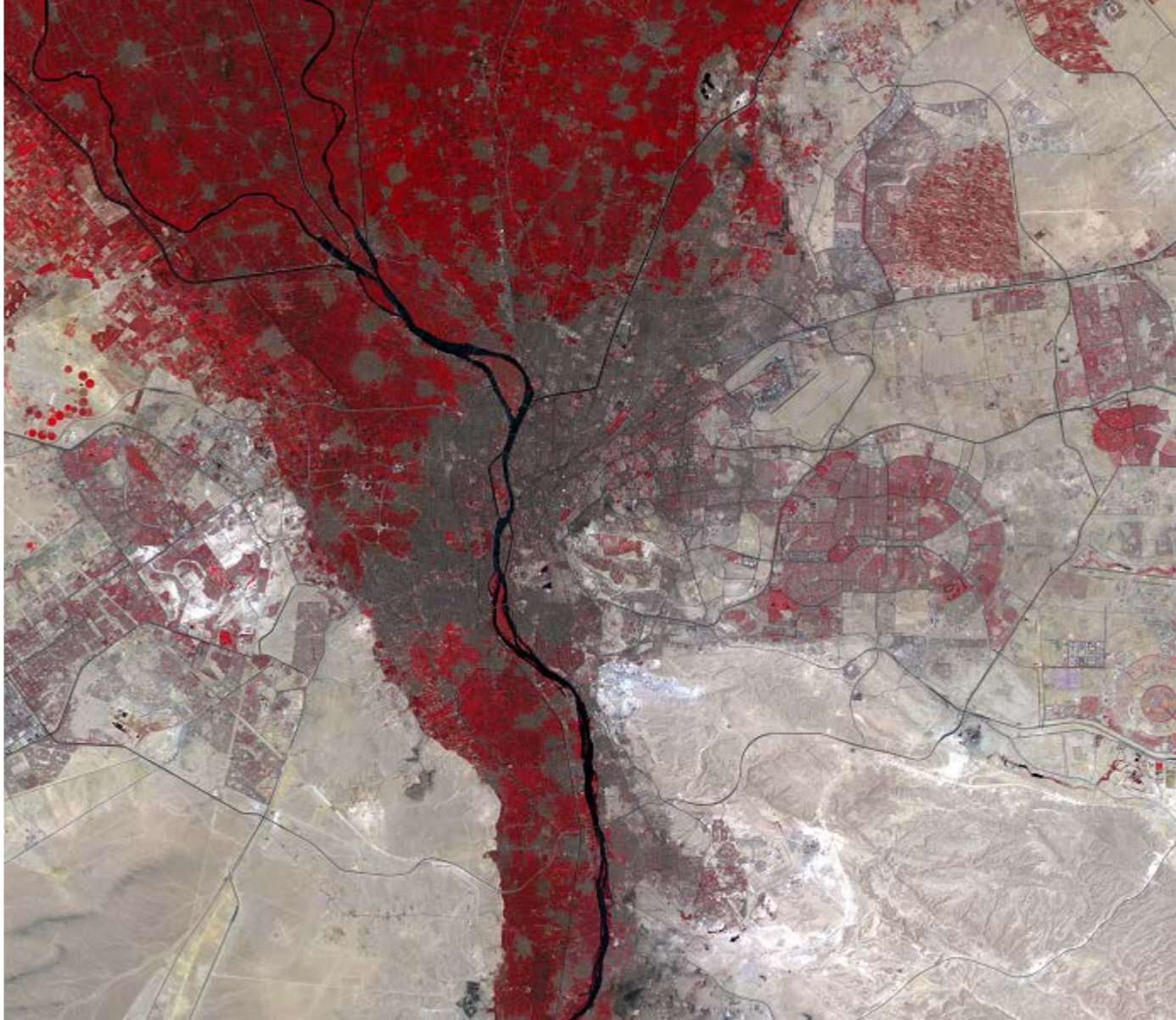
Cairo Skyline (Adulyatham, 2023. Retrieved from [archdaily.com](https://www.archdaily.com))

Context

population increase



Cairo in 1984 (EROS, 2023. Retrieved from eros.usgs.gov)



Cairo in 2023 (EROS, 2023 Retrieved from eros.usgs.gov)

Context

desert urbanisation



Islamic Cairo (Blue Cairo, 2021)

Context

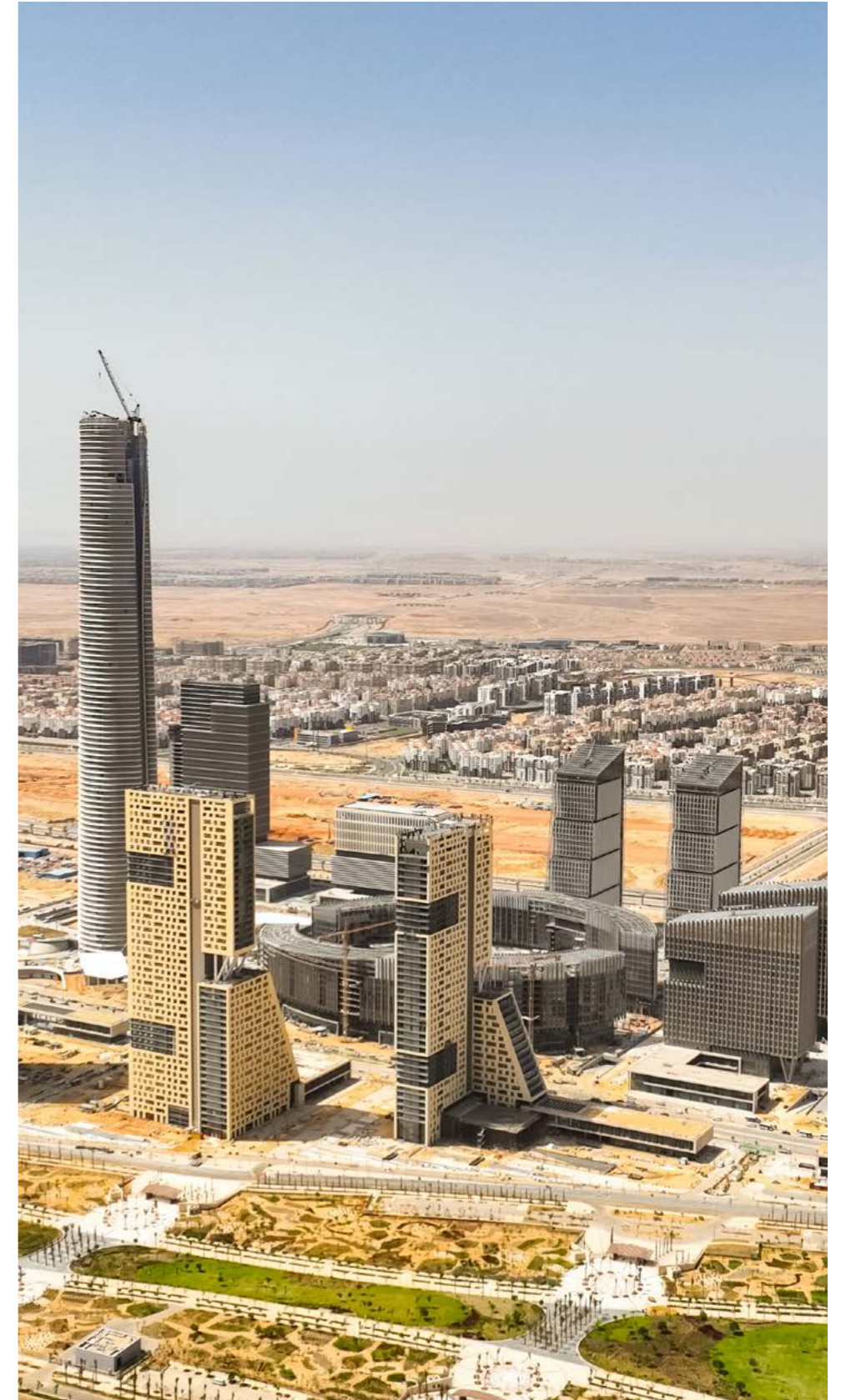
desert urbanisation



Hyde Park New Cairo (Helal, 2022. Retrieved from Nawy.com)

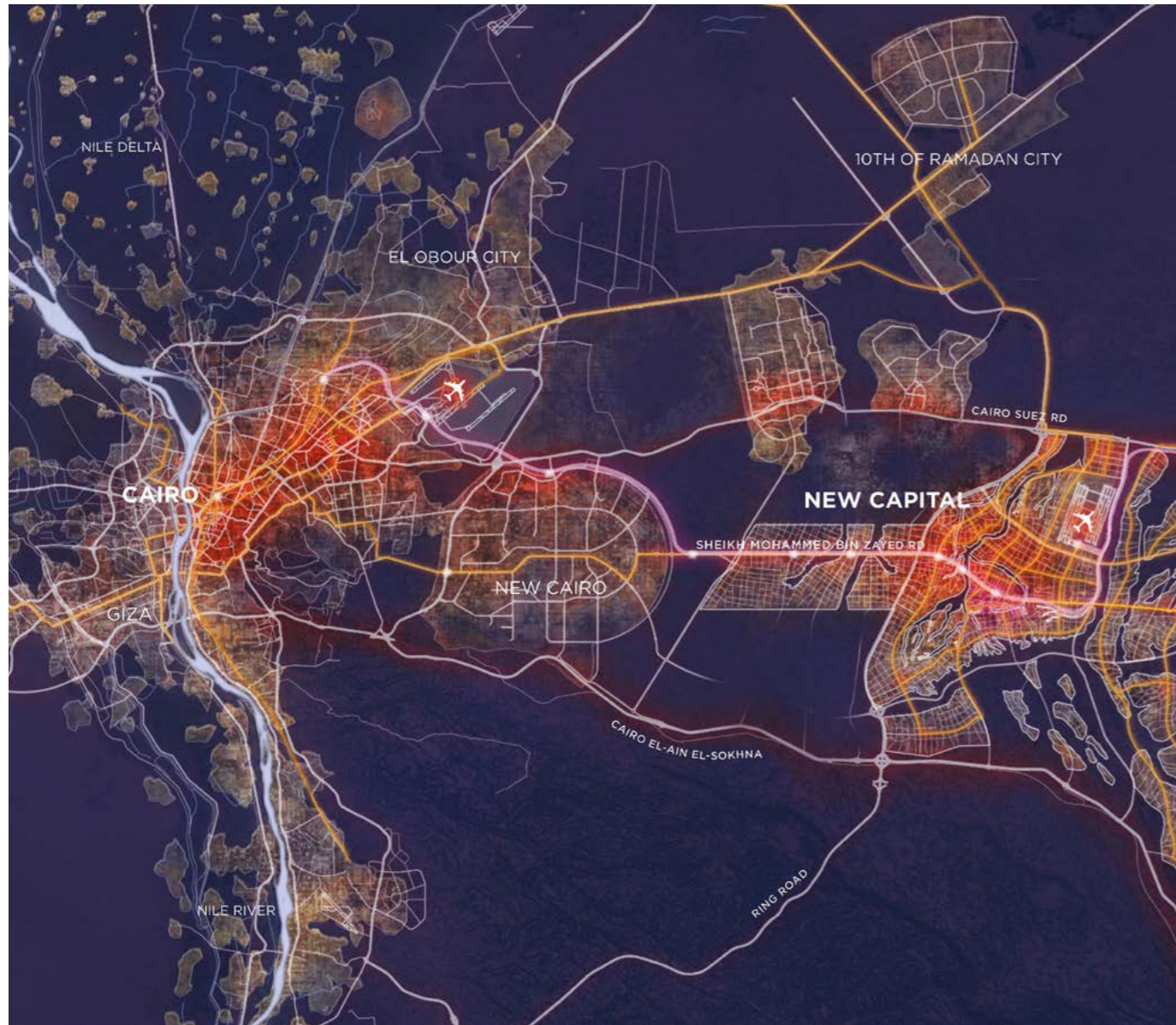
Context

desert urbanisation



New Administrative Capital (ACUD, 2024, CNN)

Problem environmental degradation



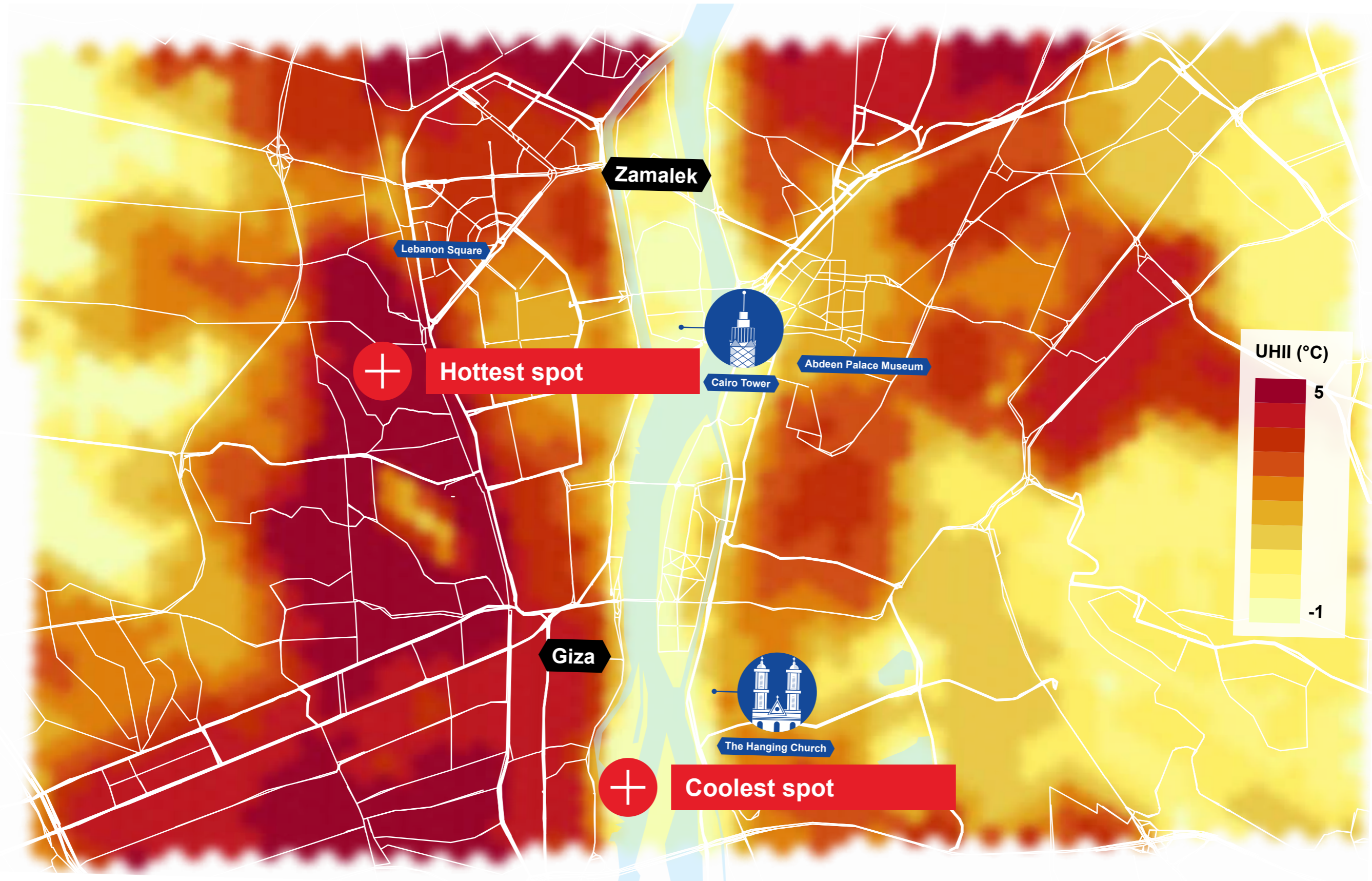
Greater Cairo Region with the New Administrative Capital (Architectenweb, 2021)



Abd el Moneim Riad Square (Degner, 2017)

Problem

environmental degradation



Urban heat snapshot (ARUP, 2024)

Problem

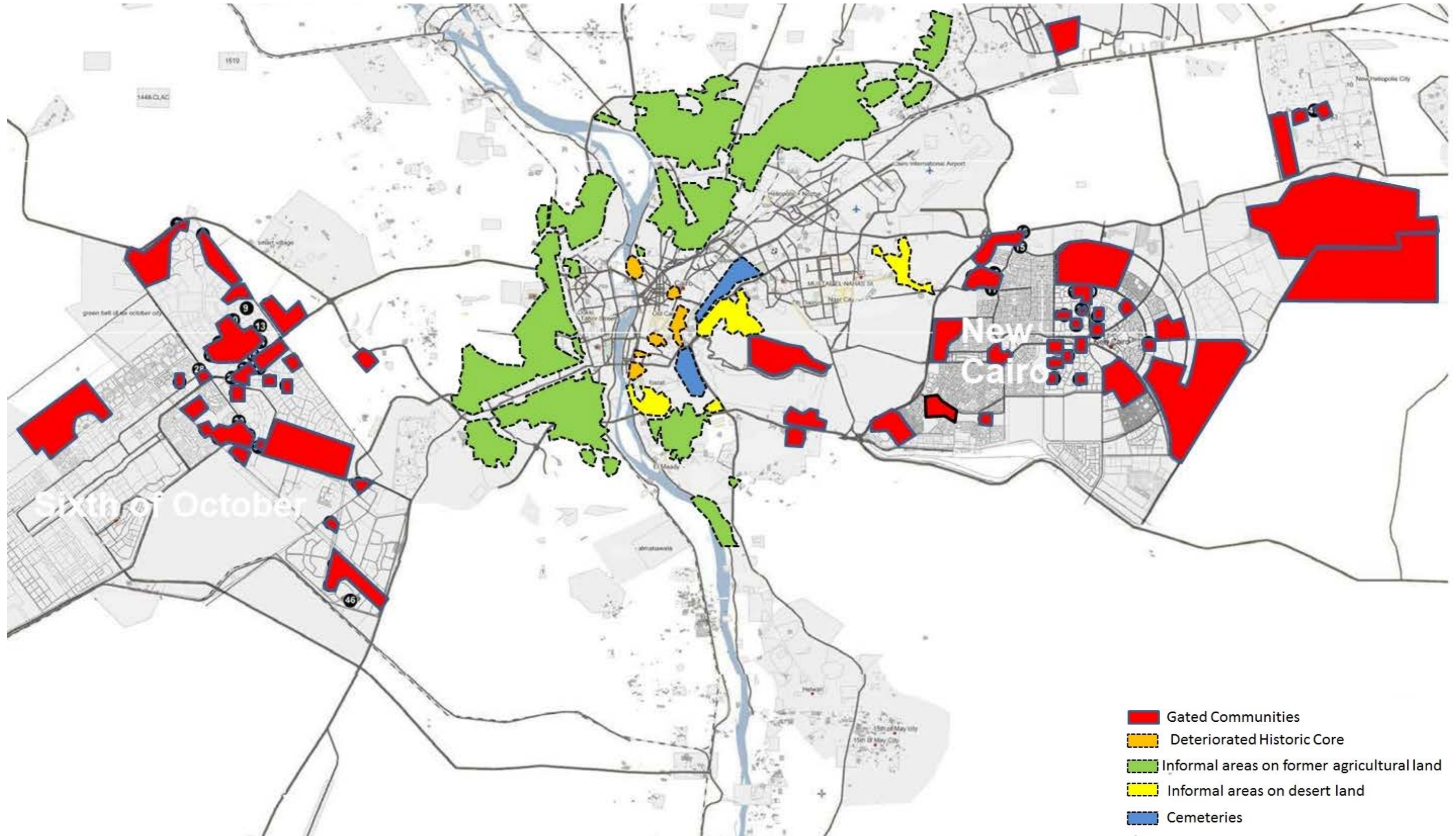
environmental degradation



Cut-off trees Heliopolis (El-Shahed, 2020. Retrieved from [washingtonpost.com](https://www.washingtonpost.com))

Problem

informal development



The spatial distribution of different areas in Cairo. (Abdelbaseer, 2015. Retrieved from failedarchitecture.com)

Problem Statement

60% is living in informal settlements

Segregation is increasing

People that are facing inequality, are at greater risk of climate change

“provide a safe, healthy and clean environment for the human and more-than-human actors in informal settlements”

Focus the Zabbaleen community



Skyline of Manshiet Nasser (Cassel, 2015)



Street in Zarayb (Mosa'ab Elshamy, 2015. Retrieved from architectureindevelopment.org)

Focus

the Zabbaleen community



Child in garbage (Dench, 2019. Retrieved from discoverdiscomfort.com)

Research Question

How can an urban design achieve environmental justice for the Zabbaleen community in the informal settlement of Manshiet Nasser in 2050?

Sub research questions

Analysis

SRQ1 In what ways is Manshiet Nasser connected to the broader environmental, infrastructural and socio-economic context of Cairo?

SRQ2 What are the routines that shape the daily life of the Zabbaleen community?

SRQ3 How do various stakeholders perceive the living and working conditions of the Zabbaleen community?

Design

SRQ4 How can a pattern language support the urban design of the Zabbaleen community?

- What type of patterns contribute to environmental justice?
- How can these patterns come together in an urban design?

How can an **urban design** achieve environmental justice for the **Zabbaleen community** in the informal settlement of Manshiet Nasser in 2050?

Assessment

SRQ5 To what extent is the urban design appropriate and feasible?

- To what extent do the patterns achieve environmental justice?
- How can the patterns be supported, financed and maintained?

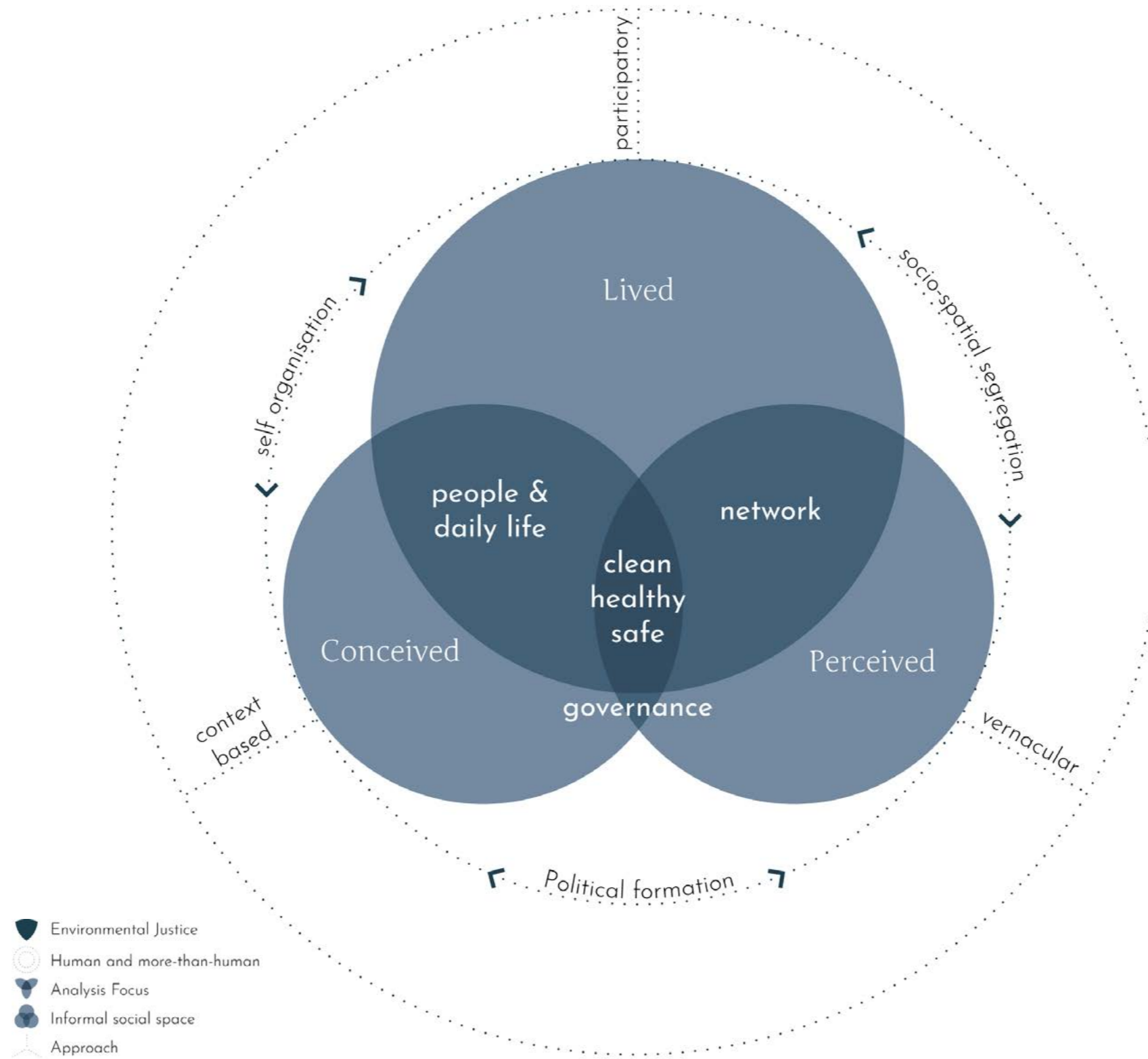
Theory

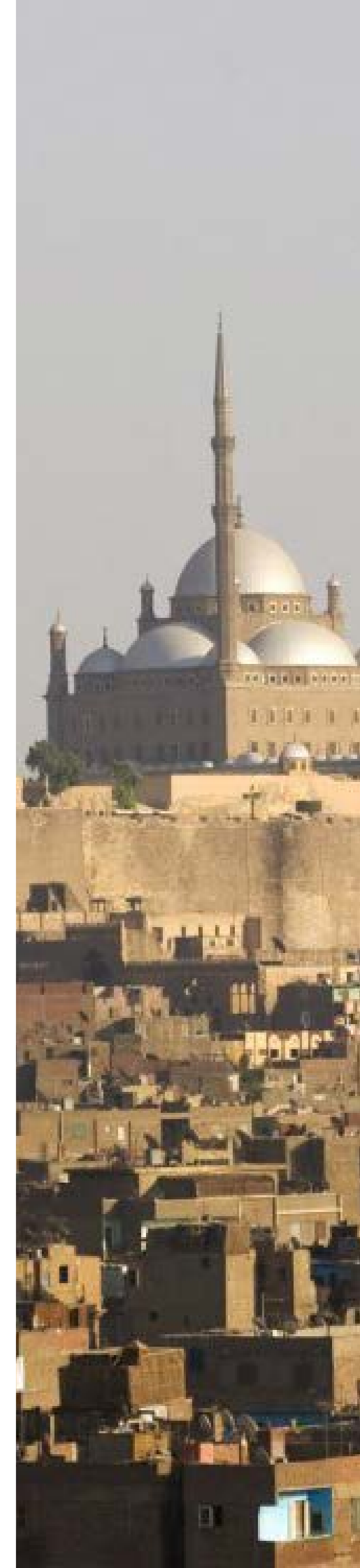
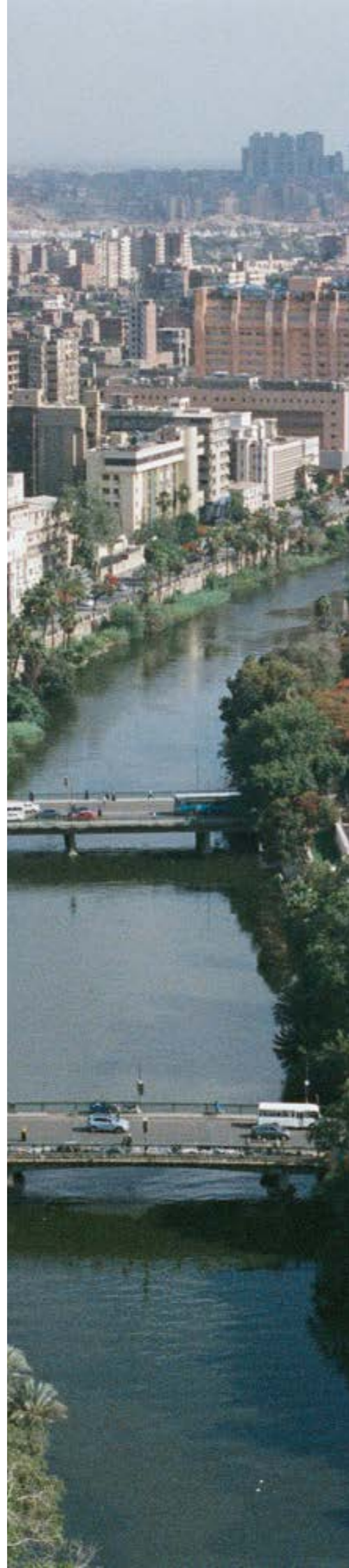
environmental justice



The origin of environmental justice: 1982 protests demonstrations in Warren County against toxic waste landfill site in an African American community (Atwater, 2022)

Conceptual Framework





Analysis environment



Manshiet Nasser

Legend

- Water
- Grass
- Park
- Agriculture
- Tree
- Fill ground
- Clay
- Nile deposits
- Sands and gravels
- Limestone
- Sandstone
- Peak
- Contour interval 50m

desert

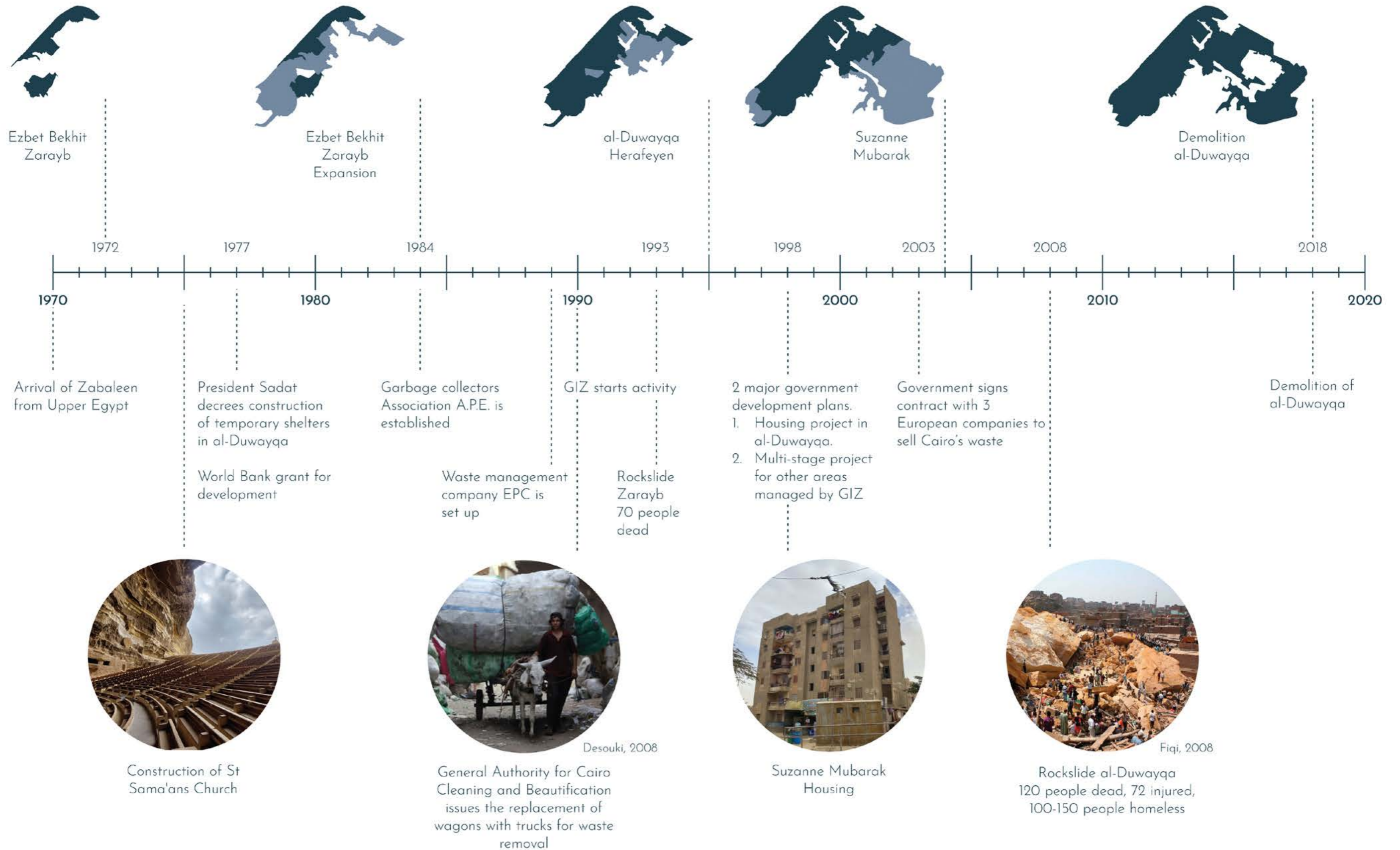
Analysis infrastructure



Manshiet Nasser

urban periphery with structure similar to Islamic Cairo

Analysis timeline



organisation stems from gradual development and government interventions over the years

Analysis neighbourhoods



Zarayb

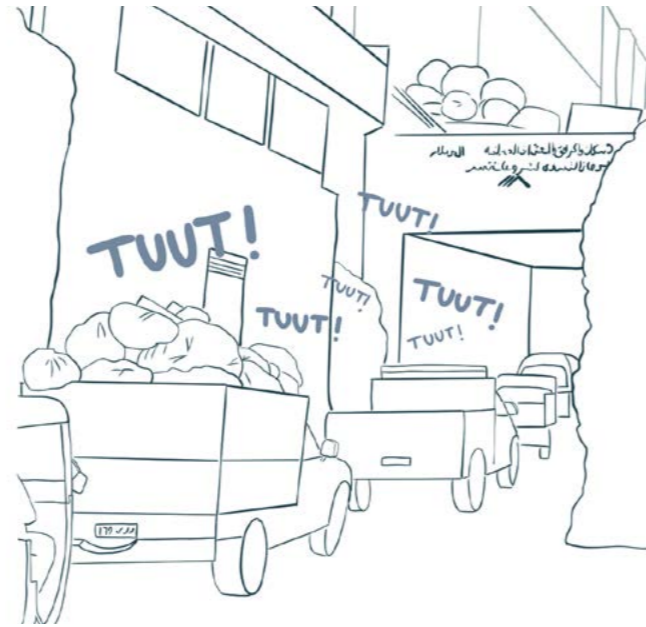


Suzanne Mubarak

Analysis

Zabbaleen

IN THE NIGHT THE MAN DRIVES
TO THE WEALTHY NEIGHBOURHOODS



THE TRASH IS COLLECTED IN
THE FAMILY HOMES ON ROOFS
OR IN THE GARAGE

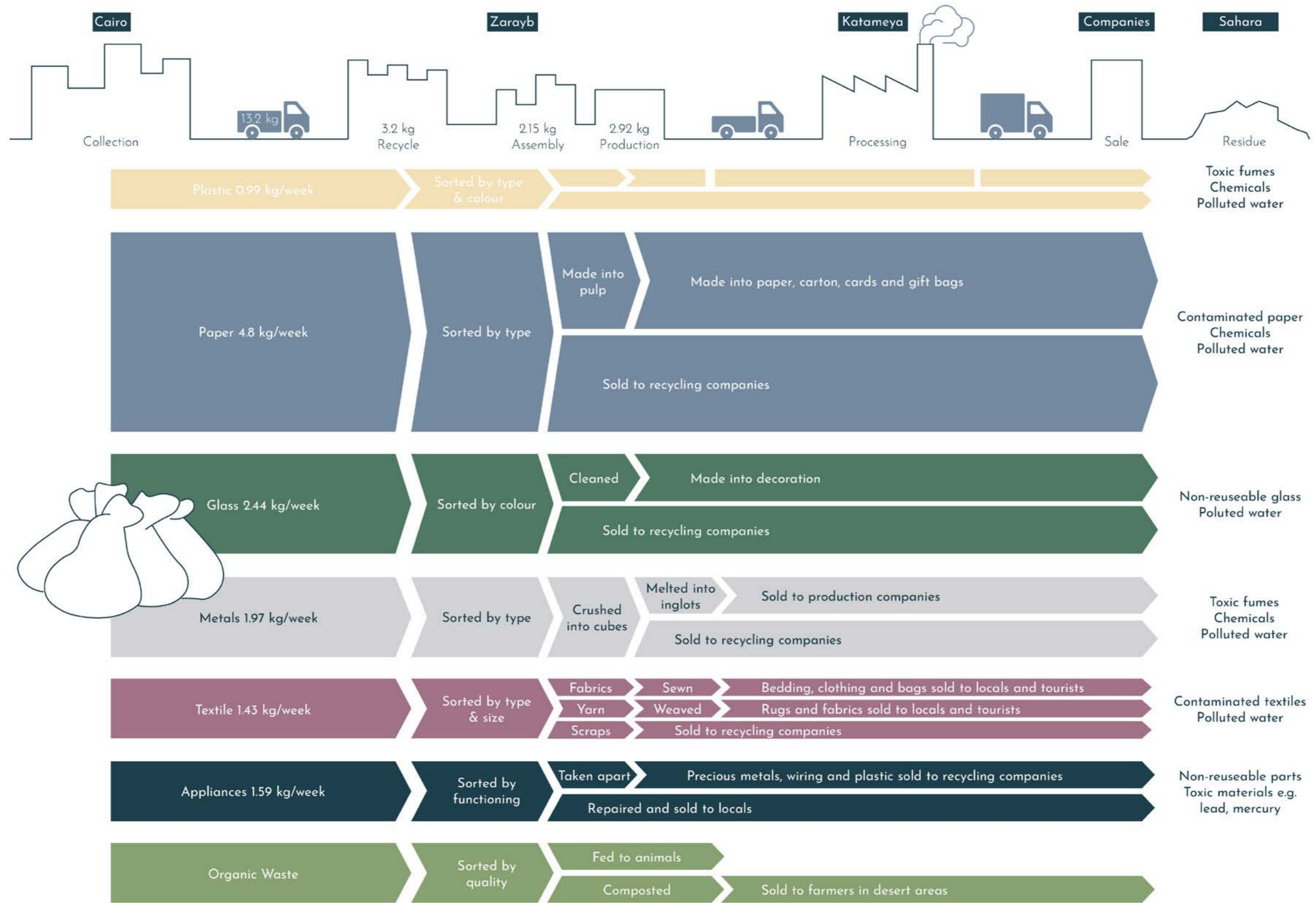


THE WOMEN SORT THE TRASH IN THE HOUSE,
WHILST FINDING THE YOUNG CHILDREN
FROM 8AM TO 5PM

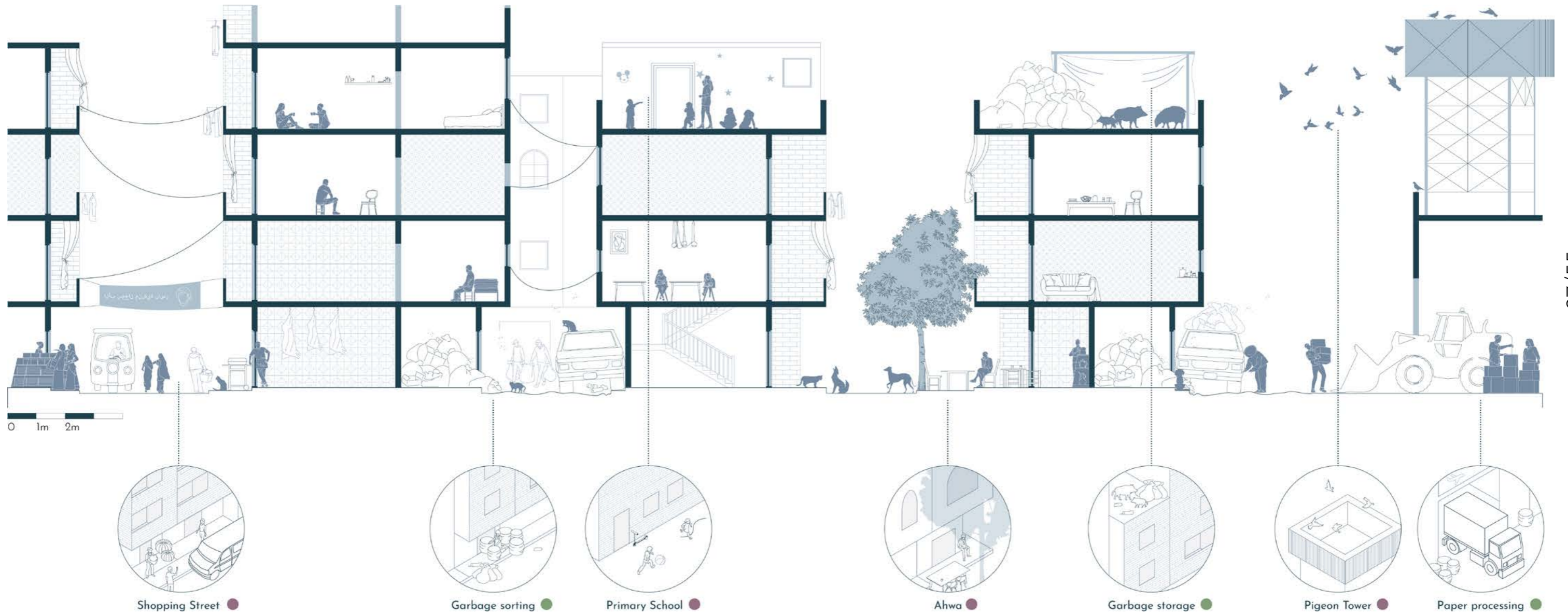


Analysis

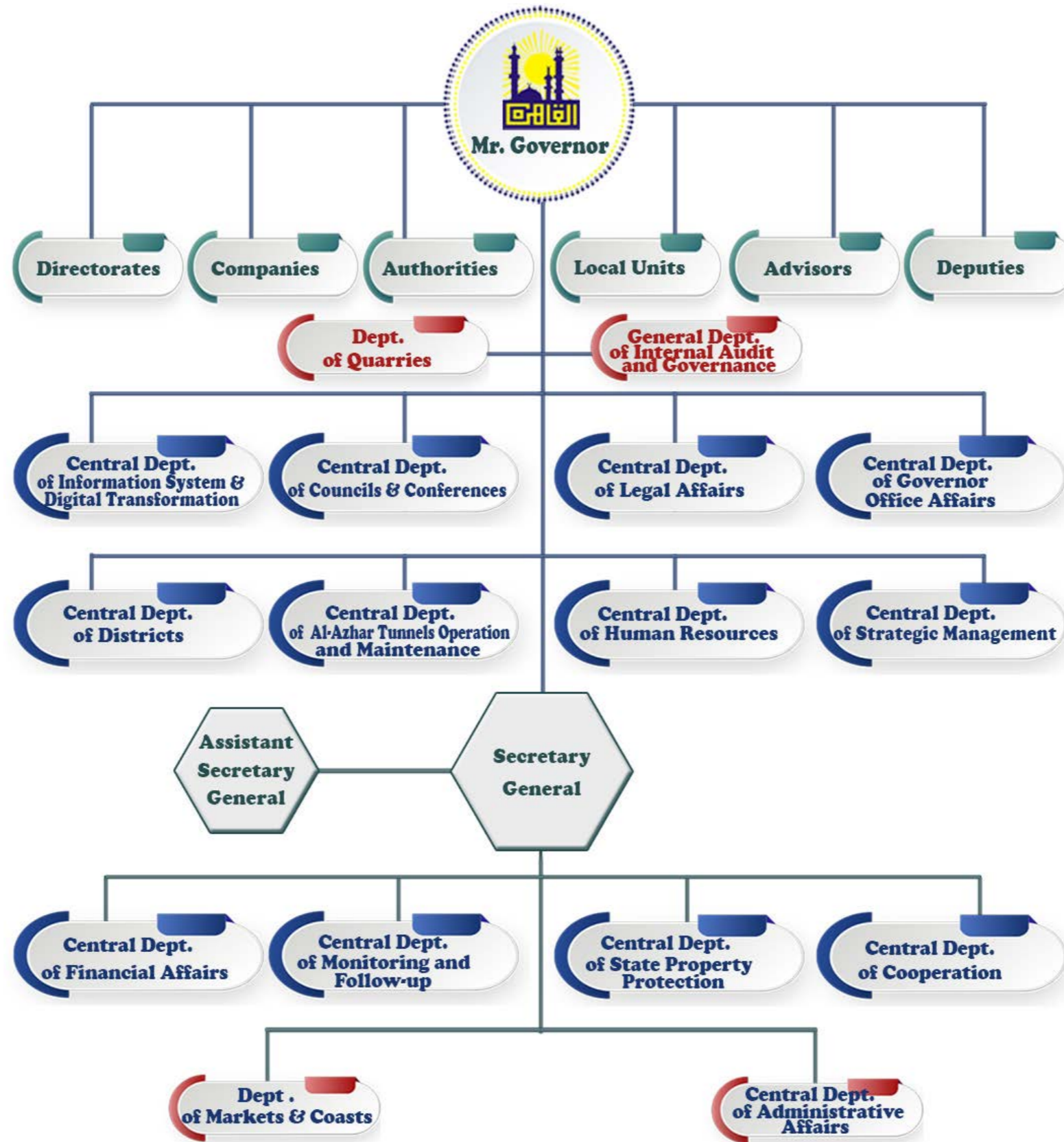
Waste Management System



Analysis Urban Section

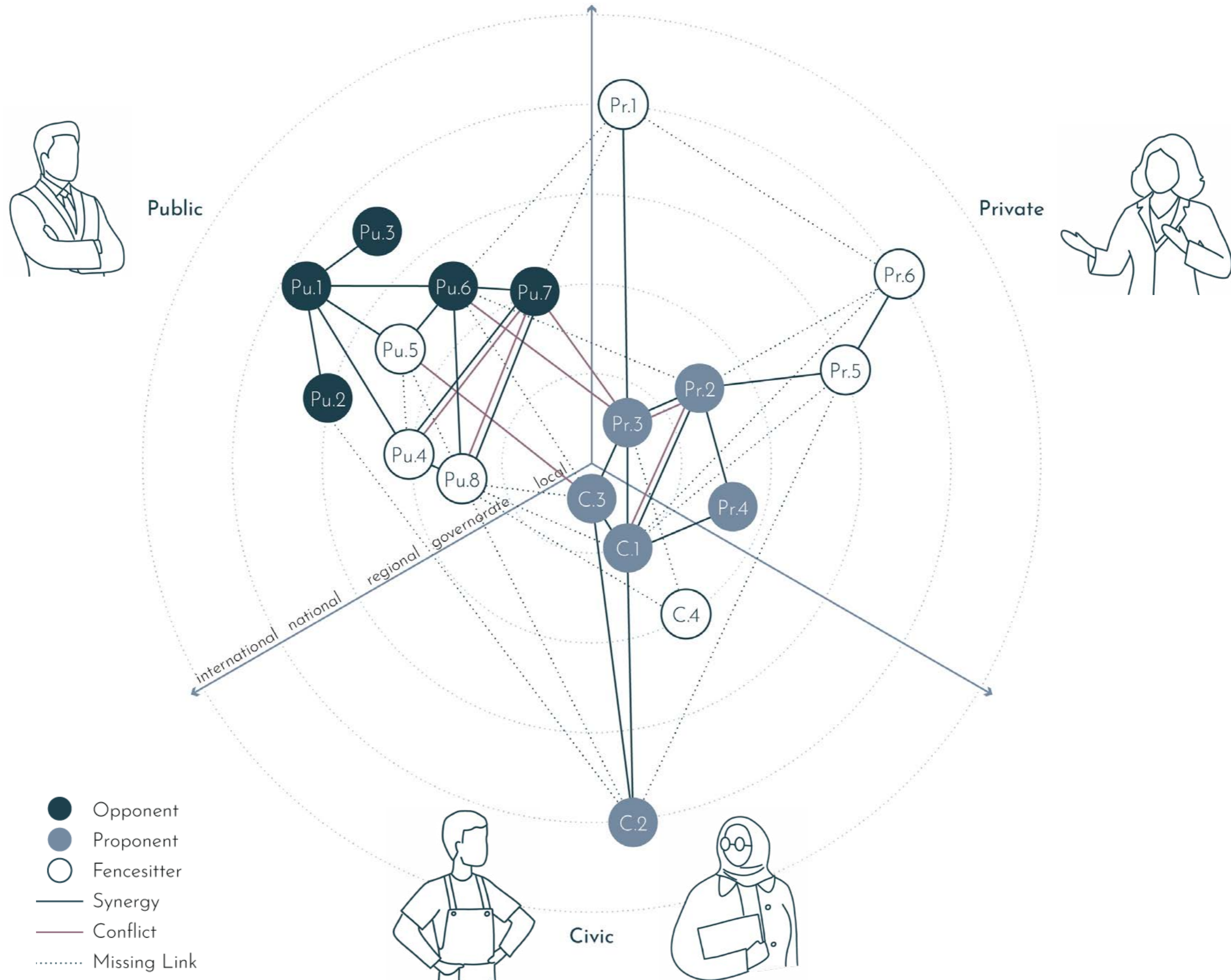


Analysis stakeholders

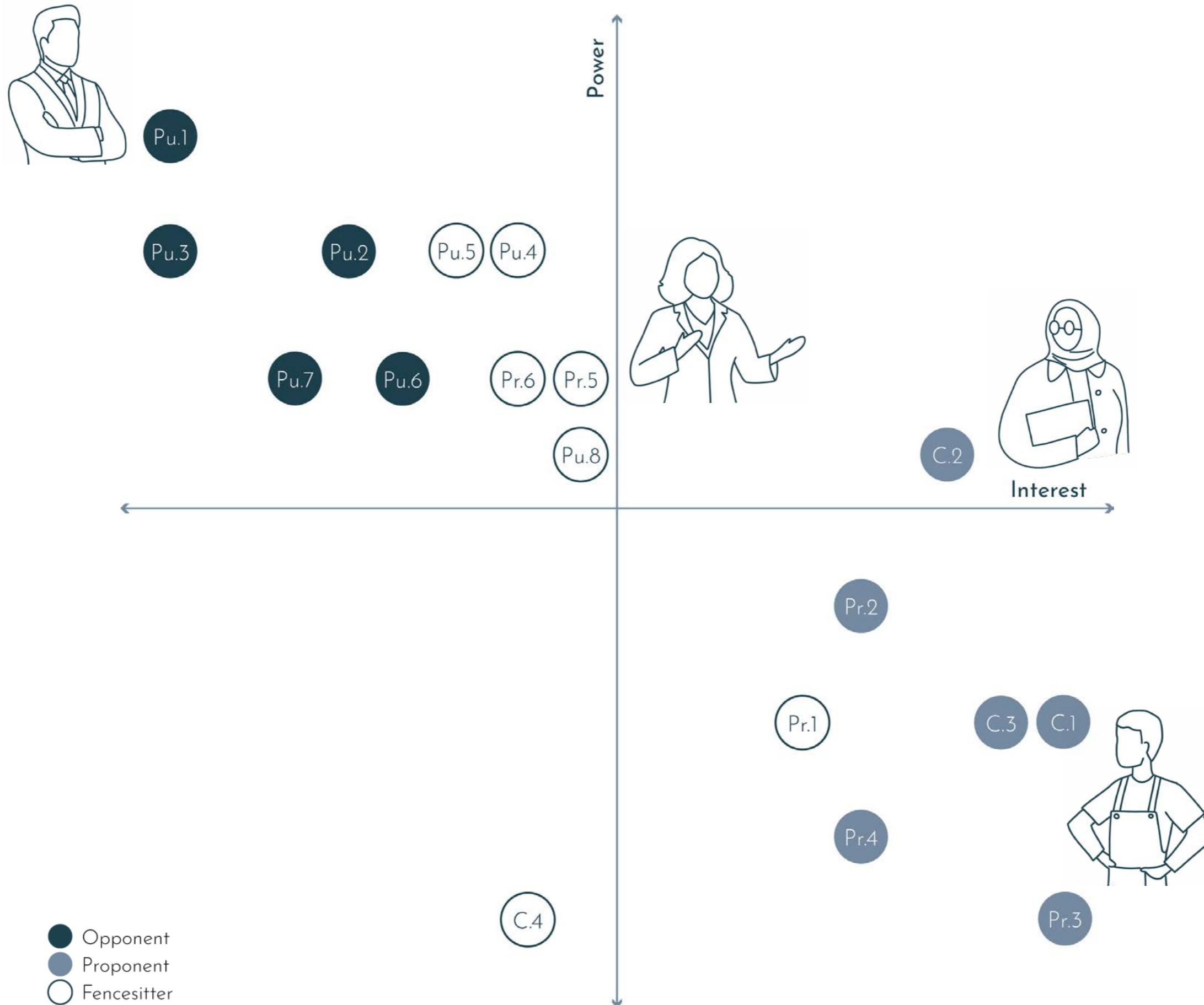


Governance structure in the Cairo governate (cairo.gov.eg, 2024)

Analysis stakeholders



Analysis stakeholders



Analyses

Conclusion

Network



- Environment is influenced by the desert
- Periphery within the city
- Urban fabric similar to Islamic Cairo
- Low quality amenities decrease opportunities

People & Everyday Life



- Many communities, Zabbaleen are distinct
- Strong family ties in social and work life
- Recycling takes toll on health
- Different future for the next generation

Governance



- Conflicting objectives of stakeholders
- Top-down approaches
- Physical upgrading

Vision sustainable artisans



Design goals



Adapting
Urban Fabric

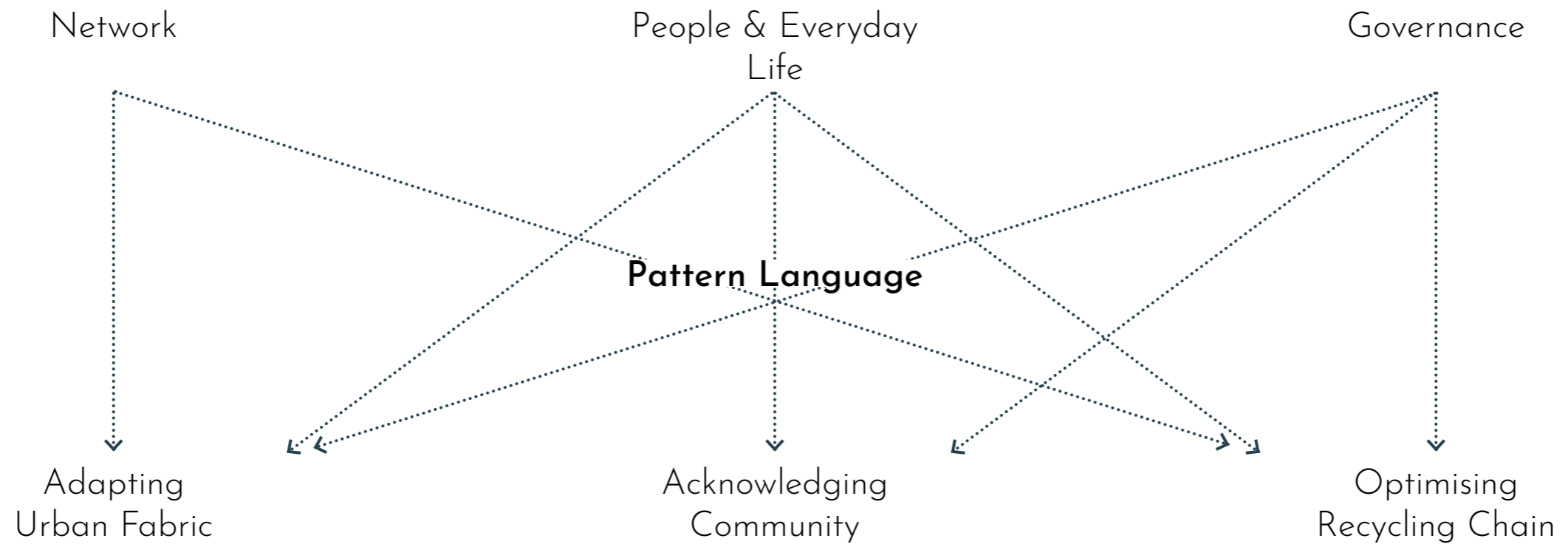


Acknowledging
Community



Optimising
Recycling Chain

Design Pattern Language

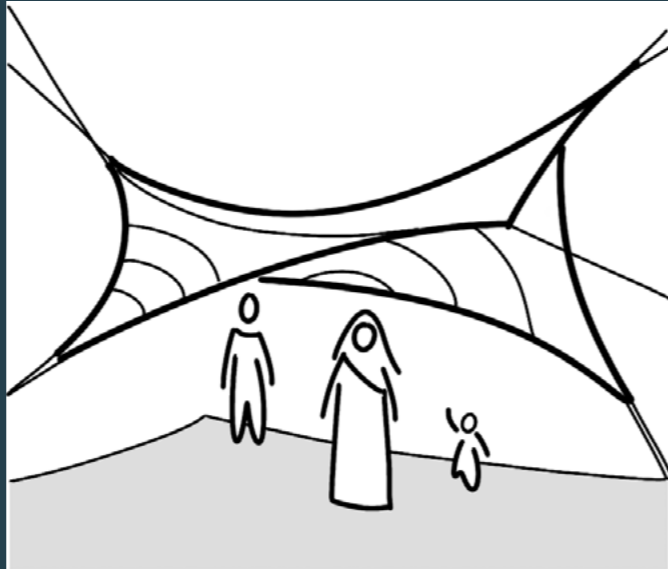


Bridging theory and design

Design Pattern Language

Design, Programme, Governance

C4 Our versatile canopies G



Street shading reduces sun radiation and improves microclimate in outdoor spaces.

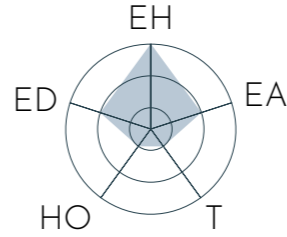
street

1 year
○ ○ ○

Theoretical back-up
The practice of using stone or wooden coverage was used in old Cairo to improve microclimate (Mahgoub, 2013). This is also observed in the streets of al-Zarayb, where inhabitants have sewn and placed fabric shading. In a survey done by Khalil et al. (2018), inhabitants of informal settlements suggested to take the responsibility of maintaining shading devices themselves.

Practical Implication
Provide funds to civil construction and maintenance of wooden pergolas, fabric sheds and other types of street shading.

Relates to
Our winding streets
My front garden



Building, Street,
Neighbourhood, City

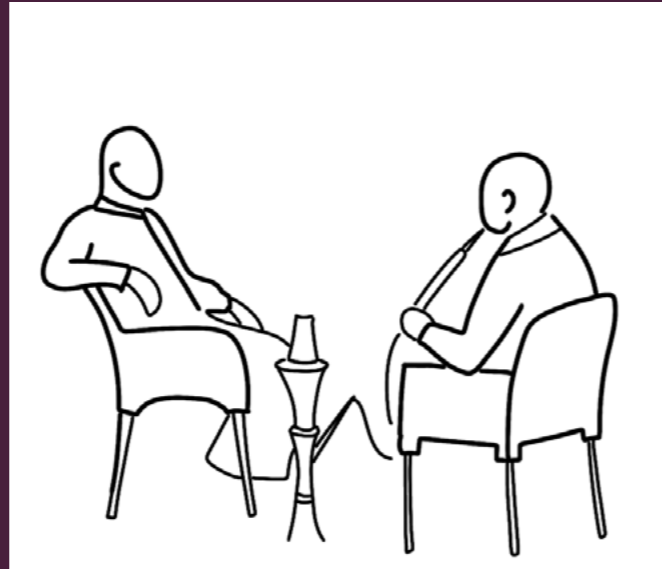
Timeline and difficulty

Assessment

Design Pattern Language

S1 My coffee time

P



Ahwas are essential as outside meeting spaces for men.

block

1 year
○ ○ ○

Theoretical back-up

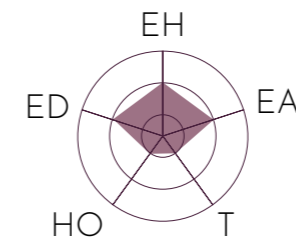
Cafes, or Ahwas, are places where mostly men come to have a coffee, play backgammon and smoke waterpipe. Every street has several Ahwas and each Ahwa has their own regulars.

Practical Implication

Allocate space for the Ahwa with shading, greenery and a street terrace in public buildings or active streets.

Relates to

- Our versatile canopies
- Our private courtyard

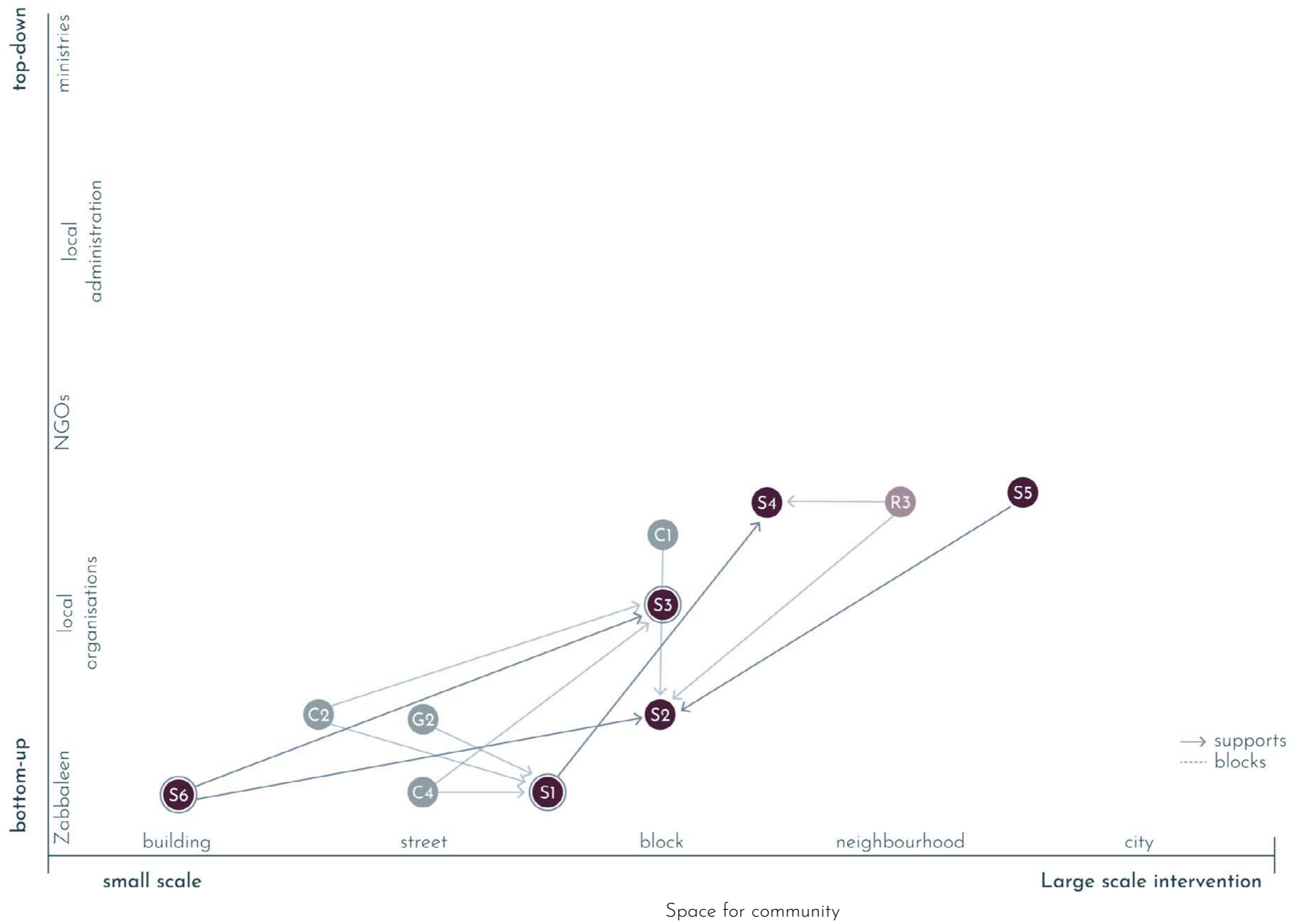


street

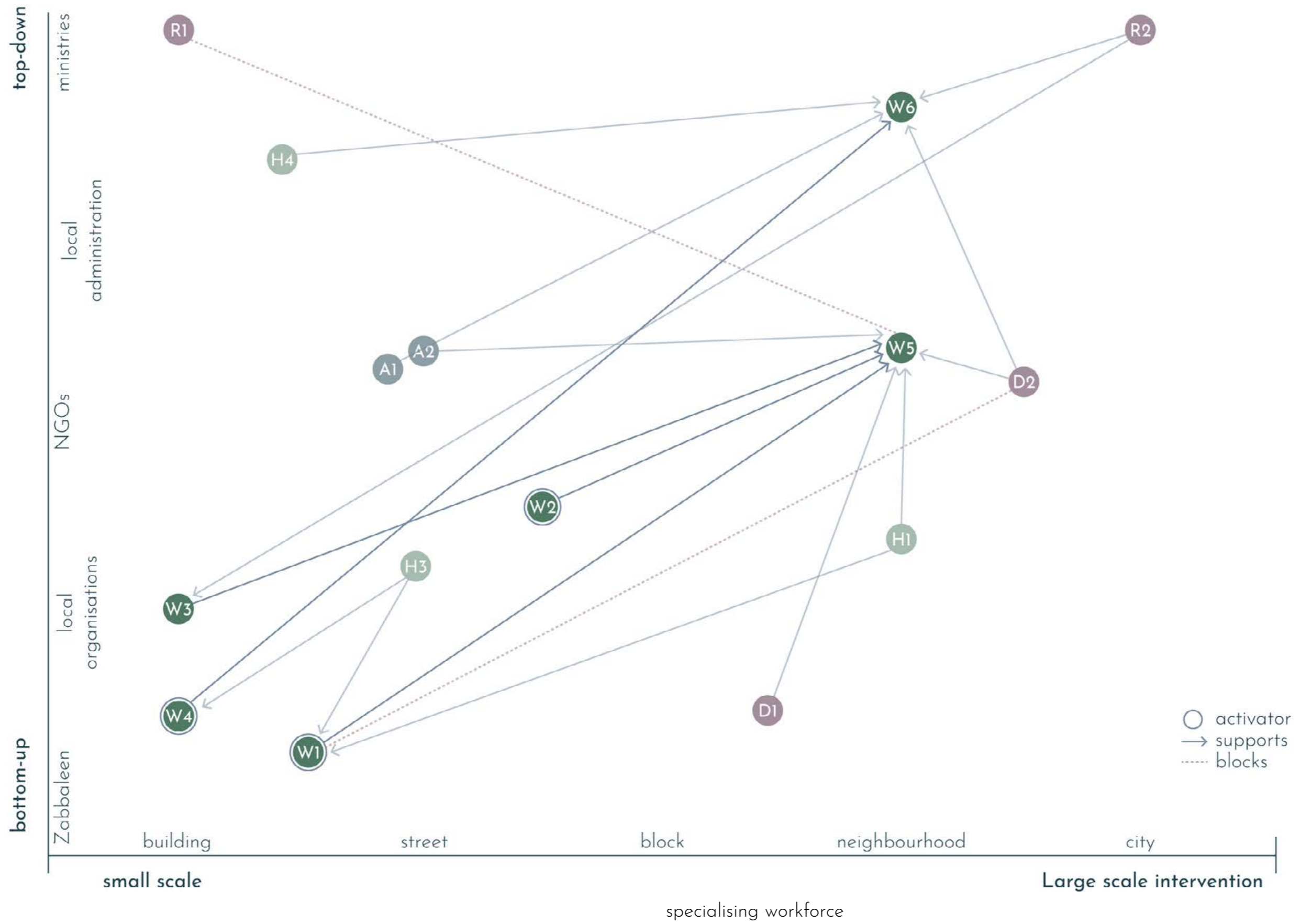
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HO T

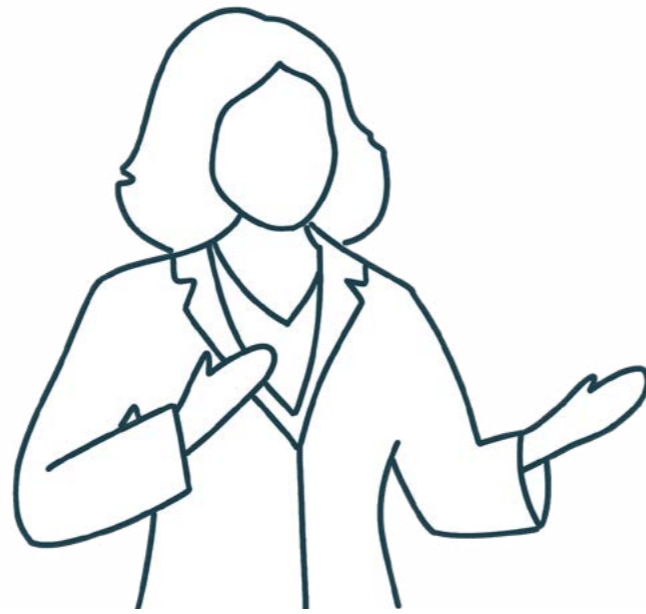
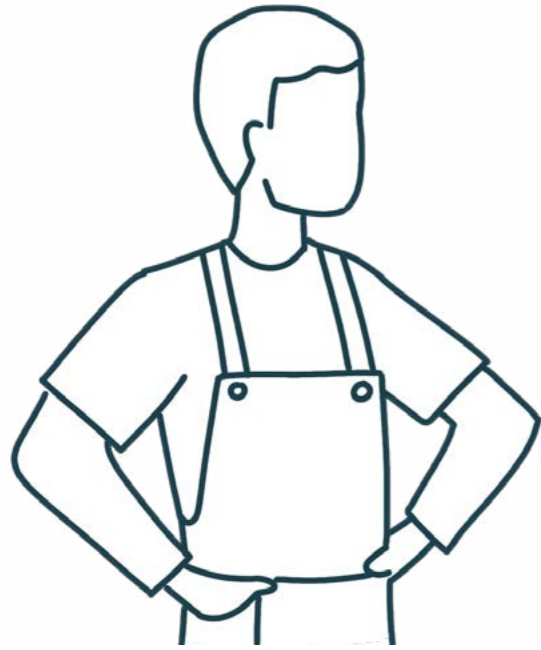
Design Pattern Language



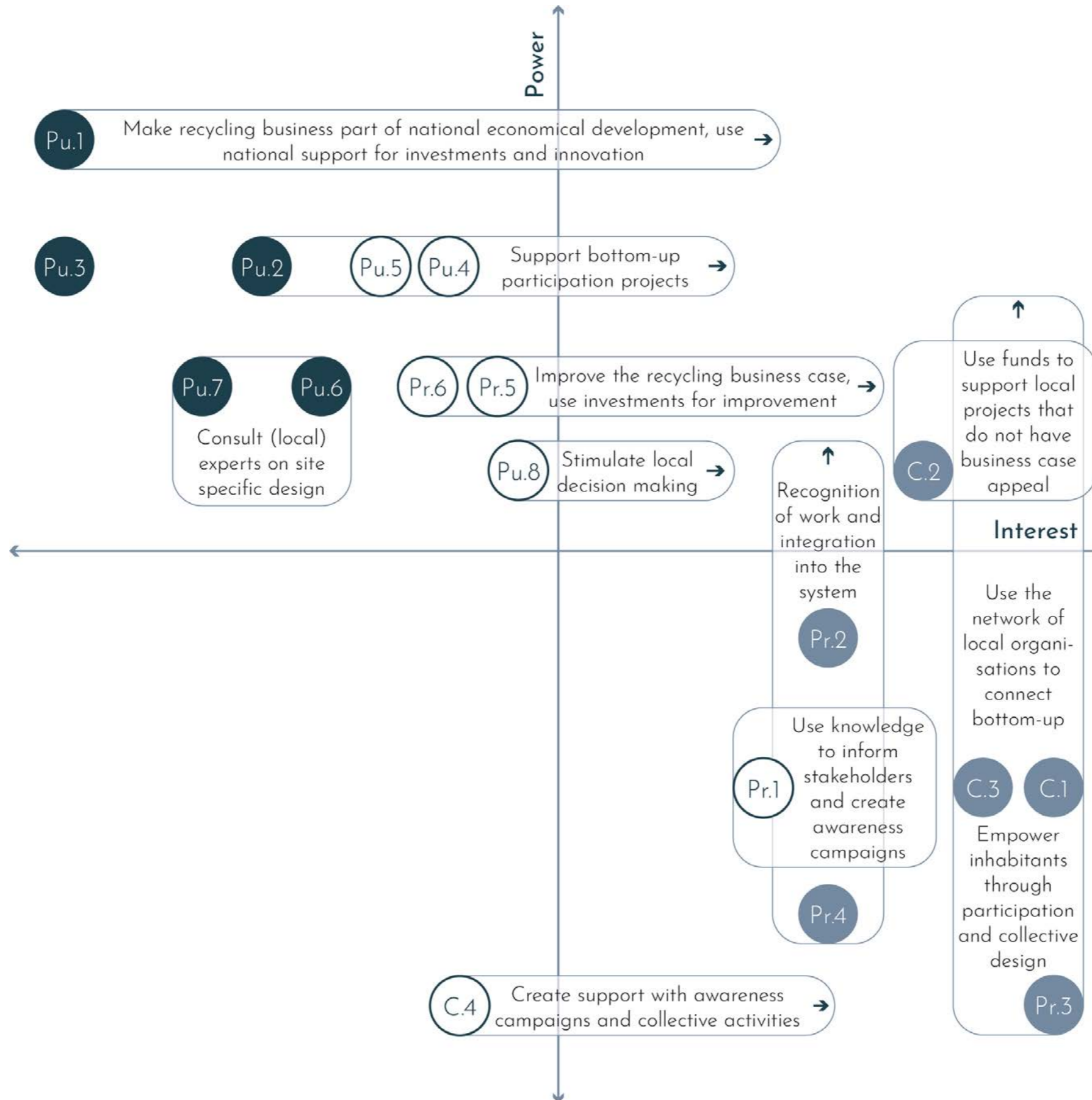
Design Pattern Language



Design Pattern Language



Analysis stakeholders



Integrated strategy Timeline



Integrated strategy sustainable artisans



Case Study



Case Study site analysis

low interested in working conditions, but...

quality marks for higher quality products
increasing sustainability
financial support

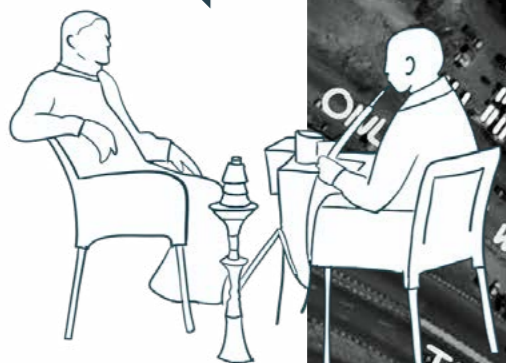


development from 2011
high amounts of waste
muddy streets
many shacks
less stores and facilities



help around the house
play, school and religion class
crossing the street
play on the streets and inside
older kids on the roofs

parking my truck
dropping off goods
coffee in the shade
what happens to our home
protect my private property



high end developments on Moqattam Mount

property value increase
waste decrease
low effort and investment
eradication is an option



space for sorting trash
space for producing
where would I learn?
how to make an investment?
where will I sell my products?
my children need care



Case Study

current system

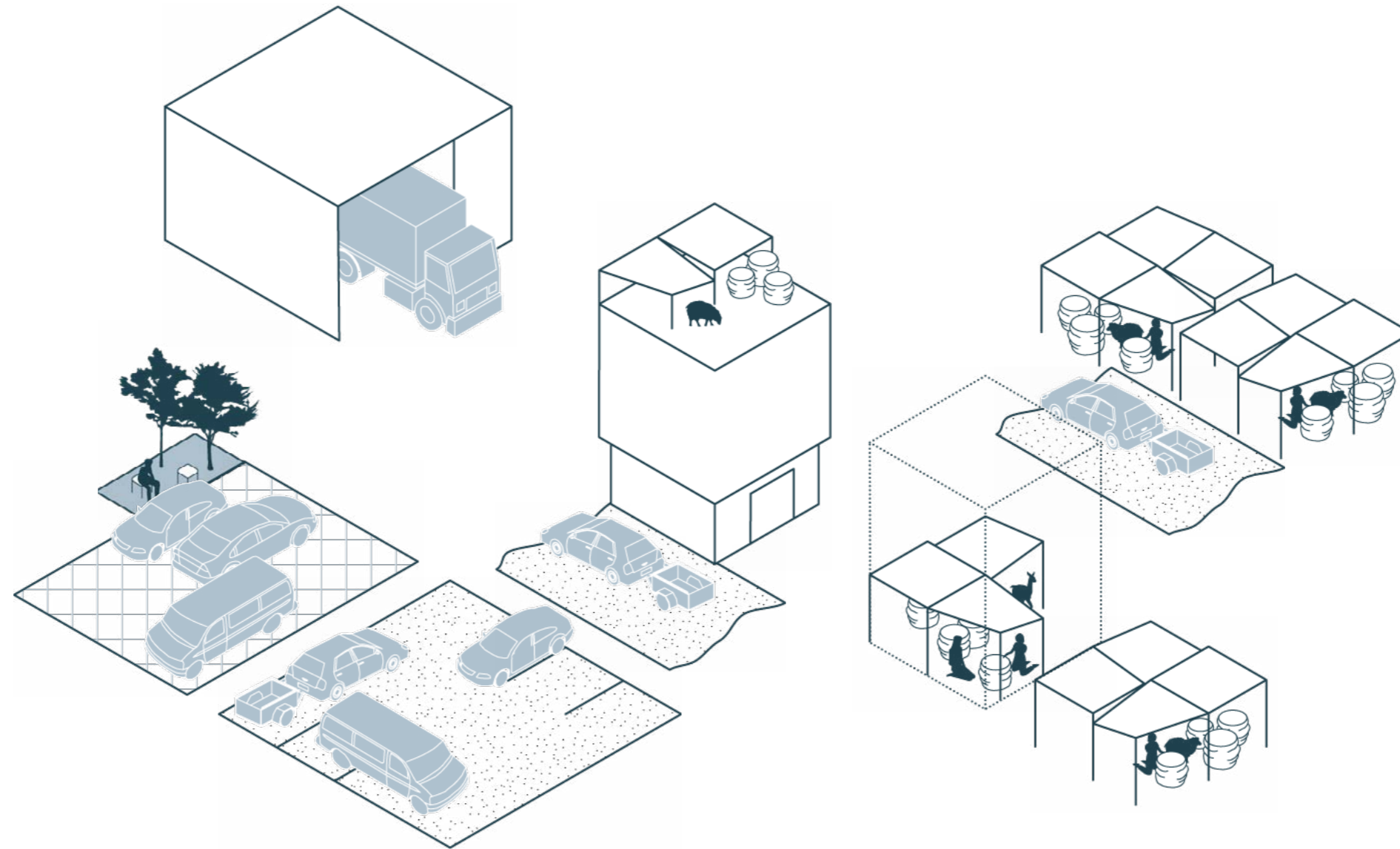
access street

processing
facility

house

empty/ sorting lot

shack



ahwa

parking lot

residential
working street

Case Study

strategy system

access street

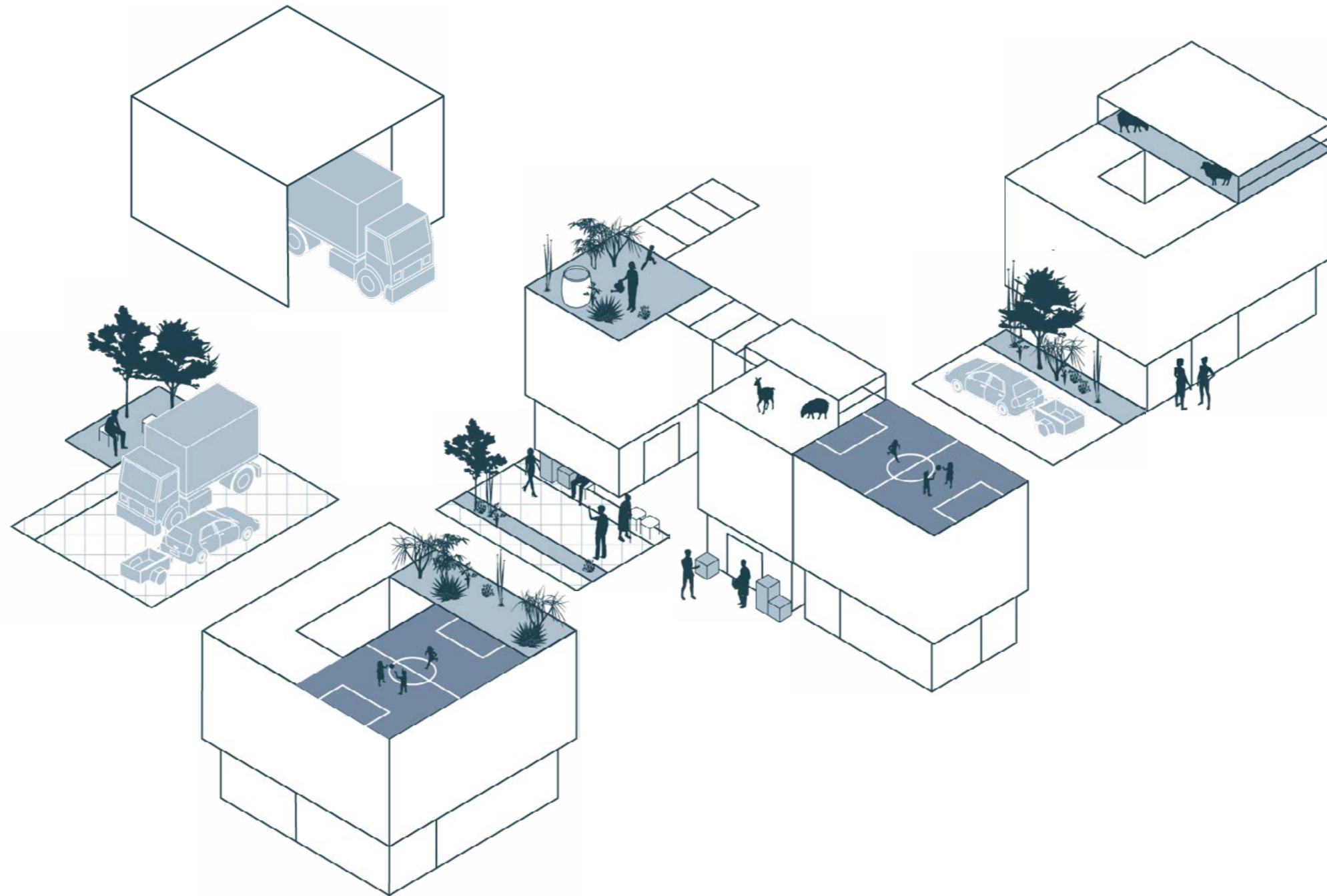
processing
facility

green roofs
walkways

upcycling
store

buffer street

recycling facility
repair shop as front



ahwa

innovation centre

bazaar street

community
building

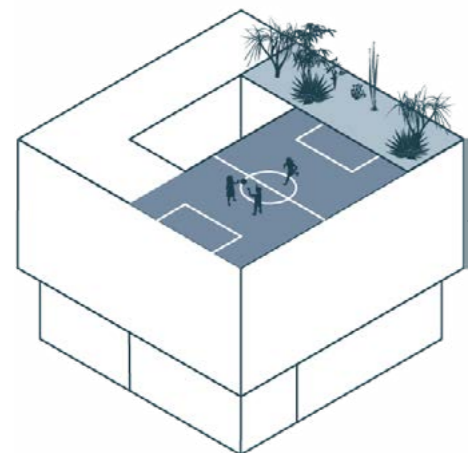
Case Study

phase 1 | Individual



Case Study

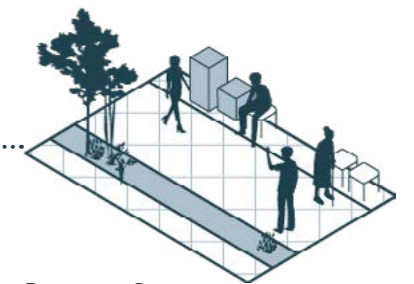
phase 2 | negotiation



Innovation centre



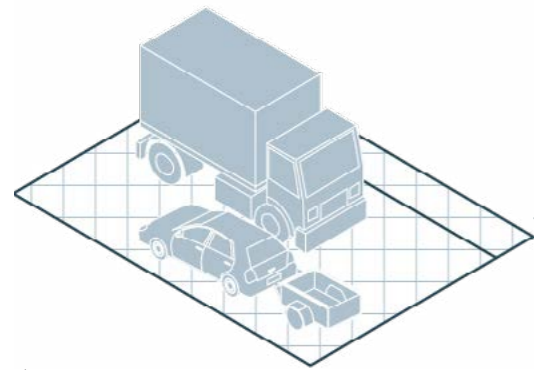
Buffer Street



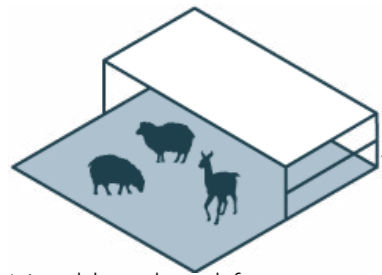
Bazaar Street

Case Study

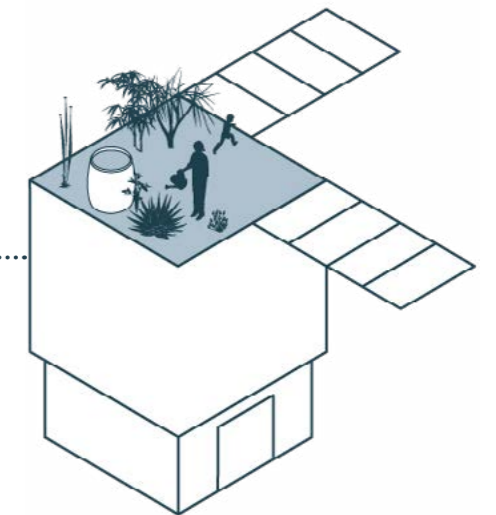
phase 3 | Collaboration



Access street



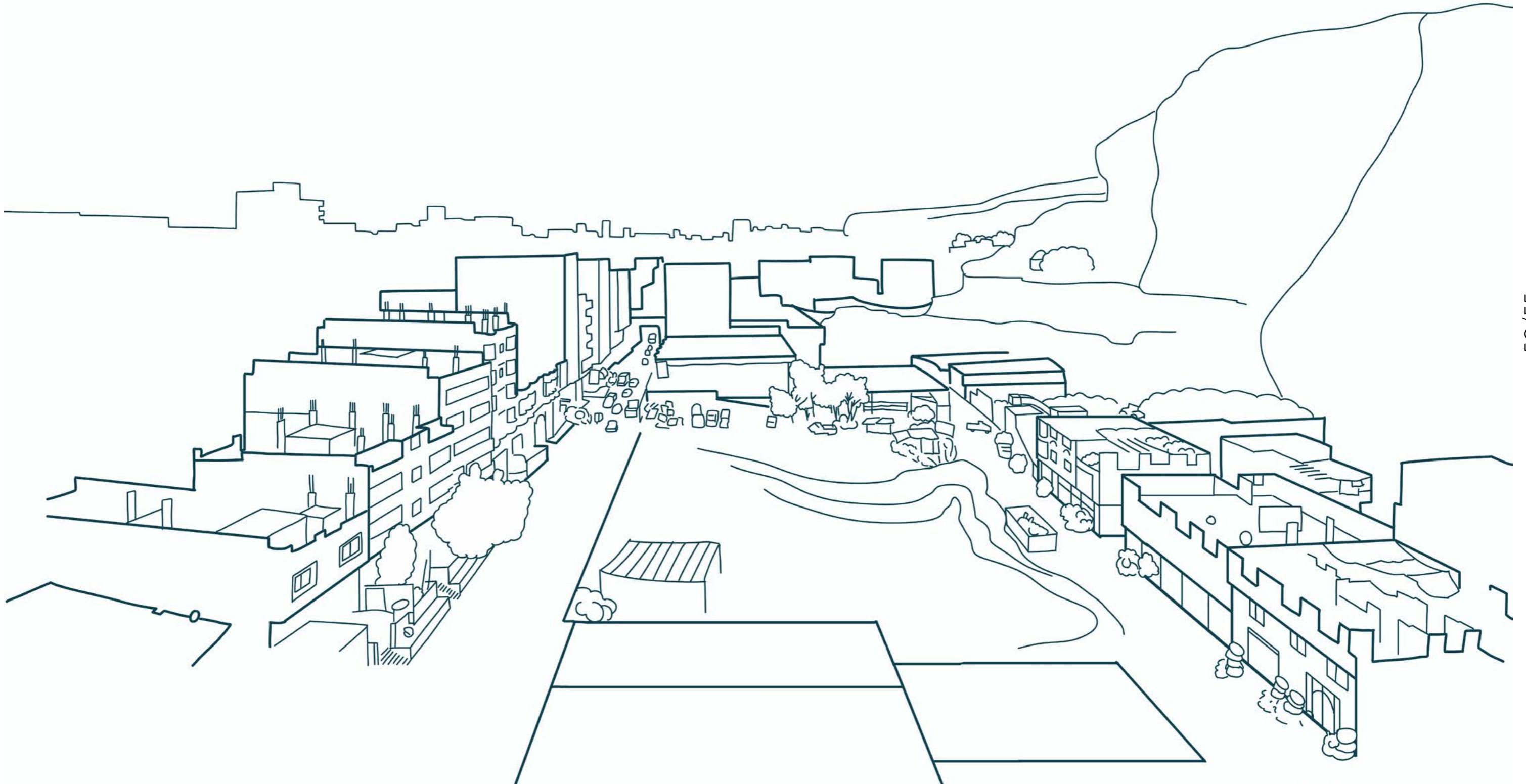
Neighbourhood farm



Green roofs and walkways

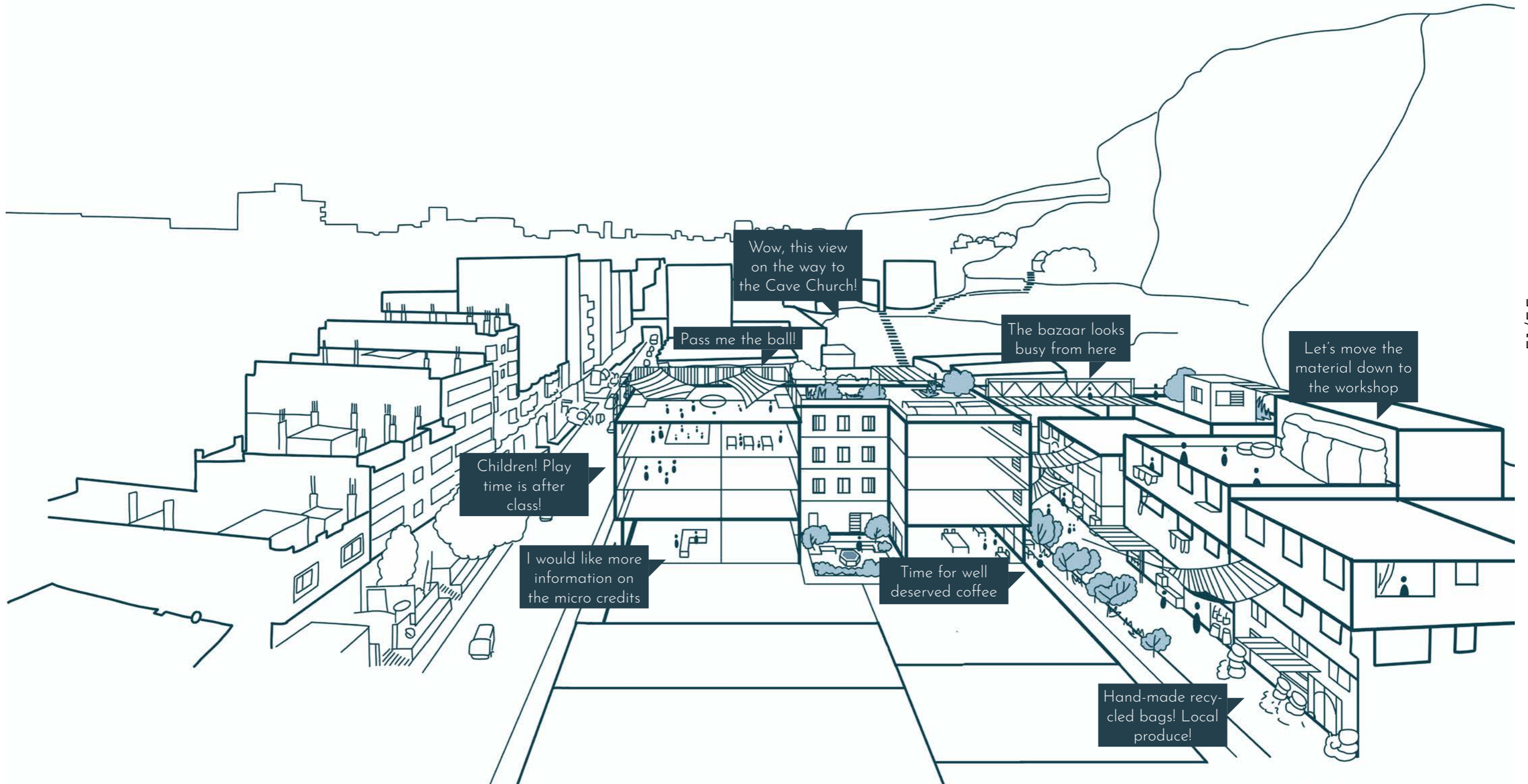
Case Study

before



Case Study

after



Children! Play time is after class!

I would like more information on the micro credits

Pass me the ball!

Wow, this view on the way to the Cave Church!

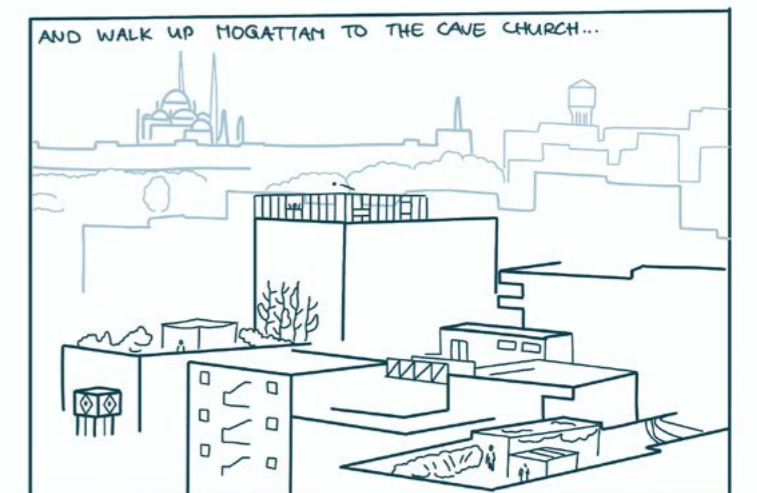
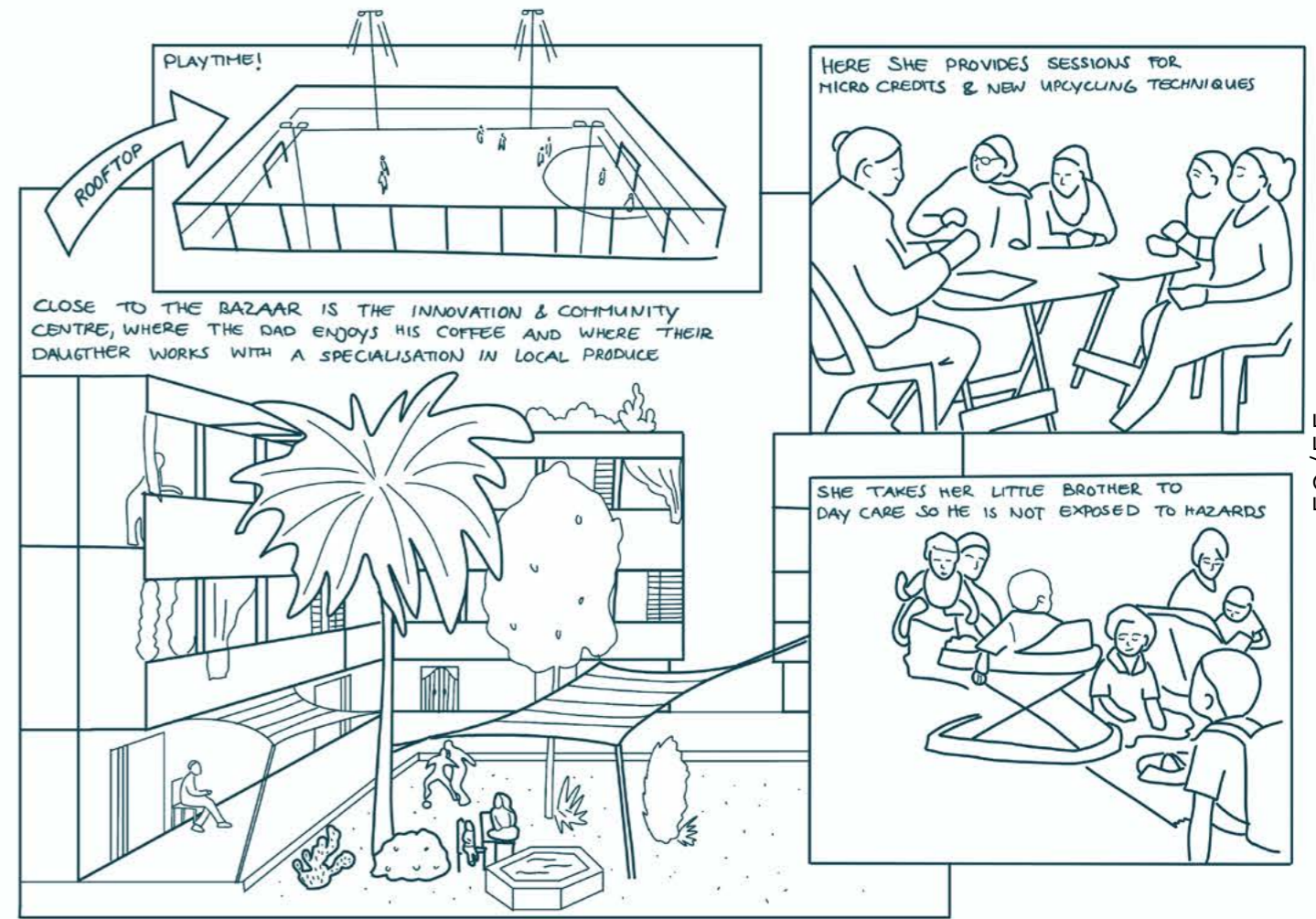
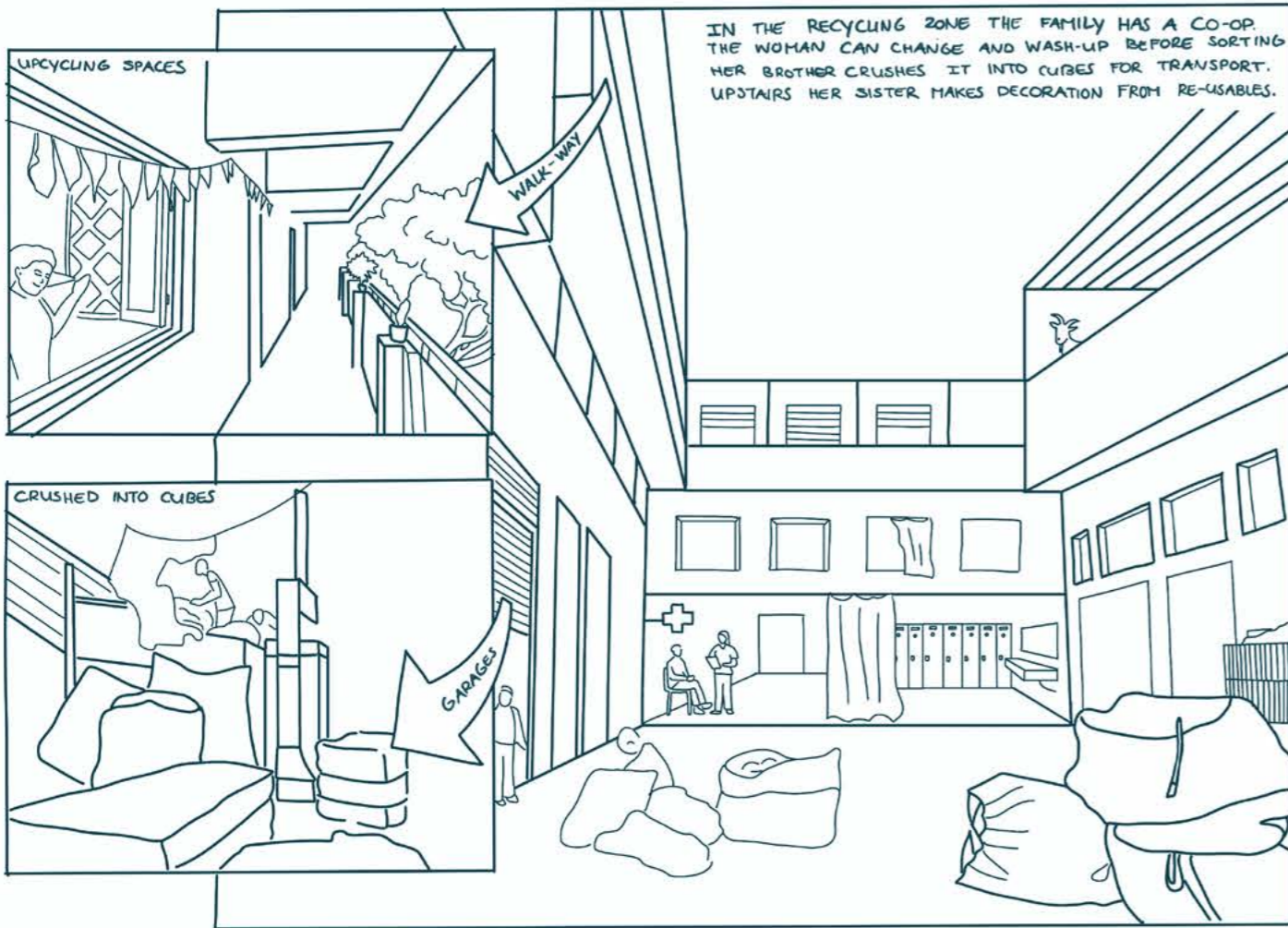
Time for well deserved coffee

The bazaar looks busy from here

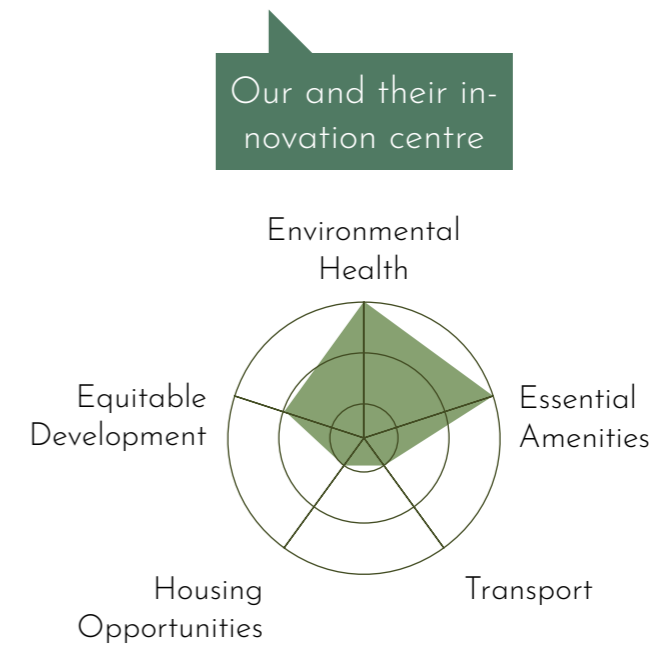
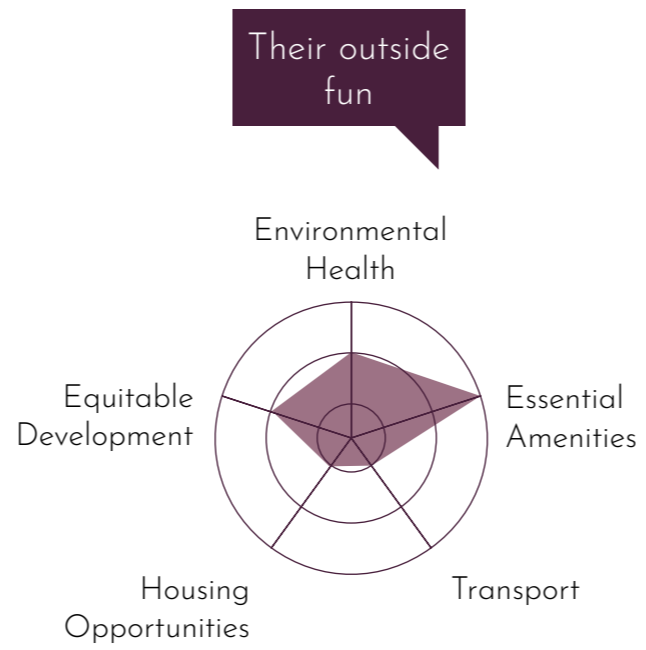
Hand-made recycled bags! Local produce!

Let's move the material down to the workshop

Case Study story



Assessment Environmental Justice

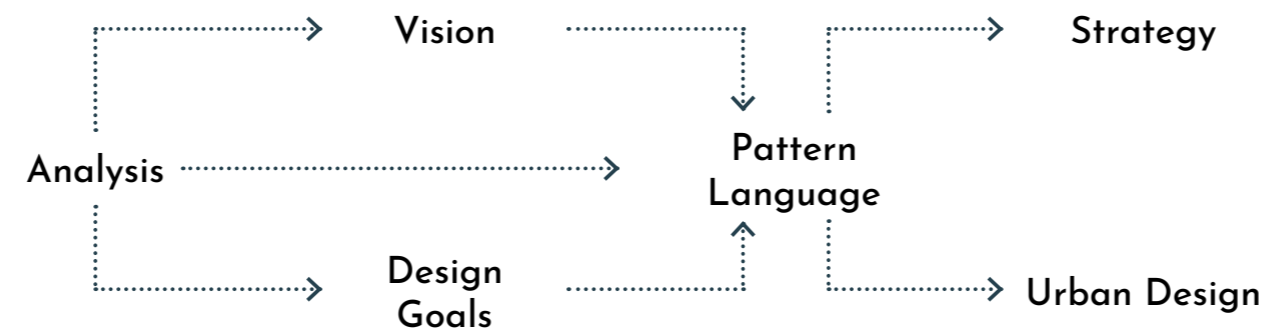


Conclusion

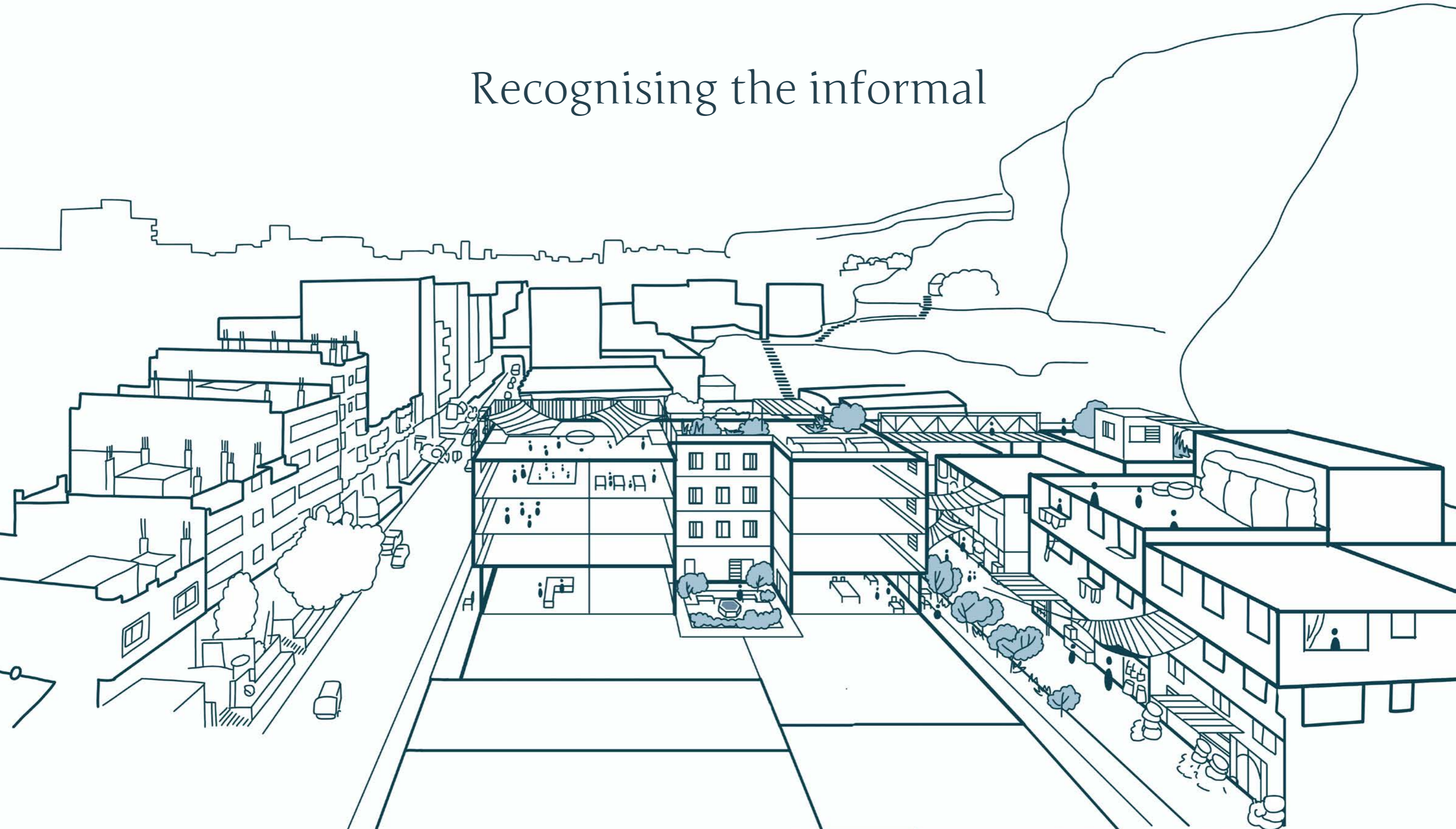
How can an urban design achieve environmental justice for the Zabbaleen community in the informal settlement of Manshiet Nasser in 2050?

Conclusion

How can an urban design achieve environmental justice for the Zabbaleen community in the informal settlement of Manshiet Nasser in 2050?



Recognising the informal



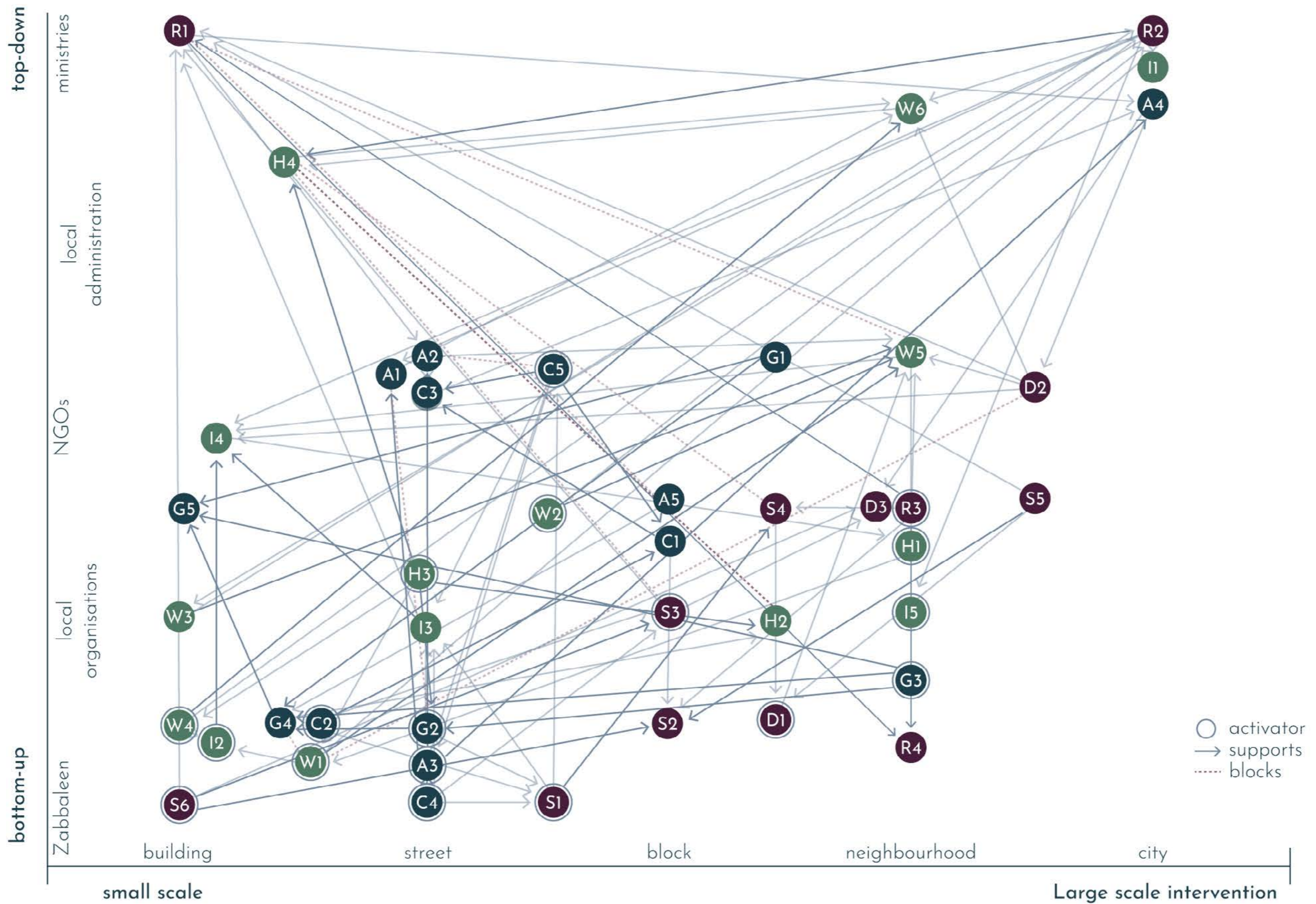
Thank you!
questions?



Pattern Field



Pattern Field



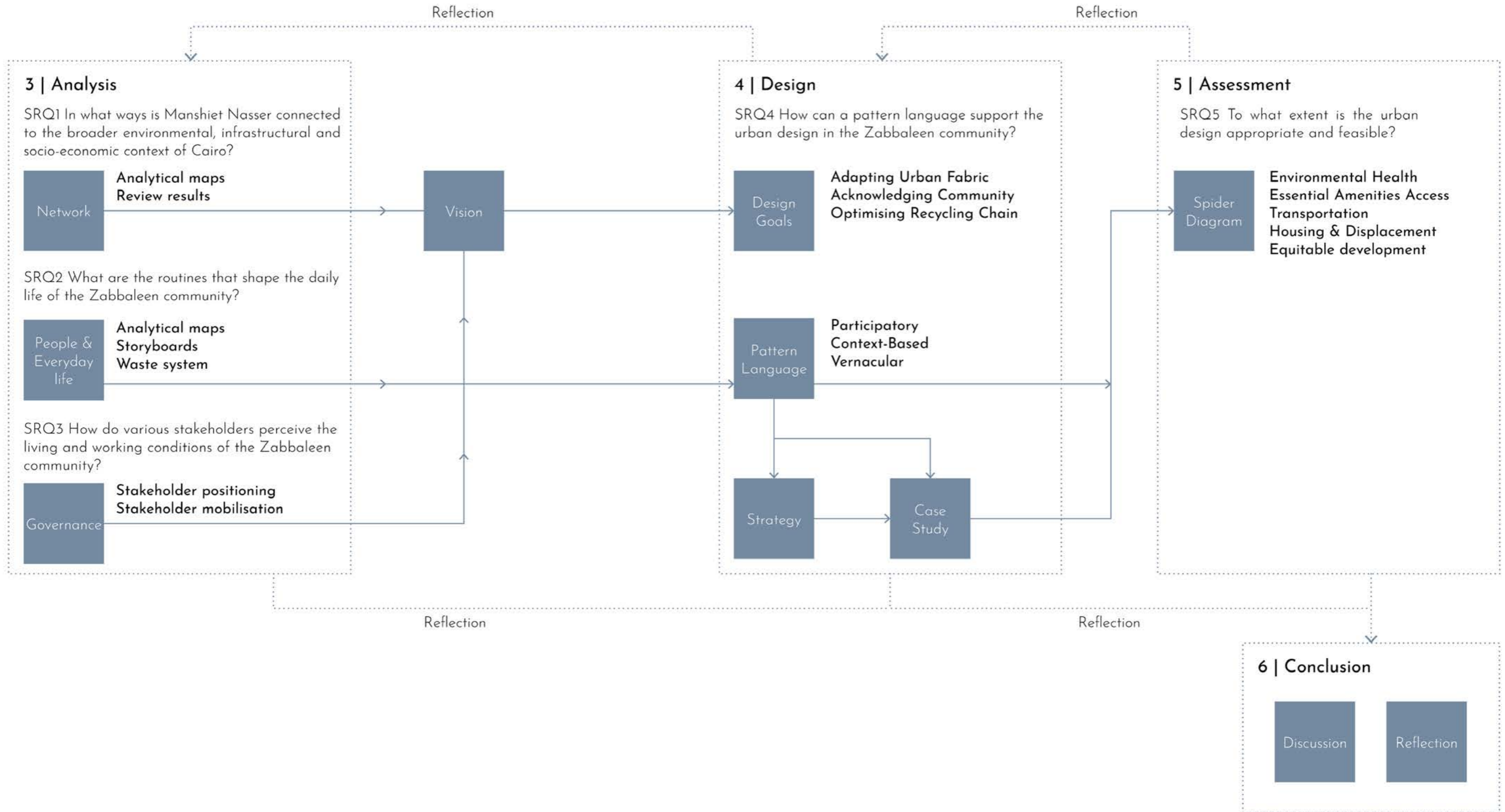
Overview

| | | Objective | Problem perception | Power | Resources | |
|---------|------|--|---|--|-----------|---|
| Public | Pu.1 | Supreme Council for Planning and Urban Development SCPUD | Determining national objectives and approving urban development plans | Informality is a threat to the state, slums needs to be removed and unplanned areas improved | ● ● ● ● ● | Control, funds, approval |
| | Pu.2 | Ministry of Housing, Utilities and Urban Development MHUUD | Preparing urban development for existing and new towns within the national policy framework | Developing plans for desert expansion and improving unplanned areas will provide housing. | ● ● ● ● ○ | Control, funds, expertise, approval |
| | Pu.3 | Ministry of Planning and Economic Development | Long term planning and budget allocations according to national policy framework | Investments in desert expansion will provide better housing and economic growth. | ● ● ● ● ○ | Funds, approval |
| | Pu.4 | Ministry of Local Development | Governing urban development and supporting decentralised initiatives | Intervening in unplanned areas in existing urban areas will improve living conditions | ● ● ● ● ○ | Expertise, funds |
| | Pu.5 | Urban Development Fund UDF (Prime Minister's Office) | Improving informal settlements, developing new urban areas and enhancing existing neighborhoods | Constructing 500,000 units will provide affordable housing, community and sustainable development | ● ● ● ● ○ | Funds, control |
| | Pu.6 | General organisation for Physical Planning GOPP | Preparing plans and programs on national and regional level. Approving plans on local level. | Zarayb is a slum and in need of urban upgrading, but Zabbaleen are crucial for waste management. | ● ● ● ● ○ | Expertise, approval |
| | Pu.7 | New Urban Communities Authority NUCA | Preparing structure-, master- and detailed plans for new communities. | Constructing new communities in the desert will provide better housing | ● ● ● ● ○ | Expertise, approval |
| | Pu.8 | Local Administration/ Governorate | Executing urban development through detailed plans with support of GOPP | Governorates lack authority, staff competence, or finances to execute (local) projects | ● ● ● ○ ○ | Experience, network |
| Private | Pr.1 | Researchers | Generating knowledge and mapping problems and opportunities | Zabbaleen are a unique community, but face socio-economic and environmental challenges | ● ● ○ ○ ○ | Expertise, network |
| | Pr.2 | Environmental Protection Company EPC | Collecting and processing company based on business agreements between Zabbaleen and Wahiya | Waste collection is a business with higher financial gain if Zabbaleen and Wahiya collaborate. | ● ● ● ○ ○ | Contracts, network |
| | Pr.3 | Zabbaleen | Collecting and processing waste to generate income | Waste collection secures livelihood, but endangers health and does not provide future opportunities. | ● ○ ○ ○ ○ | Community network, strikes |
| | Pr.4 | Wahiya | Managing contact with households and controlling access and collection rights of Zabbaleen | Waste collection secures livelihood. | ● ● ○ ○ ○ | Household contacts |
| | Pr.5 | Recycling companies | Buying up separated or processed waste from Zabbaleen | Cheap labour provides processed waste for low prices. | ● ● ● ● ○ | Money |
| | Pr.6 | Manufacturing companies | Buying up recycled raw materials to produce new products from Zabbaleen or recycling companies | Cheap labour provides low prices, but specialised labour provides higher quality materials. | ● ● ● ● ○ | Money |
| Civic | C.1 | Association for the Protection of the Environment A.P.E. | NGO improving well-being of the Zabbaleen and promoting sustainable environmental practices | Zabbaleen lack services, education, health care facilities and bottom-up support | ● ● ○ ○ ○ | Grassroot support, education |
| | C.2 | Civil Society Organisations UN-Habitat, GIZ, World Bank | NGOs Responding to on the ground needs with limited decision making power | Zabbaleen lack services, education, health care facilities and bottom-up support | ● ● ● ○ ○ | Funds, tools, soft and technical assistance |
| | C.3 | Local Organisations | Promoting community participation with limited formal involvement | Top down plans do not respond to the needs of inhabitants, bottom up initiatives are necessary | ● ● ○ ○ ○ | Community network, experience |
| | C.4 | Cairenes | Guaranteed collection of waste, but 'Not in My Back Yard' | Zabbaleen are uneducated and waste collection is dirty | ● ○ ○ ○ ○ | Complaints, media |

Methodology

2 | Methodology

How can an urban design achieve environmental justice for Zabbaleen community in the informal settlement of Manshiet Nasser in 2050?



Theory

