



the New (In)Formal

Cover Image : <https://www.facebook.com/Africinno/photos>

An aerial photograph of Kampala, Uganda, showing a mix of formal and informal urban development. On the left, there are more organized, planned areas with wider roads and larger plots. On the right, there is a dense, informal settlement with narrow, winding paths and closely packed buildings. The background shows a mix of greenery and urban structures.

the New (In)Formal

Leveraging Formal and Informal practices
towards the just, resilient and sustainable
urban development of Kampala

AR3U115 - Graduation Lab Urbanism Studio - Planning Complex Cities
MSc Architecture, Urbanism & Building Sciences
Technische Universiteit Delft

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22-06-2022

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Introduction

Cover Image : <https://www.facebook.com/Africinno/photos>

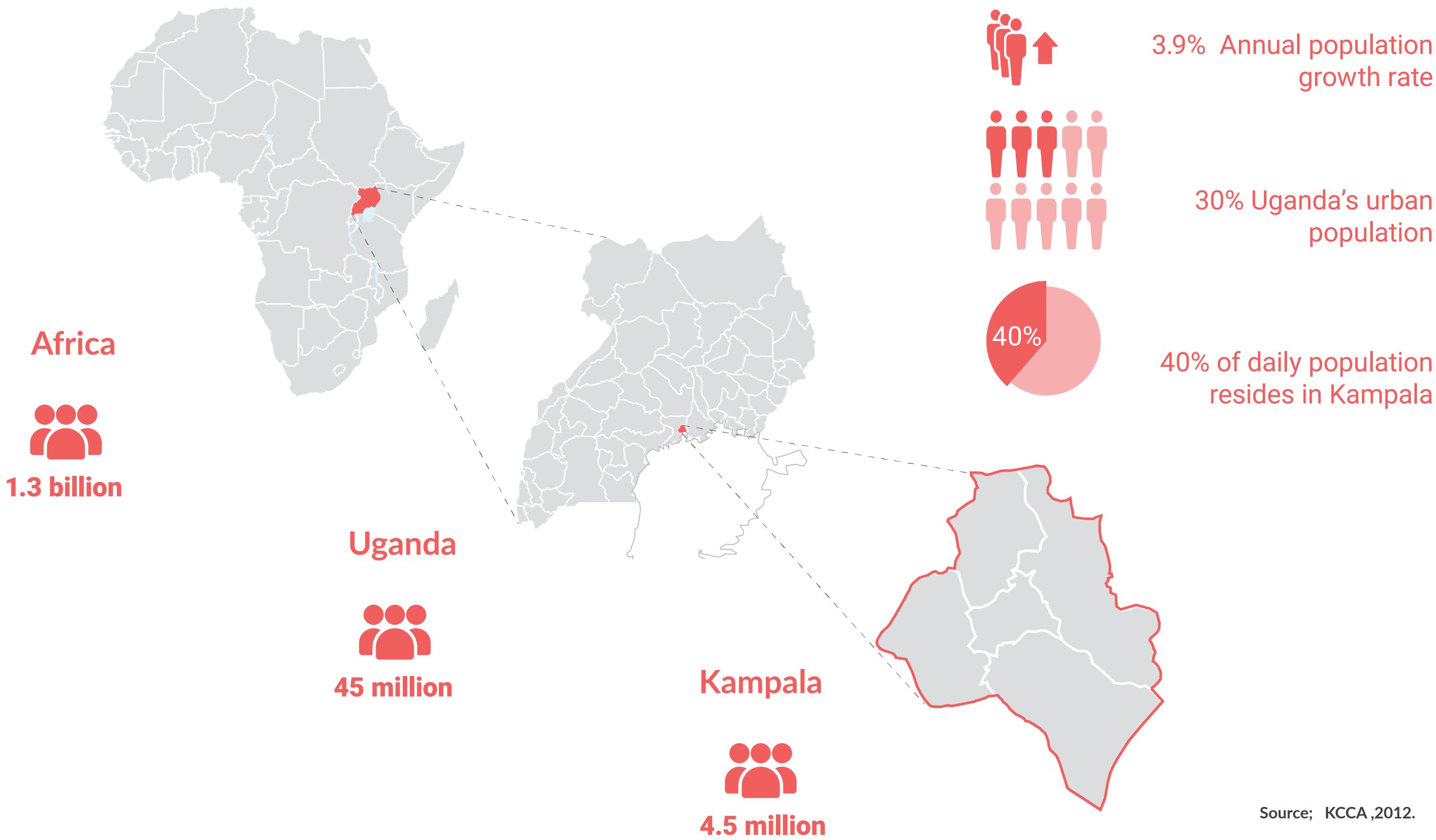
Introduction to Kampala



Image source; Author, 2015

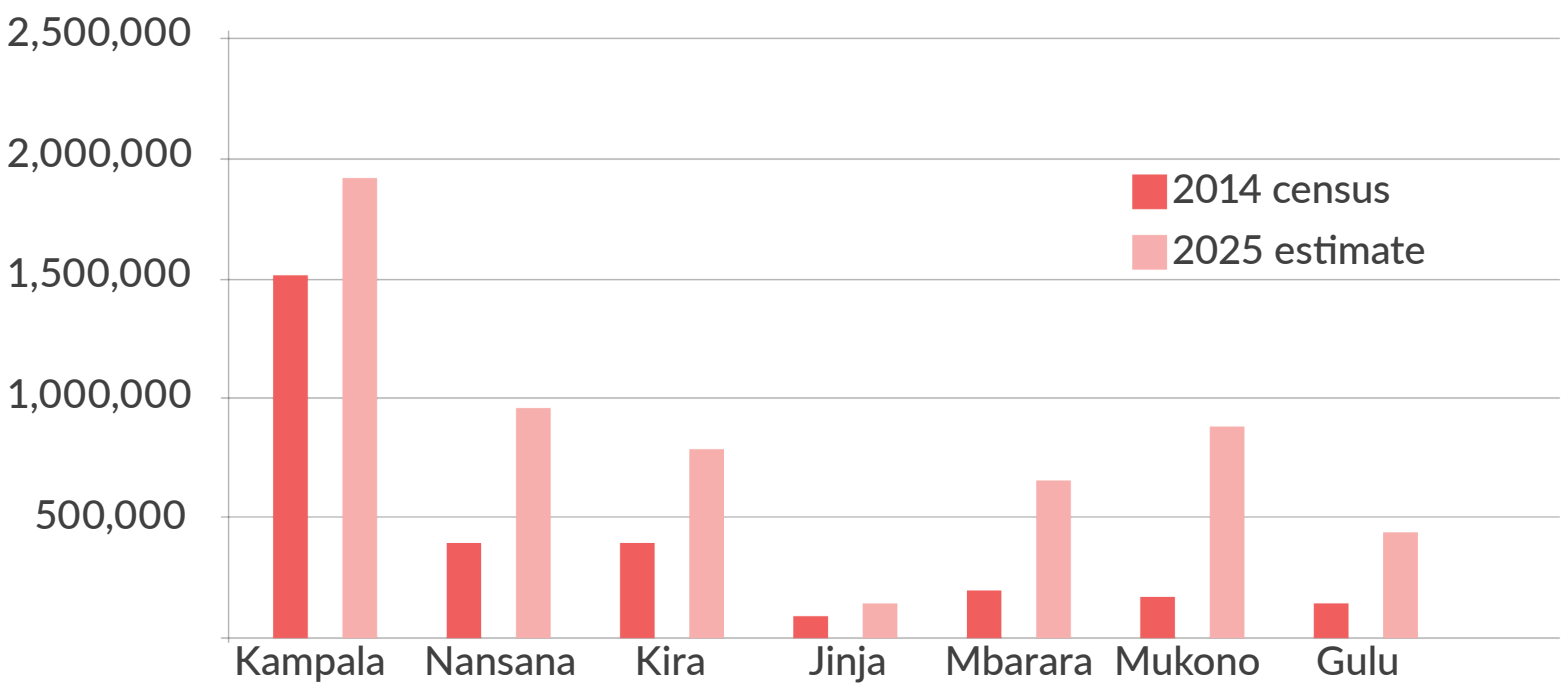
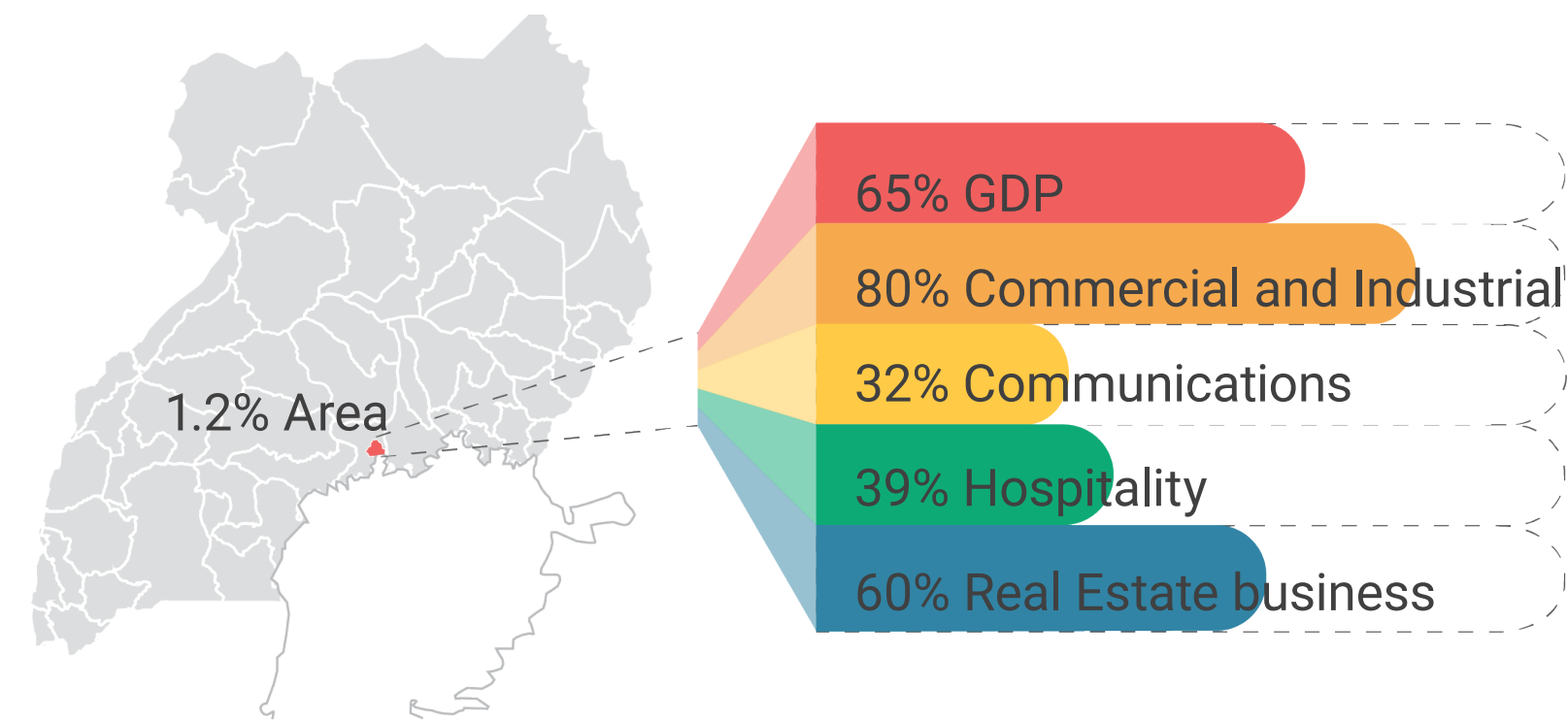
Introduction to Kampala

Location and Urban growth



Problem field

Current trends
Primacy and In-migration



Source; KCCA, 2019.

Problem field

Kampala in 1985



Image source; [googleearth.com](https://www.google.com/earth/)

Problem field

Kampala in 2015



Image source; [googleearth.com](https://www.google.com/earth/)

Problem field

Current trends - Informality



60%

Image source; unsplash.com

Problem field

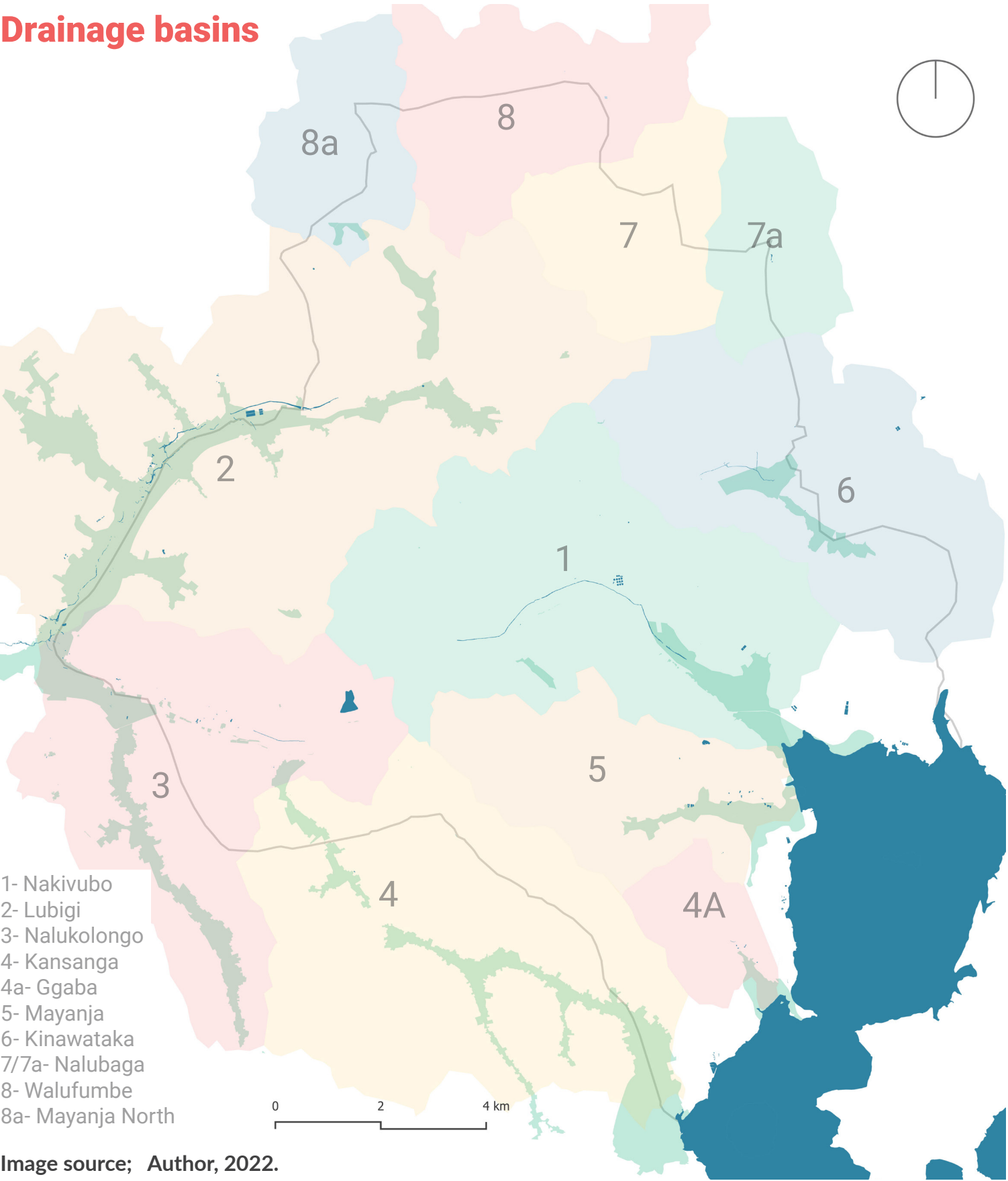
Current trends
Wetland encroachment



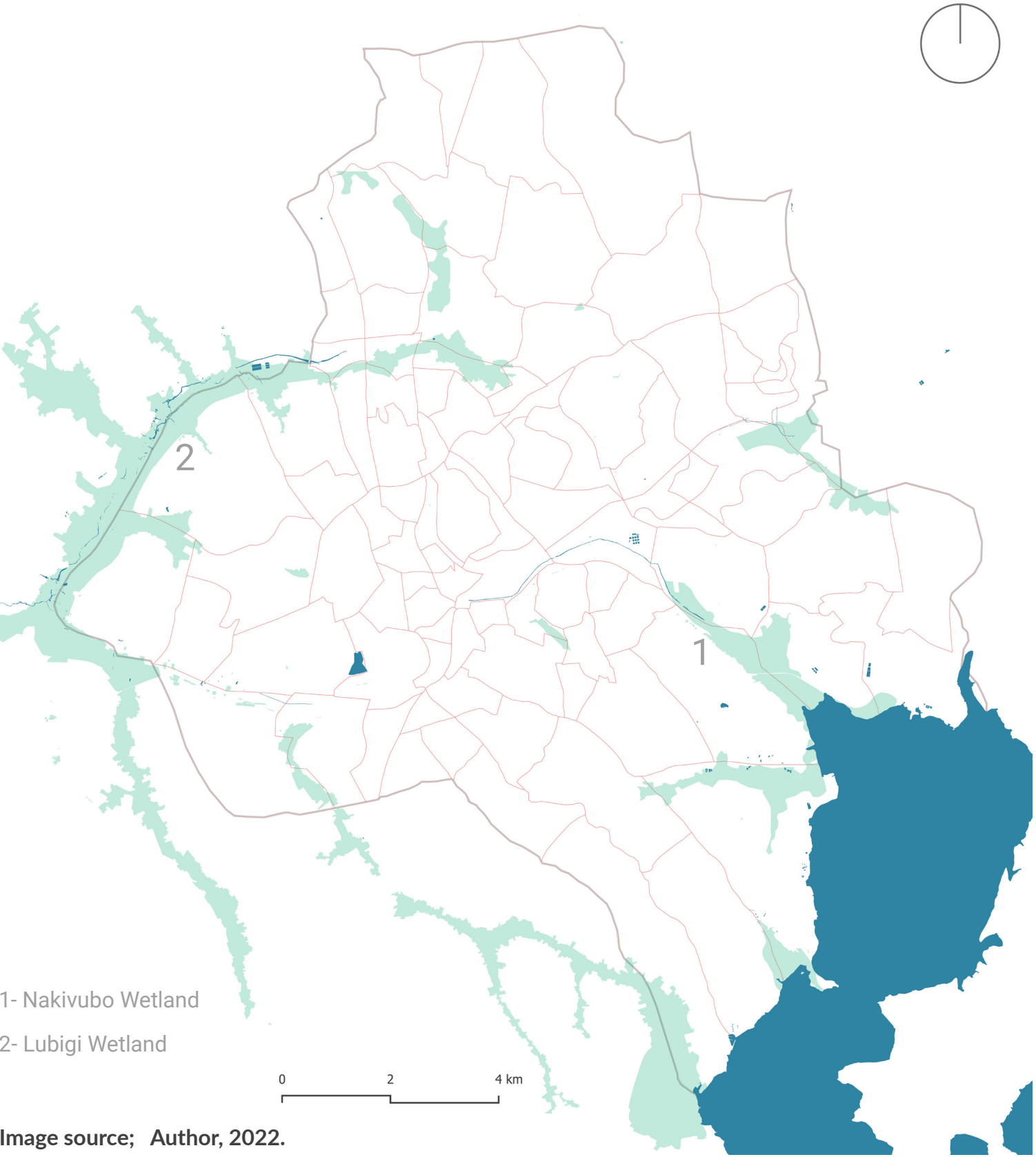
Image source; Author, 2018

Problem field

Drainage basins



Wetlands in Kampala



Problem field

Informal settlements and wetlands

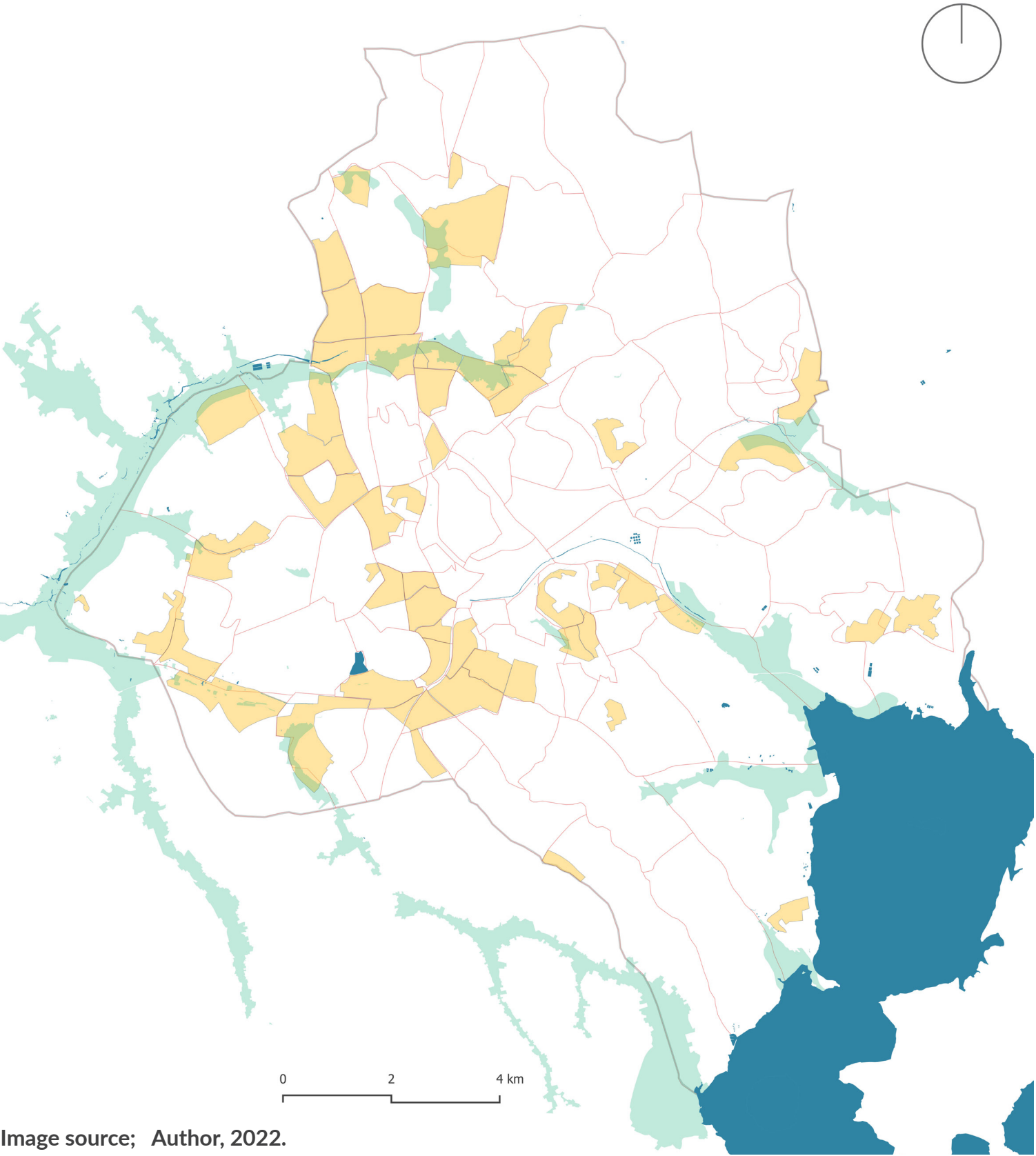


Image source; Author, 2022.

10 year flood risk

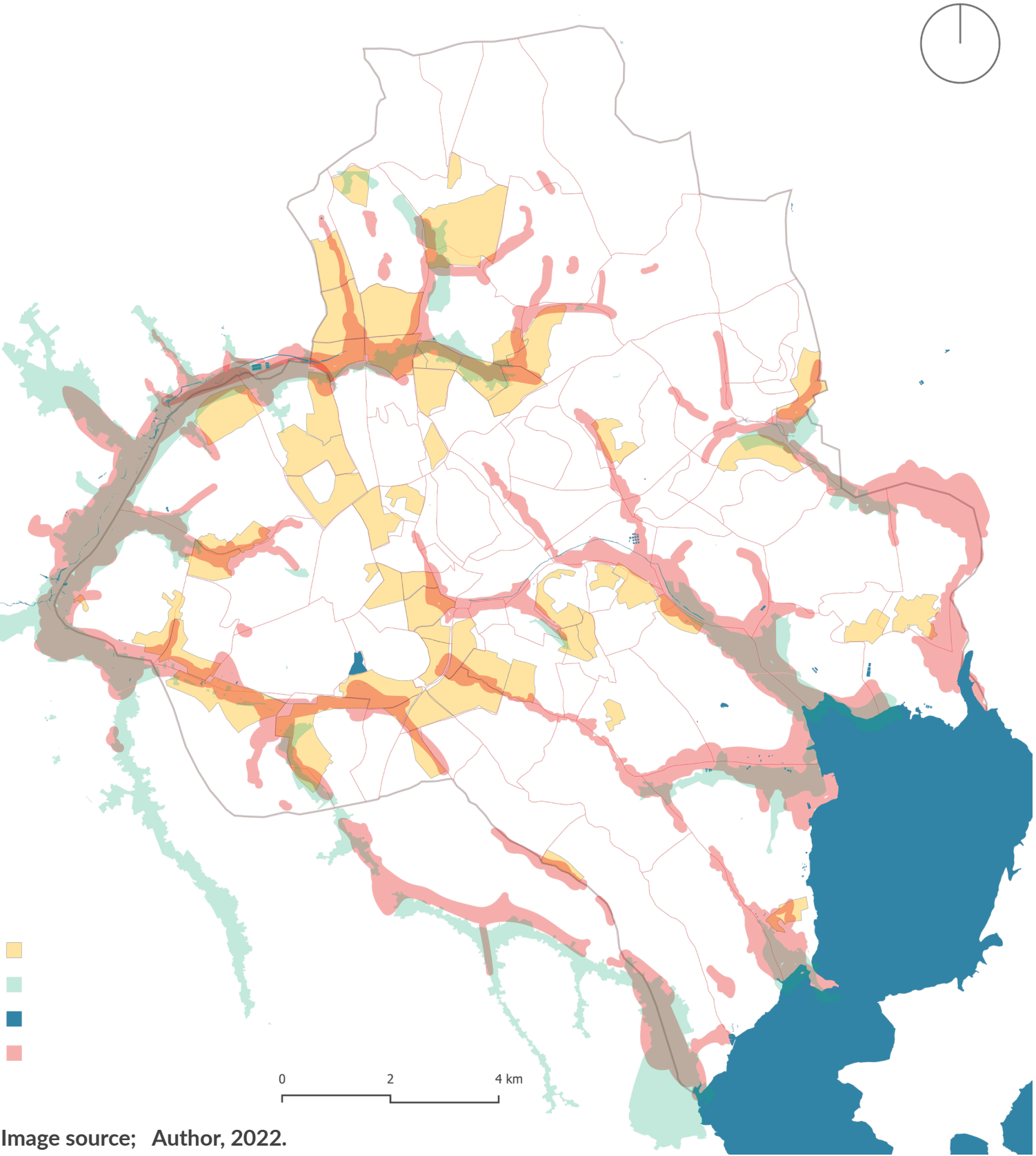


Image source; Author, 2022.

Problem field

Population density

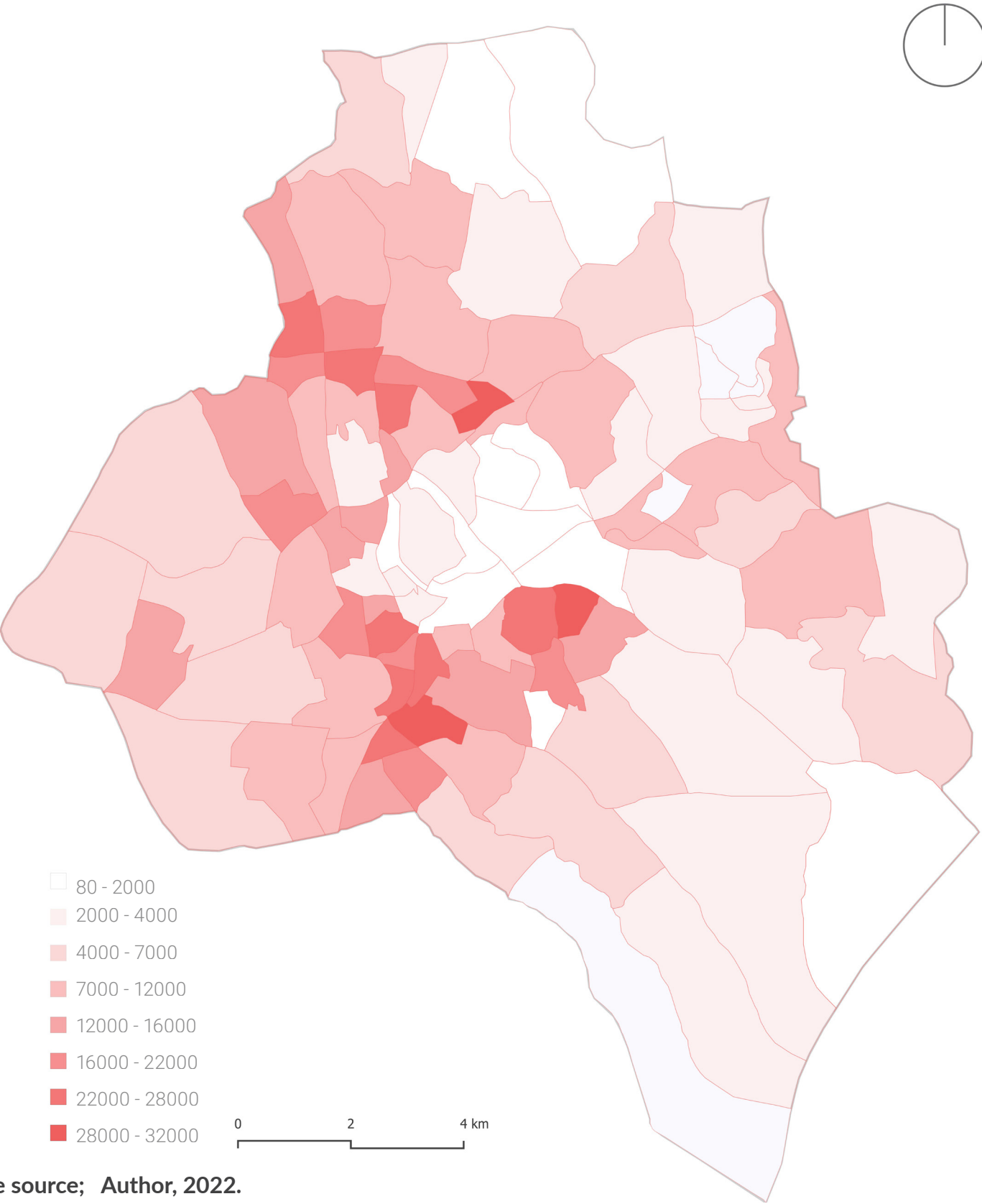


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Population density and Informal settlements

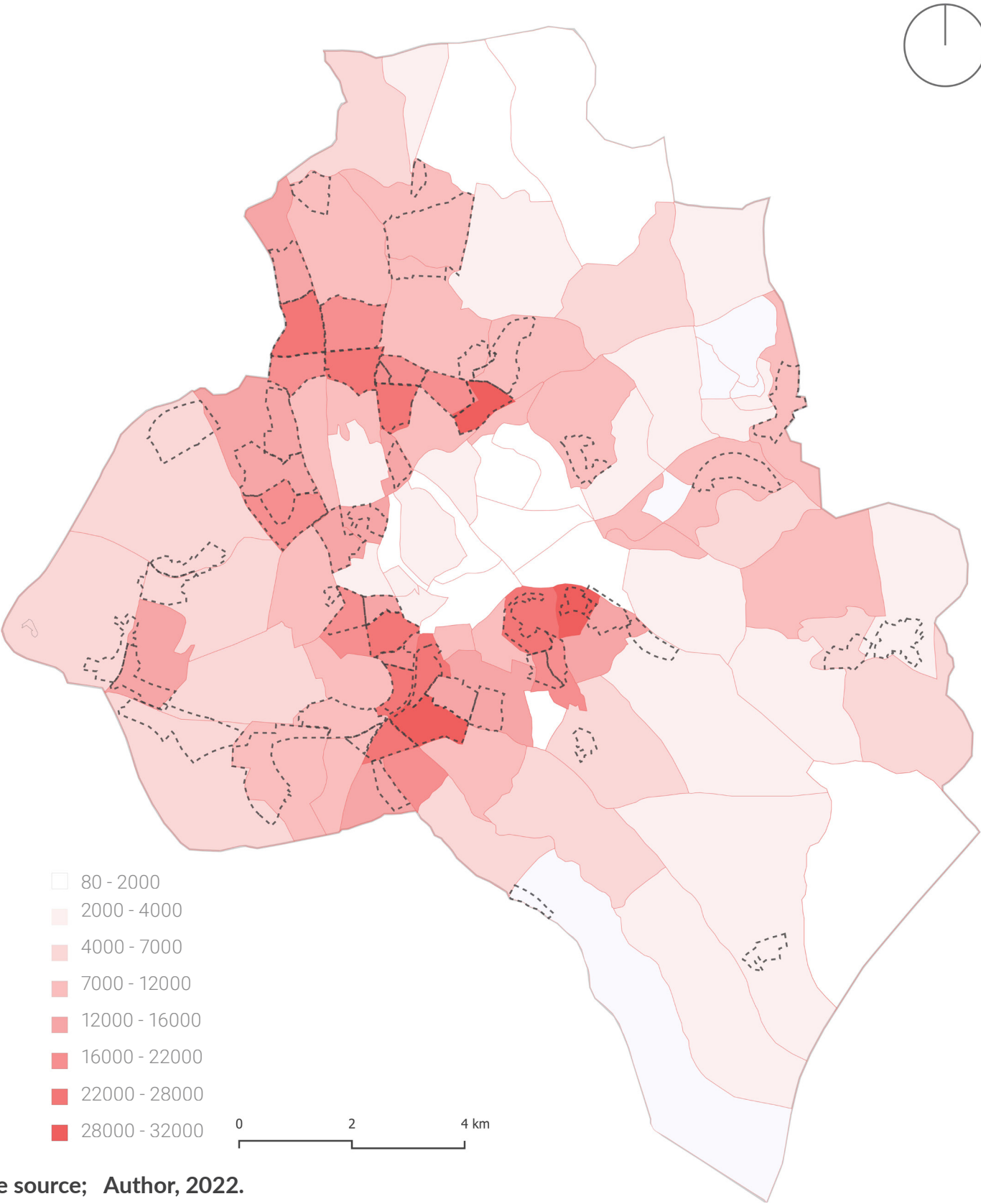


Image source; Author, 2022.

Problem field

Informal housing and informal settlements

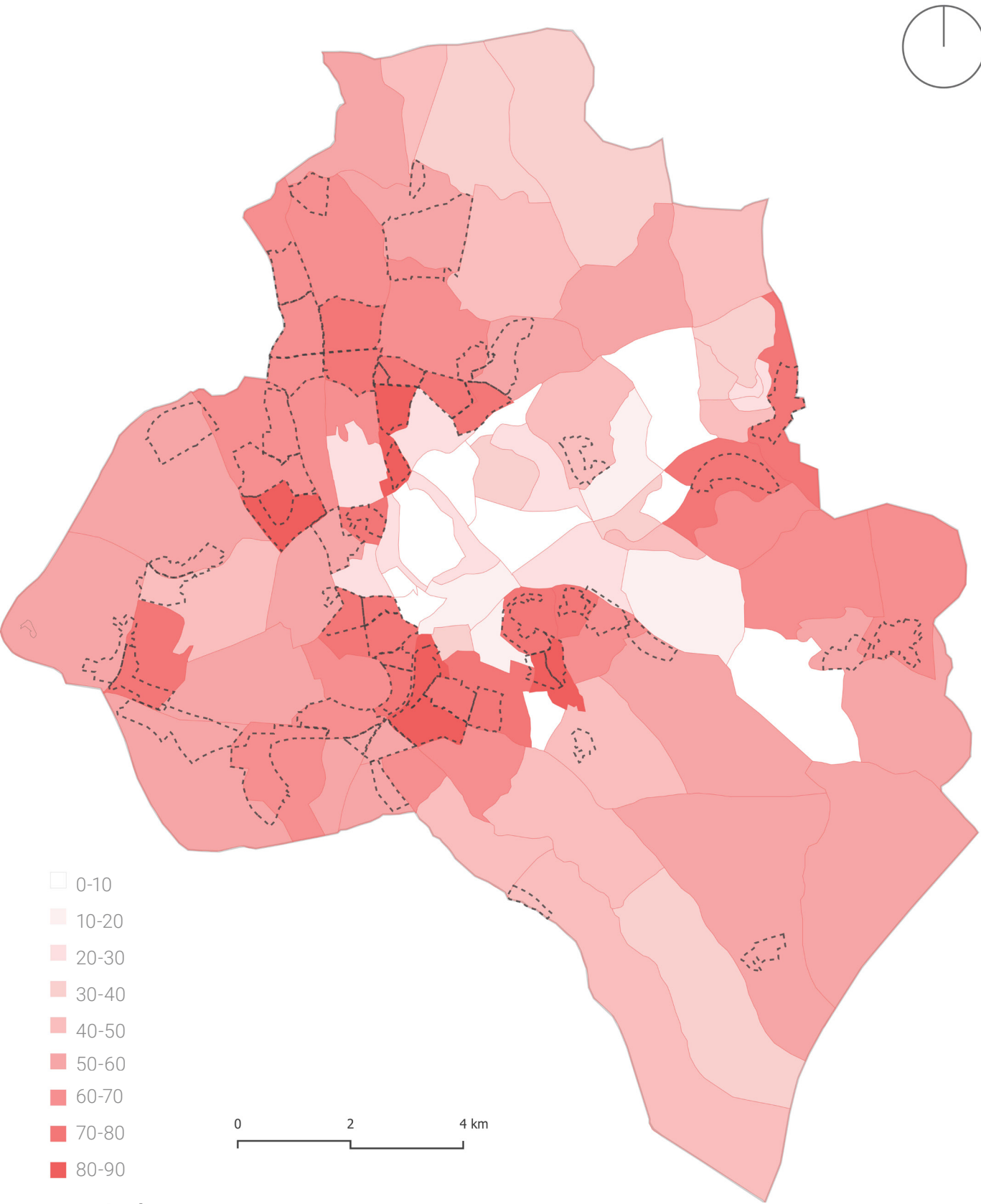


Image source; Author, 2022.

Mailo land tenure
Informal land market
No land titles

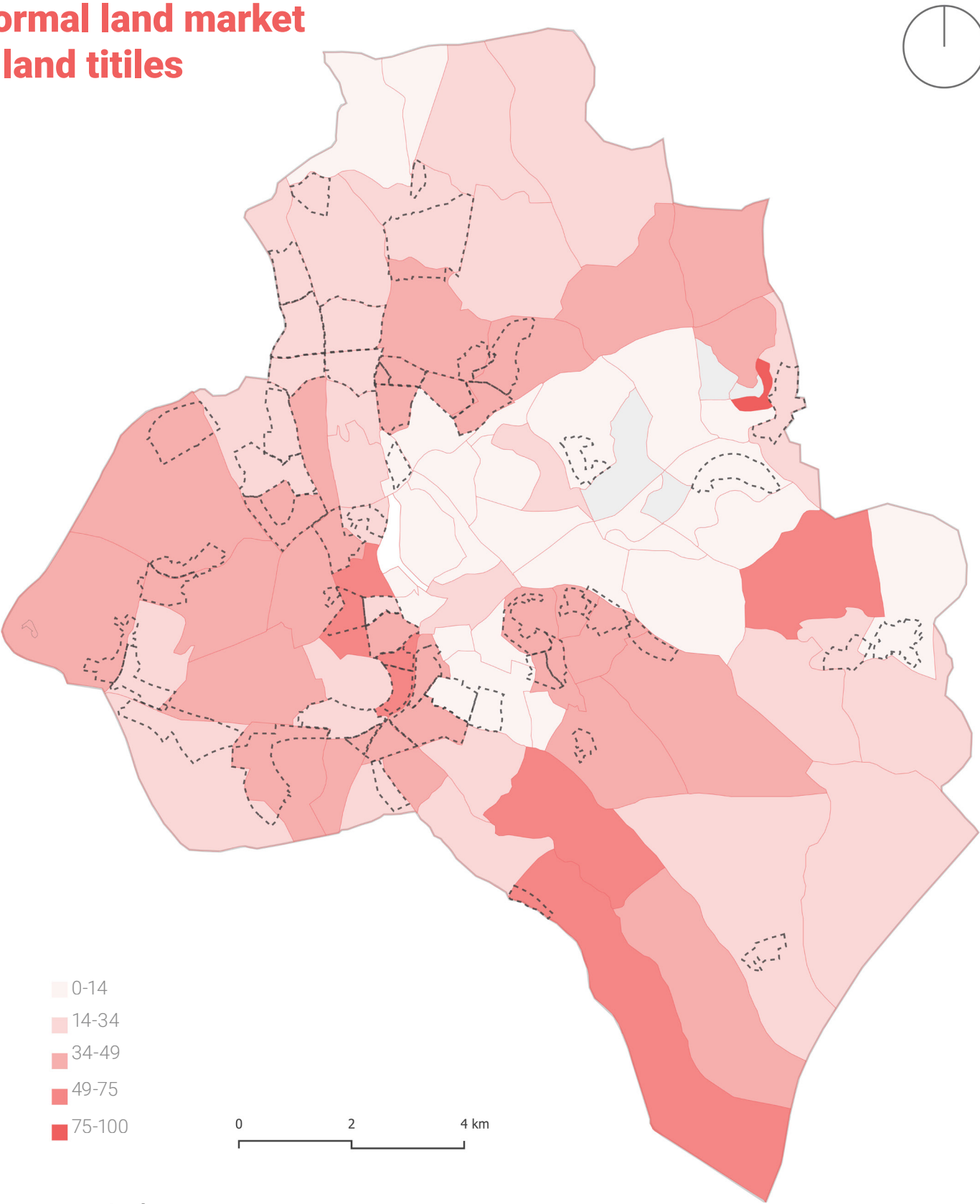


Image source; Author, 2022.

Where spatial planning failure meets climate change....

Problem field

Flooding



Image source; Nicholas Bamulanzeki

Problem field

Flooding



Image source; Nicholas Bamulanzeki

**BUT Flooding is not the
problem,
it is the consequence....**

The problem can be traced
from a critical review of
Kampala's planning history

History of Planning in Kampala

Pre-Independence - 1910-51 Kampala Planning scheme

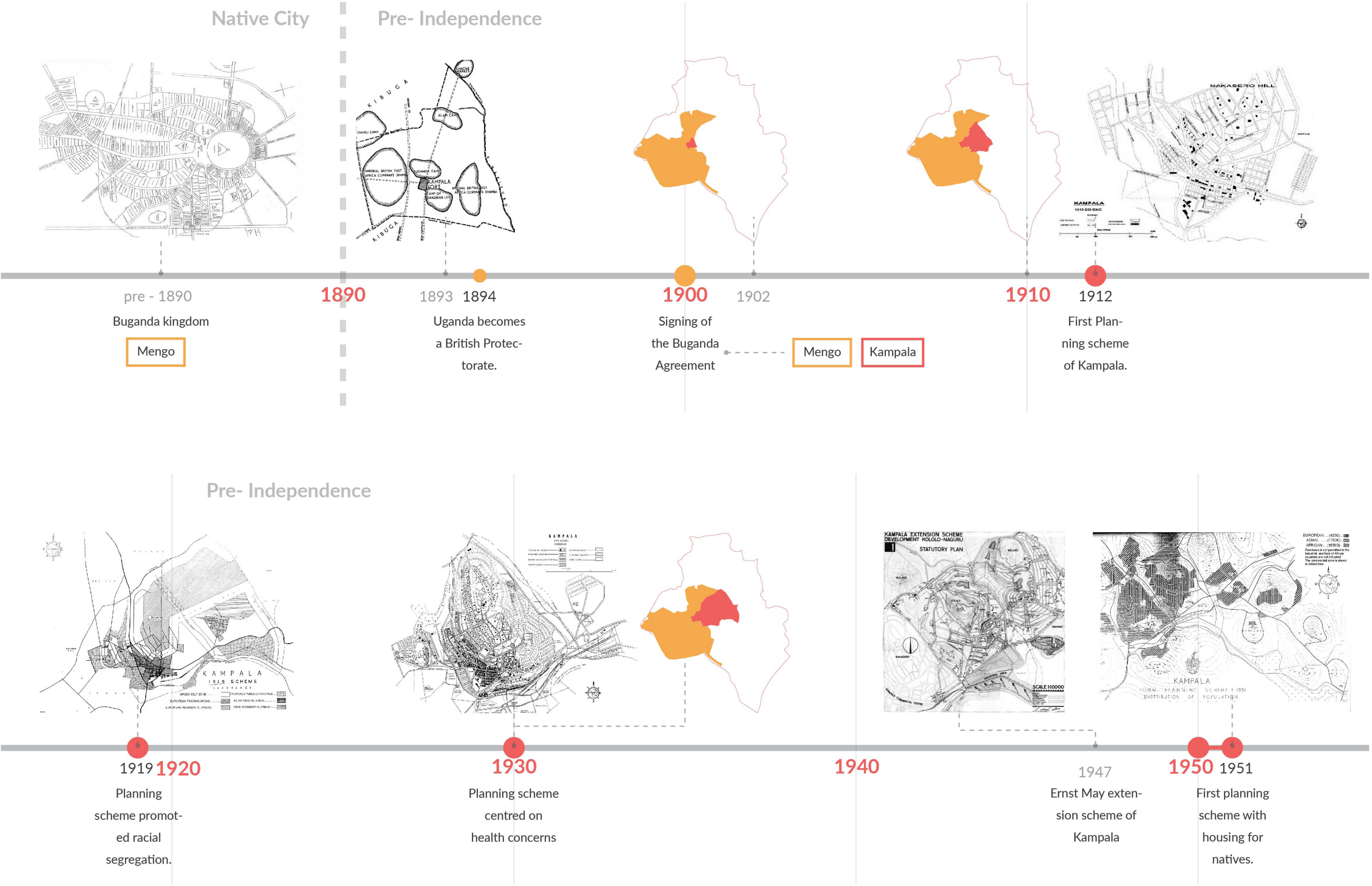


Image source; Author, 2022.

History of Planning in Kampala

Post-Independence - 1963-current

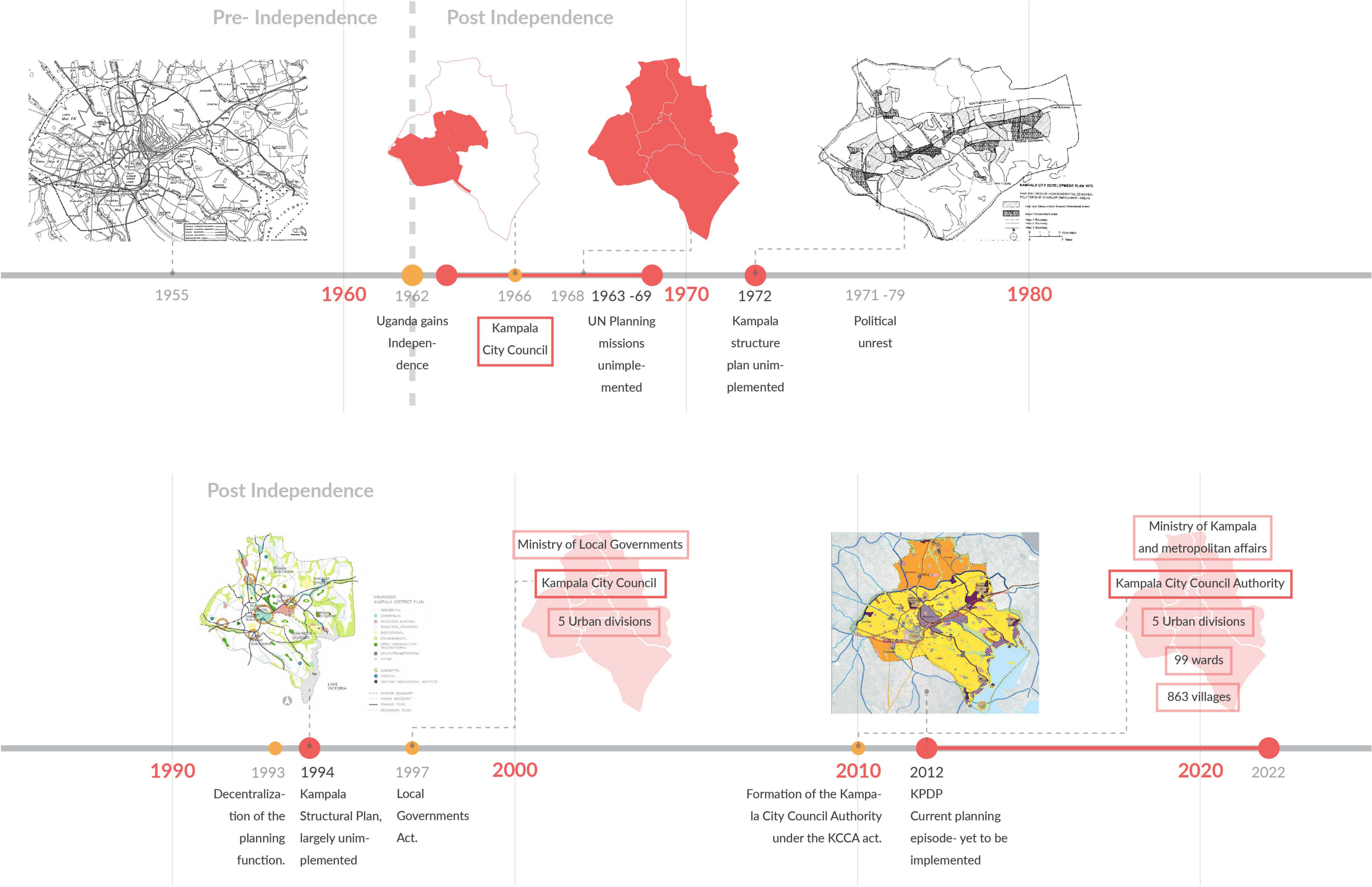


Image source; Author, 2022

History of Planning in Kampala

Conclusion

Non-implementation

a problem with the planning process

- planning approach/processes doesn't reflect the 'duality'
- centred on Western ideals with no appreciation of the realities on ground
- no collaboration with the existing informal processes

Spatial segregation

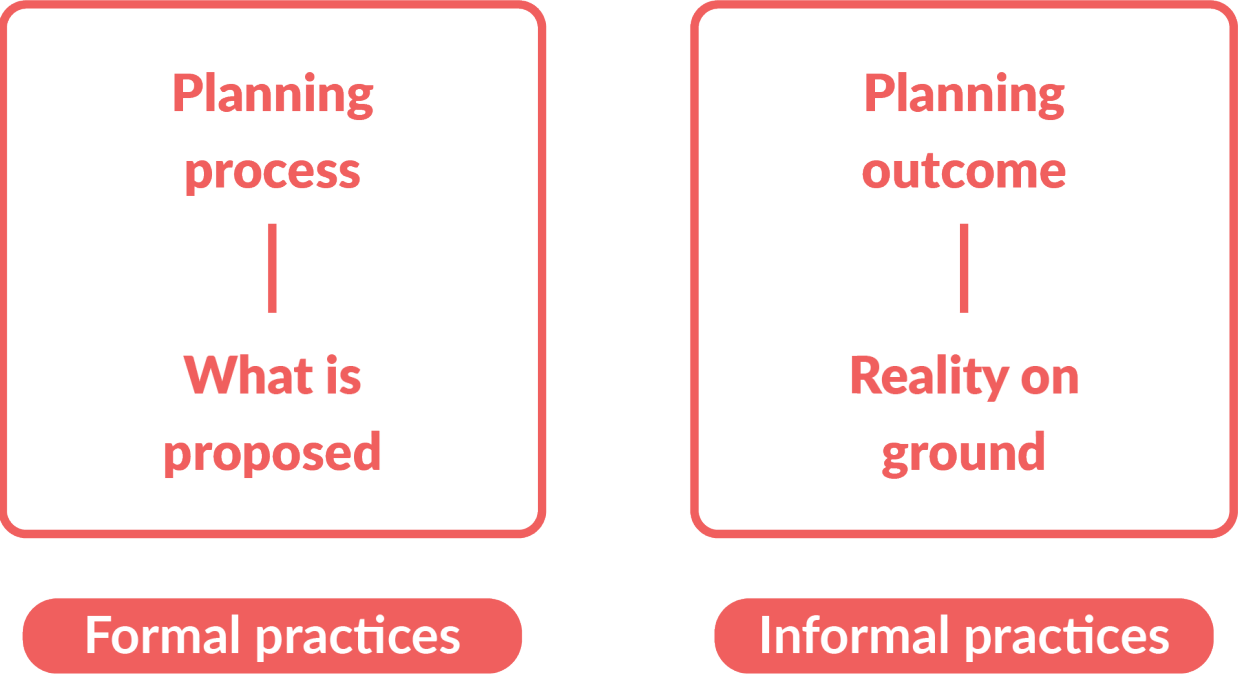
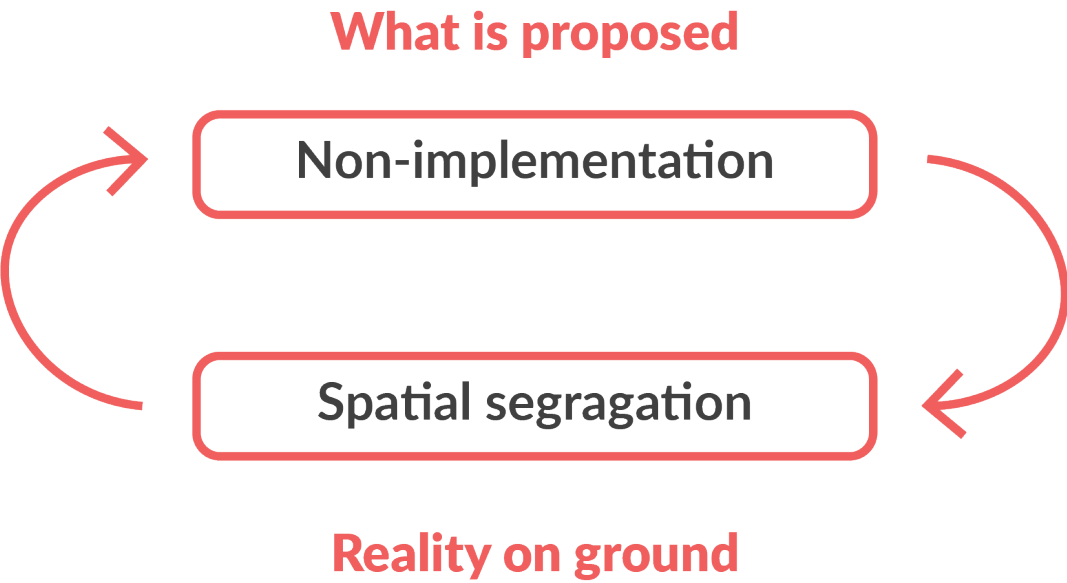
a problem with the planning outcome

- spatial segregation inherited from colonial times continues to persist, with little to no input from formal planning

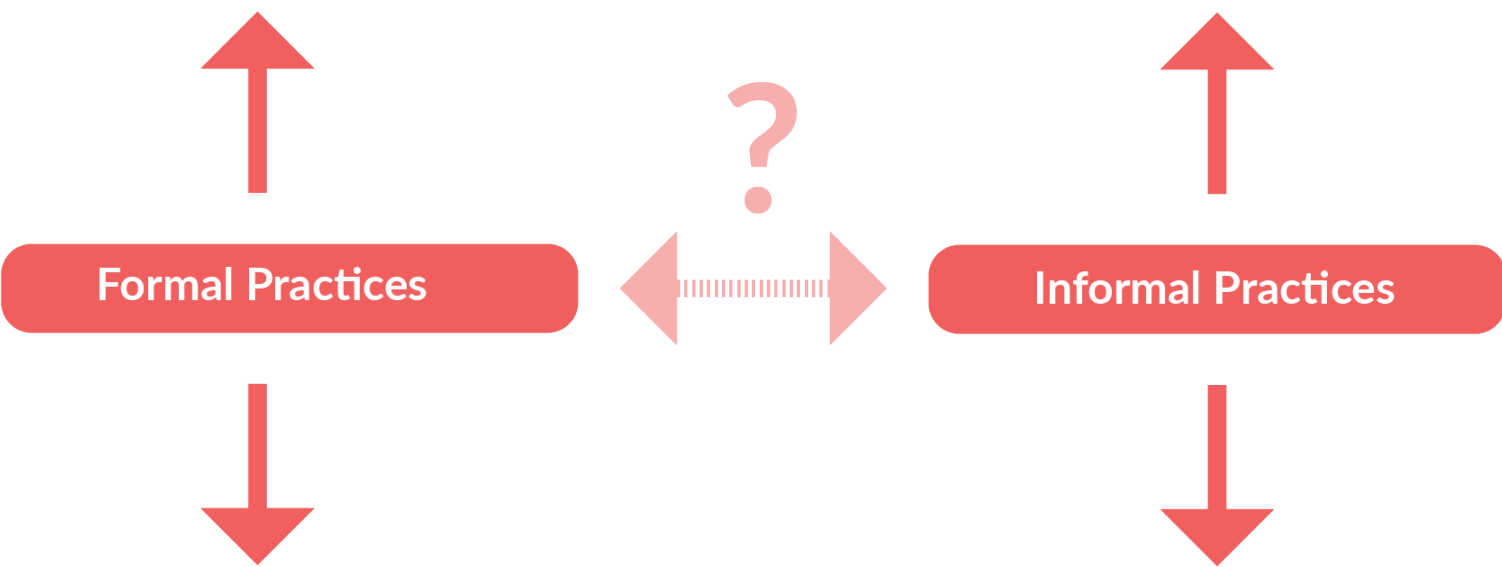
Image source; KCCA, 2010.



Problem Statement



Informal and formal practices work parallel to each other, leading to conflicting and uncoordinated efforts towards tackling the city’s urbanisation challenges.



Main Research Question

How can *a strategic framework* combining both the *formal and informal practices* lead to the *effective planning implementation* for a sustainable and flood resilient Kampala?

Sub Research Questions

Formal practices

1. What formal planning practices on flood resilience in wetlands exist in Kampala?

Informal practices

2. What informal practices on flood resilience in wetlands exist in informal settlements in Kampala?

Combined

3. How can the informal practices be combined with formal practices?



Methodology

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Existing Theories



Image source; Author, 2022.



Image source; Author, 2022.

Theoretical Framework

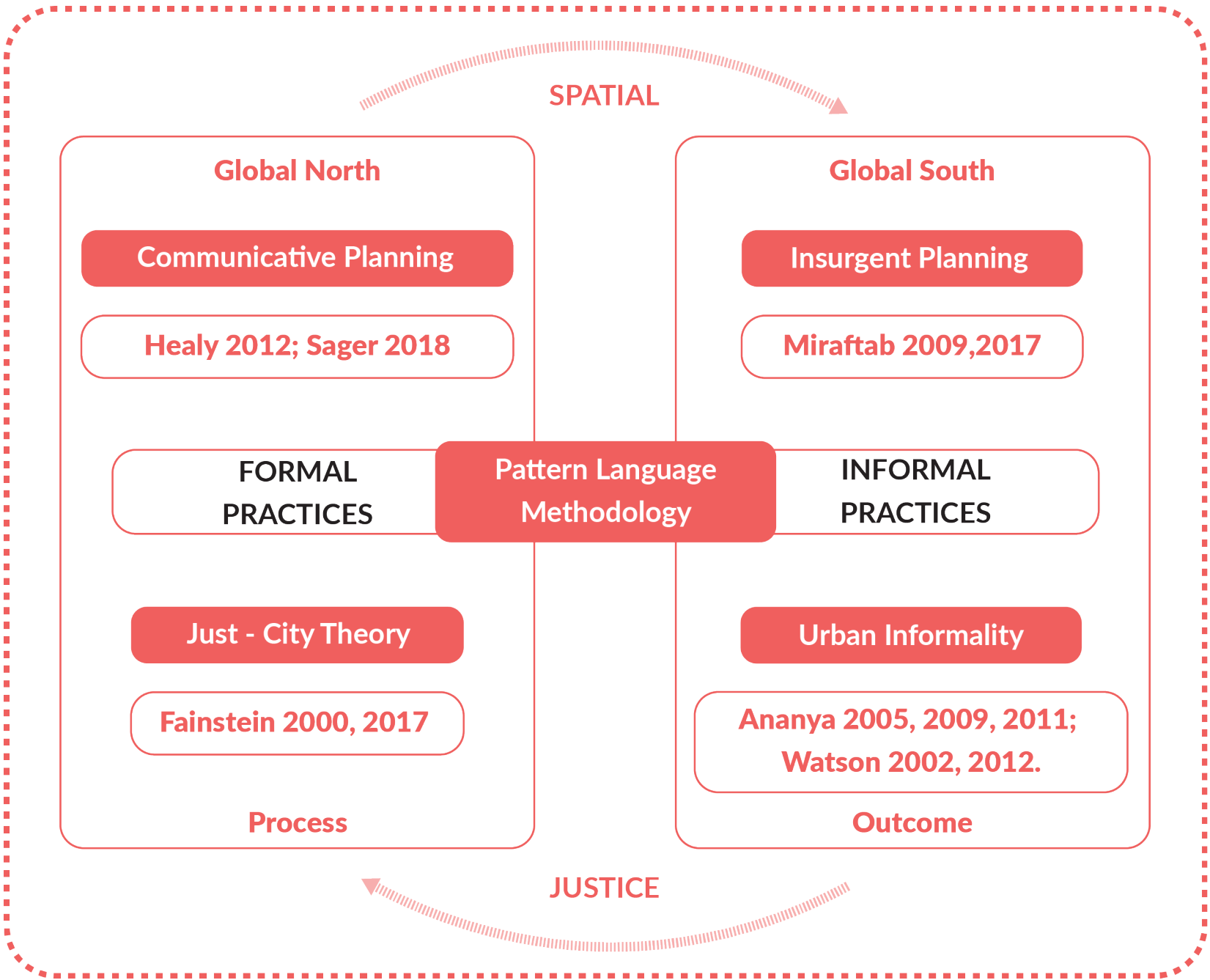


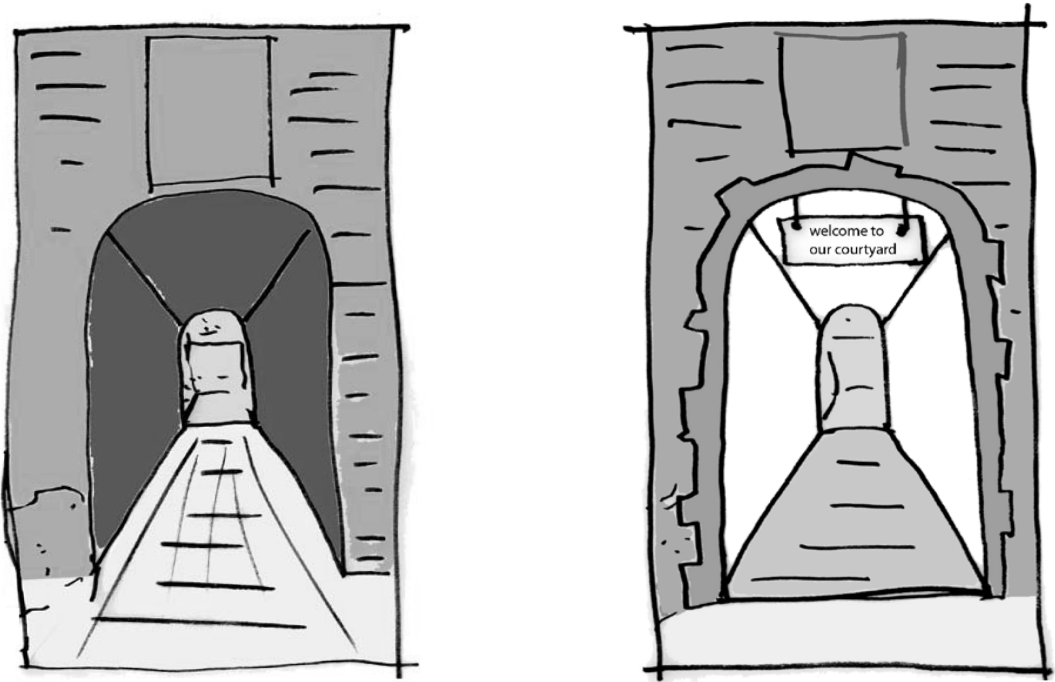
Image source; Author, 2022.

Why the Pattern Language

Pattern

03. Courtyard entrance

- Statement:** A courtyard entrance needs to be socially safe and a territorial marker
- Clarification:** Courtyard entrances form the gateway from the main public space to the semi-privacy of the building block. Their narrowness and poor lighting make them unattractive for normal use, and attractive to undesirable use, such as the application of graffiti. Courtyard entrances should be well-lit and attractive, but also be clearly marked as the entrance to the block residents territory.
- Solution:** Change materialisation and put up a sign at the entrance to clearly define the difference with the surrounding public space, and improve lighting.



- Sources:** Van Dorst, 2005; Luten, 2008; Newman, 1972
- Group:** ! eye vertical lines rectangle grid
- Relation:** slow traffic network, communal courtyard, public space materialisation

Image source; Bruin, 2010.

Pattern Field

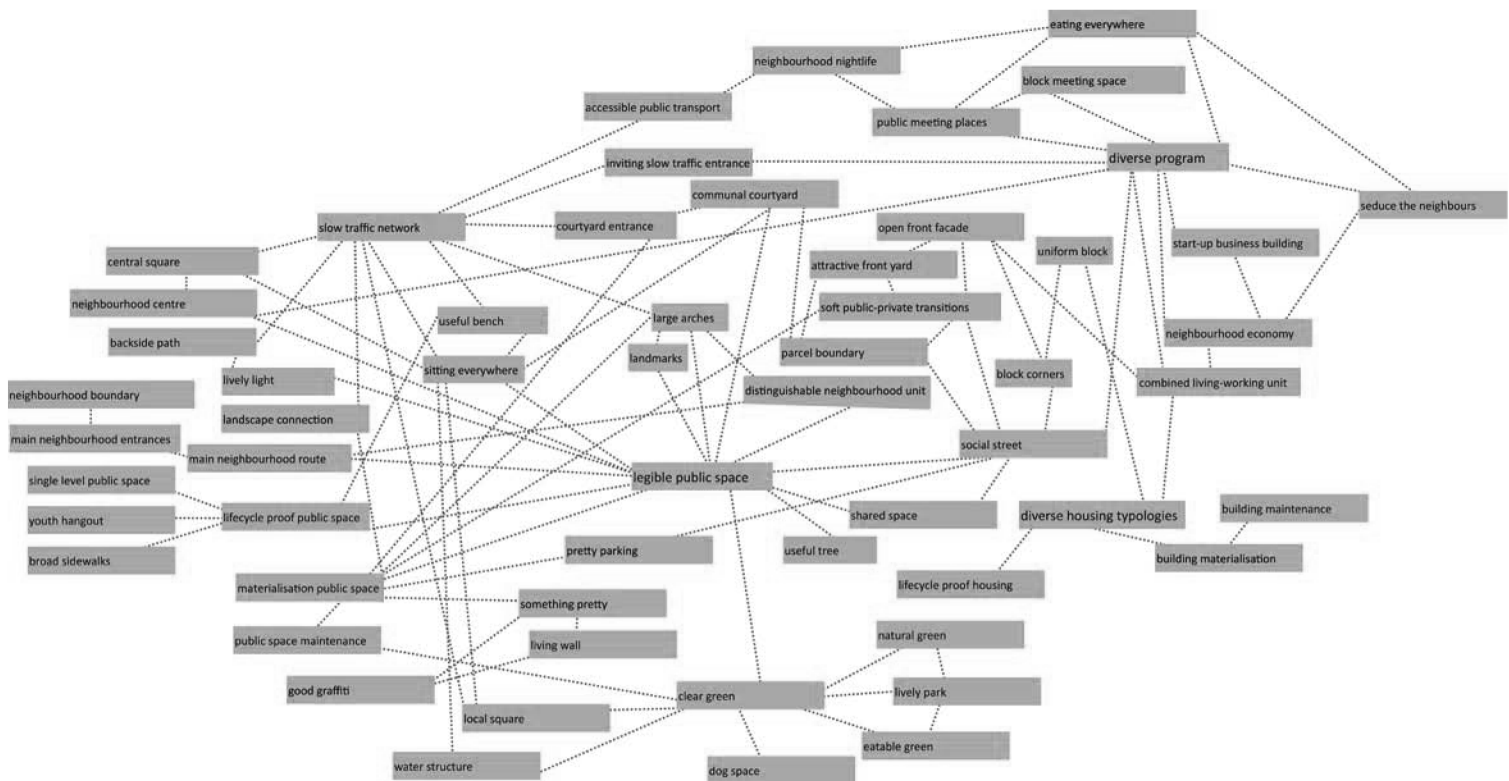


Image source; Bruin, 2010.

Conceptual Framework

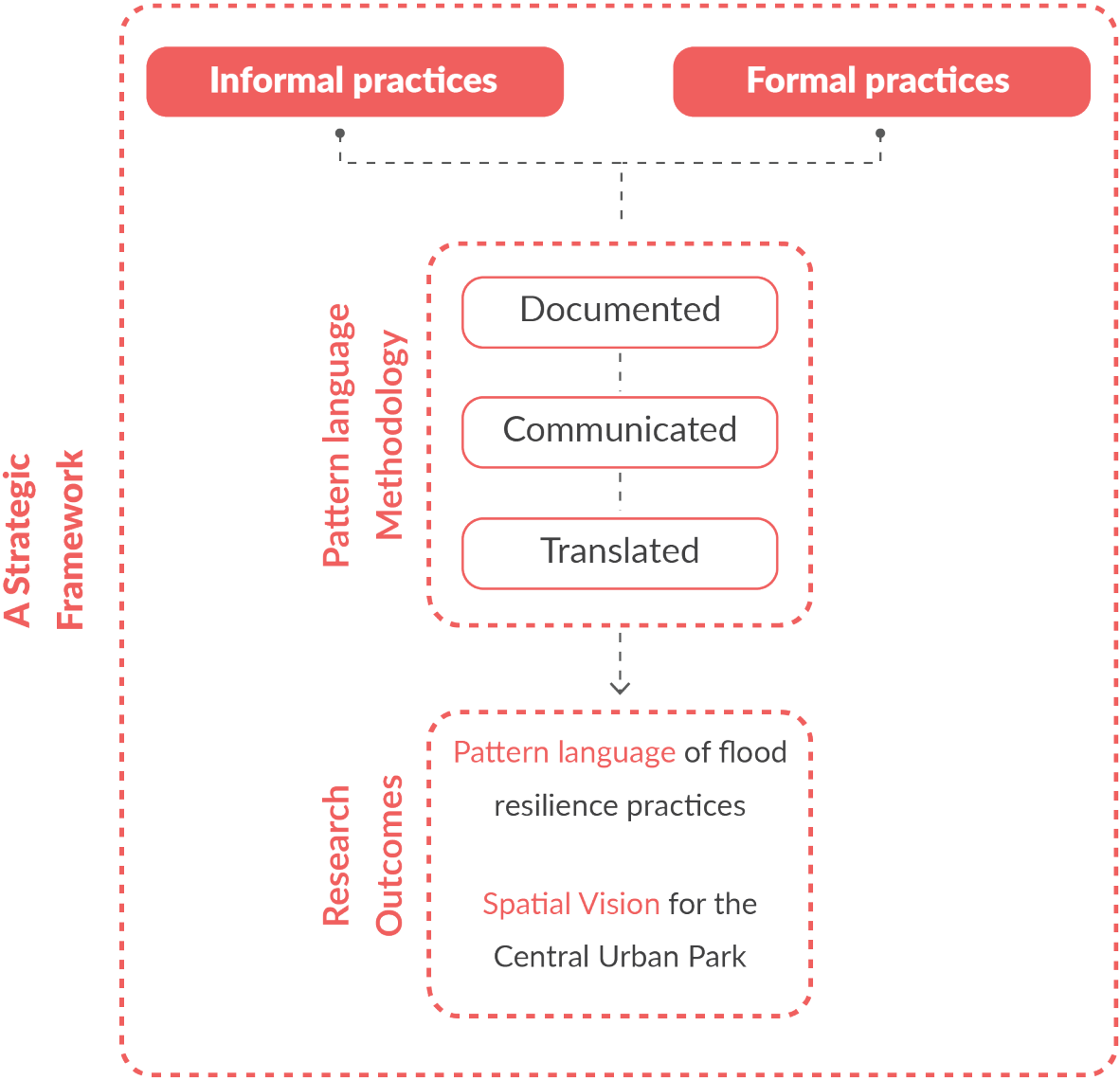


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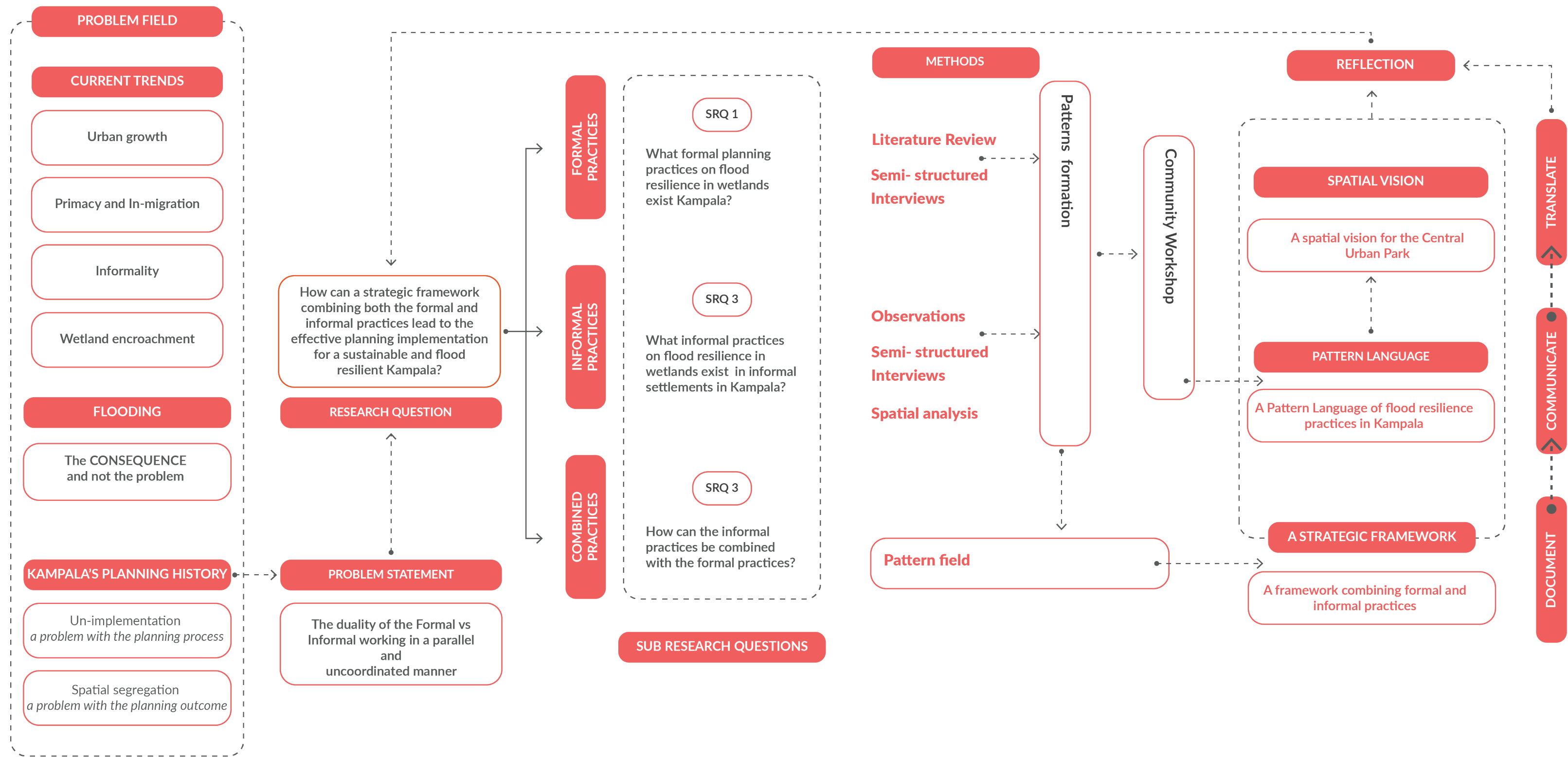


Image source; Author, 2022.

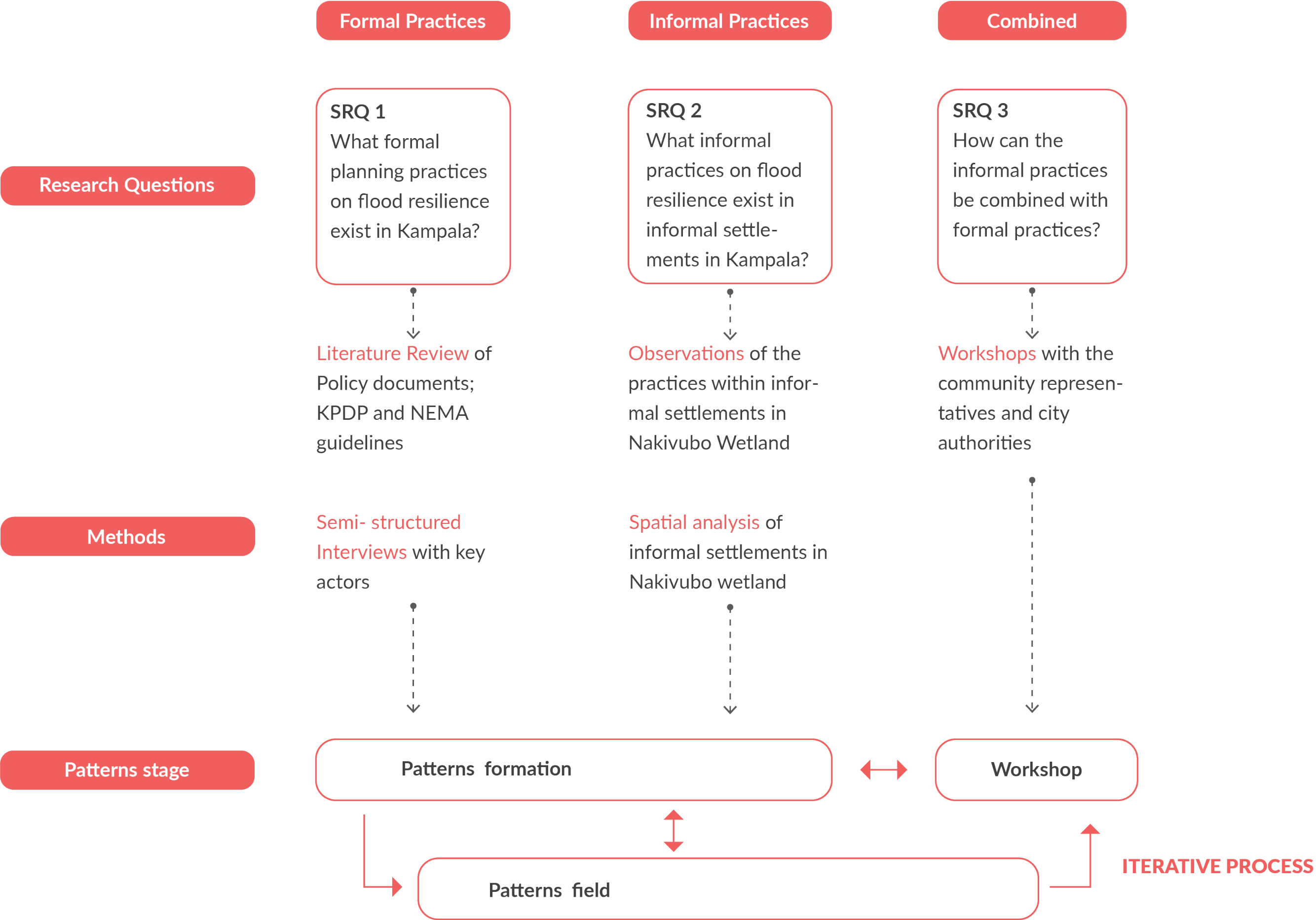


Image source; Author, 2022.



DOCUMENT

Cover Image : <https://www.facebook.com/Africinno/photos>

Research focus

Intersection of issues

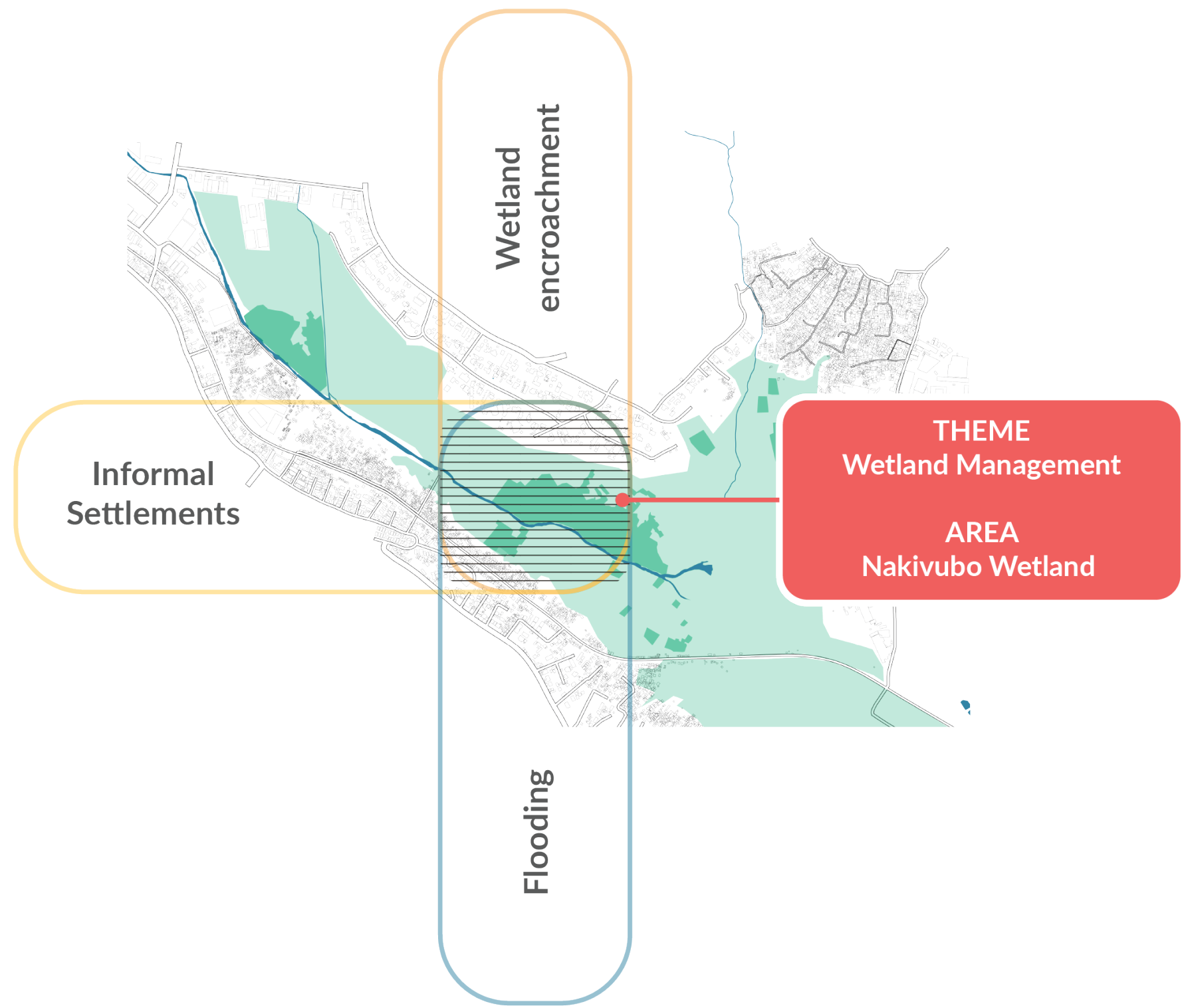


Image source; Author, 2022.

Nakivubo Wetland



Image source; Author, 2022.

Research Focus



Image source; KCCA , 2010.

Nakivubo Channel



Image source; Author, 2022.

Research Focus

Plans for a Central Urban Park



Image source; KCCA, 2012.

Expansion of Kasanvu Informal settlement



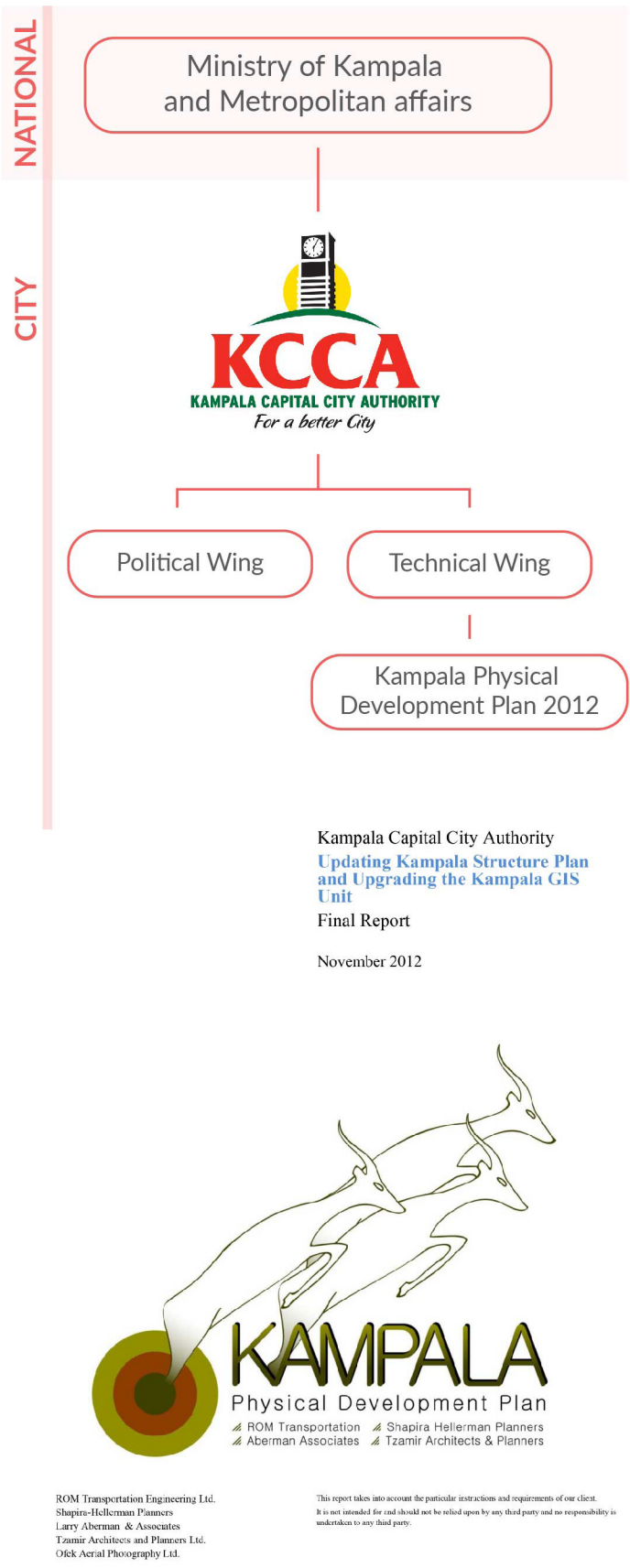
Image source; Author, 2019.

Formal practices

1. What Formal planning practices on flood resilience in wetlands exist in Kampala?


Institutional analysis

1. What are the **Key institutions** concerned with Wetland Management in Kampala?
2. What are the **Key Policy documents** governing wetland management in these institutions?
3. Which are the **repeated/common actions** or recommendations put forth in the documents?



NATIONAL

Ministry of Water and Environment



Department of wetland management

Policy Planning and enforcement management

ACTS SUPPLEMENT No. 27th March, 2019

ACTS SUPPLEMENT

to The Uganda Gazette No. 10, Volume CXII, dated 7th March, 2019

Printed by UPPC, Entebbe, by Order of the Government.

Act 5The National Environment Act2019

THE NATIONAL ENVIRONMENT ACT, 2019

SectionARRANGEMENT OF SECTIONS

PART I—PRELIMINARY.

The National Environment (Wetlands, River Banks And Lake Shores Management) Regulations, No. 3/2000

(Under section 107 of the National Environmental Act Cap. 153)

STATUTORY INSTRUMENTS

2000 No.3.

Part I: Preliminary.

1. Citation.

These Regulations may be cited as the National Environment (Wetlands; River Banks and Lake Shores Management) Regulations, 2000

2. Interpretation.

In these regulations, unless the context otherwise requires -

"agriculture" means all farming activities including cultivation, agroforestry, bee keeping, livestock management and aquaculture;

"alien specie" means any specie of a plant or animal whose natural range does not or did not in the past exist in a specific part of Uganda or the whole of Uganda;

4.2.5 Promoting Urban Tourism In Kampala

Kampala’s tourism potential in terms of urban, fresh water sports and le cultural and religious tourism, is significant but has not been exploited, n supporting infrastructure still very limited. The vast bulk of Ugandans at these facilities, while at the same time the tourists and visitors to Uganda jus Kampala generally staying in the City for a given period of time and not ta

45. Environmental planning by lead agencies. (1) A lead agency shall prepare environment action plans for their respective sectors in conformity with the national environment action plan. (2) An environment action plan prepared under s shall be reviewed every two and a half years. (3) An urban or district council shall prepare an urt environment action plan. (4) The environment action plan made under st shall— (a) be prepared every five years and reviewed e half years; (b) be in conformity with the national environmen (c) take into account village, parish and environment action plans; (d) be subject to approval by the urban or district (e) be disseminated to the public

(1) The relevant lead agency shall, in collaborati Authority, ensure that wetlands are conserved for the com the people of Uganda. (2) Government or a local government shall not rease otherwise (3) following (a) (b) (c) (d) (e)

(1) The Technical committee on Biodiversity Conservation established under section 11 of the statute shall be responsible for advising the Board and the Executive Director on the wise use, (2) The specific functions includes - (a) plan, regulate and manage the segment of the environment within its mandate; (b) carry out strategic environmental assessments in accordance with section 47; (c) prepare an environment action plan in accordance with section 45; (d) prepare the state of environment report in accordance with section 46; (e) undertake environmental inspections and review environment assessments and environmental audits in accordance with this Act and any other applicable law; (f) ensure that any activity undertaken in its area of jurisdiction is in compliance with this Act; (g) implement the decisions of the Authority with respect to the segment of environment under its mandate; (h) report on progress quarterly and account to the Authority for the execution of its role in relation to environmental management within three months after the end of the financial year, and (i) implement and enforce the provisions of this Act.

11. Functions of a lead agency. A lead agency shall— (a) plan, regulate and manage the segment of the environment within its mandate; (b) carry out strategic environmental assessments in accordance with section 47; (c) prepare an environment action plan in accordance with section 45; (d) prepare the state of environment report in accordance with section 46; (e) undertake environmental inspections and review environment assessments and environmental audits in accordance with this Act and any other applicable law; (f) ensure that any activity undertaken in its area of jurisdiction is in compliance with this Act; (g) implement the decisions of the Authority with respect to the segment of environment under its mandate; (h) report on progress quarterly and account to the Authority for the execution of its role in relation to environmental management within three months after the end of the financial year, and (i) implement and enforce the provisions of this Act.

(1) The District Environment Committees shall be responsi and advising District Councils on all aspects of wetland res

(1) A person shall not, without the written approval of the relevant lead agency, given in consultation with the Authority— (a) reclaim or drain any wetland; (b) erect, construct, place, alter, extend, remove or demolish any structure that is fixed in, on, under or over any wetland; (c) disturb any wetland by drilling or tunnelling in a manner that has or is likely to have an adverse effect on the wetland; (d) deposit in, on or under any wetland any substance in a manner that has or is likely to have an adverse effect on the wetland; (e) destroy, damage or disturb any wetland in a manner that has or is likely to have an adverse effect on any plant or animal or its habitat; or (f) introduce any alien plant or animal in a wetland.

(1) A developer desiring to conduct a project which may have a significant impact on a wetland, river bank or lake shore, shall be required to carry out an environmental impact assessment in accordance with sections 19, 20 and 21 of the Act.

Cap. 269.

(2) The local environment committee shall be the implementing organ in conserving and managing wetland resources in its area of jurisdiction.

(3) The specific functions of the Lower Local Government Council includes -

(a) ensuring that any activity undertaken within the catchment area of a wetland does not affect the water level of the wetland;

(b) regulating activities which may include supply of water for domestic purposes, fishing, swamp adage gardens, grazing, papyrus harvesting to ensure sustainable use of wetlands;

(c) advising the Authority, after the prior approval of the District Council, to declare an area a "protected wetland" in accordance with these Regulations;

(d) authorizing research activities in a protected wetland;

(e) issuing local guidelines and directives for the better carrying out of the provisions of these Regulations and ensure wise use of wetlands;

(f) with the approval of the district environment officer, under directing that an environmental impact assessment be carried out on a project that involve the use of a wetland or an area within ten metros of the edge of a wetland;

(g) declaring that a wetland be closed from some or all activities for purposes of regeneration;

(h) formulating bye-local and laws on the proper management of wetlands; and

(i) performing any other duty assigned to it by the Executive Director under the Statute.

(1) A person shall not, without the written approval of the relevant lead agency, given in consultation with the Authority—

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(b) erect, construct, place, alter, extend, remove or demolish any structure that is fixed in, on, under or over any wetland;

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Cap. 269.

Formal practices on Flood resilience in Wetlands

Environmental Action plans

Local Community Conservation

Research and tourism activities

Habitat for flora and fauna

Technical committee on Biodiversity conservation

District Environment committees

Environment officer

Strategic environment assessment

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P5 Presentation

Formal Practices

Interviews



Image source; www.kcca.go.ug/news.

Highlights

1. Institutional capacity gaps
2. Overlaps between departments
3. Minimal Coordination (sectors operate separately e.g NEMA and KCCA)
4. Planning is not prioritised
5. Implementation strategies not included
6. No one on ground to check/implementation

Local Governance structure in Uganda

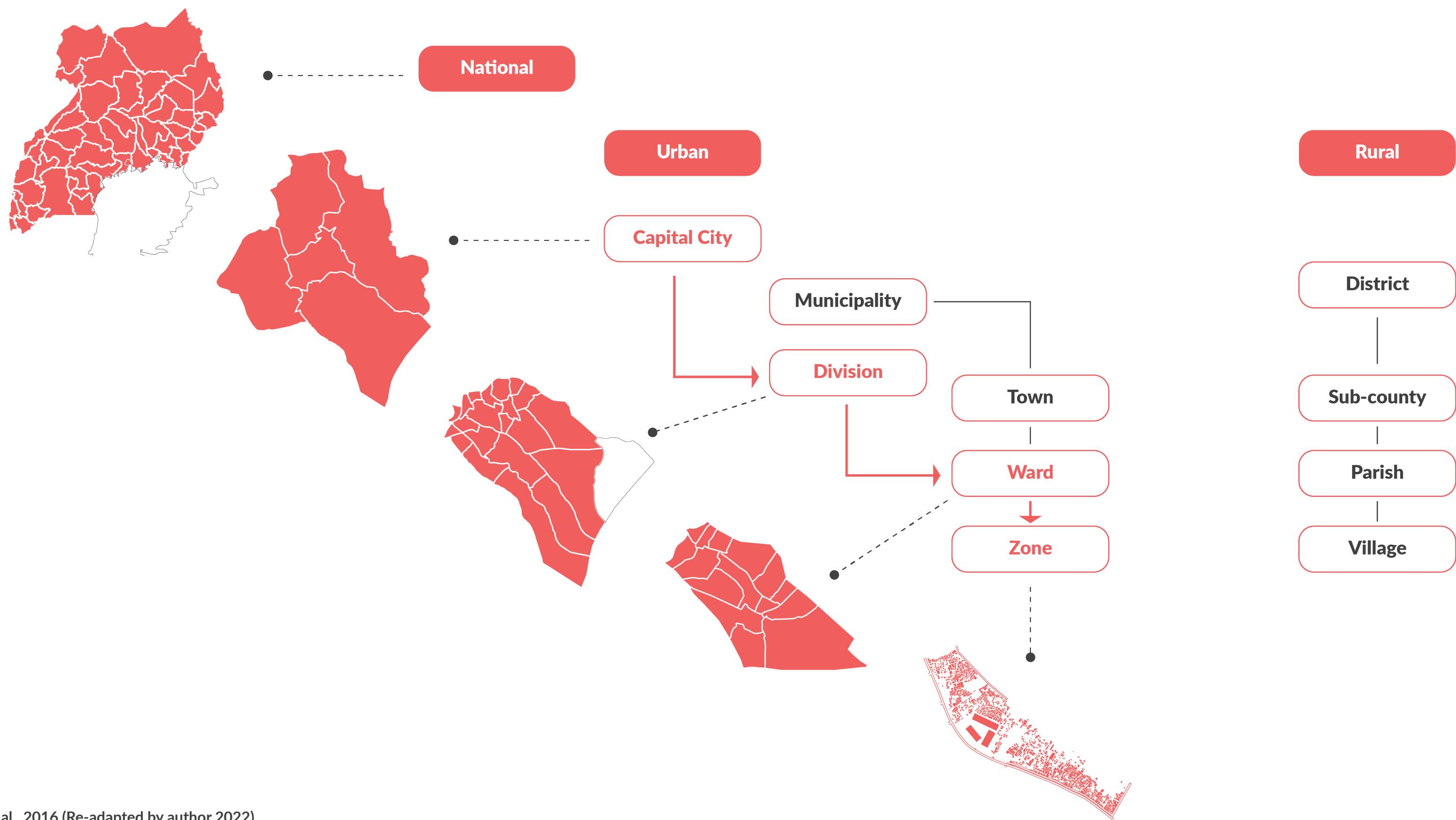


Image source; Jones et al., 2016 (Re-adapted by author 2022)

Institutional mapping

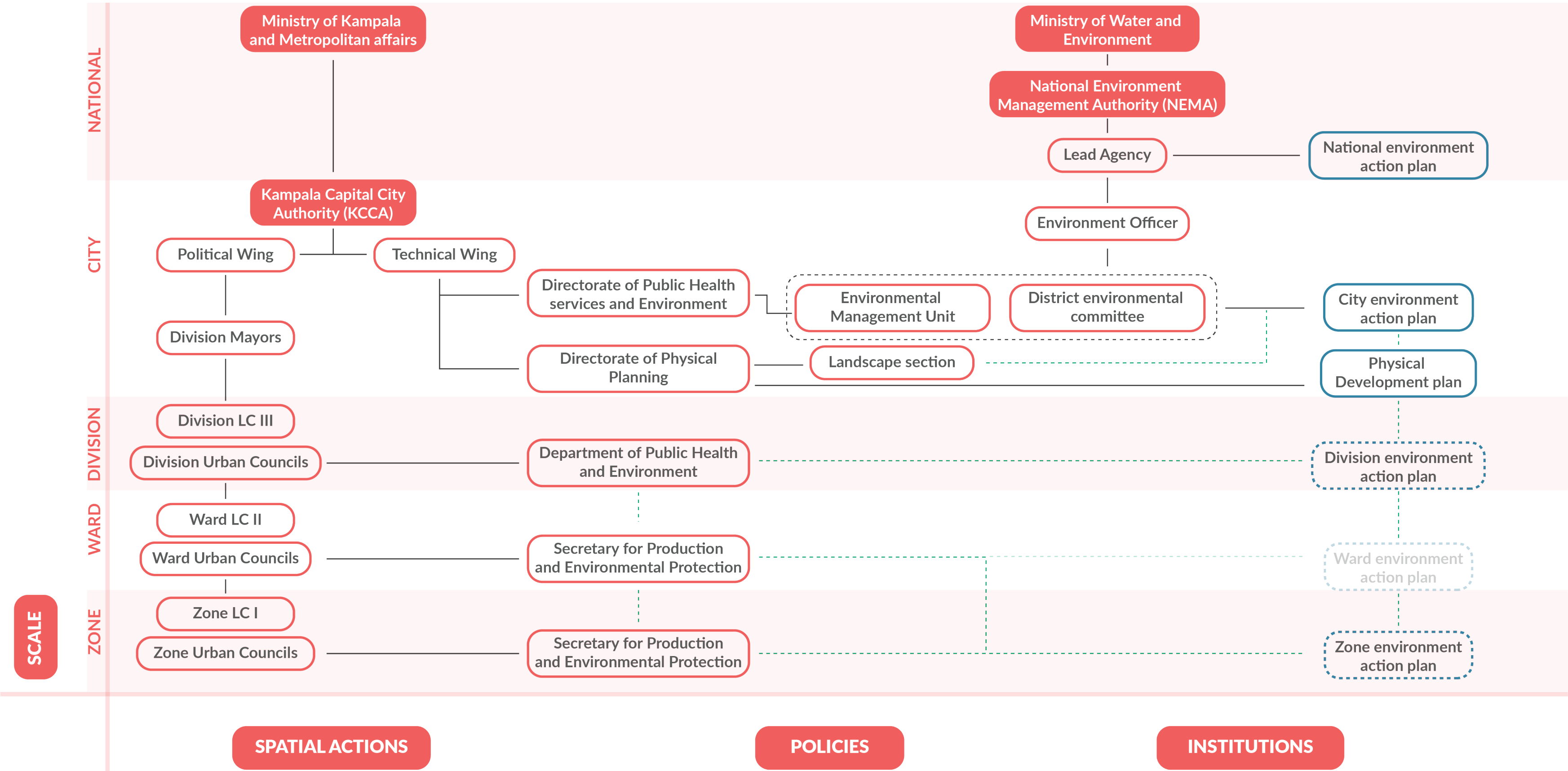


Image source; Author, 2022.

Framework

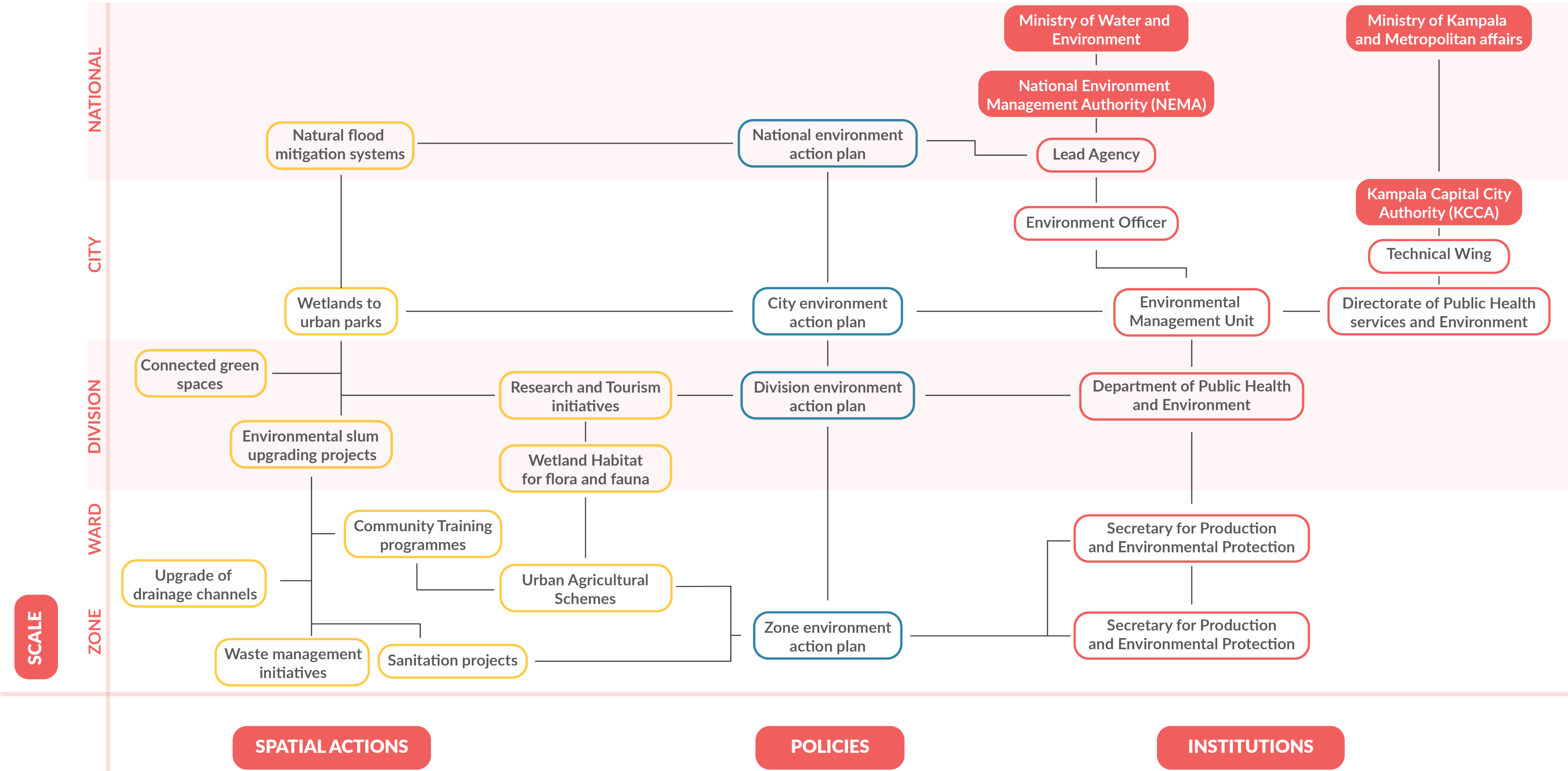


Image source; Author, 2022.

Vision of formal practices

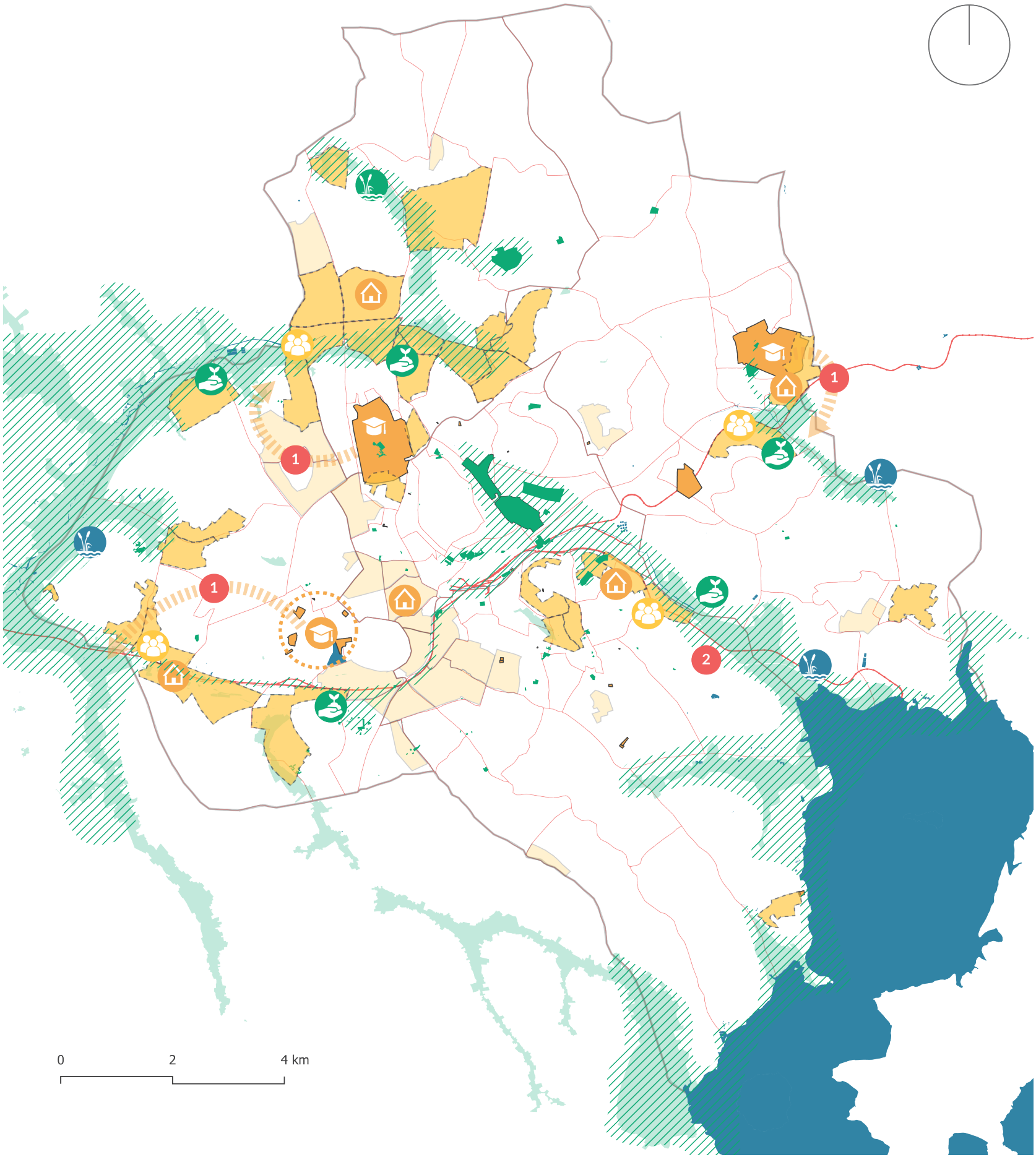
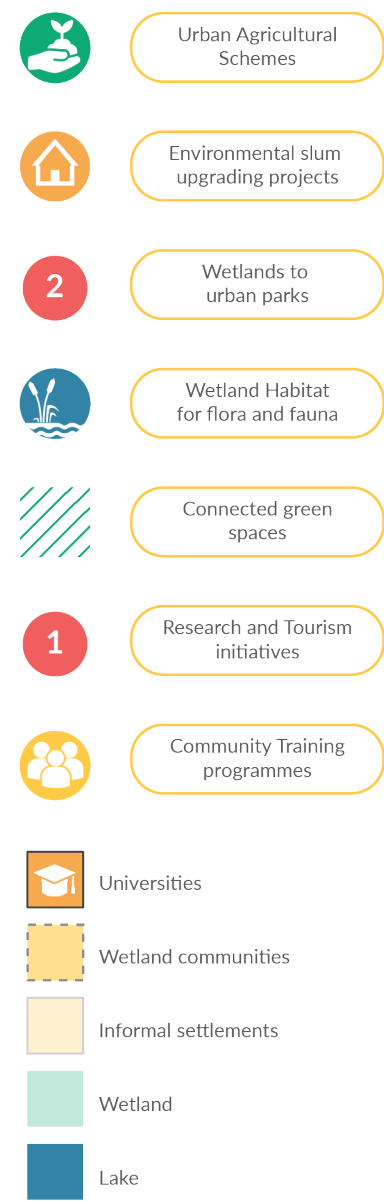


Image source; Author, 2022.

Informal practices

2. What informal practices on flood resilience in wetlands exist in informal settlements in Kampala?

Informal Practices

Kasanvu and Kitintale informal settlements



Image source; googleearth.com.

Answering the Questions

1. What **practices** can be **observed** from Kitintale and Kasanvu informal settlements?
2. At what **scales** do these practices occur?
3. Aside from the spatial, in what other **dimensions** do these practices exist?

Informal Practices



Informal practices on Flood resilience in Wetlands

Chanel street

Acces bridges over drains

Street drains

Community open grounds

Waste filters

Raised floor level

Image sources; Author, 2022.

Informal Practices



Informal practices on Flood resilience in Wetlands

Waste recycling

Brick making

Urban Agriculture

Centralised service point

Urban green space

Water harvesting

Image sources; Author, 2022.

Network of Public Spaces

Kasanvu Informal Settlement



Kitintale Informal Settlement



Image sources; Google earth (Re-adapted by Author, 2022).

Scales of informal practices

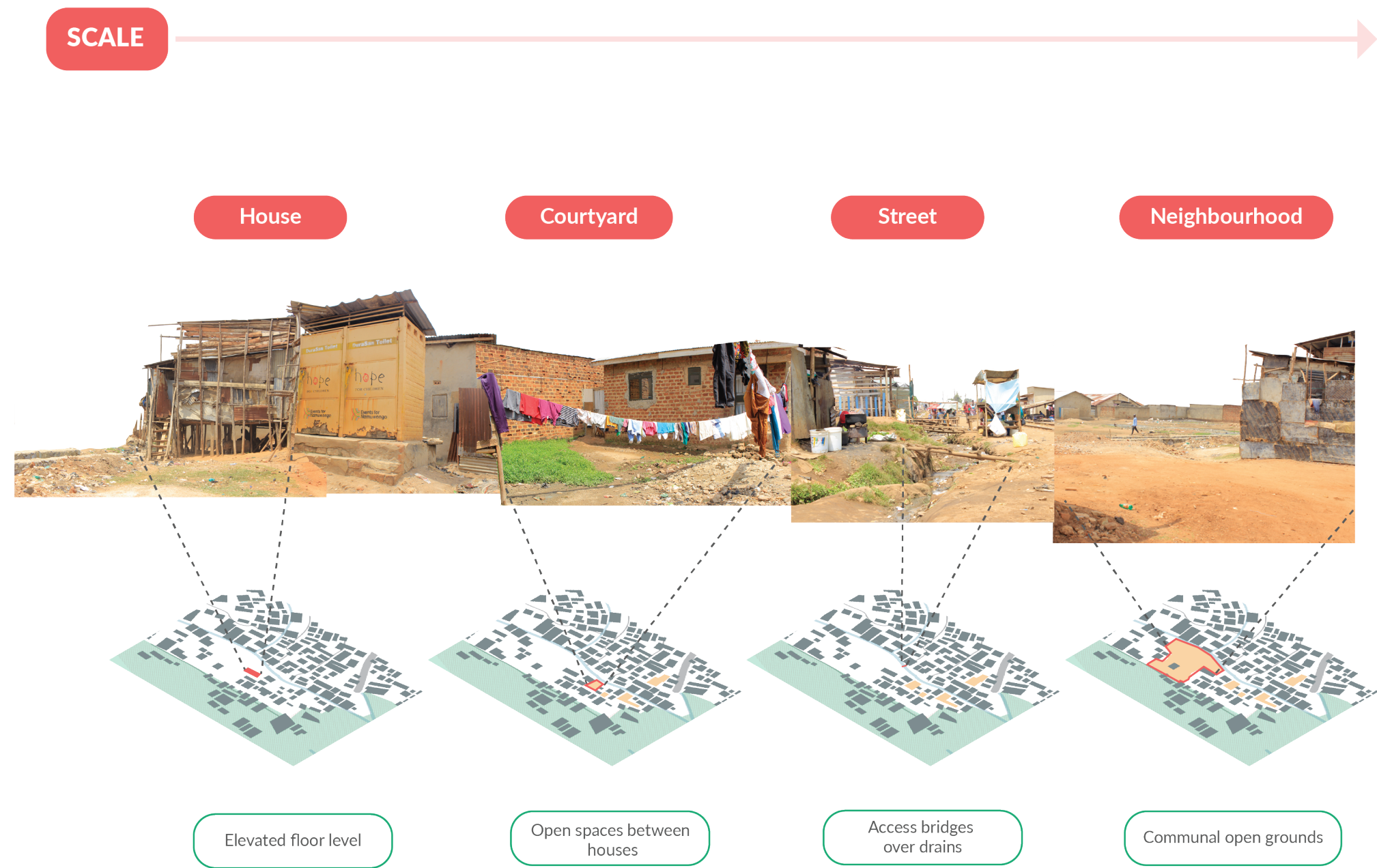


Image source; Author, 2022.

Dimensions of informal practices

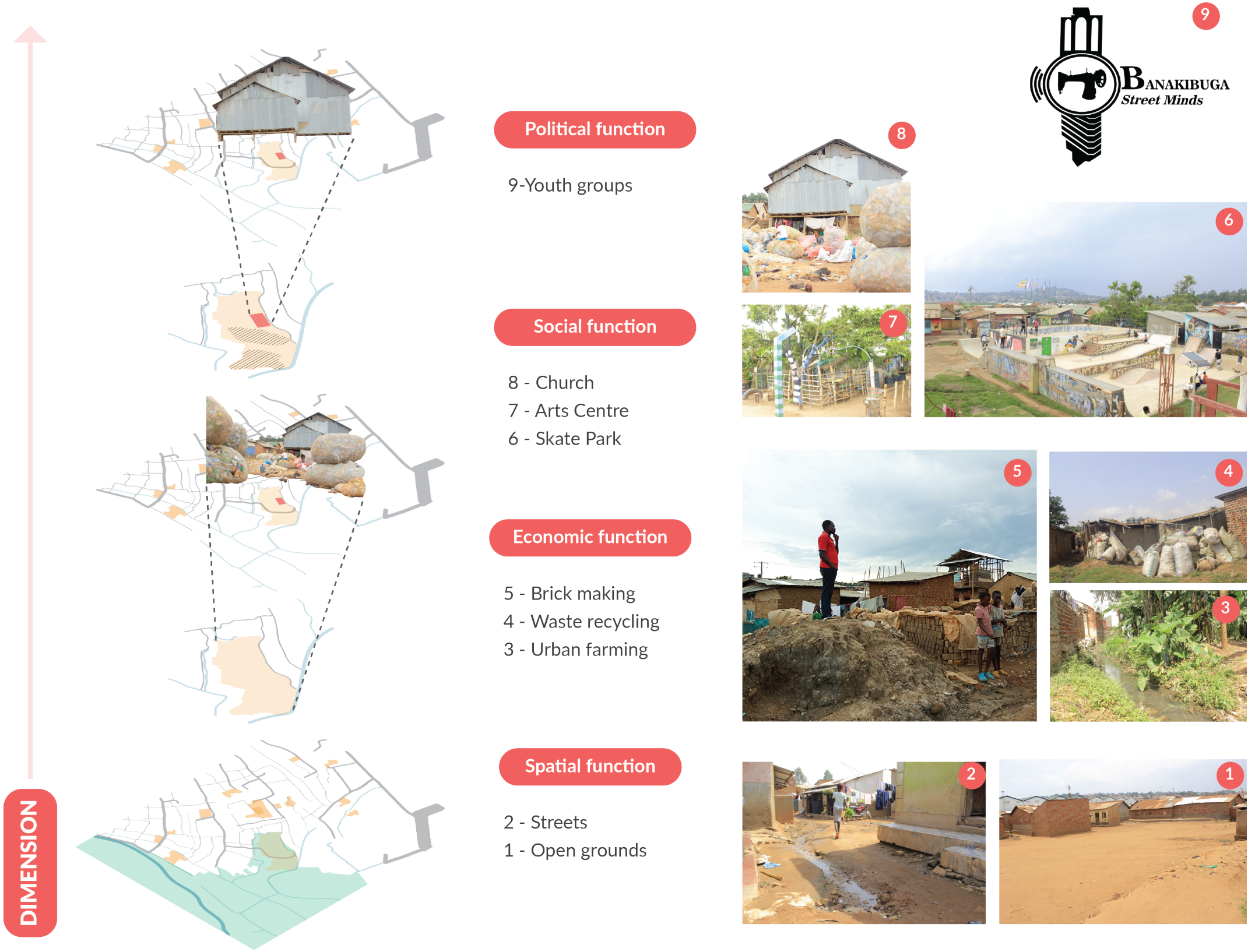


Image source; Author, 2022.

Framework of Informal practices

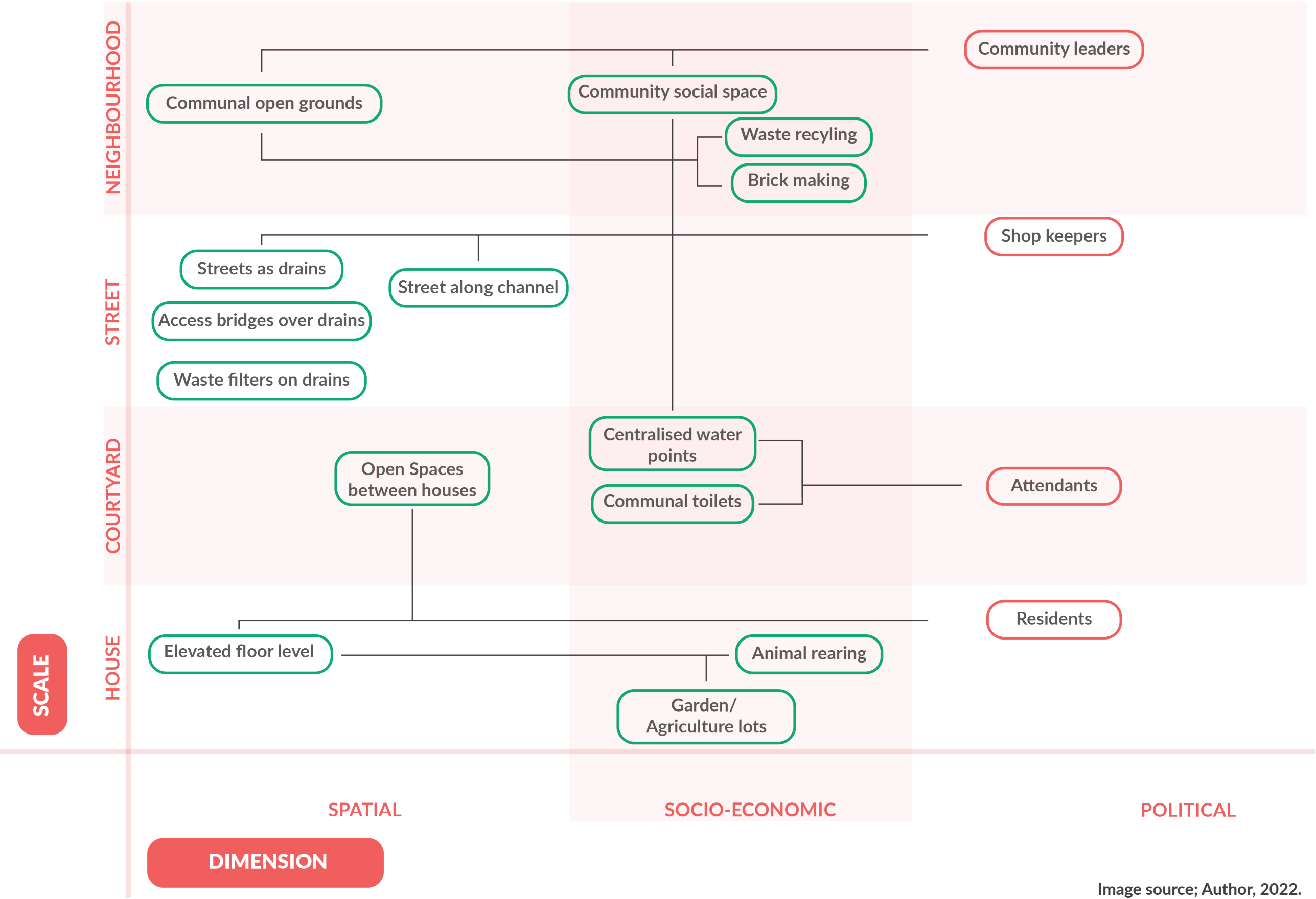


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Vision of informal practices

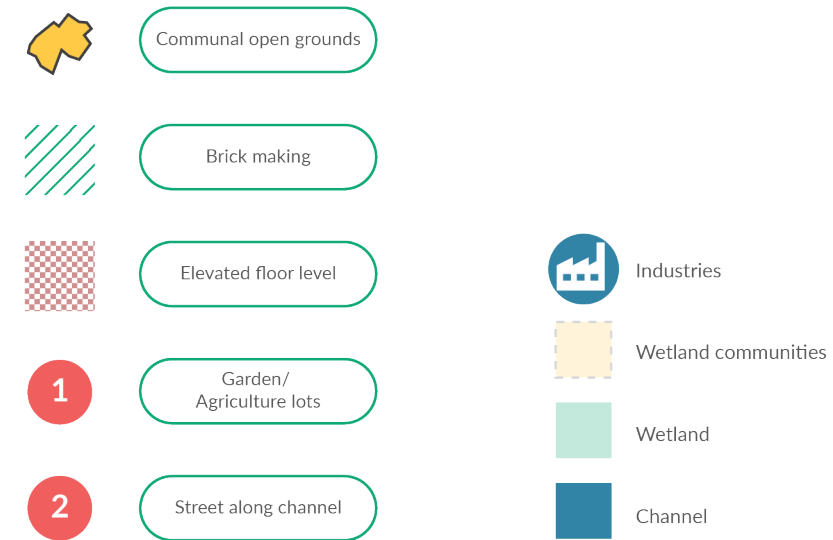


Image source; Author, 2022.

Combined

3. How can the informal practices be combined with the formal practices?

Combined Framework

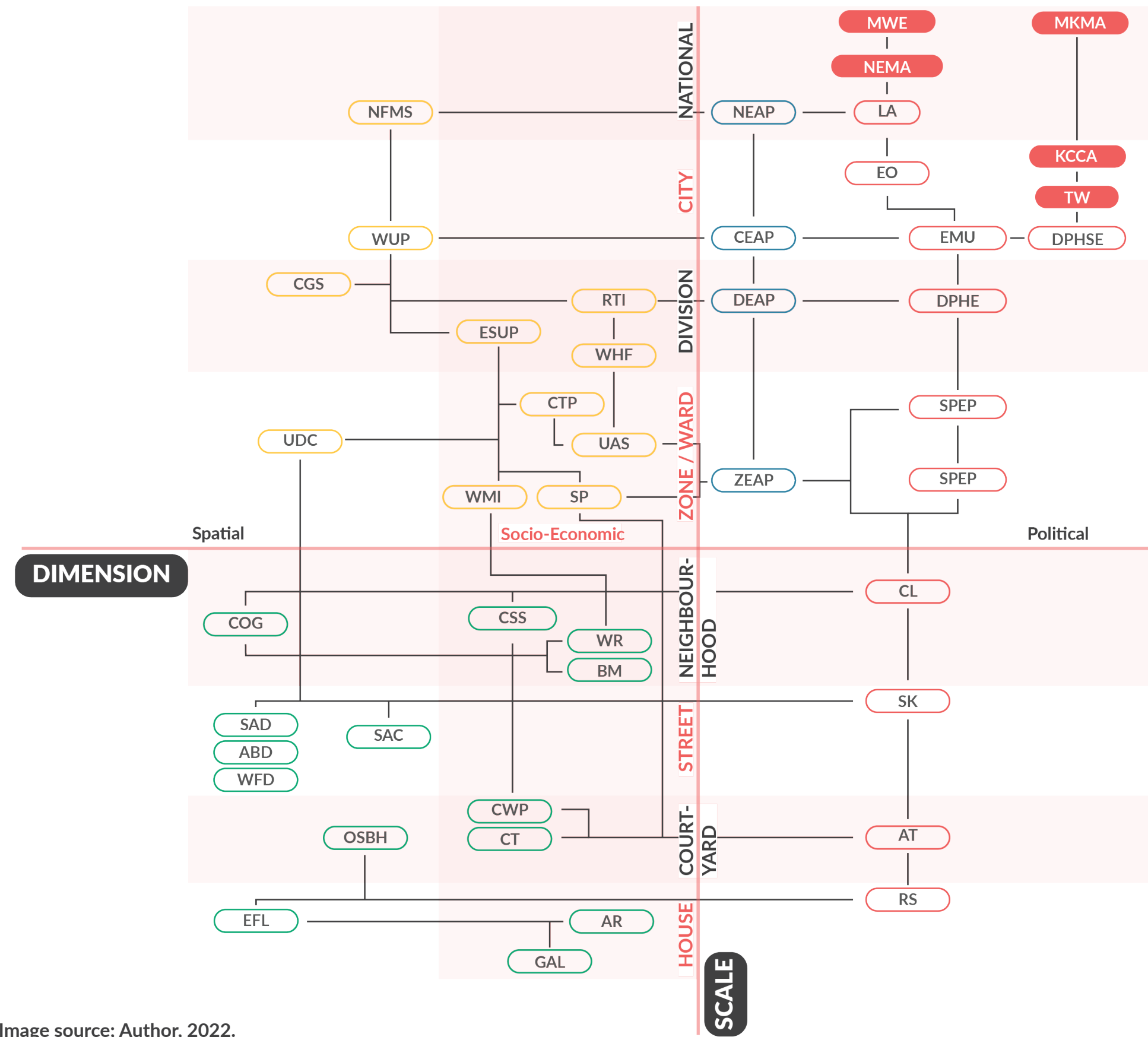


Image source; Author, 2022.

INSTITUTIONS

- MWE: Ministry of Water and Environment
- MKMA: Ministry of Kampala and Metropolitan affairs
- NEMA: National Environment Management Authority
- KCCA: Kampala Capital City Authority (KCCA)
- TW: Technical Wing
- DPHSE: Directorate of Public Health services and Environment
- LA: Lead Agency
- EO: Environment Officer
- EMU: Environmental Management Unit
- DPHE: Department of Public Health and Environment
- SPEP: Secretary for Production and Environmental Protection

LOCAL ACTORS

- CL: Community leaders
- SK: Shop keepers
- AT: Attendants
- RS: Residents

POLICIES

- NEAP: National environment action plan
- CEAP: City environment action plan
- DEAP: Division environment action plan
- ZEAP: Zone environment action plan

GOALS/ ACTIONS

- NFMS: Natural flood mitigation systems
- WUP: Wetlands to urban parks
- CGS: Connected green spaces
- ESUP: Environmental slum upgrading projects
- RTI: Research and Tourism initiatives
- WHF: Wetland Habitat for flora and fauna
- CTP: Community Training programmes
- UAS: Urban Agricultural Schemes
- UDC: Upgrade of drainage channels
- WMI: Waste management initiatives
- SP: Sanitation projects

INITIATIVES ON GROUND

- CSS: Community social space
- WR: Waste recycling
- BM: Brick making
- CWP: Centralised water points
- CT: Communal toilets
- COG: Communal open grounds
- SAD: Streets as drains
- ABD: Access bridges over drains
- WFD: Waste filters on drains
- SAC: Street along channel
- OSBH: Open Spaces between houses
- EFL: Elevated floor level
- AR: Animal rearing
- GAL: Garden/ Agriculture lots

Developing the Framework

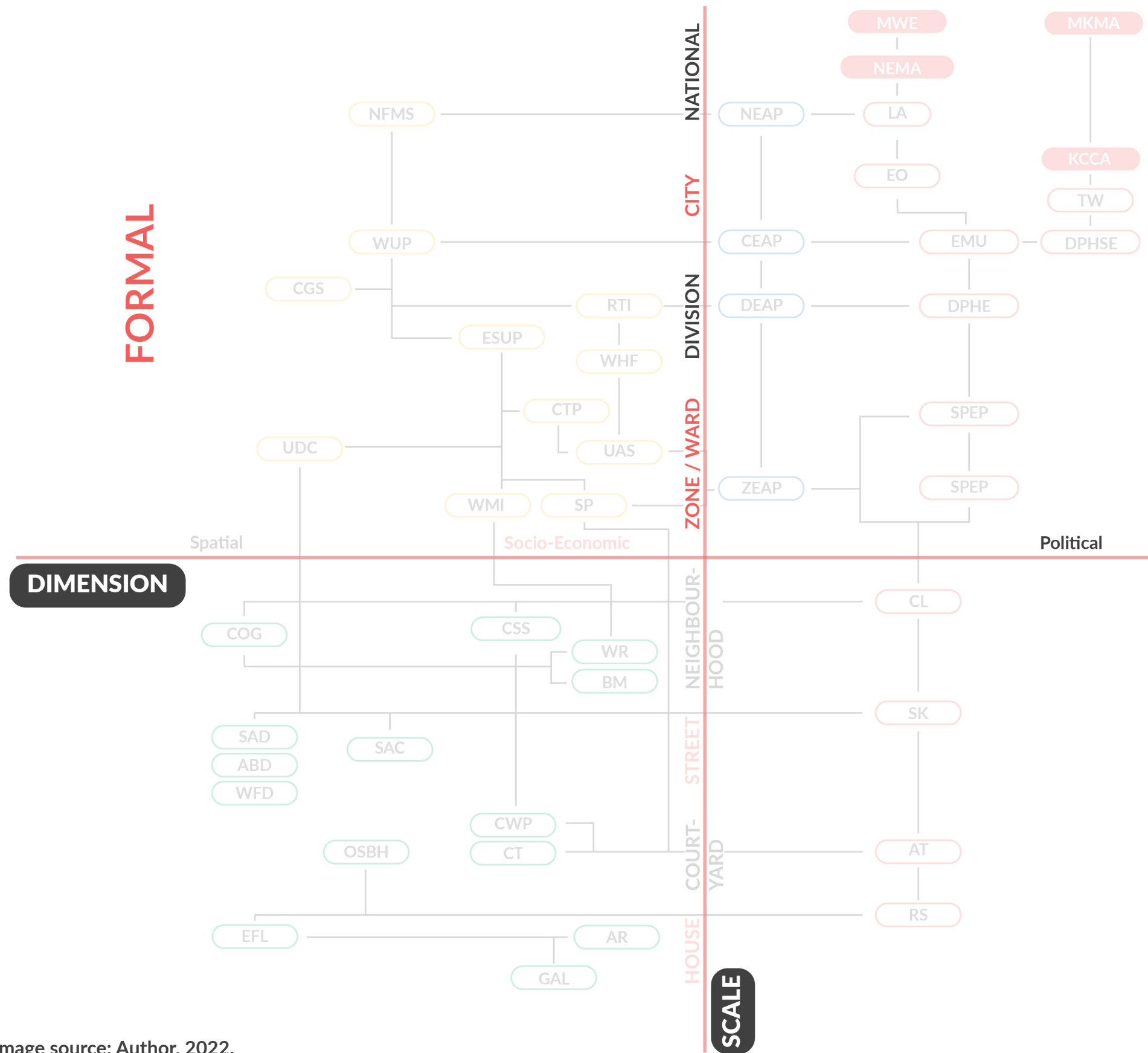


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Developing the Framework

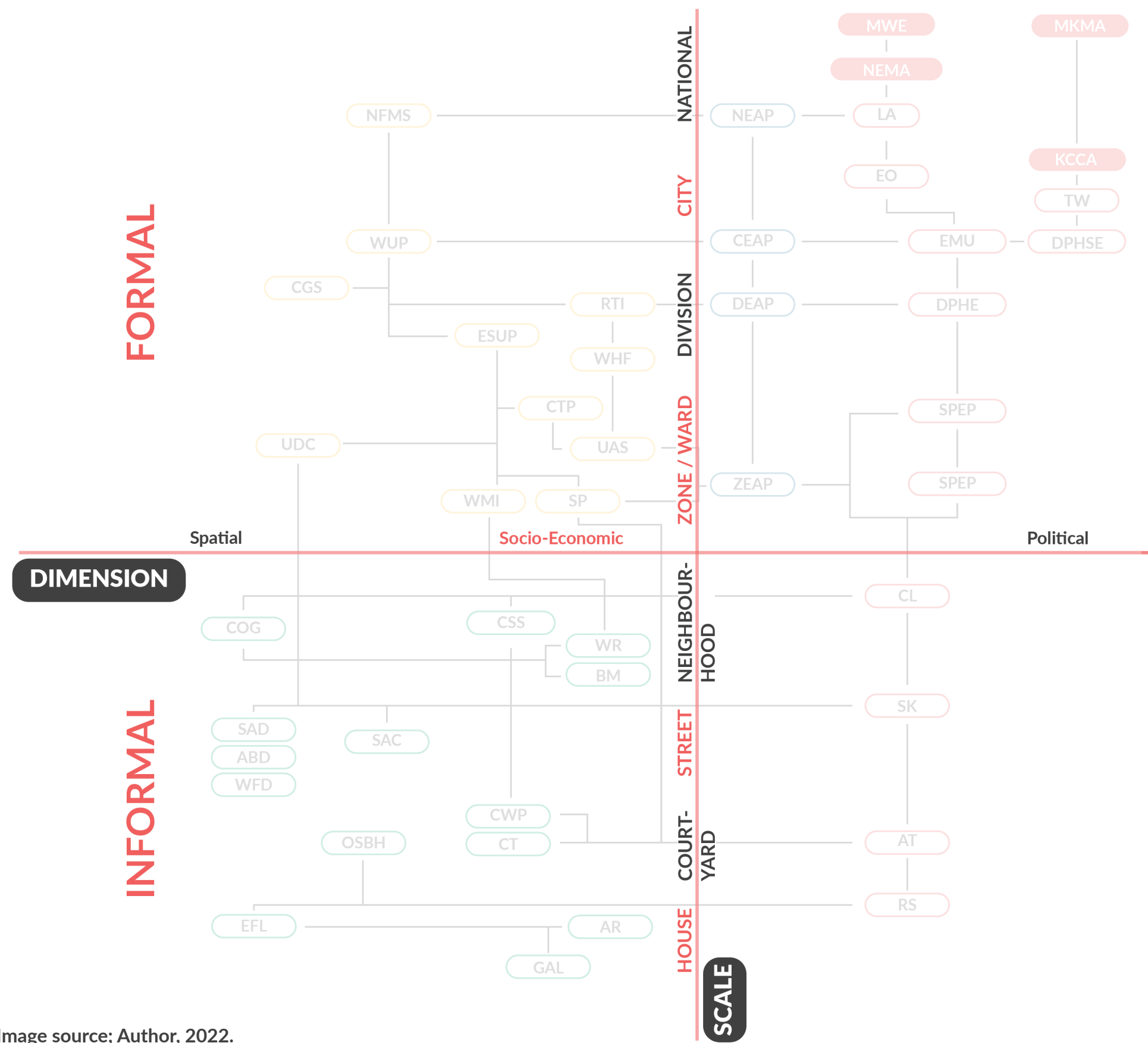


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Developing the Framework

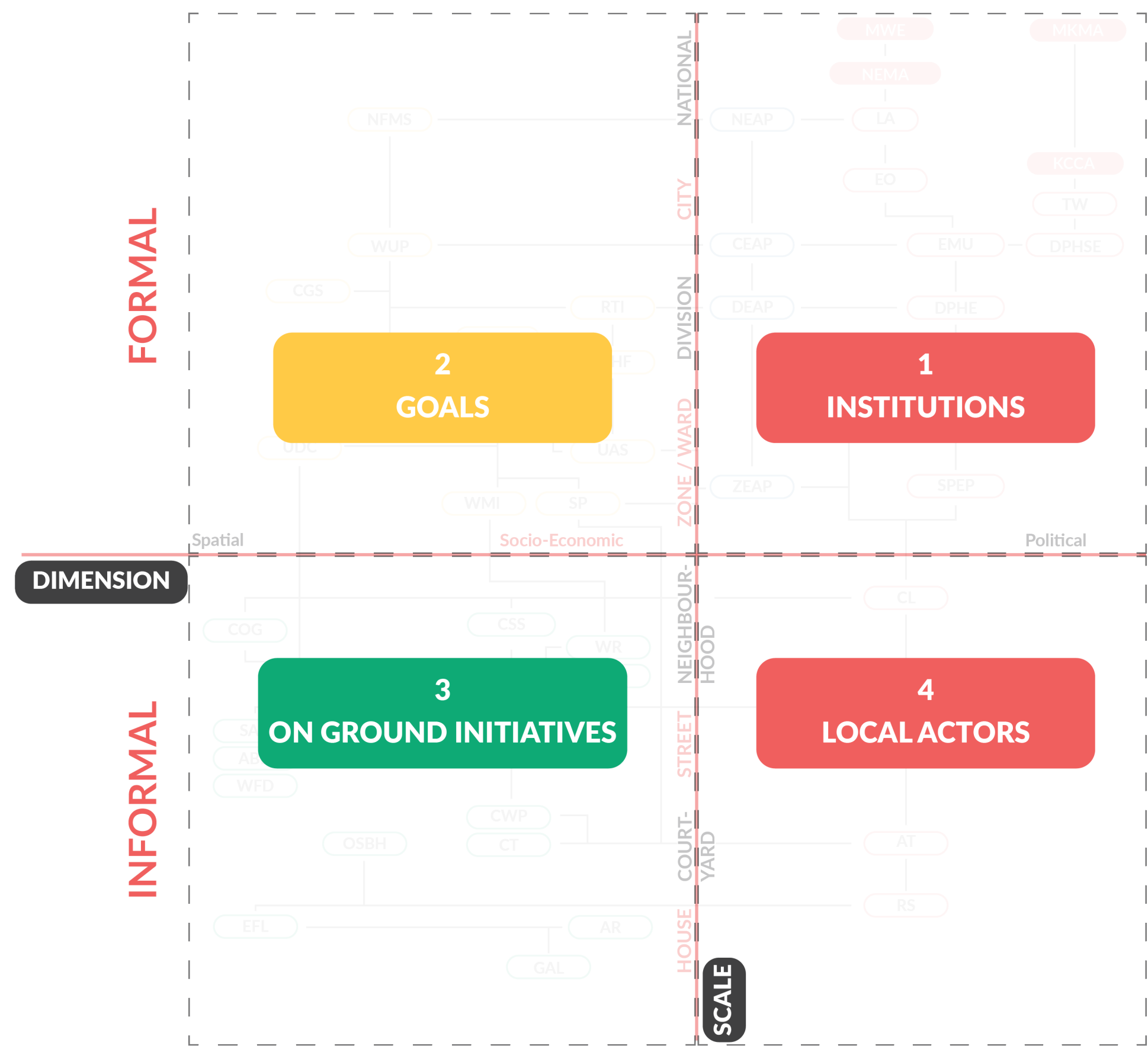


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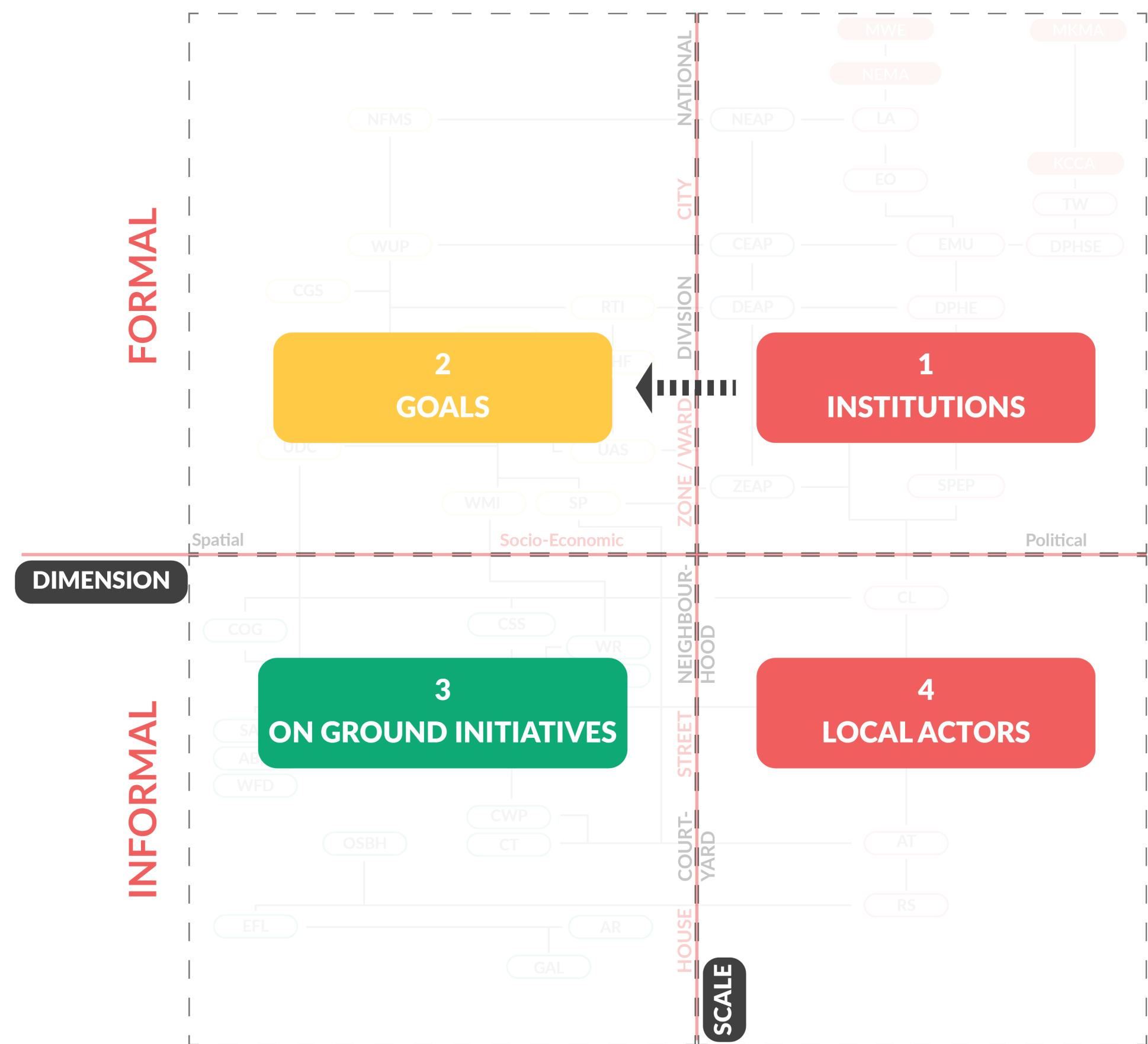


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Developing the Framework

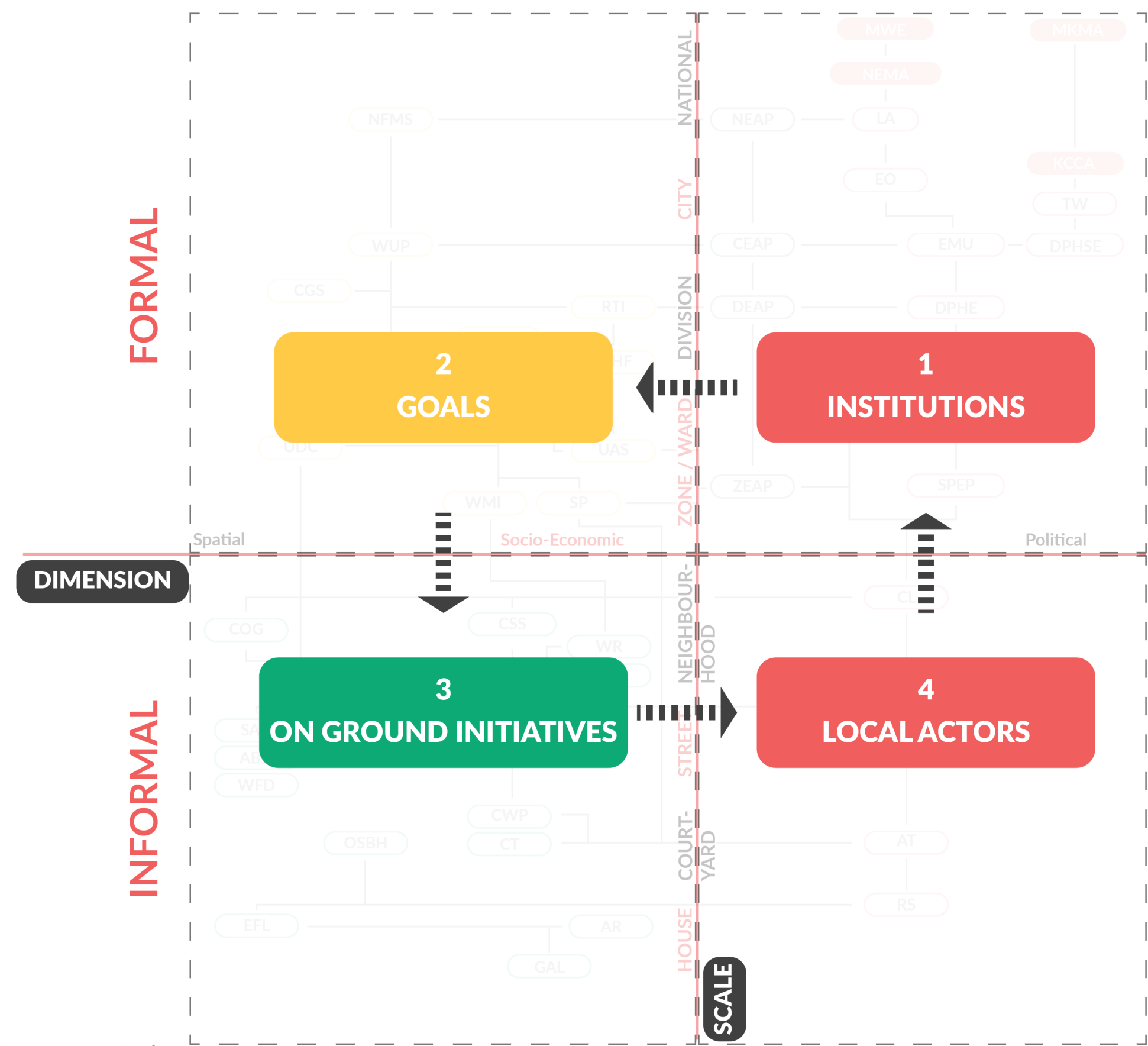


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Developing the Framework

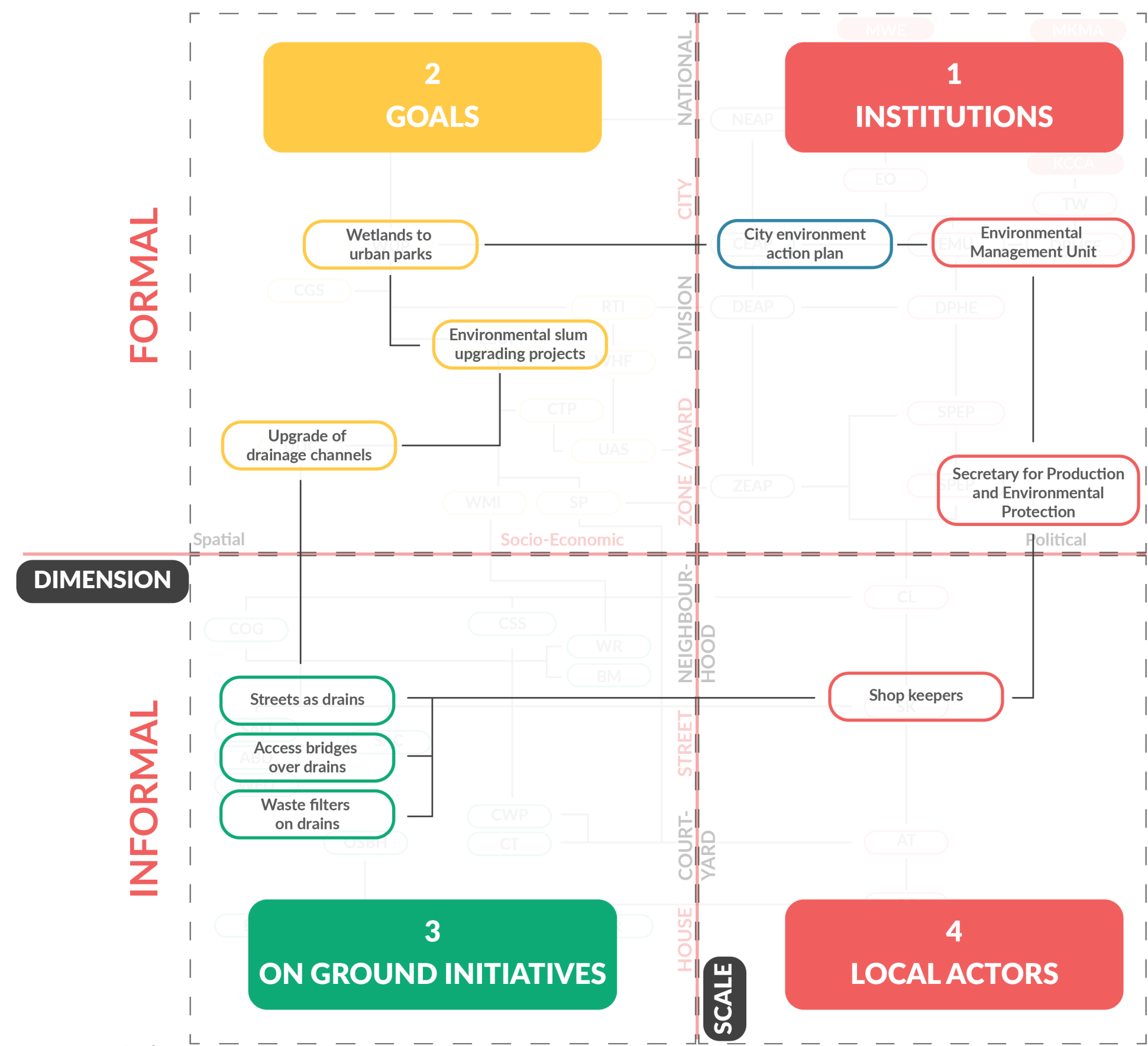
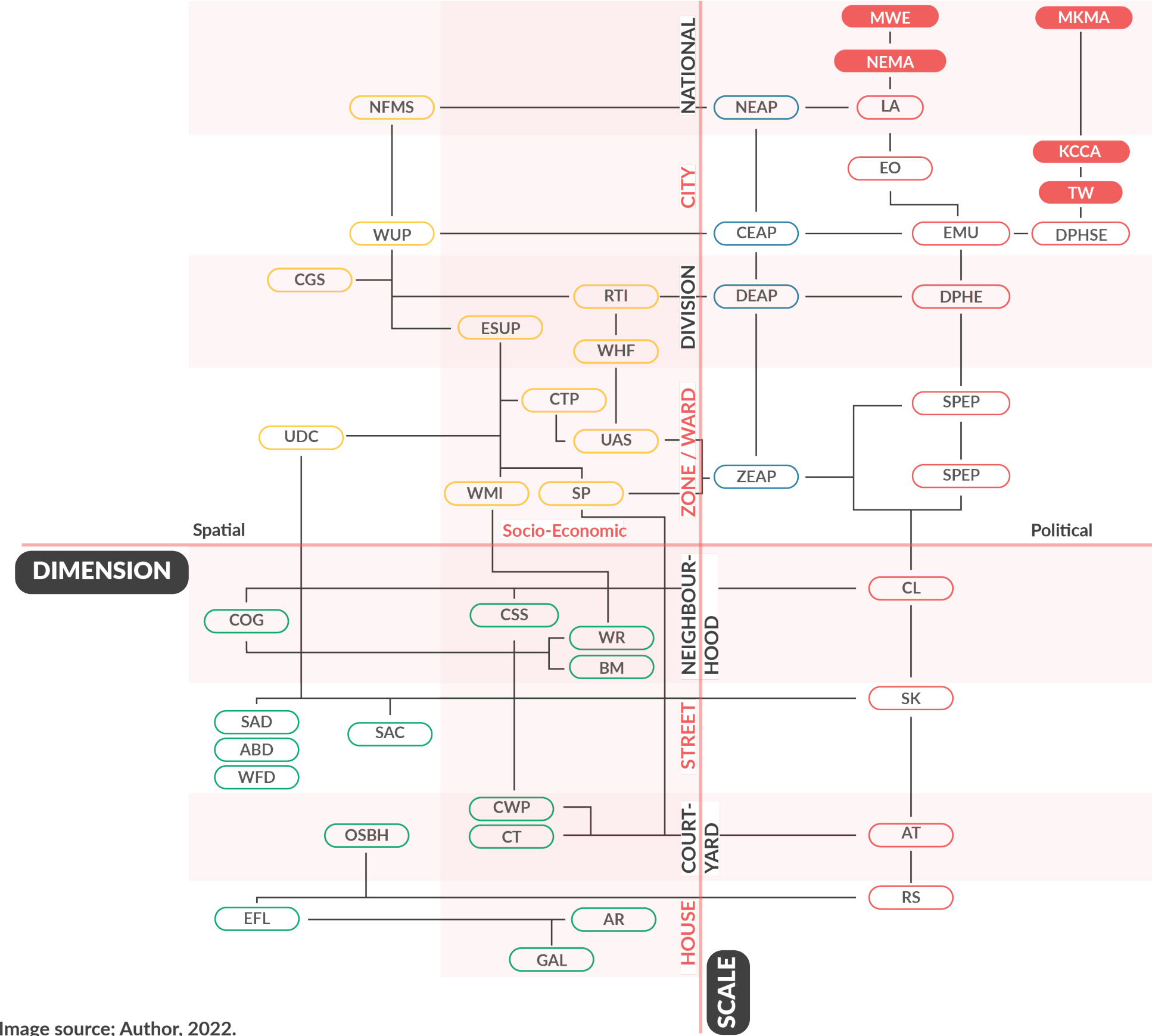


Image source; Author, 2022.

The Framework



INSTITUTIONS		POLICIES		INITIATIVES ON GROUND	
MWE	Ministry of Water and Environment	NEAP	National environment action plan	CSS	Community social space
MKMA	Ministry of Kampala and Metropolitan affairs	CEAP	City environment action plan	WR	Waste recyling
NEMA	National Environment Management Authority	DEAP	Division environment action plan	BM	Brick making
KCCA	Kampala Capital City Authority (KCCA)	ZEAP	Zone environment action plan	CWP	Centralised water points
TW	Technical Wing	GOALS/ ACTIONS		CT	Communal toilets
DPHSE	Directorate of Public Health services and Environment			COG	Communal open grounds
LA	Lead Agency	NFMS	Natural flood mitigation systems	SAD	Streets as drains
EO	Environment Officer	WUP	Wetlands to urban parks	ABD	Access bridges over drains
EMU	Environmental Management Unit	CGS	Connected green spaces	WFD	Waste filters on drains
DPHE	Department of Public Health and Environment	ESUP	Environmental slum upgrading projects	SAC	Street along channel
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LOCAL ACTORS		WHF	Wetland Habitat for flora and fauna	EFL	Elevated floor level
		CTP	Community Training programmes	AR	Animal rearing
CL	Community leaders	UAS	Urban Agricultural Schemes	GAL	
SK	Shop keepers	UDC	Upgrade of drainage channels		
AT	Attendants	WMI	Waste management initiatives		
RS	Residents	SP	Sanitation projects		

Image source; Author, 2022.



COMMUNICATE

Cover Image : <https://www.facebook.com/Africinno/photos>

Practices to Patterns

PATTERN

Street along the Chanel

A street along the channel demarcates the limits of the settlement and prevents further encroachment of the wetland



TITLE
Urban upgrading projects

1

CONCEPTS
Address socio-economic infrastructure such as health, sports, education and housing facilities to enhance awareness, improve their quality.

RELATION WITH OTHER PATTERNS

TITLE
Sanitized neighbourhood plans

2

CONCEPTS
Sanitized neighbourhood plans conceptualize the sanitization of urban development plans. The guide also addresses environmental and infrastructure development within the city.

RELATION WITH OTHER PATTERNS

TITLE
Connected green spaces

3

CONCEPTS
Creating a link between all green spaces within the city to ensure connectivity and provision of the public space.

RELATION WITH OTHER PATTERNS

TITLE
Walkways to urban parks

4

CONCEPTS
Turning the walkways which exist as the main open green space within the city into urban parks that function as the city's green spaces.

RELATION WITH OTHER PATTERNS

TITLE
Urban lake front system

5

CONCEPTS
Connecting the urban park system to the lake area from the urban lake front system to the lake area.

RELATION WITH OTHER PATTERNS

TITLE
Upgrades of drainage channels

6

CONCEPTS
Addressing, reconstruction and greening of the pathway and secondary drainage channels to improve the city's water retention and drainage capacity.

RELATION WITH OTHER PATTERNS

TITLE
Natural Flood Mitigation systems

13

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Disaster Management Plan

14

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Coordinated Community Initiatives

15

CONCEPTS
Community initiatives

RELATION WITH OTHER PATTERNS

TITLE
Participatory Planning platform

16

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Endowment Action Plan

17

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Local community conservation

18

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Gardens, agriculture lots

25

CONCEPTS
Addressing agriculture lots and traditional for wetlands and forests in the wetland and improvement of the wetland ecological function.

RELATION WITH OTHER PATTERNS

TITLE
Adapted Overhead Power Lines

26

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Street Drains

27

CONCEPTS

RELATION WITH OTHER PATTERNS

TITLE
Water Flows

28

CONCEPTS

RELATION WITH OTHER PATTERNS

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Access Bridges over drains

29

CONCEPTS

RELATION WITH OTHER PATTERNS

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RELATION WITH OTHER PATTERNS

70 The New(In)Formal

P5 Presentation

Workshop

Stage 1 - Prioritising patterns

Explaining the process



Image source; Author, 2022.

Workshop

Stage 1 - Prioritising patterns

Forming two teams



Image source; Author, 2022.

Workshop

Stage 1 - Prioritising patterns

Translating



Image source; Author, 2022.

Workshop

Stage 1 - Prioritising patterns

Voting



Image source; Author, 2022.

Workshop

Stage 1 - Prioritising patterns

Voting



Image source; Author, 2022.

Workshop

Stage 1 - Prioritising patterns



Image source; Author, 2022.

Workshop

Stage 2 - Identifying areas where patterns can be implemented

Building a shared vision



Image source; Author, 2022.

Workshop

Stage 2 - Identifying areas where patterns can be implemented

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Image source; Author, 2022.

Workshop

Stage 2 - Identifying areas where patterns can be implemented

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Workshop

Stage 2 - Identifying areas where patterns can be implemented

Building a shared vision

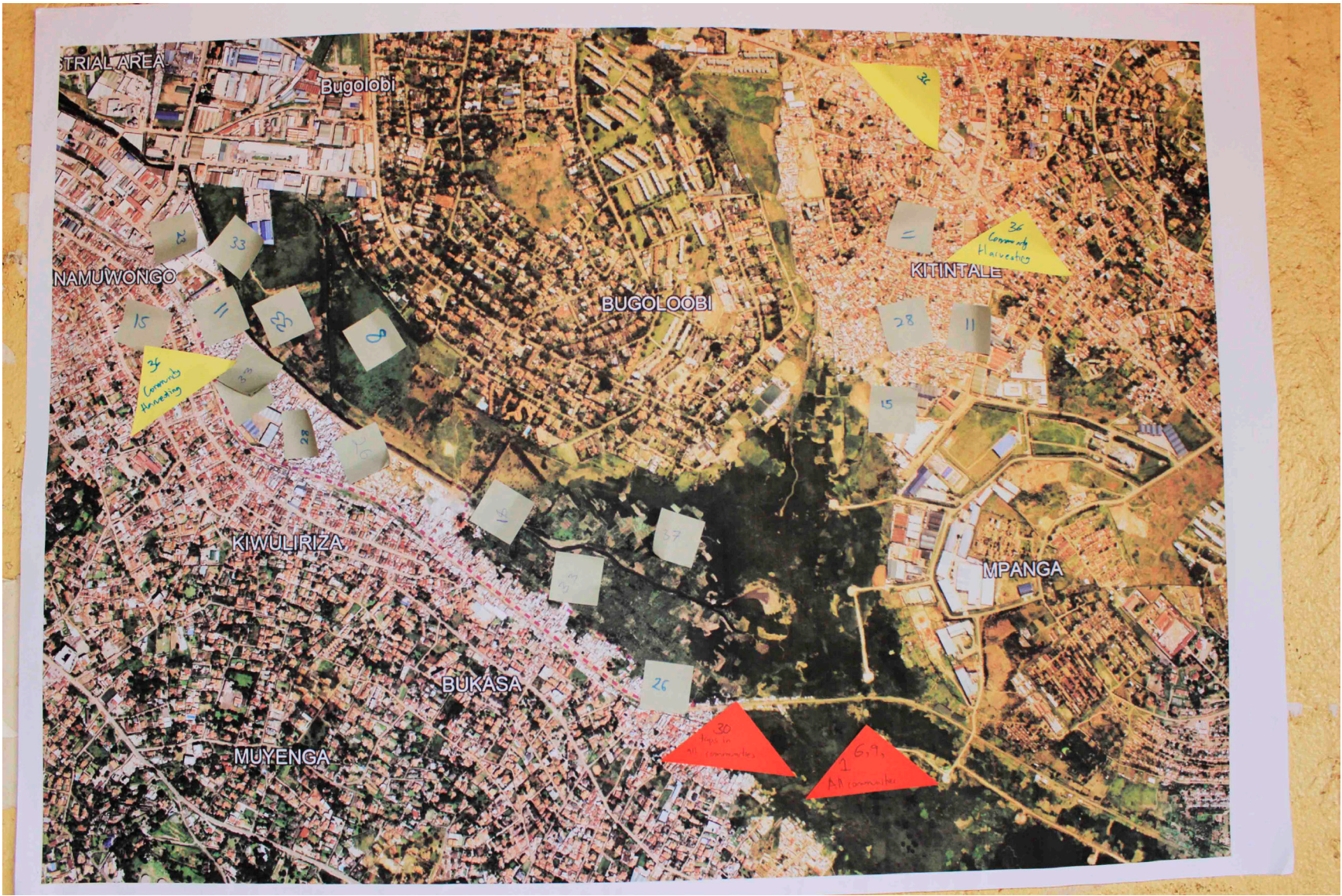


Image source; Author, 2022.

Workshop

Stage 3 - Reflection and Discussion

Feedback on Workshop and patterns

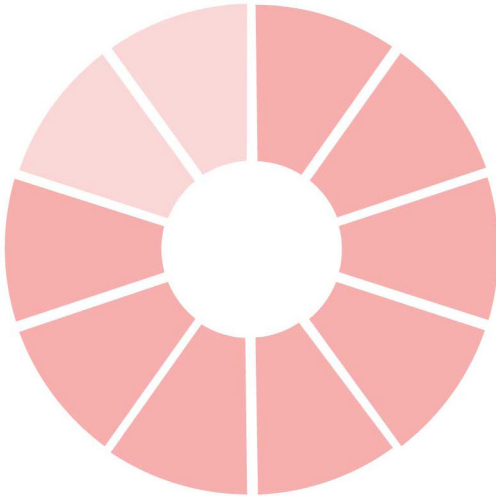


Image source; Author, 2022.

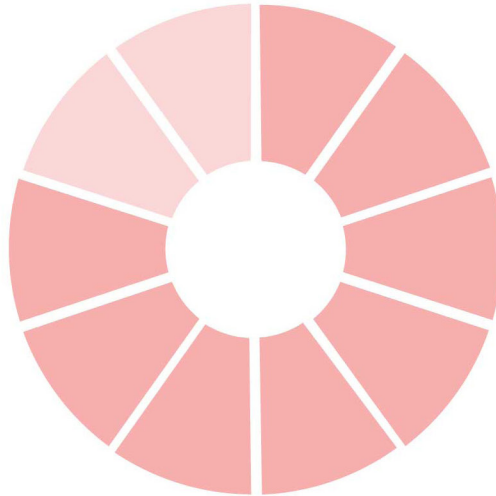
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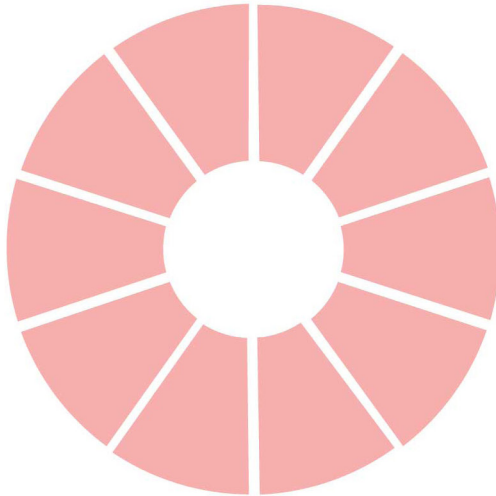
1. Were the workshop instructions clear and understandable?



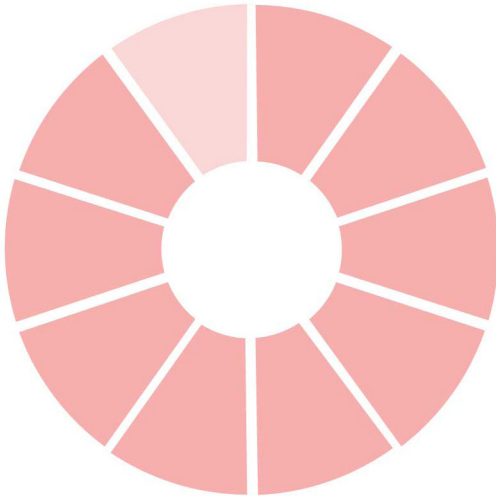
3. Did you understand the results /output of the workshop?



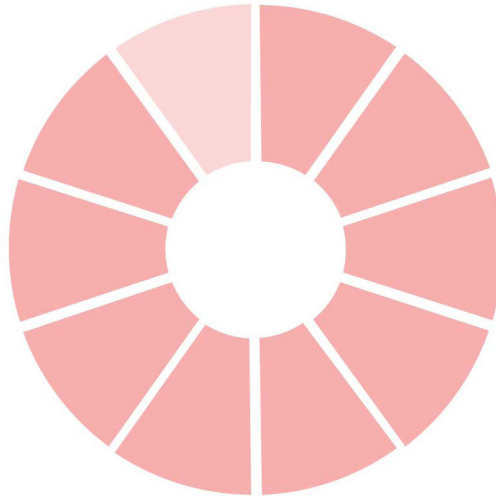
5. Did you enjoy the workshop?



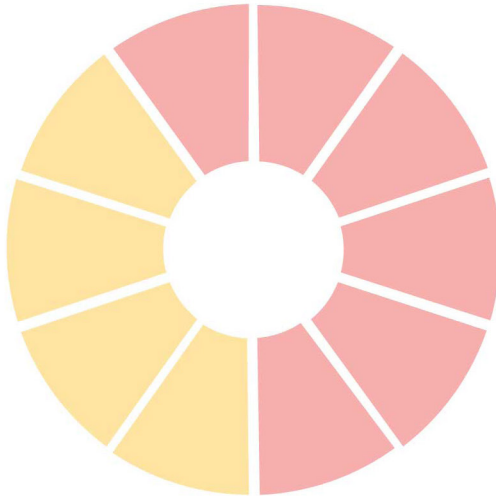
2. Were you able to follow all the sessions of the workshop?



4. Were you able to freely express yourself in the workshop?



2. Which was your favourite stage of the workshop?



Stage 1
Stage 2

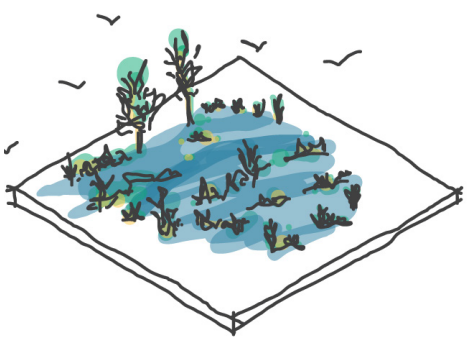
Workshop

Stage 3 - Reflection and Discussion

Feedback on Workshop and patterns

Points of improvement

- Clearer Imagery
- Abstract Images for formal patterns
- Simpler descriptions
- More representatives from the formal institutions
- Alternative language



Sketches



Icons



Images

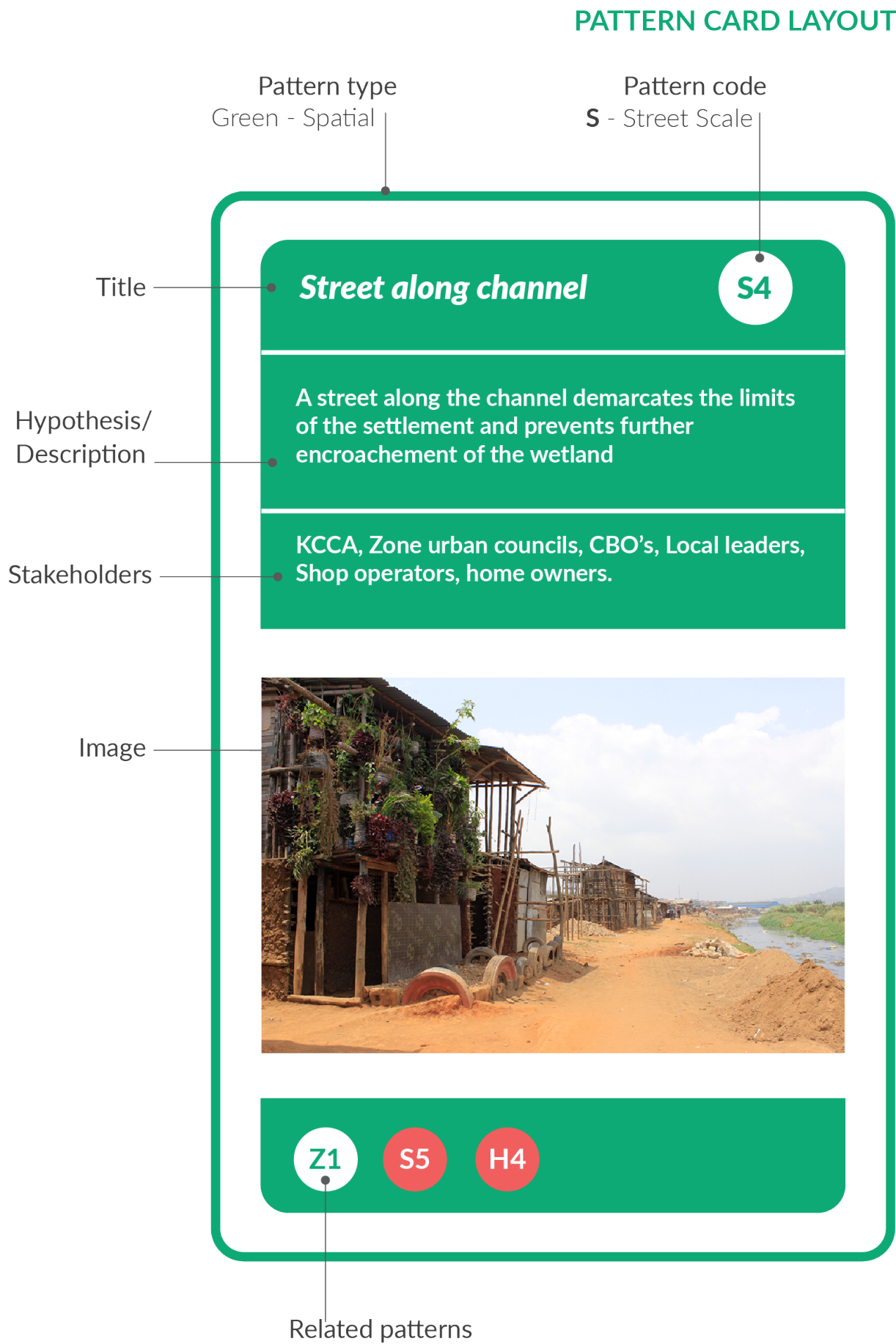


Image sources; Author, 2022.

The Pattern Language

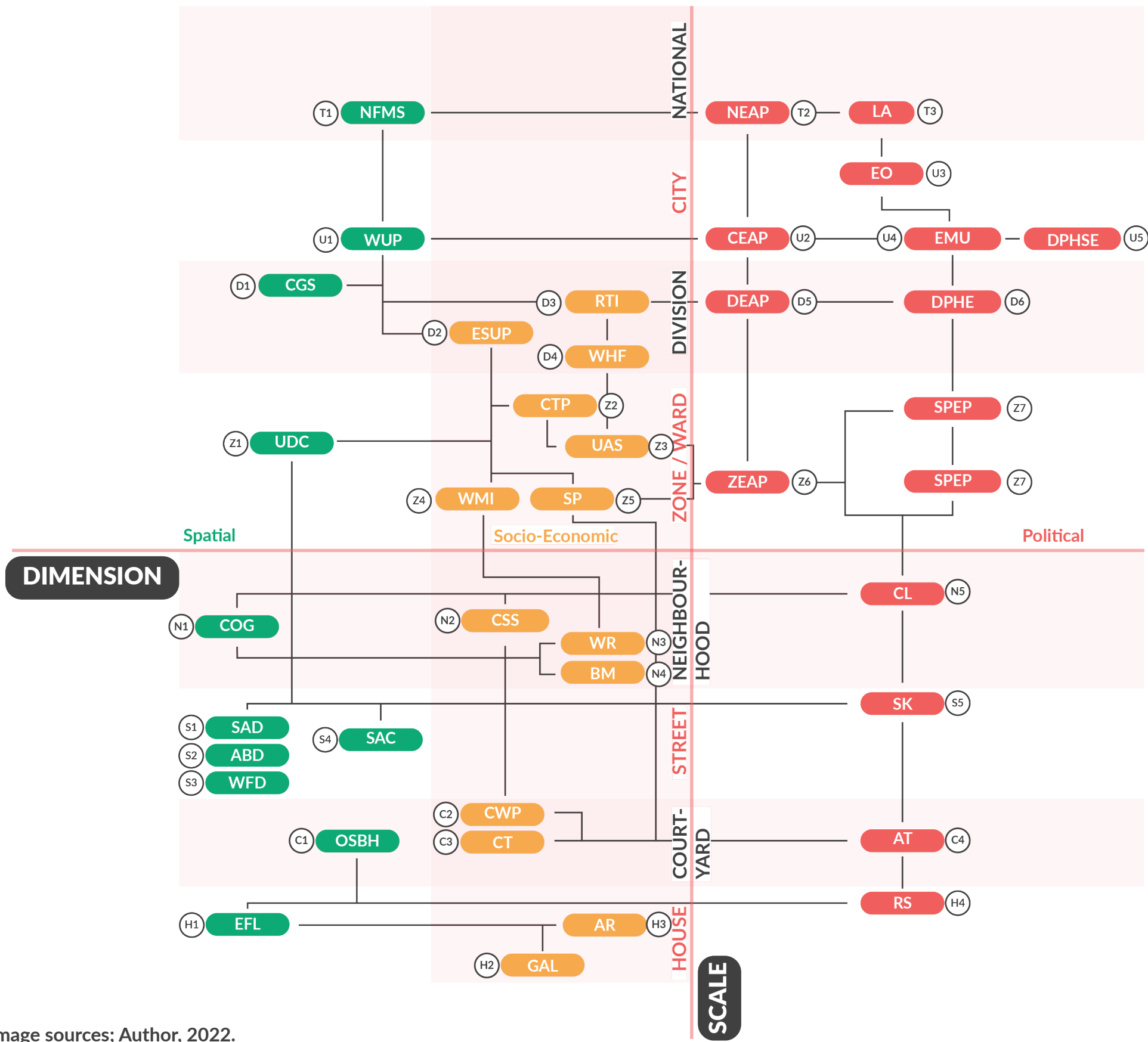


Image sources; Author, 2022.

POLITICAL PATTERNS

- NEAP** National environment action plan
- CEAP** City environment action plan
- DEAP** Division environment action plan
- ZEAP** Zone environment action plan
- DPHSE** Directorate of Public Health services and Environment
- LA** Lead Agency
- EO** Environment Officer
- EMU** Environmental Management Unit
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- SK** Shop keepers
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- RS** Residents

SOCIO-ECONOMIC PATTERNS

- CSS** Community social space
- WR** Waste recycling
- BM** Brick making
- ESUP** Environmental slum upgrading projects
- RTI** Research and Tourism initiatives
- WHF** Wetland Habitat for flora and fauna
- CTP** Community Training programmes
- UAS** Urban Agricultural Schemes
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- SP** Sanitation projects
- CWP** Centralised water points
- CT** Communal toilets
- AR** Animal rearing

SPATIAL PATTERNS

- NFMS** Natural flood mitigation systems
- WUP** Wetlands to urban parks
- CGS** Connected green spaces
- COG** Communal open grounds
- SAD** Streets as drains
- ABD** Access bridges over drains
- WFD** Waste filters on drains
- SAC** Street along channel
- OSBH** Open Spaces between houses
- EFL** Elevated floor level
- UDC** Upgrade of drainage channels

The Pattern Language

Spatial Patterns

Natural flood mitigation sytems

T1

Making use of the city's swamps and wetlands as natural drainage systems mitigates the urban flooding risk casued by climate change.

National Environment Management Authority (NEMA) , Kampala City Council Authority (KCCA)



T2

T3

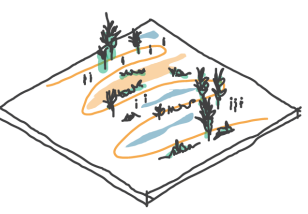
U3

Wetlands to Urban Parks

U1

Turning wetlands into a green system of urban parks provides more green spaces within the city and prevents further wetland encroachment.

Kampala City Council Authority (KCCA), NEMA, Privat sector (park proprietors)



U2

U4

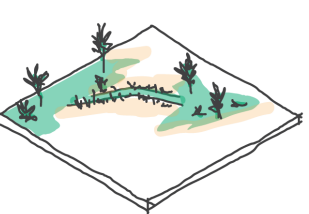
U5

Connected green spaces

D1

Creating a chain of green spaces increases the available public space and ensures continuity of ecosystems across the urban landscape.

KCCA, Division Urban council, Private sector (park proprietors)



D2

D3

D5

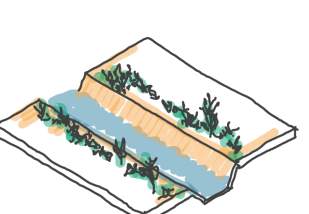
D6

Upgrade of drainage channels

Z1

Widening and greening of the primary and secondary drainage channels greatly improves the city's water retention and drainage capacity

KCCA, Private sector (property owners), UNRA



D2

S1

S2

S3


S4

Communal open grounds

N1

Open grounds improve the drainage capabilities of the area by acting as water squares that retain water during periods of heavy rainfall.

Zone Urban councils, Local leaders, social groups, CBO's.



N2

N3

N4


N5

Streets as drains

S1

Streets can double as drains when they are filled with stones which allow for easy drainage especially when it rains.

Zone Urban councils, CBO's, Local propretitors, home owners,



Z1


S5

Access bridges over drains

S2

Bridges placed over large drains allow for accessibility within the settlement and improve the safety levels of residents mobility.

KCCA, Zone urban councils, Local leaders, Shop operators, buisness owners, home owners.



Z1


S5

Waste filters on drains

S3

Filting drains with a mesh/sieve avoids accumulation of waste in the channel and blockage of drains further down the settlement

KCCA, Zone urban councils, Local leaders, Shop operators, buisness owners, home owners.



Z1

S5


H4

Street along channel

S4

A street along the channel demarcates the limits of the settlement and prevents further encroachment of the wetland

KCCA, Zone urban councils, CBO's, Local leaders, Shop operators, home owners.



Z1

S5


H4

Open Spaces between houses

C1

Open spaces of varying sizes and forms, left between the houses, allow for accessibility, drainage and social functions.

Community leaders, Shop operators, home owners.



H1


H4

Elevated floor level

H1

Raising the floor level of the houses mitigates the flooding effects on the livelihood of the residents.

Community leaders, social groups, home owners.



C1

H2

H3

H4

The Pattern Language

Socio-economic patterns

Research and tourism InitiativesD3

A wetland designated as protected because of its biological diversity and ecological importance, can host research and eco - tourism activities.

KCCA, Division Urban council, NEMA, Universities and Research Institutions




D5D6U1

Environmental slum upgrading projectsD2

Creation of land banks and encouraging incremental housing projects improves on the livelihood of slum residents and the environment.

KCCA, Division Urban councils, MLHUD, NGO's, home owners.



Z2Z3Z4Z5

Wetland habitat for flora and faunaD4

Take measures to protect wetlands with national and local importance as ecological systems and habitat for flora and fauna species.

KCCA, NEMA, Universities and Research Institutions




Z3D3

Community training programmesZ2

Provide training programmes on wetland conservation and ensure collaboration between community environment initiatives.

KCCA, Division Urban councils, Universities and Research institutions, NGO's, Community Leaders.




Z2Z3

Waste recyclingN3

Due to the high volume of waste accumulation, residents engage in waste sorting and recycling activities to make a living.

Zone Urban councils, CBO's, NGO's, Private sector (companies), Community Leaders, Home owners.




N1Z4

Brick makingN4

The constant presence of water and clay soils in the wetland areas facilitates brick making to supply the construction activities within the area.

CBO's, Community Leaders, Local proprietors, Local leaders, social groups.




N1

Centralised water pointsC2

Centralising shared water sources such as boreholes and metered water (NWSG) ensures accessibility of clean water to all residents.

KCCA, Division Urban councils, Zone Urban councils, NGO's, Community Leaders, Shop operators.




N2C3C4

Communal toiletsC3

Sanitary facilities such as showers and toilets are shared within the settlements and are also used to collect rainwater.

KCCA, Division Urban councils, Zone Urban councils, NGO's, Community Leaders, social groups.




C2C4

Urban Agricultural SchemesZ3

Urban Agricultural schemes that encourage utilisation of wetland resources in a sustainable manner, and also provide a source of income.

Zone Urban councils, Universities and Research institutions, NGO's, Community Leaders, Home owners.

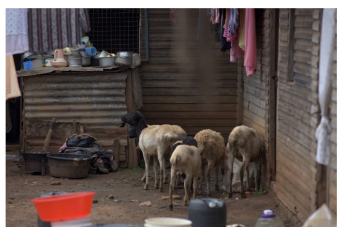


Z2Z6

Animal rearingH3

Residents engage in animal rearing as a source of income, using the spaces under their houses (elevated homes) or the courtyards.

Residents, Local leaders, social groups.




H1C2H4

Community social spaceN2

Shared social spaces improve community resilience and overall livability of informal settlements.

Zone Urban councils, CBO's, NGO's, Community Leaders.




N1N5C2C3

Garden/Agriculture lotsH2

The presence of water and fertile soils facilitates urban farming within the wetland area where residents cultivate crops for sale and consumption

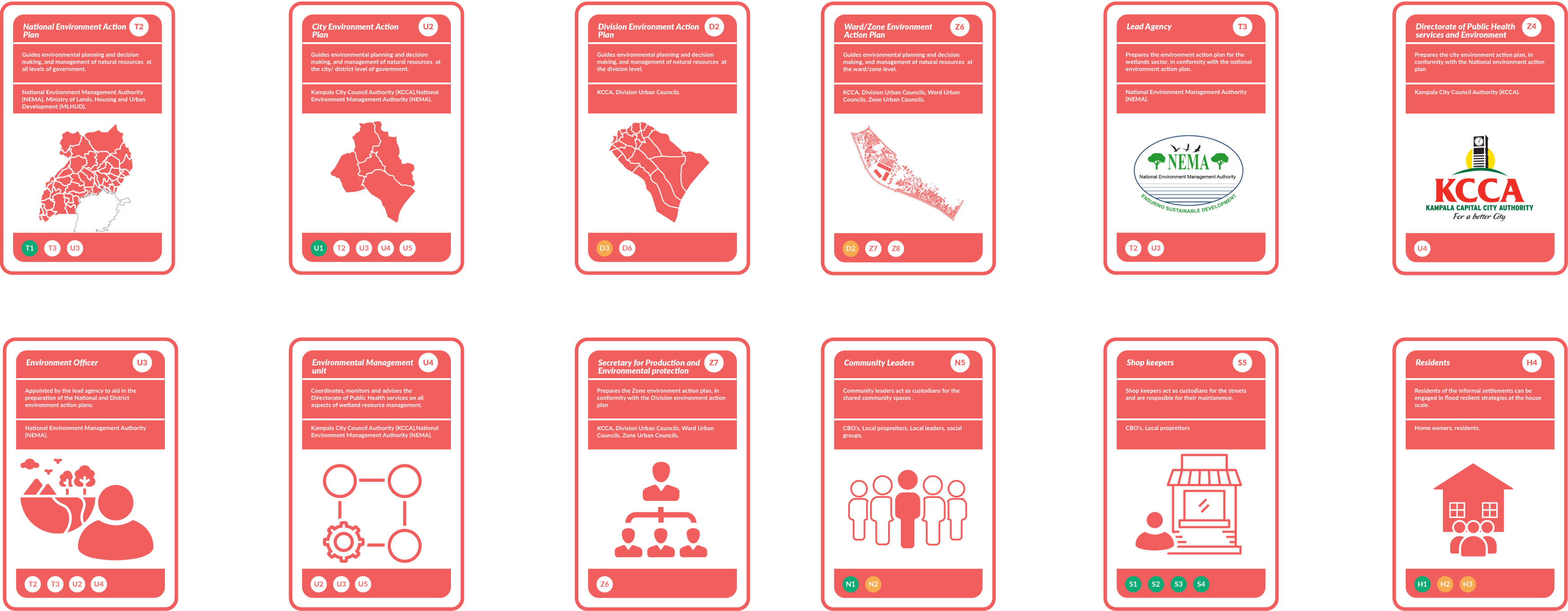
Residents, Local leaders, social groups.



H1C2H4

The Pattern Language

Political Patterns

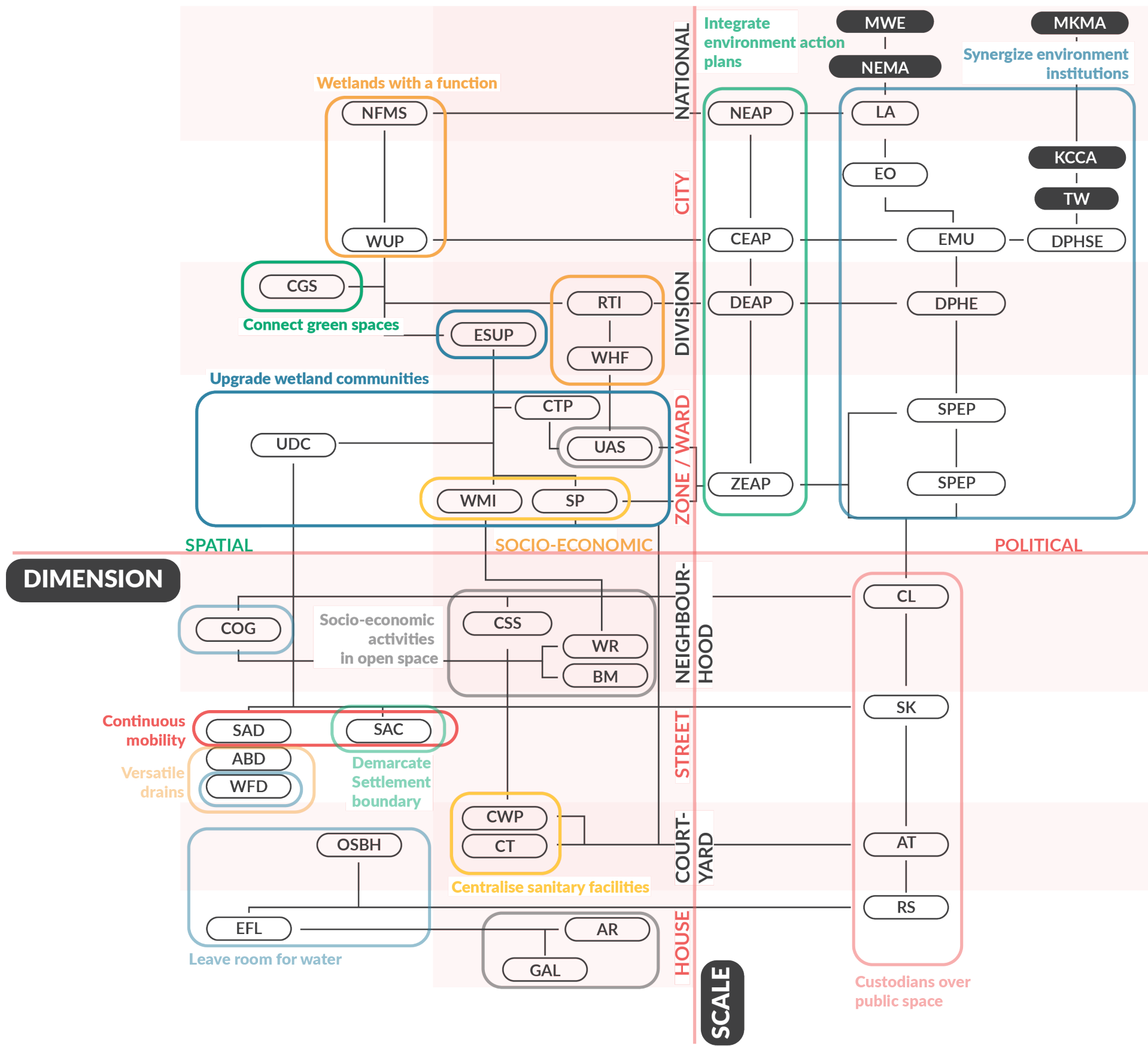




TRANSLATE

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Guiding principles



POLITICAL

Synergize Environment Institutions

- LA: Lead Agency
- EO: Environment Officer
- EMU: Environmental Management Unit
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- NEAP: National environment action plan
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Custodians over public space

- CL: Community leaders
- SK: Shop keepers
- AT: Attendants
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SOCIO-ECONOMIC

Upgrade Wetland Communities

- ESUP: Environmental slum upgrading projects
- CTP: Community Training programmes
- UAS: Urban Agricultural Schemes
- WMI: Waste management initiatives
- SP: Sanitation projects
- UDC: Upgrade of drainage channels

Socio-economic activities in open space

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- WR: Waste recycling
- BM: Brick making
- GAL: Garden/Agriculture lots
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Centralise Sanitary facilities

- CWP: Centralised water points
- CT: Communal toilets

SPATIAL

Wetlands with a function

- NFMS: Natural flood mitigation systems
- WUP: Wetlands to urban parks
- RTI: Research and Tourism initiatives
- WHF: Wetland Habitat for flora and fauna

Leave room for water

- COG: Communal open grounds
- OSBH: Open Spaces between houses
- EFL: Elevated floor level
- WFD: Waste filters on drains

Continuous mobility

- SAD: Streets as drains

Connect green spaces

- CGS: Connected green spaces

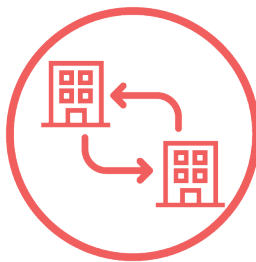
Demarcate settlement boundary

- SAC: Street along channel

Versatile drains

- ABD: Access bridges over drains

Guiding principles



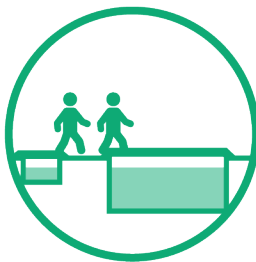
Synergize environment institutions



Upgrade wetland communities



Wetlands with a function



Continuous mobility



Integrate environment action plans



Social economic activities in open space



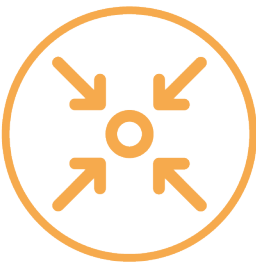
Leave room for water



Connect green spaces



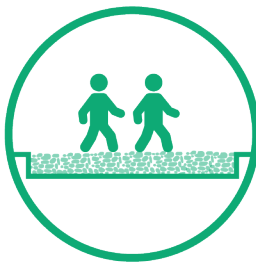
Custodians over public space



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Demarcate settlement boundary



Versatile drains

Using the principles

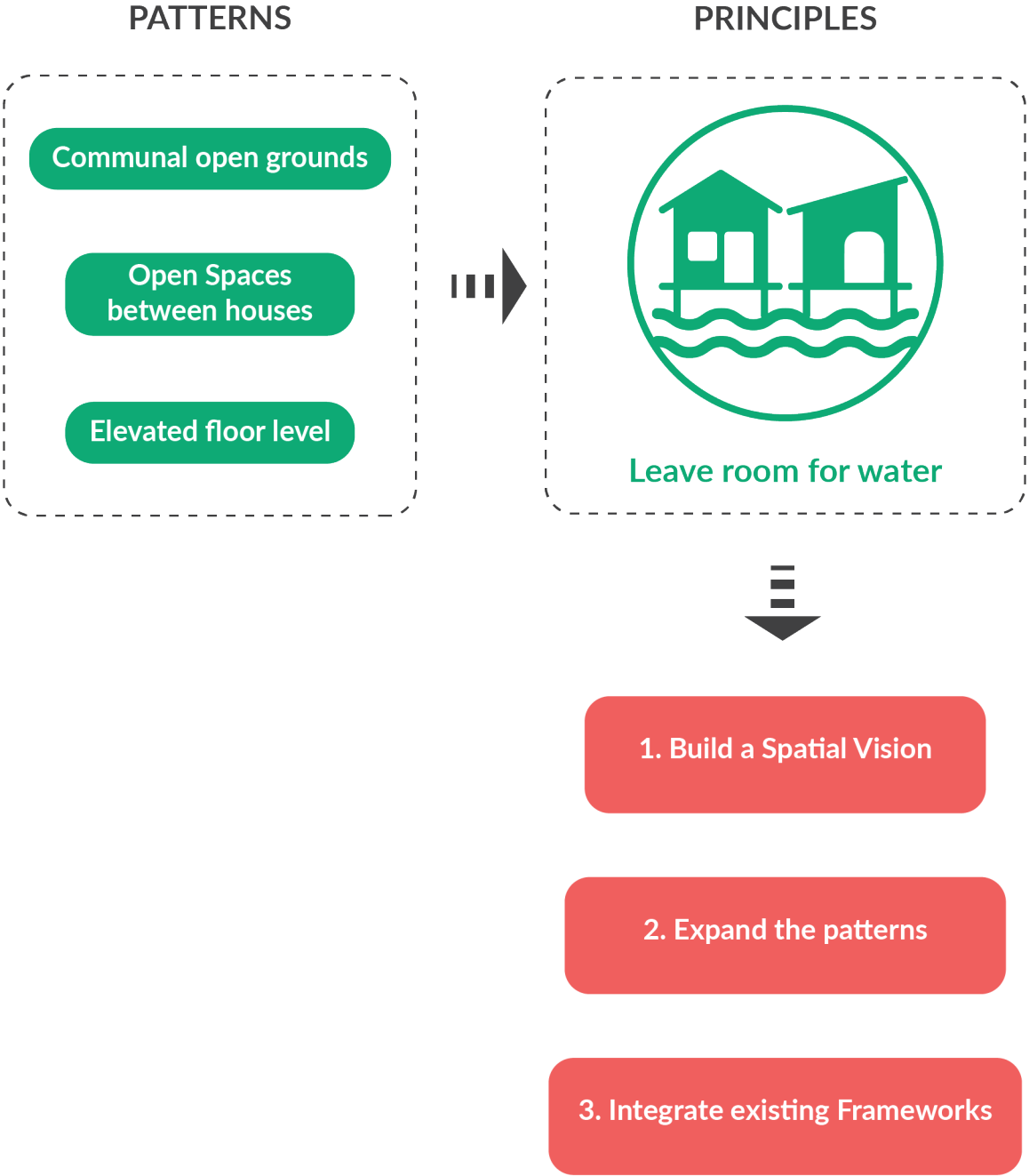


Image source; Author, 2022.

Spatial Vision for Nakivubo Wetland

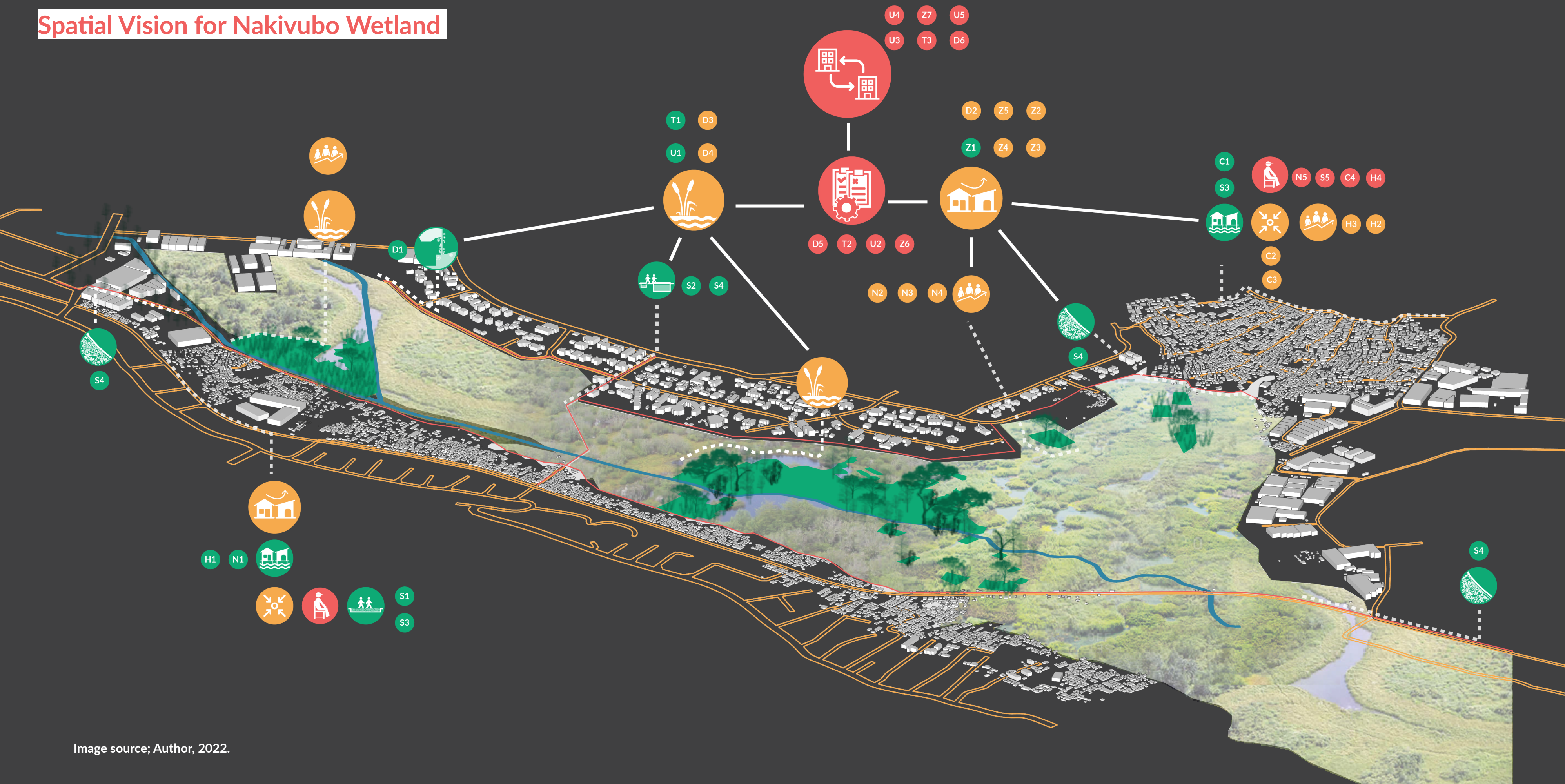
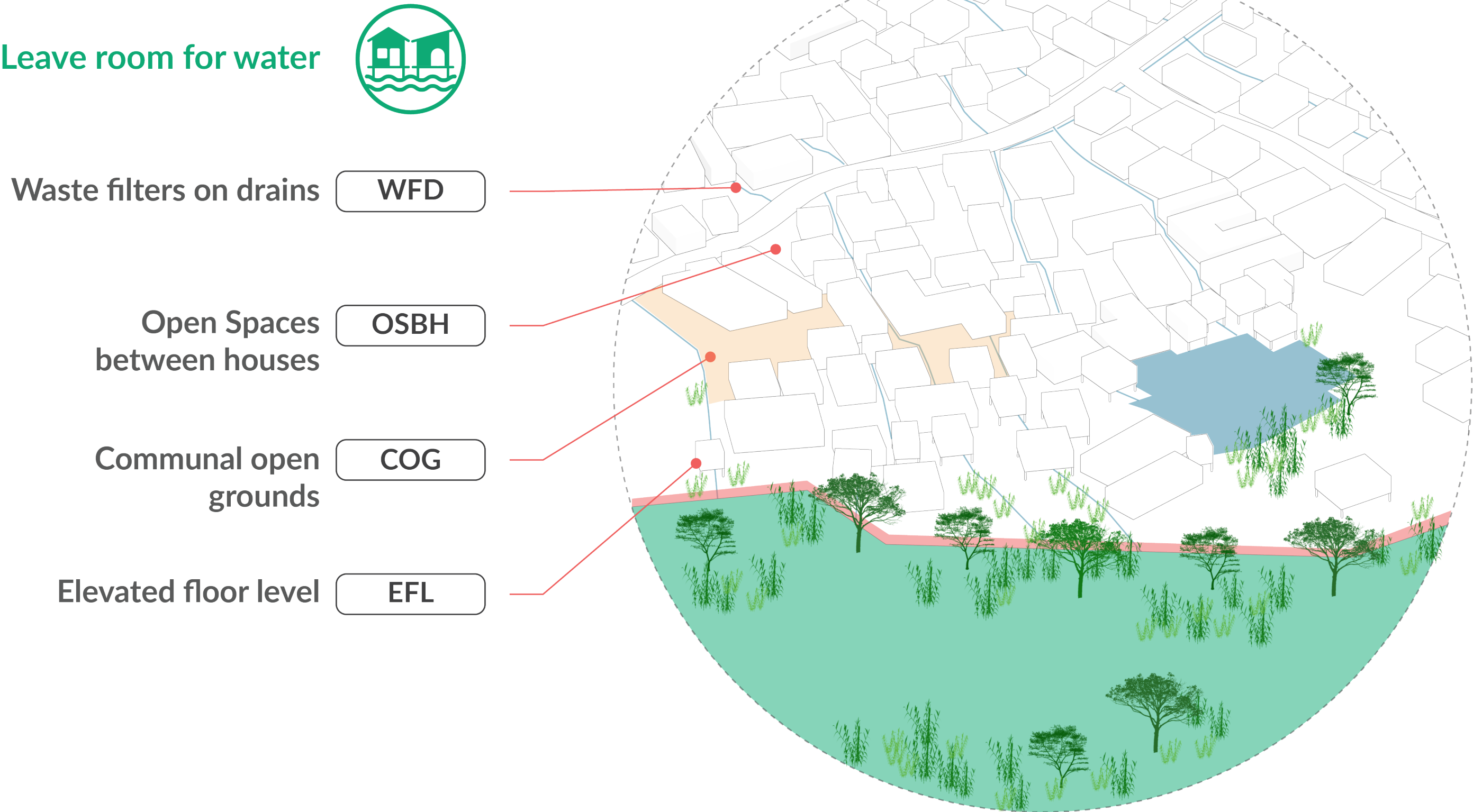
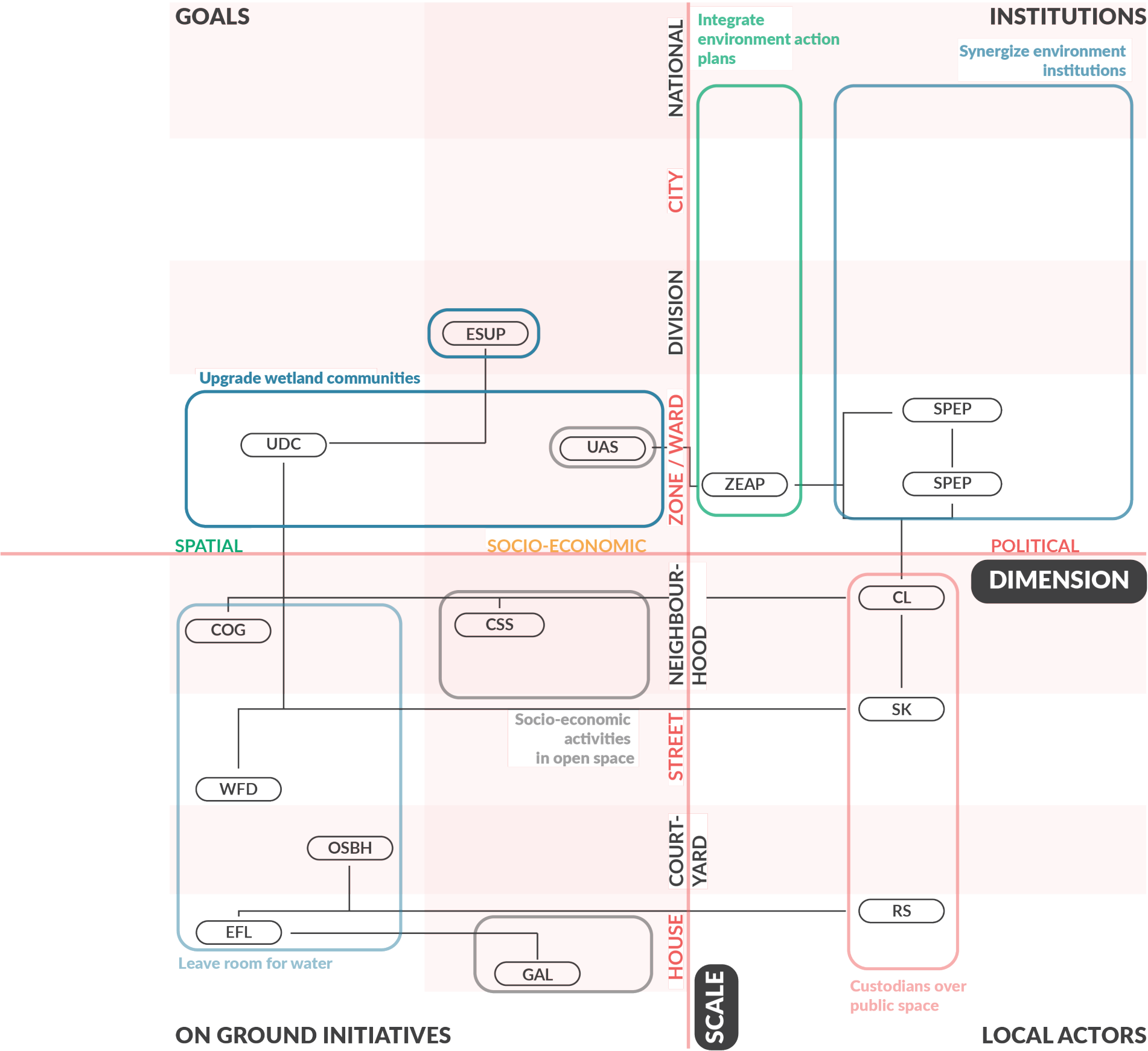


Image source; Author, 2022.



Using the Framework



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SPEP Secretary for Production and Environmental Protection

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RS Residents

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GAL Garden/ Agriculture lots

SPATIAL

Leave room for water

COG Communal open grounds

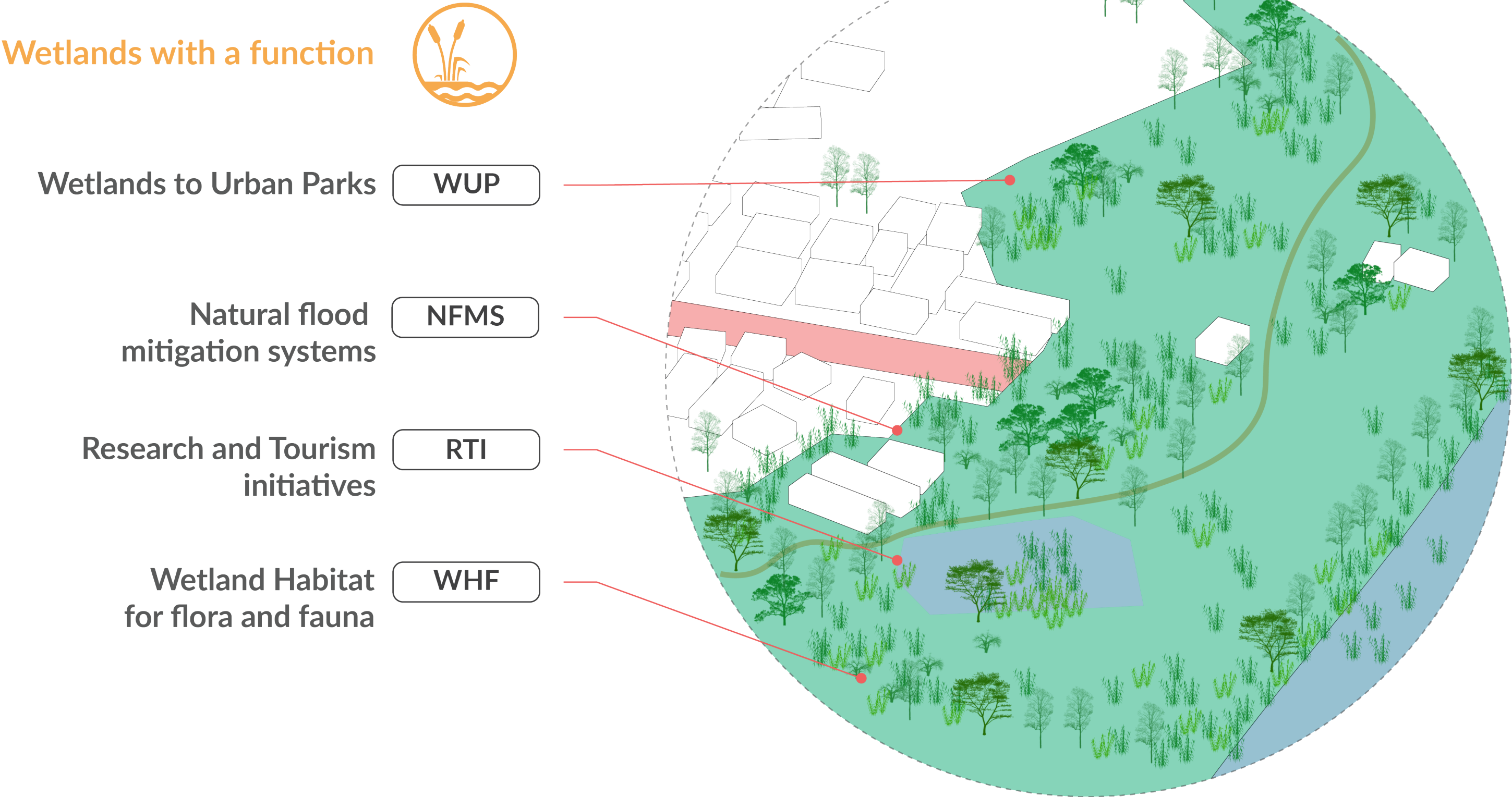
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EFL Elevated floor level

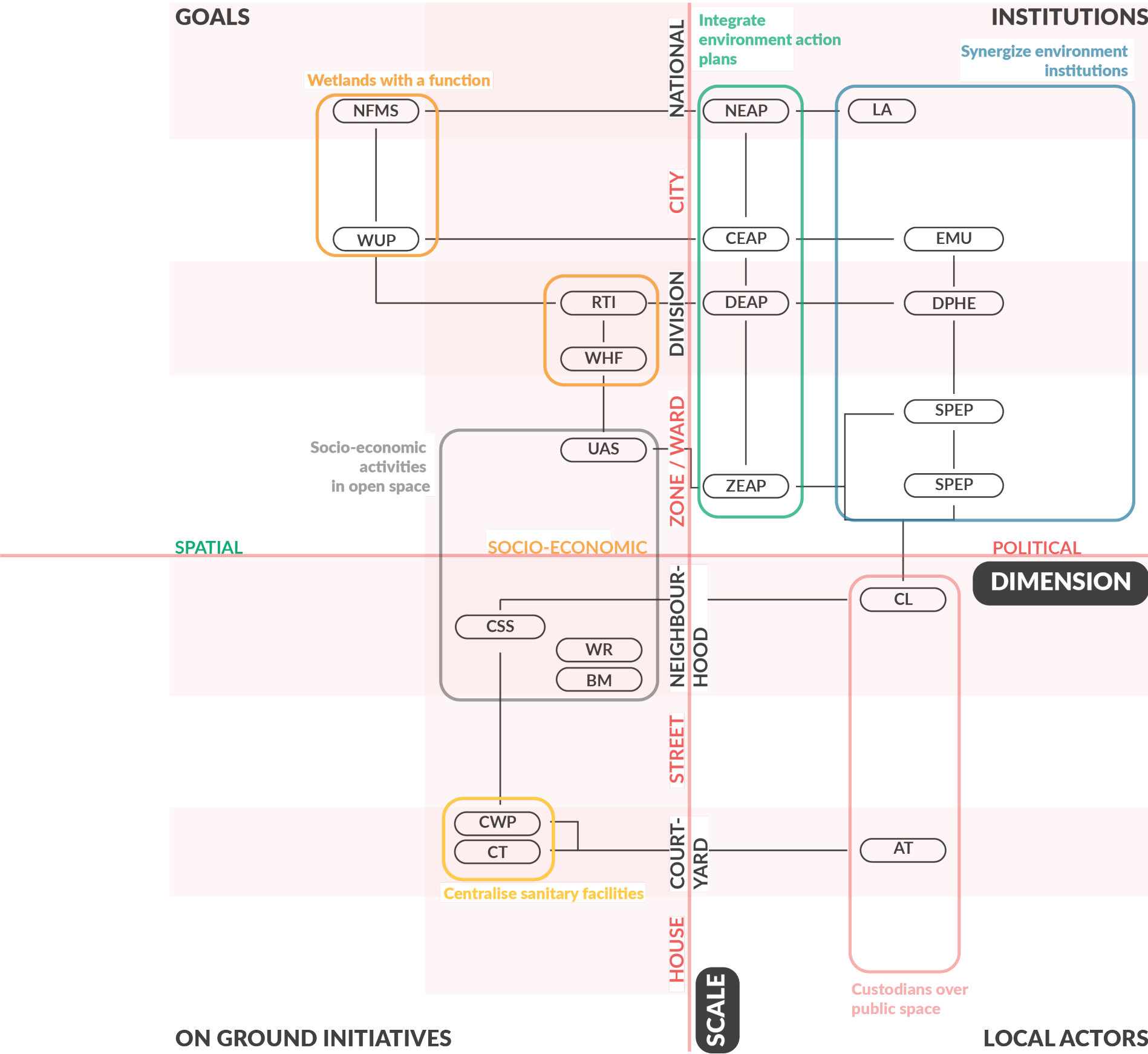
WFD Waste filters on drains

Implementation





Using the Framework



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Implementation





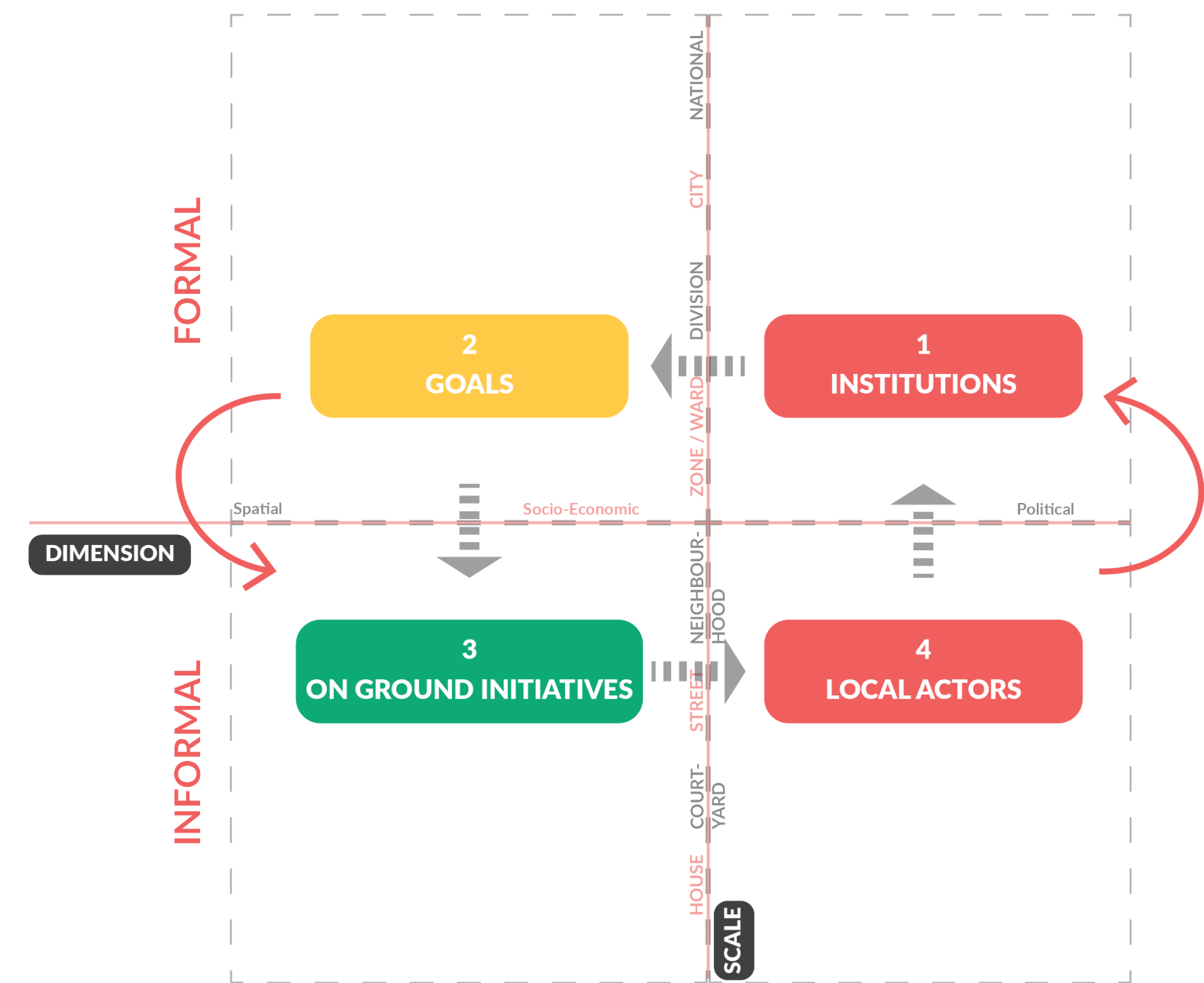
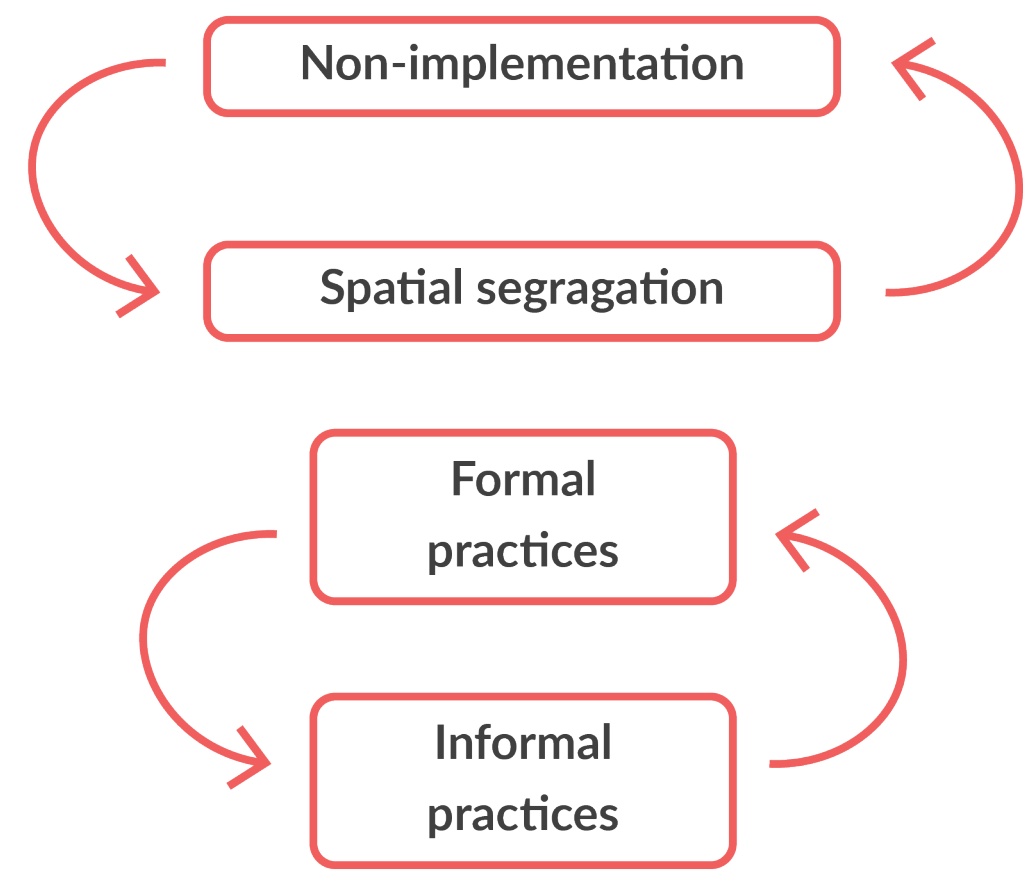
CONCLUSION

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Answering the Research Question

How can a strategic framework combining both the formal and informal practices lead to the effective planning implementation for a sustainable and flood resilient Kampala?

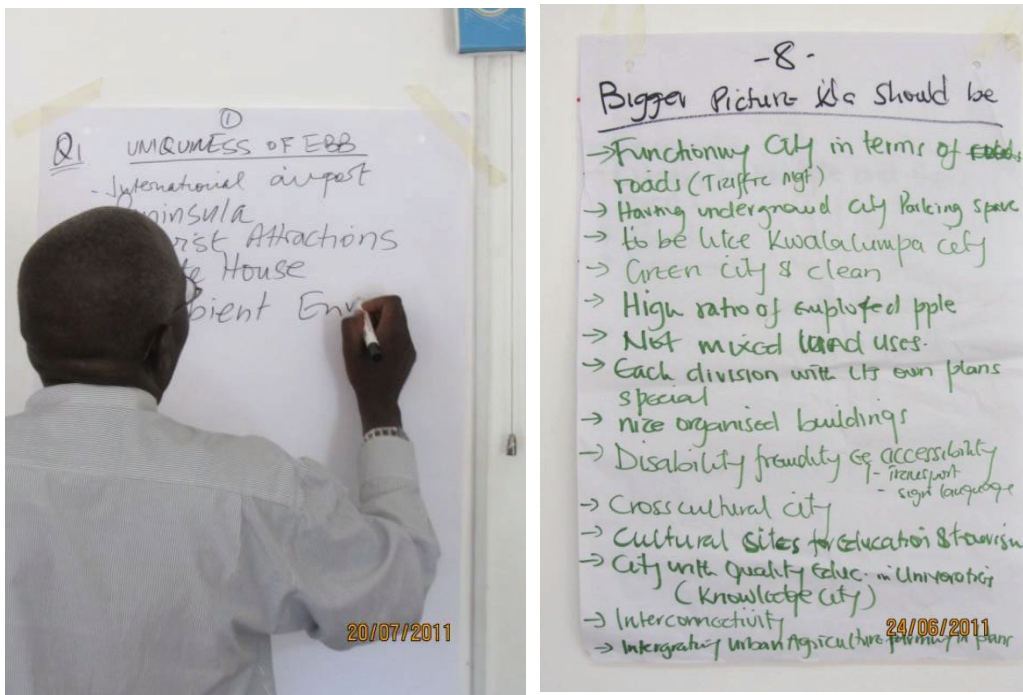
Conclusion



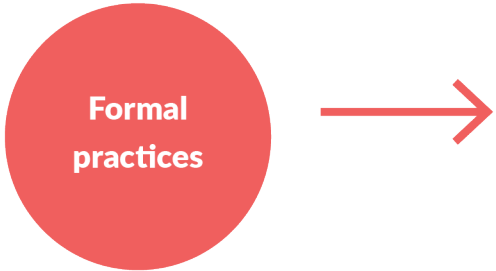
Potential Obstacles and points for further research

- Assumes the existence of formal structures-institutional gaps that need to be filled or reconciled
- Assumes that the 'social rules' that organise informal communities are the same - dynamics of informal communities differ from one place
- Where to begin? - Framework doesn't clarify which stakeholder or actor kick starts the process
- Doesn't consider other intermediary actors such as NGO's and the Private sector who also play a key role in a project implementation

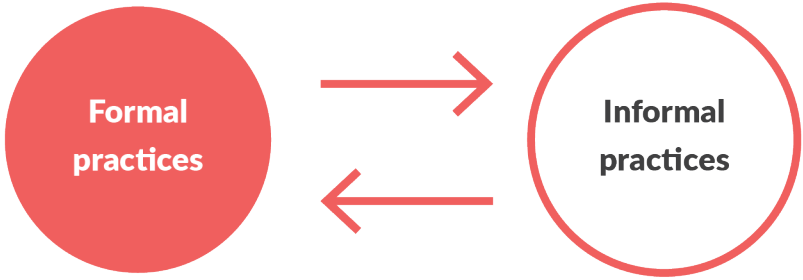
Reflection



KPDP



Research Project





*thank you for
listening*

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