



## An Adaptive strategic framework

*Exploring new upgrading strategies for informal settlements in Bogotá, Colombia*

**Elisa Isaza Bernhard**

Mentor: Diego Sepúlveda

Mentor: Luisa Calabrese

MSc3 Urbanism

Planning Complex Cities

Inclusive Cities of the Global South



Problem field

---

An Adaptive strategic framework  
for planning strategies for informal settlements in Bogotá, Colombia

Proposed Model

---

I.

Assessment  
Framework

II.

Planning  
Framework

III.

Implementation  
Guidelines

VI.

Planning  
Operability



Bogotá, Colombia



Source: ENGIE, Innovation. 2019

Bogotá, Colombia



Source: ENGIE, Innovation. 2019

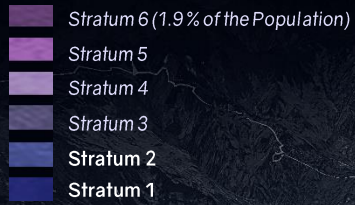


Source: Tumbler, Colombia. Christian Leftist, 2018.



Bogotá, Colombia

Stratification System in the city of Bogota




Source: Urban Expansion, Social Segregation and Land Degradation, Mirosława Czerny, 2018, Google Earth  
Drawing made by author



Bogotá, Colombia

Delimitation of Improvement Areas in the Municipal Plan

 Improvement Zonal Planning Units

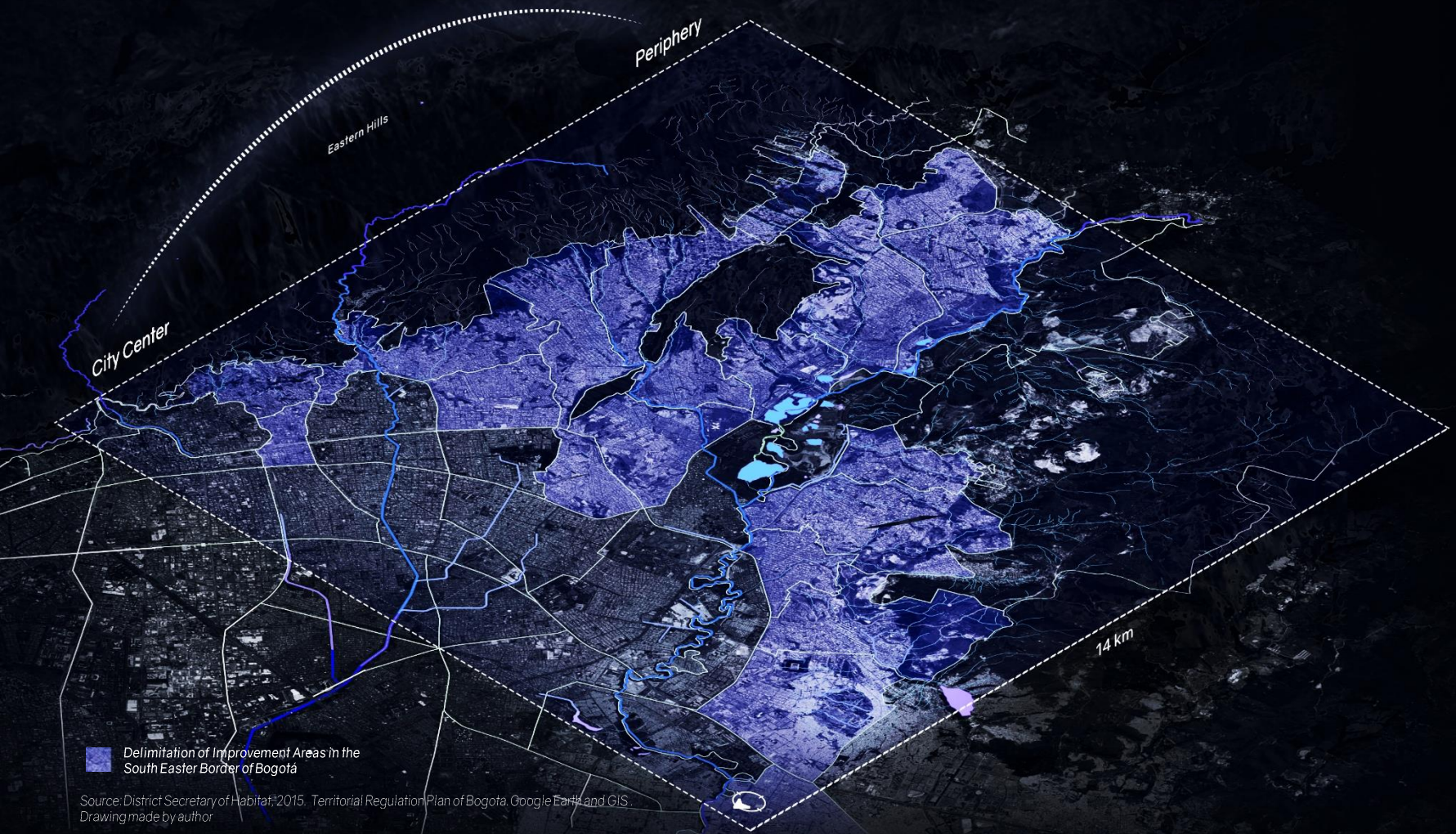


Source: District Secretary of Habitat, 2015 Territorial Regulation Plan of Bogotá, Google Earth and GIS.  
Drawing made by author



Delimitation of Improvement Areas in the Municipal Plan

Zoom in – South Eastern Border of Bogotá



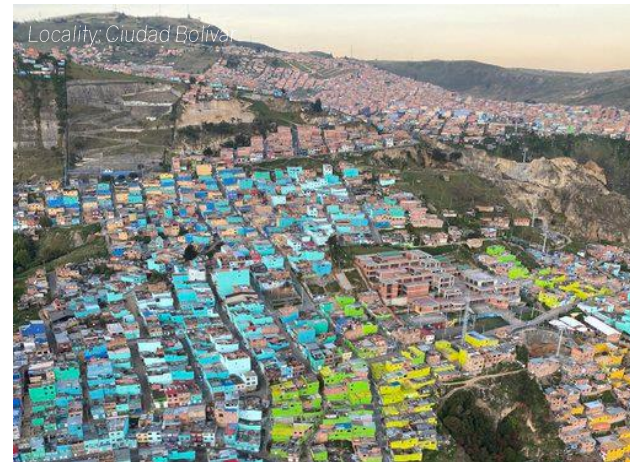


Planning approach of the Upgrading Program in Bogotá



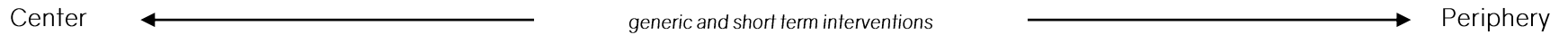
Locality: Santa Fe

Source: Conexión Capital, 2017



Locality: Ciudad Bolívar

Source: Twitter: Enrique Peñalosa, Mayor of Bogotá (2016-2019)

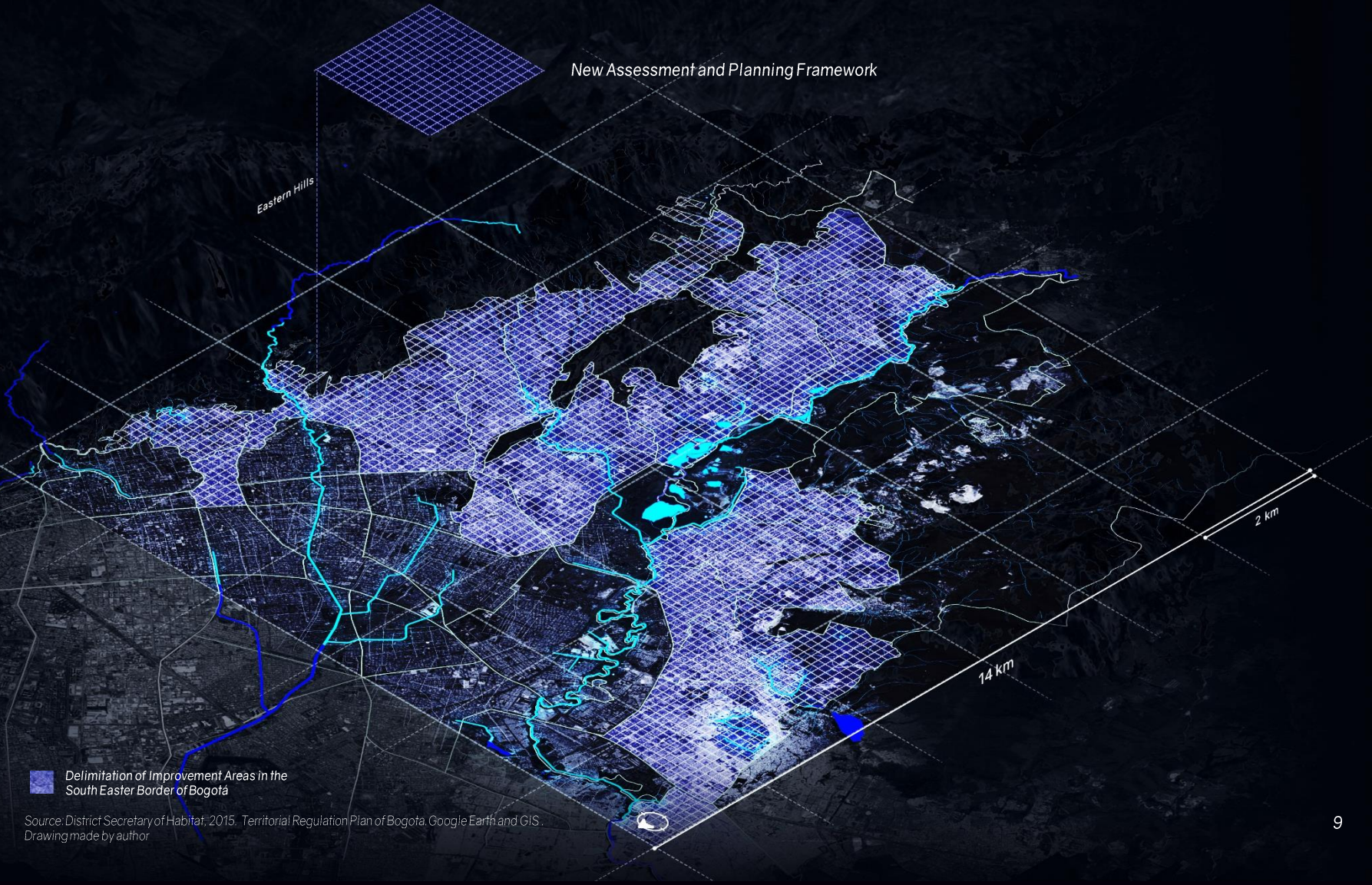


Source: Google Earth Street View, 2020



Source: Google Earth Street View, 2020





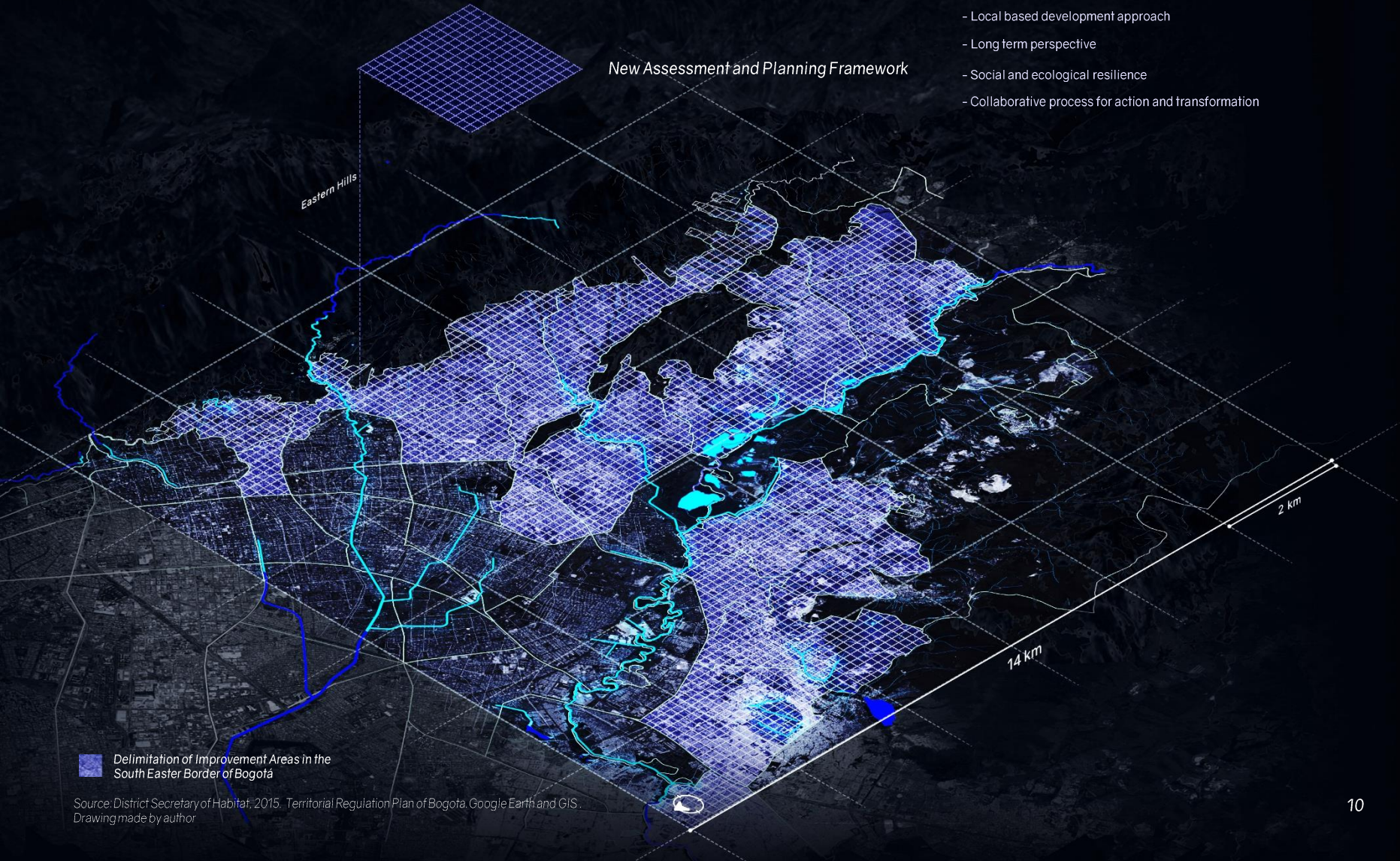
Delimitation of Improvement Areas in the South Easter Border of Bogotá

Source: District Secretary of Habitat, 2015, Territorial Regulation Plan of Bogotá, Google Earth and GIS.  
Drawing made by author



New Assessment and Planning Framework

- Local based development approach
- Long term perspective
- Social and ecological resilience
- Collaborative process for action and transformation

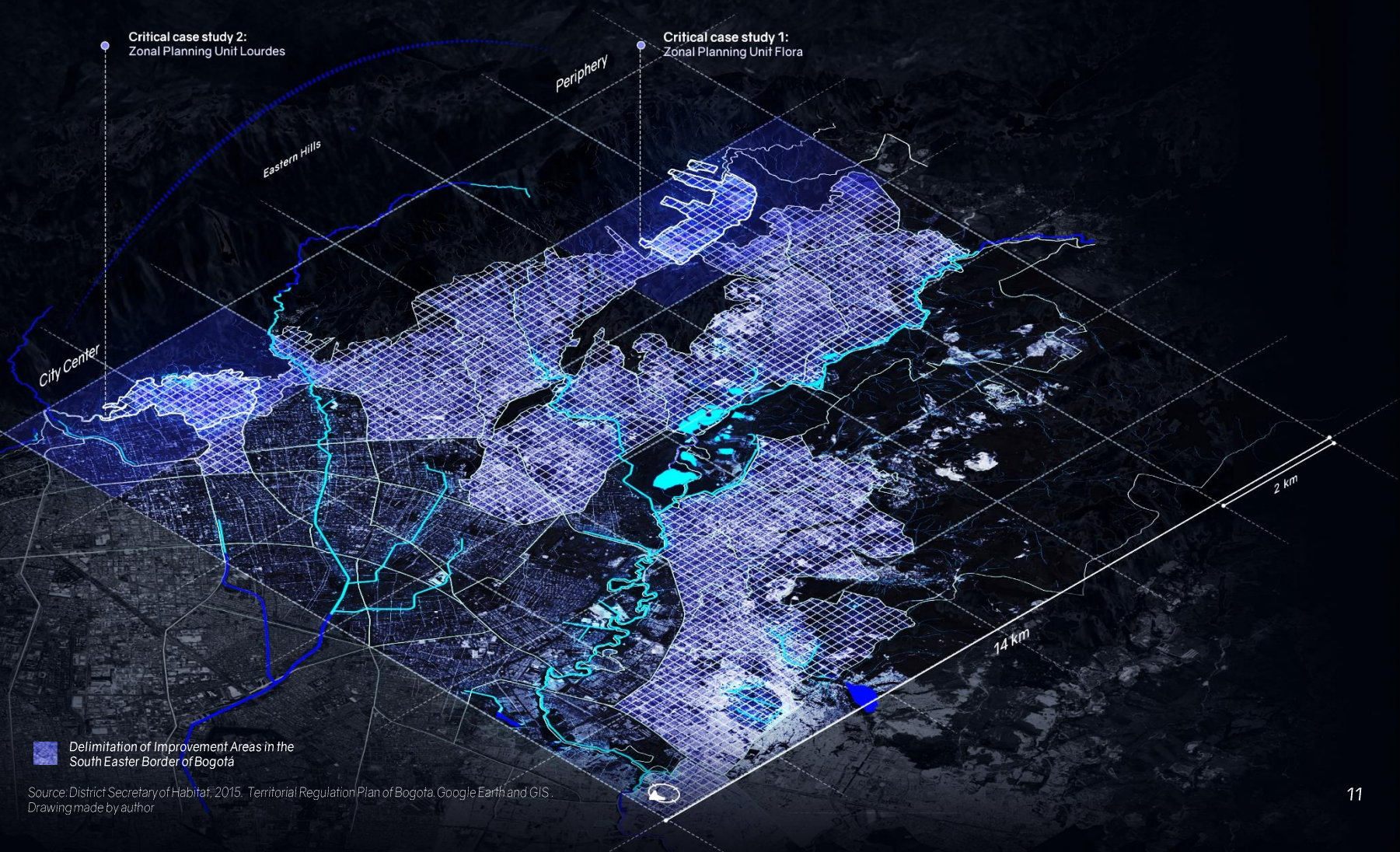


Delimitation of Improvement Areas in the South Easter Border of Bogotá

Source: District Secretary of Habitat, 2015, Territorial Regulation Plan of Bogotá, Google Earth and GIS.  
Drawing made by author



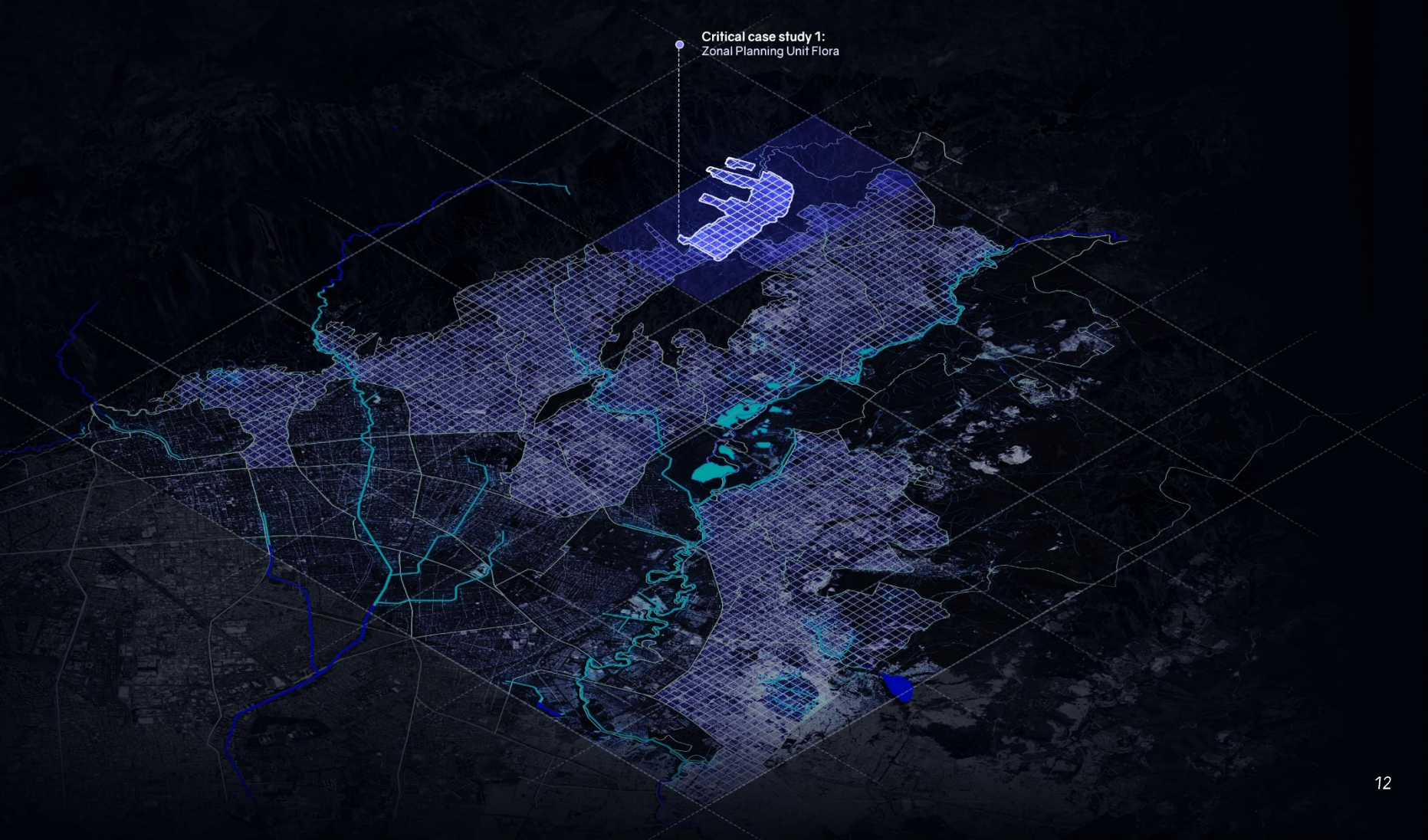
Critical chosen areas



Source: District Secretary of Habitat, 2015. Territorial Regulation Plan of Bogotá, Google Earth and GIS.  
Drawing made by author

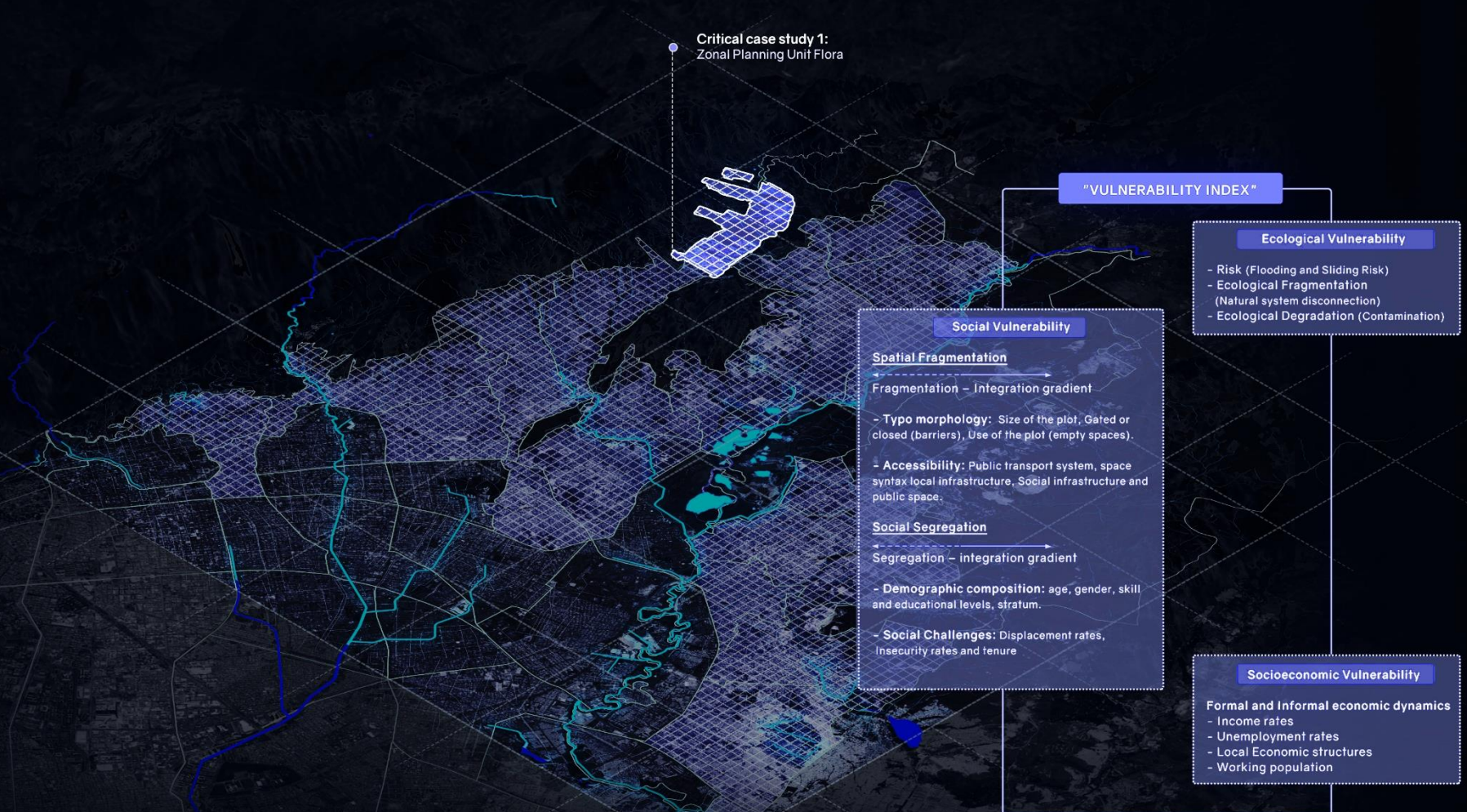


Critical chosen area: Zonal Planning Unit La Flora



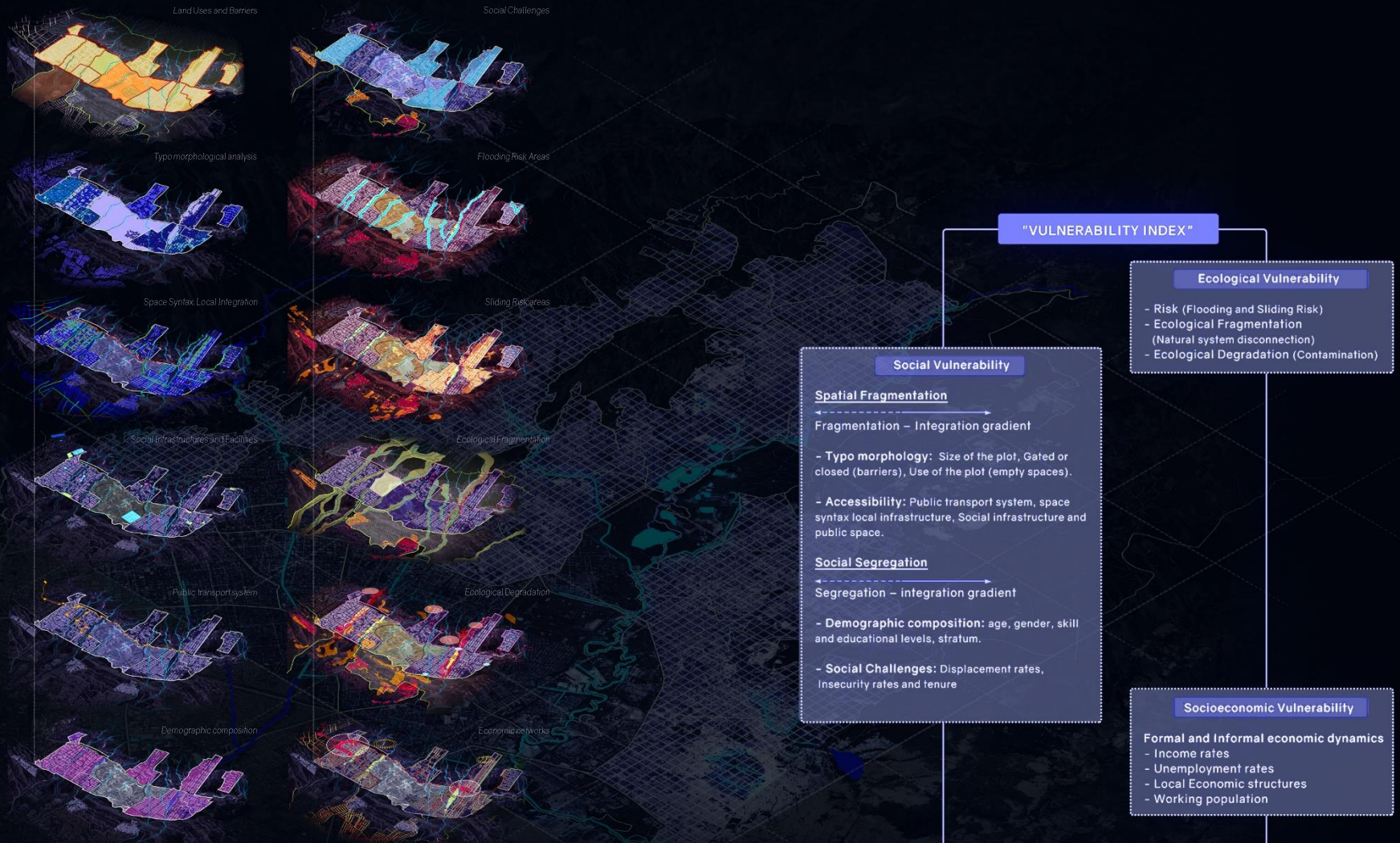


Multidimensional Vulnerability assessment



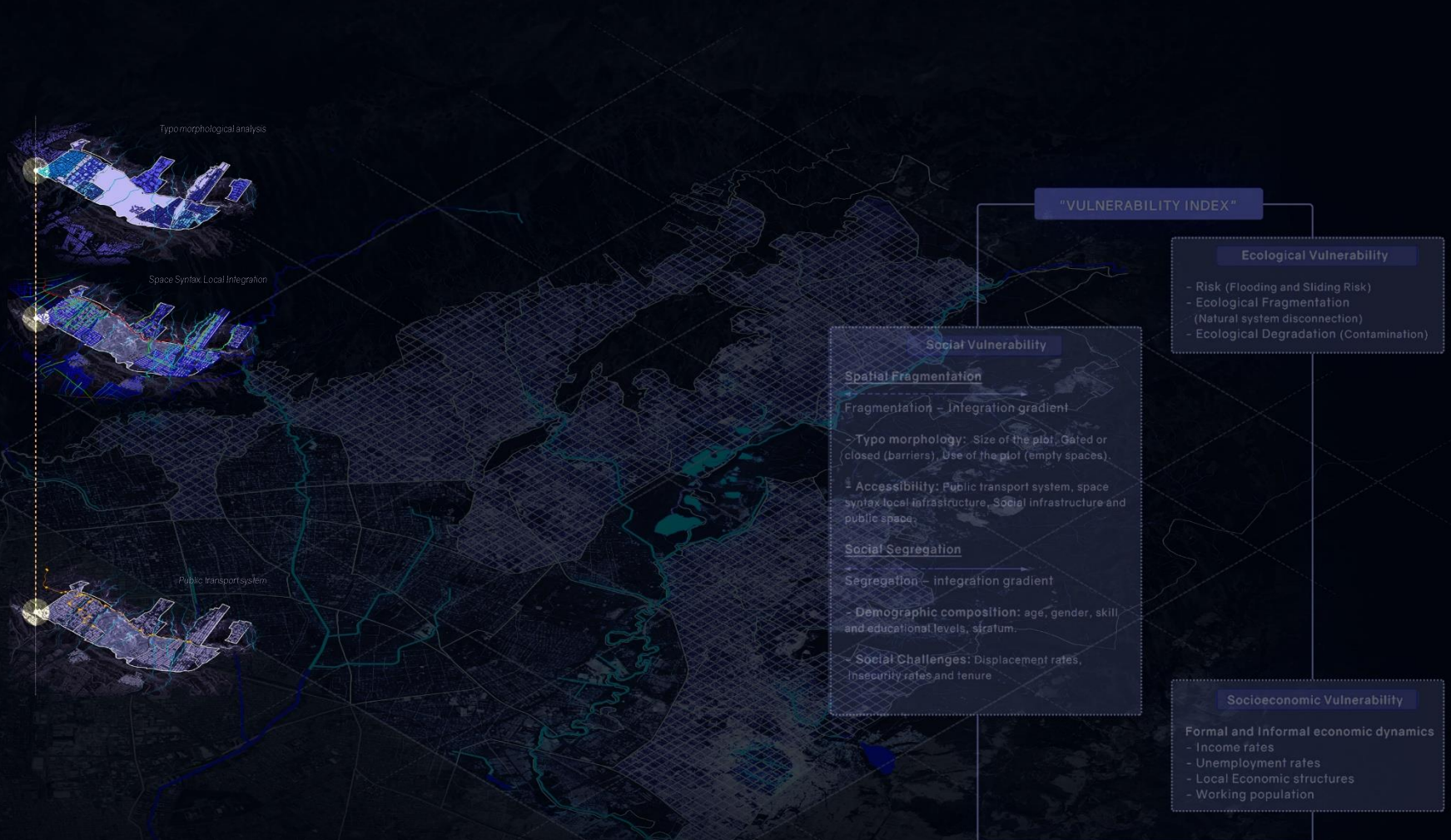


Multidimensional Vulnerability assessment





Multidimensional Vulnerability assessment





Multidimensional Vulnerability assessment



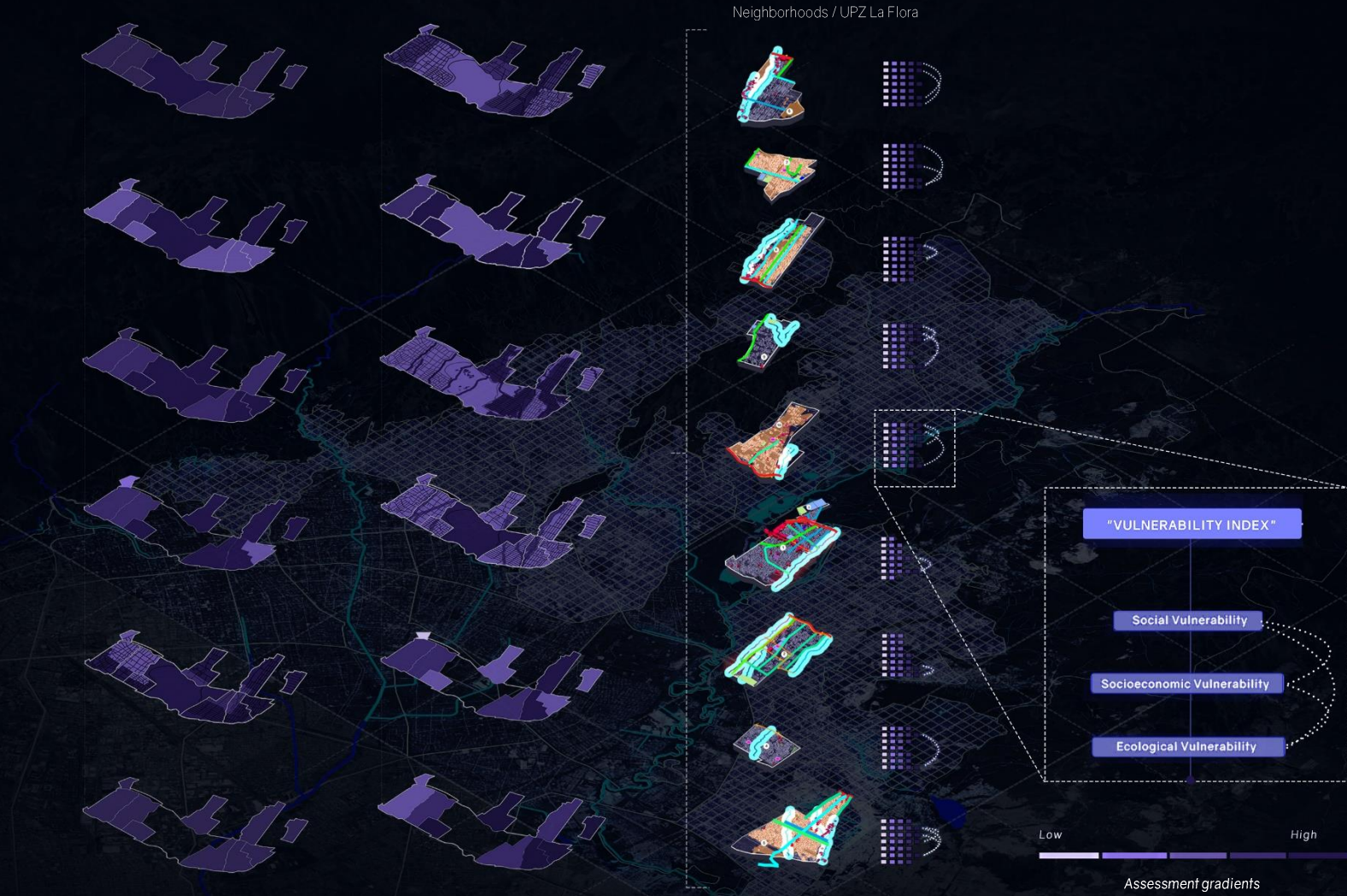


Multidimensional Vulnerability assessment





Multidimensional Vulnerability assessment





Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.

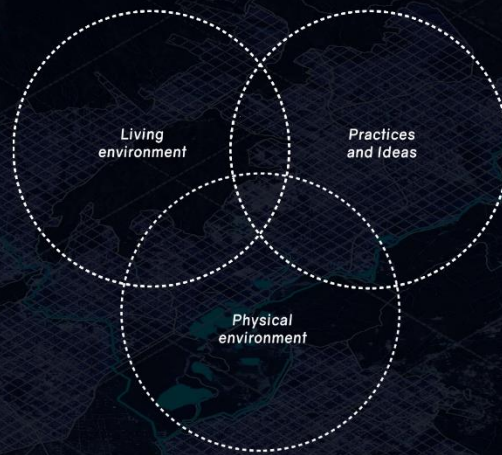


*Correlated encountered challenges as possible lines of development*



Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.

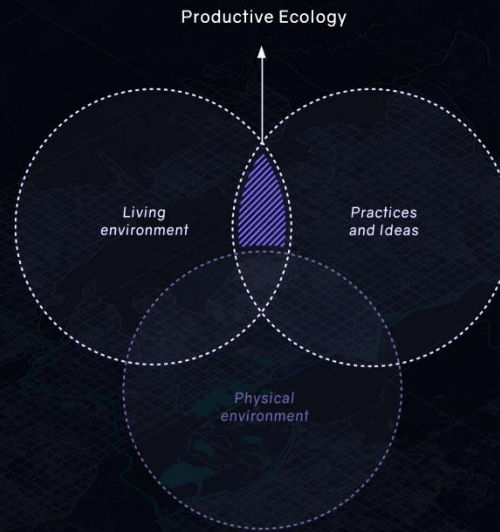


Socio-ecological Coevolution (Kallis, 2007)



Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.



Strategic Goal 1

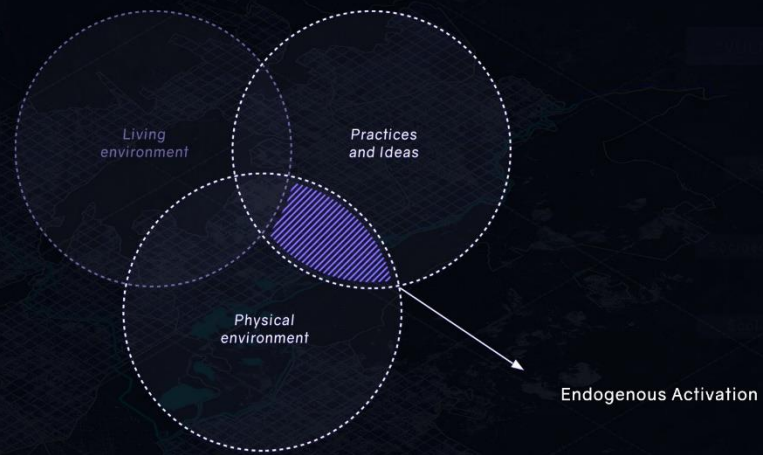
*Coevolution between Ecological and Economic Systems*

Counteract Ecological risk and Poverty guiding an evolutionary transformation of vulnerable areas through nature based solutions in order to mitigate negative impacts on the ecosystem, reduce the ecological risk and activate sustainable local economies improving therefore the operability of local economic practices with ecological systems.



Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.



Strategic Goal 2

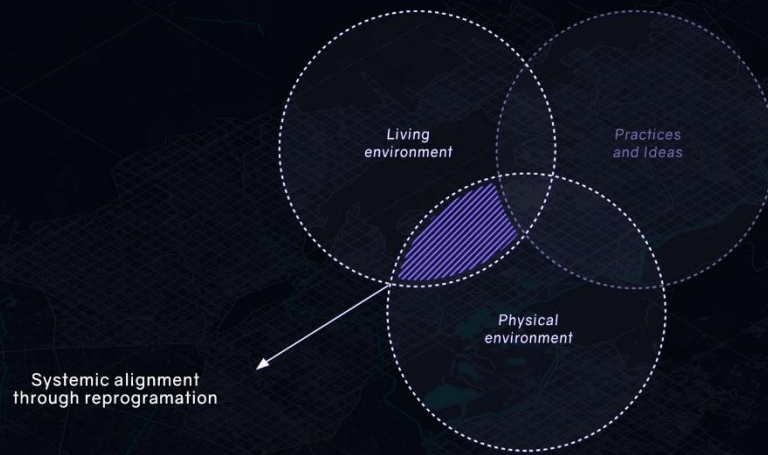
*Coevolution between Physical environment and Local economies and values*

Counteract Social challenges and poverty by strengthen local capacities and self sustaining production and social systems through a functional integration with the formal city.



Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.



Strategic Goal 3

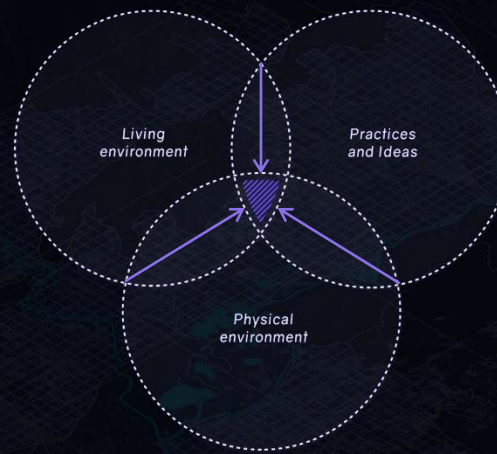
*Coevolution between Social and Spatial systems*

Counteract Social challenges and poverty by strengthen local capacities and self sustaining production and social systems through a functional integration with the formal city.



Strategic Goals

Cohabitation and Coevolution  
between Social and Environmental Systems.



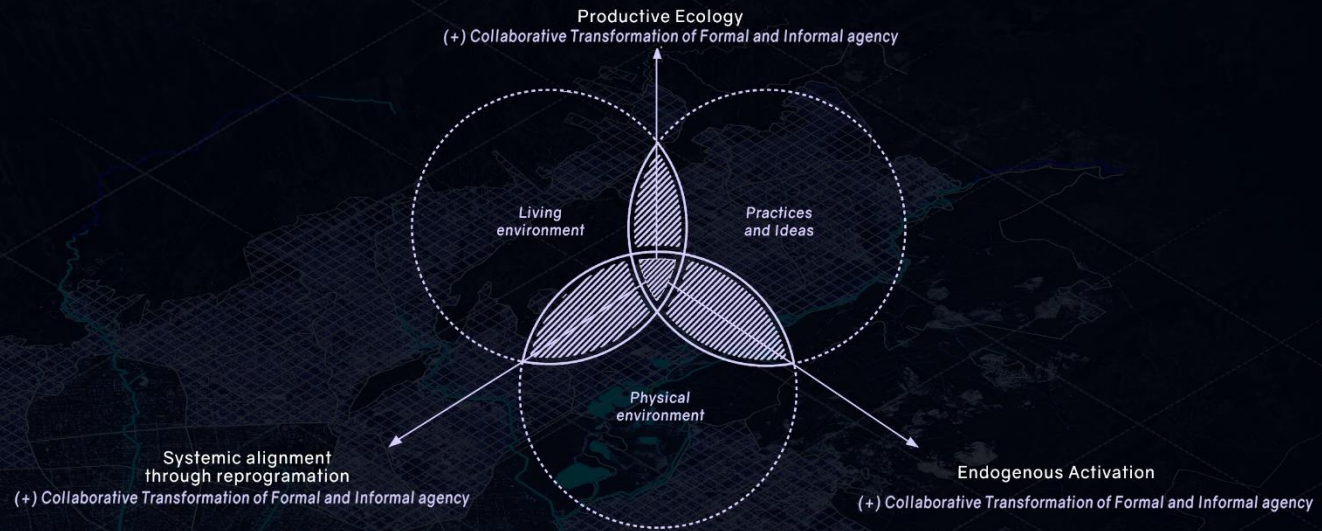
Collaborative transformation of formal and Informal agency

---

Expand the planning scope and redefine the interrelation  
between formal and informal agents



Strategic Goals



Proposed Strategic approach

Cohabitation and Coevolution of Social and Environmental systems by recognizing and activating different roles in the adaptive process through time.

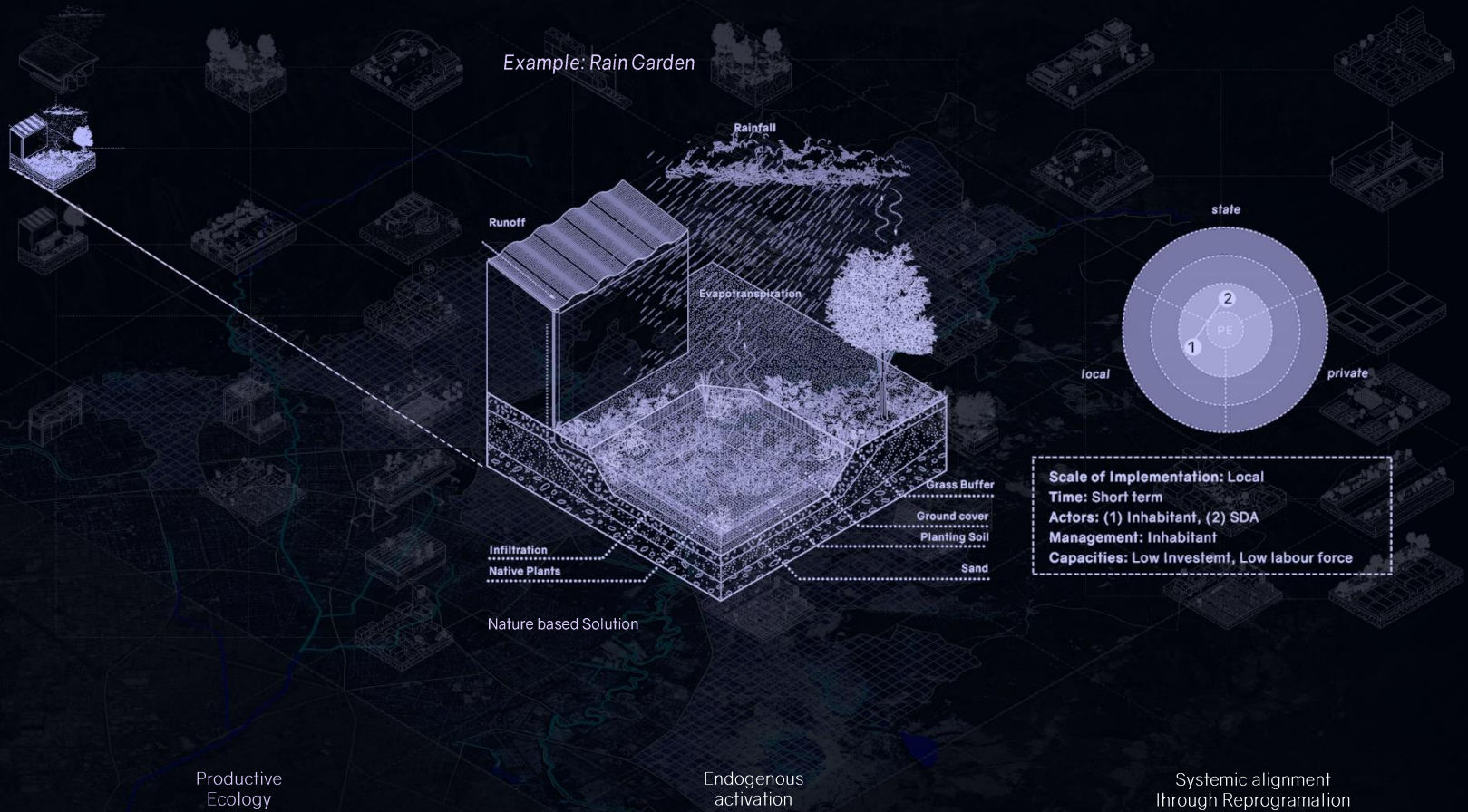


Strategic Actions



Strategic Actions

Multi-actor interrelations





Strategic Actions

Multi-actor interrelations



Strategic Actions

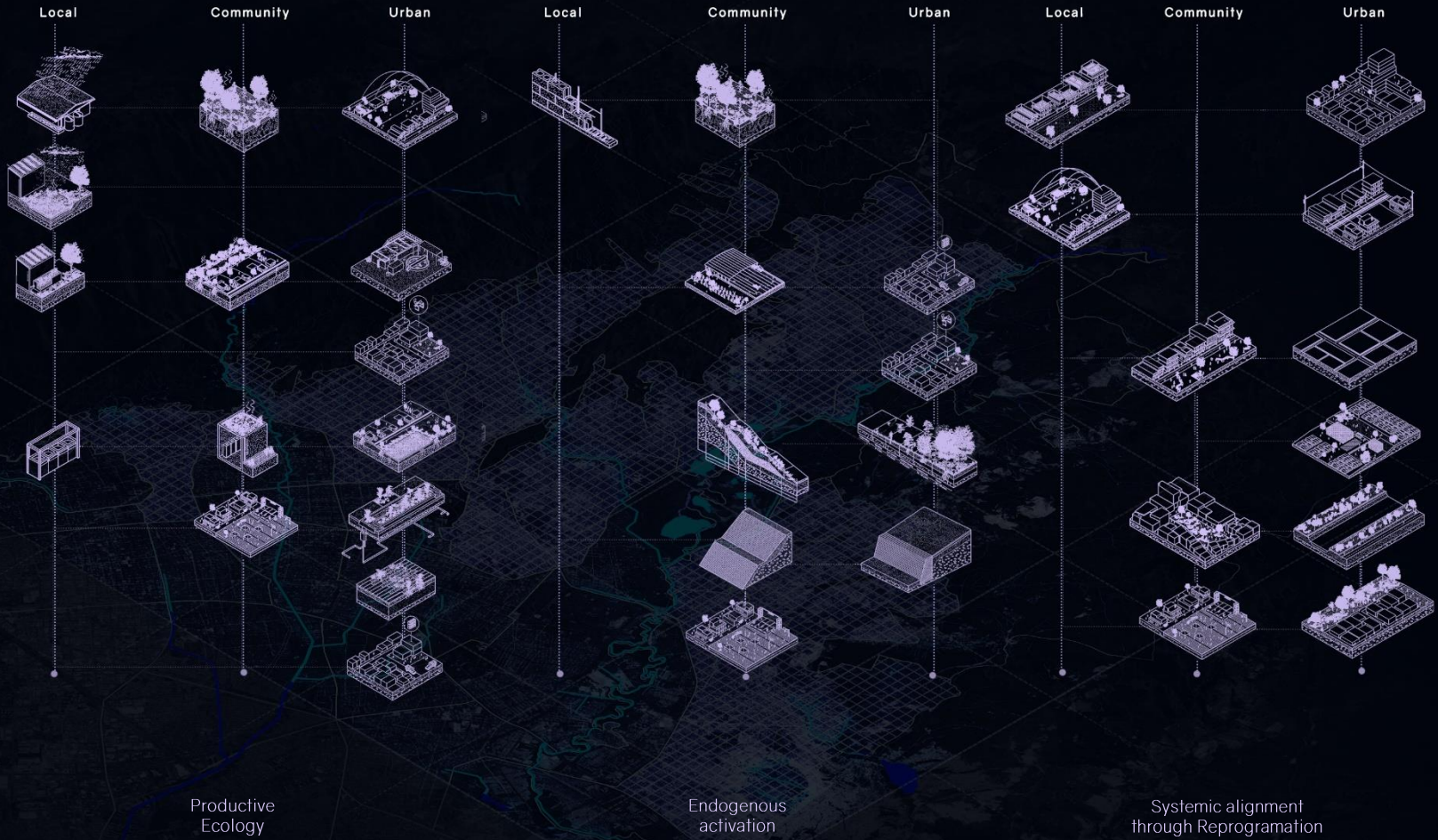
Multi-actor interrelations





Strategic Actions

Multi-actor interrelations



Strategic Actions

Multi-actor interrelations



Strategies can expand and increase into more complex actions depending on the local specific needs

Productive Ecology

Endogenous activation

Systemic alignment through Reprogramation





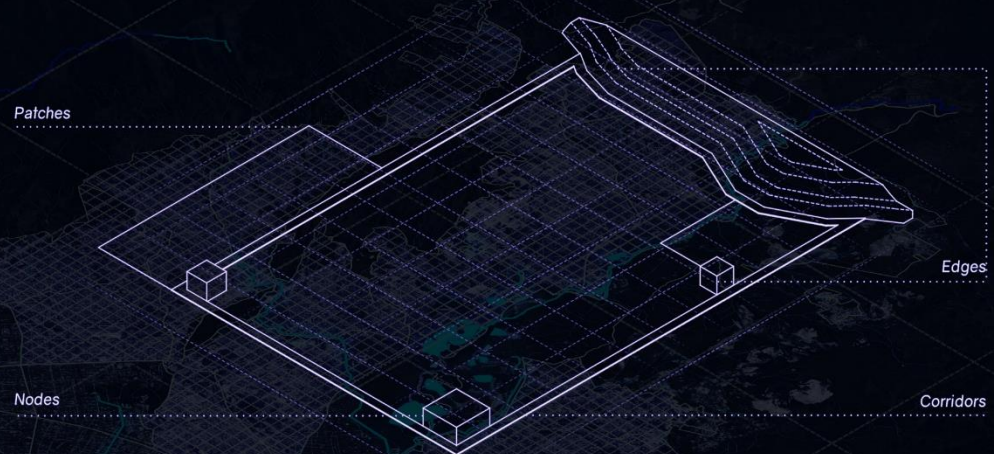






Spatial Framework

Spatial Framework



Implementation Guidelines



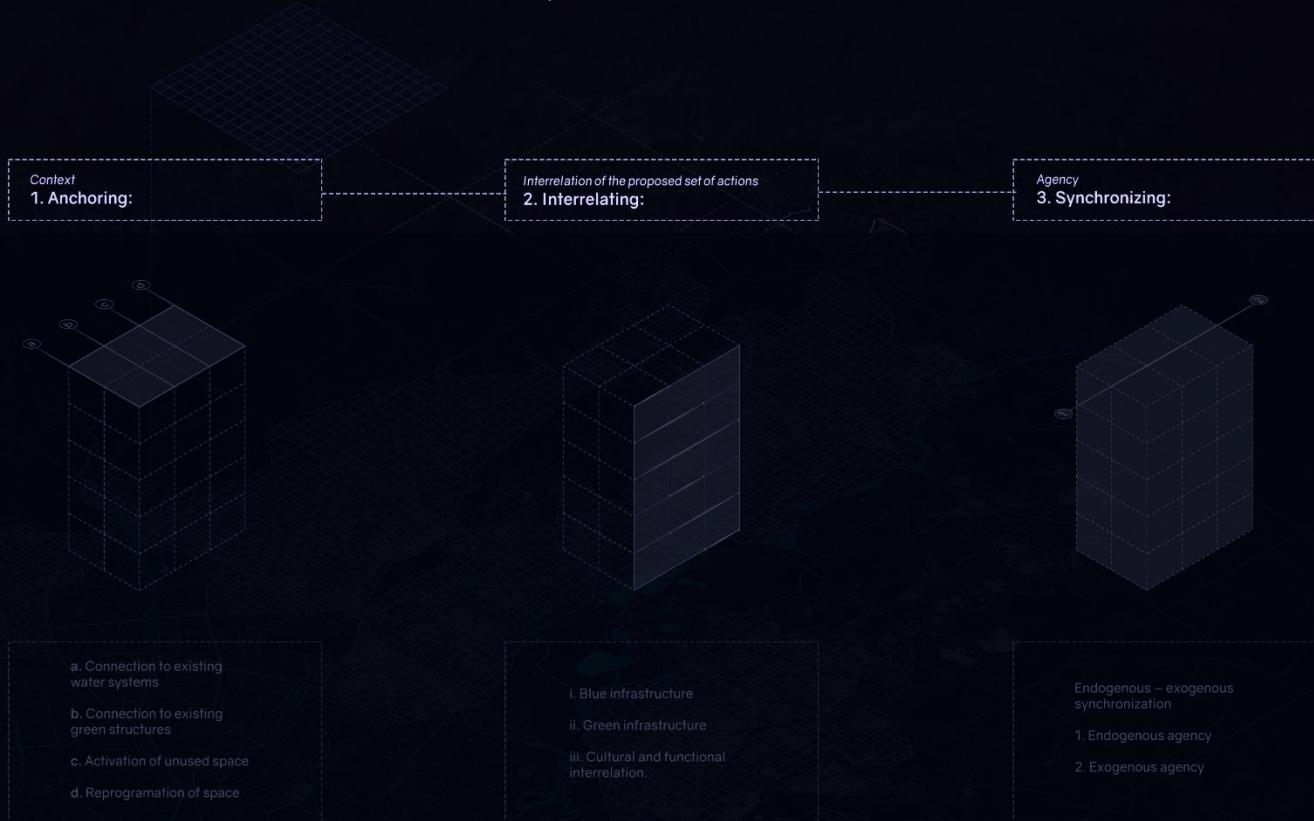
Spatial Framework

Spatial Framework



Spatial Framework

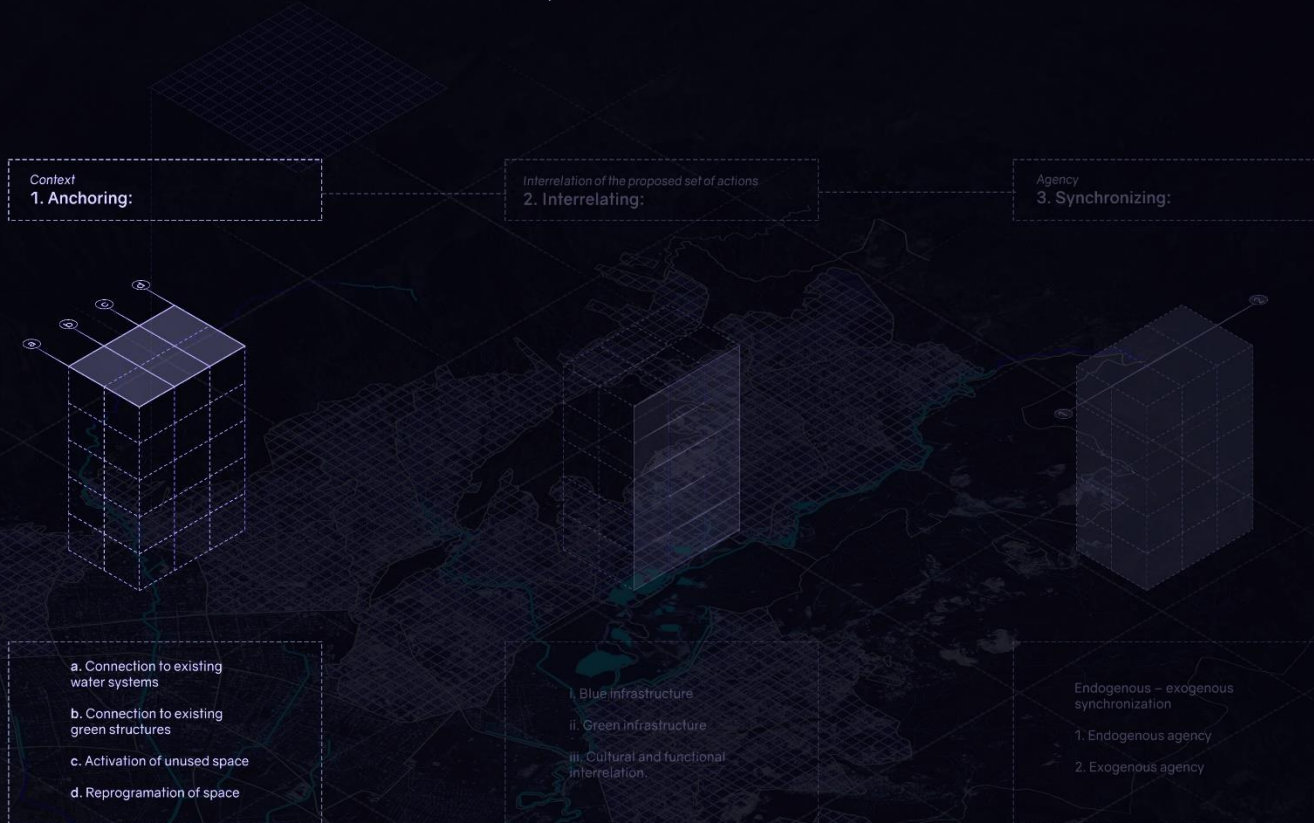
Spatial Framework Rules





Spatial Framework

Spatial Framework Rules



Spatial Framework

Spatial Framework Rules





Spatial Framework

Spatial Framework Rules



Temporal Framework

Temporal Framework

Operationalization of socio ecological resilience in practice

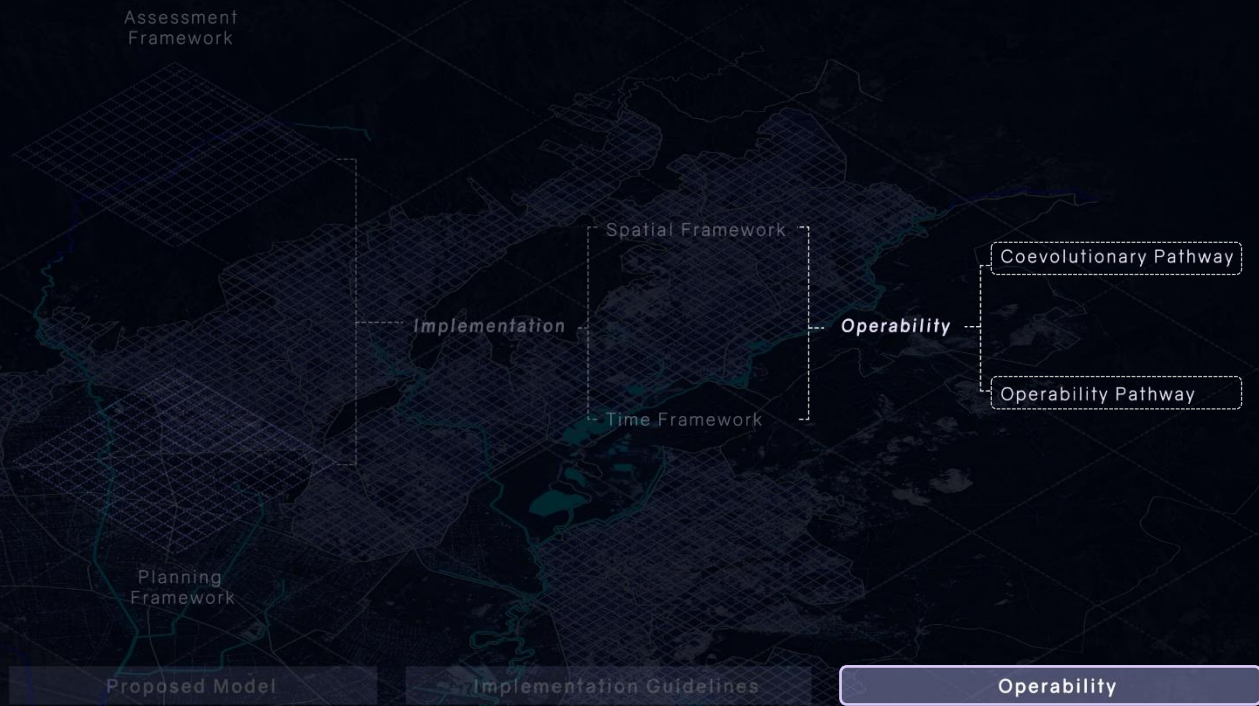




Temporal Framework

Temporal Framework

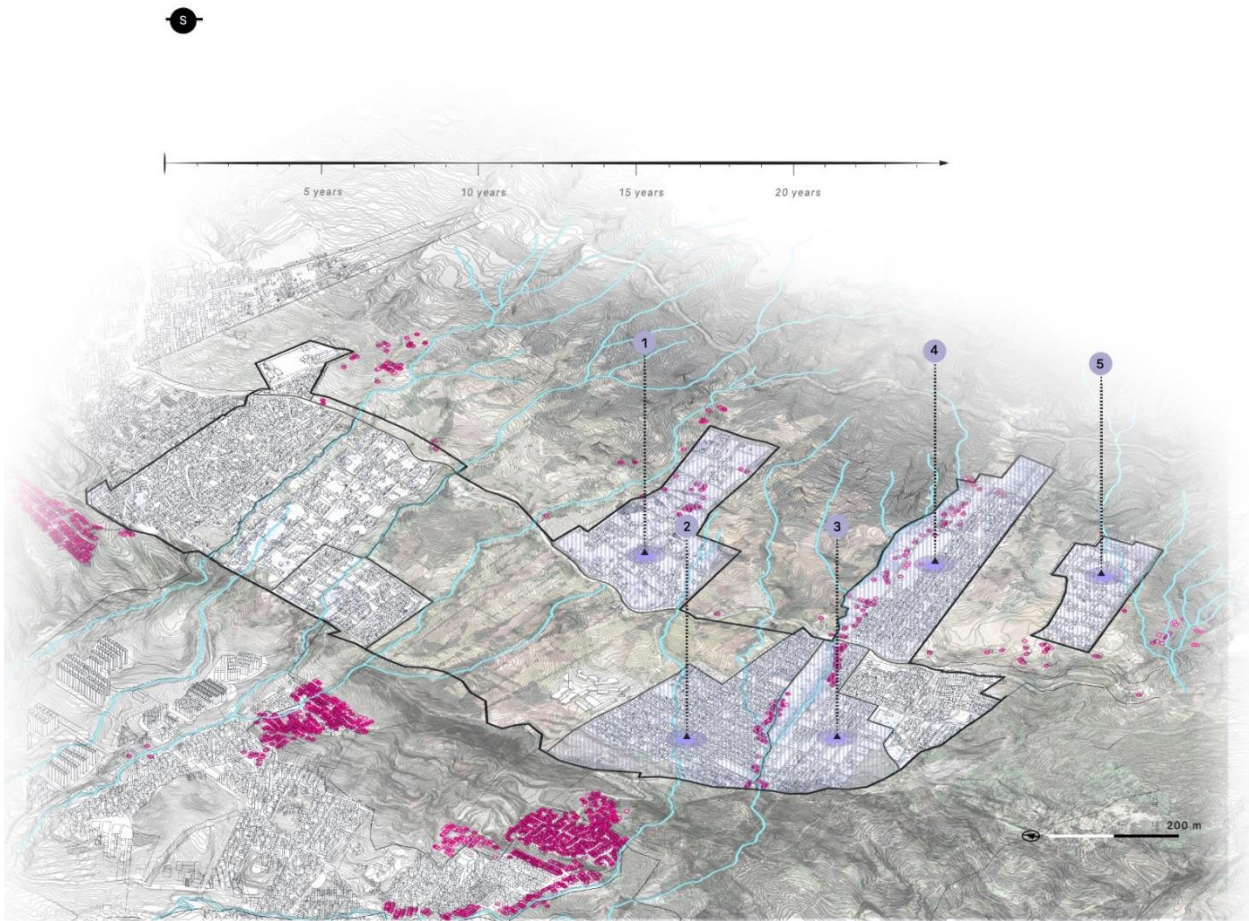






Coevolutionary Pathway

Recognitional phase



Strategic actions:  
Social Activation Strategies



50.26% are woman

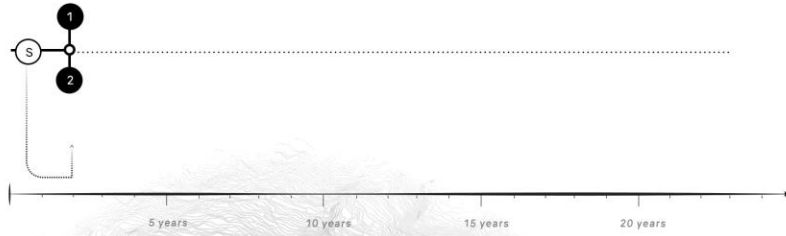


63.2% are 0 - 15 years



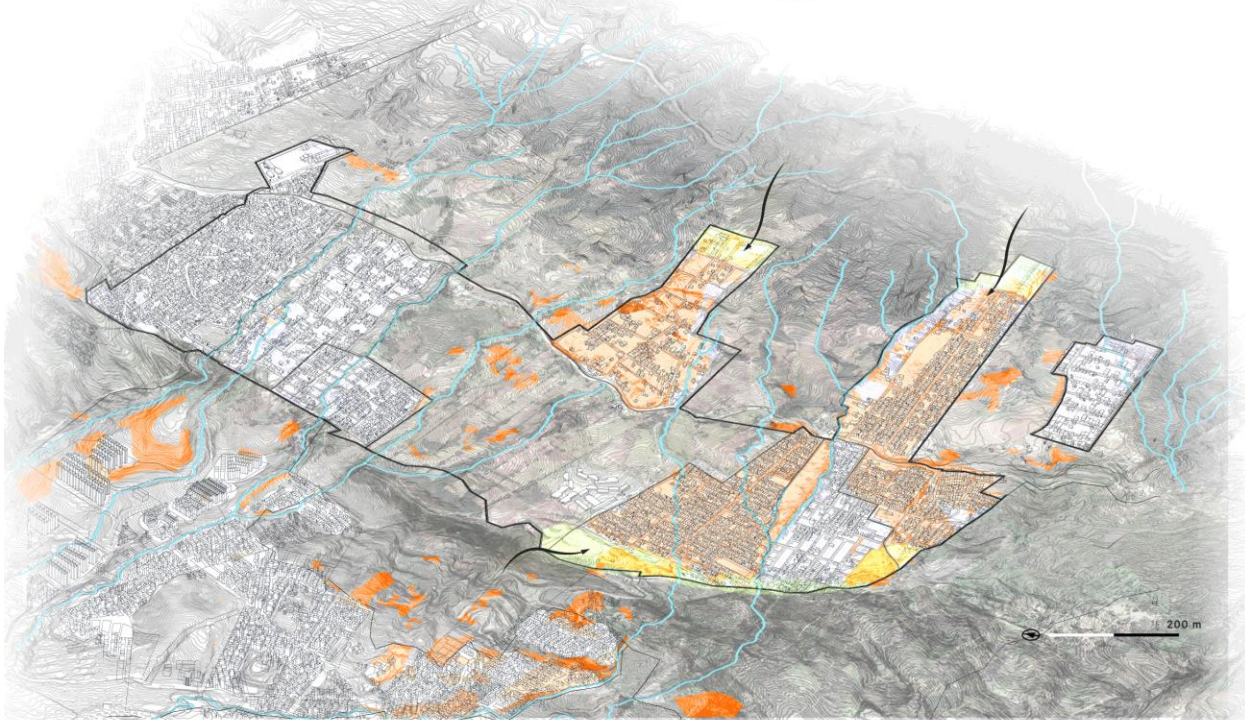
Coevolutionary Pathway

Procedural phase

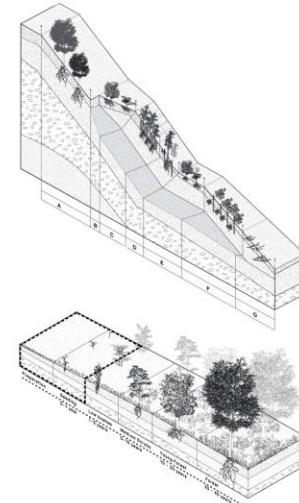


	PE	SA	EA
1	1	1a	1
2	2	1b	2
3	3	1c	3
4	4	1d	4
5	5	2	5
6	6	3	
7	7	4	
8	8	5	
9	9	6	
10	10	7	
	11	8	
	12		
	13		
	14		
	15		

PE: Productive Ecology  
 SA: Systemic alignment through reprogramming  
 EA: Endogenous activation



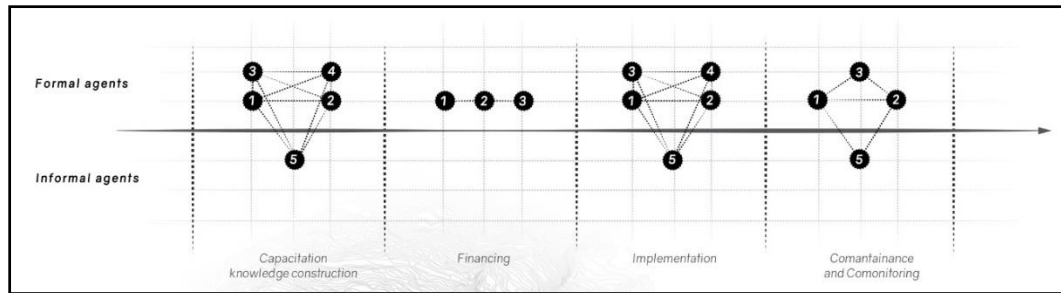
Strategic actions:





Coevolutionary Pathway

Recognitional phase



Actors - Collaborative Process for action

- (1) NGO
- (2) SDIS
- (3) SDH
- (4) Universities
- (5) Community

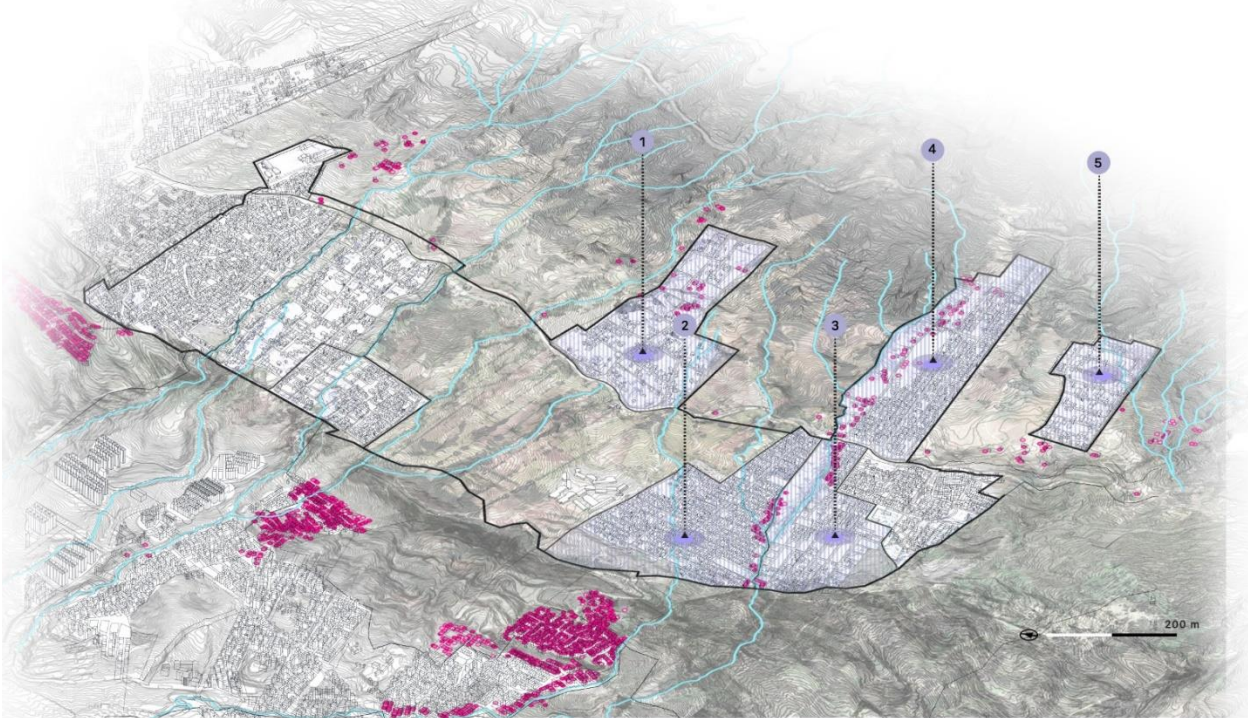
Strategic actions:



50.26% are woman

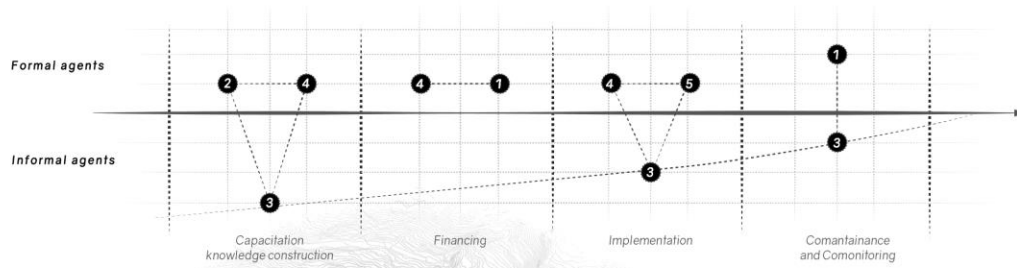


63.2% are 0 - 15 years



Coevolutionary Pathway

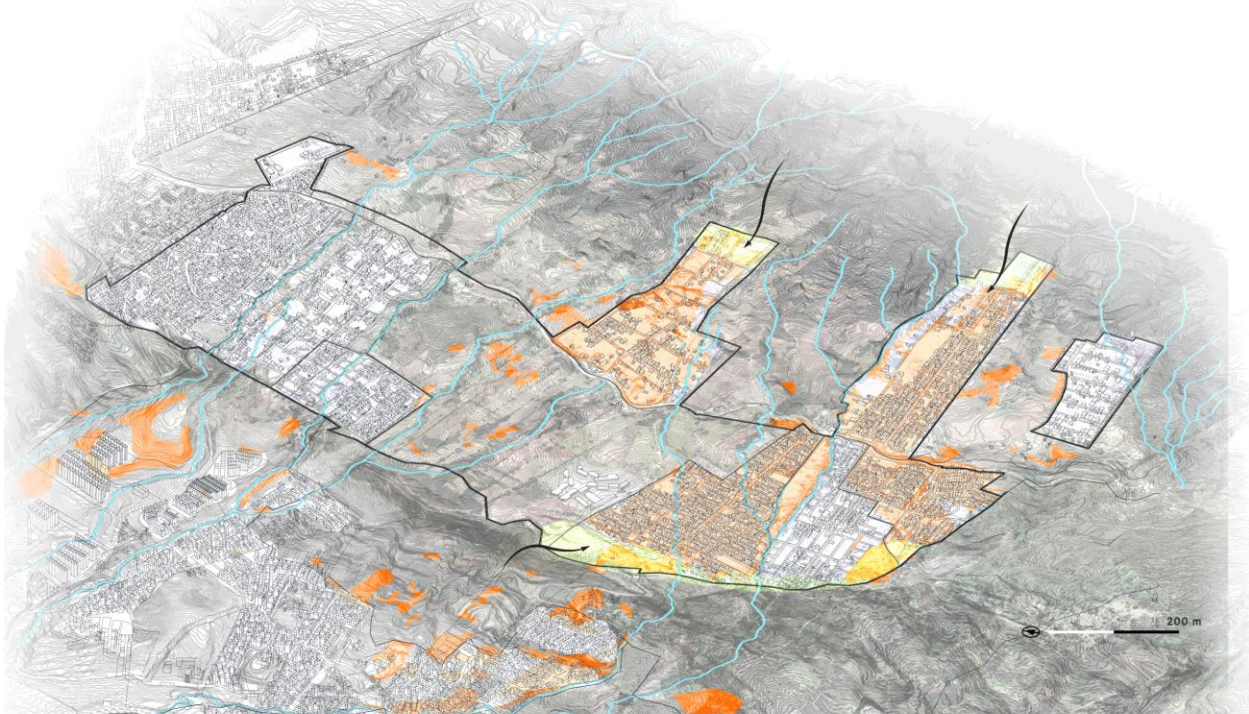
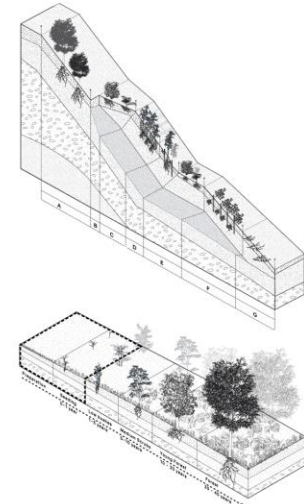
Procedural phase



Actors - Collaborative Process for action

- (1) SDA
- (2) JBB
- (3) Community
- (4) IDIGER
- (5) SDP

Strategic actions:



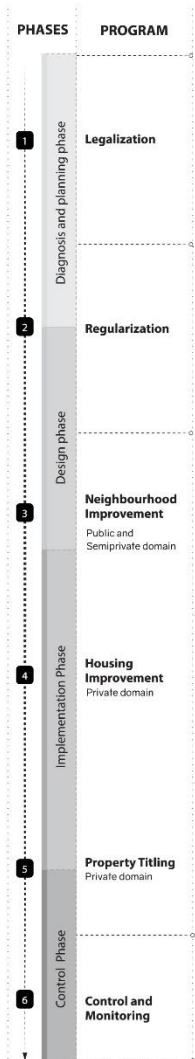


SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)



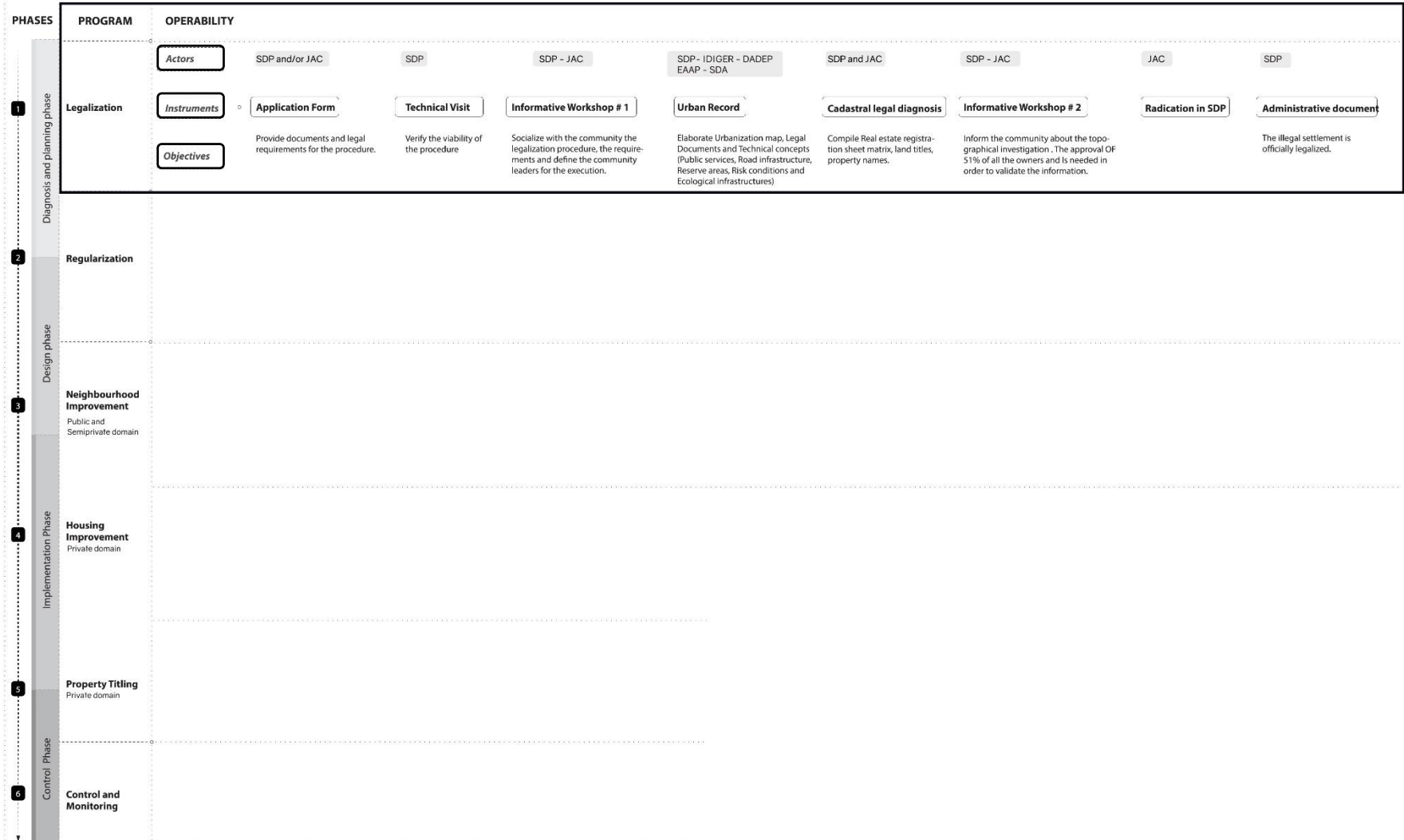
Coevolutionary Pathway – La Flora

Current Planning Operability of the Upgrading Strategy in Bogota

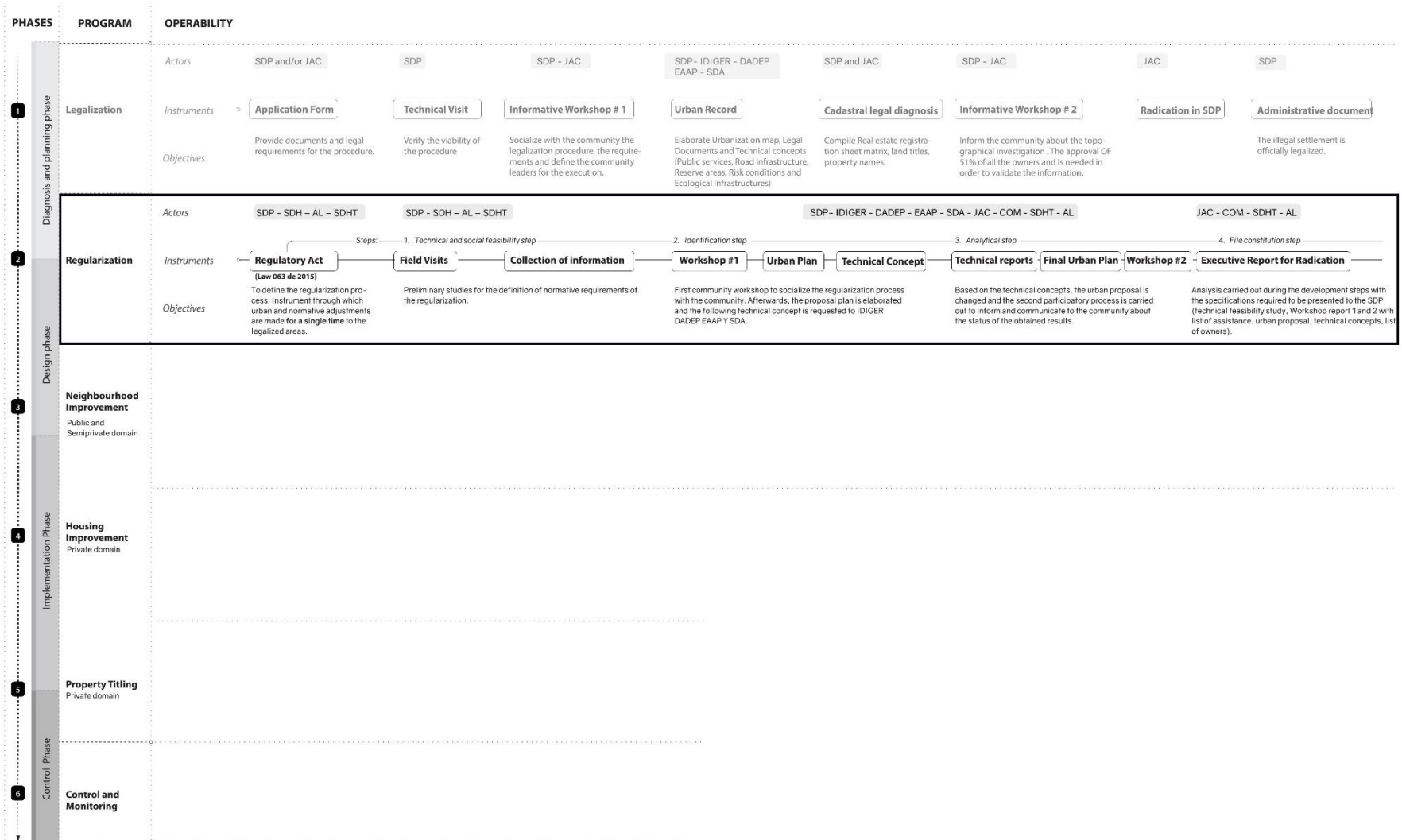




Current Planning Operability of the Upgrading Strategy in Bogota

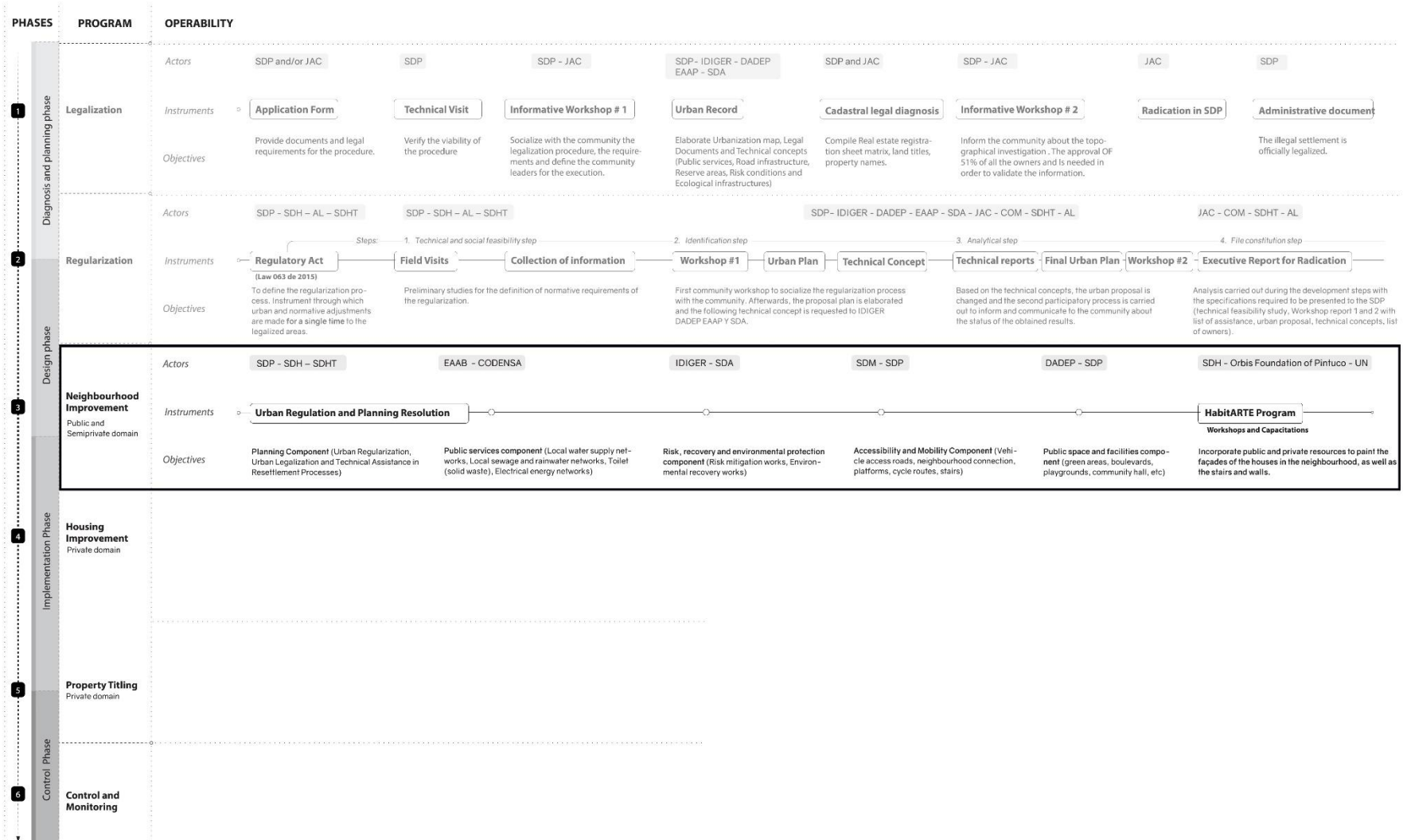


Current Planning Operability of the Upgrading Strategy in Bogota





Current Planning Operability of the Upgrading Strategy in Bogota



Current Planning Operability of the Upgrading Strategy in Bogota





Current Planning Operability of the Upgrading Strategy in Bogota



Proposed Planning Operability of the Upgrading Strategy in Bogota

1. Legalization

OPERABILITY	1	2	3	4	5	6	7	8
<b>Actors</b>	SDP and/or JAC	SDP	SDP - JAC	SDP - IDIGER - DADEP EAAP - SDA	SDP and JAC	SDP - JAC	JAC	SDP
<b>Instruments</b>	Application Form	Technical Visit	Informative Workshop # 1	Urban Record	Cadastral legal diagnosis	Informative Workshop # 2	Radication in SDP	Administrative document
<b>Objectives</b>	Provide documents and legal requirements for the procedure.	Verify the viability of the procedure	Socialize with the community the legalization procedure, the requirements and define the community leaders for the execution.	Elaborate Urbanization map, Legal Documents and Technical concepts (Public services, Road infrastructure, Reserve areas, Risk conditions and Ecological infrastruc-	Compile Real estate registration sheet matrix, land titles, property names.	Inform the community about the topographical investigation. The approval of 51% of all the owners and is needed in order to validate the information.		The illegal settlement is officially legalized.



**PROPOSED MODEL**  
COMPLEMENTARY APPROACH TO THE EXISTING PLANNING STRUCTURES

**ASSESSMENT FRAMEWORK**

- Vulnerability Index (Corelated encountered challenges)
- Particular conditions as potential lines of development

**PLANNING FRAMEWORK**

- Coevolutionary approach in the implementation of the proposed set of goals, actions, spatial rules and phases.
- Codesign and Coevaluation Instruments (Collaborative process between nature, formal and informal actors)
- Cohabitation of Social and Environmental systems as the strategic approach towards the counteraction of the multidimensional vulnerability.

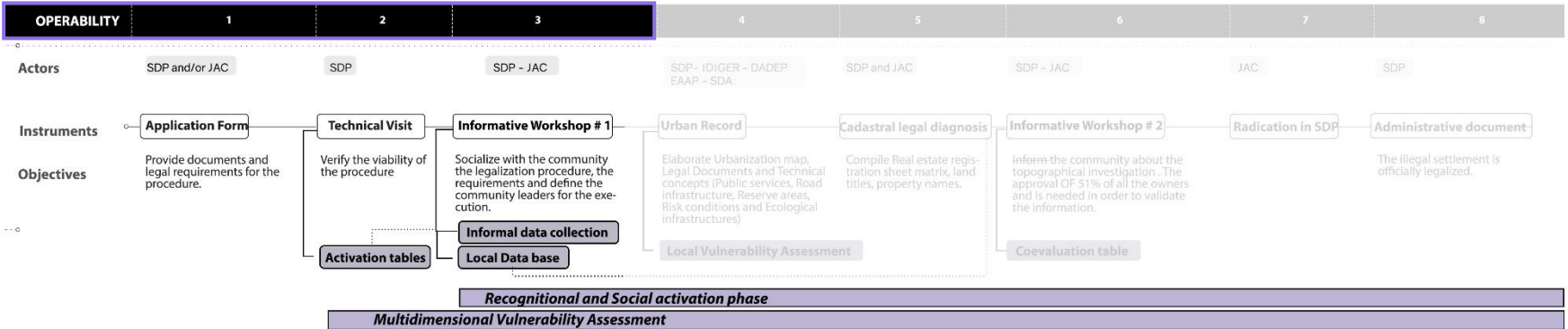
- **Additional Instruments**
- **Additional Phases**



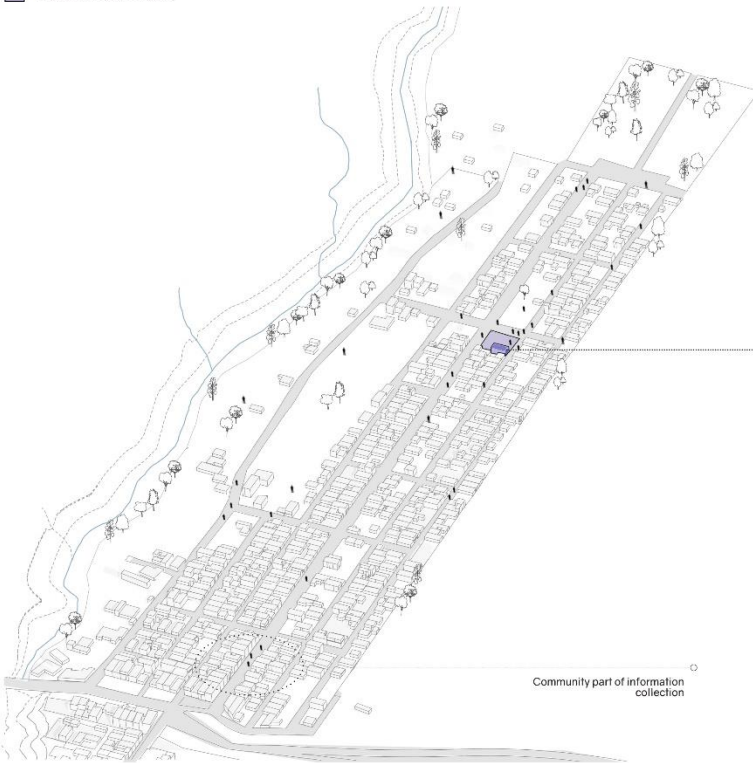
Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

1. Legalization



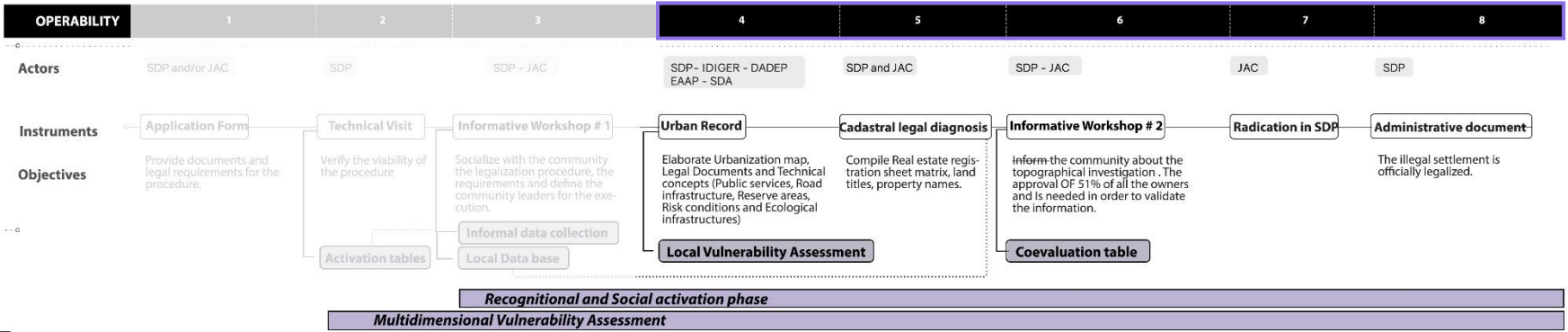
- Additional Instruments
- Additional Phases



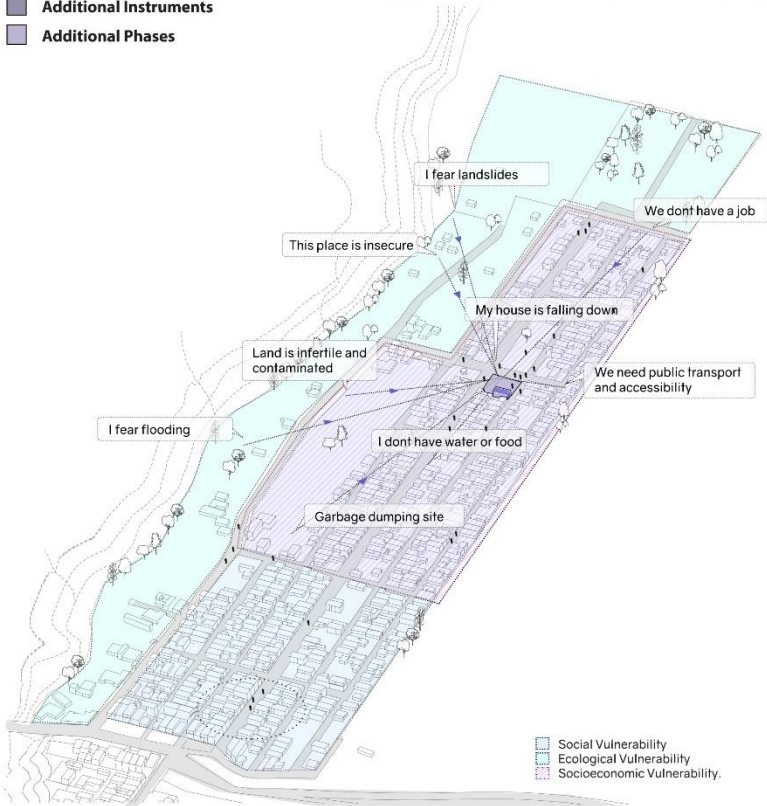
Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

1. Legalization



- Additional Instruments
- Additional Phases

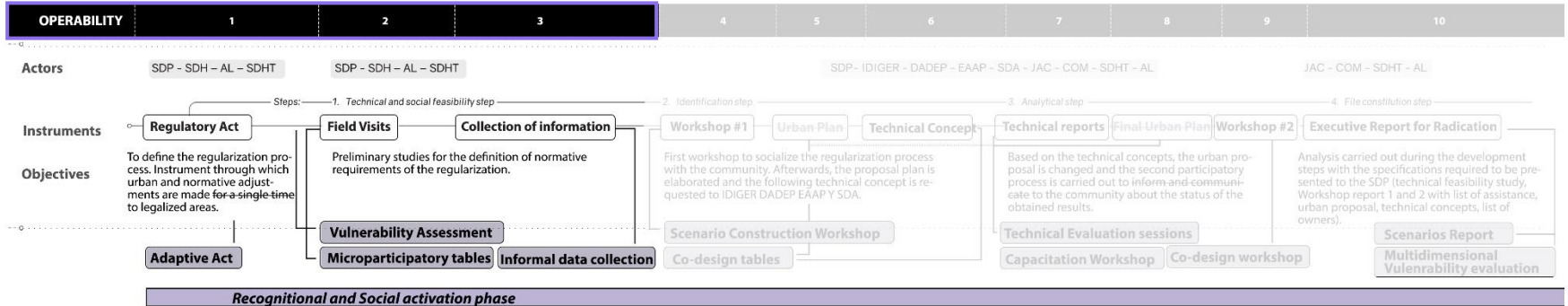




Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

2. Regularization



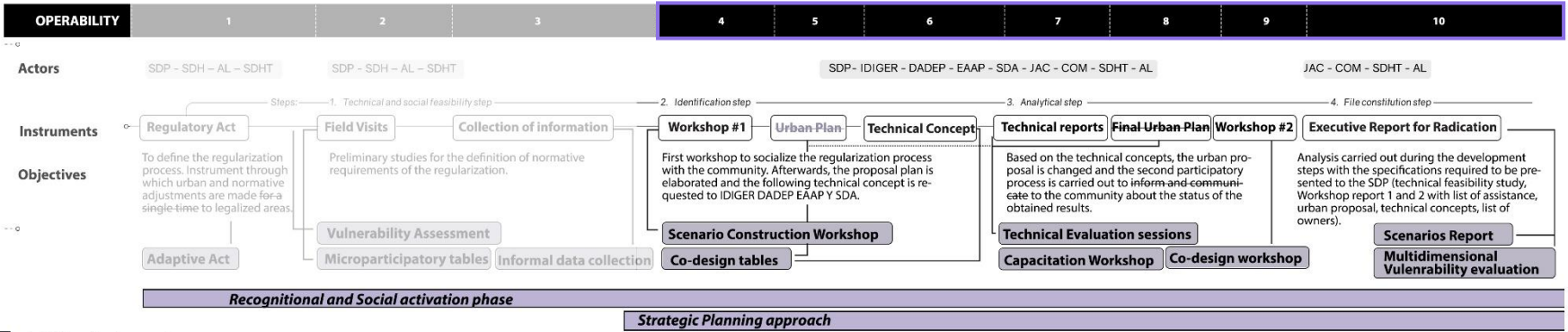
- Additional Instruments
- Additional Phases



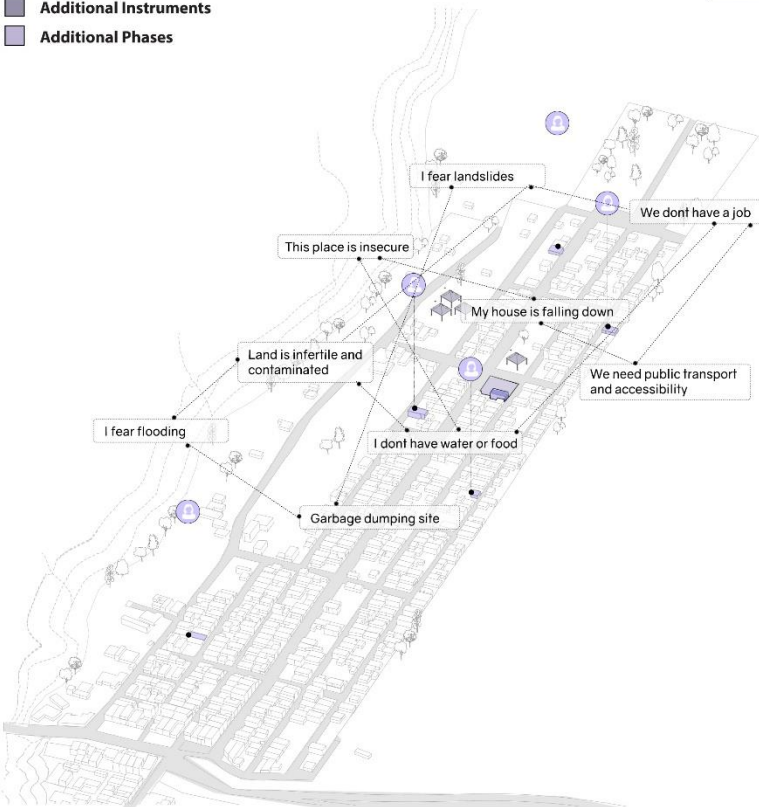
Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

2. Regularization



- Additional Instruments
- Additional Phases

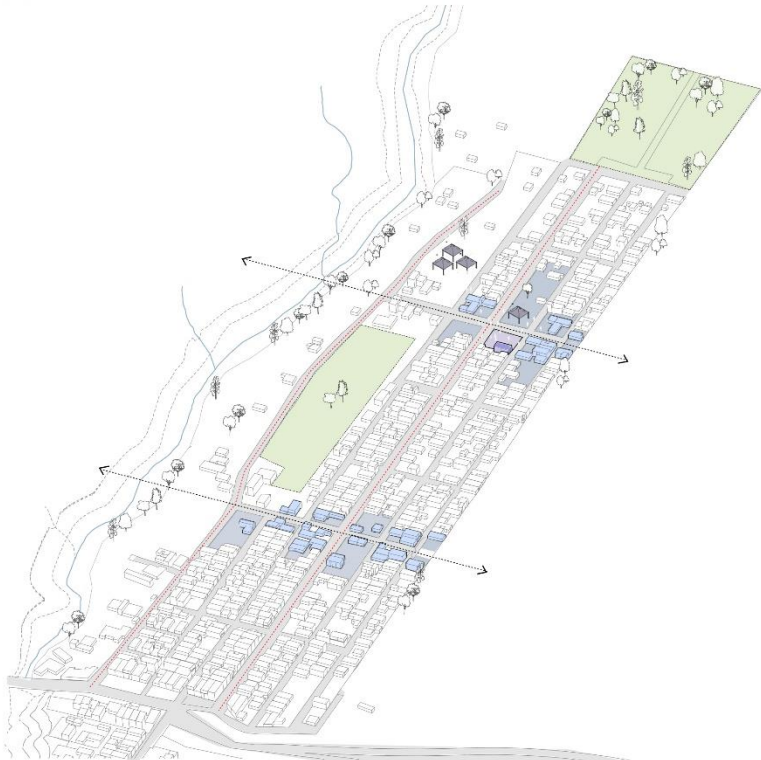
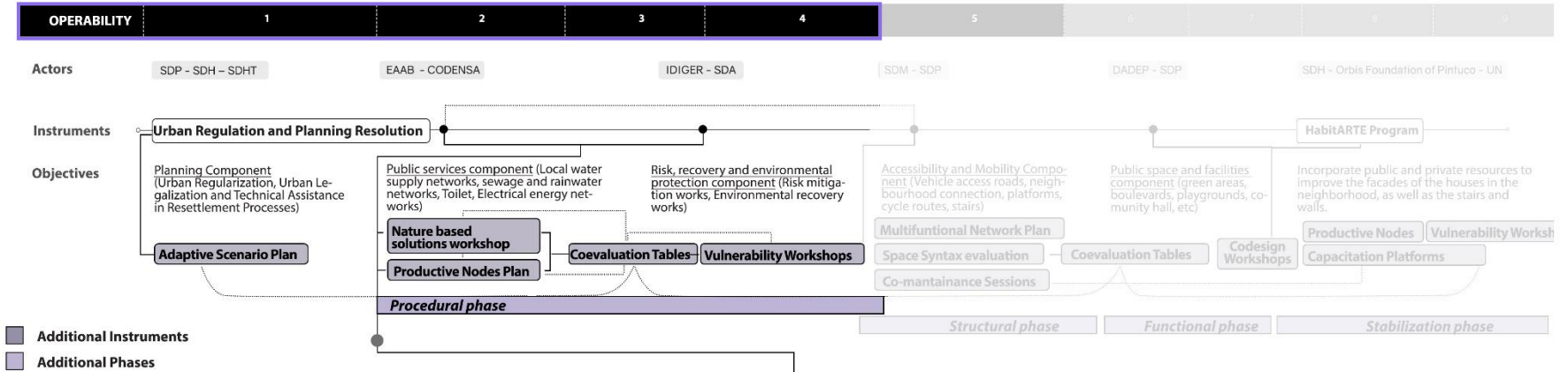




Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

3. Neighborhood Improvement

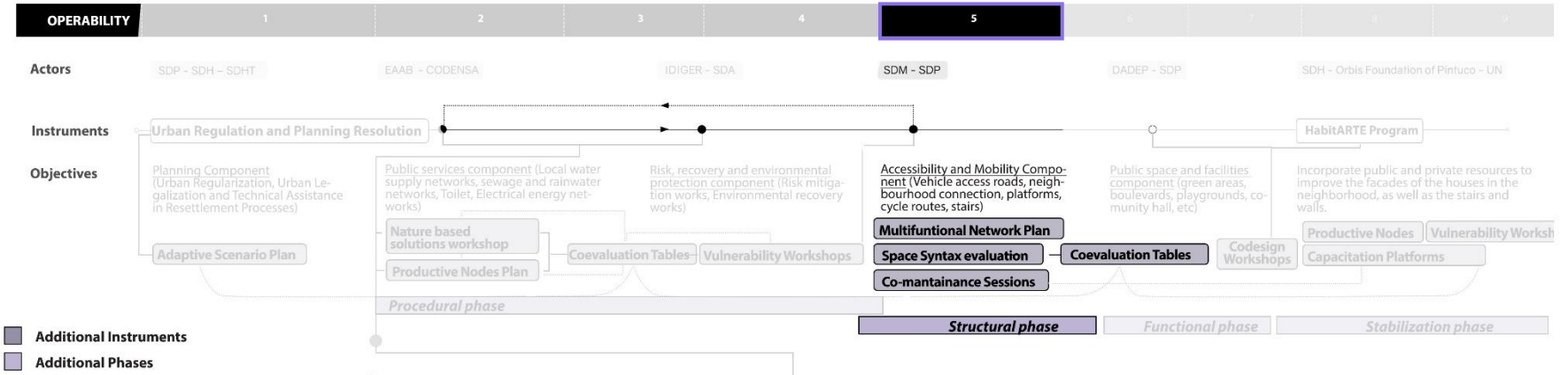


4. Housing Improvement

Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

3. Neighborhood Improvement



4. Housing Improvement

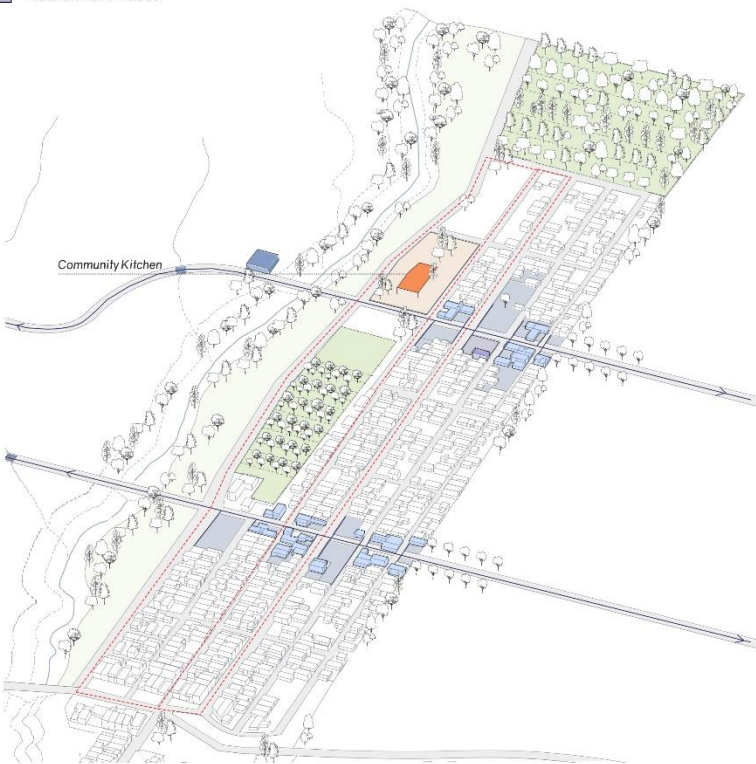
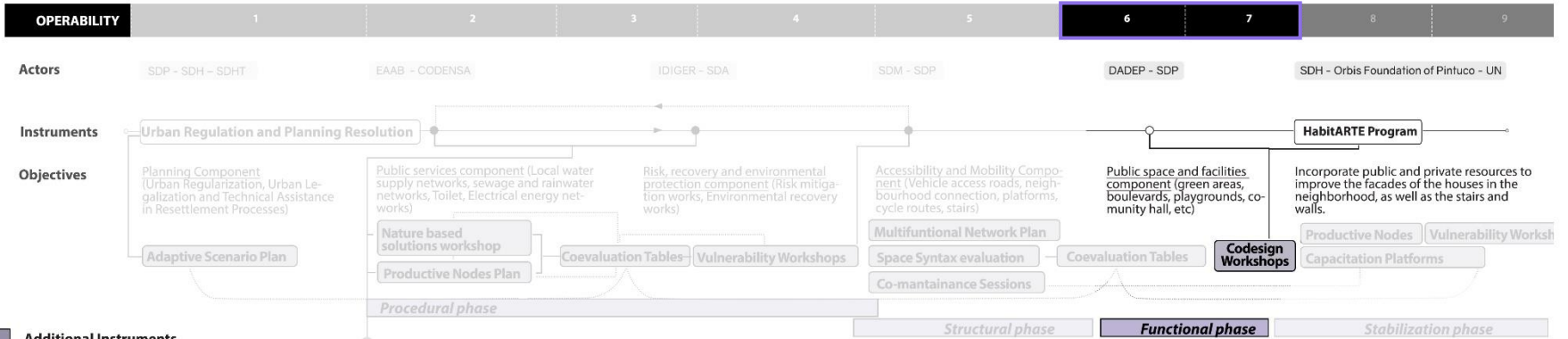




Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

3. Neighborhood Improvement

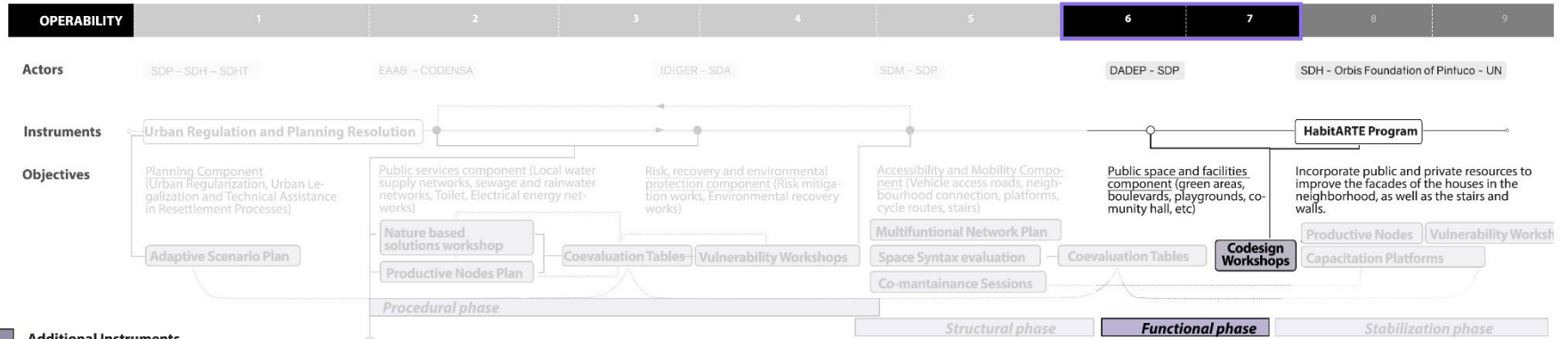


4. Housing Improvement

Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

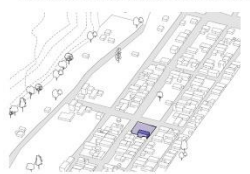
3. Neighborhood Improvement



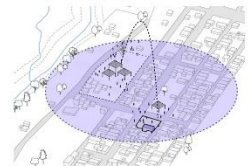
Final stages  
Co-construction of an Outdoor Kitchen as a local community space.



First stages  
Current indor community kitchen as reunion point.



Following stages  
Outdoor spaces for coevaluation and codeign.

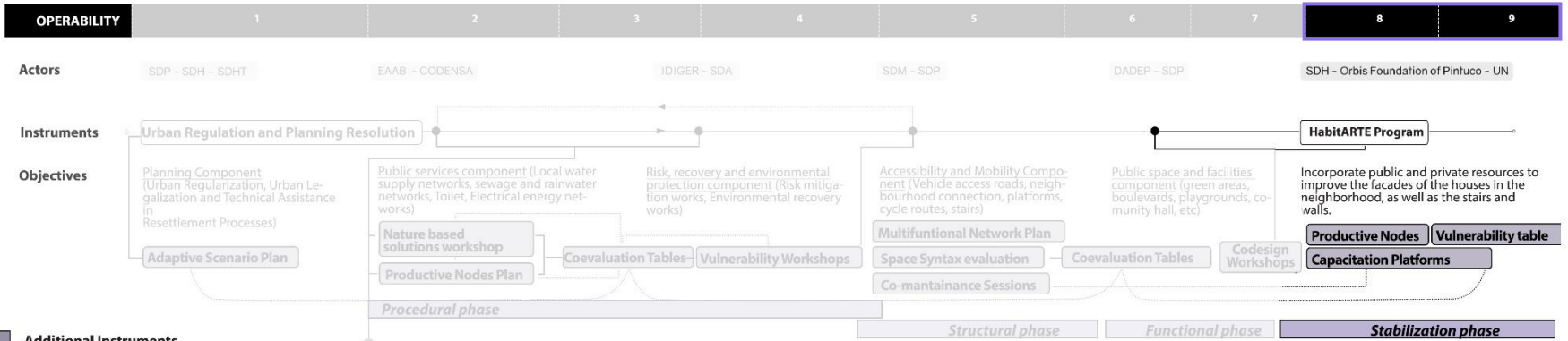




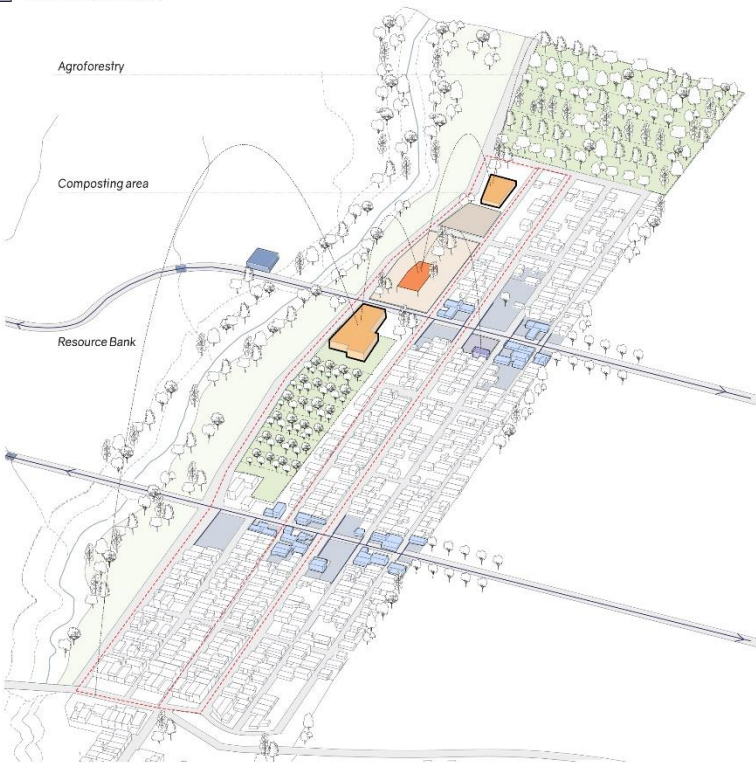
Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

3. Neighborhood Improvement



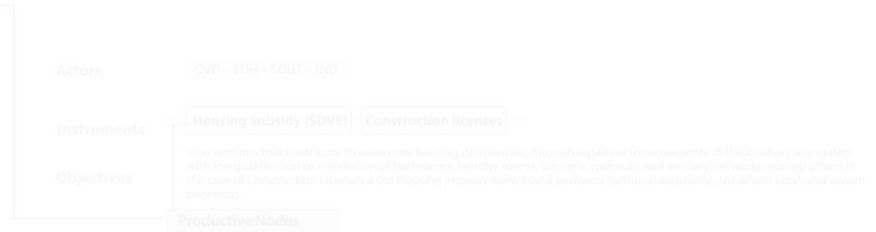
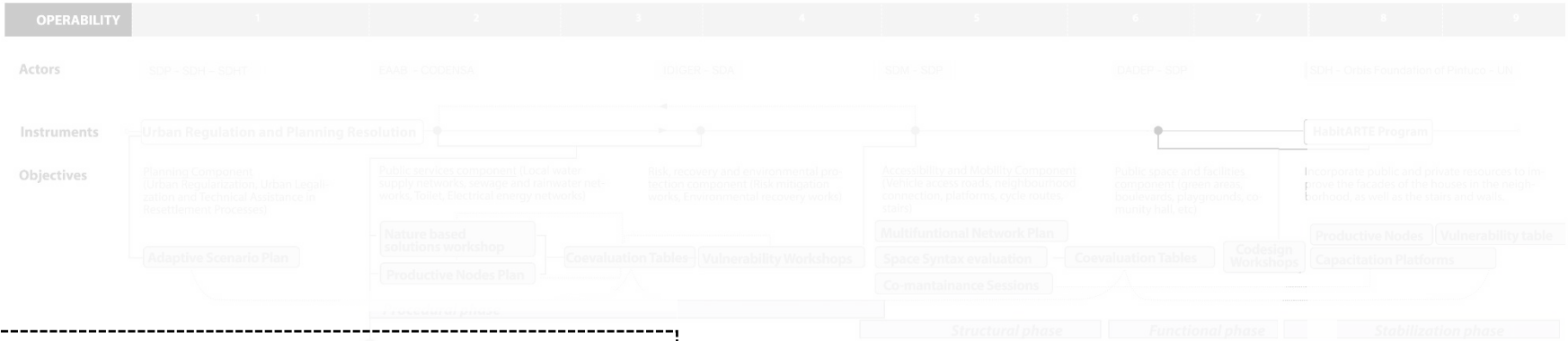
- Additional Instruments
- Additional Phases



4. Housing Improvement

Proposed Planning Operability of the Upgrading Strategy in Bogota

SAS (Story and Simulation) approach to scenario development (Alcamo, 2011)

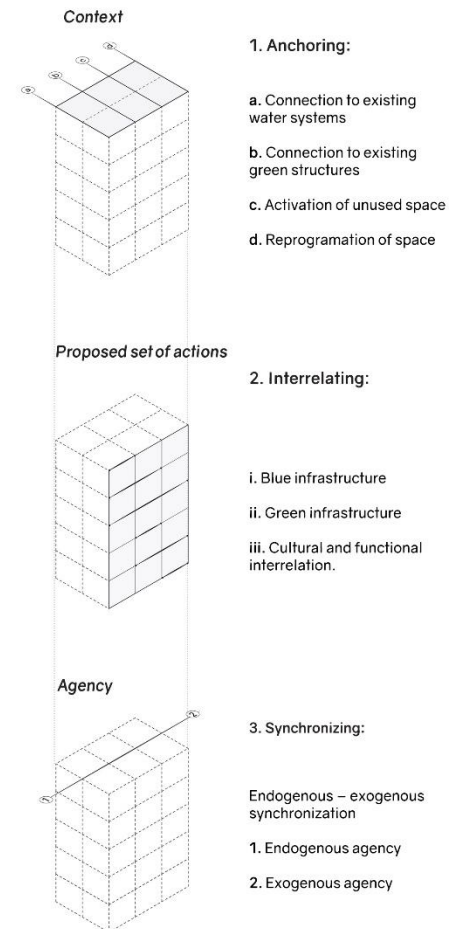




Spatial and functional Interrelations



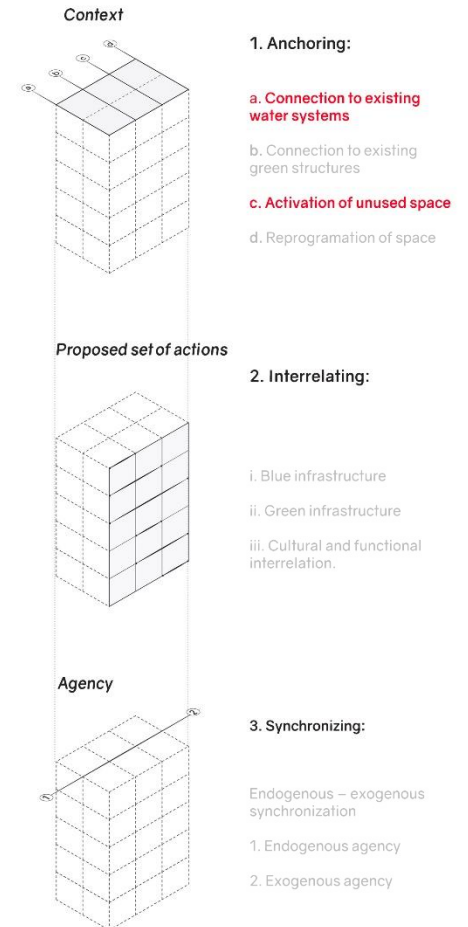
Spatial Framework Rules



Spatial and functional Interrelations



Spatial Framework Rules

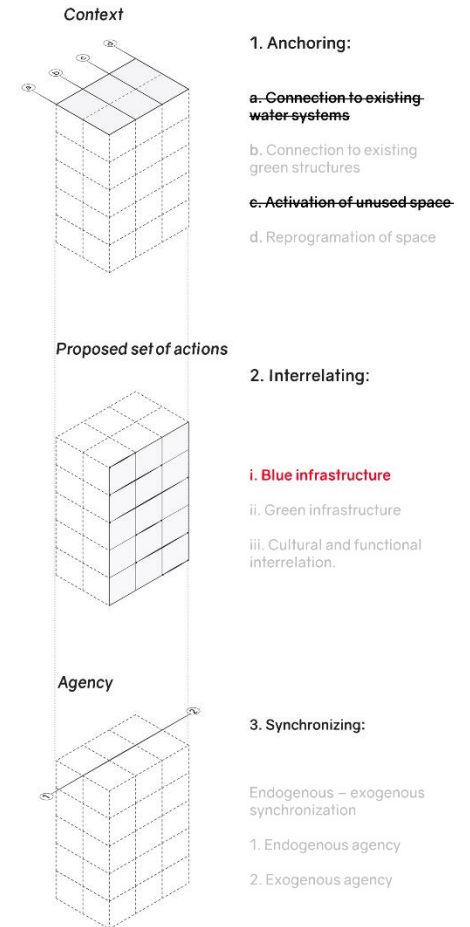




Spatial and functional Interrelations



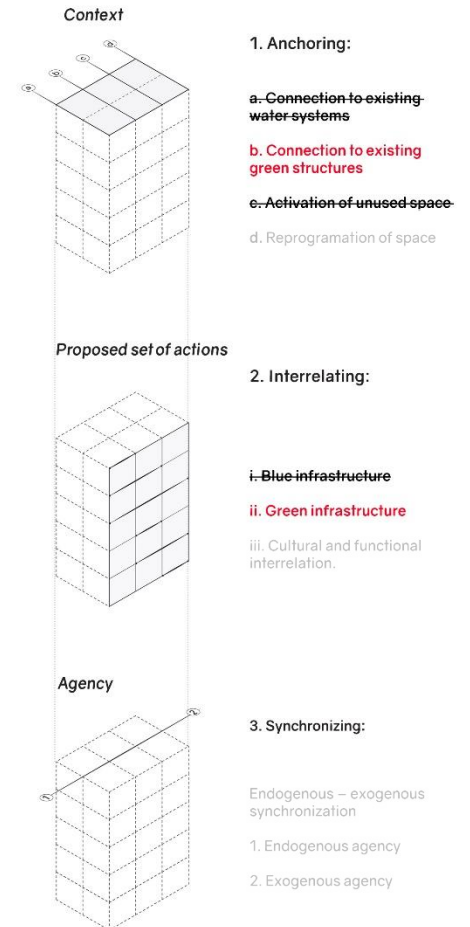
Spatial Framework Rules



Spatial and functional Interrelations



Spatial Framework Rules





Spatial and functional Interrelations





Google Street View, 2020

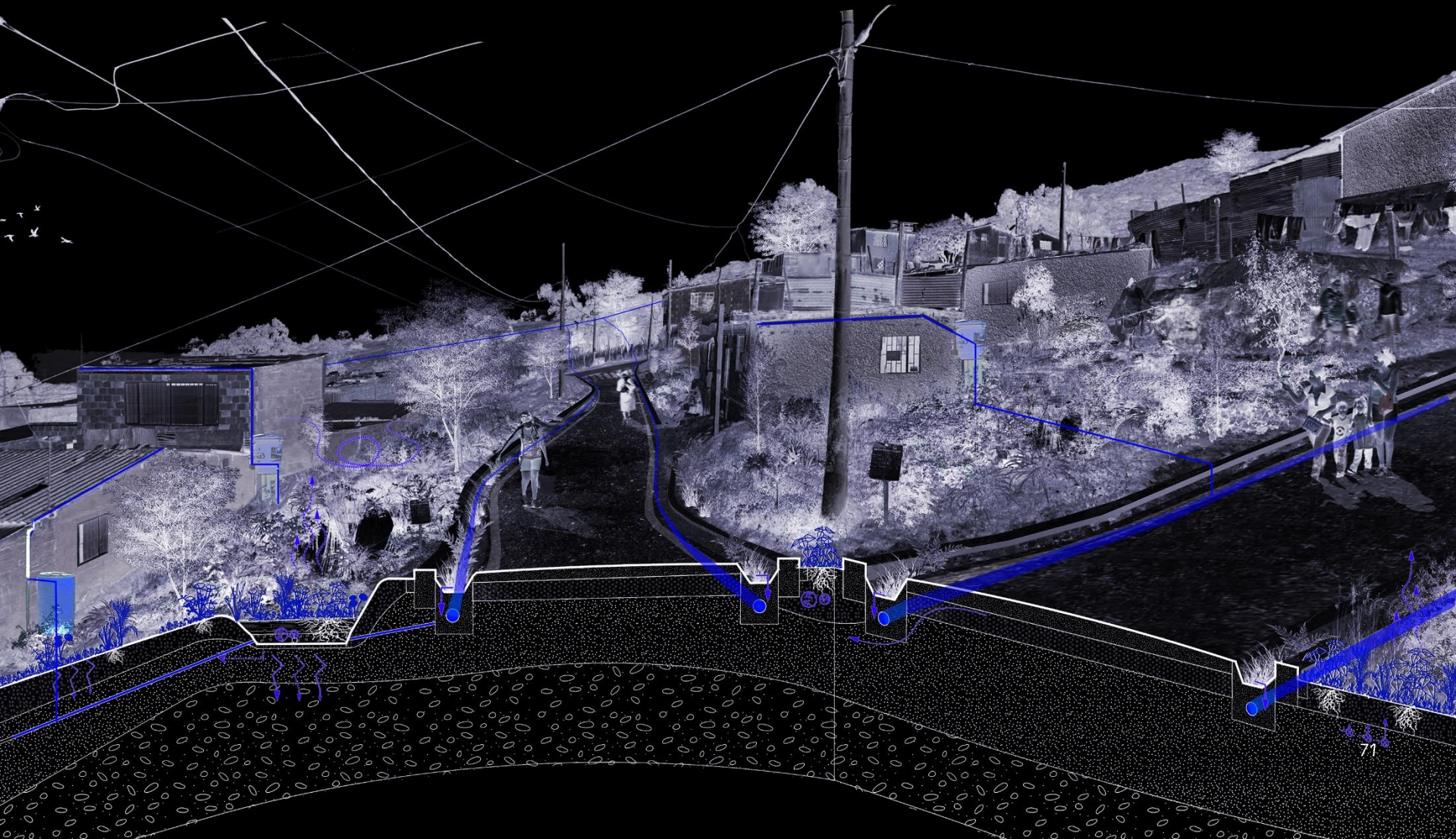


Spatial and functional Interrelations





Spatial and functional Interrelations

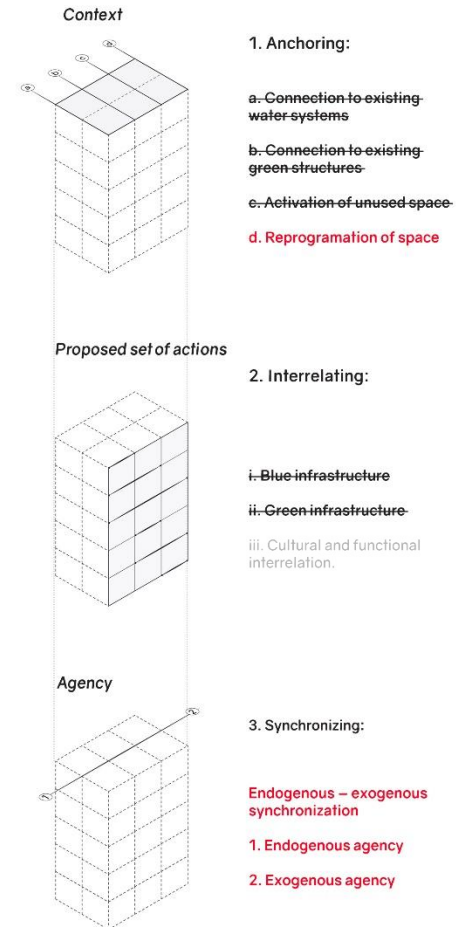




Spatial and functional Interrelations



Spatial Framework Rules



Spatial and functional Interrelations



Google Street View, 2020

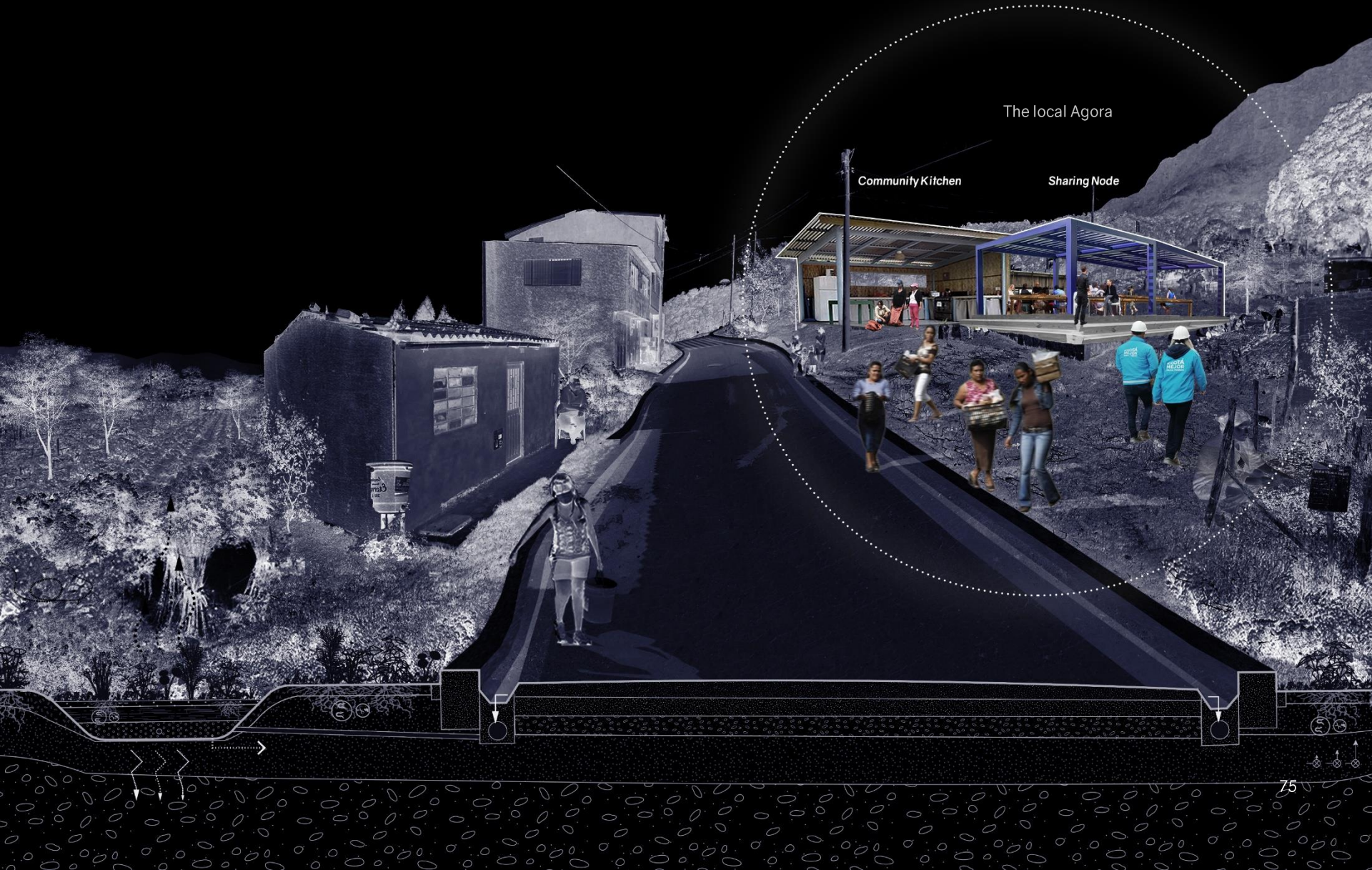


The local Agora





Spatial and functional Interrelations

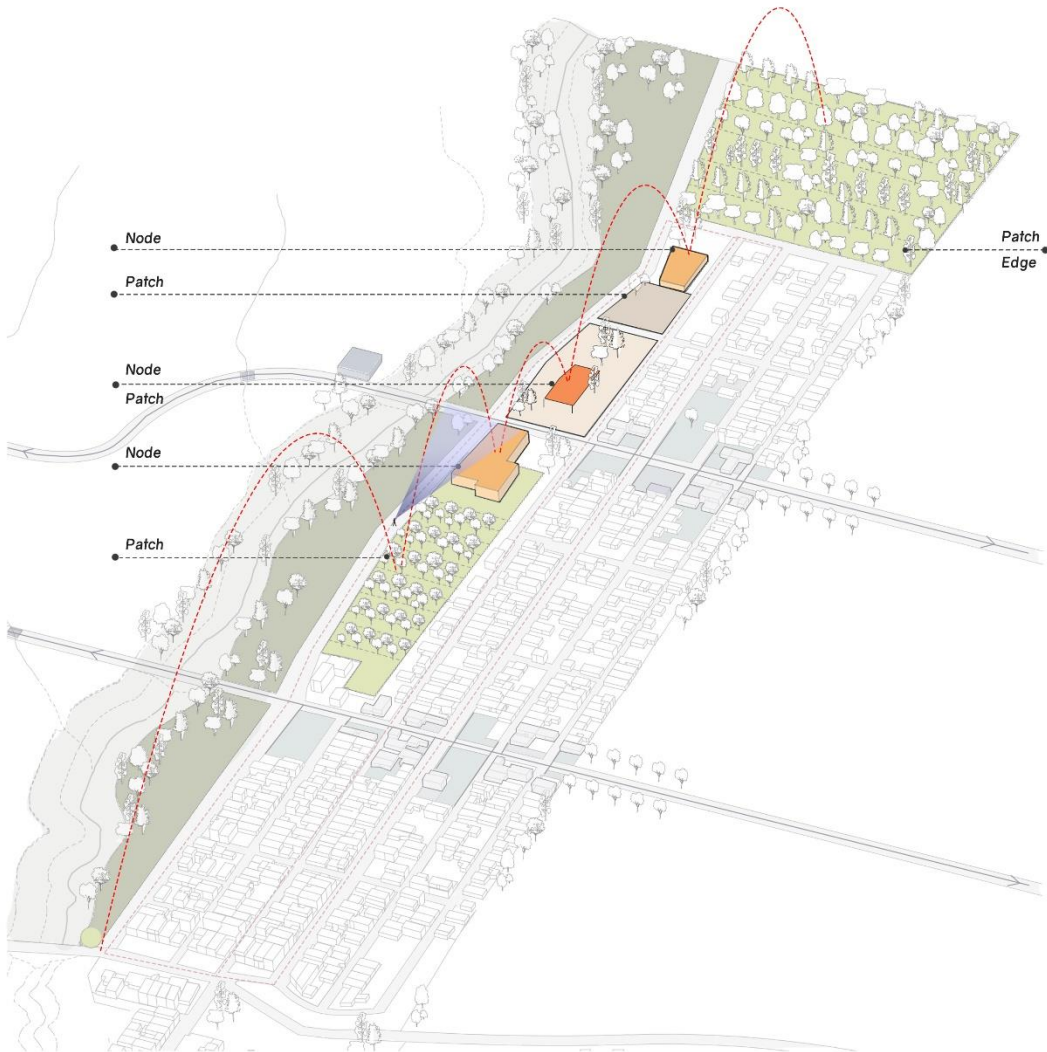




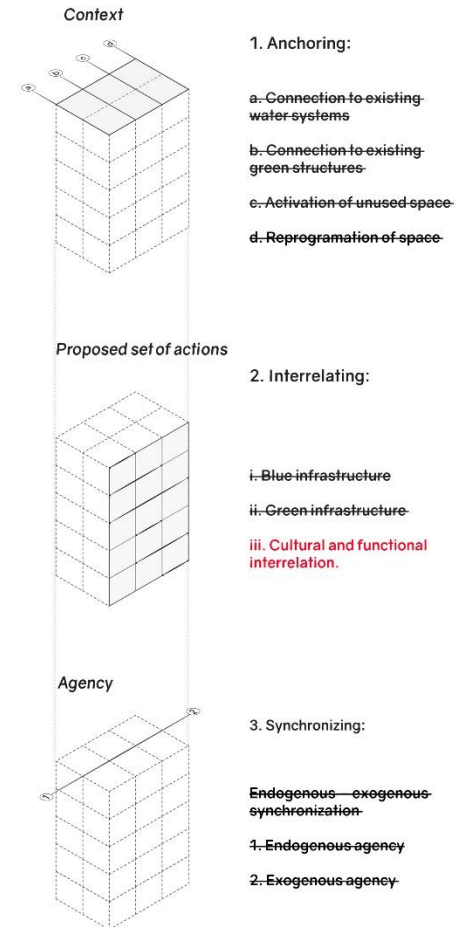
Spatial and functional Interrelations



Spatial and functional Interrelations



Spatial Framework Rules





Spatial and functional Interrelations



Google Street View, 2020

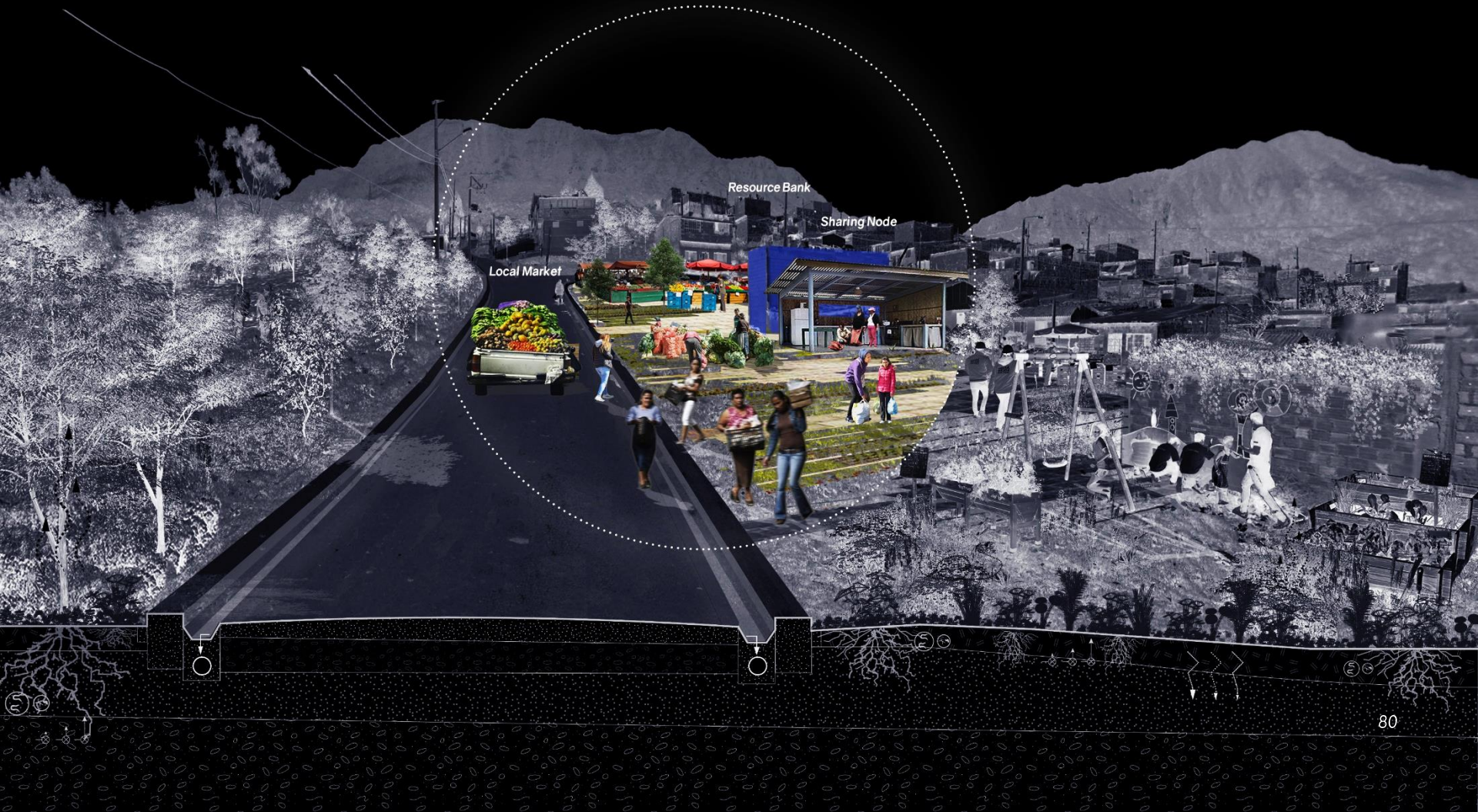


Spatial and functional Interrelations



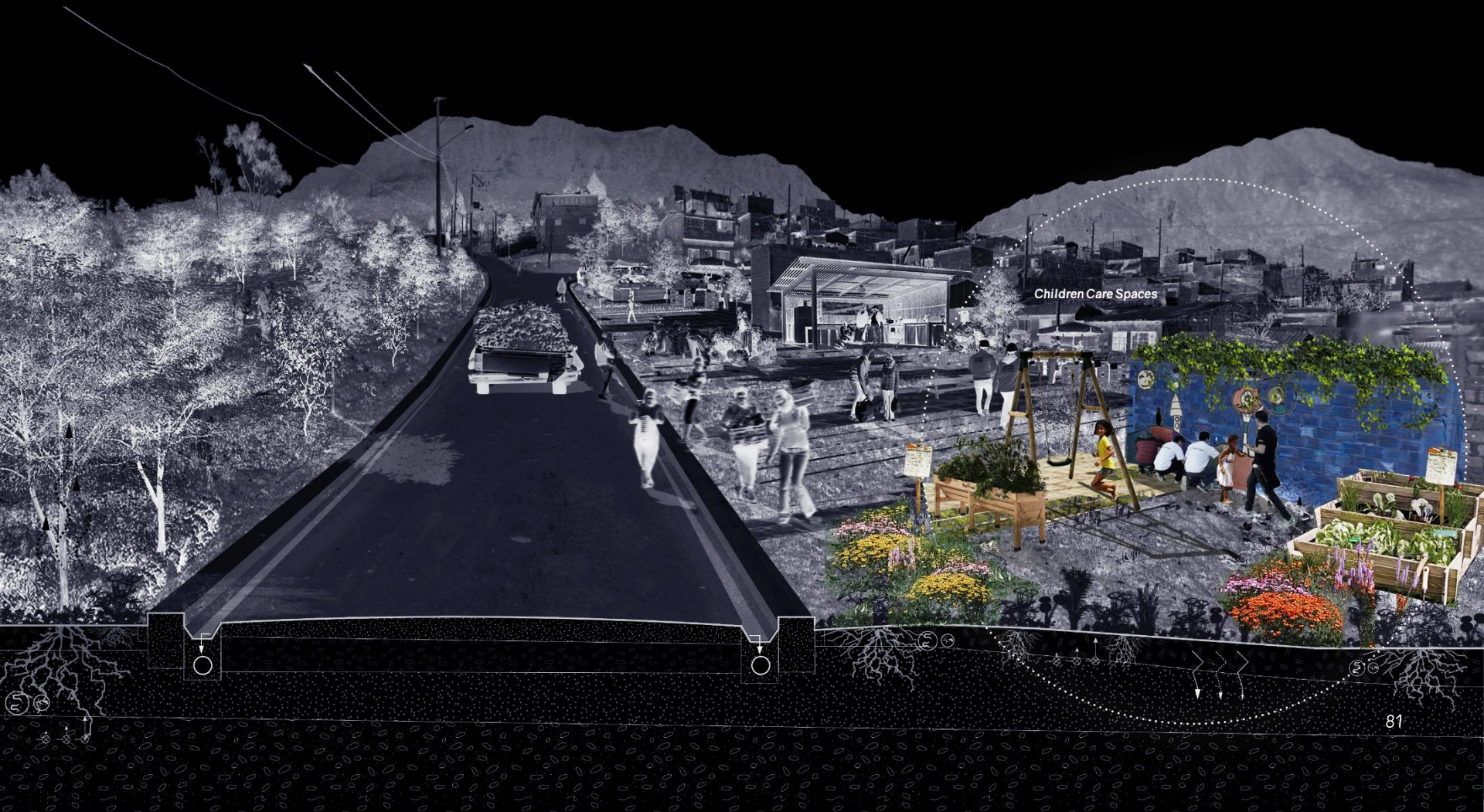


Spatial and functional Interrelations



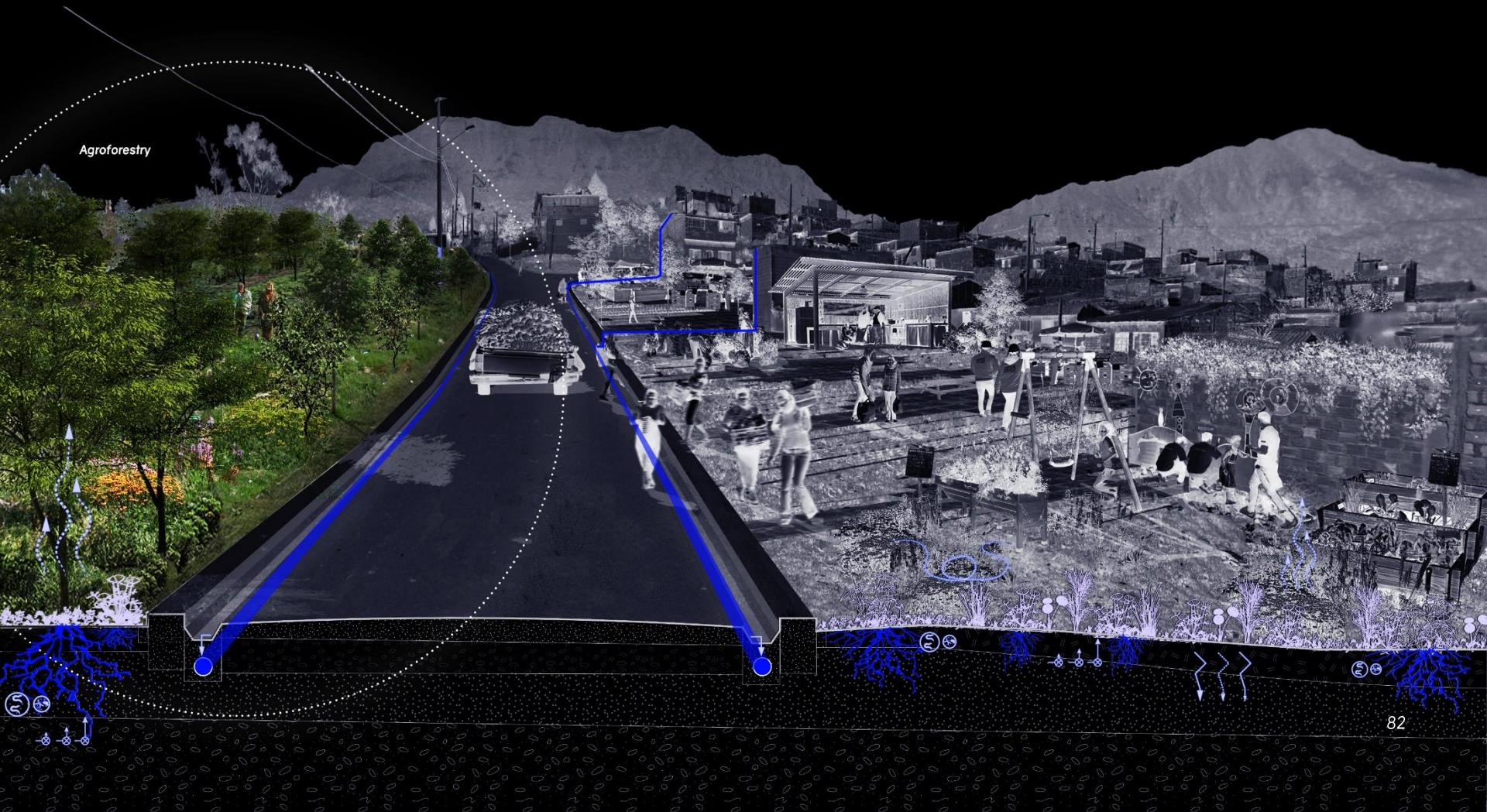


Spatial and functional Interrelations





Spatial and functional Interrelations























Main Research Question

How can an adaptive strategic framework create a new planning vision for vulnerable areas in the city of Bogotá in order to achieve a sustainable, dynamic and cohesive urban environment?





## An Adaptive strategic framework

*Exploring new upgrading strategies for informal settlements in Bogotá, Colombia*







## An Adaptive strategic framework

*Exploring new upgrading strategies for informal settlements in Bogotá, Colombia*

**GRACIAS!**  
**THANK YOU!**



**Elisa Isaza Bernhard**  
4916883  
TU Delft

MSc3 Urbanism  
Planning Complex Cities  
Inclusive Cities of the Global South