MEDELLÍN URBAN DESIGN STUDIO

PROVIDING INFRASTRUCTURE FOR INFORMAL SETTLEMENTS

JOTA SAMPER CATALINA ORTIZ MANUEL ORTEGA LORENA BELLO

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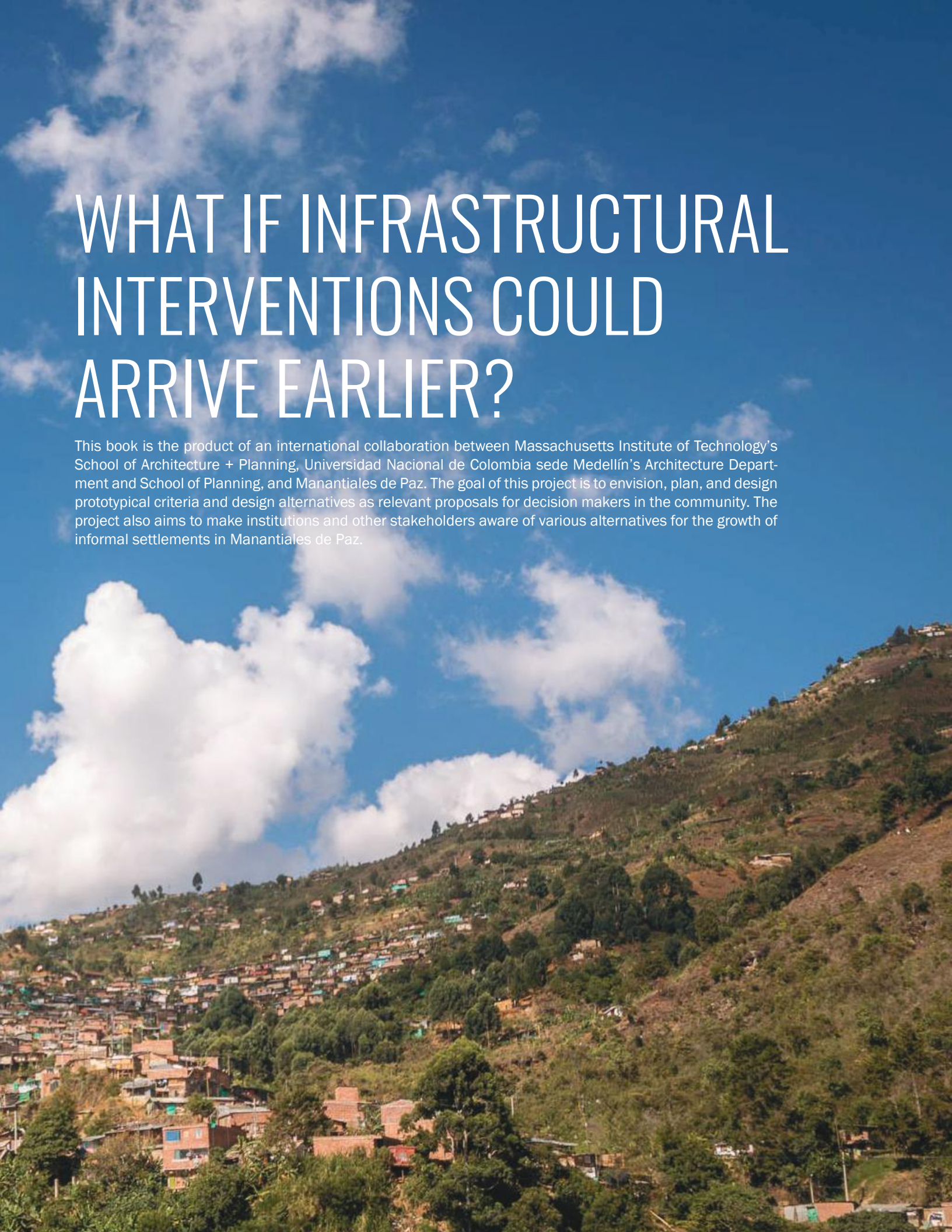
WHAT IF INFRASTRUCTURAL INTERVENTIONS COULD ARRIVE EARLIER?

This book is the product of an international collaboration between Massachusetts Institute of Technology's School of Architecture + Planning, Universidad Nacional de Colombia sede Medellín's Architecture Department and School of Planning, and Manantiales de Paz. The goal of this project is to envision, plan, and design prototypical criteria and design alternatives as relevant proposals for decision makers in the community. The project also aims to make institutions and other stakeholders aware of various alternatives for the growth of informal settlements in Manantiales de Paz.



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INTRODUCTION

The world is urbanizing at a high speed. It is expected that up to five billion people will be living in urban areas by 2030, meaning that one million people per week will be joining the urban life in the next 15 years. Most of this urban growth will happen in the Global South, where the more than one billion people who today live in extreme poverty in informal settlements will be joined by another billion in less than two decades.

Slums, tugurios, favelas, bidonvilles, chabolas, pueblos nuevos, coreas, barracas, kampung, morros, ashwa'iyya, squatters or shantytowns, just to name a few terms, are the physical manifestations of this urban informality. It is a geography that results from city managers' lack of capacity to effectively respond to urban development pressures in the context of migration and inequality. Because of this, informal settlers usually occupy the undesirable, leftover spaces, like flood zones or steep slopes. Even if many romanticize this flexibility for survival and our capacity as human beings to self-build landscapes for habitation, these informal fabrics are subject to many social and environmental problems that also compromise the ecological carrying capacity of their host territory.

These settlements are far from being new geographies in the 21st century; informality has coexisted with formality since the Industrial Revolution. What is new, however, is the speed and scale of the process of informal urbanization in the planet. For these reasons, many think that, together with climate change, informality is one of the most pressing problems to be tackled by urban thinkers and designers in our century. The Medellín Urban Design Studio wants to join this challenge.

PEDAGOGICAL FRAMEWORK

Urban informality has become the most common form of urbanization in the planet. For this reason, this studio considers it critical to expose and provide tools and mechanisms for understanding these process, to be able to respond with innovative and sensitive urban design visions. We also share the idea that there are many lessons to be learned from these forms of urbanization in the Global South for a more sustainable and equitable Global North.

The speed, scale, and the exponential growth of informality's complex processes have proven the old urban regime's toolbox obsolete. More importantly, the role of the author-designer who "only" listens to the genius loci of the place to give a personal answer is over. Societies and ecologies at risk demonstrate the need for an interdisciplinary, collaborative approach in design that blurs the boundaries between different disciplinary silos of knowledge, transforming urbanists into mediators between the government and the community at large to come up with innovative and alternative projects. To create these more inclusive mechanisms, they uncover and emphasize the invisible layers that often hide under bureaucratic and technocratic urban processes.

Today, there is a renewed interest in multiple disciplines in working on spaces of informality. Urbanists, planners, anthropologists, and designers like John Habraken, Manuel de Sola-Morales, David Harvey, Mike Davis, Alejandro Aravena, Rahul Mehotra, Urban-Think Tank, Ecosistema Urbano, Christian Werthmann, Teddy Cruz, Jose Castillo, Joan Busquets and Alejandro Echeverri come to mind as great thinkers and multidisciplinary designers in these contexts, some of whom were invited to give lectures or participate in our studio reviews.

BACKGROUND + AGENDA

Medellín's approach to informal settlements has been celebrated as one of the best models in the world, and it is also seen as one of the leading cities in Latin America in improving the quality of life for informal dwellers. Alejandro Echeverri explains that the tenure of Mayor Sergio Fajardo between 2003 and 2007 was key to this process. Under the umbrella of education and his political campaign 'Medellín the most educated,' the city introduced social and urban infrastructure as ways to improve the quality of life for poor communities in Medellín. A key urban design instrument was the Proyecto Urbano Integral (integrated urban project), or PUI. Five PUIs were created from 2003 to 2011. They focus on transportation infrastructure, public buildings, and public space in critical locations within informal neighborhoods. The Northeastern PUI alone had more than 200 individual physical projects. A large measure of these projects' effectiveness is the state's ability positively to modify the physical public structure of a neighborhood where the state had not previously had any meaningful presence.

Yet this successful phenomenon in Medellín is counteracted by a high pressure of informal, non-planned development in the other cities in the metropolitan area, which lack the mechanisms to stop encroachment. These eight municipalities are now the recipients of hordes of new dwellers who arrive in the region searching for safety and a better economic future. Over the last 10 years, these areas have seen the emergence of entire neighborhoods of thousands of informal dwellers, and Manantiales de Paz, in the municipality of Bello, is an example of such a process. It is a six-year-old neighborhood where most development is the result of informal dwellers' agency. Street networks, water, sewage, and power are provided by informal entrepreneurs and Manantiales de Paz's community board, as we have discovered in our visits.

The overall goal of the Medellín Studio has been to

collaborate with the Manatiales de Paz neighborhood as a case study for research and action, which has let us discover firsthand the process and form of fast informal urbanization as well as its consequences. Learning from that process, and their other innovative ideas about the process of informal city development, the studio has intended to answer the following question:

What if those infrastructural interventions could arrive in time?

If this were the case then: How should they be deployed? Which would be the strategies? What should be their social and spatial mechanisms to direct future growth? What kind of hybrid programs and forms could help this community overcome the challenge of, over the next 15 years, becoming 20 times bigger than it is today? Our projects will help not only this neighborhood, but also the growing metropolis of Medellín by providing infrastructural prototypes to direct its future growth.

COLLABORATION + TRAVEL (WORKSHOP)

With this challenge in mind, the Medellín Studio has been organized as an international collaboration between the two departments of MIT's School of Architecture + Planning, the School of Architecture and Planning at the Universidad Nacional de Colombia in Medellín, the planning council of Nueva Jerusalem in the Municipality of Bello, and the community that started to settle in this neighborhood in 2009.

This book is compiled by a multidisciplinary team of architects and planners at both institutions. In each of the three sections, teams engage with the question of development at several scales of intervention: at the urban scale (MIT planning + architecture), at the planning and regulatory scale (UNal planning) and at the urban project scale (UNal architecture).

The collaboration was divided in two sections. The first took place on-site in Medellín over nine days in February 2015. It was a collaboration with community partners, students, and faculty from both institutions in which a hands-on charrette environment produced quick ideas and prototypes of possible strategies that were presented to community leaders. The feedback from the community in that session served as a guidance for the rest of the exercise.

The second section at MIT in Cambridge and at the Universidad Nacional in Medellín during the spring semester combined seminar, discussion, and studio formats. Short, informal talks introduced concepts, analytical techniques, and site planning models. Short exercises and a major project provided practice in various site planning and design techniques. The three groups meet again and presented their results at the end of the

semester in Cambridge. The final product was presented to the community in the form of this book, along with an exhibition of the projects at the community library in Manantiales de Paz in July 2015.

This book presents specific recommendations for the local government of Bello and the community of Manatiales de Paz to respond to the challenges of the planning process and serves as a call for more just and concerted proposals. The report is divided in three sections. The first, *Providing Infrastructure for Informal Settlements*, engages with the accelerated growth of Manantiales de Paz and the adjacent region, addressing current and future infrastructure needs by focusing on

Manantiales residents viewing the model constructed by UNAL architecture students. (Photos: Ryan Catalani)

five areas of community interest: improving the public network by focusing on the absent voids, better water access, extreme growth as it relates with landslide risk, mobility access, and violence. For each one of these areas, projects forecast the future needs and present urban projects as design strategies that evolve over time within the logic of studied informal city development. They present roles and tasks that all stakeholders—in the community, state and private sector—could play in the generation of a better future.

The second, *Enclaves of Solidarity*, is devoted to defining, identifying, and exploring the conceptual underpinnings of tensions and challenges to find a way for actors to concentrate their efforts on integration that allows them to, with solidarity and cooperation, jumpstart the urgent strategies that the area demands. The third, *Structuring Borders: Designing on the Edge*, proposes urban projects that respond to the different sectors of the neighborhood, providing public space and public buildings while also accounting for the necessary new housing supply.

The final goal of this exercise is to, by presenting the process of informal city-making as one of the multiple ways in which cities are made, contribute innovative ideas to the current tensions between formal and informal urban practices. By presenting these two processes (formal and informal) as complementary and not antagonistic, we provide real venues for policy and project action that, under the current conditions, are possible but require new action framing both from informal communities and state actors.


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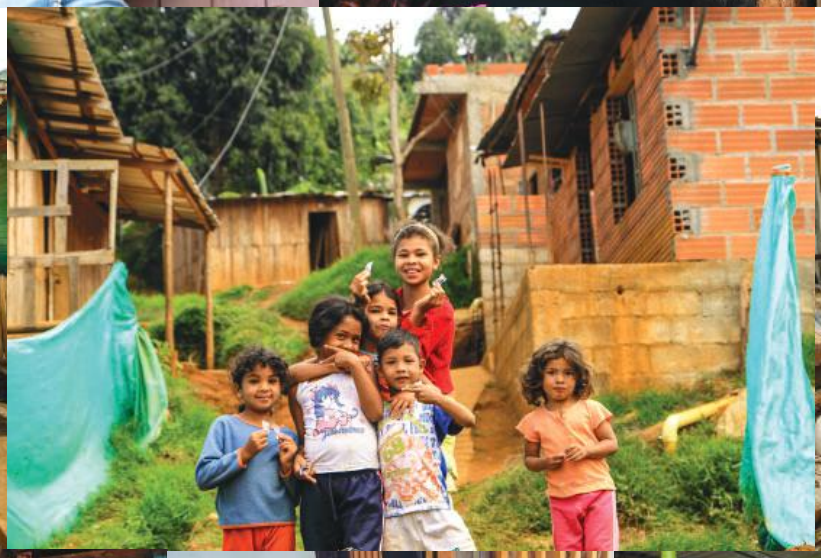




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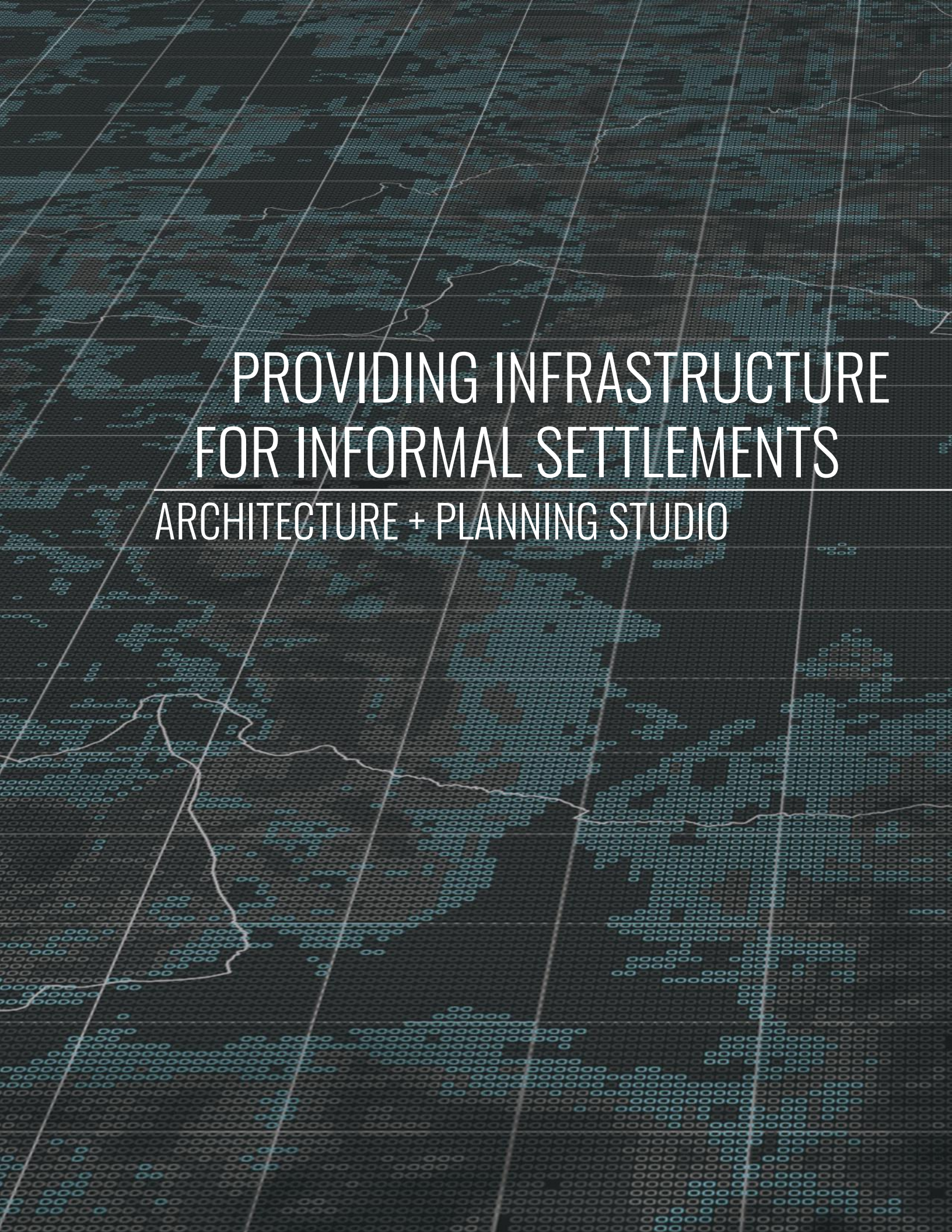


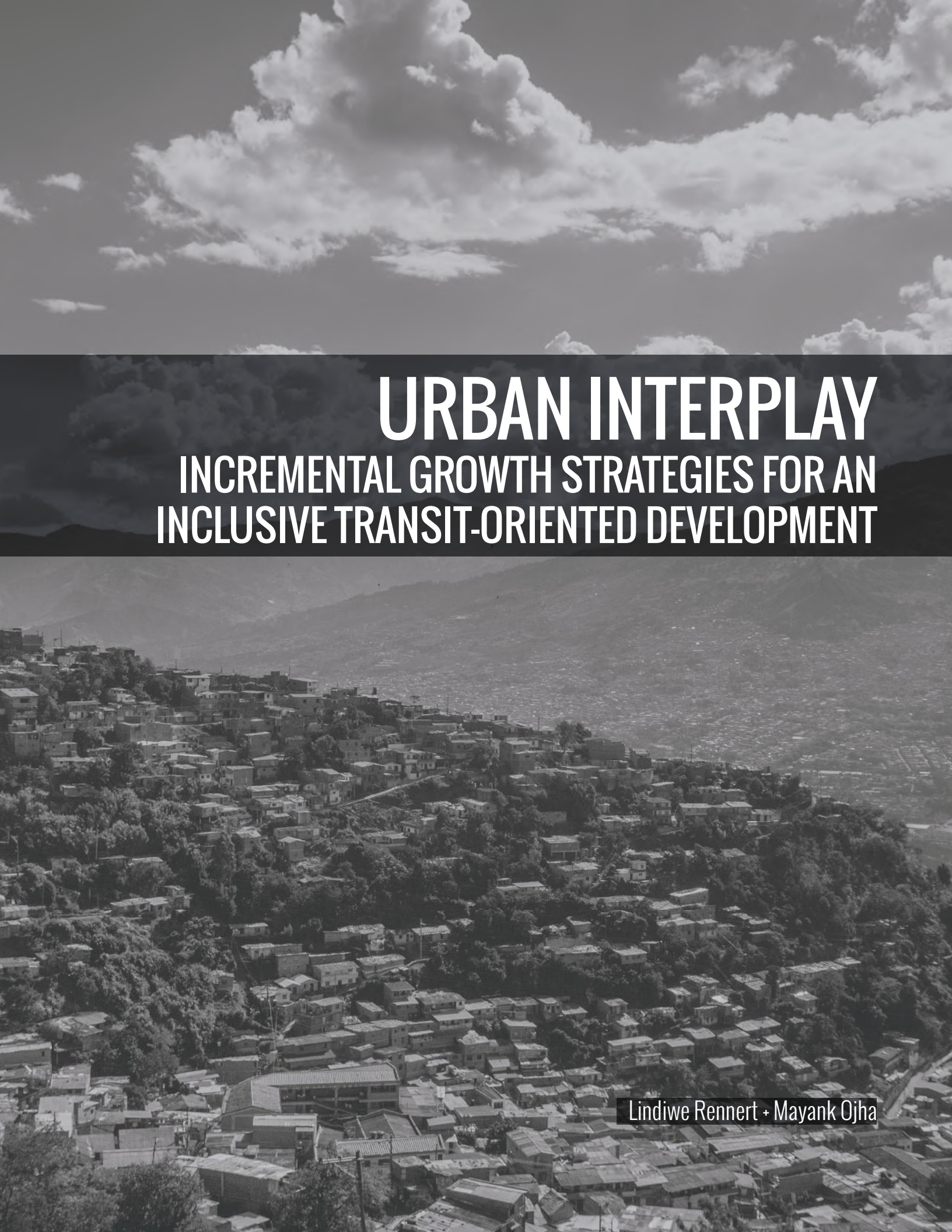
PROVIDING INFRASTRUCTURE FOR INFORMAL SETTLEMENTS

ARCHITECTURE + PLANNING STUDIO

MIT

OBJECTIVES

To engage with the accelerated growth of Manantiales de Paz and adjacent region addressing current and future infrastructure needs by focusing on five areas of community interest: improving the public network by focusing on the **absent voids**, better **water access**, extreme growth as it relates to **landslide risk**, **mobility** access and **violence**. For each one of these areas, each project forecasts its future needs and present urban projects as design strategies that evolve over time along the logics of studied informal city development. It presents as the other section roles and task that all stakeholders: community, state and private sector could play in the generation of better futures.



URBAN INTERPLAY

INCREMENTAL GROWTH STRATEGIES FOR AN INCLUSIVE TRANSIT-ORIENTED DEVELOPMENT

Lindiwe Rennert + Mayank Ojha

In assessing conditions related to mobility experienced by residents of Manatiales, we noticed concerning interplay between the following factors: access to affordable transit modes, vertical ascension of both cargo and people, a lack of municipal investment, and economic segregation. In an attempt to both mitigate this discourse and accommodate projected growth in this topographically precarious region, we propose a ten year partnership between the municipality of Bello, private developers, and the current residents of the Croatia comuna (which includes Manatiales) that uses transportation infrastructure and policy as a catalyst for mixed-use, mixed-income development. The projected results have drastic spatial, demographic, legal, and economic implications for all actors involved. The details of both the analysis of the existing conditions on-site as well as the aforementioned proposal are elaborated upon in this section.

The first step on our investigation into Manatiales was to better familiarize ourselves with the community's working parts; who lives there, what do they do, how many children does each household have, where do they commute to on a daily basis, what are their needs with respect to care for the elderly, where do they shop, and what percentage of their income is allocated to all of these elements.

We then focused our gaze in on the existing mobility networks in the area. We identified eight different transportation modes available to residents of Medellin and compared those eight modes to one another. We identified several metrics of assessment and did a cross-modal comparison. Once this base of assessment was established, we directly applied the demographic/economic profiles of members of Manatiales to the available mobility options and found concerning disconnects between community needs, capabilities, and existing service provision. Mending these disconnects became fundamental to our strategy going forth.

The assessment and analytical phase of our work was then followed by a look at projections of future growth in the area. It was at this point that we realized that the clear need for transportation improvement could be used as a shaper of the physical space, an agent of the people in fighting for a fair and desirable formalization process, and a catalyst for integration of uses, ownership types, and income tiers present in the urban realm of Croatia.

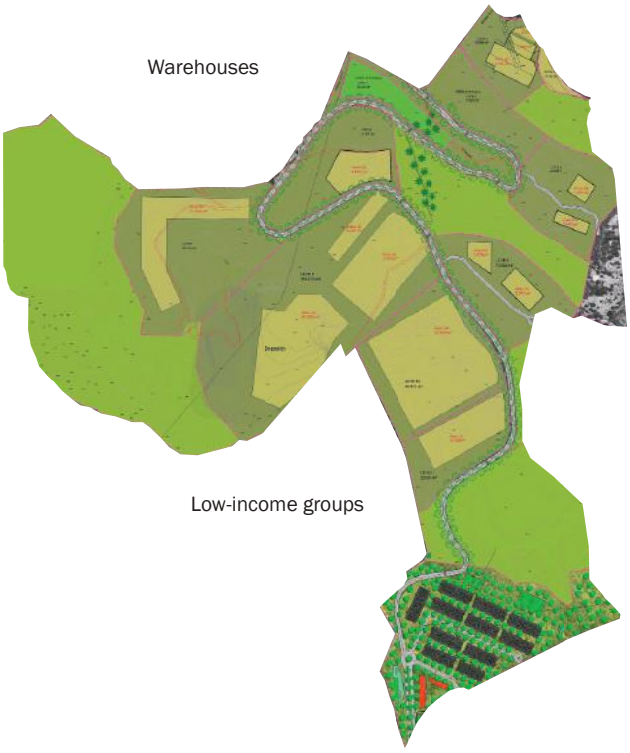
In the first of our three phase, ten year proposal that spans two and a half election cycles in Bello, we focus on bottom-up, self-sustaining acts that Manatiales could engage in in the short-term. We recommend the pooling of community funds that is then used to outright purchase a collection of jitney buses (starting with one and increasing the number as the fund pools increases as allows for it to best meet commuter capacity needs). This mini-bus/jitney would then be free to ride for all Manatiales members and would run during peak hours (take people to work hubs and return them from those work hubs to the central stop in Manatiales at the end of the day). During off-peak hours the minibuses would do rides throughout Medellin at a standard fare. This money would be used to pay drivers, cover gas and maintenance, and the rest would go back into the community fund. Once this fund grew, part of it would be allocated, by the elected fund manager, toward improvement of internal infrastructure.

In the mean time, the current zoning of Croatia is only roughly 10% urbanizable which the rest remains largely agricultural. In exchange for the ability to urbanize and the provision of necessary residential services by the municipality of Bello, the current owner of the land builds a connection road to I-60 from Manatiales. This road provides the jitneys with new access points to urban amenities and allows for incremental development by the developer along this corridor.

A winding road, which we have called a collection of loops, forms between Manatiales and the I-60 connection which leads to the airport as well as to Bello's city center. Along this winding road, middle and upper income housing is established along the periphery where views are highly commoditized. Social and self-built housing is designated within the loops. Additionally, each loop features an activity node in which public space, buildings, commerce, education, leisure, and such urban public activities are featured. Alongside this activity node and housing development, each new community has the option to mimic Manatiales' self-sufficient transit model and create their own fund pools, purchase their own mini-buses, elect their own transit fund managers, and then integrate into the larger existing minibus network which Manatiales pioneered. This elected transit authority then has the man-power to negotiate for collective land tenure for all informal settlements from Manatiales to I-60. Such a plan is beneficial for the community, who crave security of tenure, the private developer, who desires zoning capabilities for development, and the government, who will then be receiving new taxes as well as infrastructure improvements that they did not have to finance.

Finally, after two election cycles, density in the area should be enough to warrant the implementation of two metro cable stations that connect Santo Domingo and Bello through Croatia. Thus, the economic, mobility, and tenureship profiles of current Manatiales members are all improved drastically and the face of Croatia is transformed.

PROPOSED DEVELOPMENT PLAN FOR CROACIA COMMUNE



Flexible, economical mobility options
Economic opportunities

Regional connectivity, development

Urban development rights
Utilities: power, water, sewage

Interventions as top-down and bottom-up triggers for development

Proposed development plan for the Croacia region

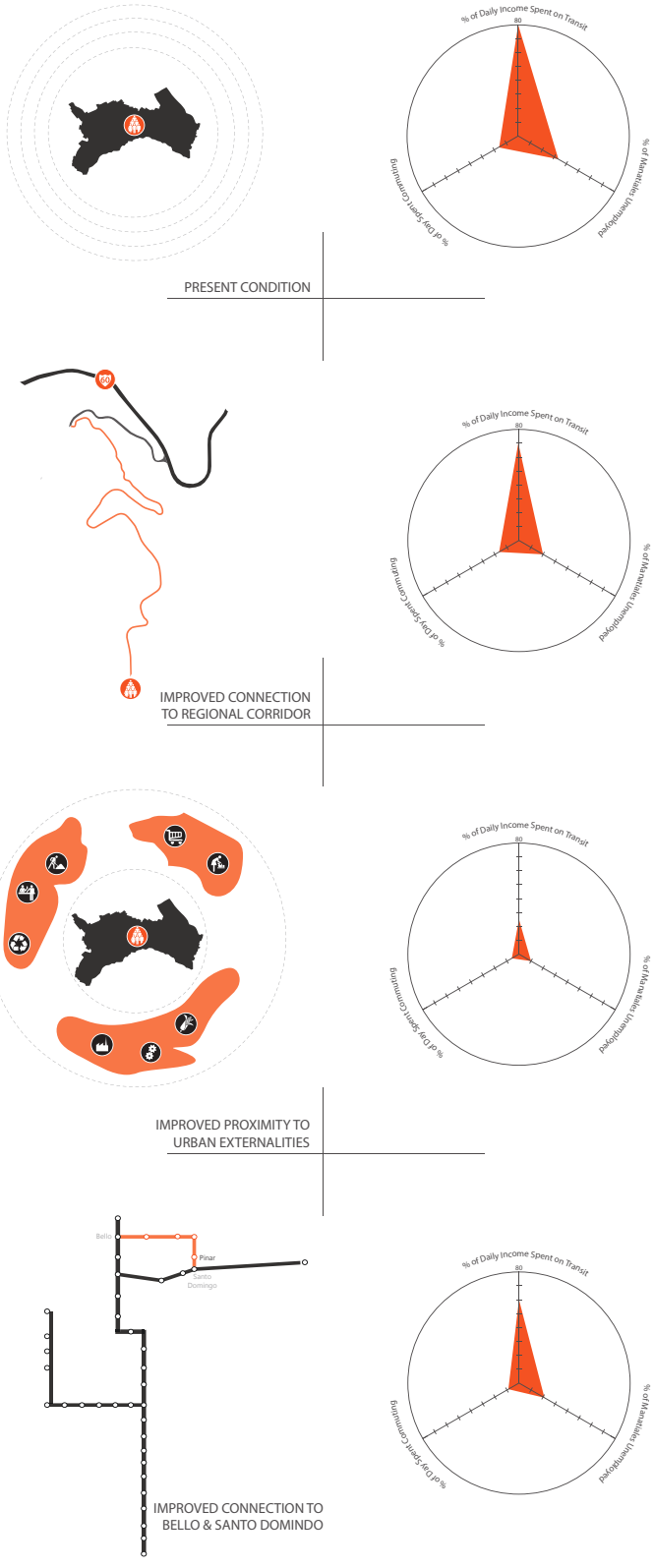
FAMILIARIZATION + ANALYSIS

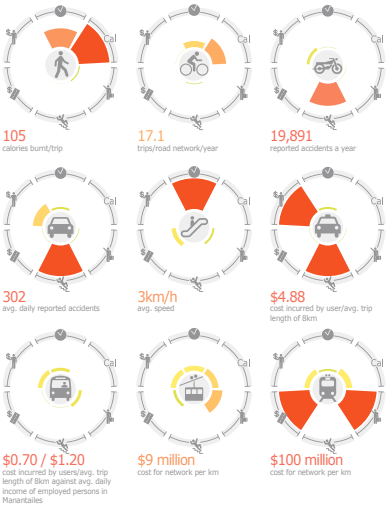
MOBILITY + ECONOMIC PROFILES

We created several scenarios that could possibly reflect the future of Manatiales. These included options the likes of resettlement of Manatiales residents nearer to Bello's city center, creating a mobility connection between the community and the larger I-60 corridor, better integrating Manatiales into the existing Medellin public transit network, and changing governance of the area from Bello to Medellin.

We tested the effects, such as amount of money spent on transit, amount of time spent commuting, and access to employment/education opportunities that each of these scenarios would have on different community members; those of varied genders, ages, employment profiles, etc.

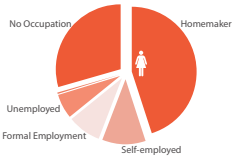
From this scenario exploration we found that the greatest value and accessibility levels for Manatiales result from the strategies below: connection to I-60, narrowed proximity to urban amenities, and increased integration into Medellin's public mobility network.

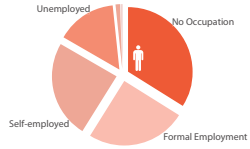




EXISTING MOBILITY CONDITIONS

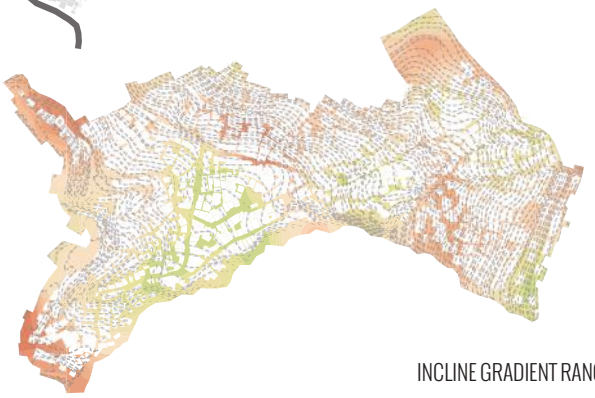
INFORMAL ECONOMY, SELF-EMPLOYMENT



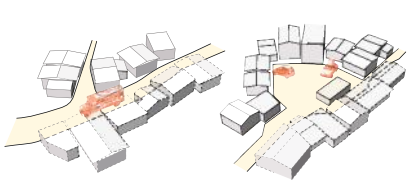


EMPLOYMENT, LABOR MARKET

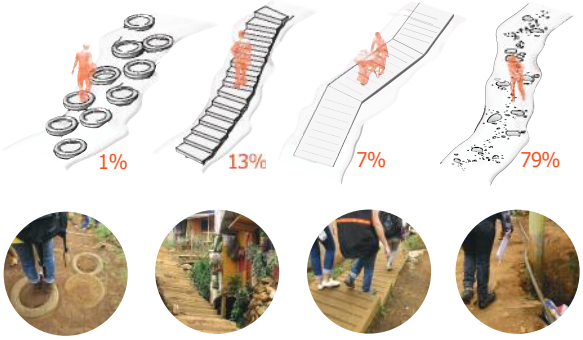
MOTORABLE ROADS



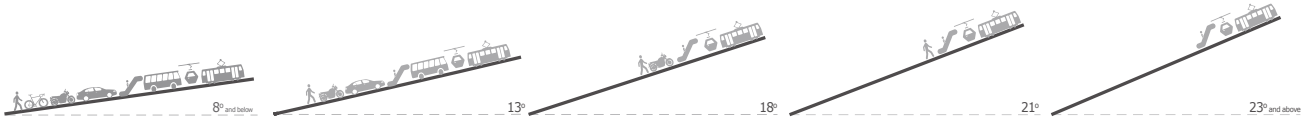
INCLINE GRADIENT RANGE

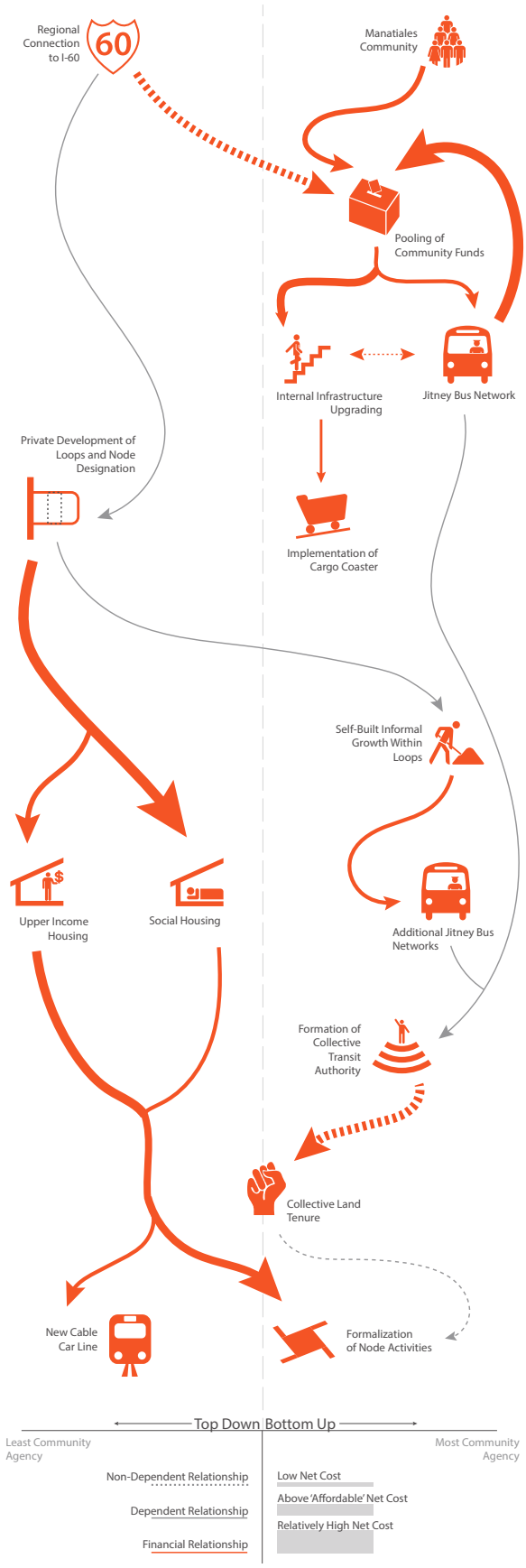


SURFACE TREATMENT WITHIN MANATIALES

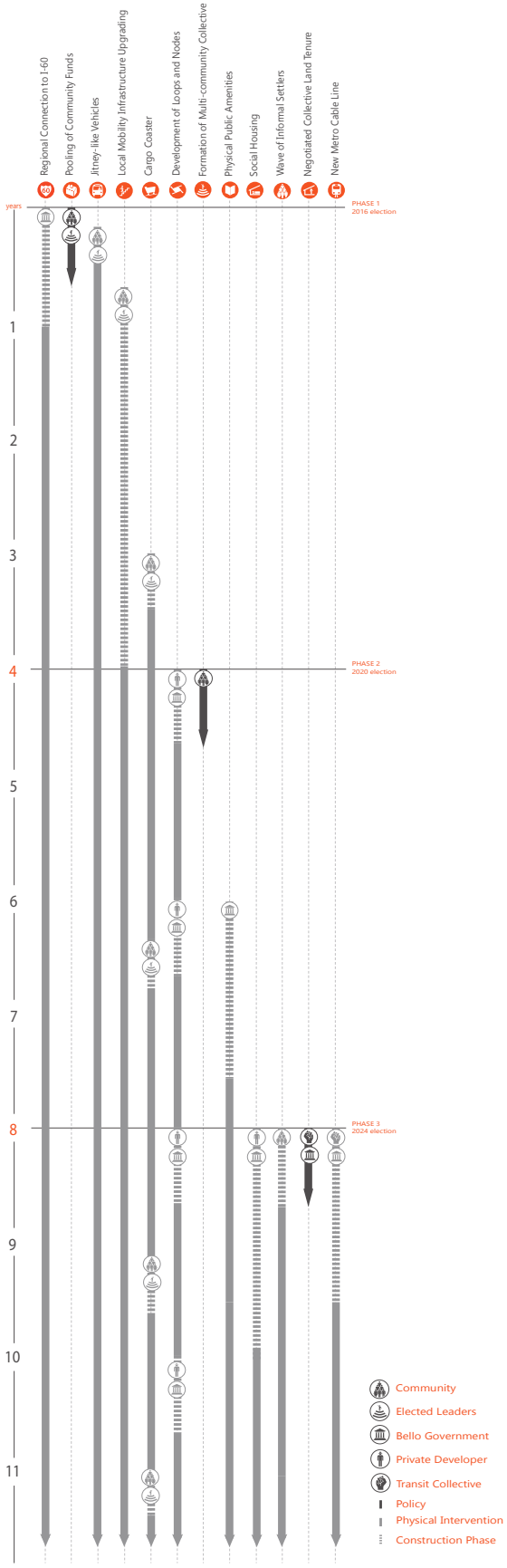


SURFACE TREATMENT





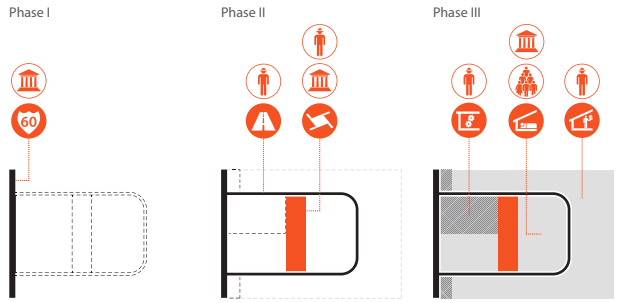
Dependency relations between the incremental, phase-wise developments



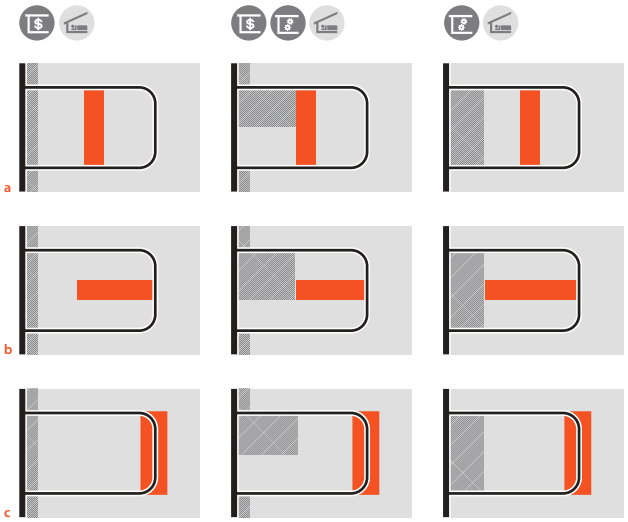
Timeline of strategies and interventions

PHASE-WISE DEVELOPMENTS FOR VARIOUS ELEMENTS OF THE PROPOSAL

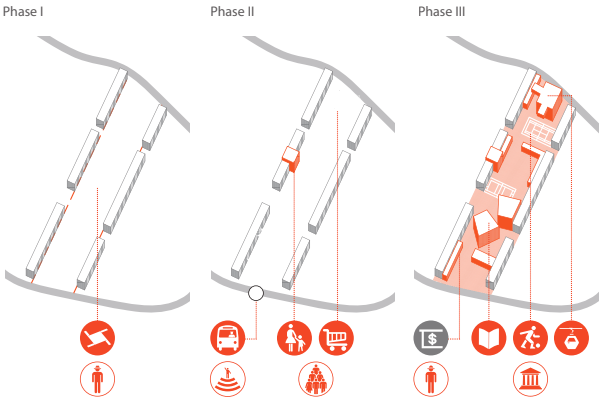
PARCEL DEVELOPMENT



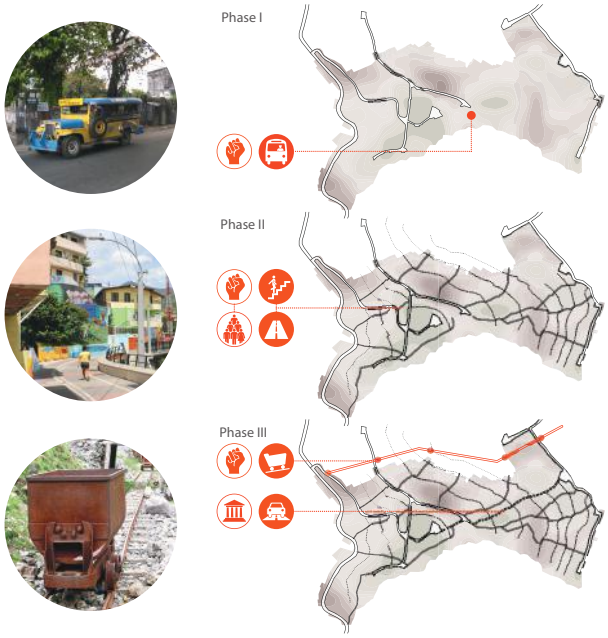
PARCEL TYPOLOGIES



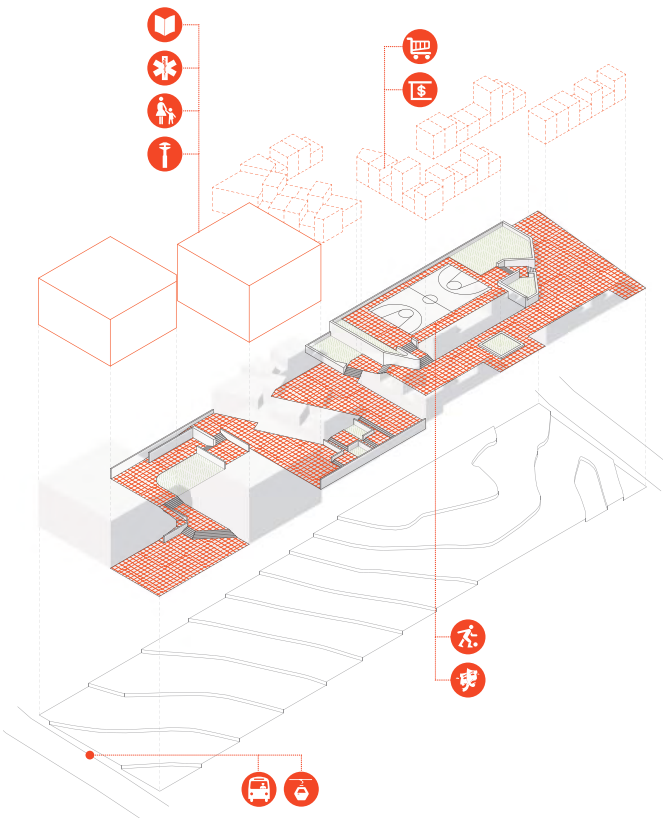
NODE DEVELOPMENT



MANANTIALES DEVELOPMENT



NODE POTENTIALS



GROWTH BUFFER

RISK MANAGEMENT AND MIXED-USE GROUND: PROVISION DE AGUA EN LA LADERA / INCOBADORES MICROTERMALES

Jin You + Quiying Sun

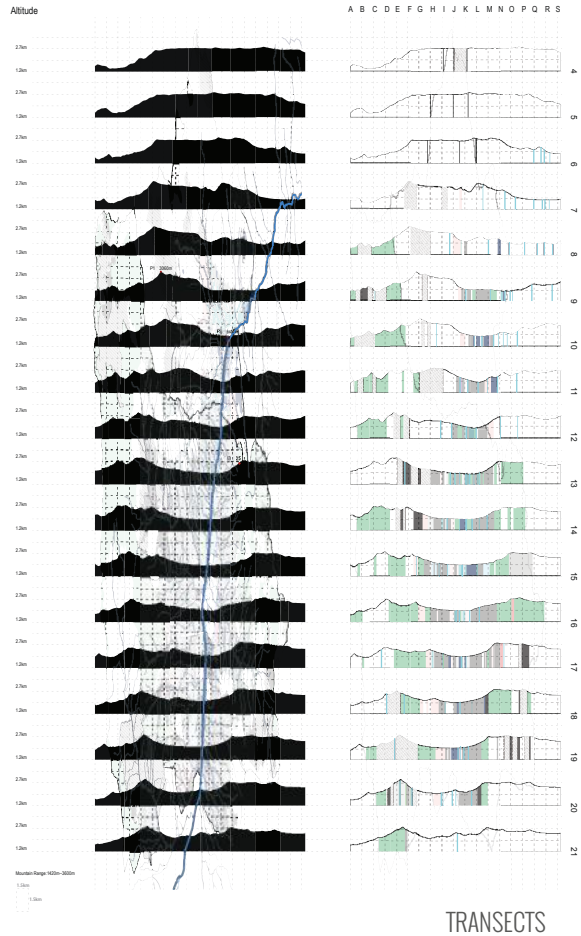
PROBLEM

The problem that we have been investigating is: “The Risk that Informal Settlers Face when Settling in the Upper Slopes of the Valley of Medellín” and how this risk will increase in the following years as the valley keeps rapidly urbanizing. Here risk means Landslides, or when steep slopes fails to support the ground soil of water erosion.

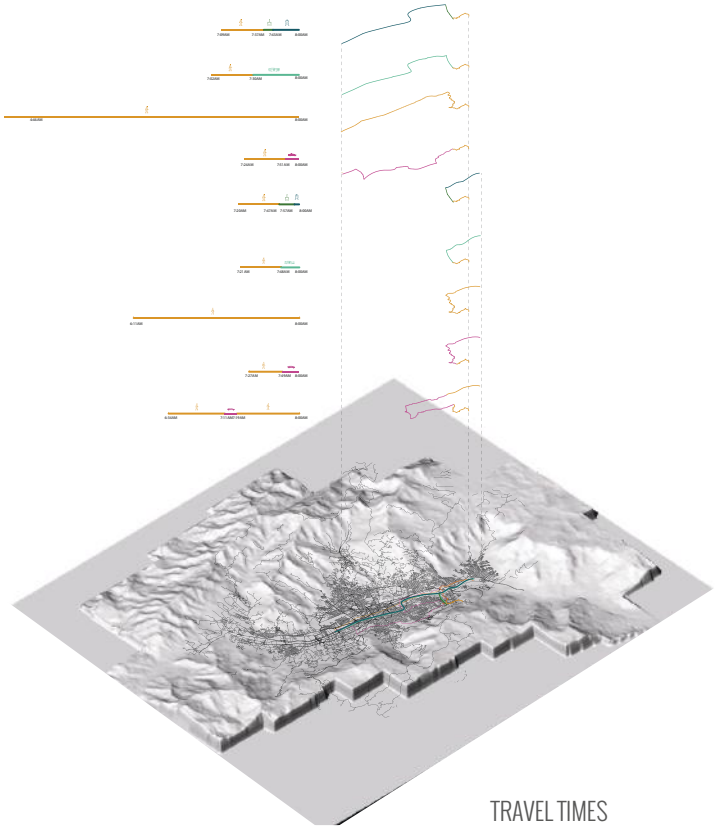
We firstly studied from the physical topography condition of the entire Aburra Valley to define the risk area and we studied the urban expansion process on this risk map.Then we estimated that according to the urban expansion rate in previous years of 1%, safe slopes would be occupied soon. We then studied the relationship of urbanization and Income and concluded that the lower the income + the higher the slope= the bigger the risk of Landslides is.

Then we zoomed in to the study of current topography condition of Manantiales.From this restrictions, we proposed 5 Scenarios that Manatiales might expand in the future.

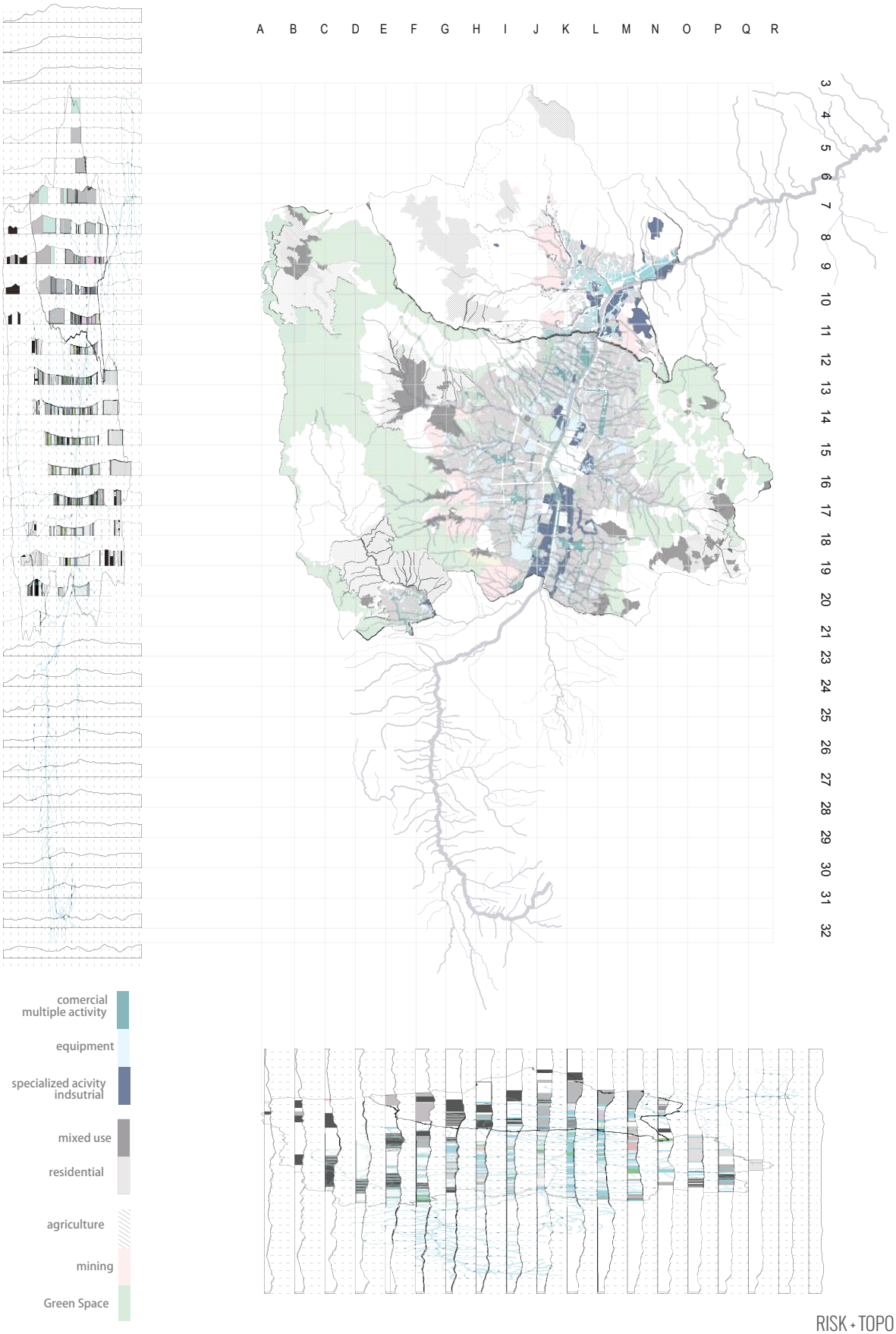
To solve the problem of informal settlement on risk slopes, we proposed three steps to re-direct growth in Manantiales so that the community doesn’t occupy the high-risk slopes. In the first phase, we start by doing coffee plantation in the high-risk slopes that will be managed by the community.This plantation would give community members some occupation and a little economy. The farmland can stablize ground soil by managing water running down the hill into Manantiales and purify the water discharged from Manantiales going back into natural water system. In phase two, we build the physical part of our buffer zone. This layer is composed of public housing, school, library, health care, and other public infrastructures to provide services that the community is missing today. This buffer is permeable and encourage mobility and activities at a certain range of public space. Then we identify existing buildings under risk and relocate these family members to these new middle rise public housing. In phase three, we provide more infrastructure inside the vacant lots of manantiales to make a connection of the two buffer areas.



TRANSECTS

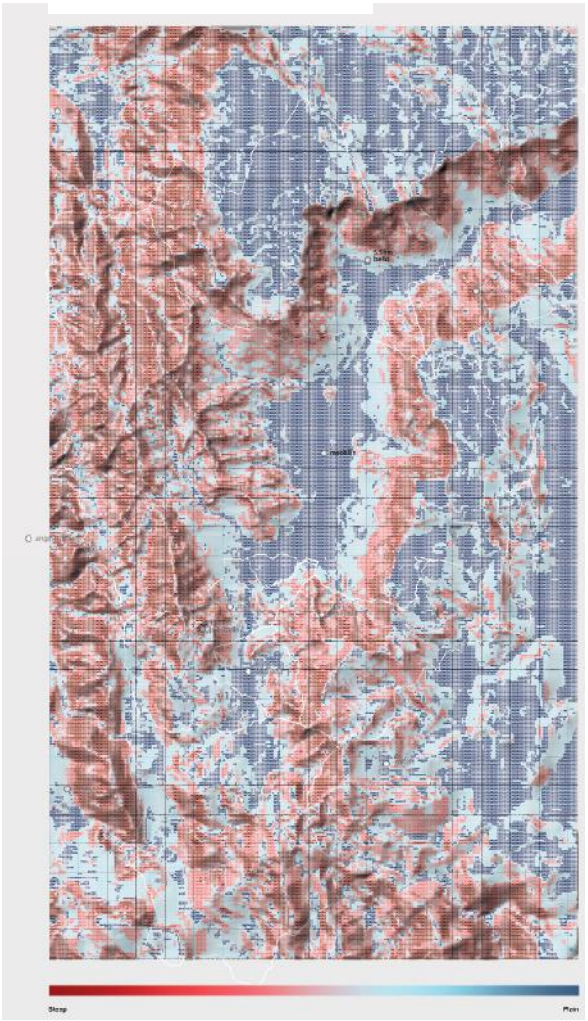


TRAVEL TIMES

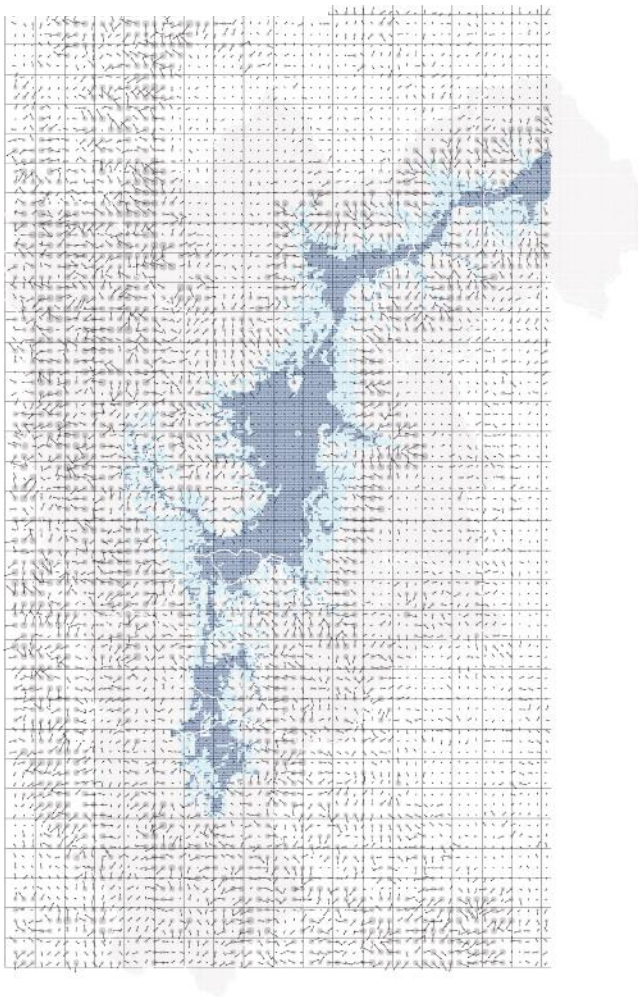

A B C D E F G H I J K L M N O P Q R
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 23 24 25 26 27 28 29 30 31 32
comercial multiple activity
equipment
specialized acivity indsutrial
mixed use
residential
agriculture
mining
Green Space

RISK + TOPO

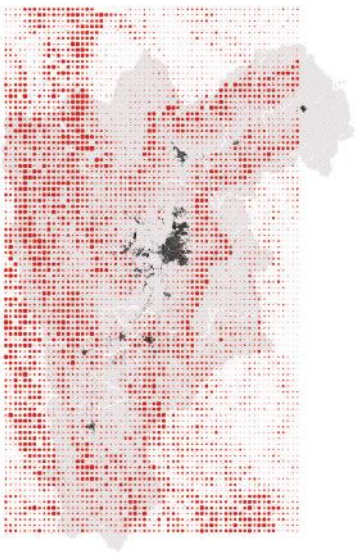
SLOPE RISK



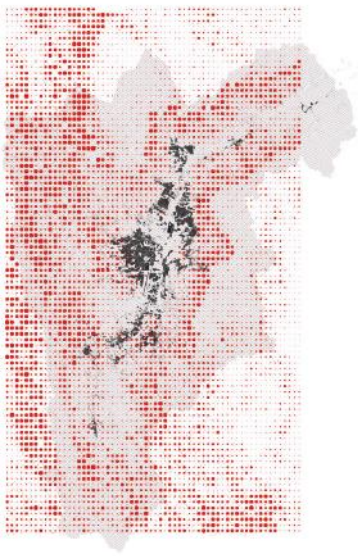
FUTURE GROWTH 2060



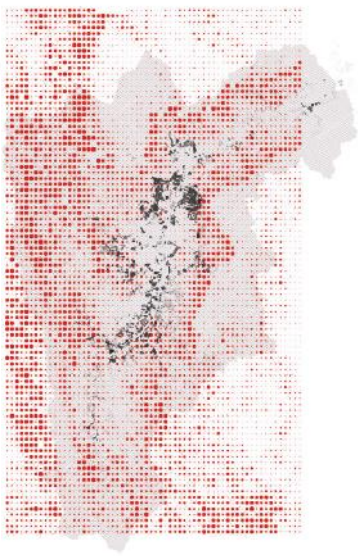
1948



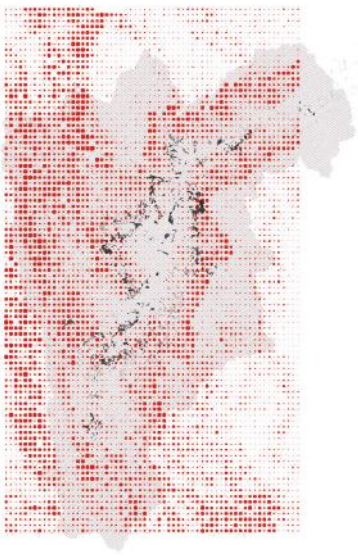
1970



1985



1996



INCOME & URBANIZATION

DEMOGRAPHIC

Population

12,000

Houses (units)

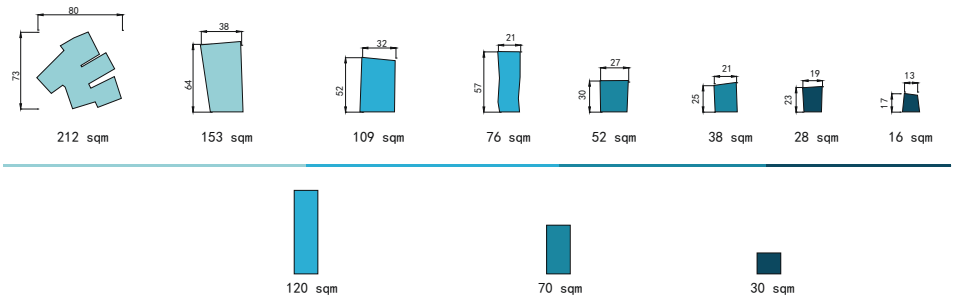
1,376

Land (ha)

12

FIGURE AND INCOME

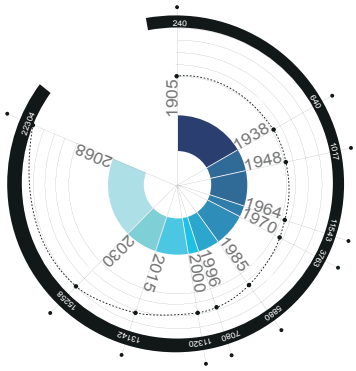
Income (Pesos/Person/Month)	Lot Area (m2)	Amount Units
Low	<30	407
	30-70	824
	70–120	125
Medium	>120	20
Non-residential	—	—



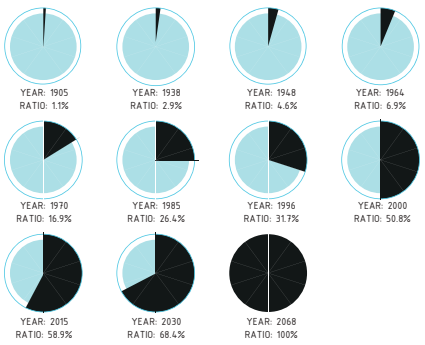
URBAN AREA ACCORDING TO YEAR

YEAR	AREA (HA)	POPULATION
1905	247	65547
1938	640	170000
1948	1017	270263
1964	1543	410000
1970	3763	1000000
1985	5880	1562583
1996	7080	1881478
2000	11320	3008344
2015	13142	(1% annul growth)3492534
2030	15258	(1% annul growth)4054793
2068	22304	(1% annul growth)5927258

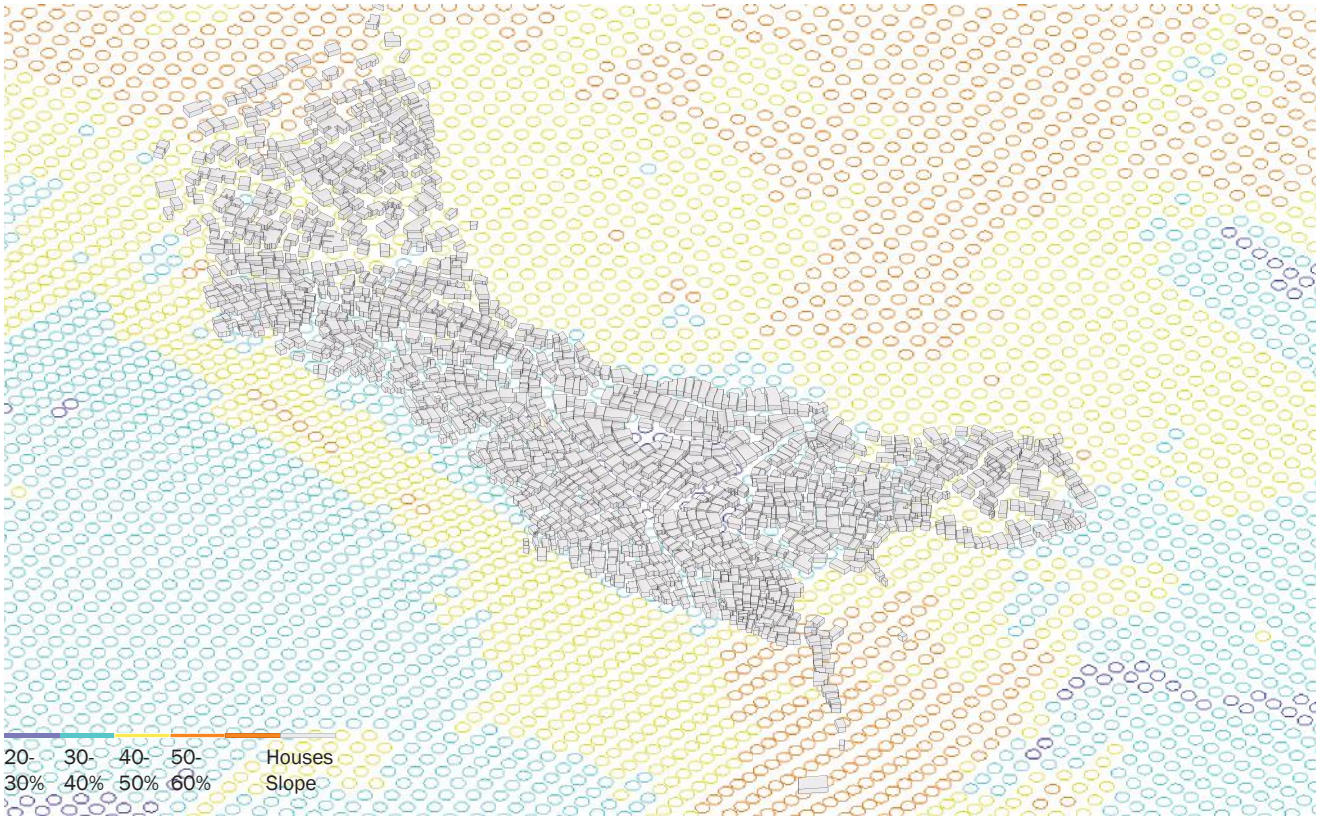
TOPO TYPE	AVAILABLE AREA (HA)	BUILT AREA (HA)
great medellin total	30521	13142
flat	12661	
slope (>40%)	17860	
risk (40%-60%)	8217	
buildable slope	9643	
flat+buildable slope	22304	



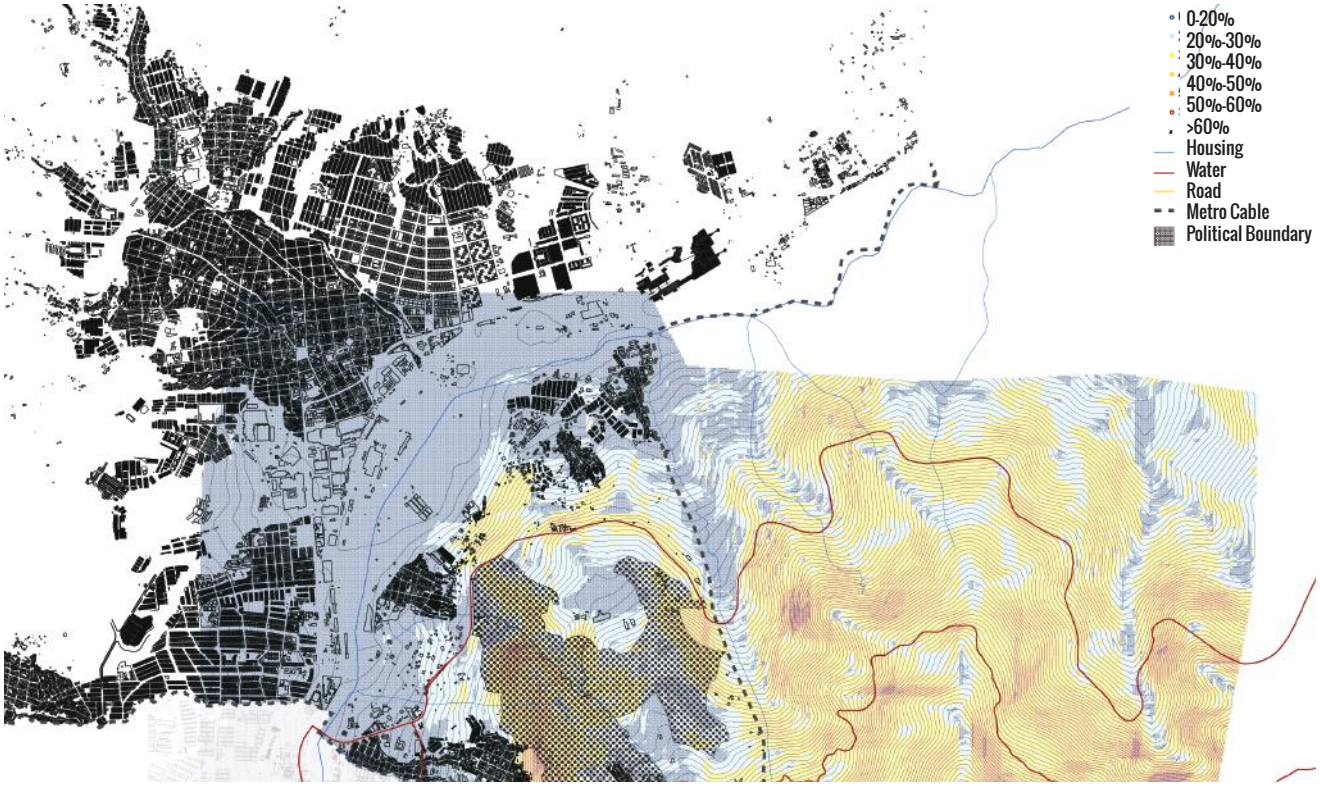
PERCENTAGE OF LAND USE ON BUILDABLE TOPO (INCLUDING FLAT AND GENTLE SLOPES)

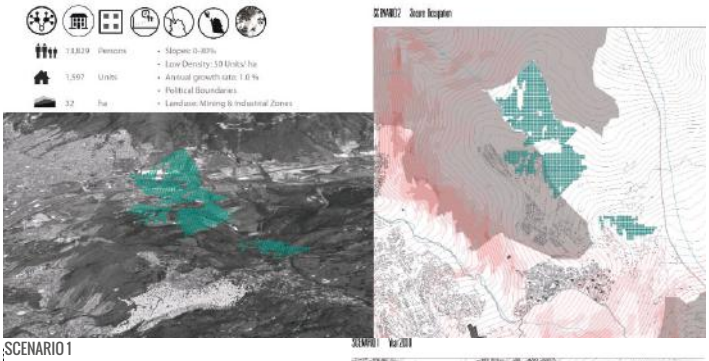


CURRENT SETTLEMENT AND TOPOGRAPHY

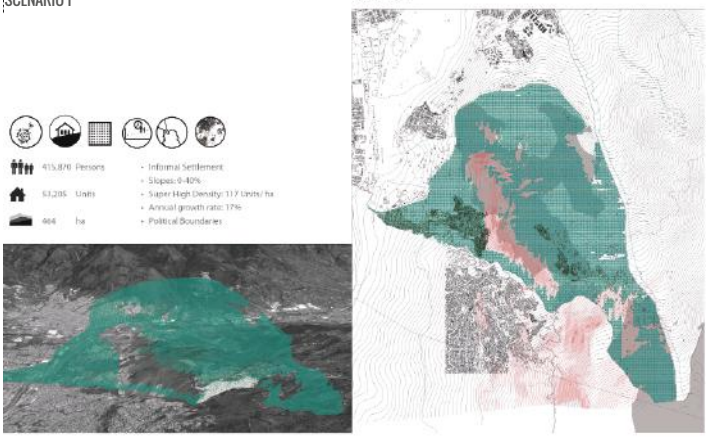


CURRENT CONDITION & SENARIOS

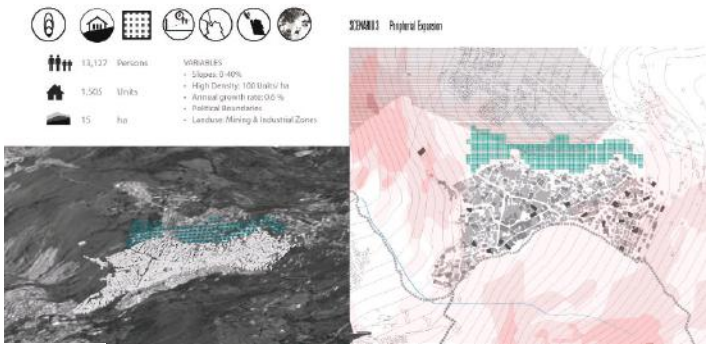




SCENARIO 1

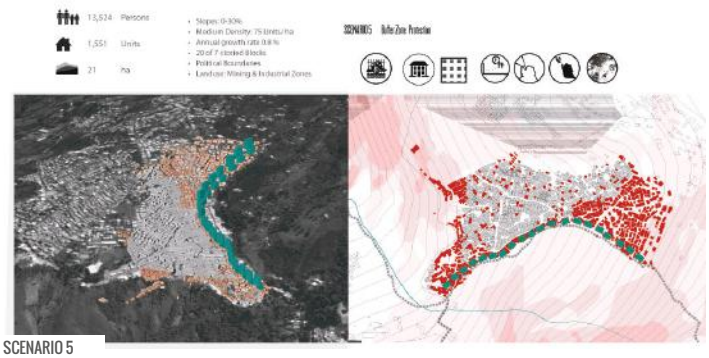


SCENARIO 2



SCENARIO 3

SCENARIO 4



SCENARIO 5

VARIABLES

GROWTH RATE	BOUNDARIES	LANDUSE
17%	Medellin &Bello	Mining& Industry
0.6%	Highway	
0.8%		Existing housing
1.0%		

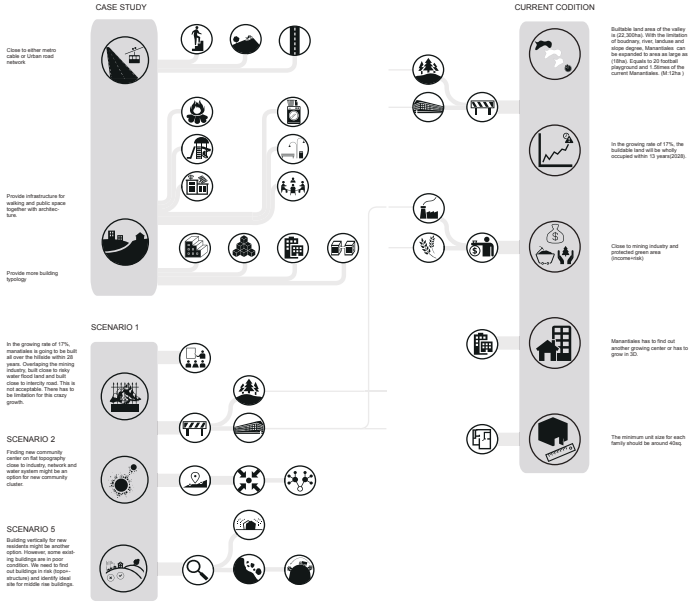
SETTLEMENT PATTERN	SLOPES	DENSITY
Informal Settlement	0-30% (<17°)	Super High (117 Units/ ha)
Secure Occupation		High Density (100 Units/ ha)
Peripherial Expansion	<40% (<22°)	Medium Density (75 Units/ ha)
Vertical Growth		Low Density (50 Units/ ha)
Buffer Zone Protection		

Projected Population = Current Population * $(1+r)^{\text{Projected Years}}$

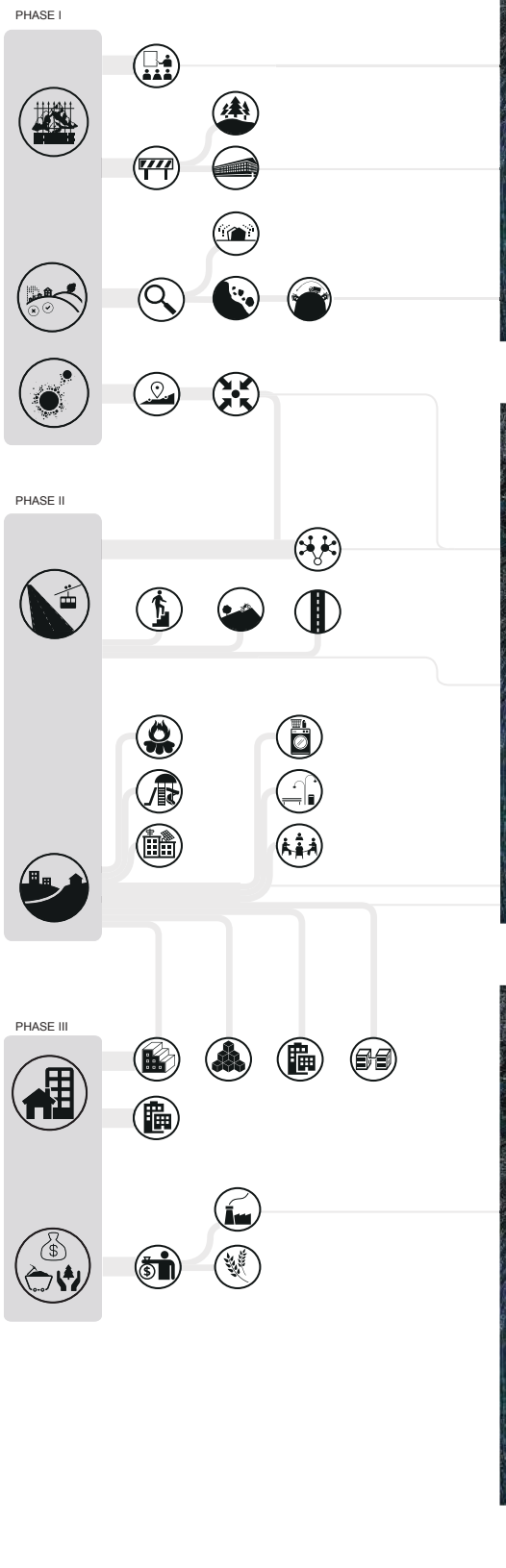
Projected Number of Houses = Current Number of Houses * $(1+r)^{\text{Projected Years}}$

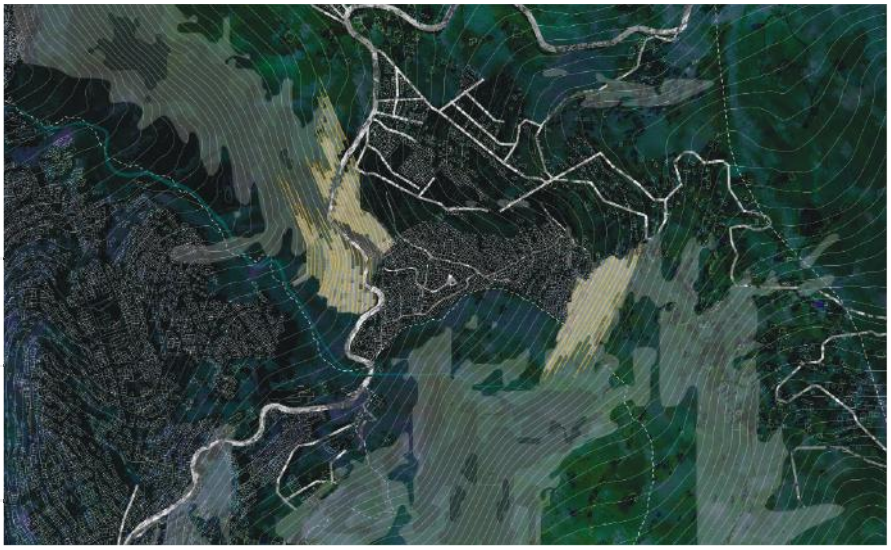
Occupied Area= Density * Number of Houses

Lessons

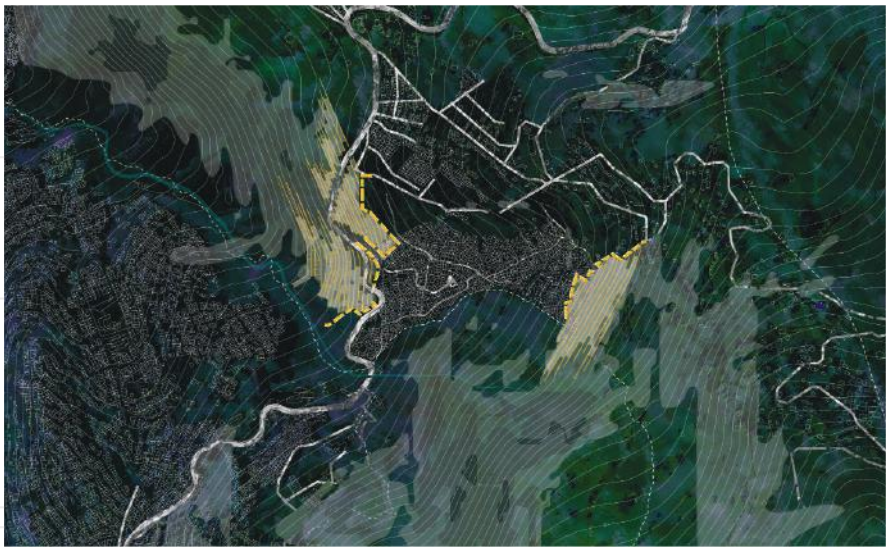


PROJECT PHASES

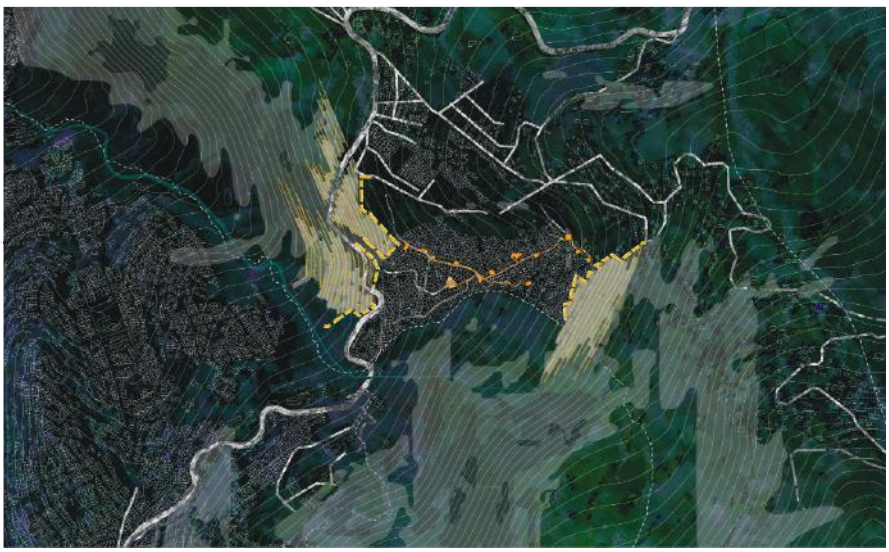




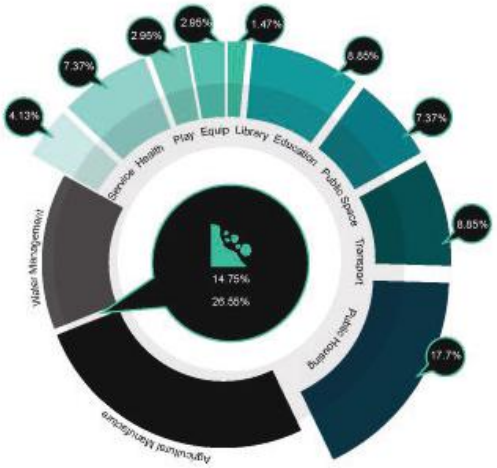
Phase I



Phase II



Phase III



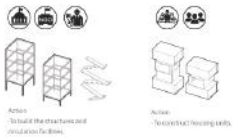
Social Service	1400	
Health Care	2500	
Playground	500	
Equipment	1000	
Library	500	
Education	3000	
Public Space	2000	
Transportation	3000	
Public Housing	6000(150 Units)	
Water Management	5000	
Agricultural Manufacturing	9000	
	(M2)	

HOUSING EDGE

SPACE ALLOCATION

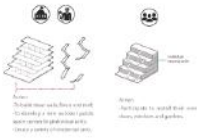
1. Community-owned coffee farmland

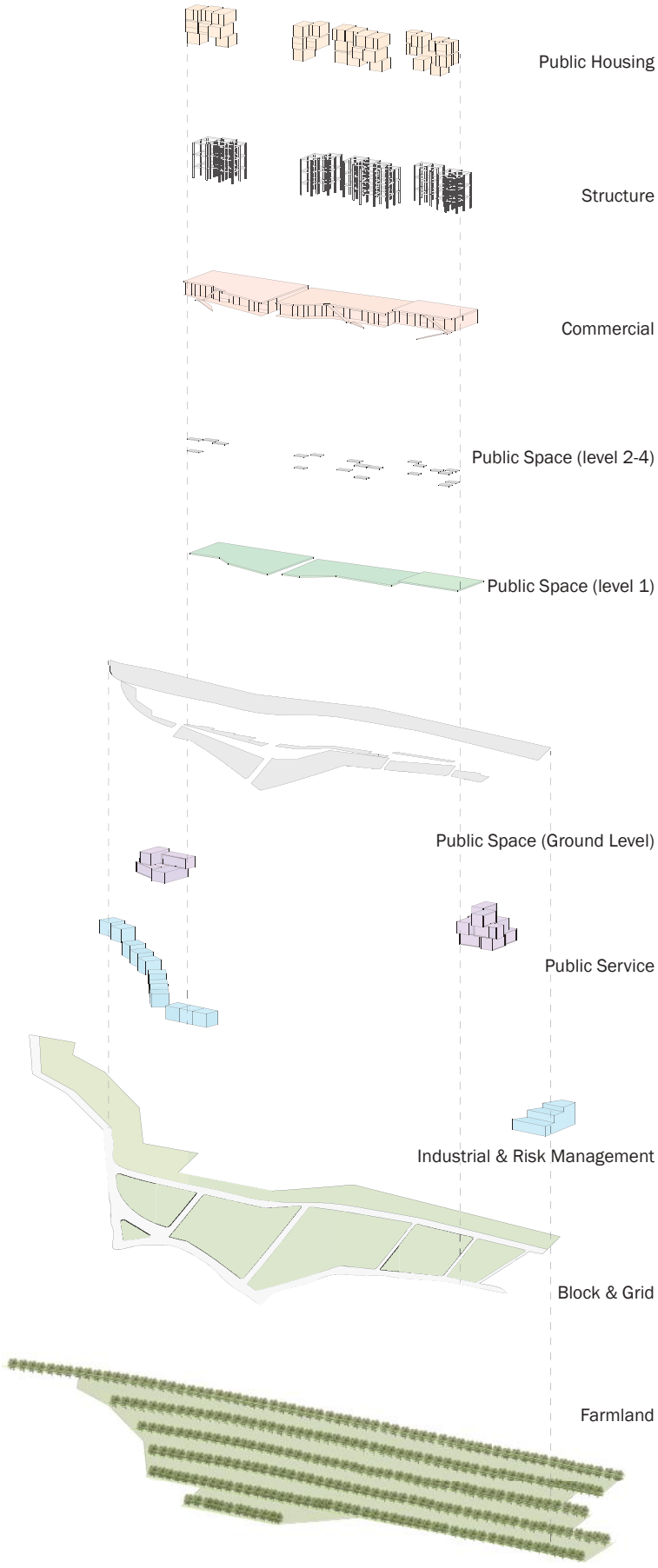
2. Public Housing



3. Public buildings and Space

4. Water Management





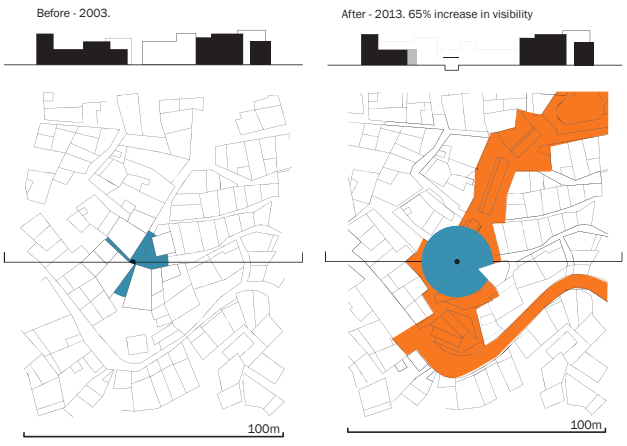
DEMOCRATIC NETWORK

Alice Kao + Javier Leal Navarro

The characteristics in the formation of settlements like Manantiales, create physical and social environments that are prone to the perpetuity of poverty and the production of conflict. With the current rate of population growth – 1 family a day, our strategy aims to anticipate such density by providing a democratic network across Manantiales and its surrounding areas. The network is composed of streets and paths, as well as community centers that will be the main activators of the streets by providing the population with opportunities for education, employment and recreation.

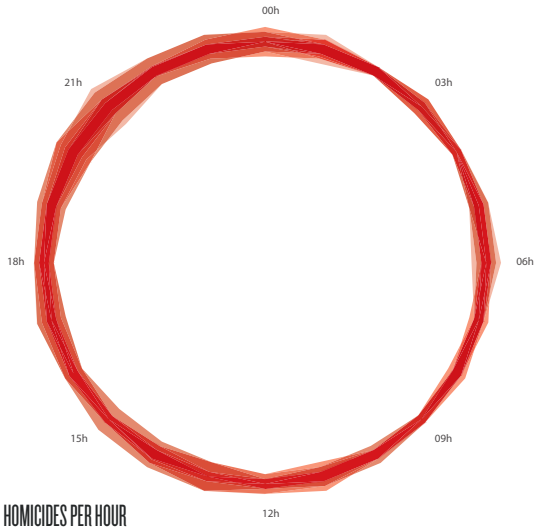
If we look at the problem across time, displacement force these communities to the peripheries of the city, and automatically restrained from the legal system with limited resources; the individual need to survive is the first and foremost challenge to address.

The community starts to expand not only across the territory but also in individual footprints. What this creates is an environment that with time, its accessibility is limited and public spaces for people to gather dissolve. This enhances the vulnerability of space to be controlled by repressive actors that often limit the positive development of the community.

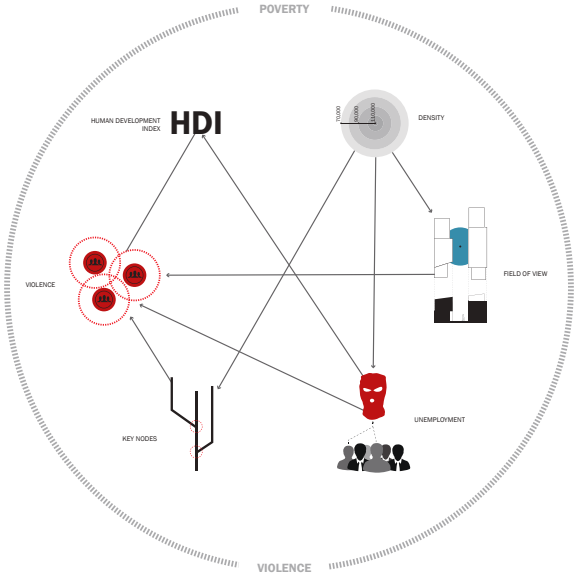


FIELD OF VIEW BEFORE

FIELD OF VIEW AFTER



HOMICIDES PER HOUR
Comuna 13, 2003-2012



DISPLACEMENT

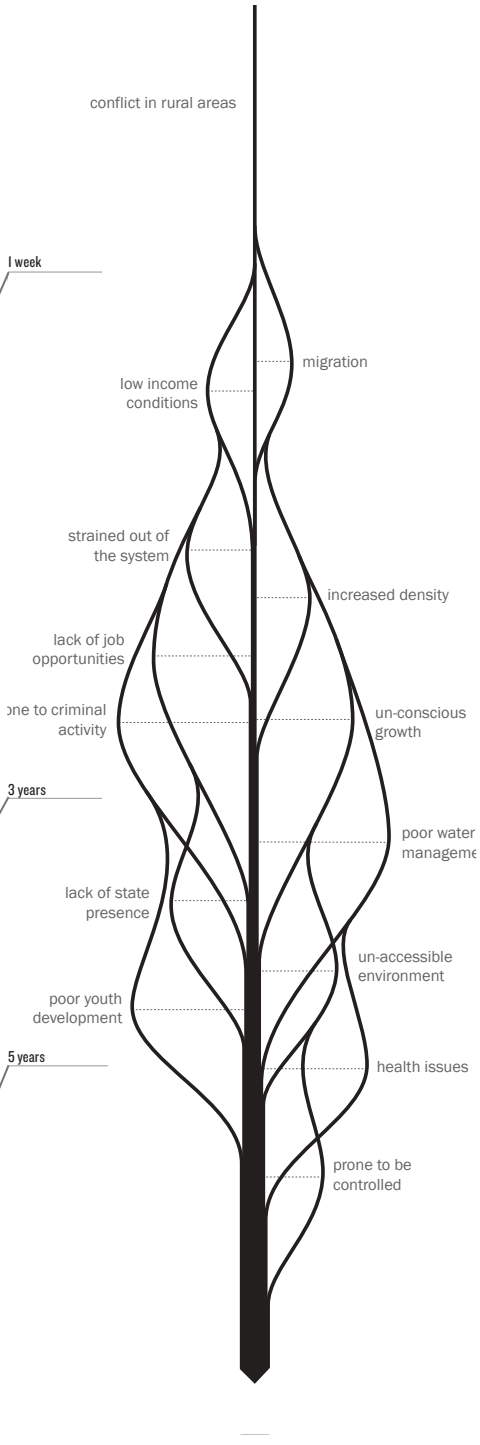
First migrations
Basic layout
Temporary materials
Roof as a priority

STABILIZATION

Population increase
Temporary materials
Water and Energy provided
Key-nodes created

LAND SECURITY

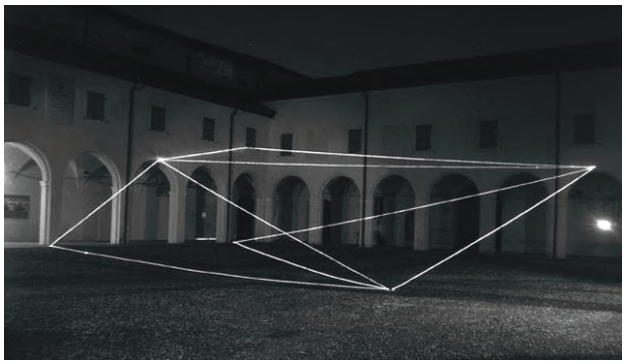
House improvement
Permanent materials



STRATEGY

Our strategy aims to develop and program a wide - democratic street and path network to anticipate future growth in both a reactive and preventive way.

Learning from the case of the PUI in Medellin, the network should create open, and connected spaces, provide a variety of programs and develop local participation methods for intervention and resiliency. However, this network aims to address the main challenges of the PUI by intervening on an early stage, with buildings that are flexible for future growth and communal needs, and most importantly, cover a wider range of the territory.

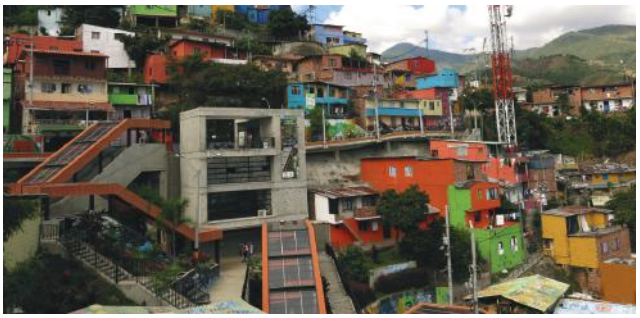


Carlo Bernardini

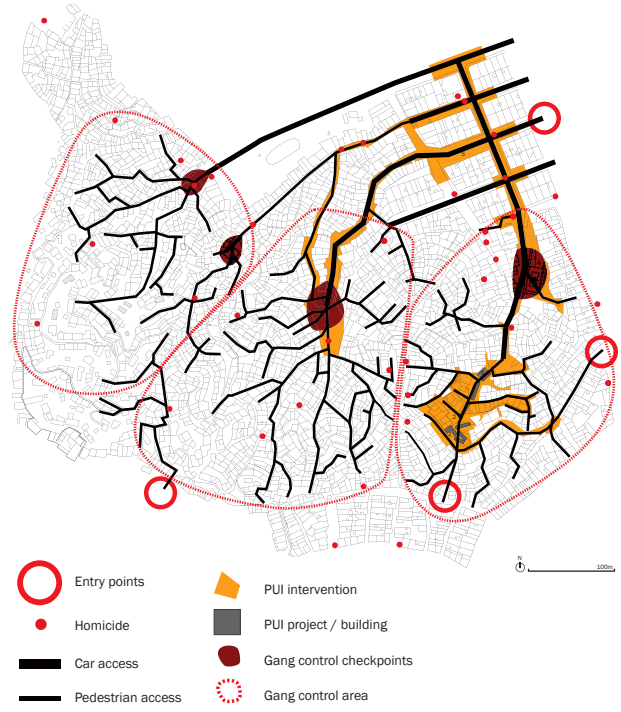
CASE STUDIES

To understand how urban interventions have been implemented, we analyzed two PUIs in Medellin: Santo Domingo in PUI Nororiental and Independencias in PUI Centro Occidental.

INDEPENDENCIAS. COMUNA 13

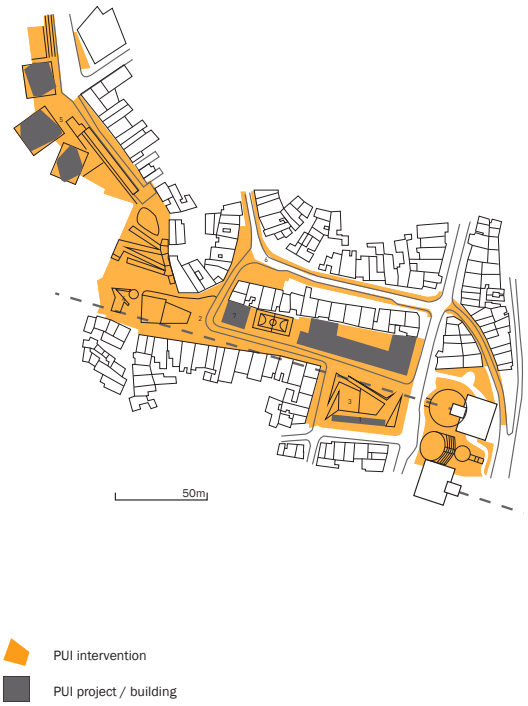


Safer and more efficient ways for people to travel across the topography by generating a larger field of view across the streets and providing electrical stairs on the steeper area.



SANTO DOMINGO. COMUNA 2

The intervention is most successful when programs are varied and interconnected with public space.



STRATEGY

CELL

d=150m. 17,600 m2
150 households

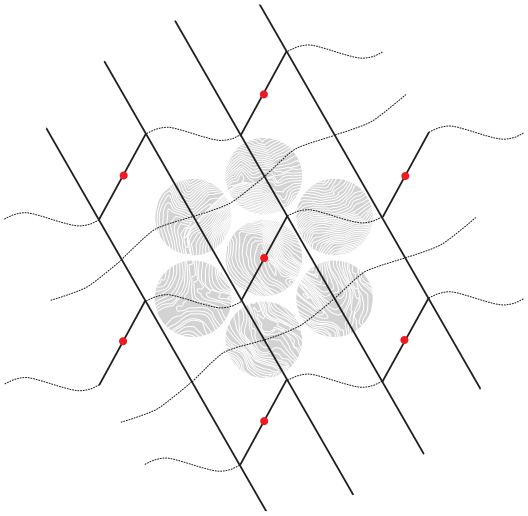
150 households, the number of people in a social network the human brain can relate to. This is associated to the governance and implementation strategy of the network.

INFRASTRUCTURE

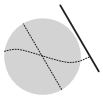
Public Buildings + Plaza
Street Network

Building
Street
Path

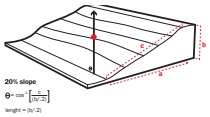
A distribution of projects along the district are the main “attractors” of the district with approximately 300 meters apart. The location of these buildings is key because they will be the main articulators of the existing & proposed topographic streets.



Street Network Rules
A. 3 entries / exits minimum
B. 1 connection to street



Diagonal Street System



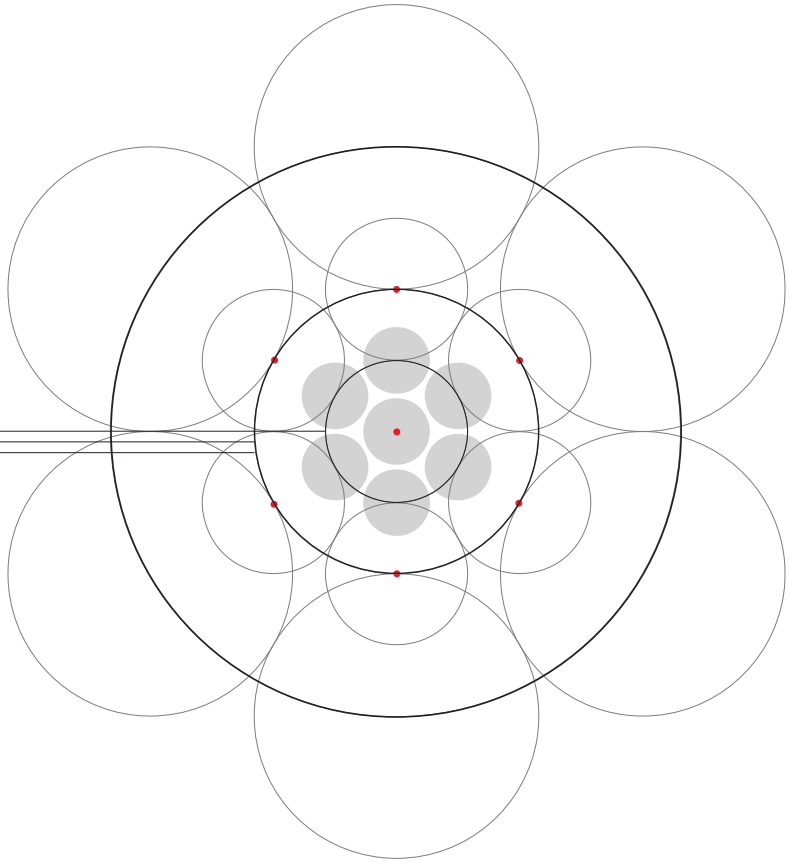
The articulation is created by crossing a diagonal street across the topography lines to provide for a continuous accessible route for all people and vehicles.

PROGRAM DISTRIBUTION

CLUSTER. 300m
Community Center
(Daycare / Kitchen / Laundry)

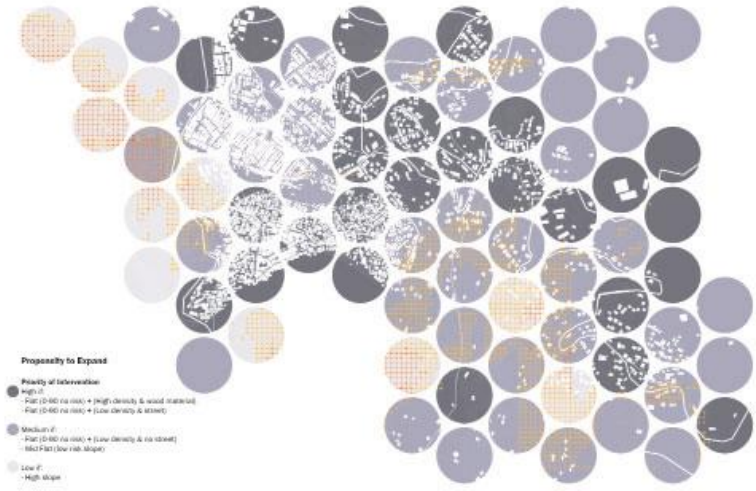
NEIGHBORHOOD. 600m
Health Clinic
Production / workshop space
Recreateation / sports area

DISTRICT. 1200m
Primary School (K-5)
Middle School (6-8)
High School (9-12)
Library
Full-size sports field
Cedezo



At the first stage, all buildings will perform as a Community Center at each cluster. With time, according to the community needs, specific program will be distributed accross the neighborhood and district level to each individual building.

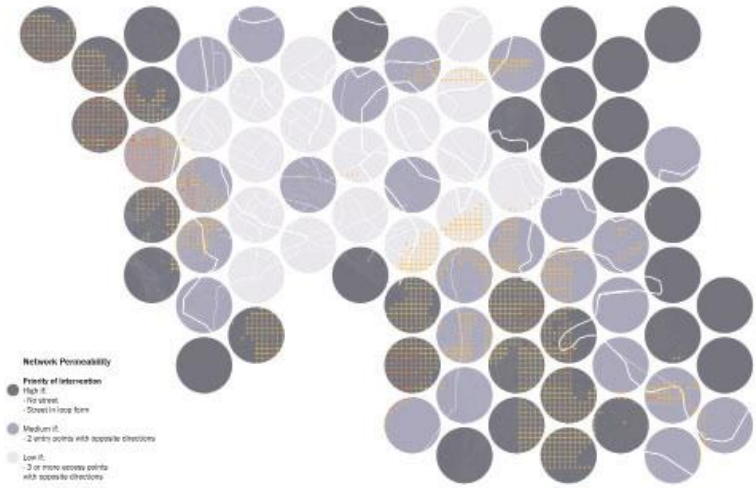
STRATEGY IMPLEMENTATION



PROPENSITY TO EXPAND

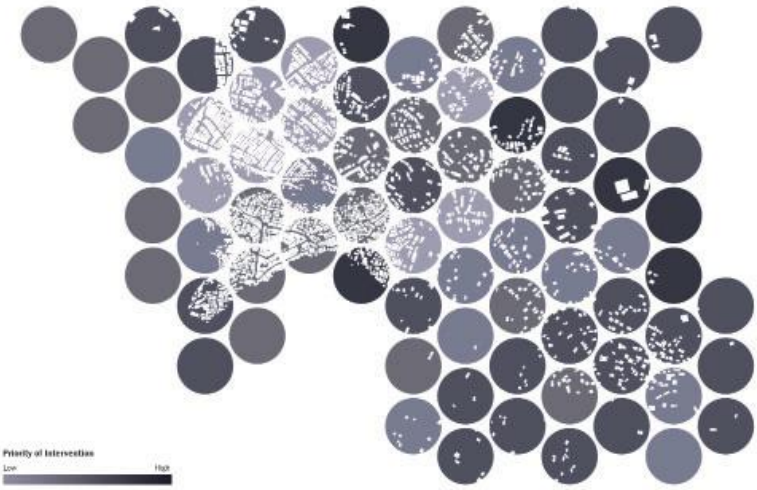
The first evaluation identifies which are the areas where the population can grow, and also which houses could expand their footprint area.

A system was developed to evaluate the priority and type of intervention in every cluster. By sampling Manantiales and its neighboring area with cells and looking at the existing roads, construction material conditions, density and slope, the site informs the where, when and how of the intervention.



NETWORK PERMEABILITY

To analyze the current conditions of the street and path network system, an evaluation of the existing permeability of each cell and its connection with the rest of the network system was realized.



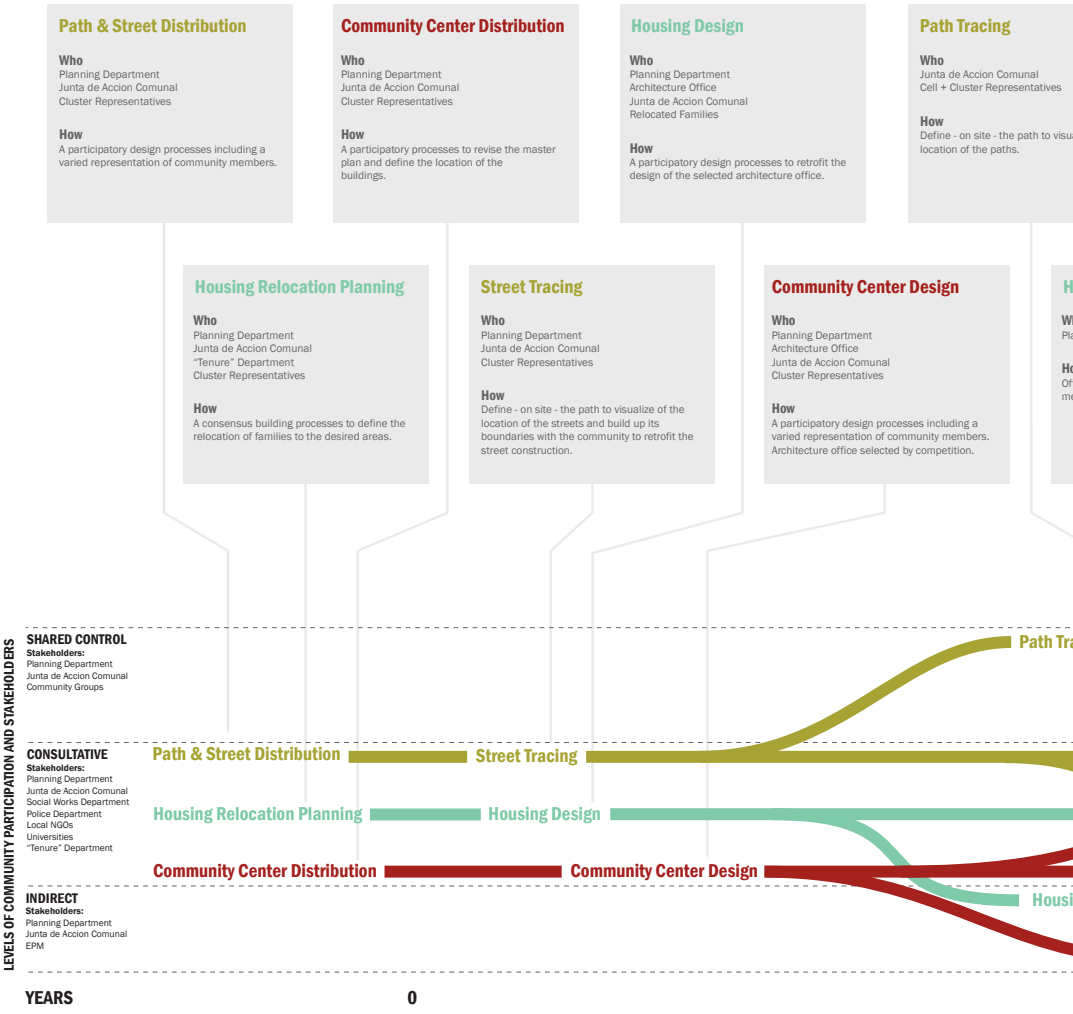
AGGREGATE

The two separate evaluations show where there is a higher priority to intervene in the creation of nodes that will hold the community centers & the diagonal connections between streets.

EXISTING 2015

STRATEGY
IMPLEMENTATION: PHASING

The phasing strategy is based on an alternate process between the different stakeholders, where there's always some level of participation from the community. There are some elements that are programmed by the city, but many of the decisions are retrofitted by the community.



FUTURE 2020

Due to the flexibility and dynamism of the design strategy, this is does not represent a final proposal but a selected iteration that best corresponds to the principles of the strategy.

Community Center Construction
Who
Planning Department
How
Offer training and/or jobs to community members.

Retrofited Program Design
Who
Planning Department
Community Groups
Cluster + District Representatives
District Representatives
How
A consensus building processes to define the retrofited program of each community center. The Planning Department defines major programs (eg Schools).

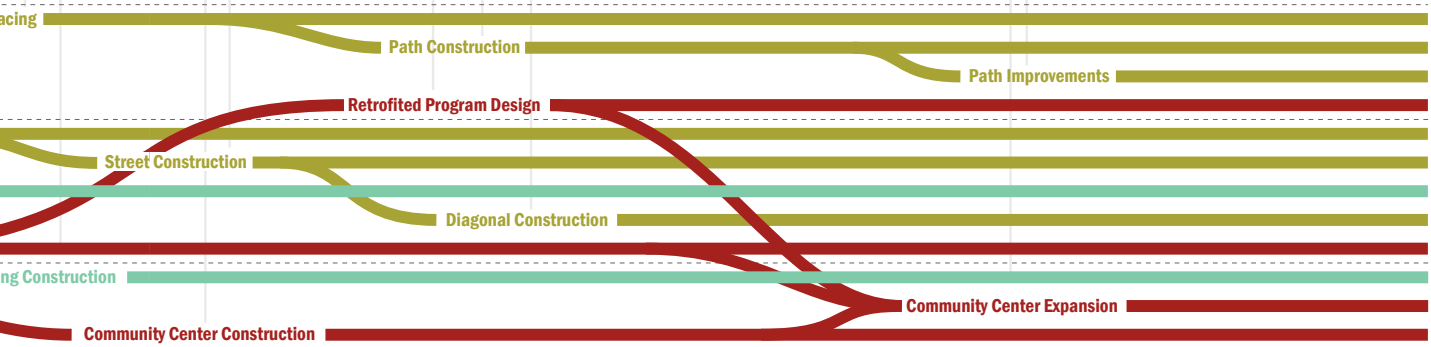
Diagonal Construction
Who
Planning Department
Cluster Representatives
How
Offer training and/or jobs to community members.

Path Improvements
Who
Planning Department
Junta de Accion Comunal
Cell + Cluster Representatives
How
Provide resources to improve path conditions.

Street Construction
Who
Planning Department
How
Offer training and/or jobs to community members.

Path Construction
Who
Junta de Accion Comunal
Cell + Cluster Representatives
How
Design an incentive to make it auto-constructive (eg public light in intersections).

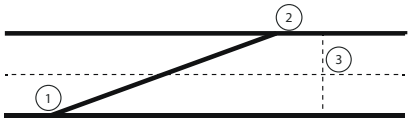
Community Center Expansion
Who
Planning Department
How
Offer training and/or jobs to community members.



2 4

NODE TYPOLOGY

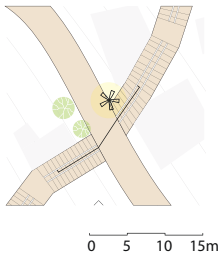
KEY

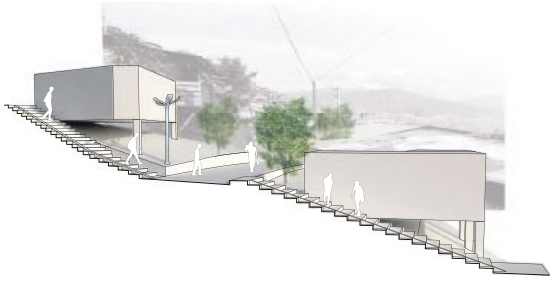


1. STREET + DIAGONAL

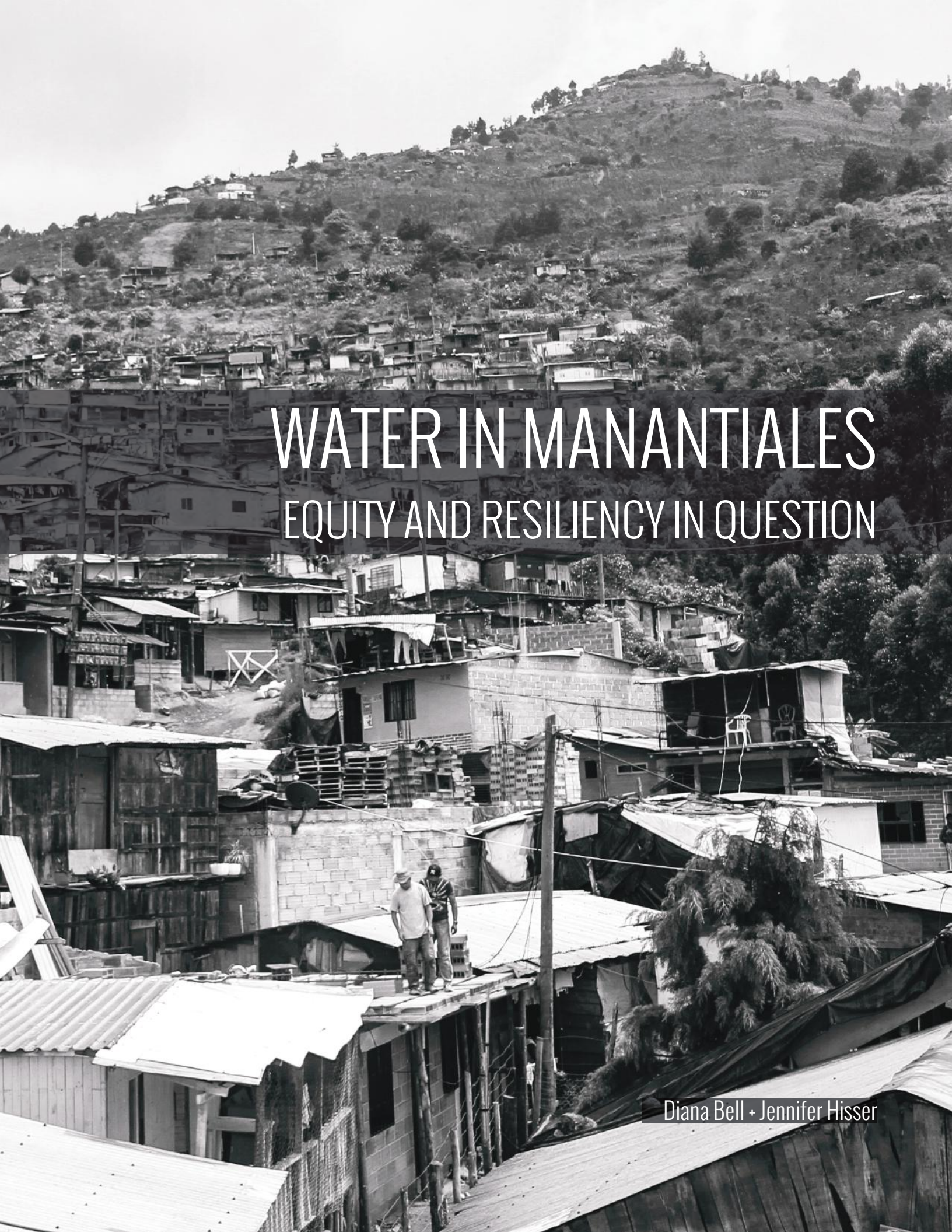
2. STREET + DIAGONAL

3. PATH + PATH





Daytime and night time view of typical Node 1 space showing community center and public space and activities; view of the overall network at night



WATER IN MANANTIALES

EQUITY AND RESILIENCY IN QUESTION

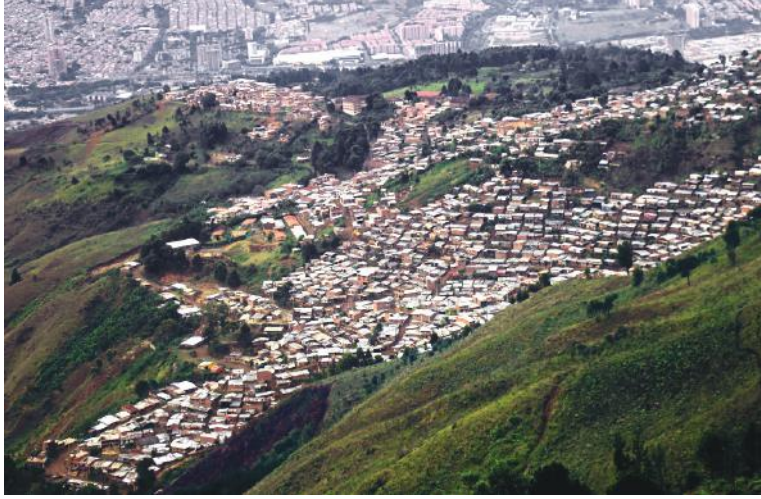
Diana Bell + Jennifer Hisser

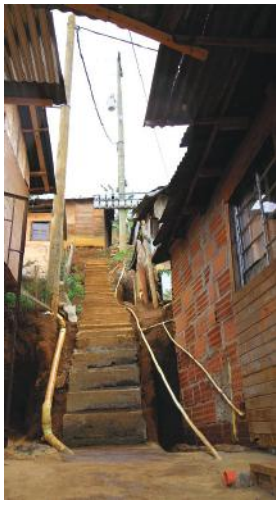
Water access is a critical concern for Manantiales. Safe and readily available water is essential for public health whether it is used for drinking, sanitation or food production. The United Nations has made the human right to water and sanitation explicit, but for the residents of Manantiales this human right is being violated. In the Valle de Aburrá, where Manantiales and Medellín are located, access to water and sanitation infrastructure is dependent on a community's position to municipal borders. EPM, the main provider for water and sanitation infrastructure, only provides potable water and sanitation connections to residents within certain municipal boundaries.

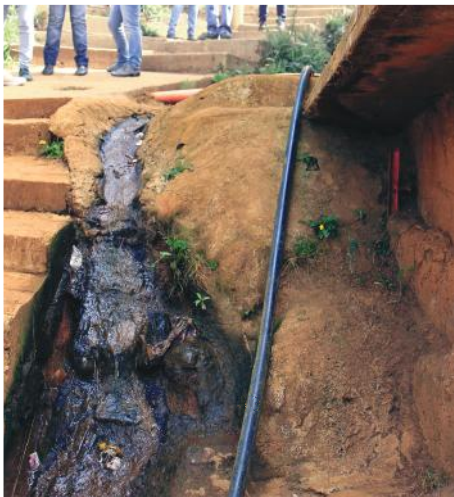
To help address the water and sanitation crisis in Manantiales, we propose strategies that consider both the physical and social infrastructure. To be effective and empowering for the residents of Manantiales, we believe these strategies must build upon the rich breadth of existing capacities and vernacular structures in the community. Our plan for a decentralized, resilient and equitable water system addresses three development priorities: the provision of resources to existing residents; a communal vision of how to direct new growth; and the management of precarious topography.

These three categories create stages of intervention of both physical and social infrastructure. They allow for build-out in a way that is incremental, according to urgency of need, and capitalizes on existing capacity. Physical infrastructure interventions are rooted in resilient approaches, leveraging the natural supply of rainwater and looking to bioengineering strategies for treatment capacity and management of precarious land. Social Infrastructure interventions build out governance and resource management in a way that is decentralized. Financing strategies look to resources both from within the community and to leveraging external ones.

Together, this will position Manantiales as a model of a resilient and equitable water system for the Valle de Aburrá.







WATER TREATMENT CAPACITY

Barbosa
60 L/s

Manantiales
19,500 L/s

Villa Hermosa y la Montana
444 L/s

San Cristobal
240 L/s

Aguas Frías
19 L/s

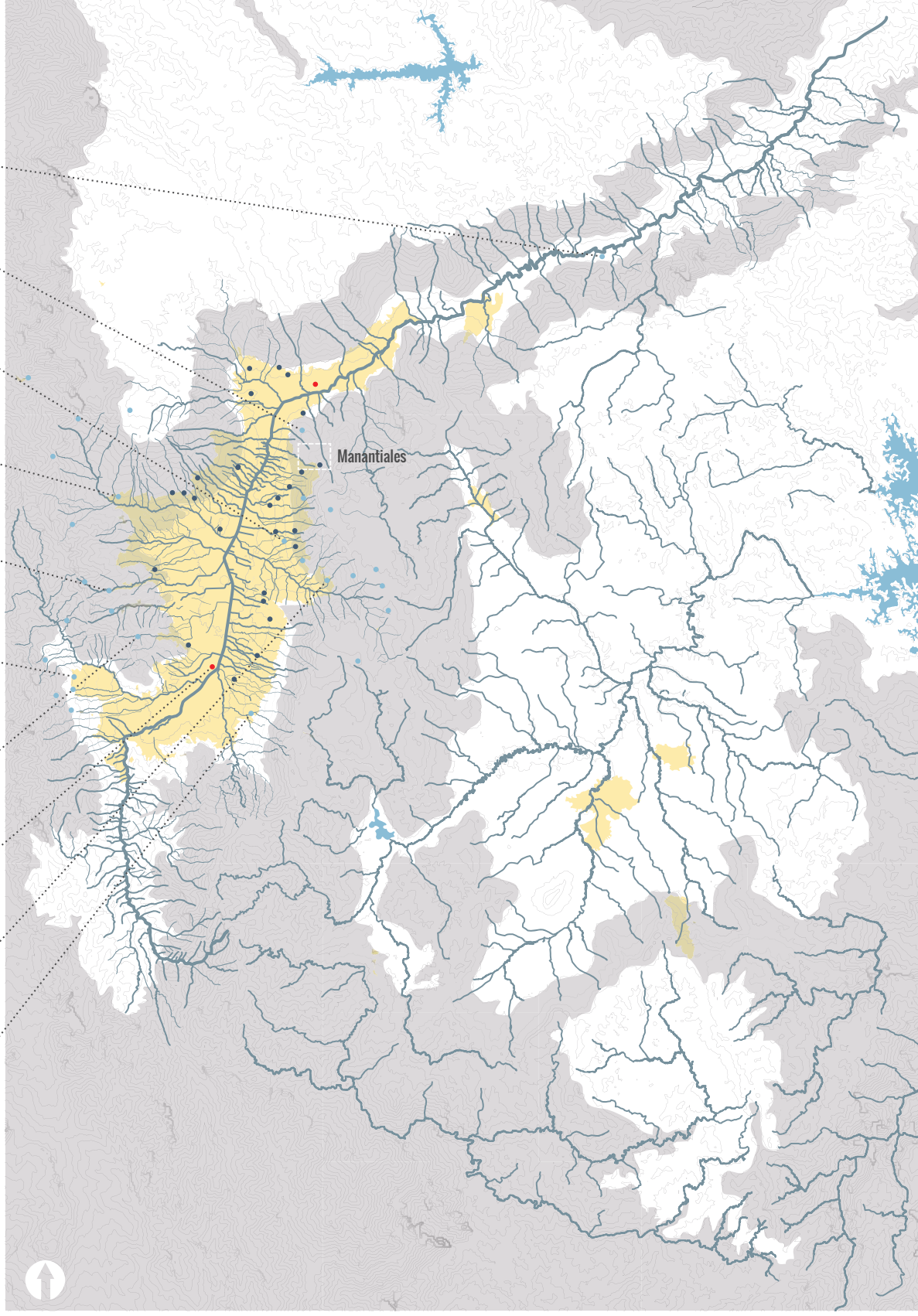
Caldas
112 L/s

San Antonio de Prado
266 L/s

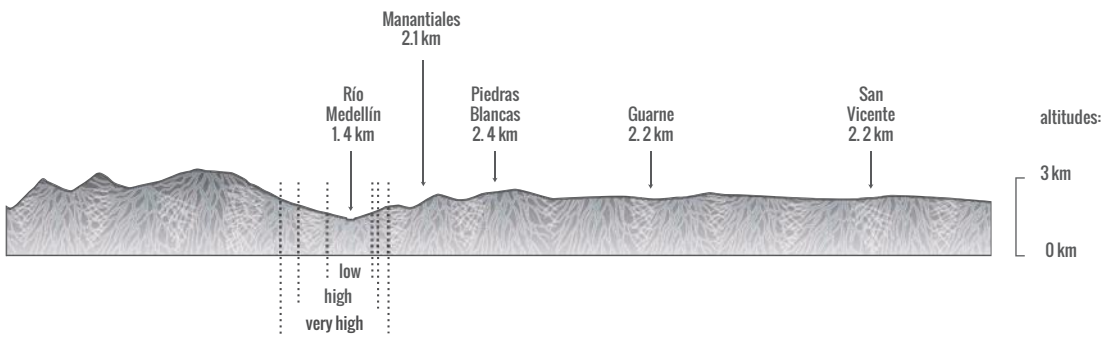
San Fernando
1800 L/s

La Cascada
120 L/s

Ayurá
9,110 L/s



Water tank
Potable water treatment plant
Wastewater treatment plant
EPM water coverage



EXISTING WATER CAPACITY

The issue of water access is a critical question for Manantiales. Safe and readily available water is essential for public health whether it is used for drinking, sanitation or food production. The human right to water and sanitation is explicitly recognized by the United Nations. Many agencies have also emphasized that improved water supply and sanitation is critical for poverty reduction and boosting economic growth. But, for the residents of Manantiales this human right is being violated. In the Valle de Aburrá, where Manantiales and Medellín are located, access to water and sanitation infrastructure is dependent on a community's position to municipal borders.

As displayed in the map, the main provider for water and sanitation infrastructure in the region, Empresas Públicas de Medellín (EPM), only provides potable water and sanitation connections to residents within certain municipal boundaries. This results in a clear disparity between "formal" and "informal" communities and a spatialized expression of inequity to water access. This disparity is also clearly identified in how the physical infrastructural network is built and how the governance and management occurs (see the Inequitable Access diagram). The detrimental impacts this has on a community like Manantiales are multifaceted. Unmanaged settlement on steep slopes with precarious lithography puts communities at great risk of landslides and mass movements.

To determine what strategies and solutions could best help address the water and sanitation access challenges for Manantiales, it was critical to analyze the supply and management of water at the regional level - a level that speaks to the actual scale of this natural resource and the watersheds, rivers and reservoirs that underpin it.

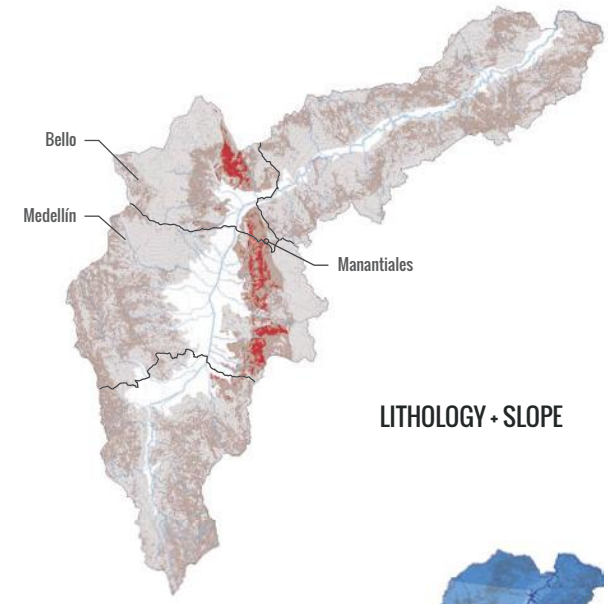
Our methodology consisted of assessing the natural and engineered network of the current system, the profile of consumption (residential and non-residential use) and current governance and management. From our analysis, we generated three main issues:

1) There is a deep misalignment between the supply in the system and capacity for treatment.

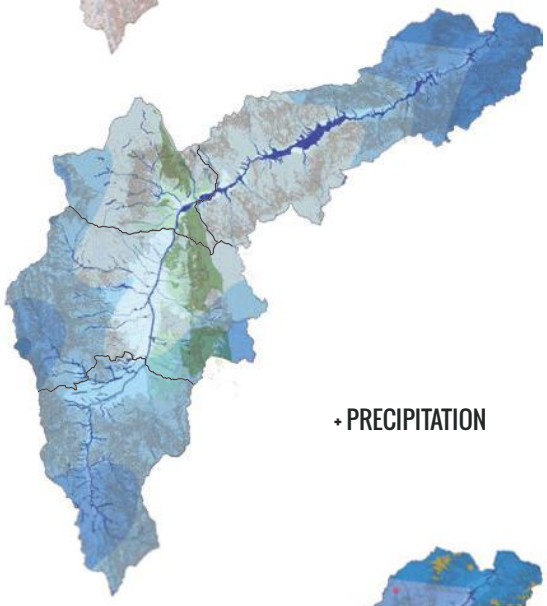
2) The current engineered network is highly centralized and reliant on inflexible and unsustainable practices.

3) Governance and Management does not align with the natural scale of the water system or the actual needs of residents within the watershed of the region, which crosses municipal boundaries.

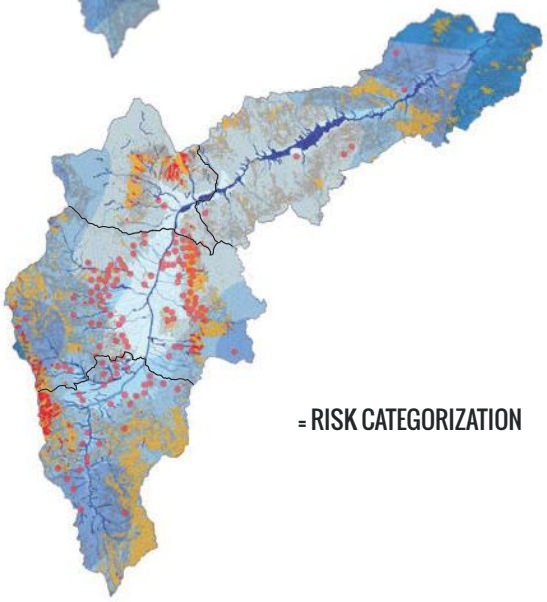
These realities point to a call to action for rethinking the system in terms of supply and management into a more decentralized, resilient, and regenerative form. This informs our strategy for envisioning a more equitable model of water access for the Manantiales community.



LITHOLOGY + SLOPE



+ PRECIPITATION

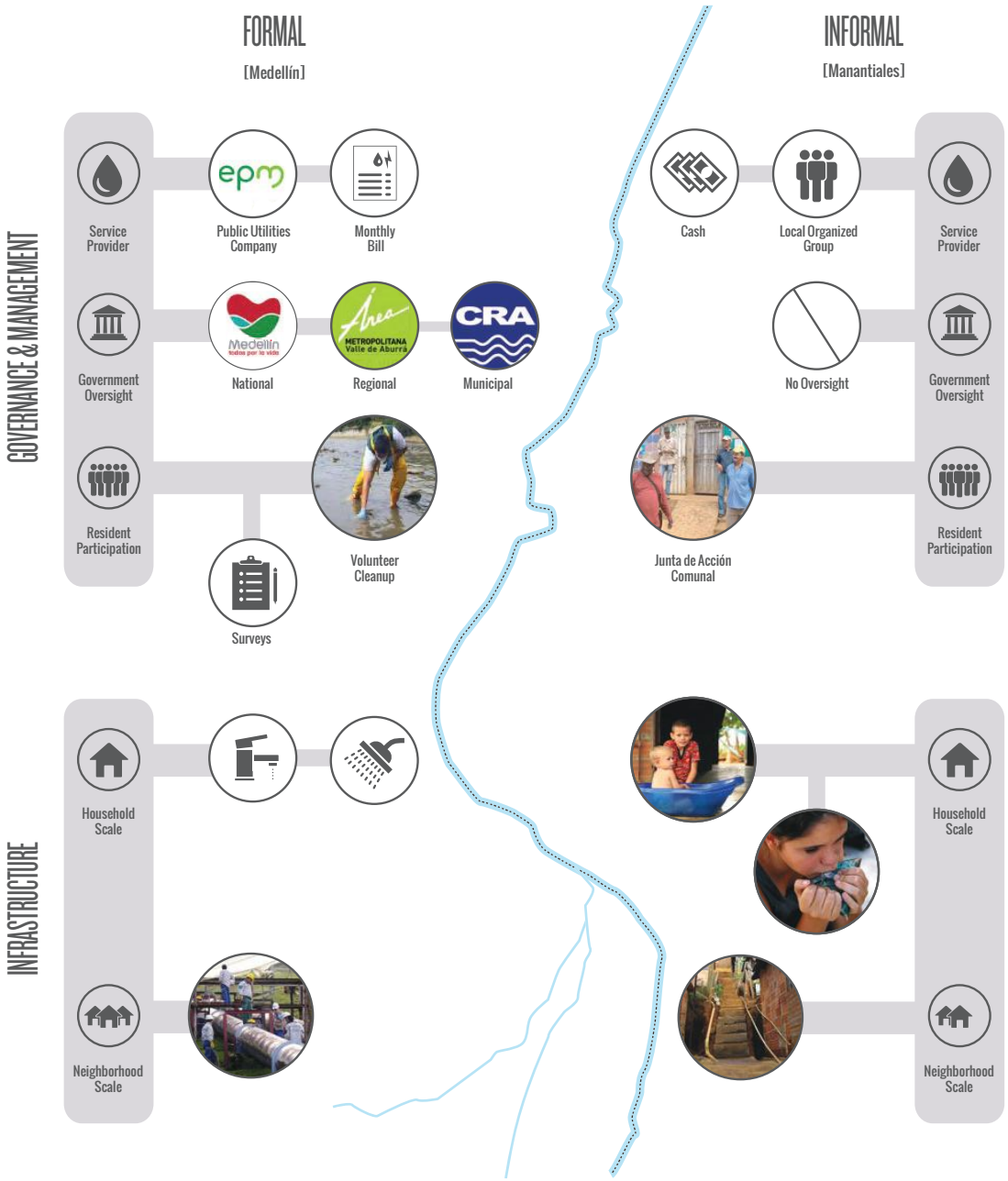


= RISK CATEGORIZATION

Dunites of Medellín
Deposits of dunites
Very high hazard — Slopes > 50% of dunites + deposits
High hazard — Slopes > 20% of dunites and > 50% other soils
Medium hazard — Slopes > 20% and > 50% other soils

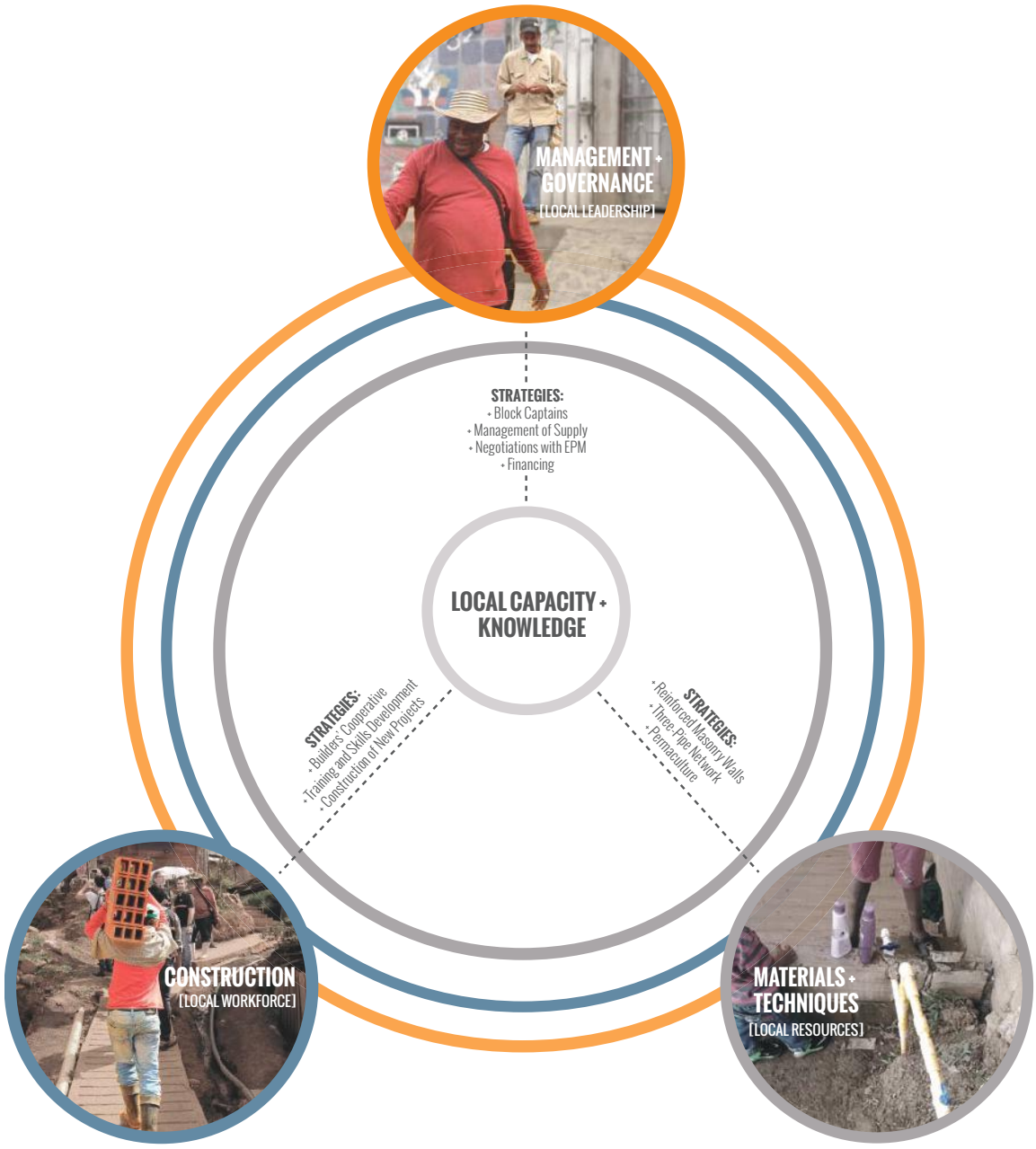
Landslide
Very high risk of mass movement
High risk of mass movement
Floodplains and flash flood zones
2.5 - 2.9 m/year precipitation
2.1 - 2.5 m/year precipitation
1.9 - 2.1 m/year precipitation

INEQUITABLE ACCESS
FORMAL VERSUS INFORMAL



The disparity between water and sanitation access for communities is made visible in how the governance, management, and physical infrastructure differs from the formal city of Medellín to the informal community of Manantiales. Residents of Medellín have reliable potable water and sanitation access through the Empresas Públicas de Medellín, government oversight to guarantee its safe distribution, and tiered payment systems to increase its affordability. Meanwhile, residents in the informal settlement of Manantiales rely on unauthorized local groups to provide non-potable supply and live without government support or oversight to ensure their safety. This results in public health risks, issues of affordability, and extensive time expenditures (for individual purification over fire). The lack of infrastructure also contributes to risks associated with stormwater management such as flooding and landslides.

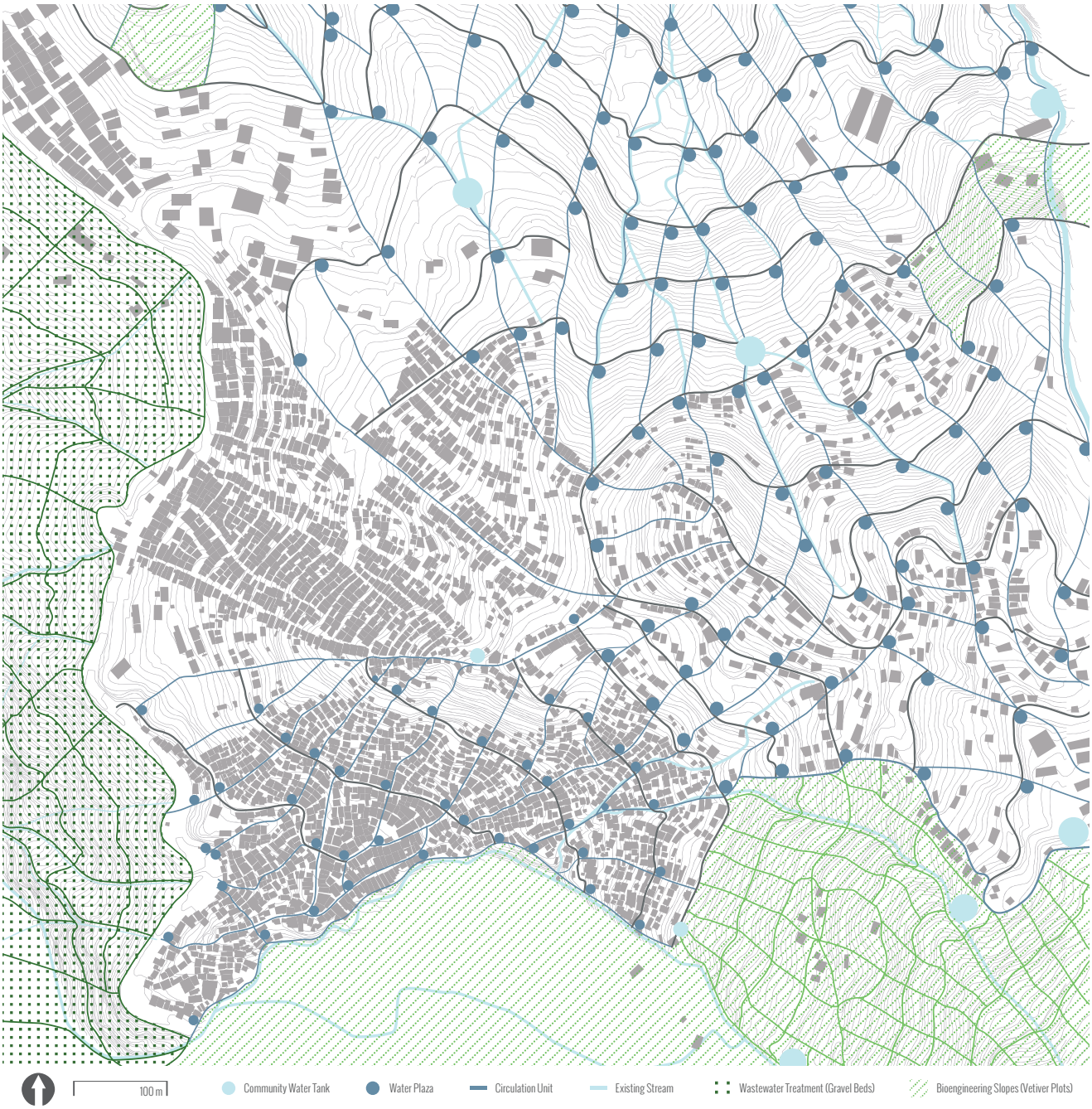
SOCIAL + PHYSICAL NETWORKS
EXISTING CAPACITY + KNOWLEDGE



To plan a resilient, equitable water system in Manantiales, our strategies consider both the physical and social infrastructure in order to design a system that could function autonomously. In order to be effective and empowering for residents in Manantiales, these strategies also build upon the rich breadth of existing capacities and vernacular structures in the community.

MASTER PLAN

IMPLEMENTATION STRATEGY

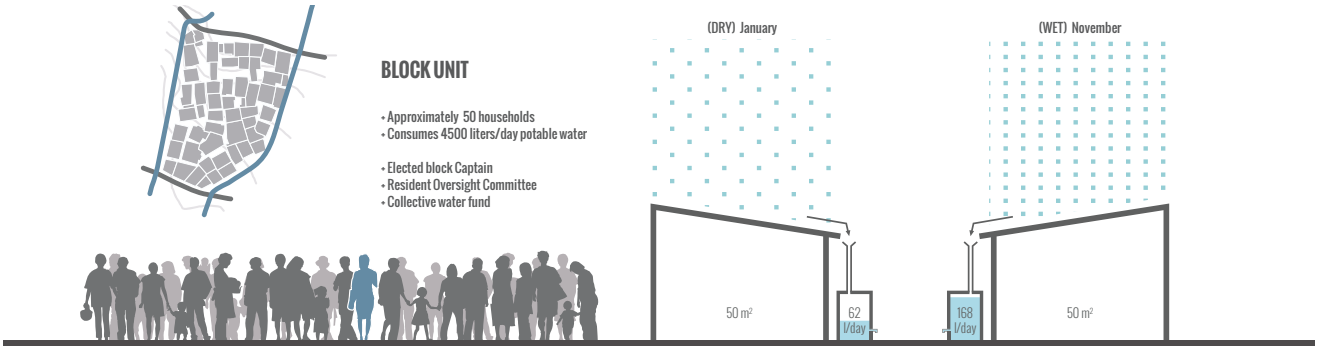


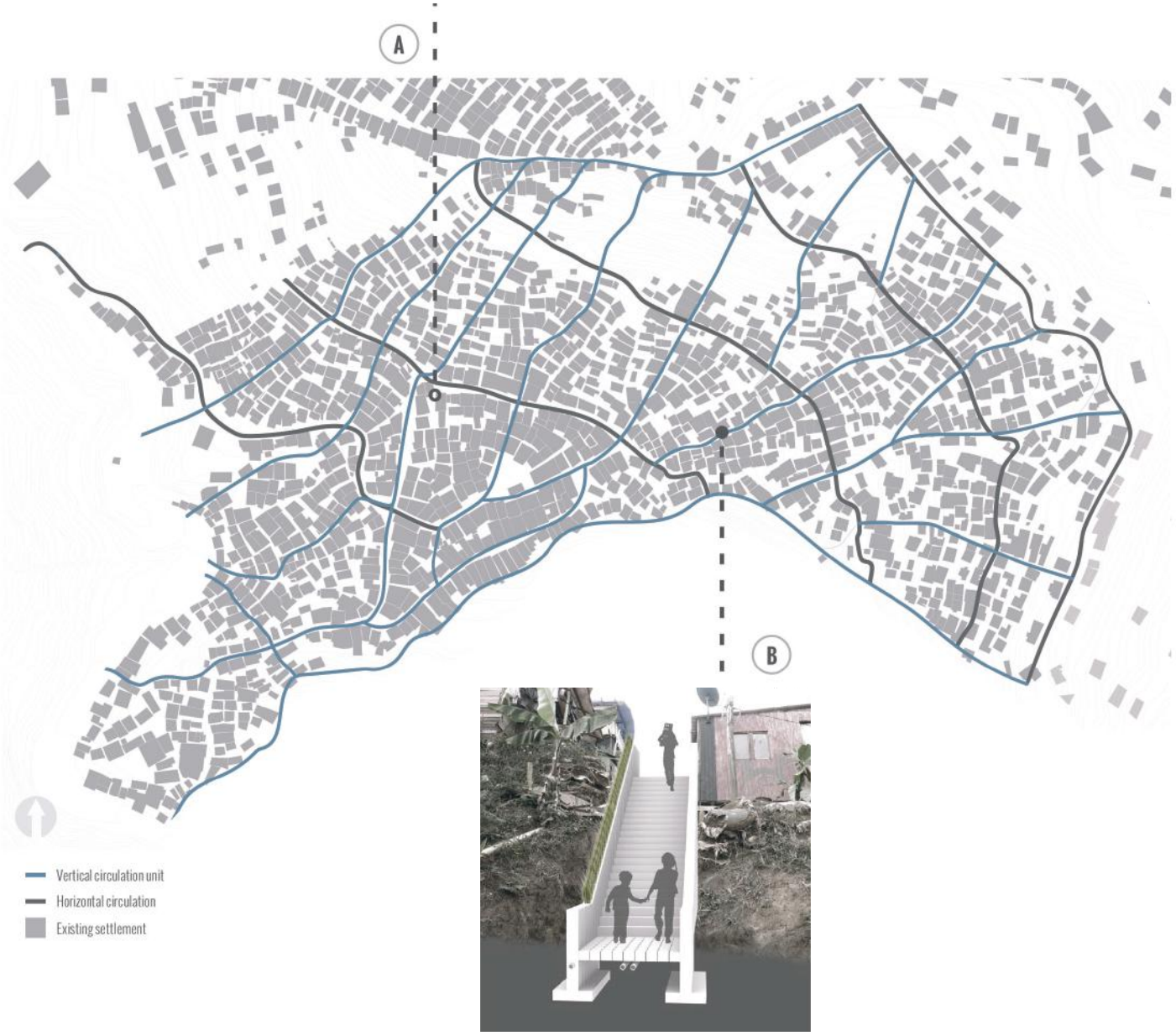
Our Implementation Strategy for water infrastructure addresses three development priorities: (A) Provision of resources to existing residents, (B) Communal vision of how to direct the growth of the settlement, and (C) Management of risky topography/lithography.

We used these categories to create stages of intervention that would allow for build out in a way that is incremental, according to urgency of need, and capitalizes on existing capacity. Physical infrastructure interventions are rooted in resilient approaches, leveraging the natural supply of rainwater and looking to bioengineering strategies for treatment capacity and management of precarious land. Social infrastructure interventions build out governance and resource management in a way that is decentralized. Financing strategies look to resources within the community and how to leverage external sources.

stage A: Servicing Existing Residents	stage B: Directing Growth For Future Residents	stage C: Managing Growth In Precarious Areas
COMMUNITY PLAN		
Initiate consensus-building process on financing, governance and planning process strategies  Perform site and needs assessment 	Initiate community-wide meetings to design and launch Master Plan: • delineate existing block units • identify circulation network • identify new growth areas and precarious sites  Establish relocation plan for disrupted sites, working with Mesa de Derechos Humanos 	Prioritize creation of new block units and housing for displaced residents Allocate site stabilization plots to block units for vetiver cultivation Establish community-wide management of secondary wastewater treatment 
GOVERNANCE + MANAGEMENT		
Elect **Block Captains**  Establish **Resident Oversight Committees** within Block Units 	Elect community wide **Water Commissioner** to sit within JAC-nominees (pooled from Block Captain seats)  Institute **Block Captain Board of Representatives** to serve as oversight to Water Commissioner seat 	Empower Water Commissioner to negotiate with EPM and AMVA Council to secure long term support with financial and network development  Empower Water Commissioner, Block Captains + Resident Oversight Committees to direct expansion of water plazas + growth stabilization areas 
FINANCING		
Establish water usage fees  Create **Community Water Fund** that pools financing from residents within Block Units	Establish **Revolving Loan Funds** at Block Unit. Residents can apply for micro loans to perform home improvements related to potable water and sanitation access 	Institute tiered usage fees and non-residential consumption fees  Secure support from **Cajas de Compensacion** like CONFAMA or COMFENALCO  Create **Community Infrastructure Bank** to finance long term network development 
CONSTRUCTION		
Secure workforce development support from National Ministry of Education and Ministry of Work  Train residents how to capture and treat rainwater 	Establish **Construction Workers' Cooperative** with residents with existing construction skills 	Construction Workers' Cooperative trains new workforce and directs new network development 

ACTORS: Community · Academic Institutions · Governmental · Private Foundations


BLOCK UNIT
• Approximately 50 households
• Consumes 4500 liters/day potable water
• Elected block Captain
• Resident Oversight Committee
• Collective water fund
(DRY) January
(WET) November
50 m²
62 l/day
168 l/day
50 m²


A
B
Vertical circulation unit
Horizontal circulation
Existing settlement

INTEGRATED INTERVENTION

NEW WATER CULTURE

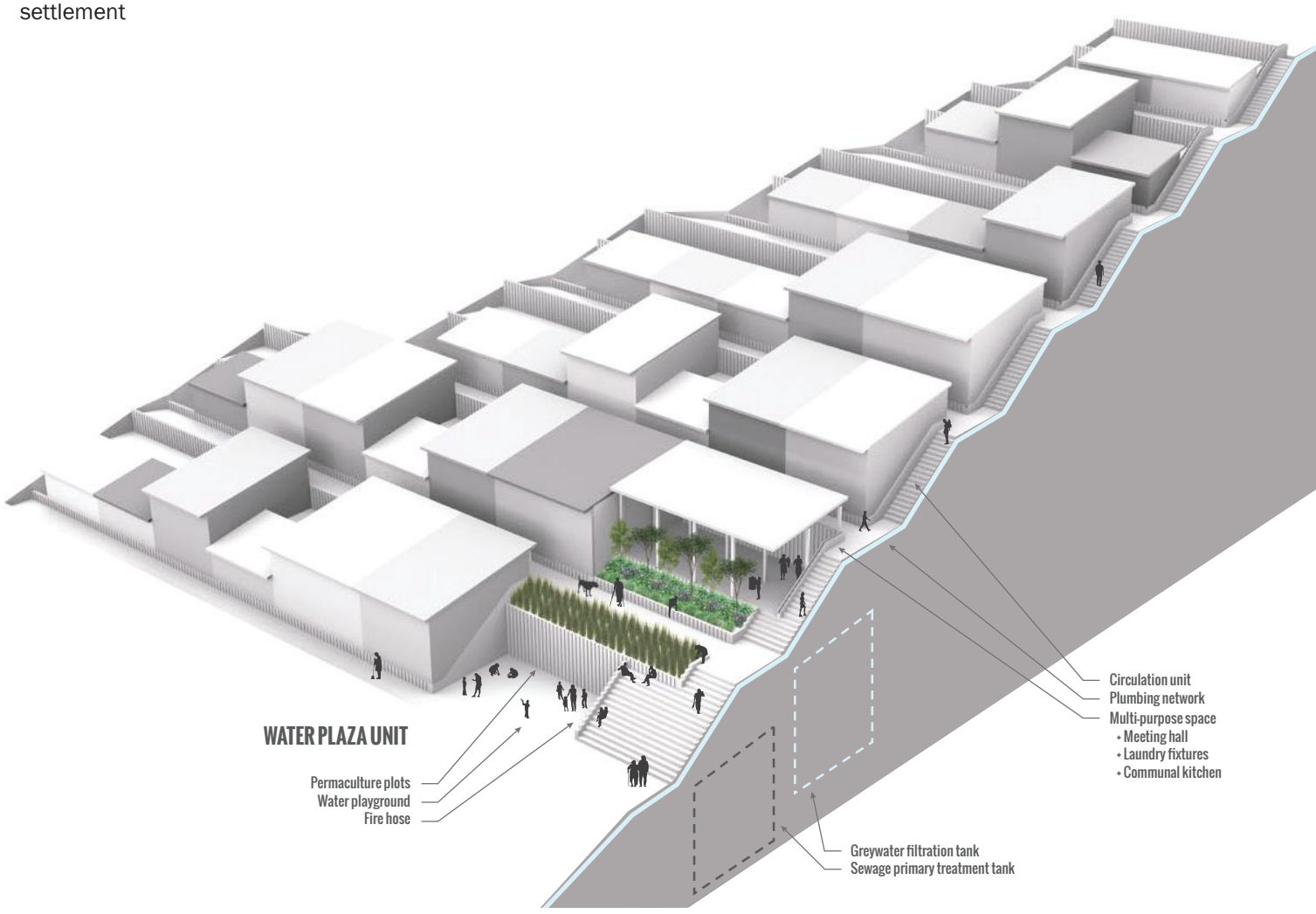
At stage A, we address the most urgent risk factor as identified by the community and establish the foundational structures to build upon: the Block Unit scale, Block Captain representative, and the household rainwater capture systems. Demonstration workshops, facilitated by each Block Captain, will explore best practices for rooftop capture and filtration, but also explain the importance of stormwater management to minimize flooding and erosion.

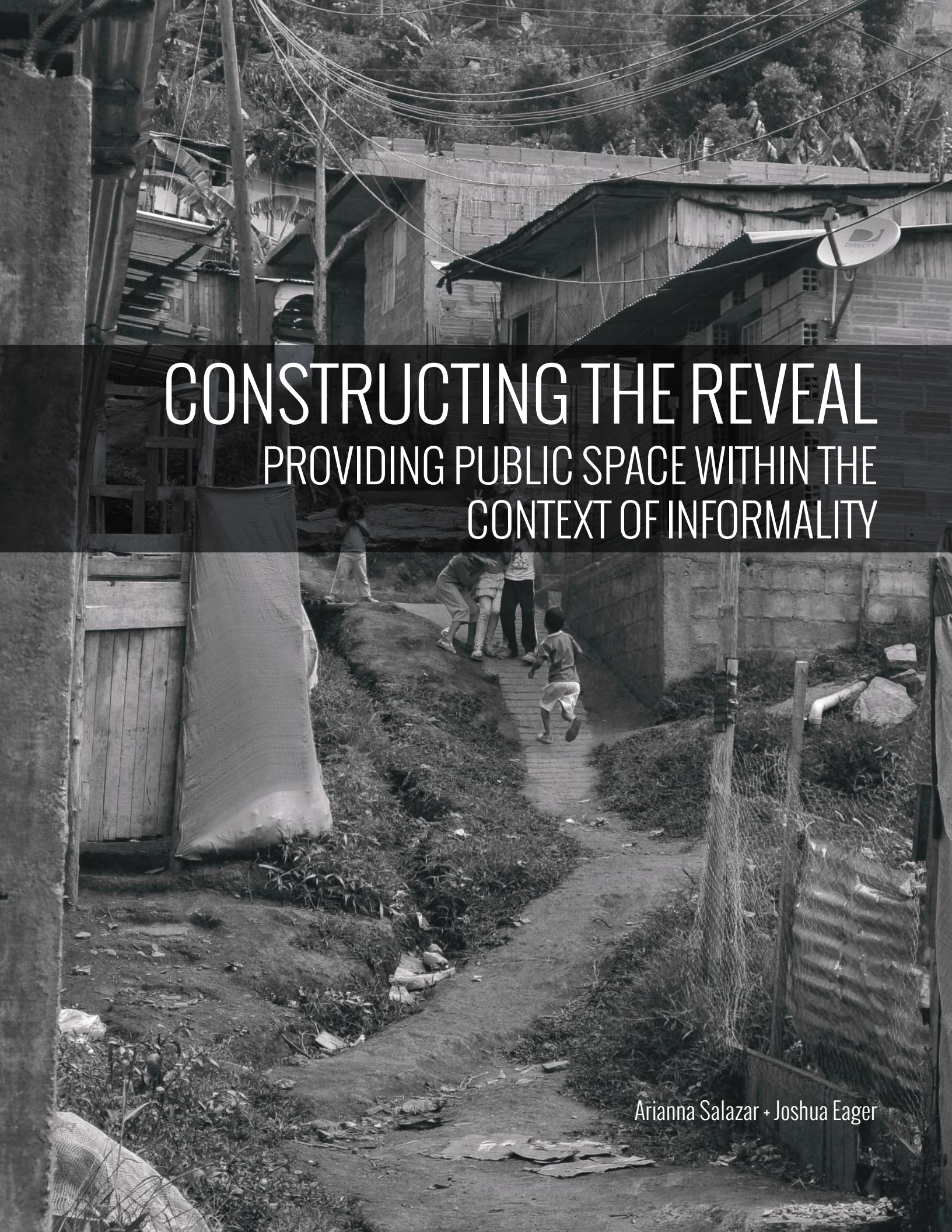
At stage B, we consider the physical and social infrastructure at the community scale in order to collectively develop its growth and manage- ment. We will initiate the community wide planning efforts to create a Master Plan that performs the three functions of our Implementation Strategy:

+ Delineates Block Units throughout the existing community
+ Identifies circulation networks
+ Differentiates safe sites from precarious sites for settlement

The Circulation Unit will help resolve the physical needs of transporting people and water while also stabilizing the site.

At stage C, we envision the implementation of the Master Plan to safely manage new growth and establish a resilient water culture throughout the community via public water plazas. To direct new growth at the household level, the Growth Unit will serve as a prescriptive set of basic require- ments for all new block units to follow. The unit is comprised of retaining walls and plumbing chases made of standard masonry units. The walls are set at increments that not only provide safe footings for each individual house, but collectively stabilize the entire Block Unit and therefore the entire community. The formula allows for the growth of the individual unit (triple expansion of floor area) in a way that considers how existing households expand and yet limits the encroachment of the shared pathways.

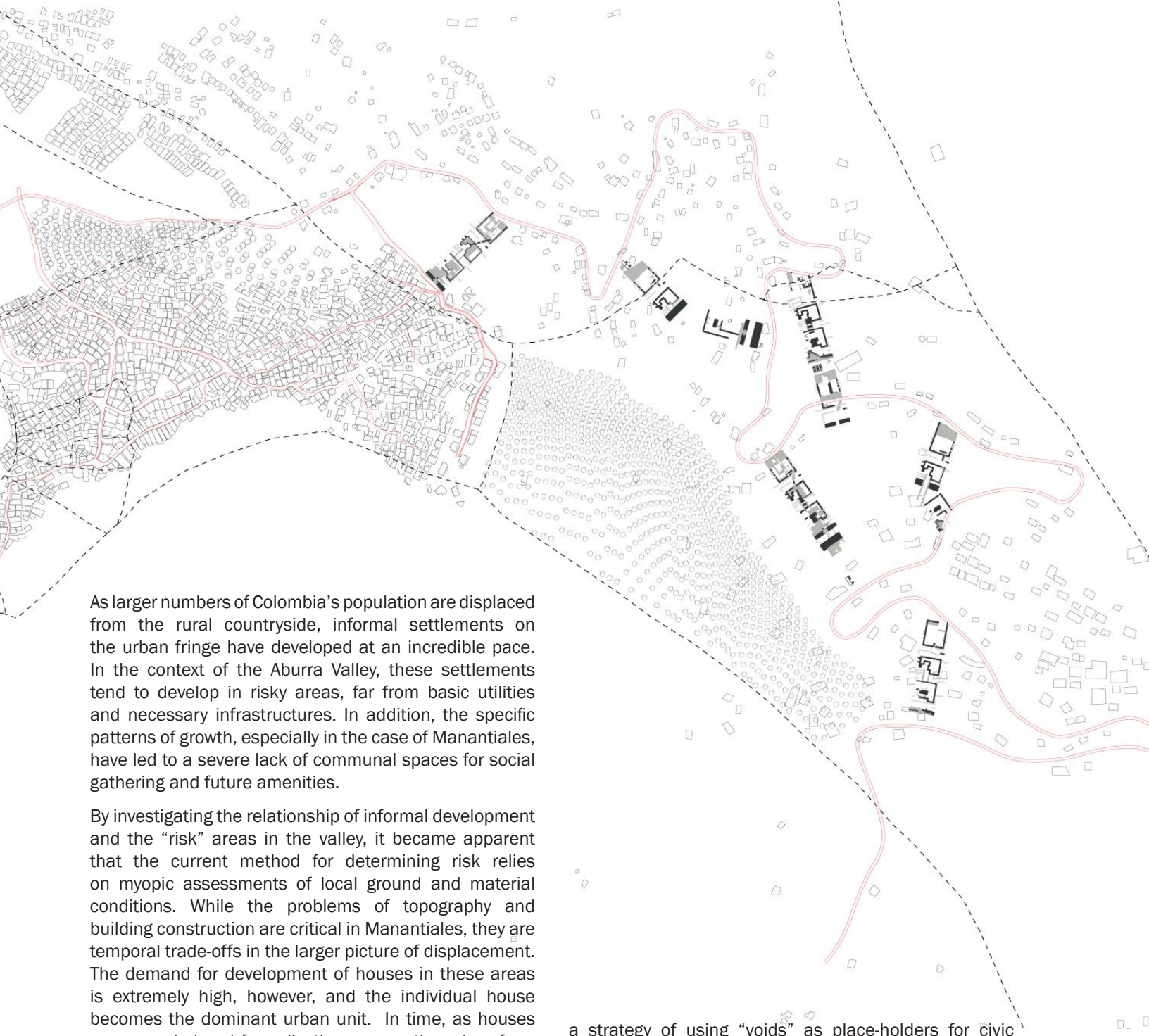




CONSTRUCTING THE REVEAL

PROVIDING PUBLIC SPACE WITHIN THE CONTEXT OF INFORMALITY

Arianna Salazar + Joshua Eager



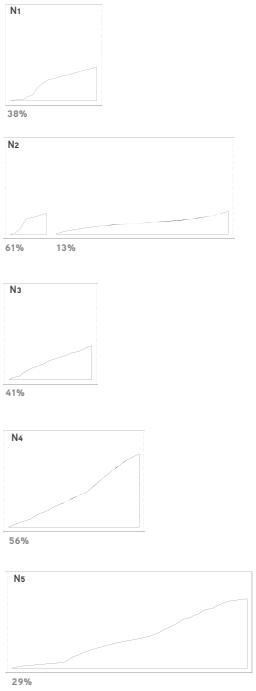
As larger numbers of Colombia's population are displaced from the rural countryside, informal settlements on the urban fringe have developed at an incredible pace. In the context of the Aburra Valley, these settlements tend to develop in risky areas, far from basic utilities and necessary infrastructures. In addition, the specific patterns of growth, especially in the case of Manantiales, have led to a severe lack of communal spaces for social gathering and future amenities.

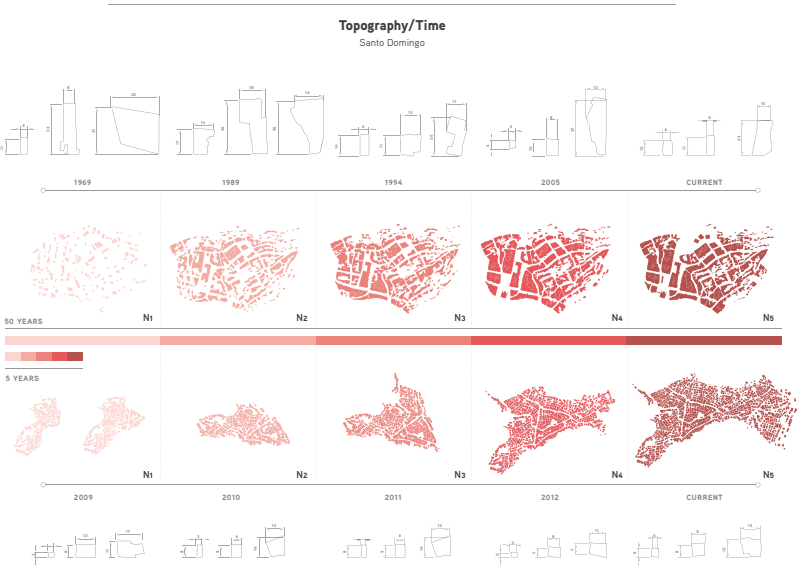
By investigating the relationship of informal development and the "risk" areas in the valley, it became apparent that the current method for determining risk relies on myopic assessments of local ground and material conditions. While the problems of topography and building construction are critical in Manantiales, they are temporal trade-offs in the larger picture of displacement. The demand for development of houses in these areas is extremely high, however, and the individual house becomes the dominant urban unit. In time, as houses are upgraded and formalization occurs, the urban form remains as a derivative of the individual plot without the capacity to provide for adequate public space. As a result, there will be little room for future infrastructure or amenities such as roads, schools, shopping centers, or sports facilities. In order to make space available for such programs, houses will have to be removed and families relocated, repeating the costly financial and psychological cycle of displacement.

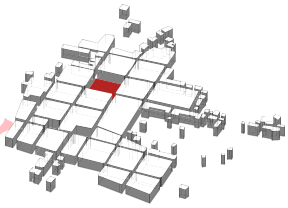
This project aims to expand the definition of risk as it is currently understood to include the assessment of growth patterns and the speed of development. It introduces a new approach for the allocation of future public space by protecting specific areas from being developed through a strategy of using "voids" as place-holders for civic programs. The proposal aims to maintain these place-holding spaces during the building process in three ways; (1) to preserve larger public plazas with large stock material such as rocks and sheet material, (2) to develop productive zones for the processing of material for the construction of homes, and (3) to provide a delineating element as an extension of the home to designate future infrastructure and prevent encroachment. As construction continues, the place-holding, productive and storage spaces will transform to meet the changing construction demands of the area they serve. Once each zone fulfills the needs of the neighborhood, the area will be clear for other programs to develop and a new public space will be revealed.

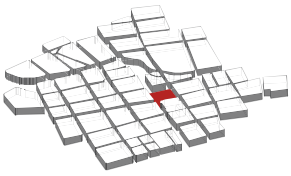
MEASURING GROWTH

SLOPES

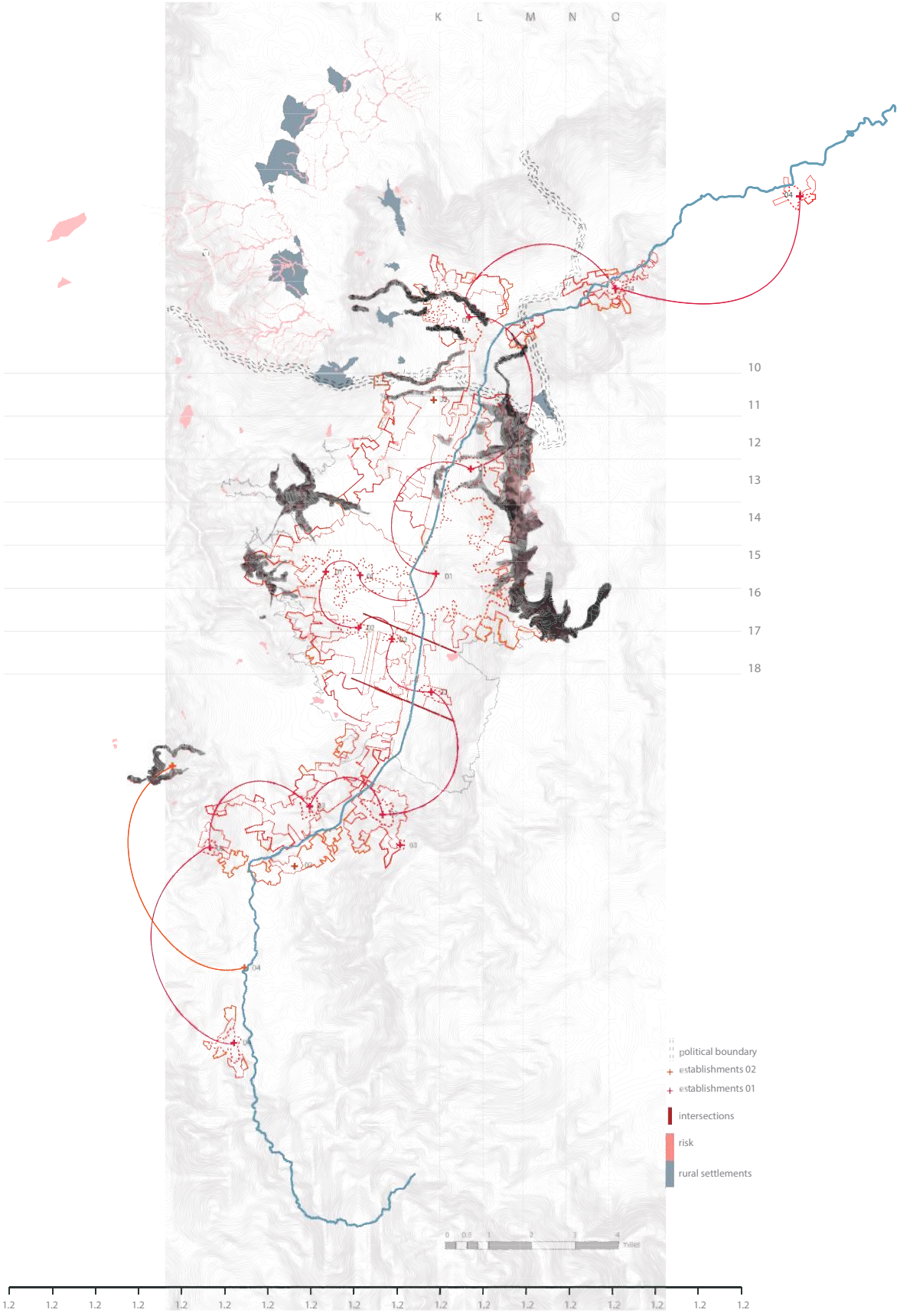








GROWTH


K
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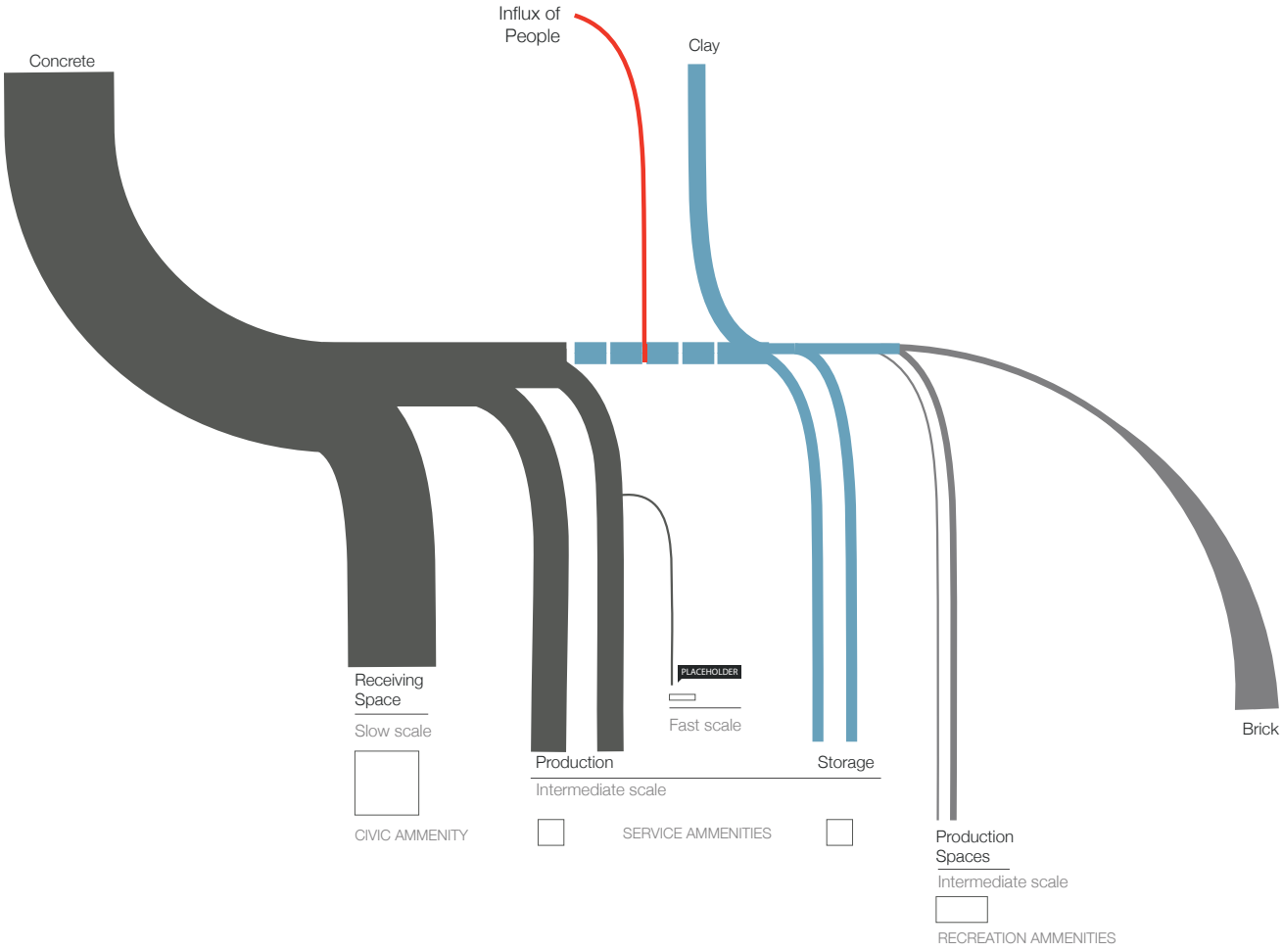
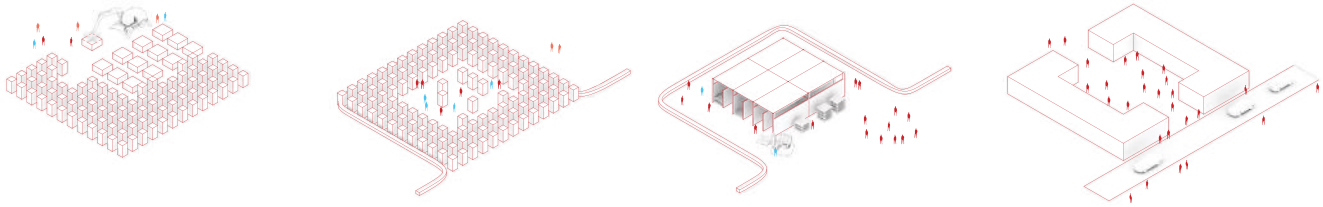
political boundary
establishments 02
establishments 01
intersections
risk
rural settlements
1.2

STRATEGIES

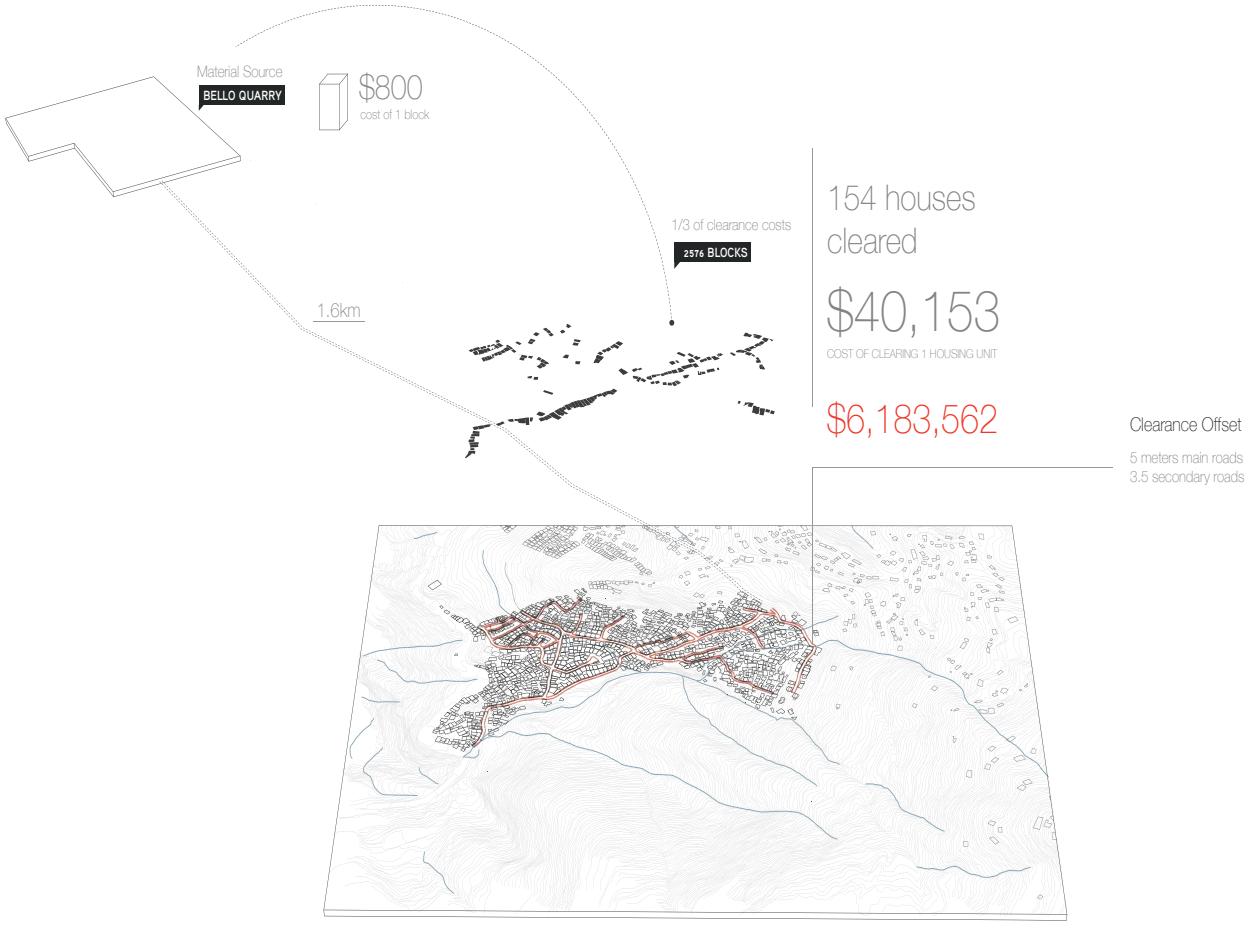

Influx of People
Clay
Concrete
Receiving Space
Slow scale
PLACEHOLDER
Fast scale
Production
Intermediate scale
Storage
Brick
CIVIC AMMENITY
SERVICE AMMENITIES
Production Spaces
Intermediate scale
RECREATION AMMENITIES


NON-STATE ACTORS
Funding for material and deployment in site
Establishing community representatives
Purchase of Raw Materials
Provision of granite Blocks and transportation
Supervision of material deployment
upskill residents and expand their contruction capabilities
Monitor settling process ground stablization for housing
Construction Guidance
NGO
Bello Quarry
Community Organization
unicipality of Bello
Planning Department
ltura and Patrimony Institute
ello Mayorality
ducation Secretary
nder
Sports Facilites and Recreational Ammenities
Sport facility
Civic Ammenities
school
Church
Town Center
Medium-size ammenities
Storage spaces
Production spaces
Services spaces
Ground Control
Ground Stabilizing path extension
SLOW VOID
MEDIUM VOID
FAST VOID
CONTRIBUTION
STATE ACTORS
PLACEHOLDERS

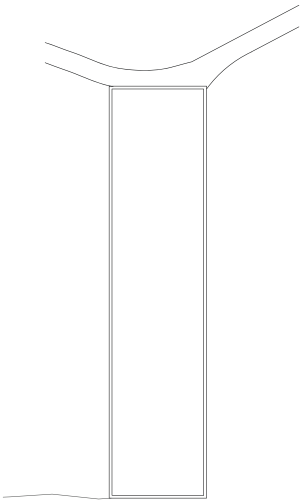
TIME SQUARE



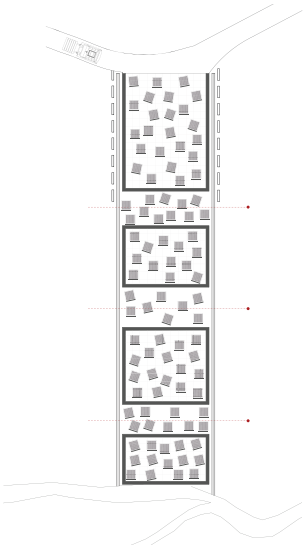
SITE LOGIC



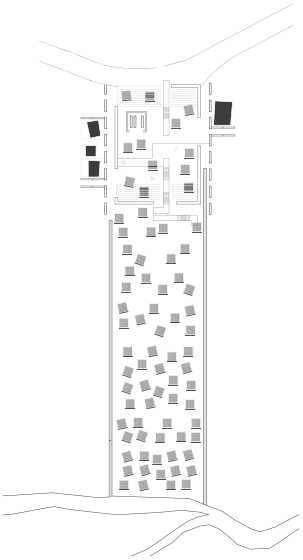
STRATEGIES OF URBAN INTERVENTION



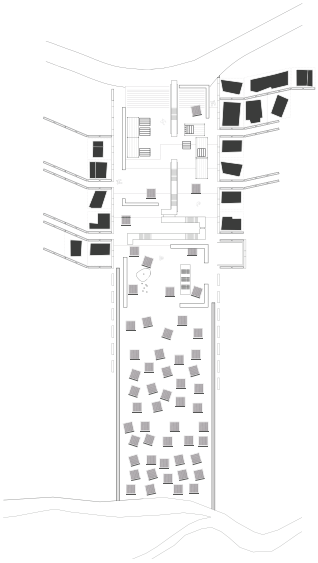
Phase 1



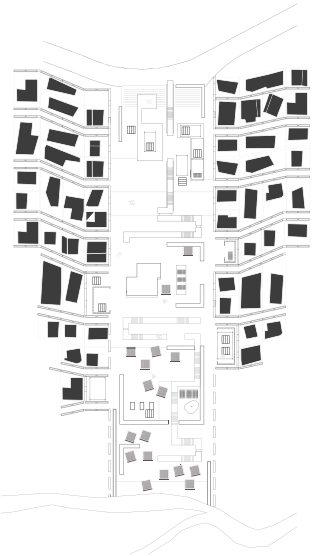
Phase 2



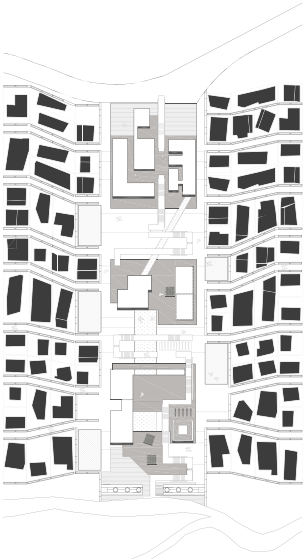
Phase 3



Phase 4

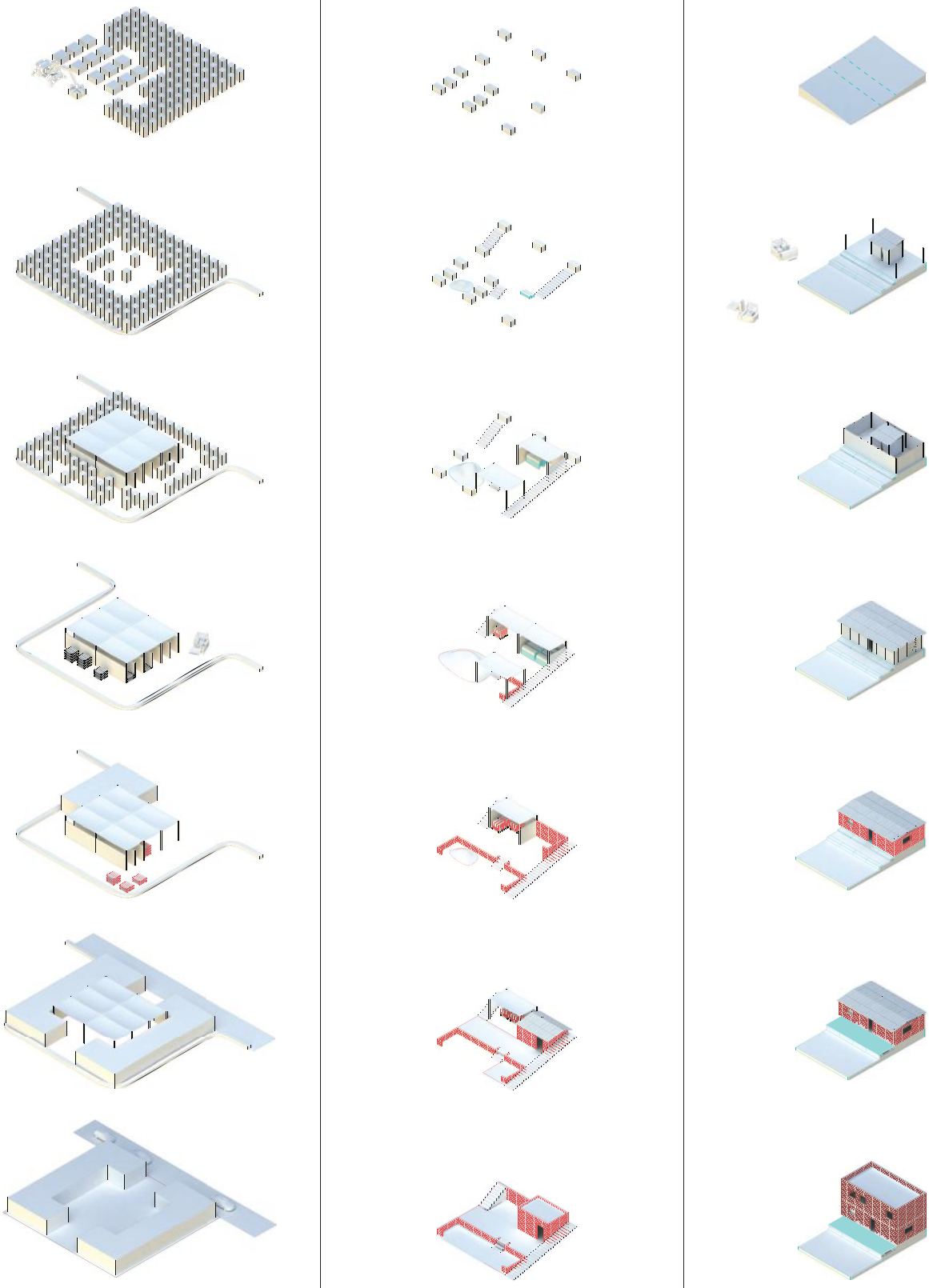


Phase 5



Phase 6

TYPOLOGIES OF VOIDS



SLOW VOID

Placement of stock material to preserve larger public space

INTERMEDIATE VOID

Processing of materials for building houses + ground stabilization

FAST VOID

Providing an attachment unit for the house for future infrastructure + growth control

ENCLAVES OF SOLIDARITY

PLANNING STUDIO

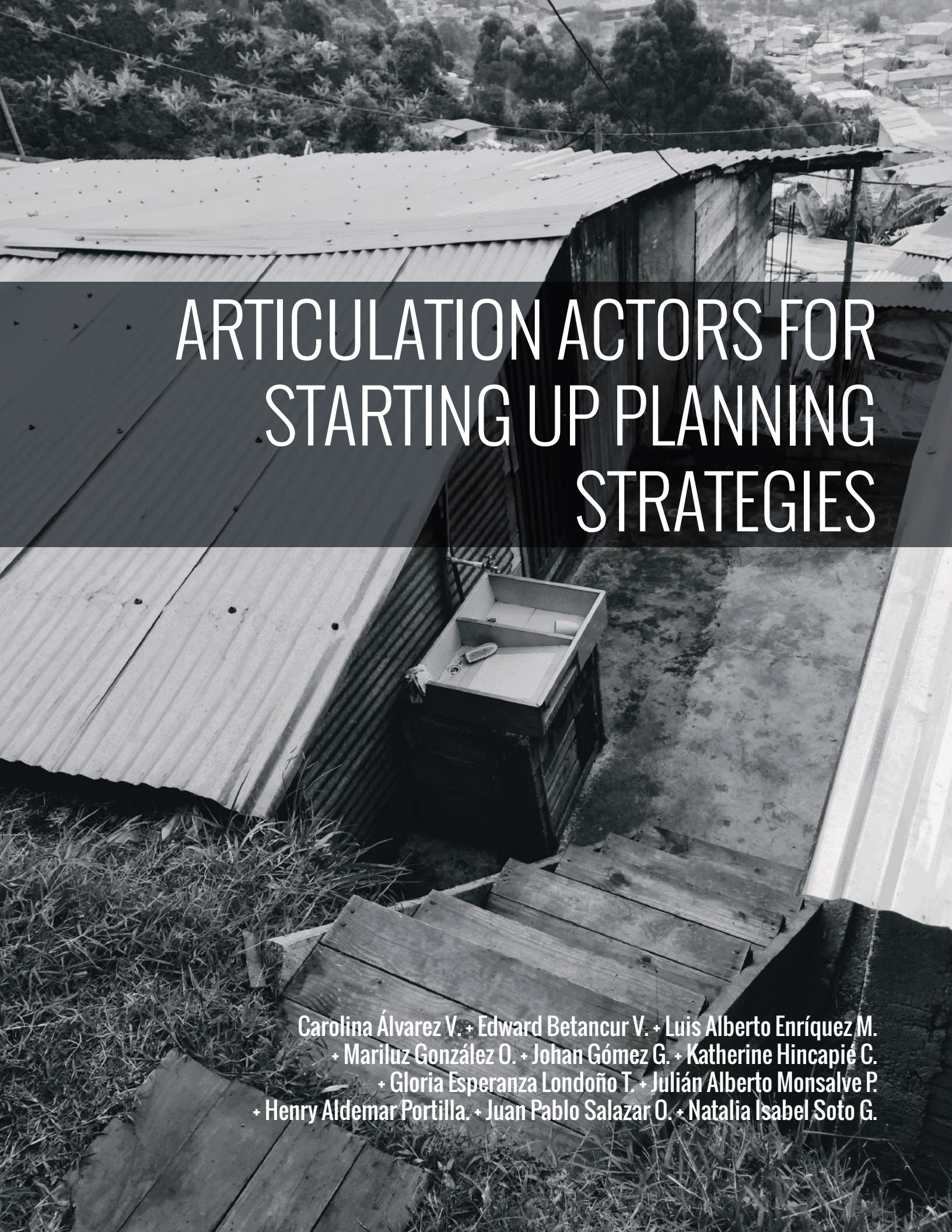
UNAL PLANNING

OBJECTIVES

To understand the complexity of the socio-spatial dynamics of informal settlements in tangled with the challenges of growth management in metropolitan contexts.

To devise territorial strategies and management schemes to promote livelihoods and infrastructure provision in the area of study.

To generate spatial intervention tactics to integrate multiple themes, dimensions, actors, and scales.



ARTICULATION ACTORS FOR STARTING UP PLANNING STRATEGIES

Carolina Álvarez V. + Edward Betancur V. + Luis Alberto Enríquez M.
+ Mariluz González O. + Johan Gómez G. + Katherine Hincapié C.
+ Gloria Esperanza Londoño T. + Julián Alberto Monsalve P.
+ Henry Aldemar Portilla. + Juan Pablo Salazar O. + Natalia Isabel Soto G.

INTRODUCTION

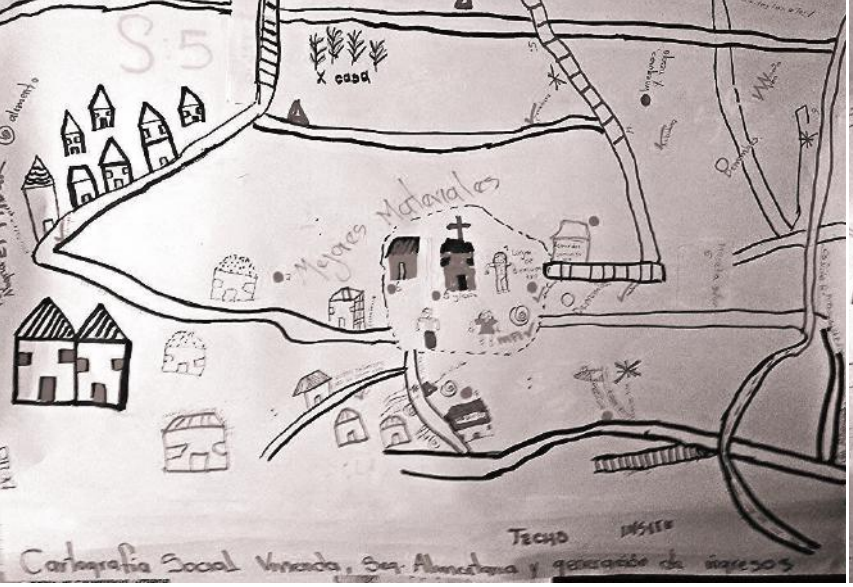
Enclaves of solidarity is a planning proposal for Manantiales de Paz and Pinar Settlement envisioned from the rural district scale. Is based in the identification of tensions and challenges in order to point a route for actors efforts integration that allows via solidarity and cooperation the starting up of the urgent planning strategies that the territory demands.

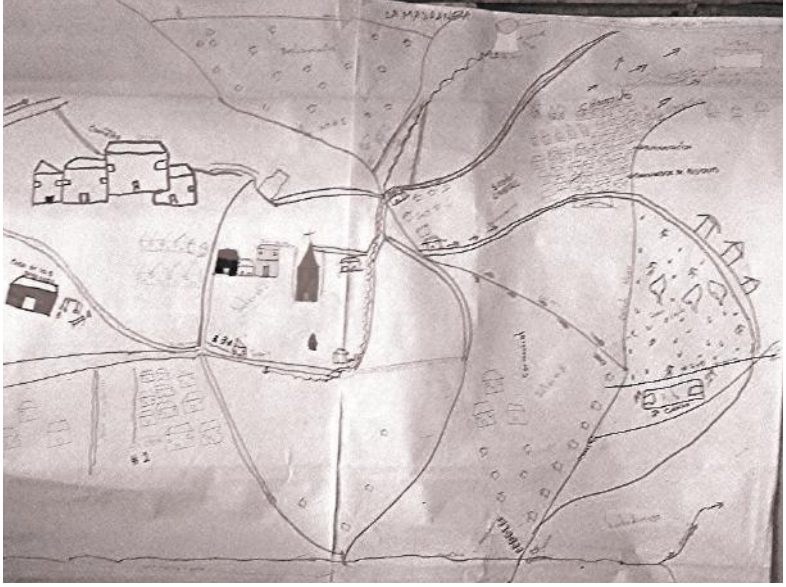
In the first step of the defined methodology was the extraction of a series of territory lectures in order to visualizeits reality, problems and opportunities.

First of all, we recognized that the settlement of Manantiales de Paz and Pinal is involved in a metropolitan tension, in which an ideal occupation model proposed for Aburrá Valley is contradicted by two strong real occupation tendencies, both taking place in the peripheral hillsides: the formal and informal expansions. The first officially but discreetly promoted and the second one stigmatized and made invisible.

When Manantiales de Paz does not even appear in the official maps (due to its youth), the social cartography exercise not only contributes to solve that lackbut opens a way to understand the territory problematic but from the community-non tactical perspective. It was an exercise where the community having no official cartography references tried with their own hands and knowledge to draw their own neighborhood and surroundings identifying weakness, strengths and dreams for future. There were important statements that helped us to define strategies: “we want to stay here”, “there is no food”, “we want our children to be students”, “we want forestation”, “we want environmental education”, and other conclusions such as the local state negligence, their self-recognition as a series of “independent” neighborhoods and the presence of a series of social and political institutions offering some kind of help.

The social cartography exercise is also the support of the definition of the 5 issues we defined for the proposal according to the community main concerns: Enviromental system and risk management, Urban growth and morphology, Housing and tenure, Public systems and food security and income generation. Having them, the next step was the definition of a series of problems but also opportunities for each them.





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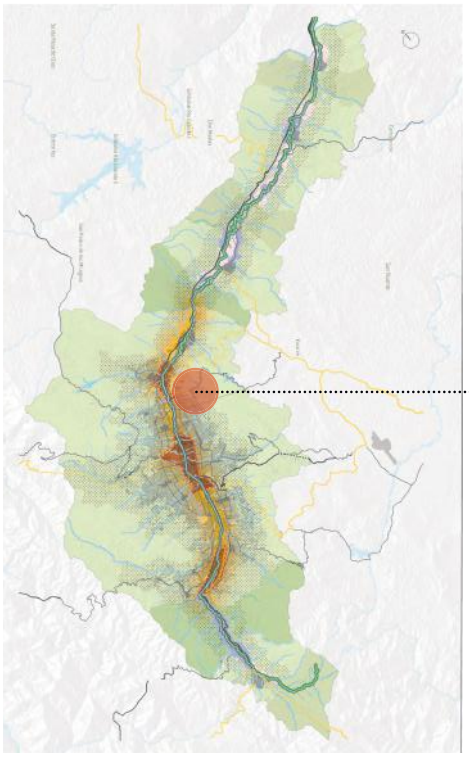
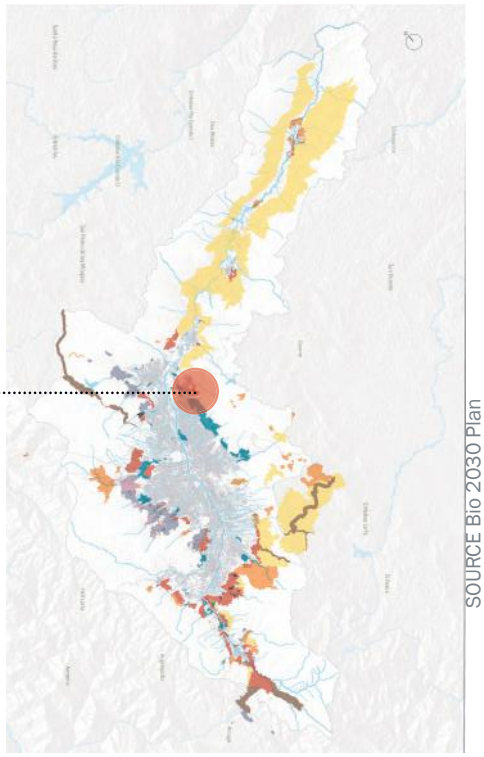
TERRITORY LECTURES

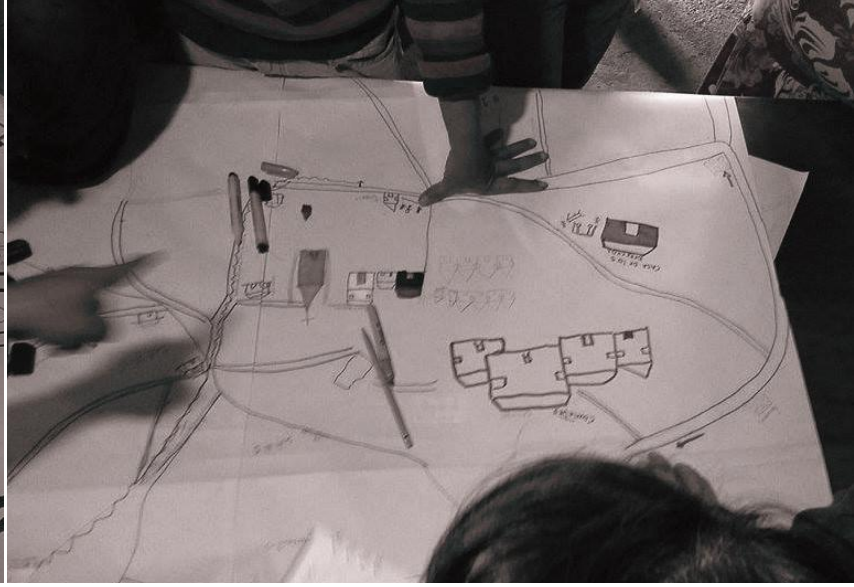


IDEAL OCUPATION MODEL OF ABURRÁ VALLEY

THE REAL OCUPATION TENDENCIES IMPULSED



SOURCE Bio 2030 Plan



draw their own neighborhood and surroundings identifying weakness, strengths and dreams for future. There were important statements that helped us to define strategies: “we want to stay here”, “there is no food”, “we want our children to be students”, “we want forestation”, “we want environmental education”, and other conclusions such as the local state negligence, their self-recognition as a series of “independent” neighborhoods and the presence of a series of social and political institutions offering some kind of help.

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“we want BETTER MATERIALS”

“we want REFORESTATION”

“we want our kids to be STUDENTS”

“we want ENVIRONMENTAL EDUCATION”

“there is NO MORE SPACE”

“state NEGLIGENCE”

“lots of INSTITUTIONS working offering help”

“we want to STAY HERE”

“we want POTABLE WATER”

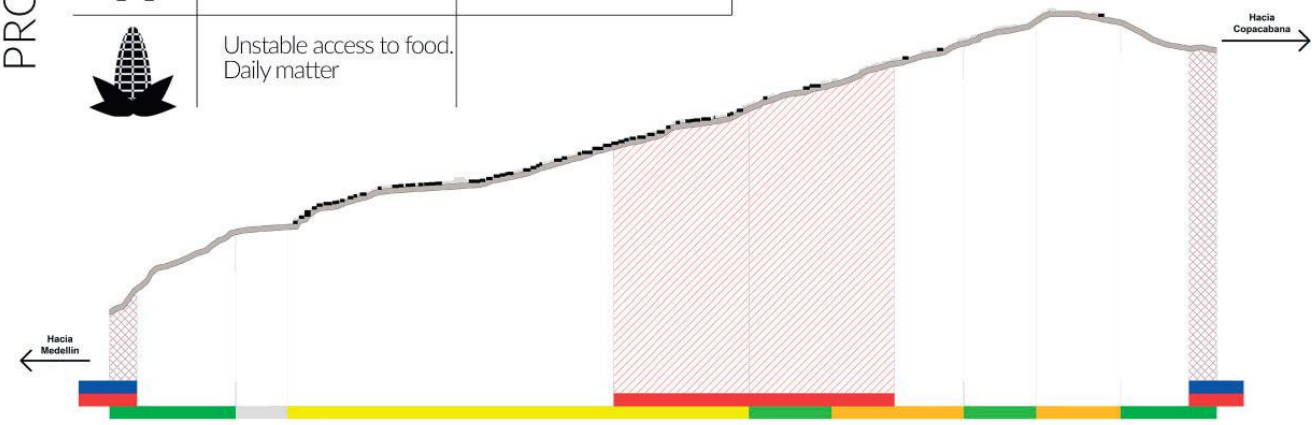
“NEIGHBORHOOD diffferentiation”

SOURCE Ryan Catalani

DIAGNOSIS PROBLEMATICS & POTENTIALS

PROBLEMATICS

	Soil with many geological restrictions	Contamination of hidrologycal system	Ecosistemic damages	Wrong water manage
	Tendency for expansive growth	Fragmentation	Private ocupation priorized over public structure	Comunity doubts about how and where to grow
	Insificient puclic spaces and equipments	Low accesibility	No efective conexion with municipal nuclei	Low effective and efficient manage of waste
	Precasious conditions of housing and habitat	Inestability and insecurity in the house tenure		
	Unstable access to food. Daily matter			



POTENTIALS

	Presence of comunitarian organizations. Eco/manantialesMAB	Articulation with Metropolitan Greenbelt	Abundant water affluents/sources	Presence of high enviromental value soils protected by law
	Sel management and construction	Possible positive effects of real state project	Organization around neighborhood nucleis	
	Sel managed aqueduct	Infrastructure proposed by real state project	Multipurpose public space	
	NGO presence: TECHO / ACNUR	Management of national and international resourses	Avaliable soils for controled urbanization	
	Presence of comunitarian restaurants	Houses as productive spaces	Avaliable soils for controled urbanization	

CHALLENGE

SOCIAL MAP

Granizal Vereda

Foundation
17 Years

Population
18.000

Displaced
90%

Manantiales de Paz Settlement

Foundation
5 Years

Population
8.000

Displaced Persons
90,8% → from Medellin 47%

Housing
1.700

Land Tenure: Rent
70%

Land Tenure: Holders
30%

Income
63% less
26% same
17% more
UD$258

So, according to the metropolitan context tension, the invisibility of the territory (no official maps) and the actors disarticulation; *the challenges should be to make Manantiales de Paz and Pinar settlements visible to the political and social institutions (actors) offering possible routes that articulates and engages their individual efforts in order to start up the planning strategies needed with urgency. That should lead us to a scenario of a better physical, social, economic and symbolical integration of the settlement to the metropolitan dynamics.*

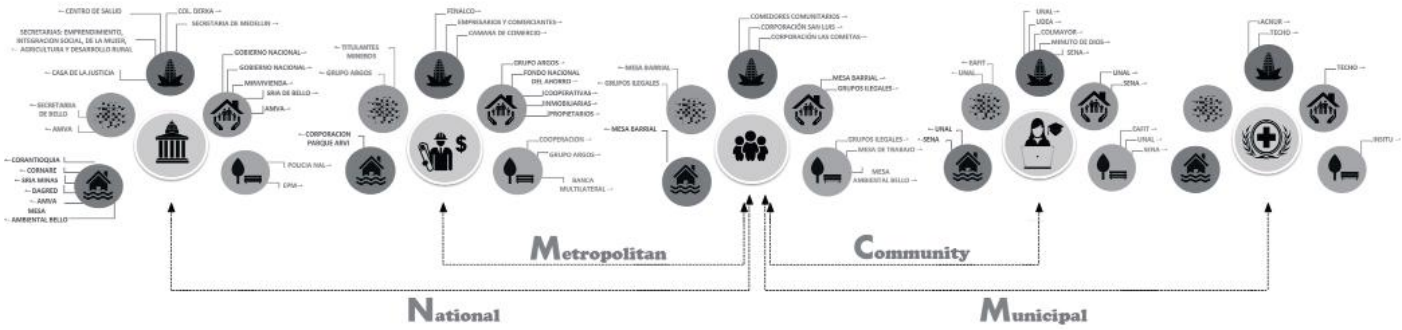
Without the actorsarticulation, they will continue shaping the territory according to separate visions. So, the formal and informal growth tendencies will continue as usual and the state, if the municipalist vision persists (no actors integration), is not going to have the capacity to manage both dynamics.

The strategy is then the establishment of a series of social agreements for each strategic issue between the actors involved or with technical and political capacity or obligation to intervene.

The actors articulation proposal should help surpass the current situation of assistance, individual efforts, and municipal preponderancy leading us to a scenario of different scale actors coordination, web configuration and the overcome of the municipal closed vision seeing Manantiales and Pinar as a metropolitan and even a national issue in some aspects.

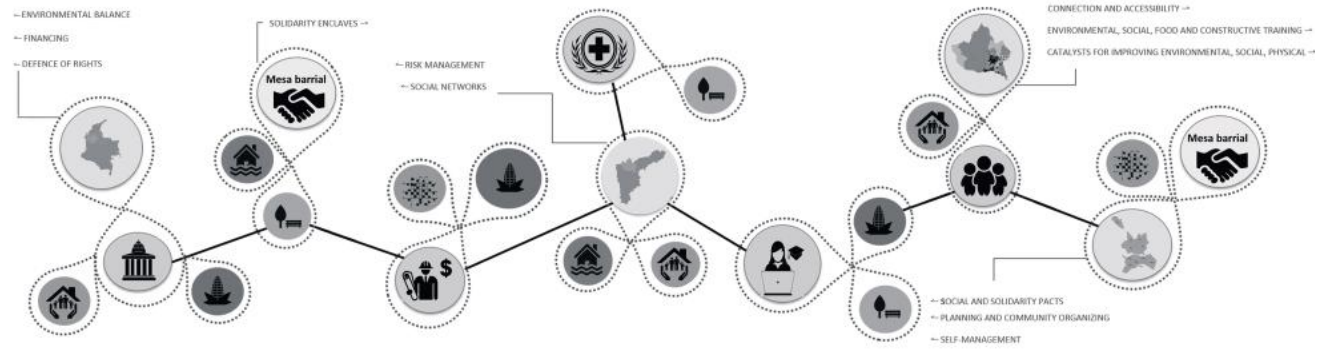
CURRENT SCENARIO

ACTORS CURRENT MAP-ASSISTANCE



POSSIBLE FUTURE SCENARIO

Actors proposal map-coordination

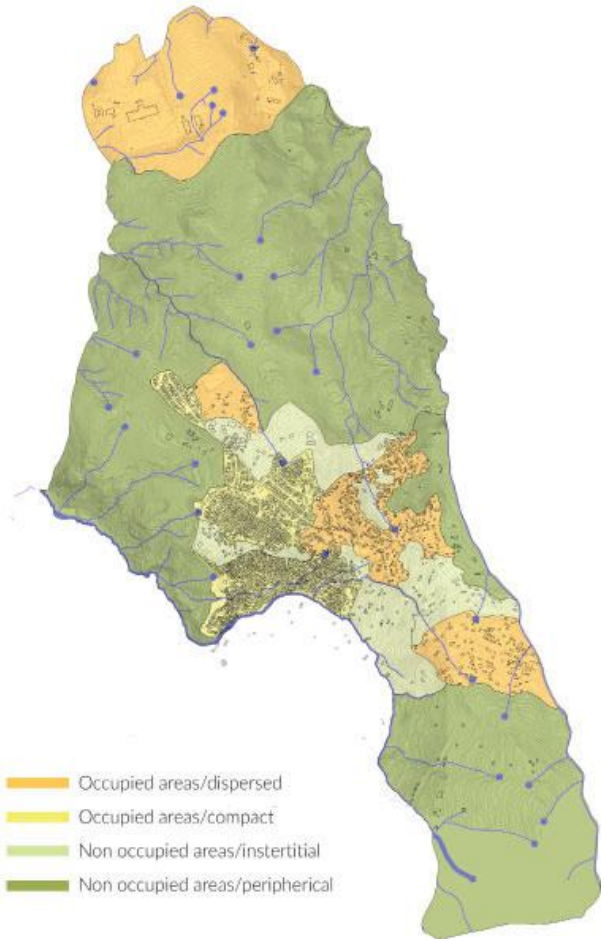


OBJECTIVES

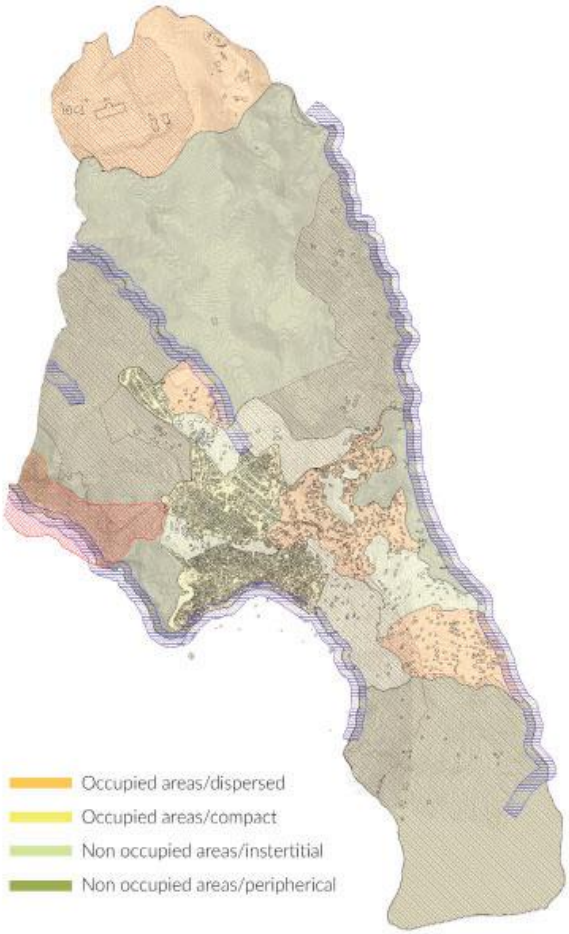
Integrate Manantiales de Paz and Pinar physically, social, economically and symbolically to the Metropilitan dynamics.

Articulate territorial actors for guiding the strategic actions of provision of infrastructure and income generation.

MORPHOLOGY HOMOGENEOUS AREAS



MORPHOLOGY HOMOGENEOUS AREAS + NORMATIVE



In order to answer the last question for each strategie (spatial scenario) it was necessary to recognize the different spatial conditions of the rural district scale territory in a series of homogeneous areas. The base for that process was the confluence and intersection between the morphologic conditionants and the environmental conditions.

In the case of the environmental conditions, we found that the use of the official information extracted from the Territorial Ordering Plan lead us to a hands off scenario and offered no flexibility in the interventions. So, in order to find alternatives there was necessary to use different environmental criteria, more flexible and realistic understanding the territory problems.

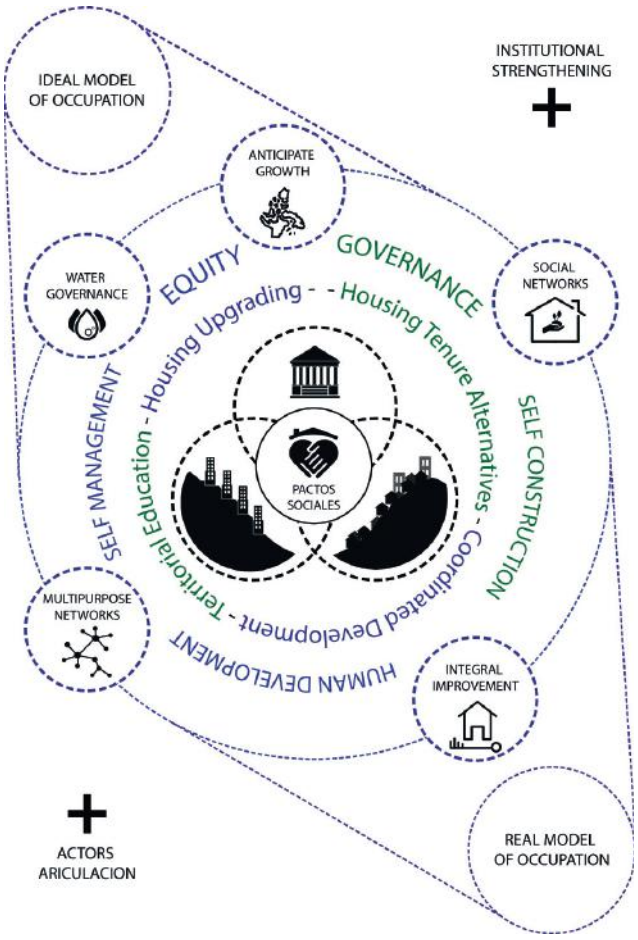
The interaction between morphologic and environmental conditionant pointed a series of resulting planning areas: occupied areas (sprawl or compact) with potential for controlled urbanization close or not to public facilities and infrastructure, occupied areas (sprawl or compact) with high environmental restrictions close or not to public facilities and infrastructure, Not occupied areas with high environmental restrictions and not occupied areas with potential for controlled urbanization close or not to public facilities and infrastructure.

Each planning area is a first approach in the way to find the specific spatial expression of each planning strategy established in each strategic issue.

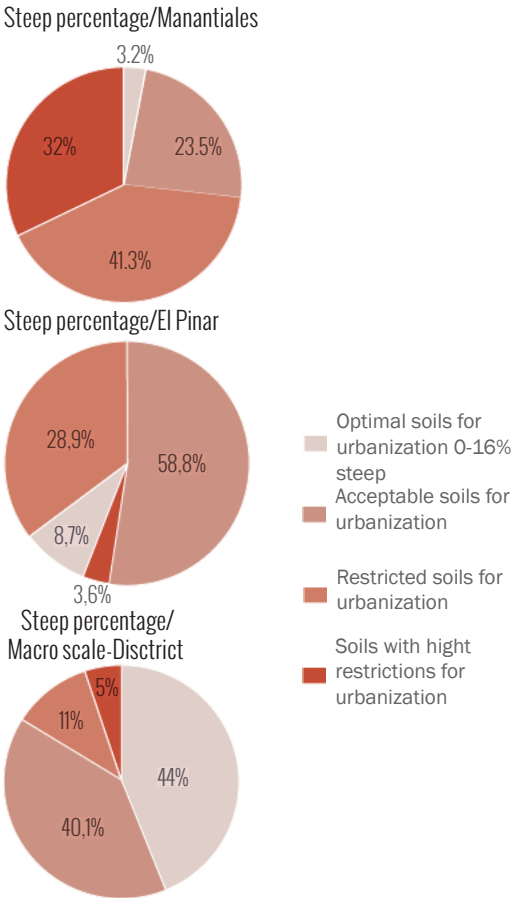
STRATEGIC ISSUES

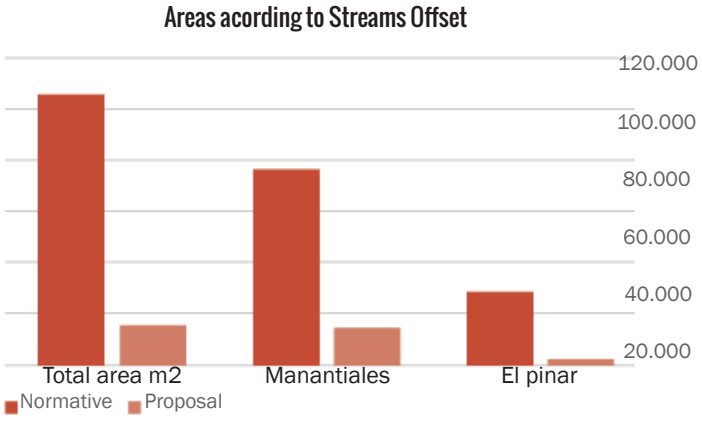
Each strategic issue was developed in more detail by working groups inside the workshop. For each five there was established a main challenge, three or four strategies to confront it and the actors confluence needed for starting up each strategy. The actors were selected in different kinds and scales: all level government, environmental authorities, the community board, real estate investors, NGO, academy among others.

In a chart, the strategies were presented in a more specific way, answering four questions for each one: How? (actions), Who? (actors), When? (short, mid or long time), How much? (kind and quantity of economic resources), Where? (spatial scenario)

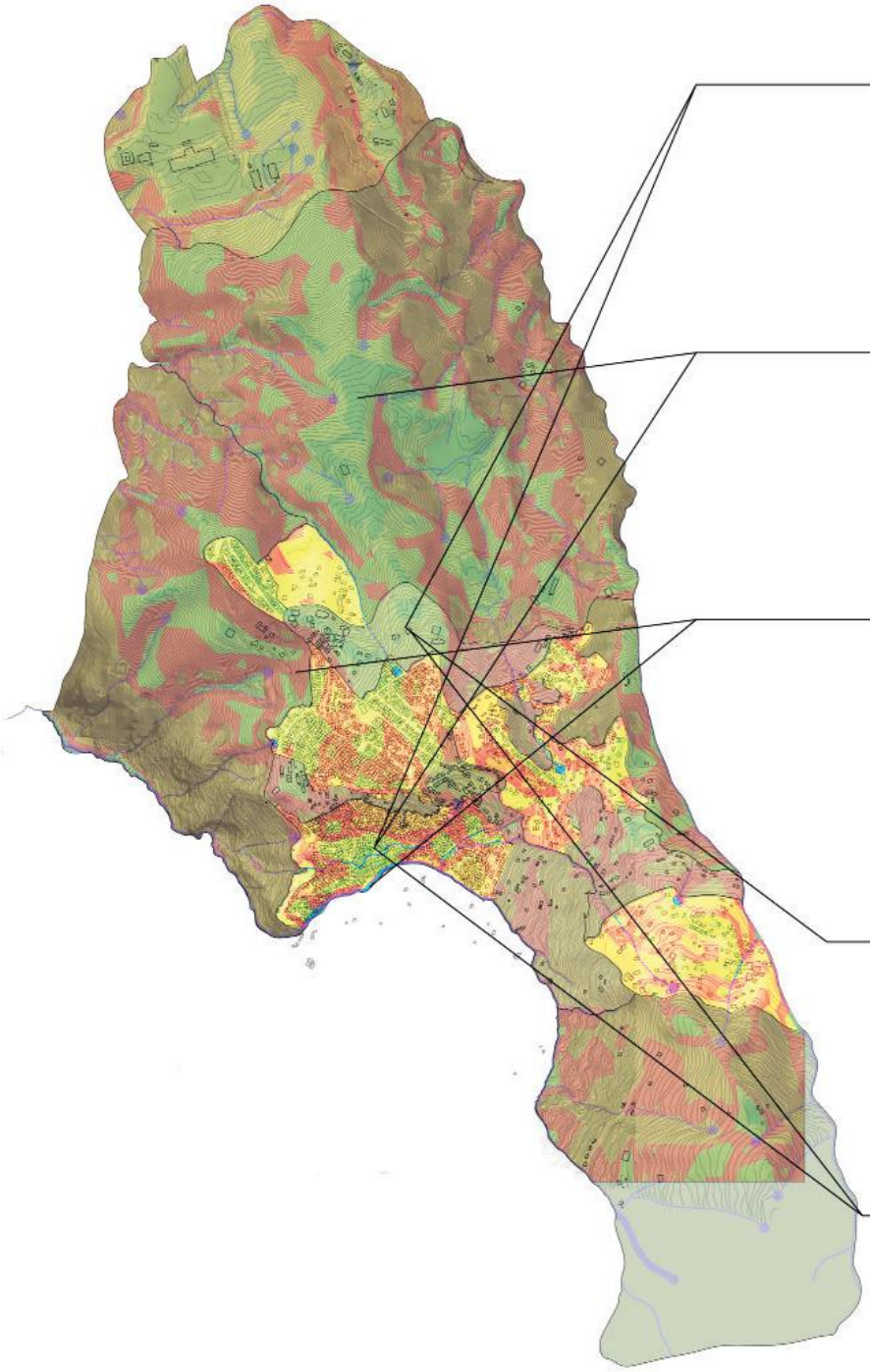


ENVIRONMENTAL FACT





MORPHOLOGY + ENVIROMENTAL CONDITIONANTS + STRATEGIES



Urban growth & morphology

- CONSOLIDATE NEIGHBORHOOD NUCLEI
- ANTICIPAR URBAN EXPANSIONS
- GUIDE INFILL AND DENSIFICATION IN CONSOLIDATED AREAS

Housing & Tenure

- GOOD PRACTICES
- URBAN ACUPUNTURE FOR VERTICAL GROWTH CONSOLIDATION
- ASSOCIATIVE MANAGEMENT BETWEEN THE MUNICIPALITY, REAL STATE AND COMUNITY

Environmental systems & risk management

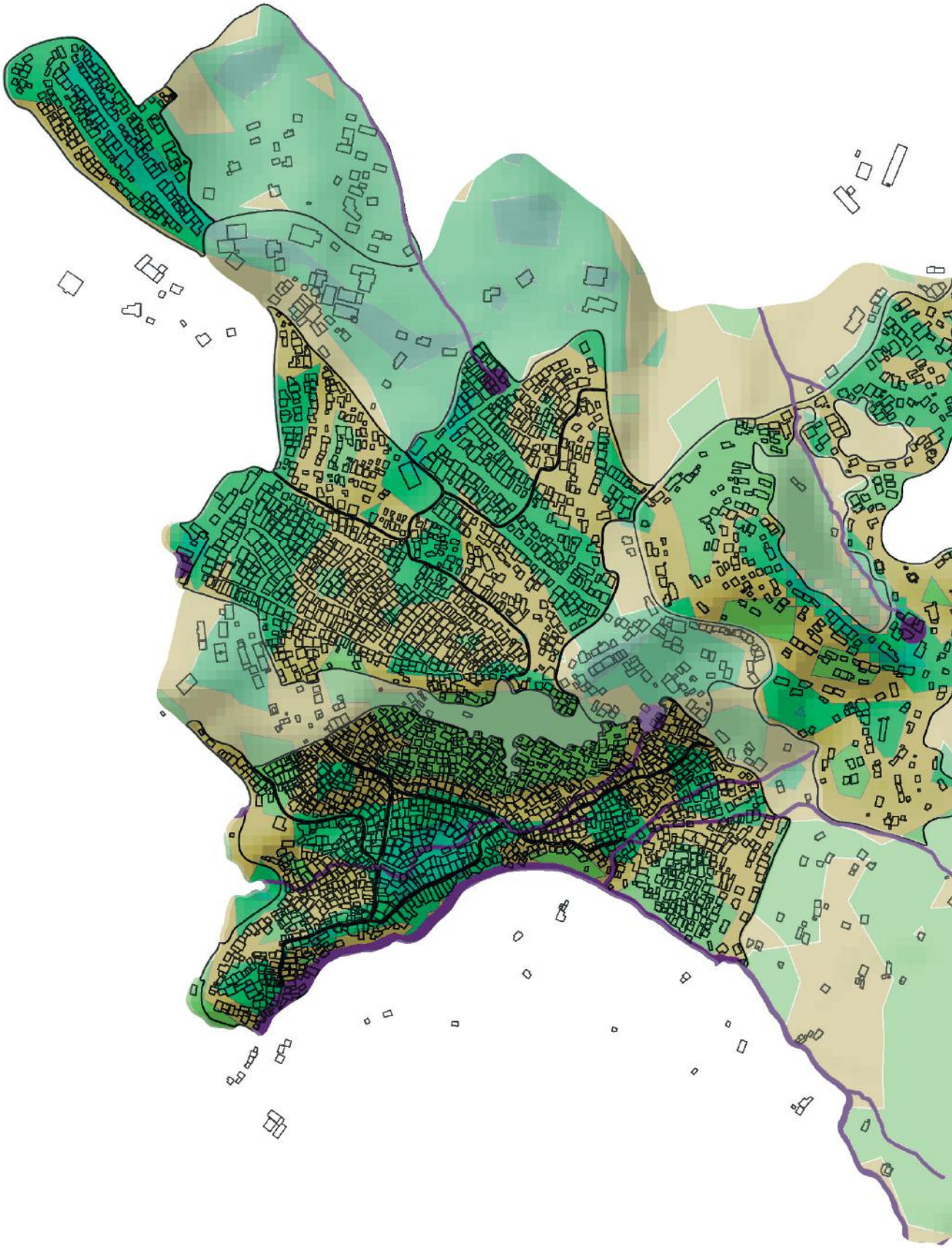
- TRAINING ENVIROMENTAL EDUCATION
- CONECTING PROTECTED AREAS
- RISK MITIGATION
- IMPROOVEMENT OF WATER QUALITY

Fodd security and icome generation

- EDUCATION FOR EMPLOYMENT AND HUMAN DEVELOPMENT
- LEVERAGE PRODUCTIVITY NEIGHBORHOOD
- GENERATION OF INTERNAL FOOD PRODUCTION

Public systems

- IMPLEMENT AND ALTERNATIVE SANITARY SYSTEM
- COLSOLIDATION OF MAIN URBANCORRIDOR AS AN STRUCTURANT SPACE
- GENERATION OF A PUBLIC SPACESSYSTEM



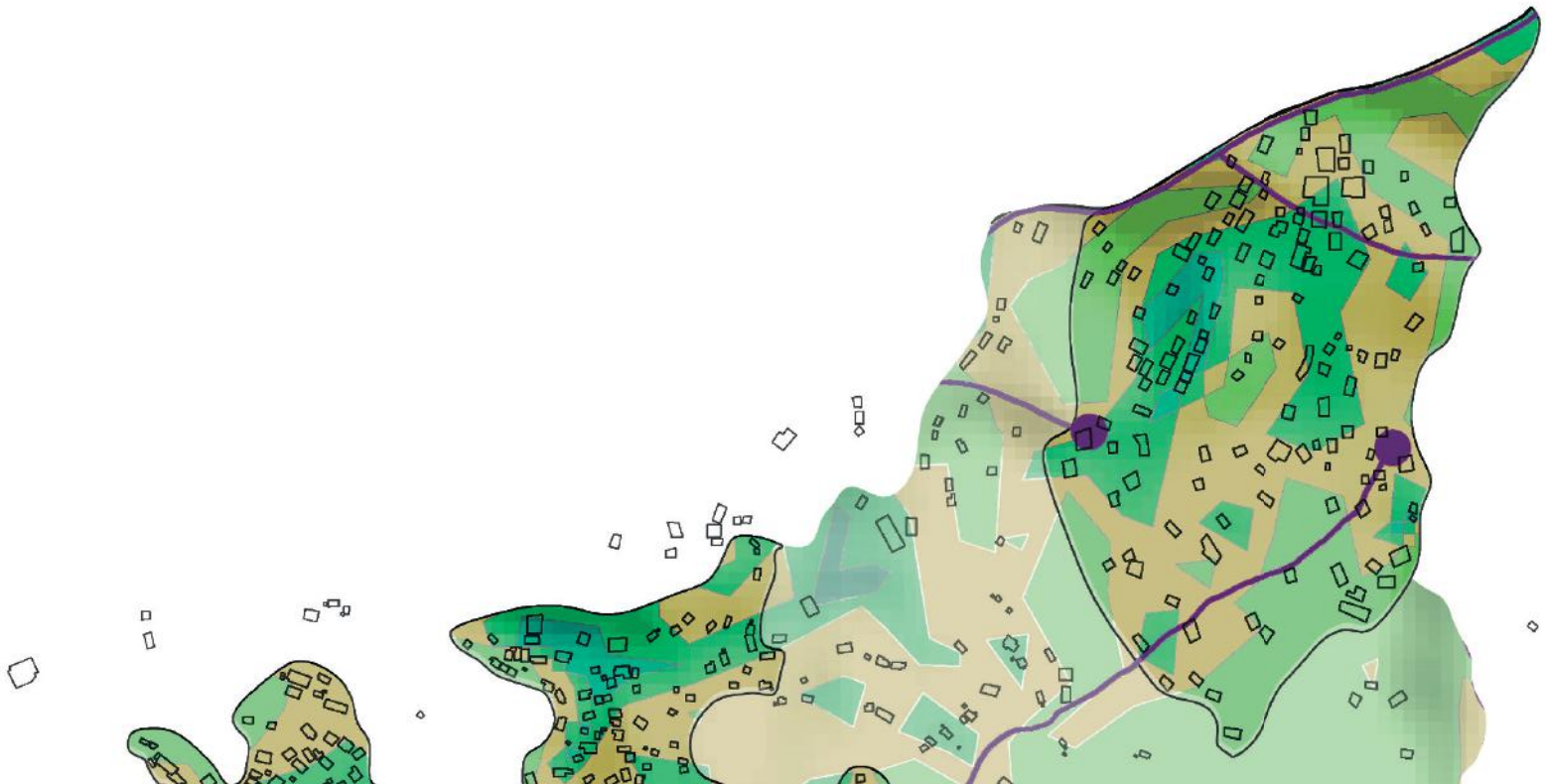
PACT FOR TENURE ALTERNATIVES

PACT FOR SOLIDARY FOOD ECONOMY

PACT FOR THE SELF-MANAGEMENT OF URBAN GROWTH

PACT FOR THE WATER GOBERNABILITY

PACT FOR PHYSICAL, SOCIAL AND SYMBOLIC CONNECTION



HIERARCHICAL AND ANALYTICAL PROCESS

In order to prioritize and select the most convenient intervention strategy we used a multi criteria analysis using the Analytical Hierarchical Process method called Expert Choice.

Based on the priorities defined in the social cartography process and technical inputs we selected the following criteria:

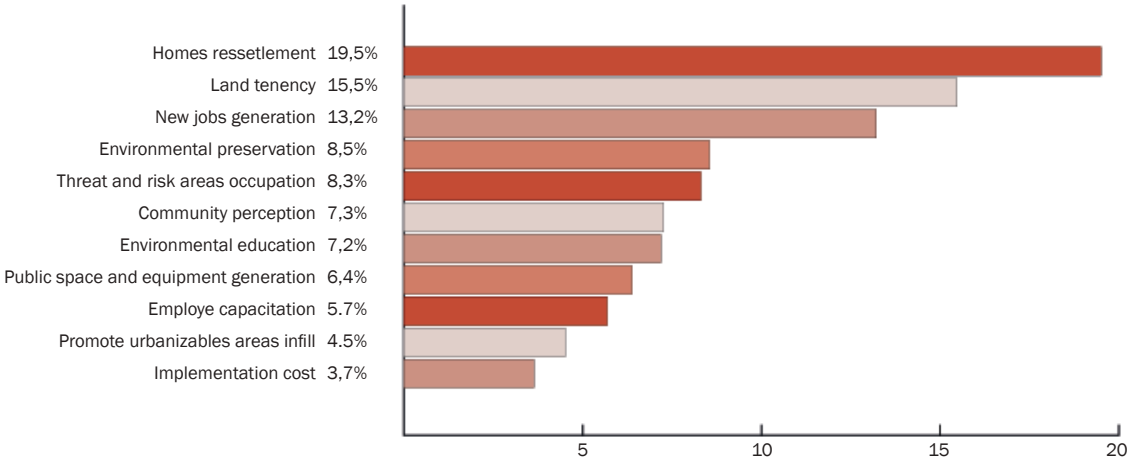
- Implementation costs
- Community perception?
- Environmental preservation
- Occupation of risky areas
- Infill potential
- Amount of resettled homes
- Public space and facilities generation
- New jobs generation
- Job training
- Environmental education
- Land tenure

As we can see in the graph, the “neighborhood cores consolidation” strategy came out as priority.

The consolidation of neighborhood cores, allows concreting those wishes of the community of staying in the territory, and their idea of being recognized not as a settlement but as a consolidated neighborhood. Although this strategy stems from the urban growth group, it manages to articulate specific components of environmental issues, public infrastructure, land tenancy and home improvement, thus becoming a good example of the critical path for the development of the complete strategy.

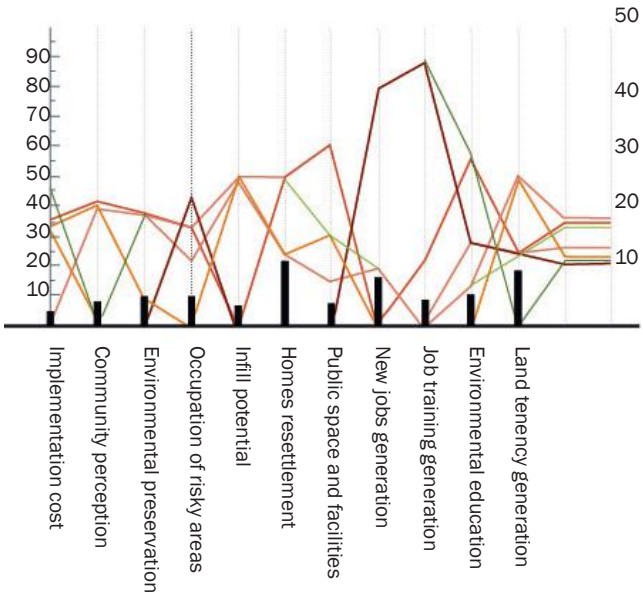
Understanding that strategy viability, implementation, and permanence through time depends on a judicial ground we established a management system in which there is an articulation of not only planning and financing instruments, but also of the actors who, in various scales of intervention, must commit to the territorial development of Manantiales.

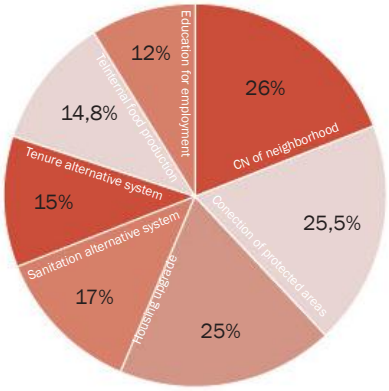
COMBINED MATRIX OF CRITERIA PONDERATION



Starting with the experts evaluation the bars graphic shows the relative weights in hierarchical order: housing resettlement, land tenure and employment generation.

ANALYSIS OF SENSITIVITY FOR STRATEGIES SELECTION





It measures the criteria's influence in the identification of the intervention proposal.There where not found variations in hierarchi at introducing variations in the weight of the criteria. Then the resulting strategies to priorize are the consolidation of neighborhod cores, the connection of protected areas and the housing upgrading.

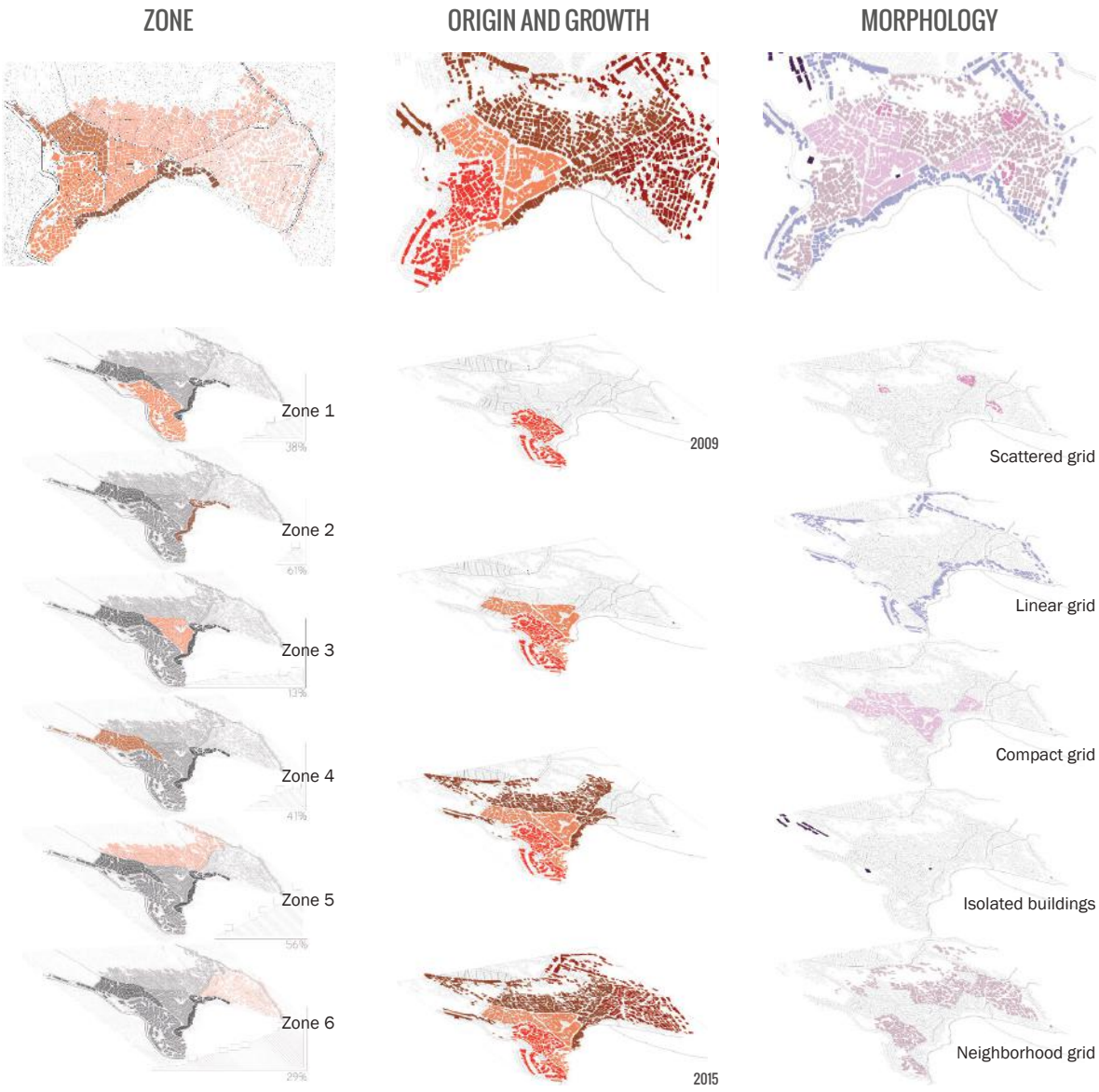
PHYSICAL SPACE DIAGNOSTIC

GENERAL INFORMATION

Manantiales de paz neighborhood is located in Colombia, in the department of Antioquia, in the municipality of Bello, inside Granizal village, right on the boundary between Bello and Medellin. It is part of a bigger settlement: El pinar, which is composed by about 18,000 inhabitants distributed in 8 sectors, being one of the largest Manantiales with 7,400 inhabitants (approximately), Distributed in 6 sectors, with 2,200 houses (approximately) a density of 130 dwellings per hectare and 430 inhabitants per hectare, in average inhabit 4-6 people per housing unit.

The settlement beginning in 2009 (this year the first 30 families arrived displaced by the armed conflict), in a few months its population increased very accelerated, occupying 40% of its current extension.

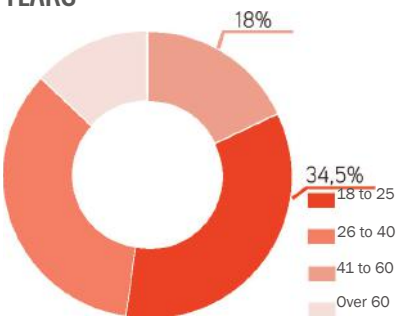
In Manantiales there are morphologic patterns that are defined mainly by the main axes of mobility and geographical features (steep slopes and some creeks), due to the difficult topographical conditions in the sector , the settlement is beginning to have a linear expansion nearby the mobility axes that are defining the periphery.



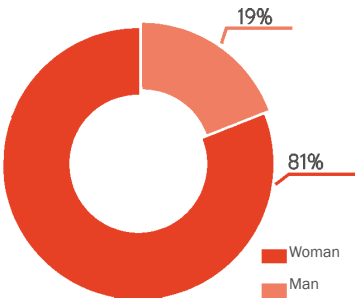
DEMOGRAPHICS

The following analysis is based on a socio-demographic study of the Granizal village agreement with ACNUR (United Nations High Commissioner for Refugees) , based on data collected in the year.

YEARS

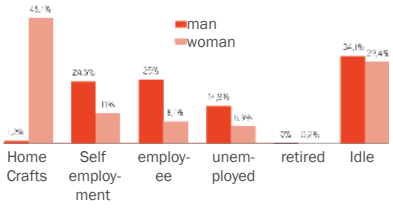


GENDER

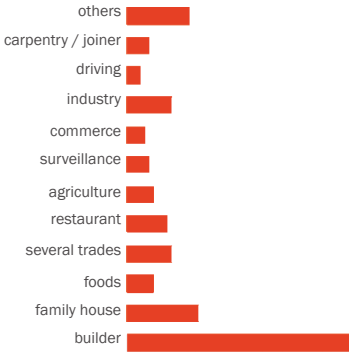


population by gender

EMPLOYMENT BY GENDER

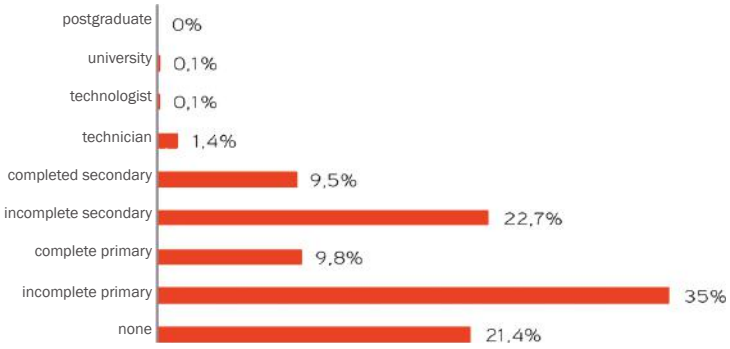


FORMAL EMPLOYMENT

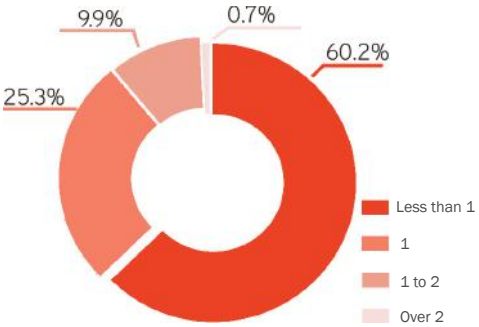


INFORMAL EMPLOYMENT

OCCUPATION BY GENDER

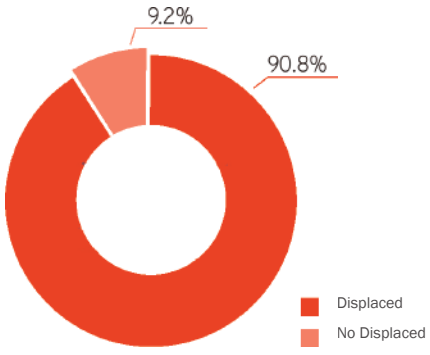


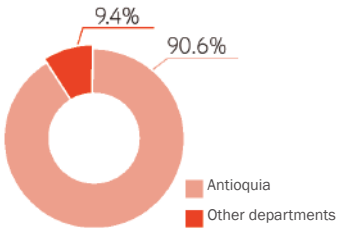
REVENUE



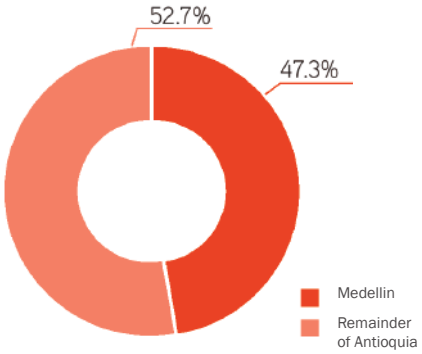
Income level in legal minimum wages

SOCIAL STATUS OF THE POPULATION



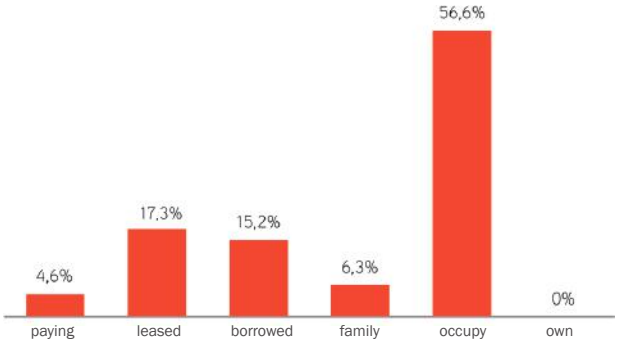


ORIGIN OF THE POPULATION



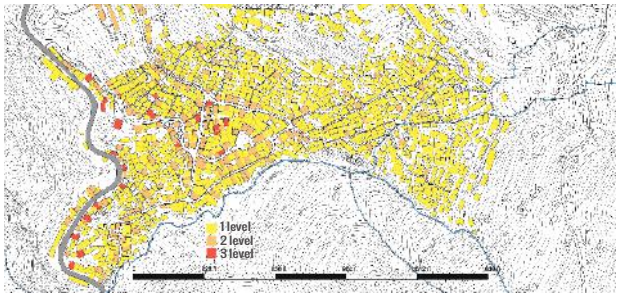
DWELLING

HOUSING TENURE

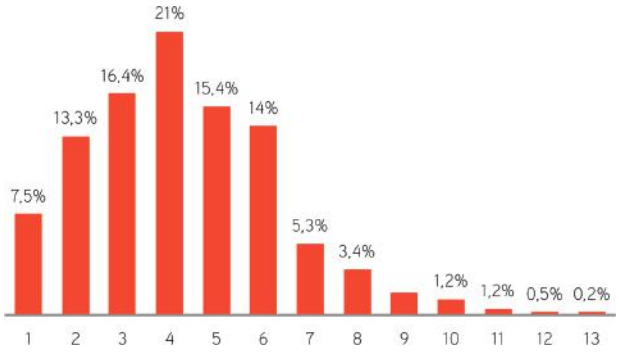


AVERAGE HEIGHT OF BUILDINGS

Number of plots 1520 (about)
Averange height of buldings : 1.8 level
Level height 6ft to 7ft

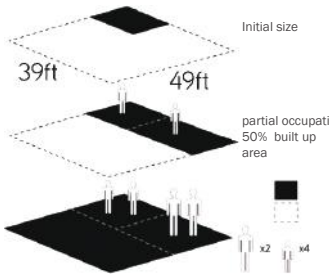


NUMBER OF INHABITANTS PER DWELLING



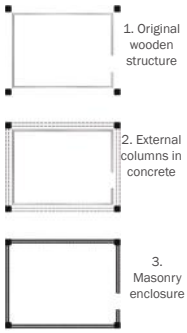
PROGRESSIVE GROWTH OF HOUSING

Adding according to family growth



EVOLUTION OF THE CONSTRUCTION METHOD

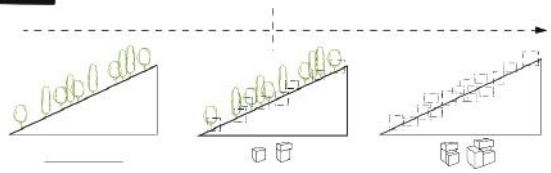
¨Shell effect¨

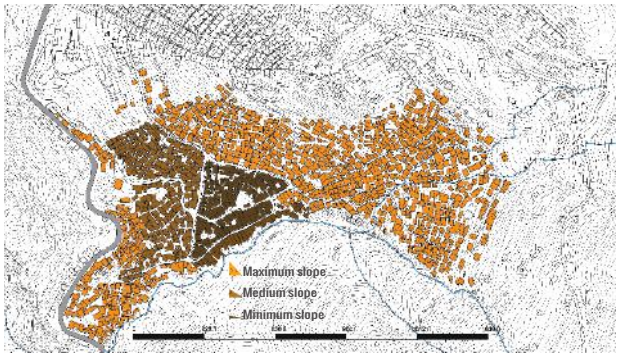


SLOPE IN THE GROUND

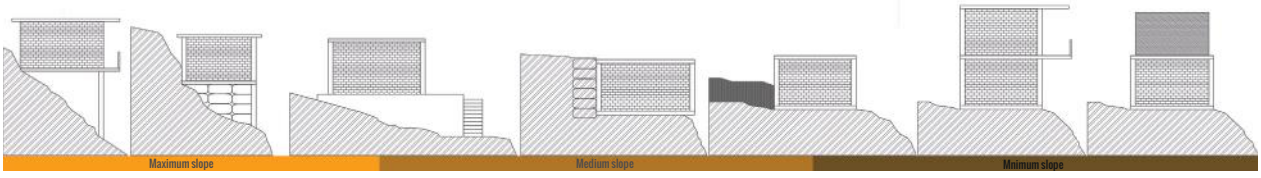
46,1% Maximum slope

16% Minimum slope





HOUSING TYPES BY LOCATION



LOCATION THEME

PUBLIC BUILDINGS

There aren't uniqueness on the equipment in the neighborhood as to form, in most cases its spatial and appearance corresponds to the same housing. However the only equipment that have a uniqueness are the casa de los derechos and Las cometas school, because they are located on lots that support their equipment condition.

public buildings: 2 casa de los derechos, 3 biblioteca - salon comunal.

Equipamientos de culto: 4 templo ubicado en ¨la cancha¨, 6 templo cristiano, 7 templo pentcostal.

Equipamientos educativos: 1 colegio las cometas, 5 comedor infantil.

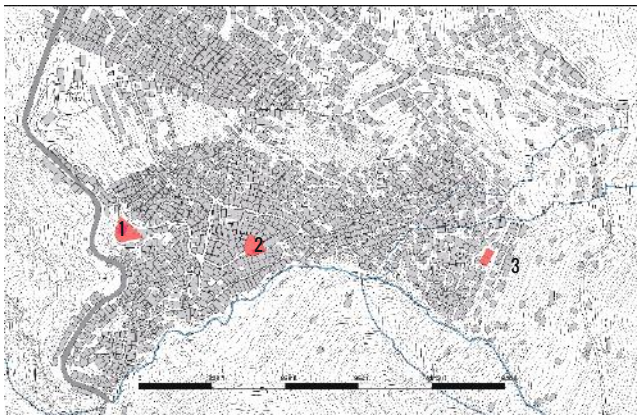
BUSINESS

The first floor of Manantiales settlement relates mainly to the use of housing, but in some cases their activity becomes commercial and housing at the same time; its architectural characteristics correspond of a common housing, however colors, announcements and more urban treatments such as chairs or bars to cater allow recognition as commerce sites.

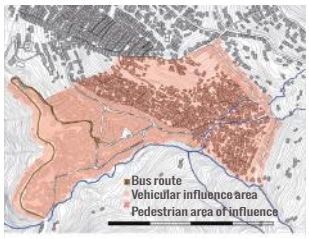
PUBLIC SPACE

Three effective public spaces are identified:

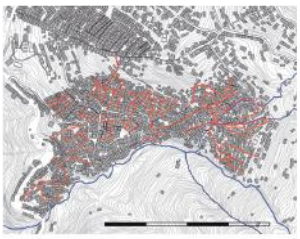
1.The supporting space equipment The house of rights, 2.A sort of square called La cancha has been preserved from the beginning of settlement and has been protected from invasion by the community,3.A small play area on a regular batch, which is mainly used by children.



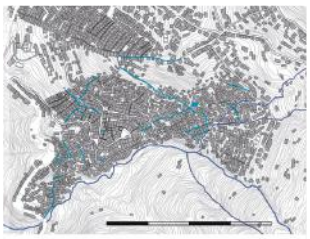
MOBILITY



Because of the topography and the section of the roads, mobility in the neighborhood is mostly pedestrian, only some portion of the sector has a vehicular coverage.



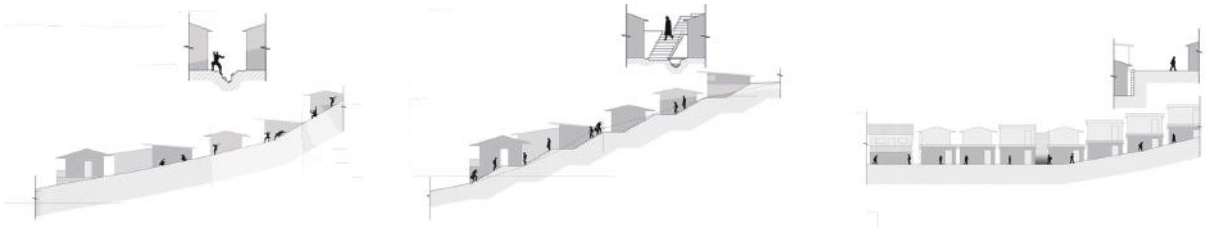
The roads have steep slopes and are built with inadequate materials that prevent transit insurance.



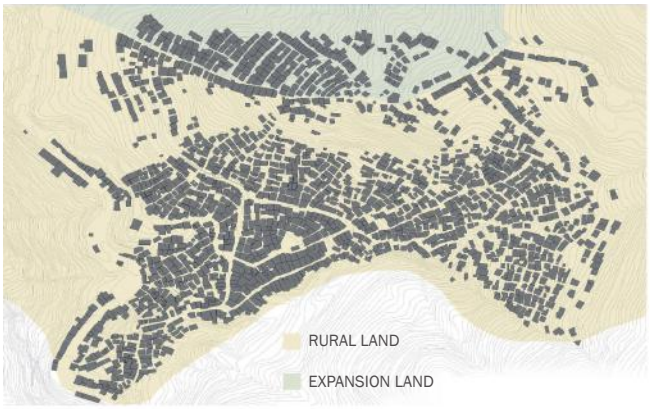
Are trails with some adaptation of materiality.

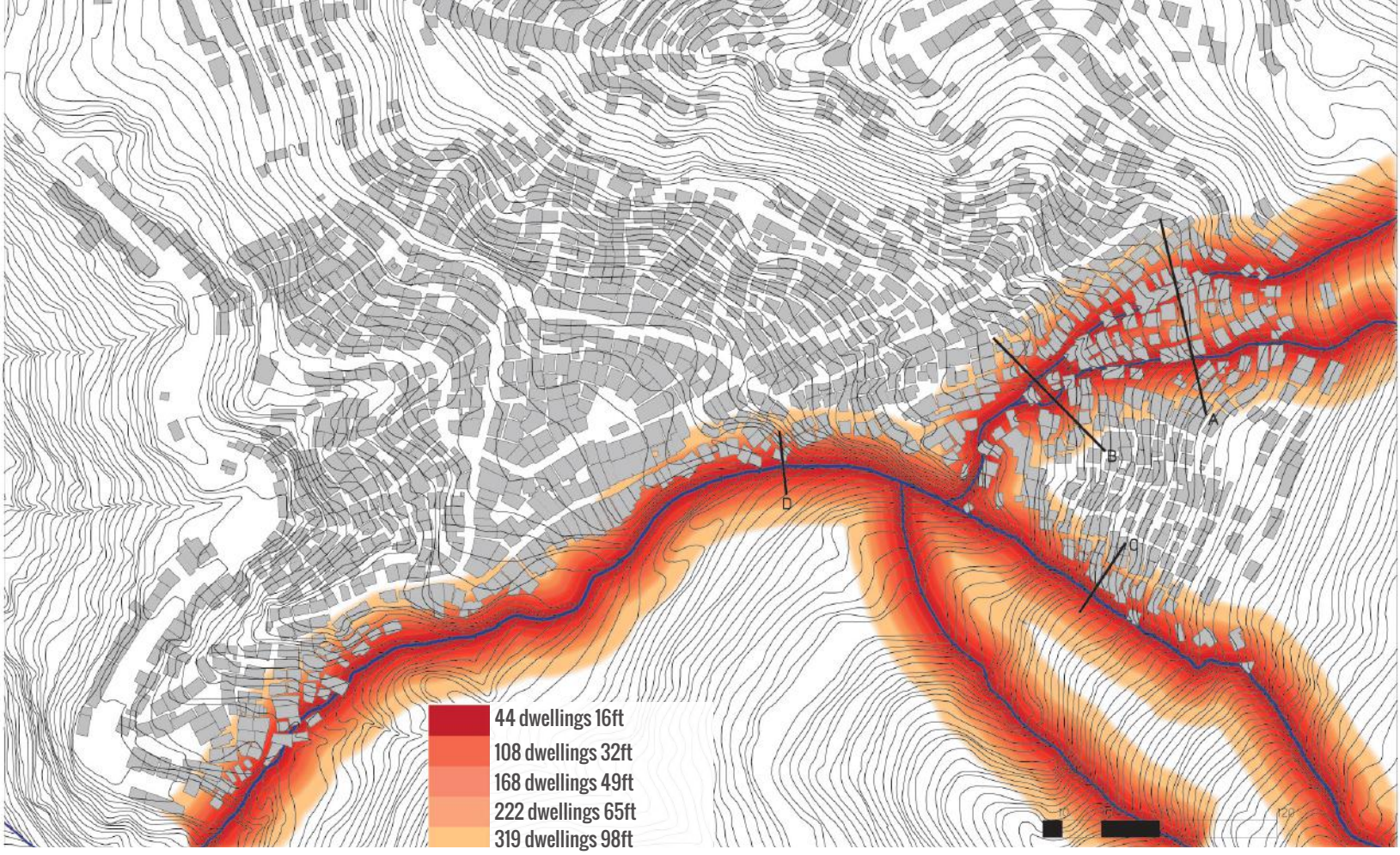
The topography and the road section allows more comfortable journeys for pedestrians.

HOUSING SETTLEMENT

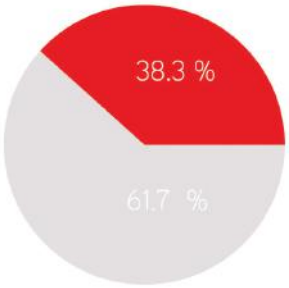


REGULATIONS

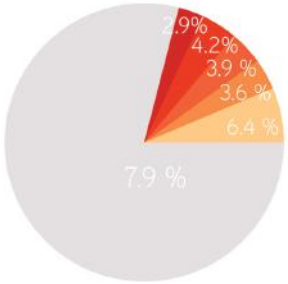




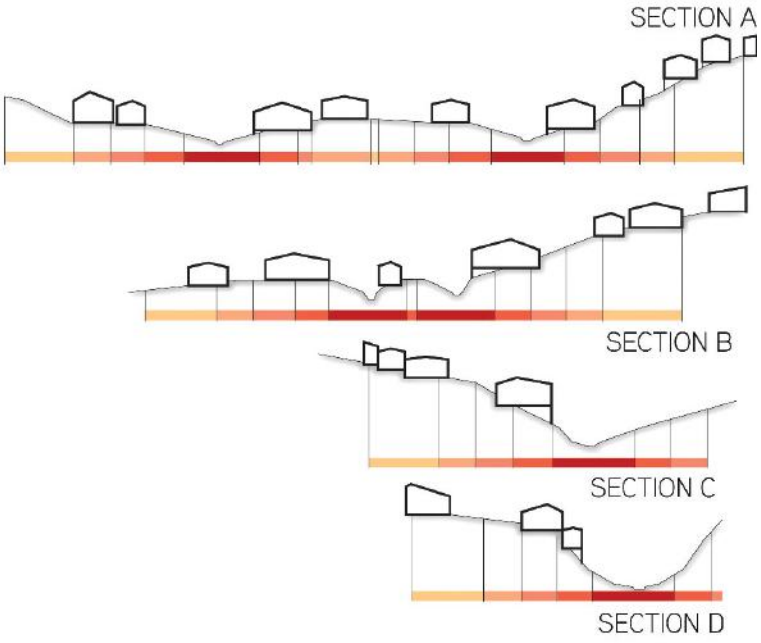
RISK



38.3% of homes are on land protection



21% of households are at risk from overflow of the creek

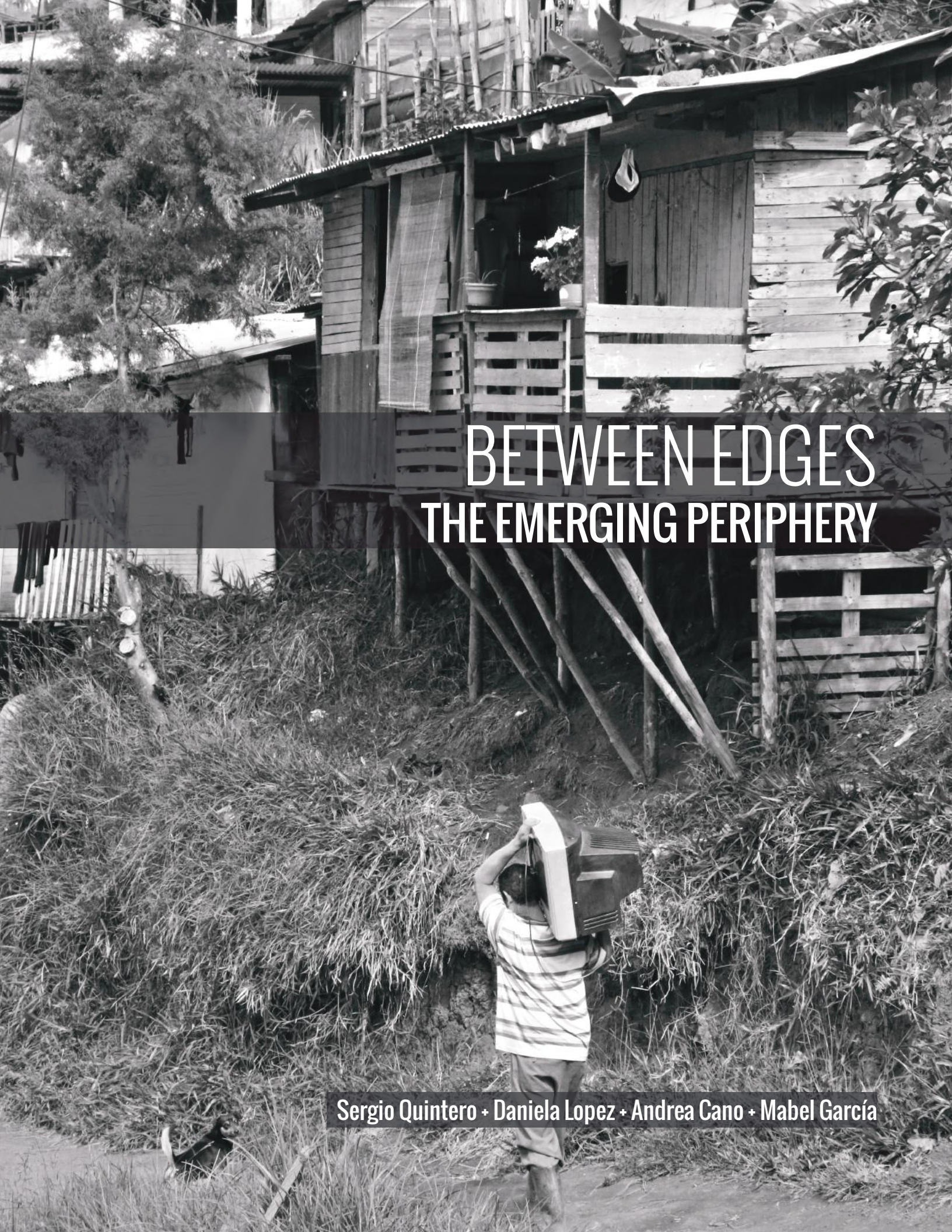


CONCLUSIONS

It is necessary to create a mesh that contains unique elements that create milestones and benchmarks for the neighborhood, and also keep their spatial qualities (landscape, cultural, topographical) and give value to the collective activities.

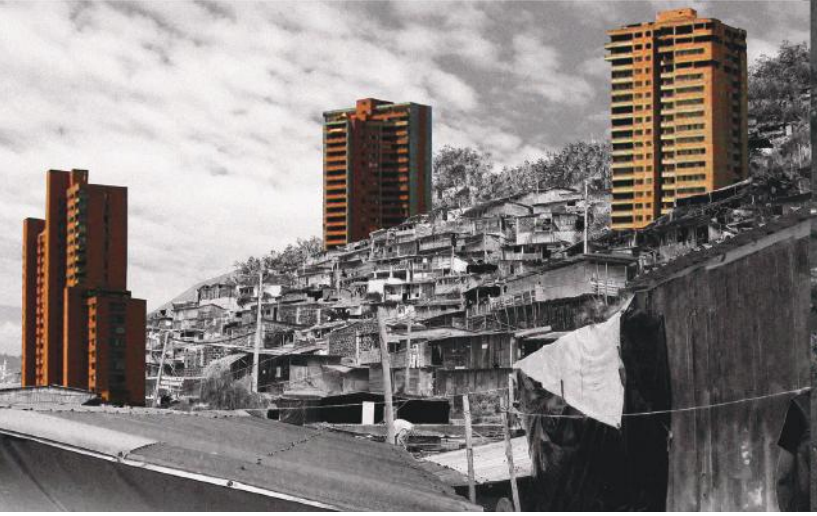
there are certain strategic connections that enable planning new urban public-relations edification space required to consolidate the urban neighborhood system.

informal city can not be planned like the formal city, because their proportions and empirical responses involve a different intervention



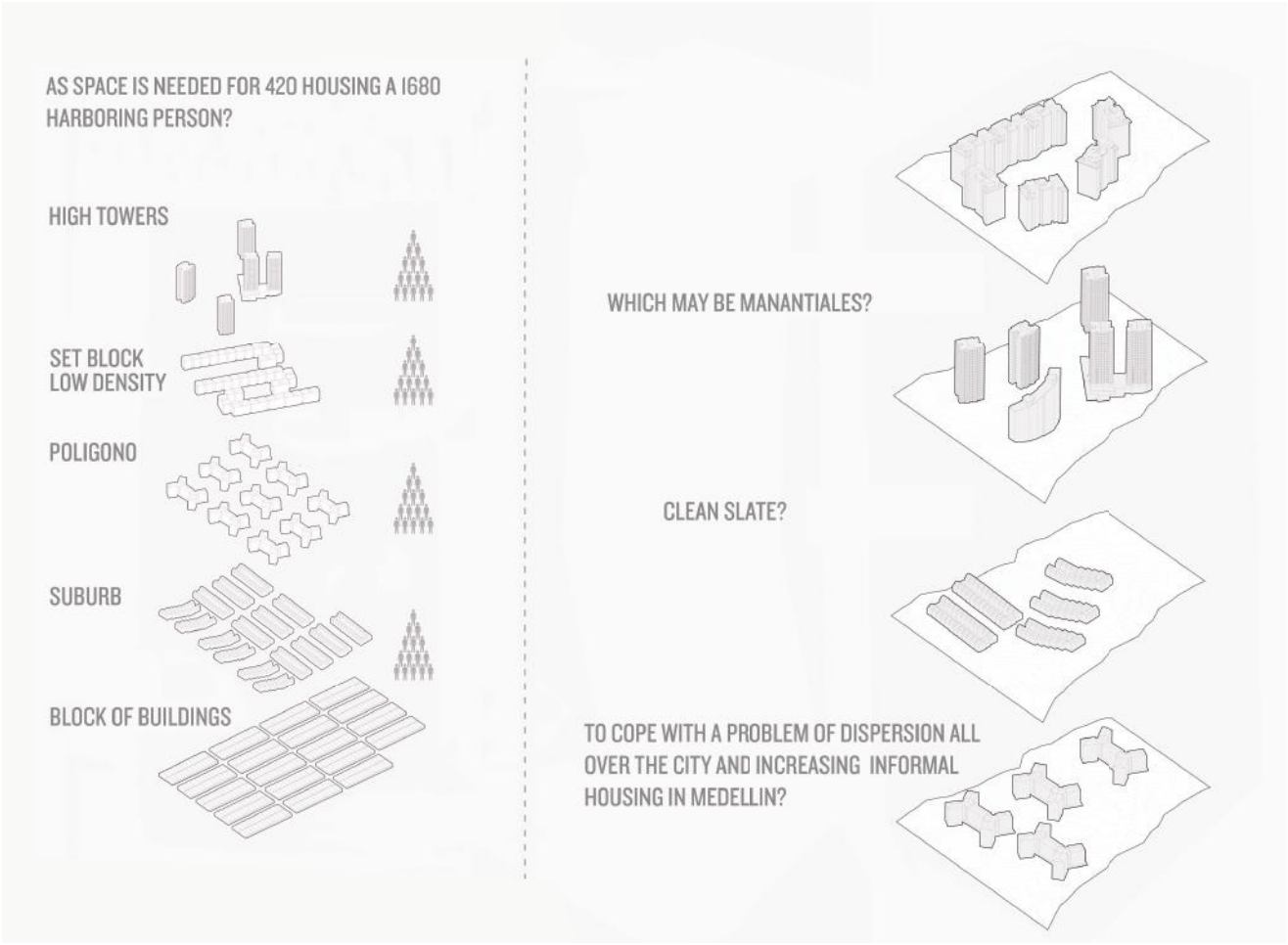
BETWEEN EDGES
THE EMERGING PERIPHERY

Sergio Quintero + Daniela Lopez + Andrea Cano + Mabel García



Forms of Growth formal and informal town tend to be distinguished, not by their final path, but yes by the ways of growth, the time and urban actors. The spatial response of formal city in Medellin's case can be as erroneous as the case of Manantiales neighborhood, but in different proportions; The Urban Condition of buildings complex with 30 levels for apartments on the slopes, with high population strata against a batch by batch construction of informal settlements presents little or no improvement over social and spatial issues of this kind of settlements. Deal Growth Informal phenomena implicate a Radical change in the way of reasoning the district's dynamics, understanding of the different ways of life that are manifested in the spontaneous neighborhood assemblies.

The informal growth even when appear without government intervention begins to weave spatial and social logics that intensify and consolidate its status of settlement immersed in the dynamics of the city. When an informal settlement has consolidated is important to respect the conditions that gave origin to it is and intervene using the same codes preventing them being transgress by gestures that do not correspond to its urban identity

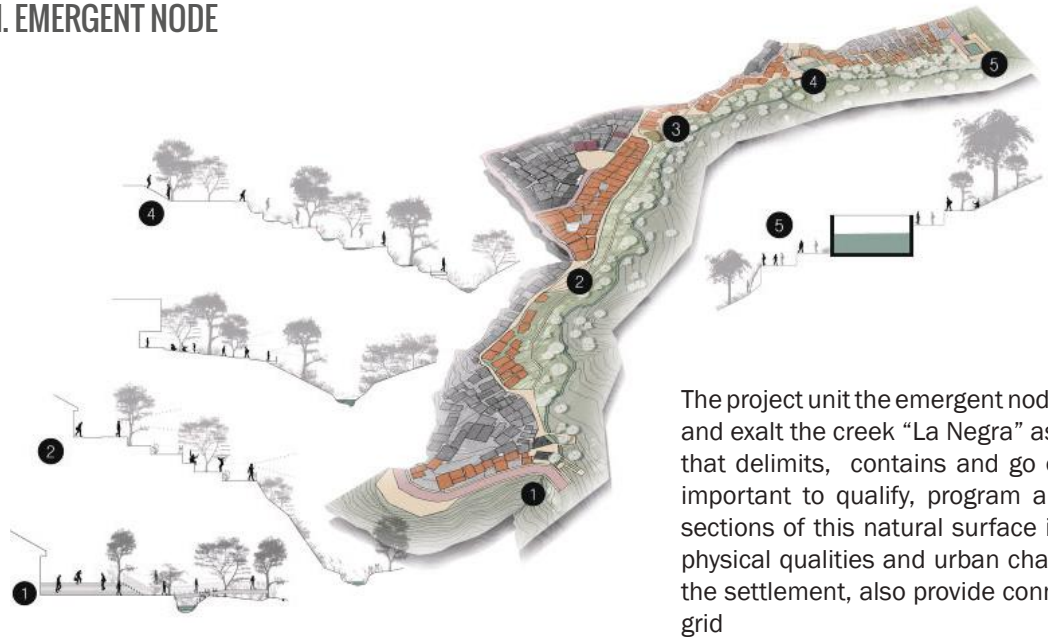


URBAN STRUCTURE PLAN

According to physical-spatial backgrounds found in diagnostic of Manantiales de paz neighborhood, an important quality is evident with respect to the edges containing it and were the determinants in growth it, from this premise are identified as potential lines that determine stronger connections, these define and contain the urban grid of the neighborhood. following a rigorous analysis of its current configuration, physical features and impact on the urban memory key connections are located inside the grid, supported by more generous road sections and routes recorded on the urban imaginary of the inhabitants, either for its accessibility or shortest routes to arrive to some point, this grid determines strategic points for provide neighborhood activities of public space and equipment that protect their life quality and urban dynamics in its different scales

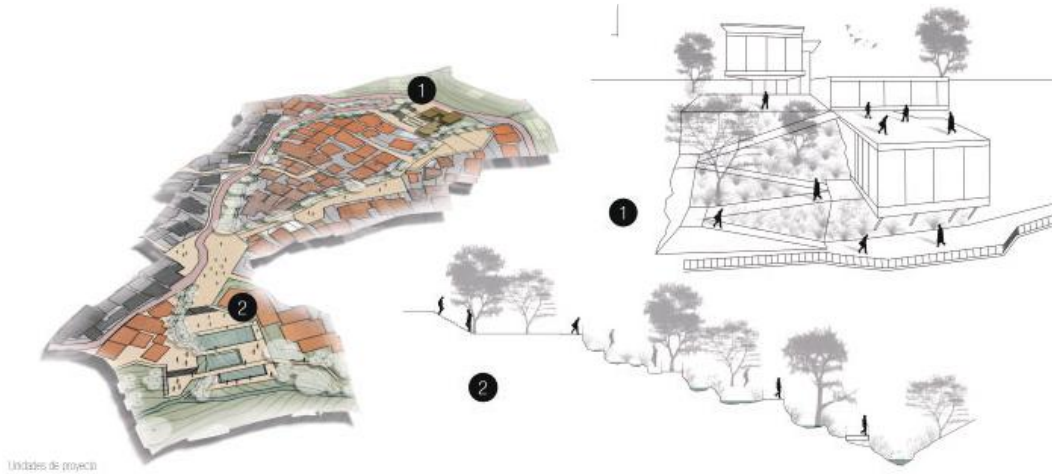
PROJECT UNITS

1. EMERGENT NODE



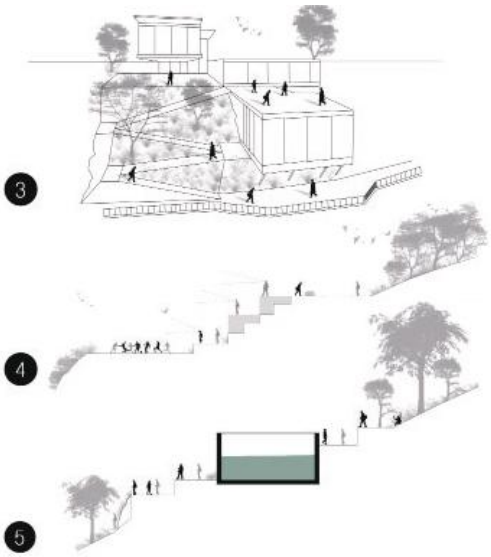
The project unit the emergent node has urban role rescue and exalt the creek “La Negra” as main natural element that delimits, contains and go over the settlement, is important to qualify, program and boost the different sections of this natural surface in accordance with the physical qualities and urban character that playing it in the settlement, also provide connections into the urban grid

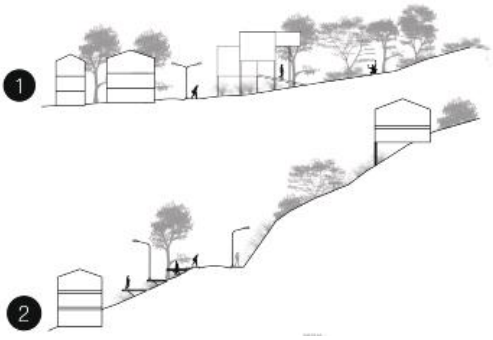
2. ENCOUNTER BETWEEN CREEKS



Morphological encounter that occurs in this sector comprises a large landscape potential, in addition to water, visual and topographical qualities that make it a key place to highlight the urban history of the neighborhood , the role of this unit is to exalt the value of water components that can Manantiales de paz representing.

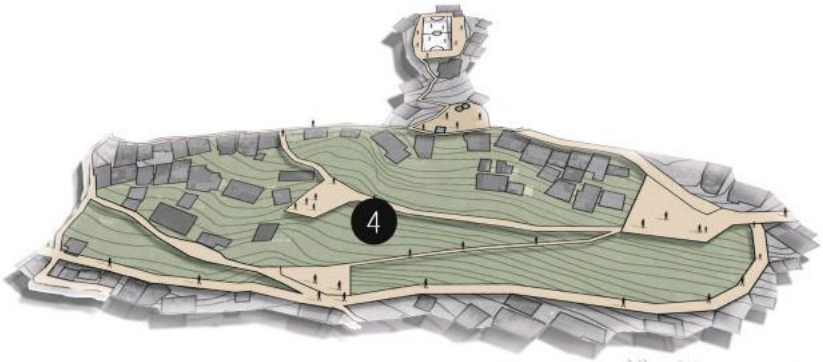
3. BETWEEN CREEKS - VIEWPOINT HEIGHT

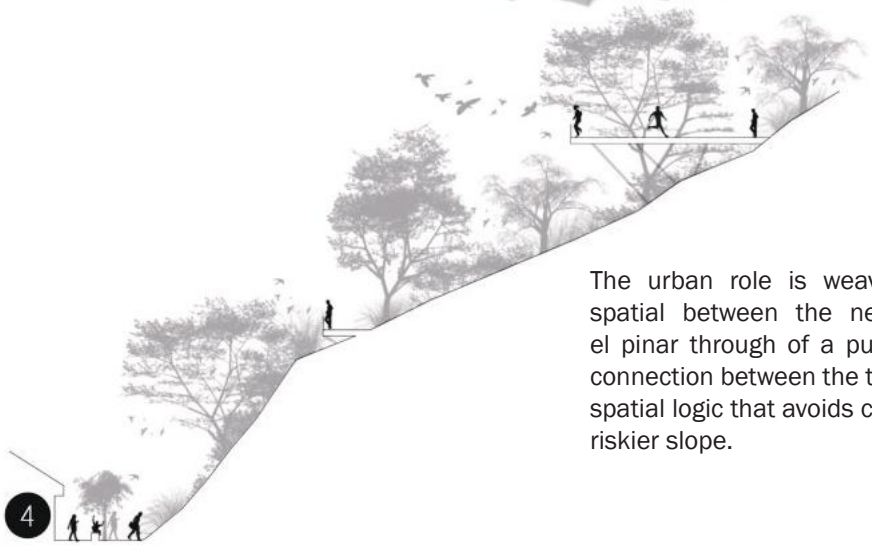




The edge that delimits the highest point of the settlement was set up as a street that arose spontaneously in accordance the growth and progressive organization that had it. The physical-spatial qualities of this street have the privilege of having a good road section with vehicular access, and significant Visual and water opportunities with the passage of two creeks too; its role in the urban structure of the settlement is to contain the excessive growth, scheduling the conservation area with agricultural, ecological activities and water infrastructure that encourage community activities and the sense of protect it of emerging private construction.

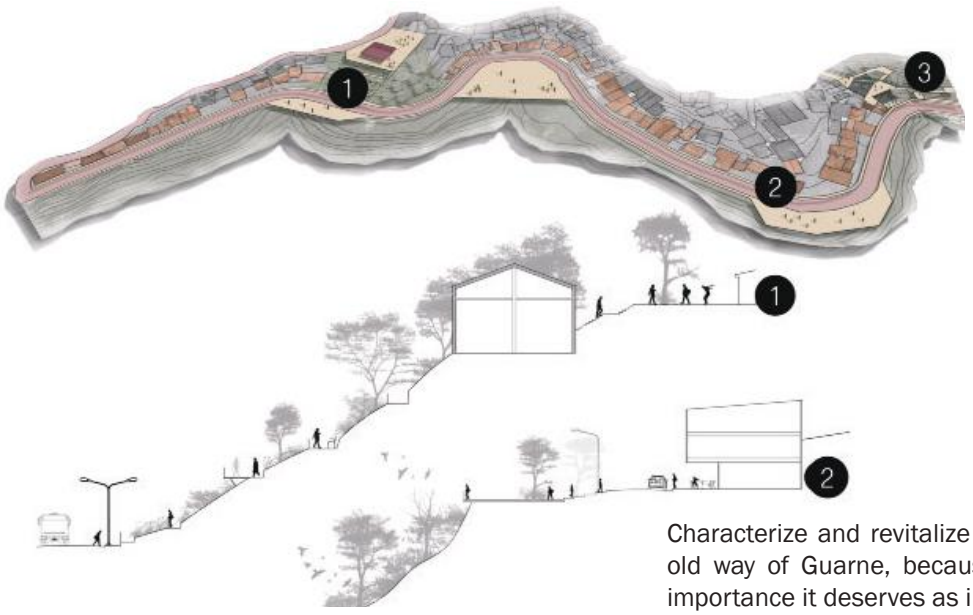
4. HILLSIDE EDGE





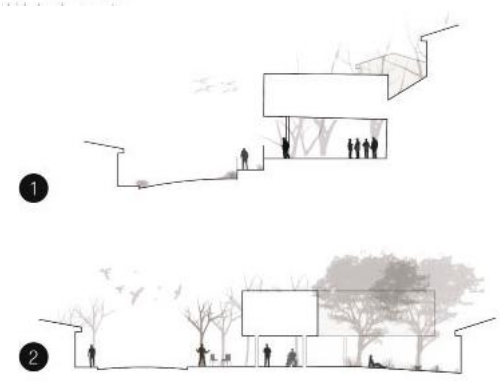
The urban role is weaving the relationship physical spatial between the neighborhood manantiales and el pinar through of a public space in slope allowing a connection between the two neighborhoods, and also an spatial logic that avoids colonize this sector, which has a riskier slope.

5. MANANTIALES´S GATE

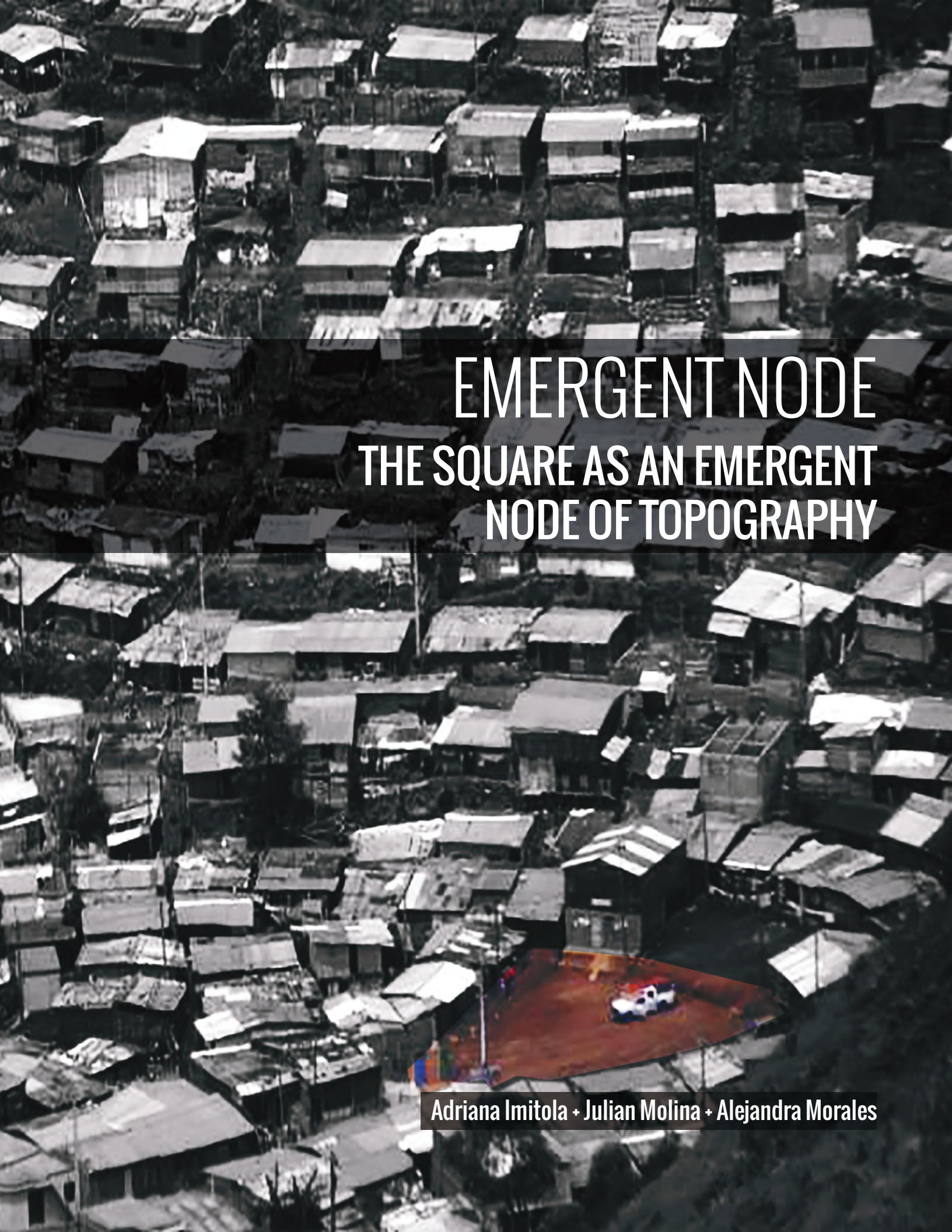


Characterize and revitalize the front that containing the old way of Guarne, because currently there is not the importance it deserves as intermunicipal connection and one of the edges that gave origin to the settlement, Also to providing access that stand out and represents the image of manantiales.

6. MANANTIALES URBAN CORRIDORS



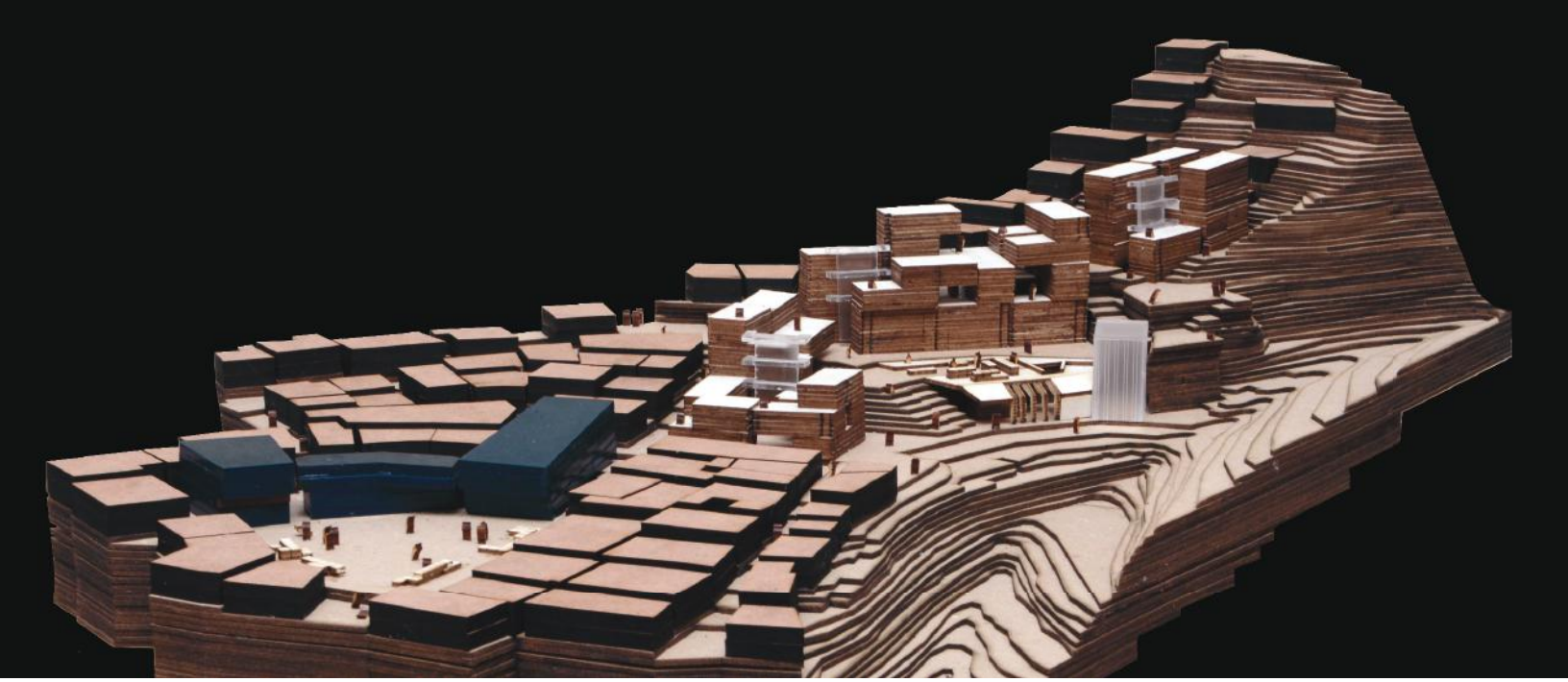
Inland of the urban configuration of the Manantiales neighborhood, physical qualities, space location and the logic of population location generated connections characterized by different conditions in their sections, elevation, materiality, ... that morphologically stand out as potential lines, however precariousness is remarkable in terms of effective public space (surfaces) and equipment (points) that will solve the collective needs of the neighborhood, is where take the importance to of the project unit “articulating”, it aims to consolidate the existing frame by points and surfaces that enrich the quality of life of the population.

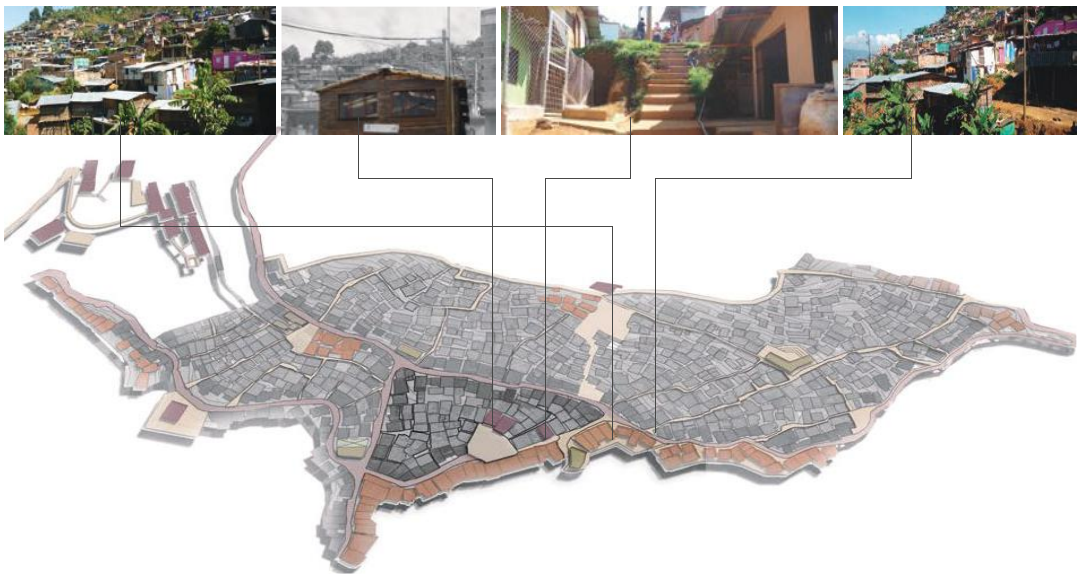


EMERGENT NODE

THE SQUARE AS AN EMERGENT NODE OF TOPOGRAPHY

Adriana Imitola + Julian Molina + Alejandra Morales





At “Manantiales de Paz”, the informal tissue, despite not having the proper planning and state intervention, is marked by the identity among the inhabitants, it is then necessary to consider how it should be an urban intervention in a settlement where deleting the existing It not necessarily means better.

Manantiales de Paz, is like in many other cases the slopes of Valle de Aburrá, a product of uncontrolled urban sprawl, joining the formal city under its own rules.

Thanks to local wisdom and their own rules that you set the settlement was the idea of our project. An emerging node, “La cancha” that as existing core activities should instead be reaffirmed, as since the beginning of the settlement, this space was consolidated and protected with an innate awareness, making it to be recognized as a plaza in its form and given function.

With the idea of rearranging and emphasize the void space, this project unit, in which exist elements such as streets, equipments, housing, public space, all under the premise of making the vacuum and the host are involved structuring element is configured. It is proposed in this project unit, generating a series of public spaces interconnected by streets. The street in Manantiales is always the element that closely both housing as the main public space. In addition to the base of the project (void) A system of equipment, as complex services that complement and support existing agricultural production activities are proposed. Finally the house is added from a progressive model, where a base module allowing the possibility to mutate over time as the settlement will surely delivered.

READING THE PLACE

TAKING NOTE ABOUT THE SITE

First of all, it should be emphasized that the place has several important aspects to focusing. On the one hand it's an area auto-created (literally handmade) by the inhabitants of "Manantiales de Paz", also is it's located at the central region of the settlement and is the unique consolidated public space that exists, increasing the value in its singularity.

"La Cancha", as they named, it's bounded for basic equipment buildings. Like: a library that serves as government house and gathering entity of resources, a church that also works as a meeting room and finally exist a dining room for children, which for lack of space, can only receive less than half of the child population.

The vacuum space, highly missing at the settlement is the structuring element of all elements to be developed in the project unit. We consider so much important to highlight that empty space as the configurator of our ideas for "Manantiales", not in a way of seeing this element as the one remaining but as the core product.

From how to make their own homes, to how to generate a collective space, the community taught us basic guidelines that took into account (from the first visit to the site) to develop the project unit.

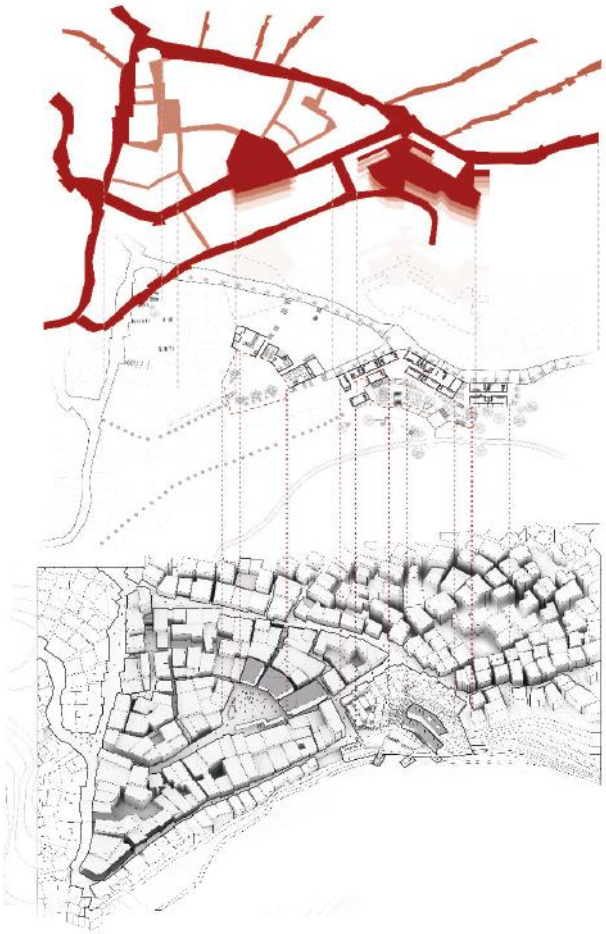
Local wisdom strongly supports our way of proceed, because based on that we can contextualized the project, who better to teach us that the inhabitants, they alone who know precise needs of the project showing us their needs and desires.

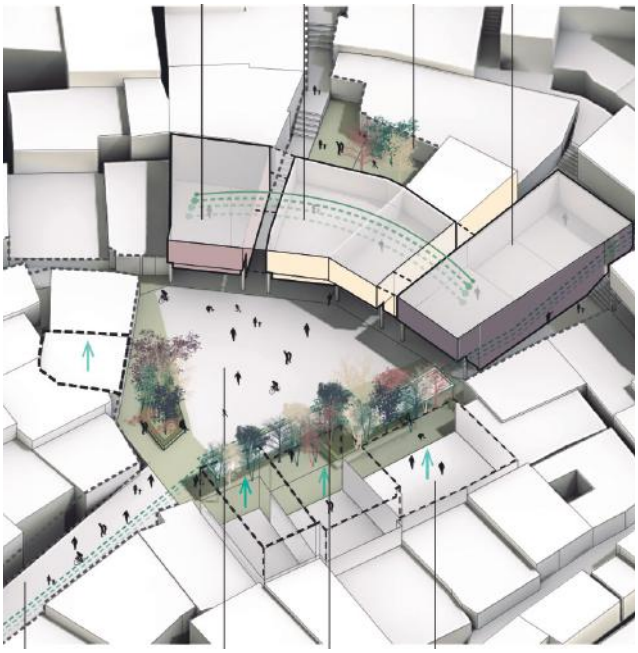
1. A system of progressive growth of housing in the lot.

2. A system of accommodation with the rugged slope.

3. A progressive system enclosures differentiating materials.

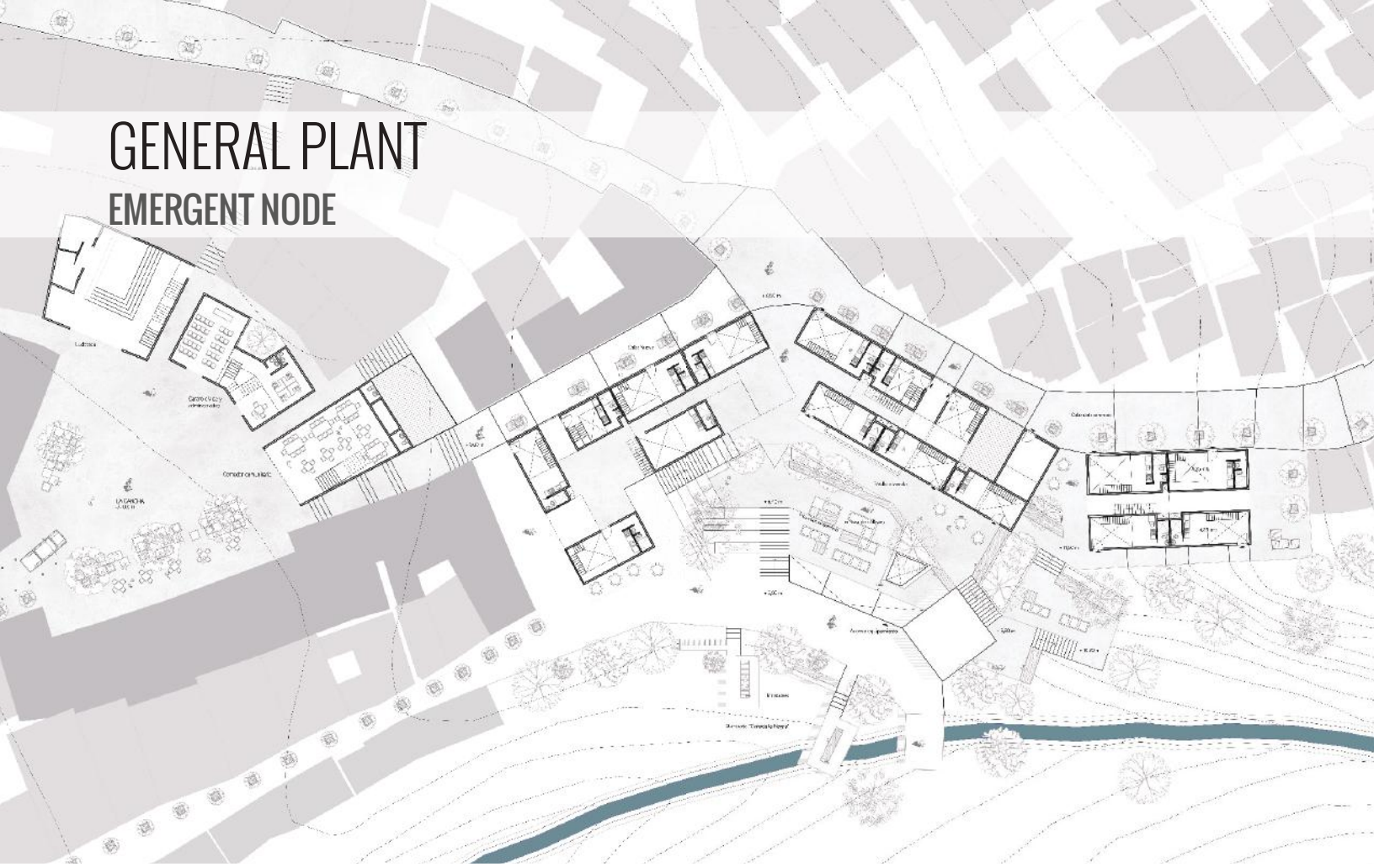
4. A system front porches and games in the house.

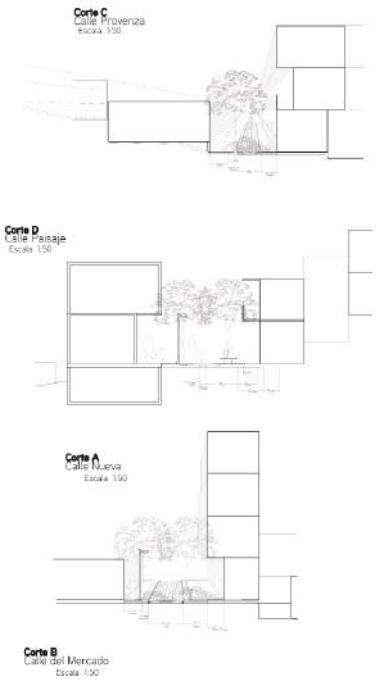


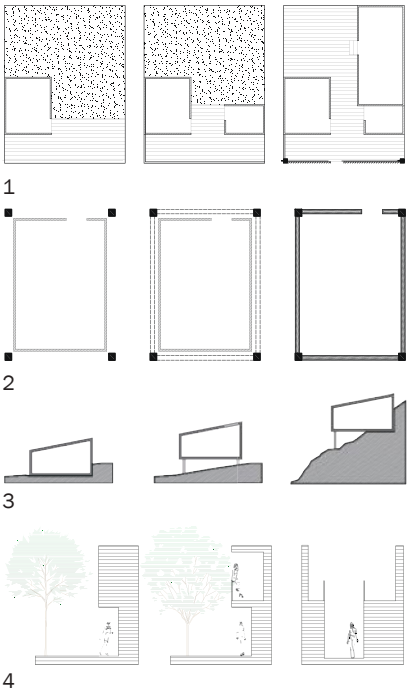


GENERAL PLANT

EMERGENT NODE







PUBLIC SPACE DIAGRAM

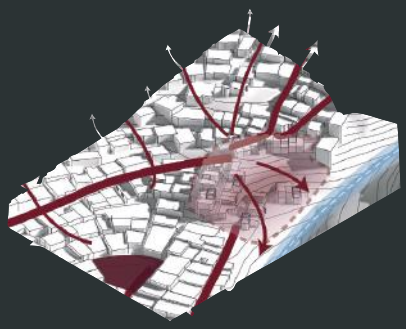
HOUSING PROPOSAL
Progressive and flexible housing
Commercial modules

REHABILITATION OF EXISTING FACILITIES
Street furniture
Arborization
First commercial plant

The proposal integrates the physical component of improving housing and turn endowment of new public space formed between the volume of housing and equipment for learning urban farming, hydroponics and other alternatives to food security and income generation. The project also aims to integrate the creek with the community.

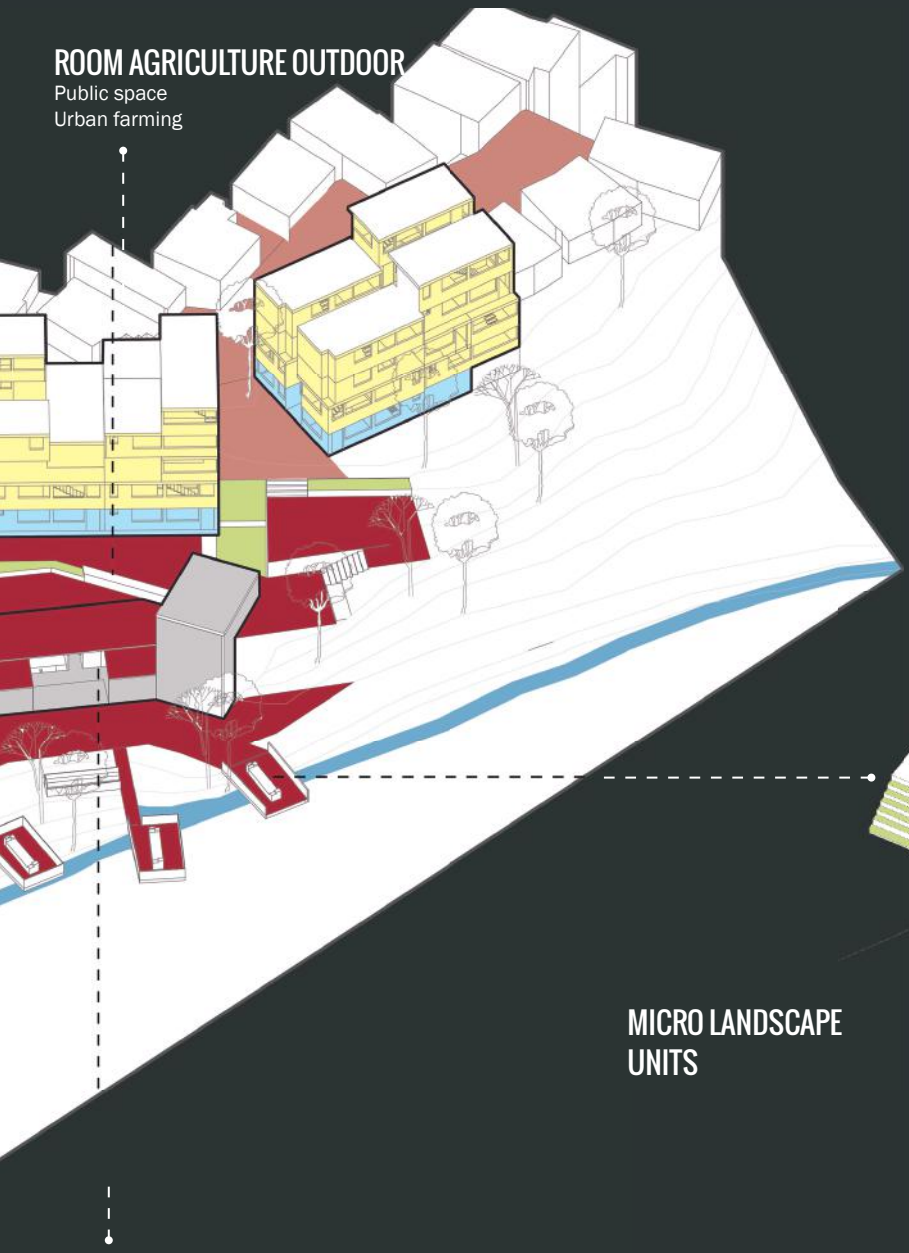
The main idea that we wanted to rescue from the local wisdom is to rearrange and emphasize the empty space. “La cancha” it is the main space since the beginning of the settlement, they want to consolidated and protected with an innate awareness, managing to achieve the level of public square in shape and role to develop.

GREEN SPACE, EQUIPMENT AND HOUSING

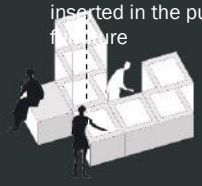


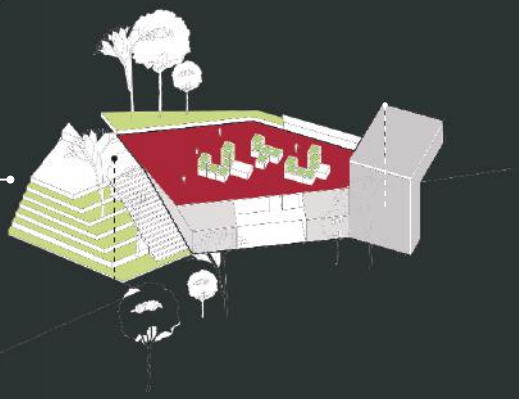
ROOM AGRICULTURE OUTDOOR

Public space
Urban farming



Crops of small format inserted in the public f[illegible]ure

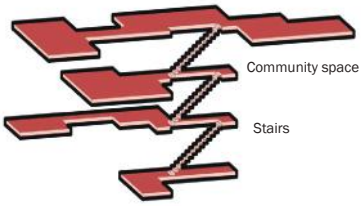


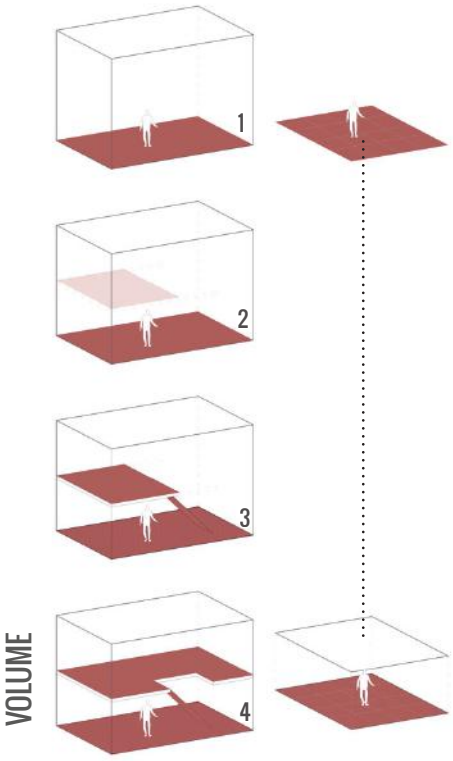


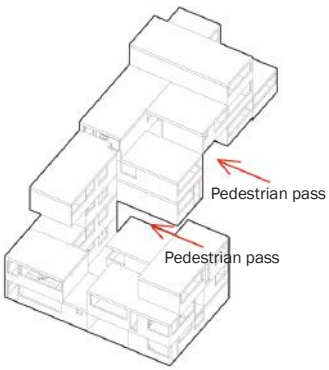
MICRO LANDSCAPE UNITS

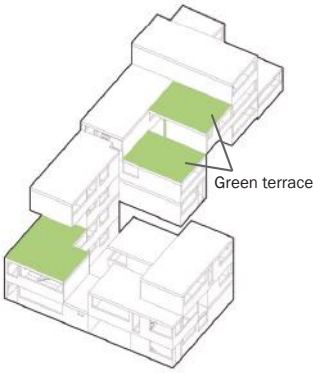
Learning equipment for urban farming

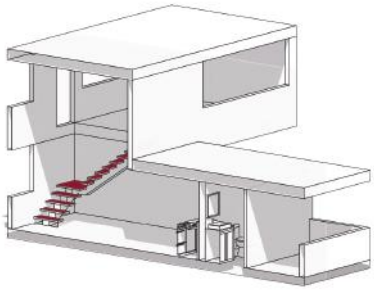
EMERGENT NODE
DWELLING

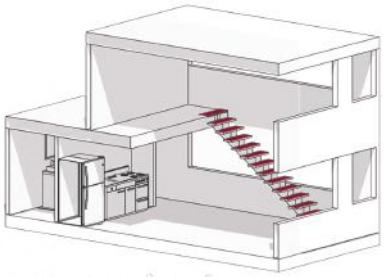


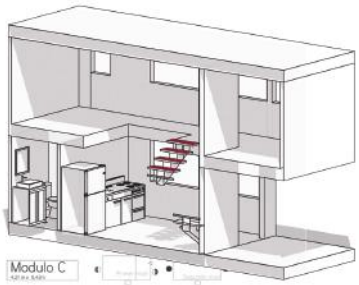


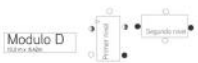


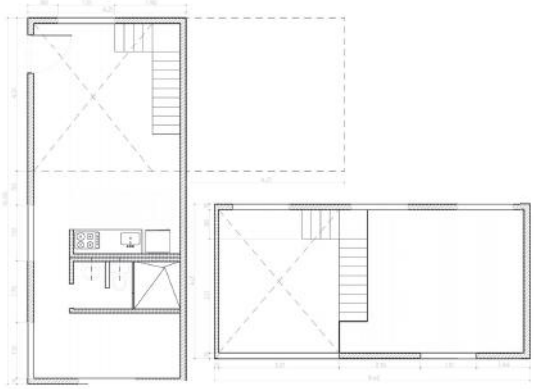


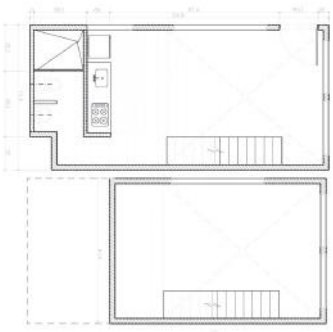


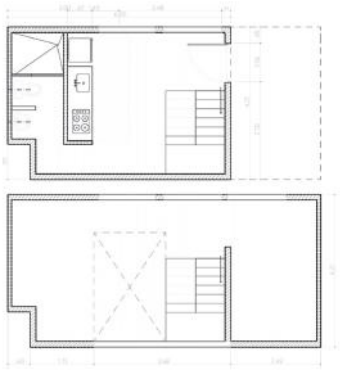


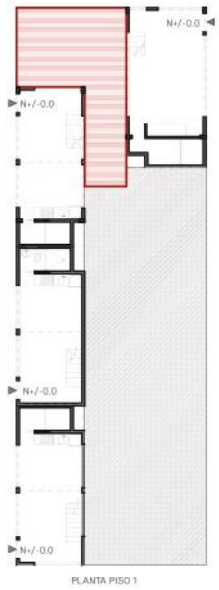






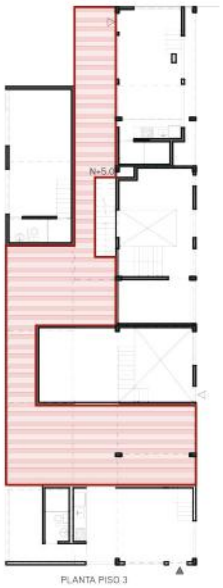






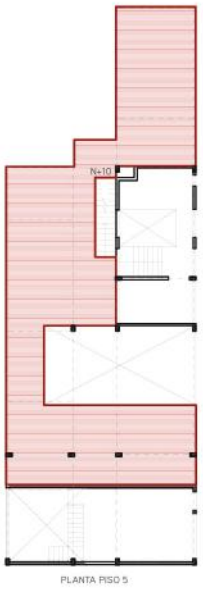
First Level

Second Level



Third Level

Fourth Level



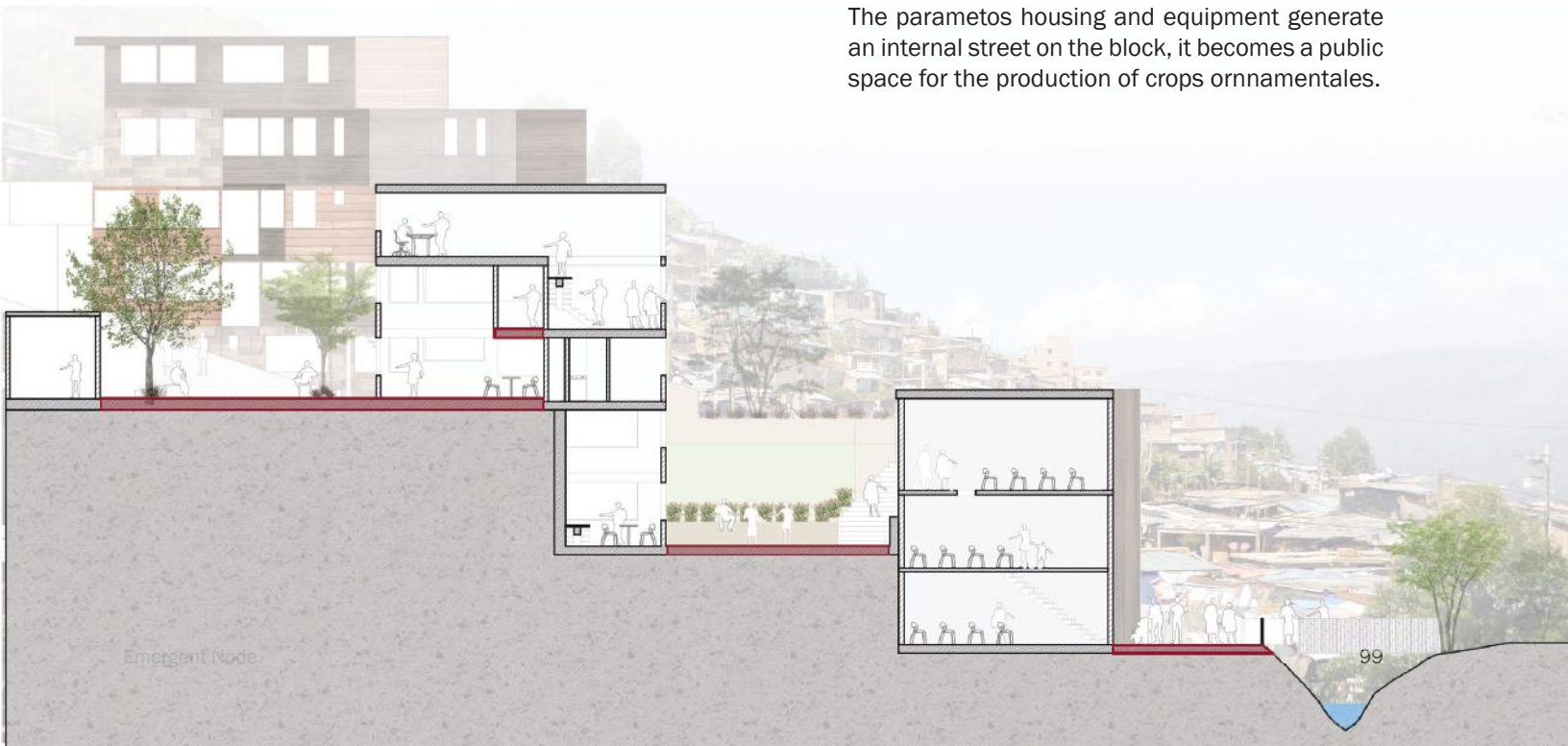
Fifth Level

The main idea that we wanted to rescue from the local wisdom is to rearrange and emphasize the empty space. “La cancha” it is the main space since the beginning of the settlement, they want to consolidated and protected with an innate awareness, managing to achieve the level of public square in shape and role to develop.

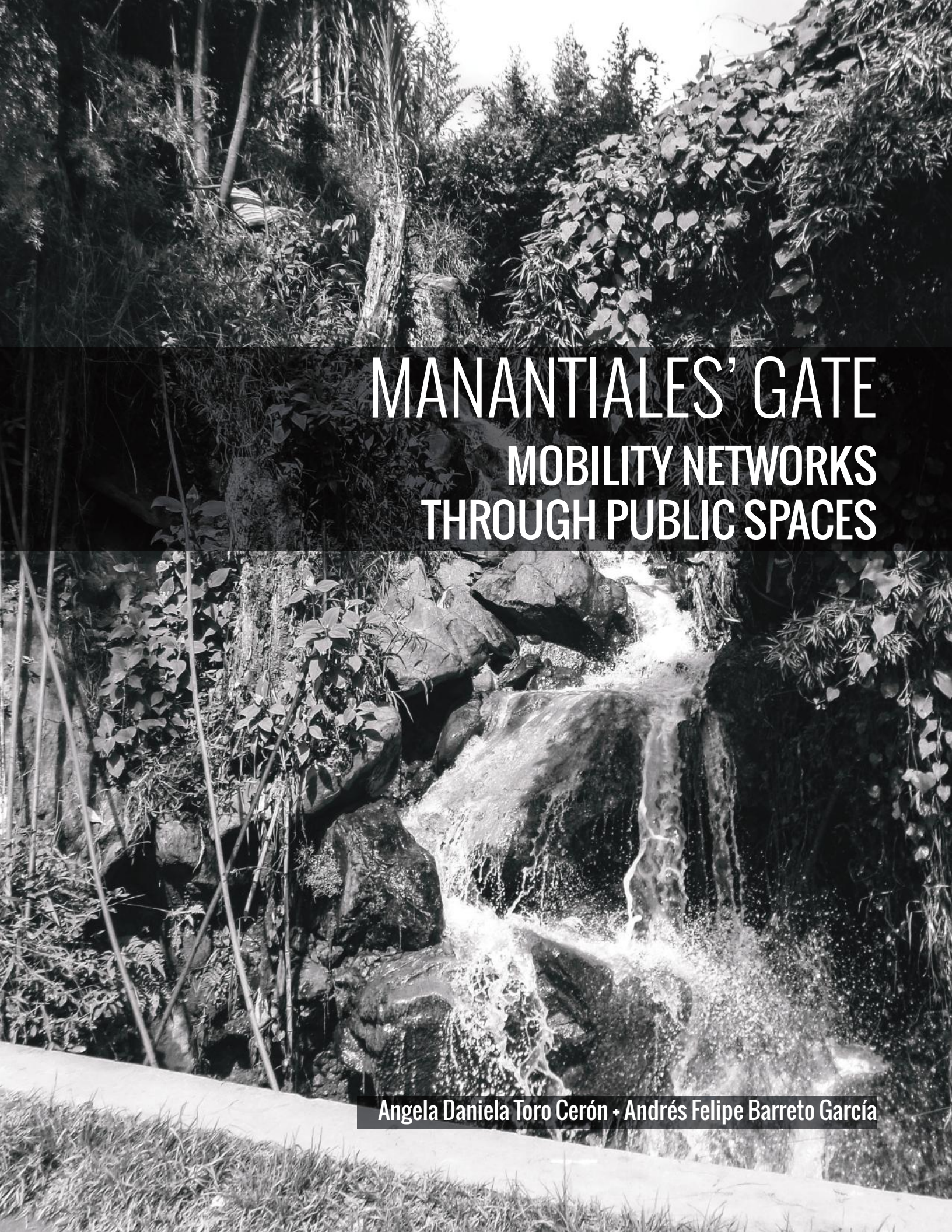
Dwelling proposal has as premised, delivering a double-height volume, with a basic module of services (bathroom, kitchen), a generic space (to live or to be used as trade or workshop that generate family income).

If the family decide grows up and has the resources to expand housing they can do it too, using the double-height and the brackets that are the support of the second level.

The parametos housing and equipment generate an internal street on the block, it becomes a public space for the production of crops ornnamentales.



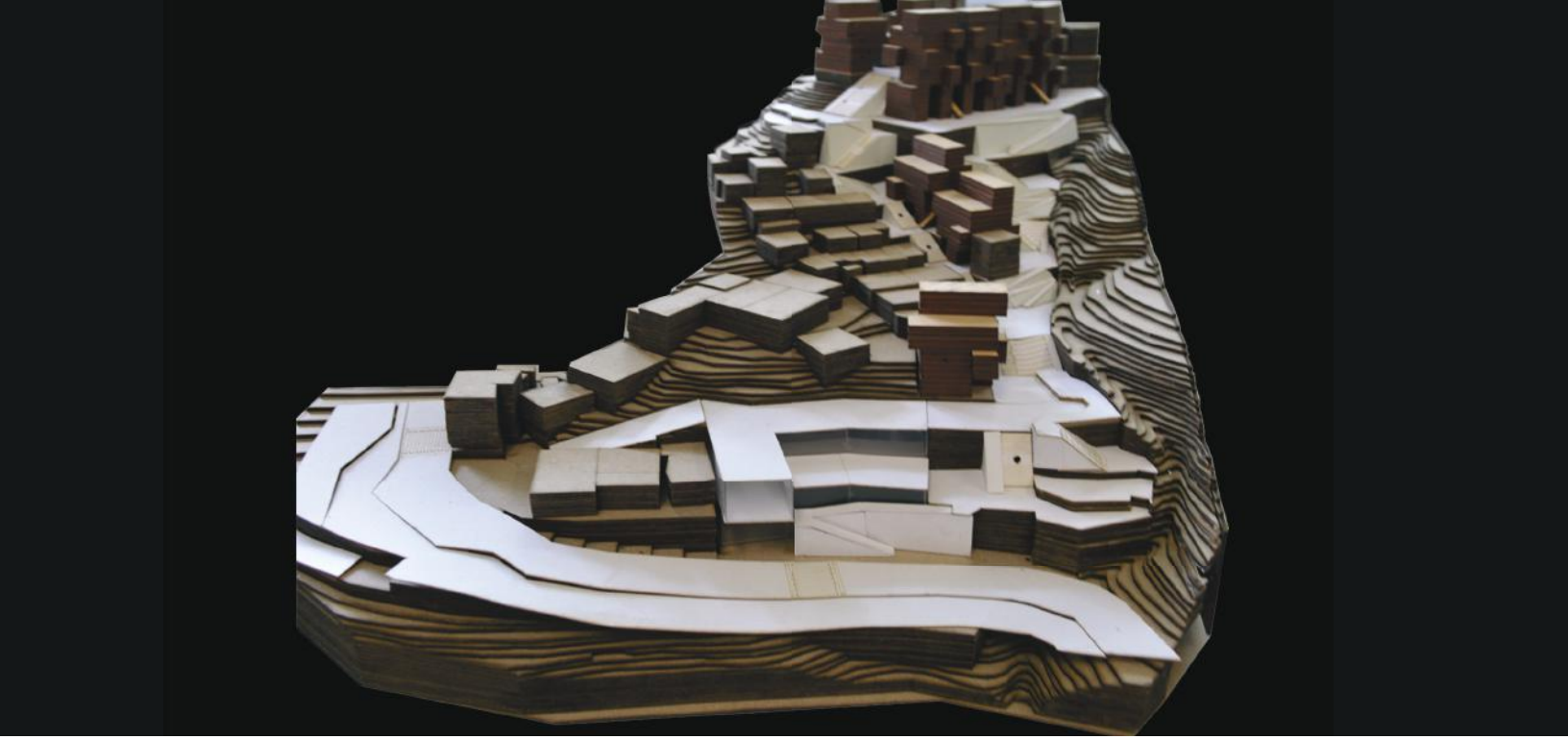
Emergent Node



MANANTIALES' GATE

MOBILITY NETWORKS THROUGH PUBLIC SPACES

Angela Daniela Toro Cerón + Andrés Felipe Barreto García

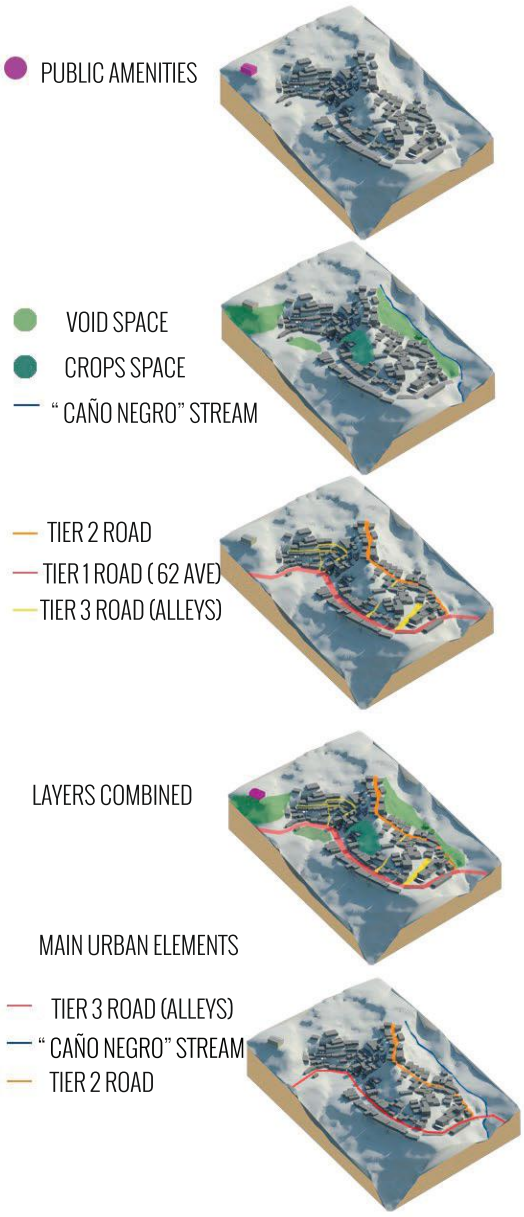


The project can be viewed as programed public space network, these public spaces try to solve differtent problems on the neighbourhood, such as the endangered houses, the lack of public space, the lackluster mobility systems, et; this last item proves to be the main priority in the project, because it is the the main entrace point for pedestrians, both it´s inhabitants and the visitor have to acces Manantiales from this unit, this is why it is understood as a mobility system built with said public space network and a series of landscape units, this spaces help the users to traverse the enighbourhood, making use of interesting walkrounds and a widvariety of activities, all of wich highlight accesibility.

there´s also a housing project, it not only helps to solve the endangered houses problem, but also the quality of said housing, by taking into account topics such as adaptability and progresion, aspects that are based on each of the users needs.

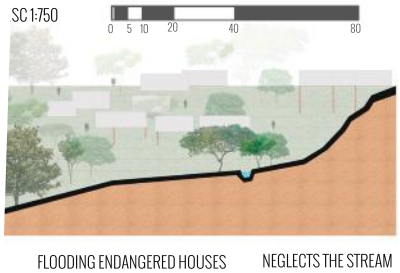
Finally we trried to develop a public buiding that tries to solve the lack of urban services, this proves to be vital because this particular project unit has big scale relationships with Medellín and Santo Domingo;.

COMPONENTS

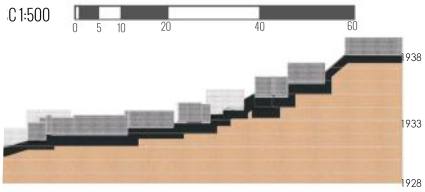


The project unit presents many challenges in the form of mobility, since it represents the main entrance for pedestrians, the number 1 priority is to generate a motility system that can integrate the different components (housing, public space and public amenity) to create a network for people to traverse; However is not enough to create a mobility system that consists of going from point A to point B, it has to make use of all the opportunities that the unit presents (topography, a stream, etc) to create a system which contains spaces that people really want to use, and not spaces people have to make us of.

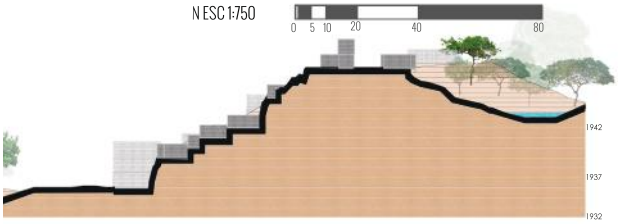
In order to create the mobility network mentioned before, all the spaces need to be programed in some way, so their within the system is clear and can be built and planned propperly, most of the programs added are a response to the community need in this specific unit, like the relocation of houses, the lack of public spaces for children to play, the below average quality of the streets, the lack of public ammenities, and so on.



FLOODING ENDANGERED HOUSES NEGLECTS THE STREAM



SLOPES BELOW AVERAGE MATERIALS QUALITY ON LANES



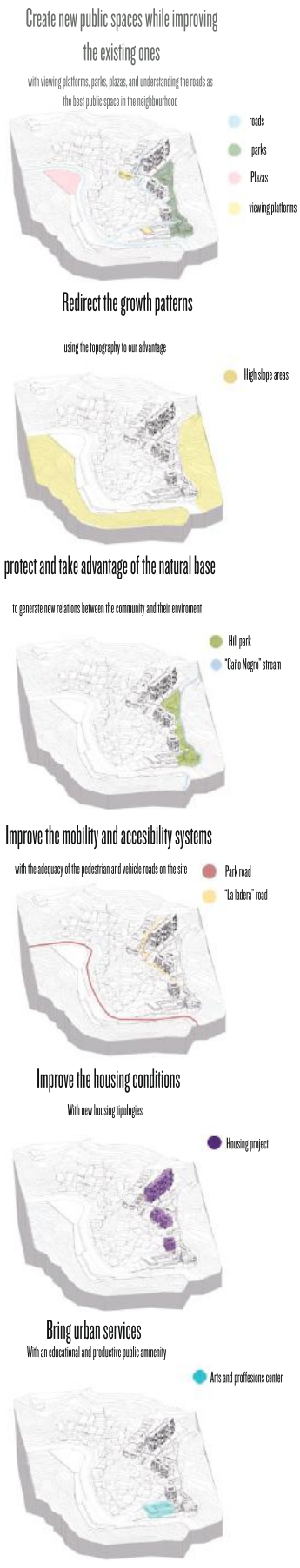
NO PUBLIC SPACES ENDANGERED HOUSES (FLOODING - LANDSLIDING)

GENERAL STRATEGIES

As mentioned before, each public space needs a program, so it can serve it´s purpose inside the project, be it a view point, a street, etc, each space requieres a different set of characteristics, like the type of flooring used, or in this case for example, the kind of trees that are planted in each area according to what role they will fullfil (give rythm to a street, provide shadow, to have fruit or flowers, so have different aromas).

All of these landscape units are meant to bring diversity into the project, but along the lines of what people fro Manantiales needs and can make use of.

The general strategies act as a blueprint for the entire project, showing what are the main needs of the community and showing what kind of solution can be implemented, these cover different topics like mobility, housing, enviromental protection, public space creation and; all of wich are crucial for the project.

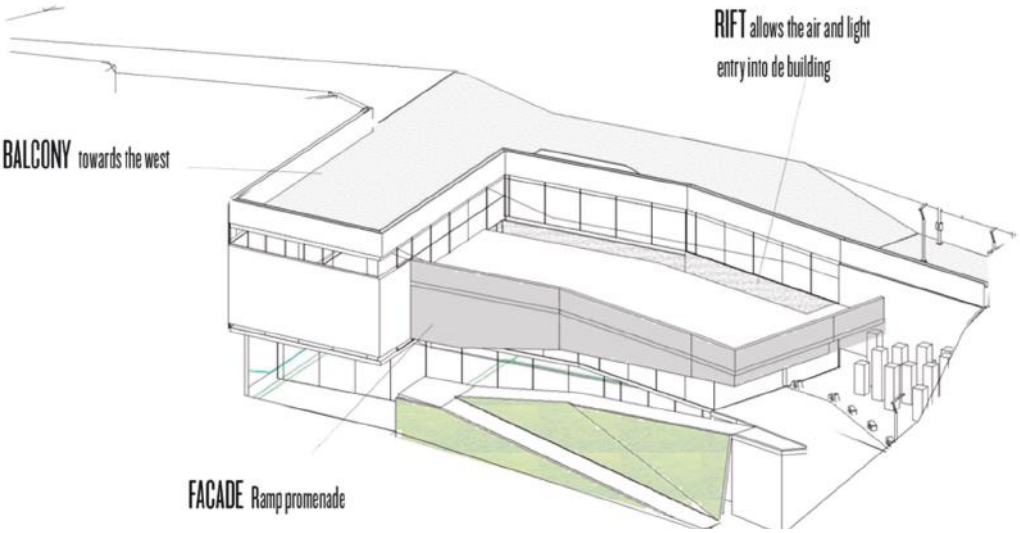


PUBLIC BUILDING

The arts and professions center tries to give Manantiales' inhabitants a way to learn new ways of productive jobs and arts, that can help them have an self-sustainable economy inside the neighborhood.

There's also the need to have a building which goes along the topoography, that helps people traverse the space and that connects different parts of the project

The roof can be viewed not only as a roof, but also as the continuation of the street and a great viewpoint of Medellín.

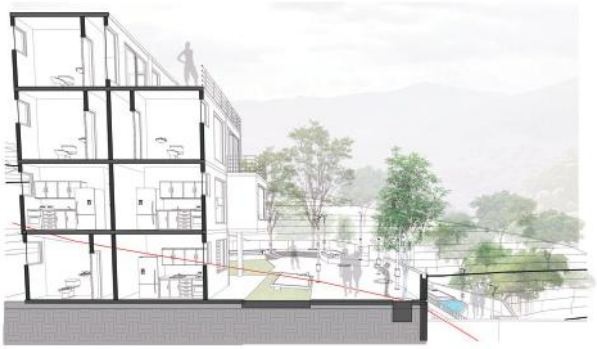


PUBLIC SPACE PLAN
ESC 1:1000

URBAN ELEMENTS

SECTION C-C´ ESC 1:750

0 5 10 20 40 80 FEET



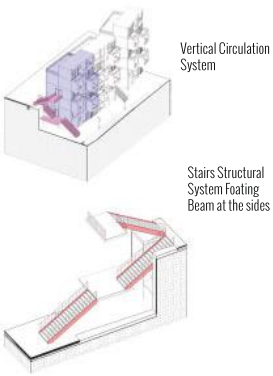
SECTION A-A´ ESC 1: 200
FORMER TERRAIN SLOPE

0 5 10 20 FEET

BEFORE AND AFTER

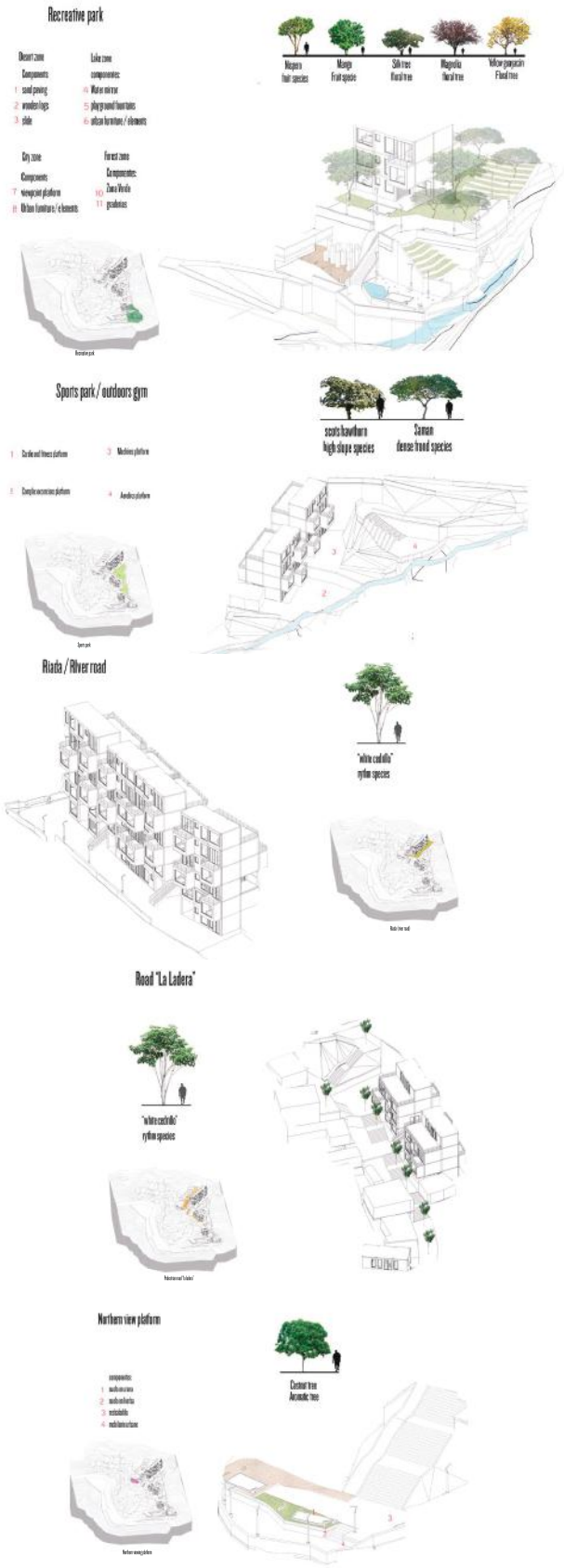
CIRCULATION DEVELOPMENT

ALLEYWAY

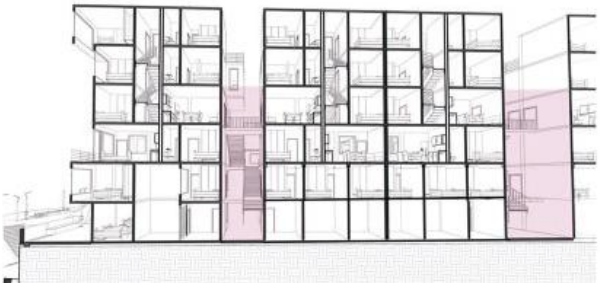


As a way to crate a public space network that is both interesting and functional, it was necessary to give each space a defined program, based on what the community needs (children playgrounds, productive spaces, places to do sports related activities, better and more inclusive mobility systems); also, since there's a lack of trees on the inside of Manantiales, a silviculture plan was developed, in which each space has the trees that are better suited for the activities that happen in said space, such as trees with aromas, trees that provide shadows, trees that give rhythm a street, etc).

LANDSCAPE UNITS

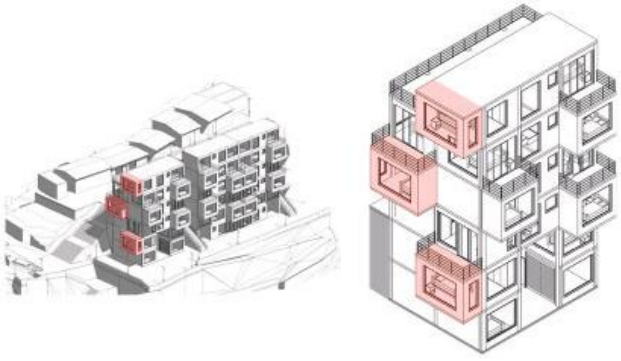


HOUSING



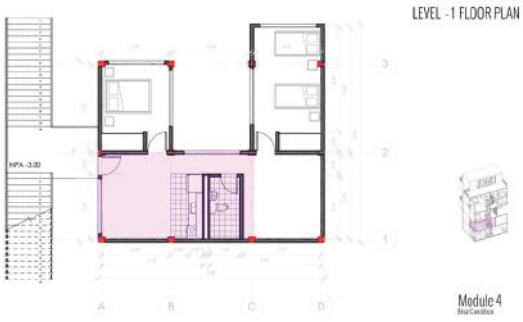
Taking note from one of the most prominent characteristics of the informal settlements, in this case, they alleys, we tried to develop a housing circulation that imitates this concept, it allows not only to acces the housing units, but also becomes a collective space that can be used to traverse from different points in the outside, it also works as a joint point, since the housing units can be turned in different angles, while the staircase acts as a joint in this situation

These volumetric extrusions on the facade allow the development of the better spaces in the inside, and also an interesting volumetric game on the outside, generating a set of balconies that can be used as viewpoints; Finally this kind of extrucsions are used on the housing blocks corners, givin them an special set of features that helps to define said corner.

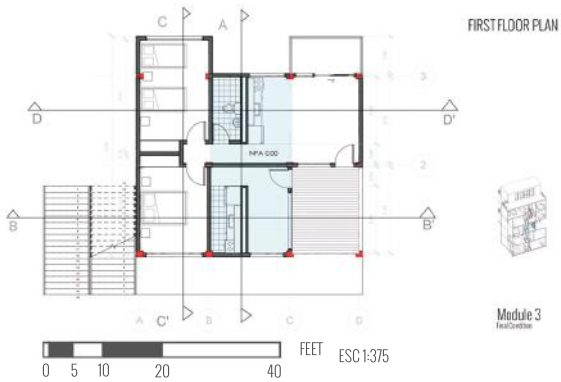



LEVEL -2 FLOOR PLAN
NPA -6.00
Module 5

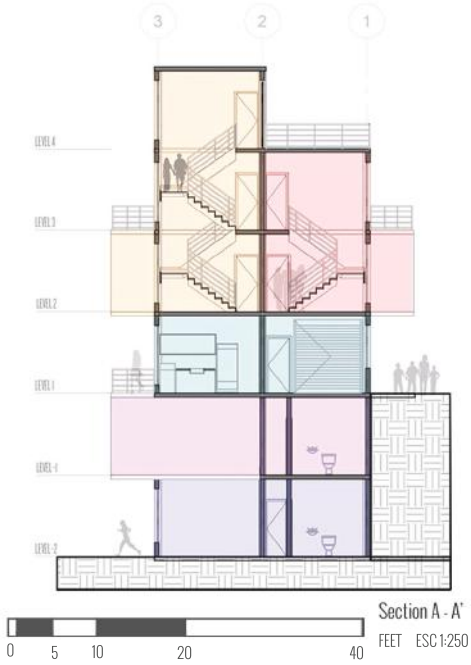

SECOND FLOOR PLAN
Module 1
NPA +3.00
Module 2


LEVEL -1 FLOOR PLAN
NPA -3.00
Module 4

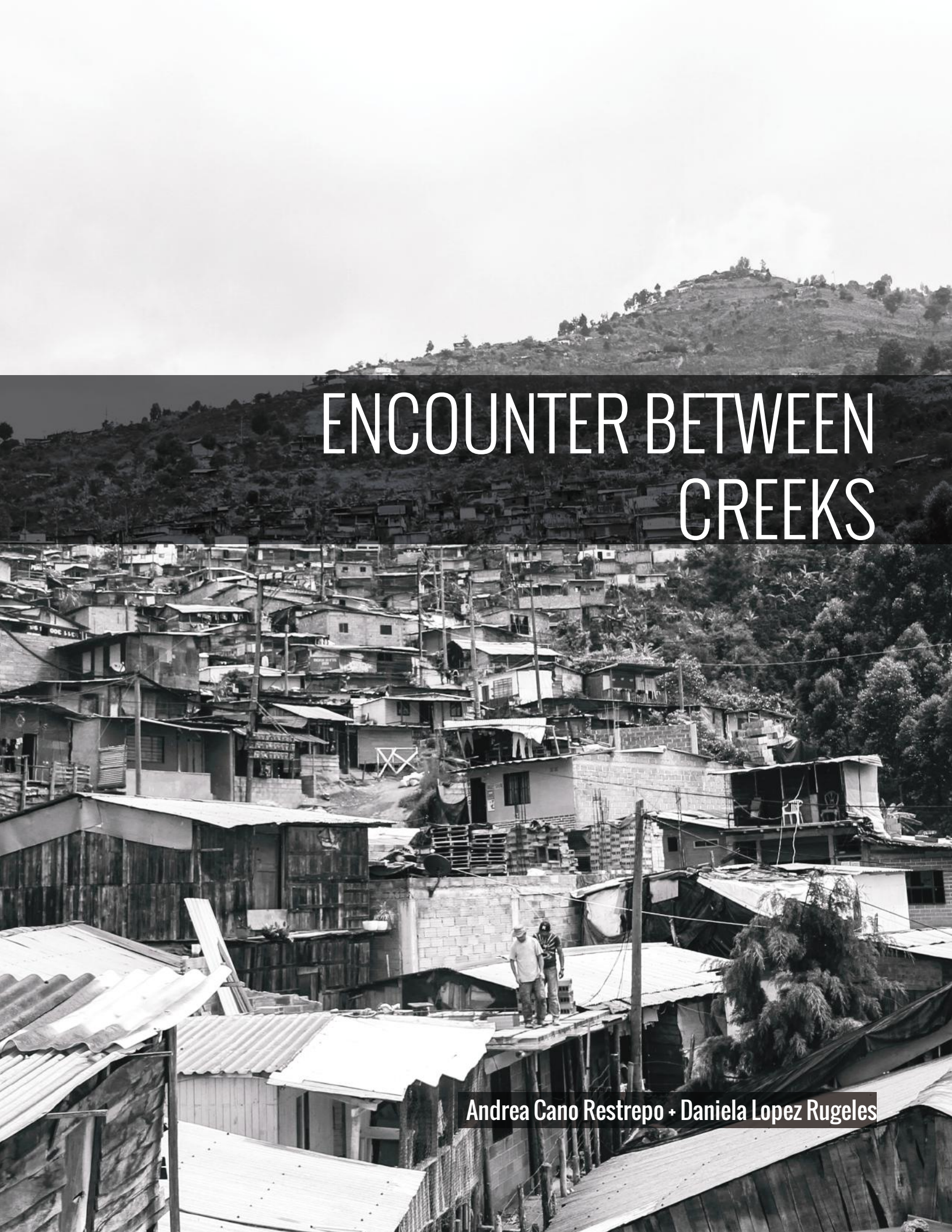

THIRD FLOOR PLAN
Module 1
NPA +6.00
Module 2


FIRST FLOOR PLAN
NPA 0.00
Module 3
FEET
0 5 10 20 40
ESC 1:375


FOURTH FLOOR PLAN
NPA +9.00
Module 1

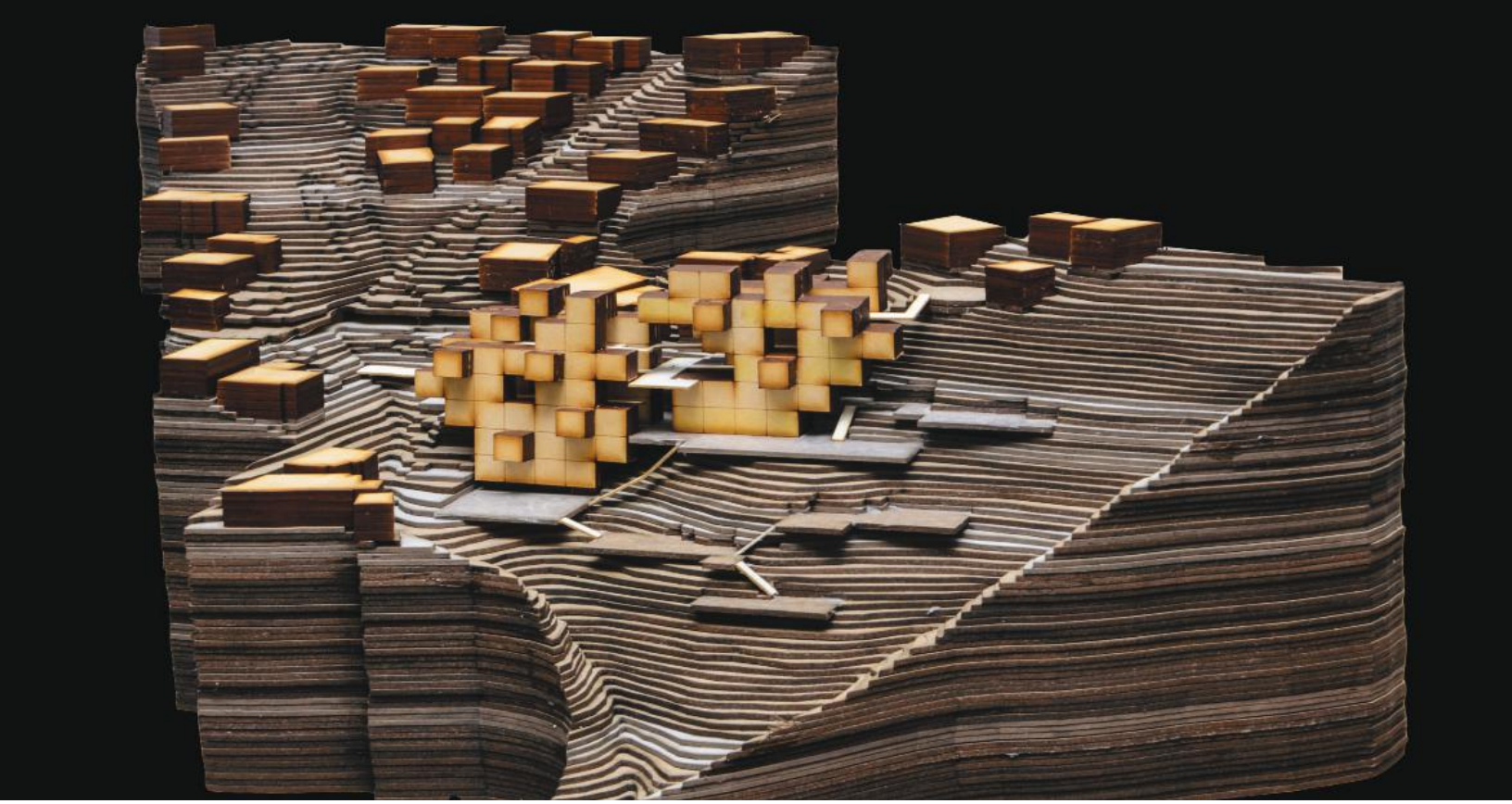

Section A - A'
FEET
0 5 10 20 40
ESC 1:250


Section B - B'



ENCOUNTER BETWEEN CREEKS

Andrea Cano Restrepo + Daniela Lopez Rugeles

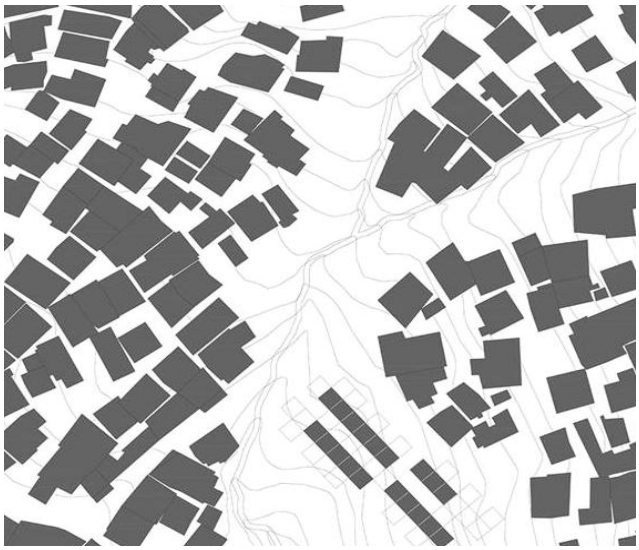


Manantiales district is in an area of outstanding slopes with small houses and located without any logic known in the formal city, on a network of footpaths quite complex, there are significant values to rescue and enhance of the place, like try shortcomings such as the lack of public space and mobility. Noting the willingness of each element, the project was under the premise that the houses are like pixels in space.

It begins by creating a vehicular road that seeks to articulate this sector of the district with the existing network of mobility and the space freed (after removing some houses) Interesting spatialities allowing the creation of an environmental axis along the creeks are generated and platforms outdoors with educational programs, urban furniture design as well as all the spaces incorporated in the project are based on the pixel (square).

Housing exploit existing slopes, making an adaptation to the topography from each of the points and allowing circulations from the street (non-fixed points or stairs) and releasing horizontal space to increase and qualify public space, building block housing is conceived progressively, with an initial investment of structure that allows the proper development of the block, it gives stow that facilitate access to each house to water, electricity and gas, achieving with the total of the intervention improve housing and services of each of the residents quality.

BEFORE



AFTER

MASTER PLAN

NEIGHBORHOOD'S CONNECTIONS

STRATEGIES

Take advantage of visual and topography

Take control and guide the growth

New equipments insertion

Existing road network with public space articulation

Urban elements endowment

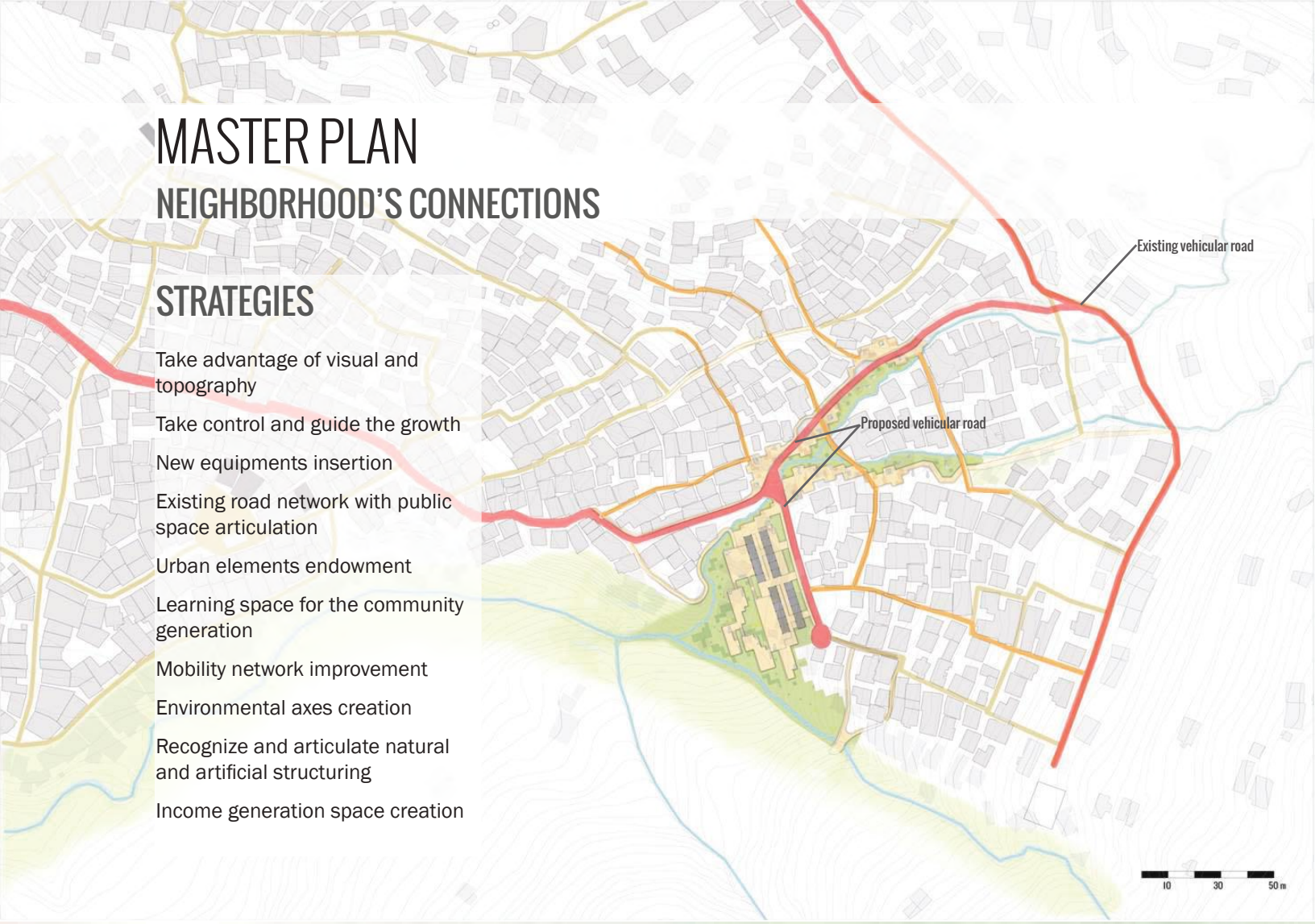
Learning space for the community generation

Mobility network improvement

Environmental axes creation

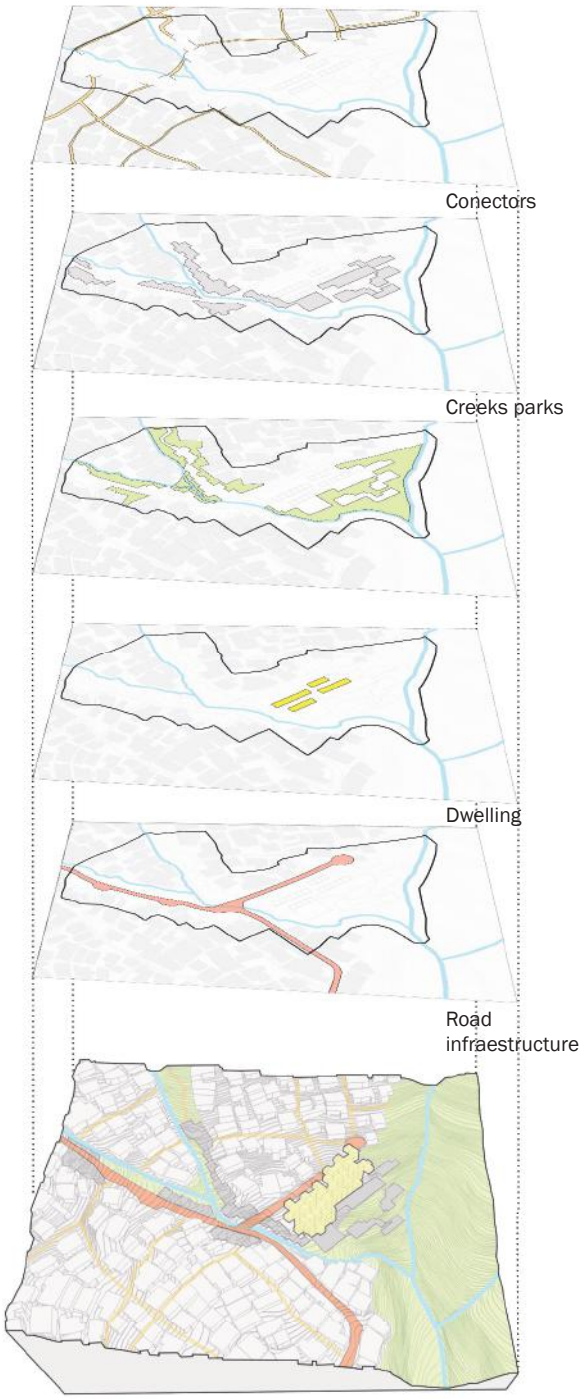
Recognize and articulate natural and artificial structuring

Income generation space creation



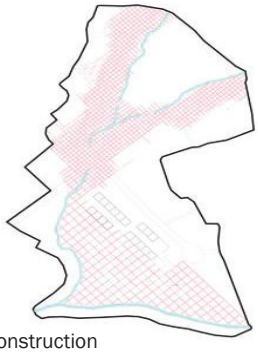
GENERAL PLAN

URBAN COMPONENTS



Encounter Between Creeks

PUBLIC SPACE



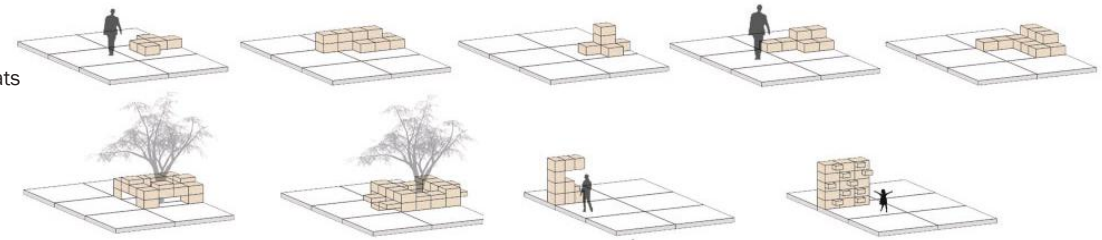
Grid construction

Recreative place and meeting points.

Educational places with outdoor exhibition in the platforms at different levels.

Urban elements

URBAN ELEMENTS

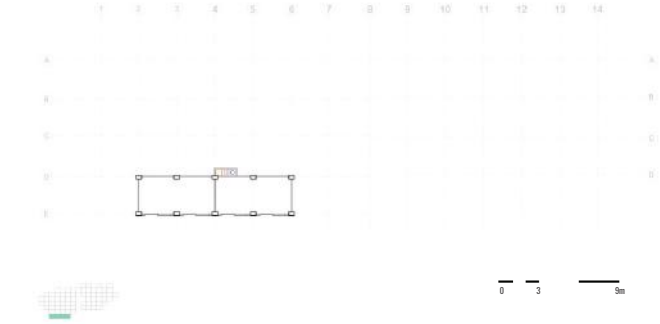


Seats

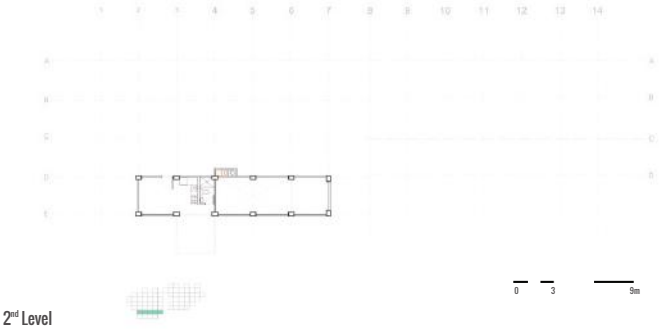
Tree grate

Exhibition panel

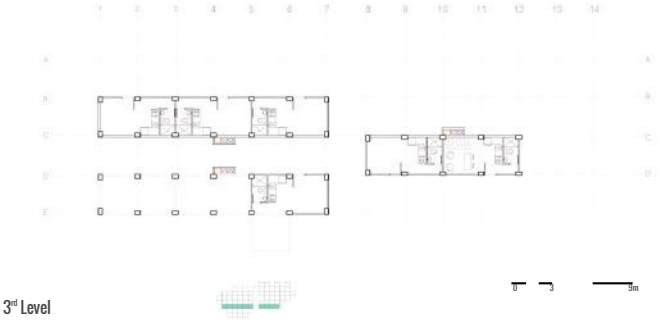
Climbing wall



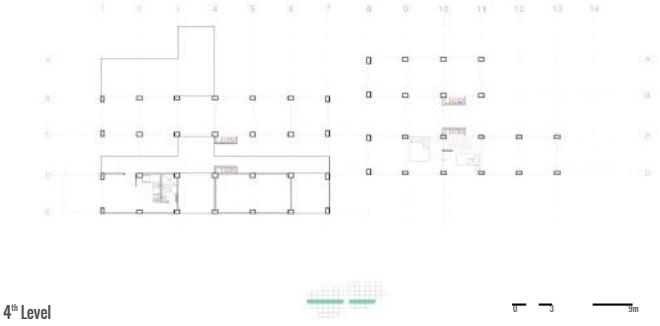
1st Level



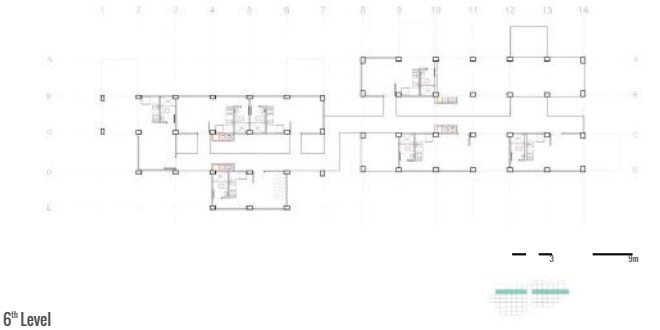
2nd Level



3rd Level

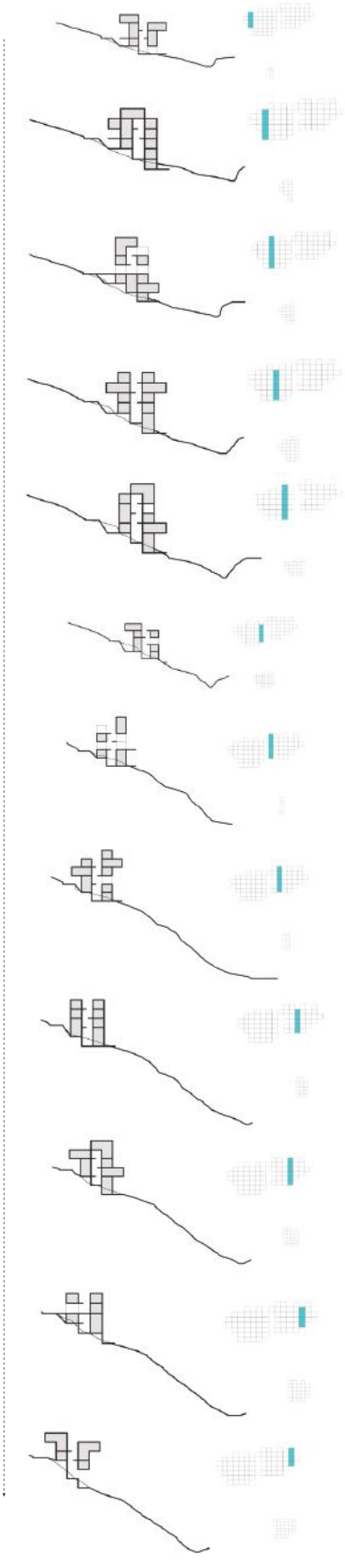


4th Level



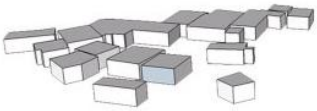
6th Level

Implementation recognizing topography



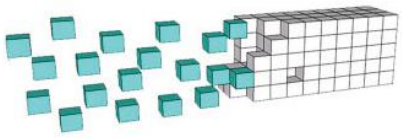
PIXELS IN THE SPACE - DWELLING CREATION

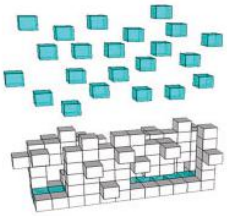
Existing houses



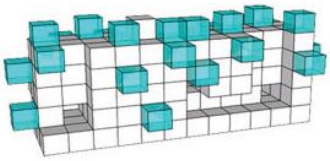
Houses like pixels

Pieces addition to create dwelling

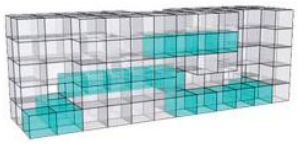




Release center for lighting and ventilation

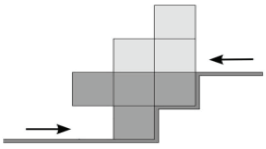


Expansion volumes

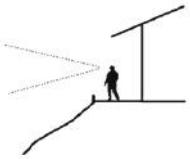


Circulation

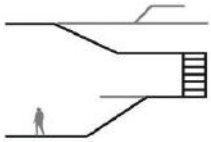
PLACES VALUES



Direct access from the street

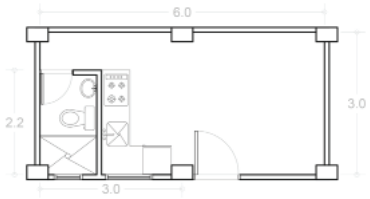


Landscape recognition

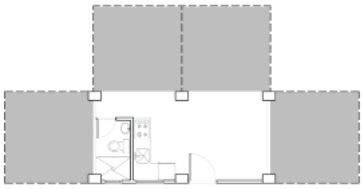


Stairs and paths network

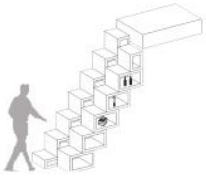
BASIC MODULE



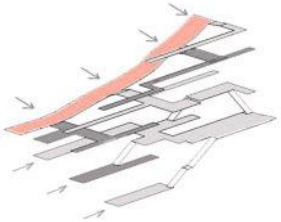
Services attached to the dwelling central corridor



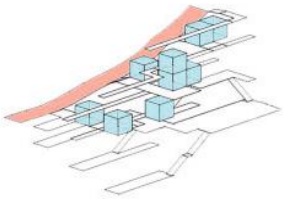
Expansion possibilities in different directions



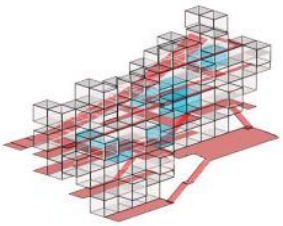
Stairs with storage space



Access from the street

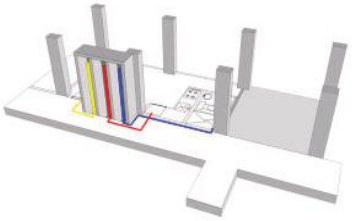


First levels connected by stairs



Void spaces to create collective areas

Elevated yards

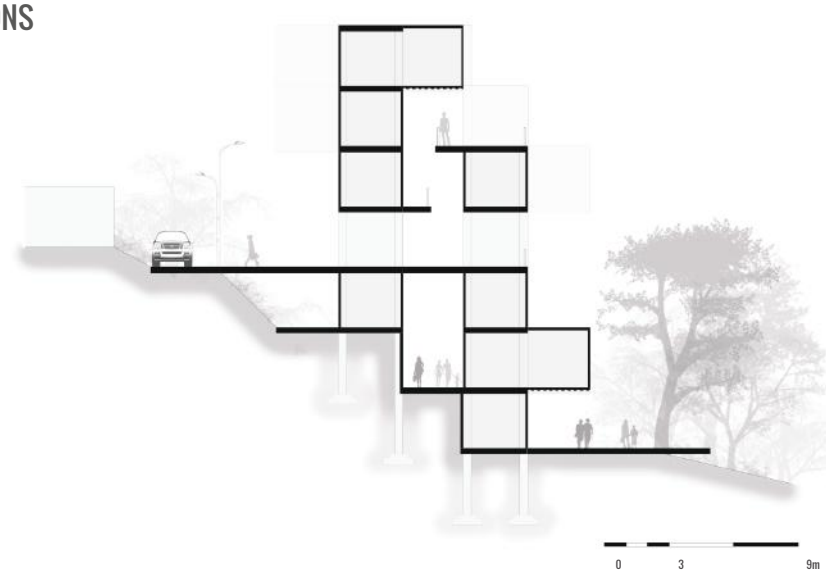


Easy access buitron

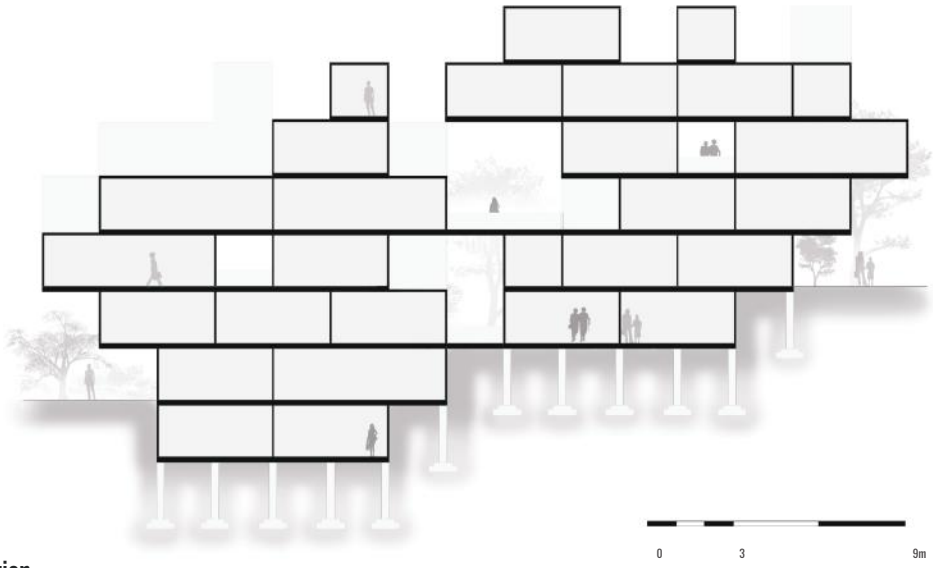
Initial structure-Concrete porticos

DIAGRAMS

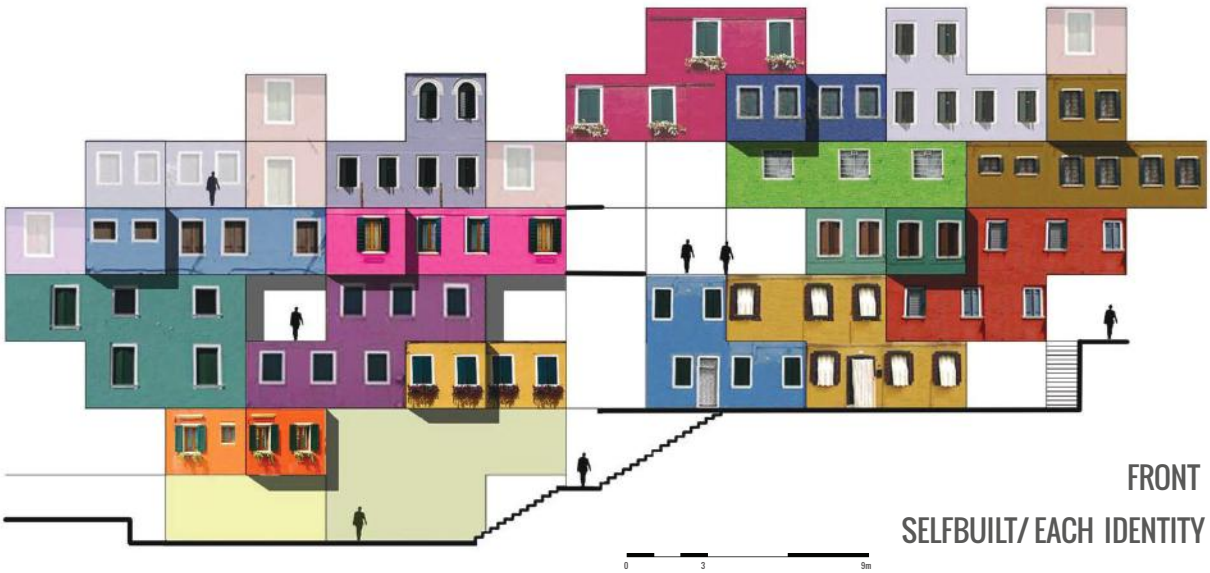
GENERAL SECTIONS



Transversal section



Longitudinal section



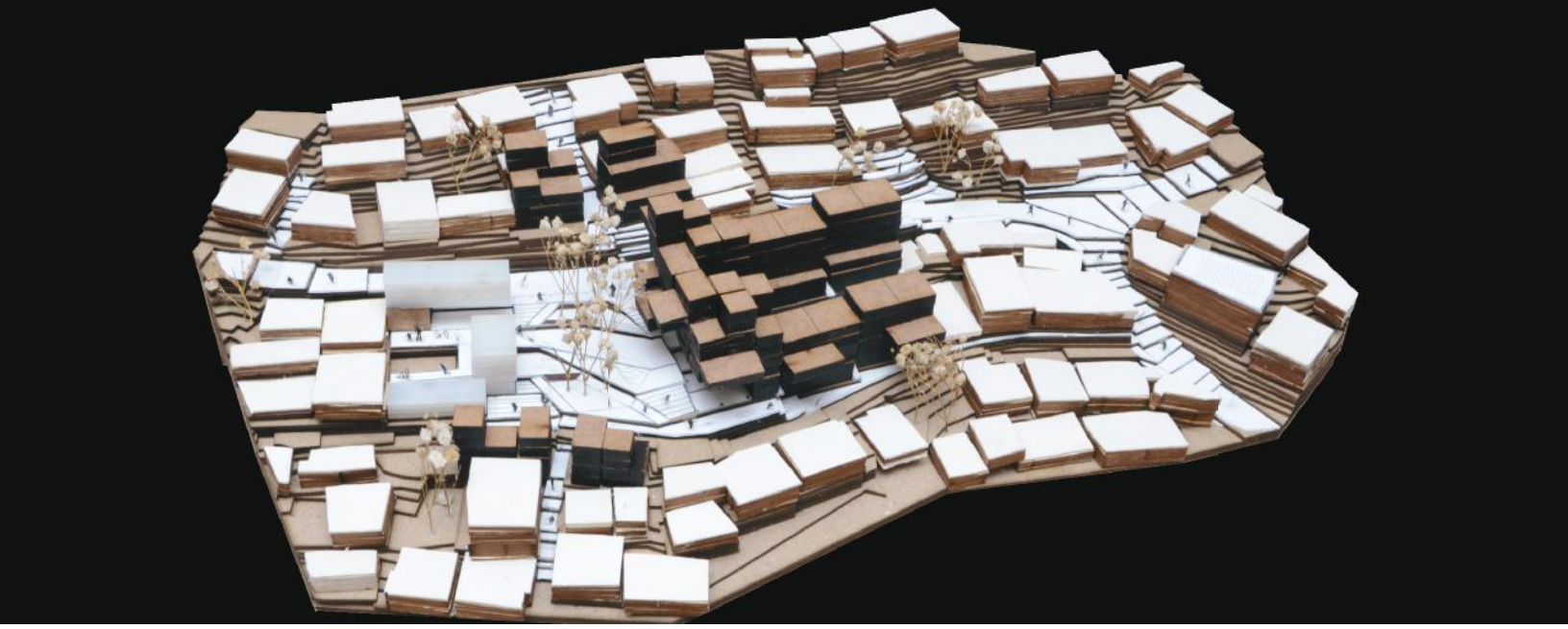
FRONT FACADE

SELFBUILT/ EACH IDENTITY OWNER

MANANTIALES URBAN CORRIDOR

A SHARED STREET

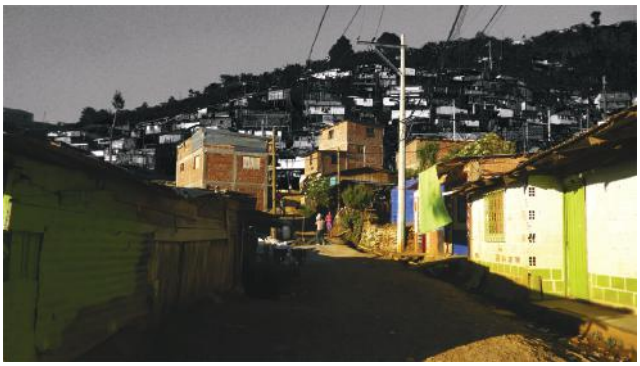
Katheryn Gutiérrez Torres



The mobility in Manantiales neighborhood is basically pedestrian based, and is given by narrow streets in a precarious state (materiality and connections) Taking that into account, a wider street is identified, it becomes an urban corridor that links various public amenities and public spaces at neighborhood level and which in turn is a structural mobility axis (vehicular, pedestrian and alternative). This street is designed as a linear space formed by stays programmed to respond to the social dynamics and economic characteristics of Manantiales.

Different important projects to the community, including a park connected to the idea of shared street, which realizes small scale interventions and inserted into an existing unused open space is developed is then raised, injecting into the sector 3 key components: Housing, Public space and Public amenities.

These components try to give an alternative solution to some of the main challenges found in the groupal diagnosis in a fragment of the settlement that is favorable to densify, to growth in infill, where also a public space could be linked to an educational and ludic equipment, characterized and designed based on the topography, because at this point there's a confluence of the 3 types of slope (Low, Medium and High).



KEY ISSUES

- Unplanned growth
- Land tenure
- Precarious conditions of mobility and accessibility to Urban services
- High levels of poverty
- Deficit of public spaces
- Precarious living conditions

1. Adress the growth
Potential area to densify, an opportunity to generate better built housing connected to the Main Street.

2. Create public spaces
Articulated to the Main Street, a system of interstitial small voids. understanding the street as an activity node.

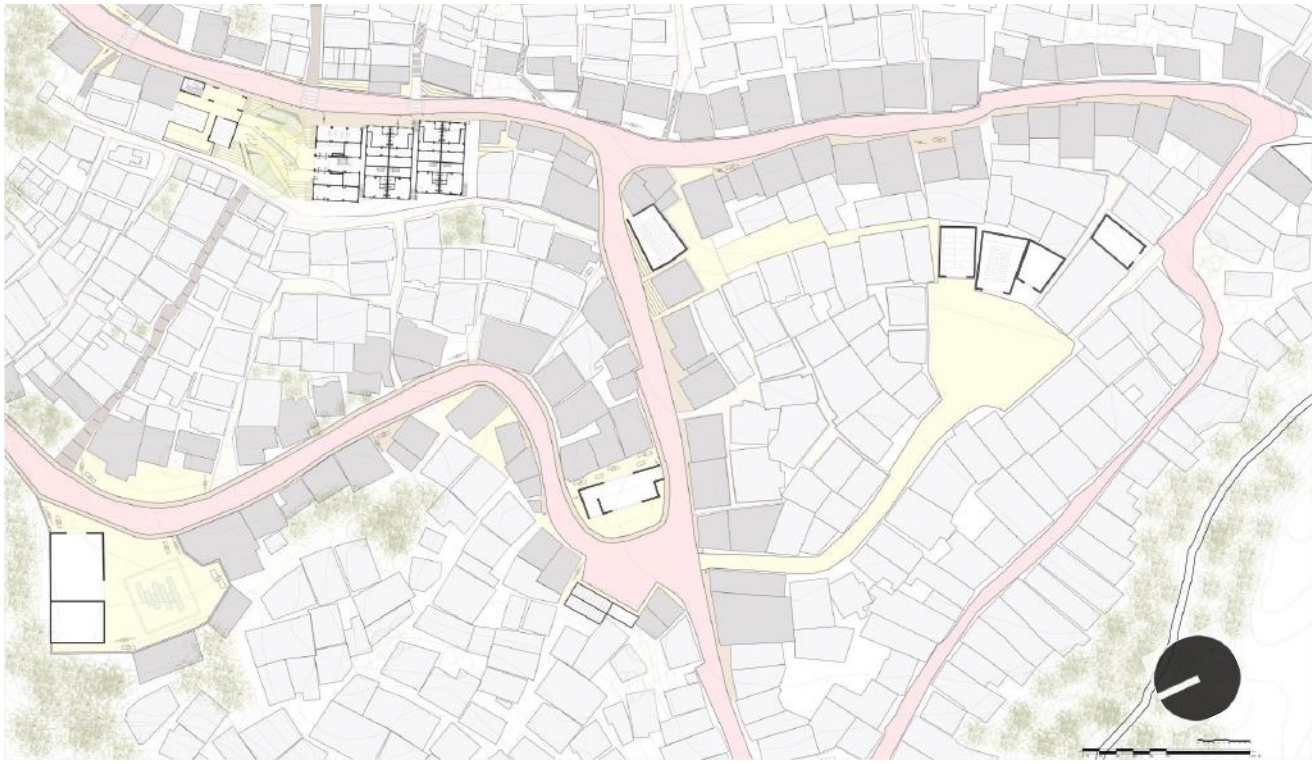
3. Improve accessibility and mobility systems
Conceived with the axis of mobility, is necessary to improve the materiality.

4. Provide better urban services
Connecting existing equipment and creating others that feed this network.

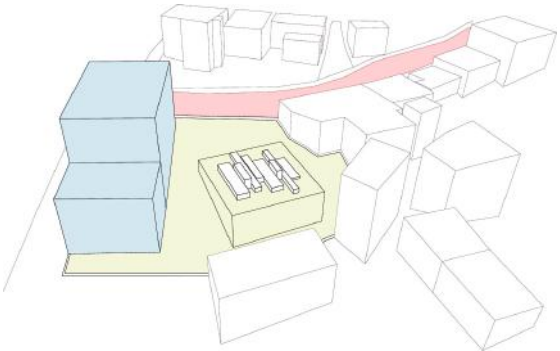
5. Generate better housing conditions
Through housing along of the street, with higher density, and better accessibility and safe constructive systems.

URBAN COMPONENT

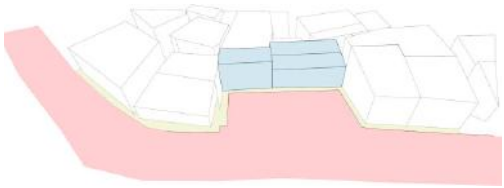
PLACES AND LITTLE PROJECTS OF MANANTIALES URBAN CORRIDOR



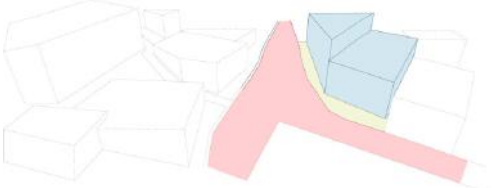
Along the wide street are some small projects working on the idea of Shared Street, that recognize and respond to the existing current dynamics of the neighborhood.



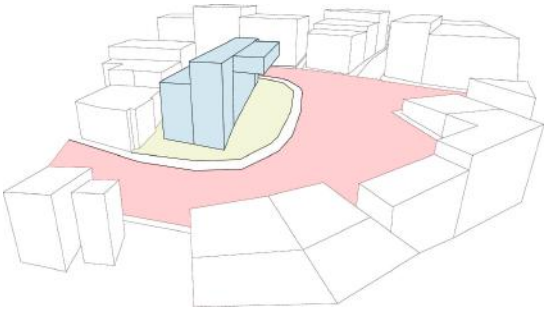
Casa de los Derechos Park



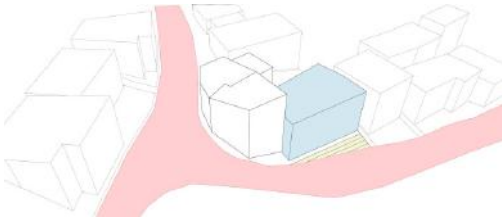
Bus stop



The Corner: Meeting point

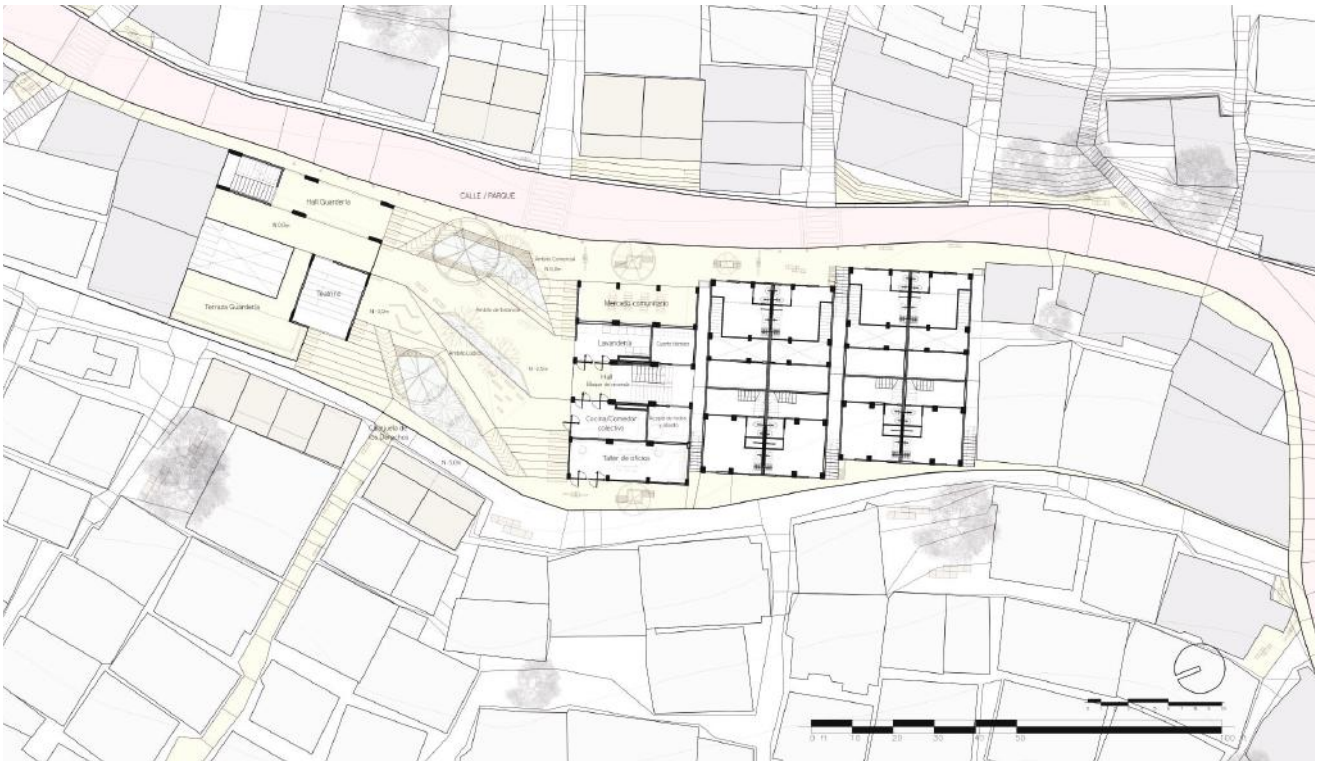


Priority Care Center Small Square



Alternative Mobility Systems point

A SMALL EXISTING OPEN SPACE



This project is realized working on the small scale, recognizing an unused existing small void into the infill of the sector in connection with the wide street

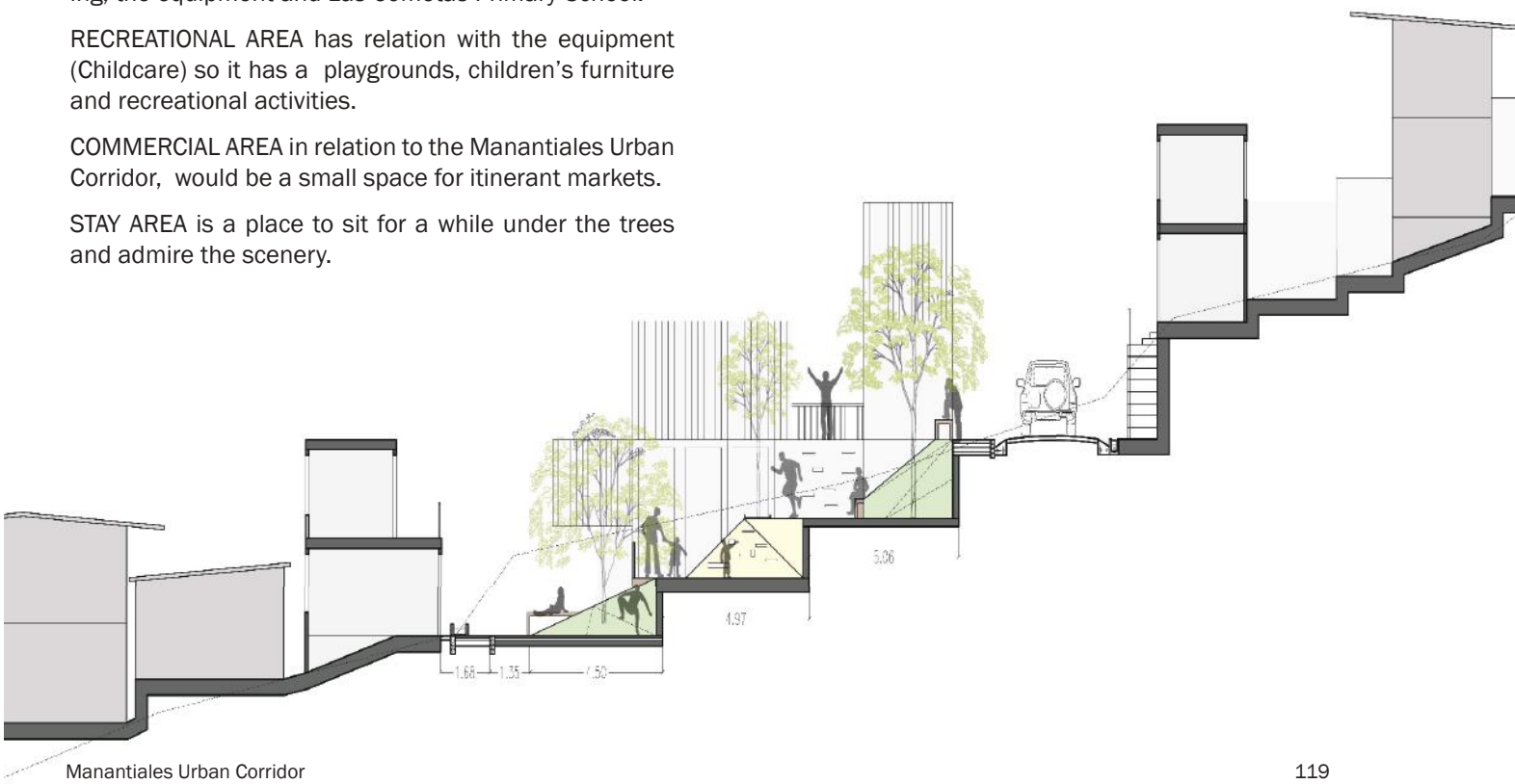
The small park has several areas in relation to the housing, the equipment and Las Cometas Primary School.

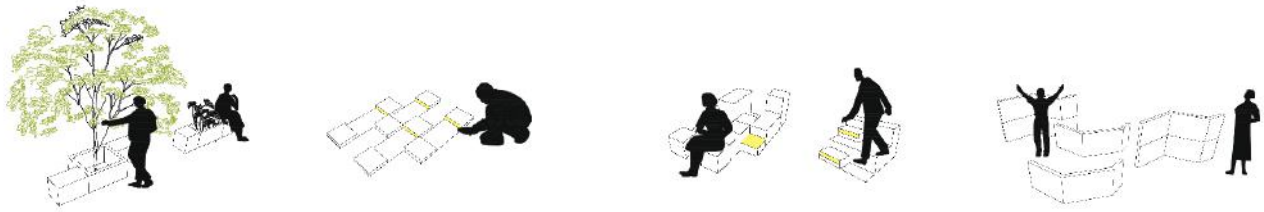
RECREATIONAL AREA has relation with the equipment (Childcare) so it has a playgrounds, children's furniture and recreational activities.

COMMERCIAL AREA in relation to the Manantiales Urban Corridor, would be a small space for itinerant markets.

STAY AREA is a place to sit for a while under the trees and admire the scenery.

The configuration of public space through surface treatment inclined slopes and stairs, allowing the spatial diversity and the use relations with the topographic condition.





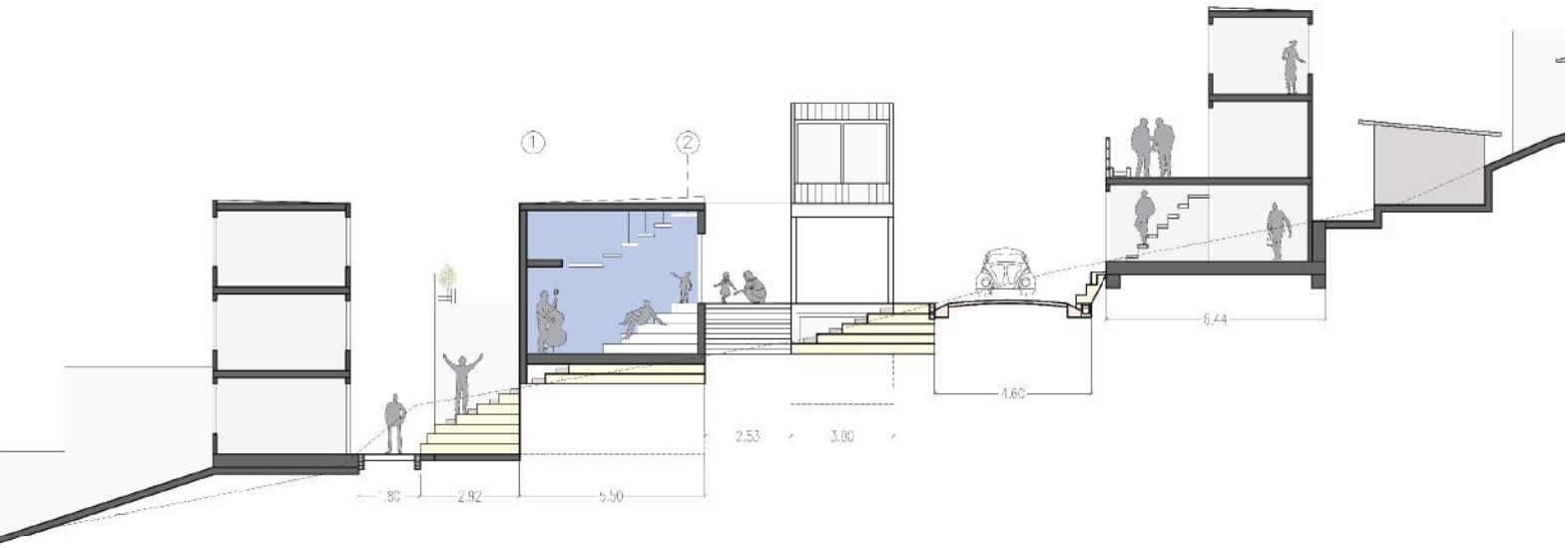
PUBLIC AMENITIES

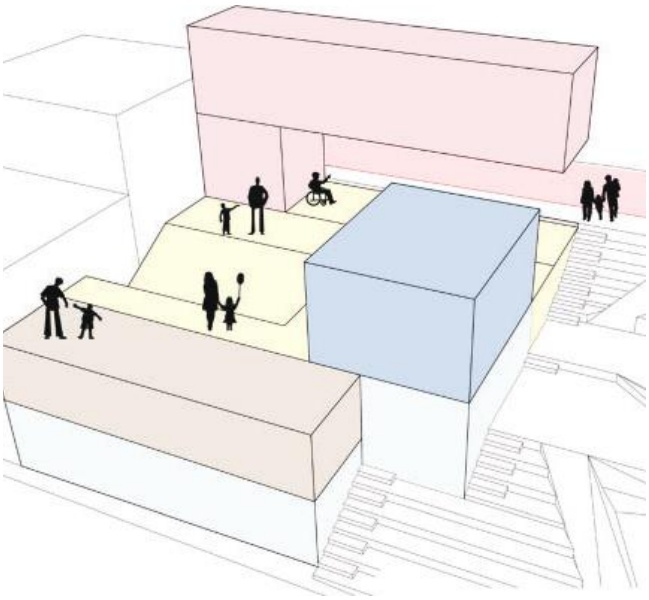
TOY LIBRARY + CHILDCARE

WHY IN THIS SPACE?

Because there is a deficit of public amenities, in number and in program that will truly serve to the community of Manantiales neighborhood.

The program chosen for this public building is that of a small-scale Toy library + Chidcare, using the connection with Las Cometas Primary School, address the high rate of child population (0-5 years). Moreover, this area would be able to function well at night for the qualifications of the adult population in different trades.



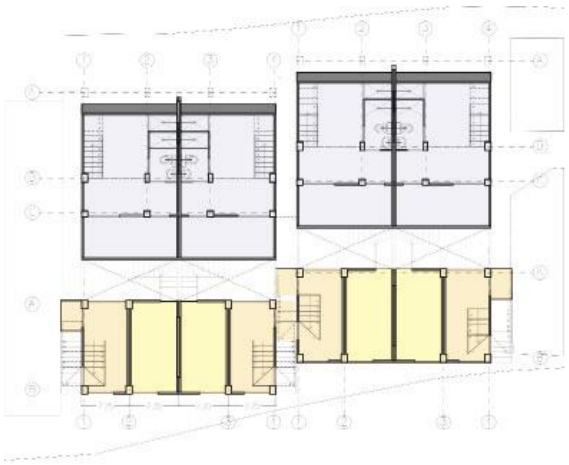


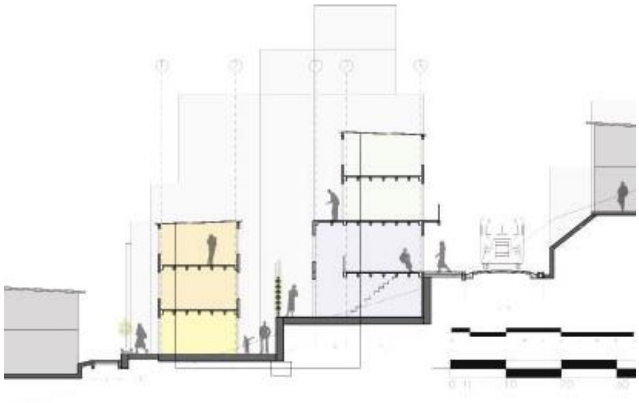
HOUSING

PROGRESSIVE HOUSING BLOCK

This block type is taken to respond in a differet way to the public space and the landscape, trying to generate a higher density with the possibility of having a lot in height adhered to a conventional structure and some collective systems.

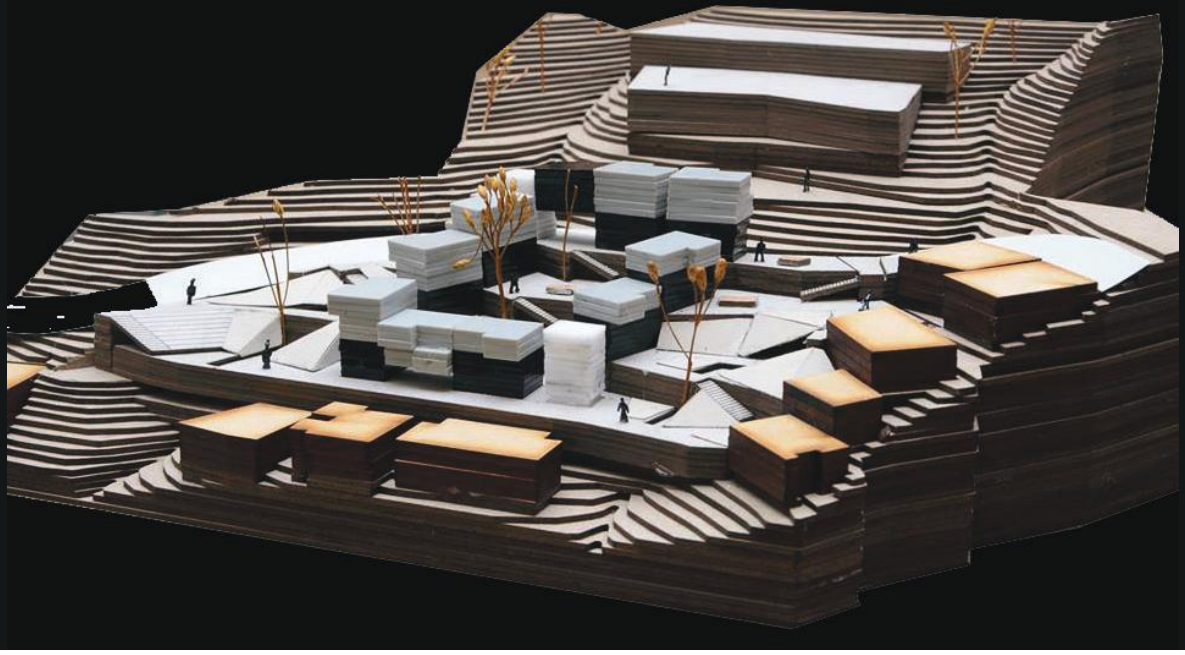
The idea is to have a conventional structure in particular more rigid and upright, to which will to add one more metal structure, flexible and diverse, allowing volumetric differences terraces and spaces that generate less conditioned, which they are designed by the inhabitants in 1,5m x 3m adicionables modules framed exterior social areas. They are designed to cantilever added.





BETWEEN CREEKS

Valeria Henao + Juanita Montes + Sara Serna



Project unity “Between Creeks” , located on the east side,has manifest phenomenas like ammenities absence, failure of the road network, high number of homes in areas of flood risk therefore given its proximity to streams and sliding due to the steep slopes. The project aims to act as an urban articulator and generator of income, solving the disconnect that exists between the center of the neighborhood and the project area and generate new revenue opportunities, like training and housing for the community. It aims to create a urban small-scale project, which starts from the adequacy of existing roads and creating new footpaths to improve accessibility, public space, ammenities and housing.

Also a number of crops that are managed by the community, generating new jobs, accompanied by training of production, that gives the necessary tools to the comunity to make the process of collection, production and marketing of products of the crops.

Finally Creating a progressive model of housing where the isolated hausing and block are hybridized, giving answer to the creeks and the main road, with simple technologies developed to construction, creates a block that is shaped gradually adapting to the topography starting from a module that answer to each household, and the user develops gradually while the family grows.

MAIN ISSUES

RISK

Lack of amenities for activation of new nodes that generate new economic dynamics

WALKS

Road networks with low qualities doesn’t allow the correct accesibility to the neighborhood

HOUSES

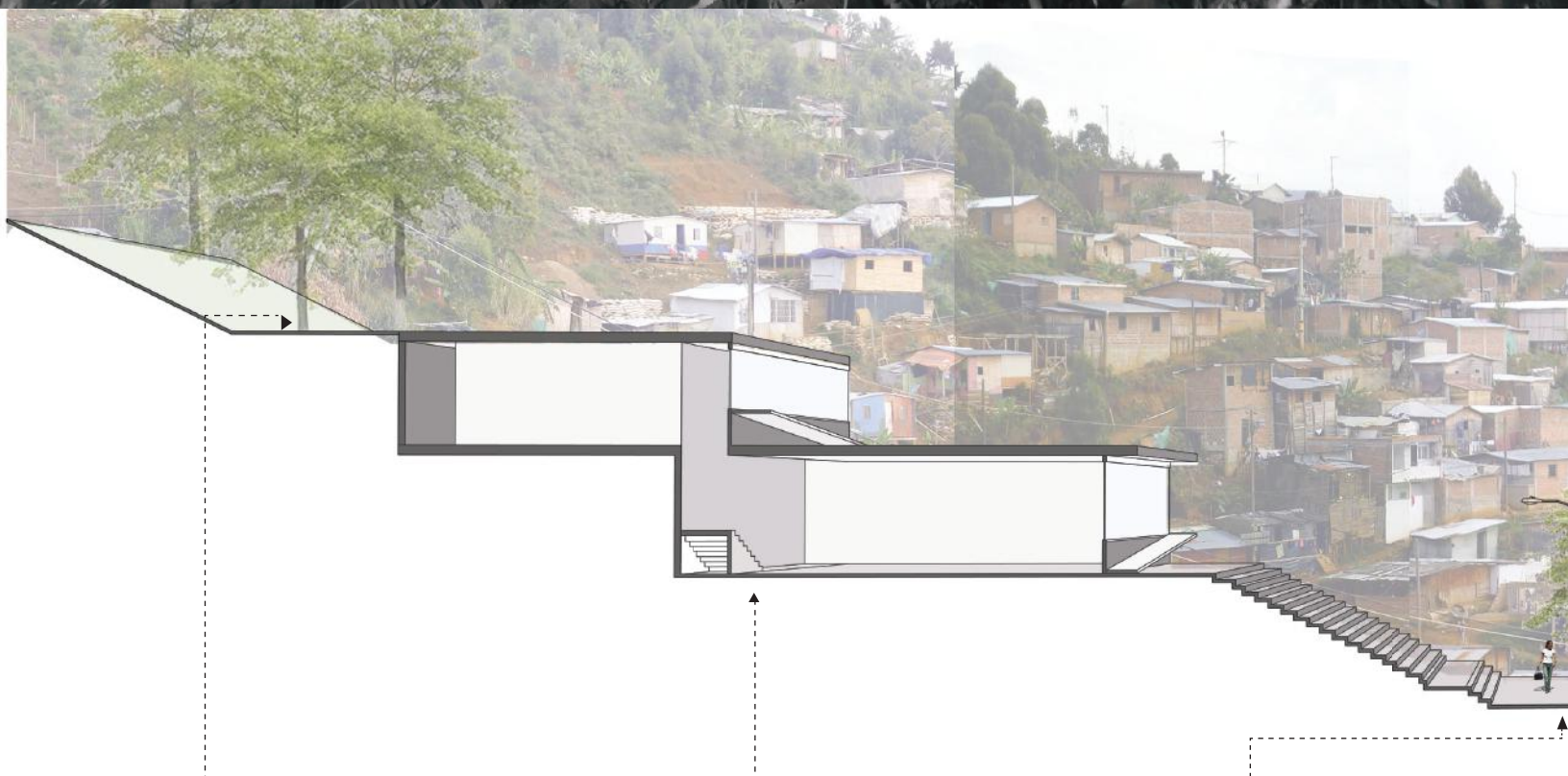
Houses located at the edge of creeks with risk from flooding

SEWER

Houses located in high slope with low chance of expansion

SLOPE

Footpaths with a high slope and in very poor condition



PRODUCTIVE

-Take advantage of views and tophography

-Control and direction of growth

-Specialized places for income generation

PUBLIC AMENITY

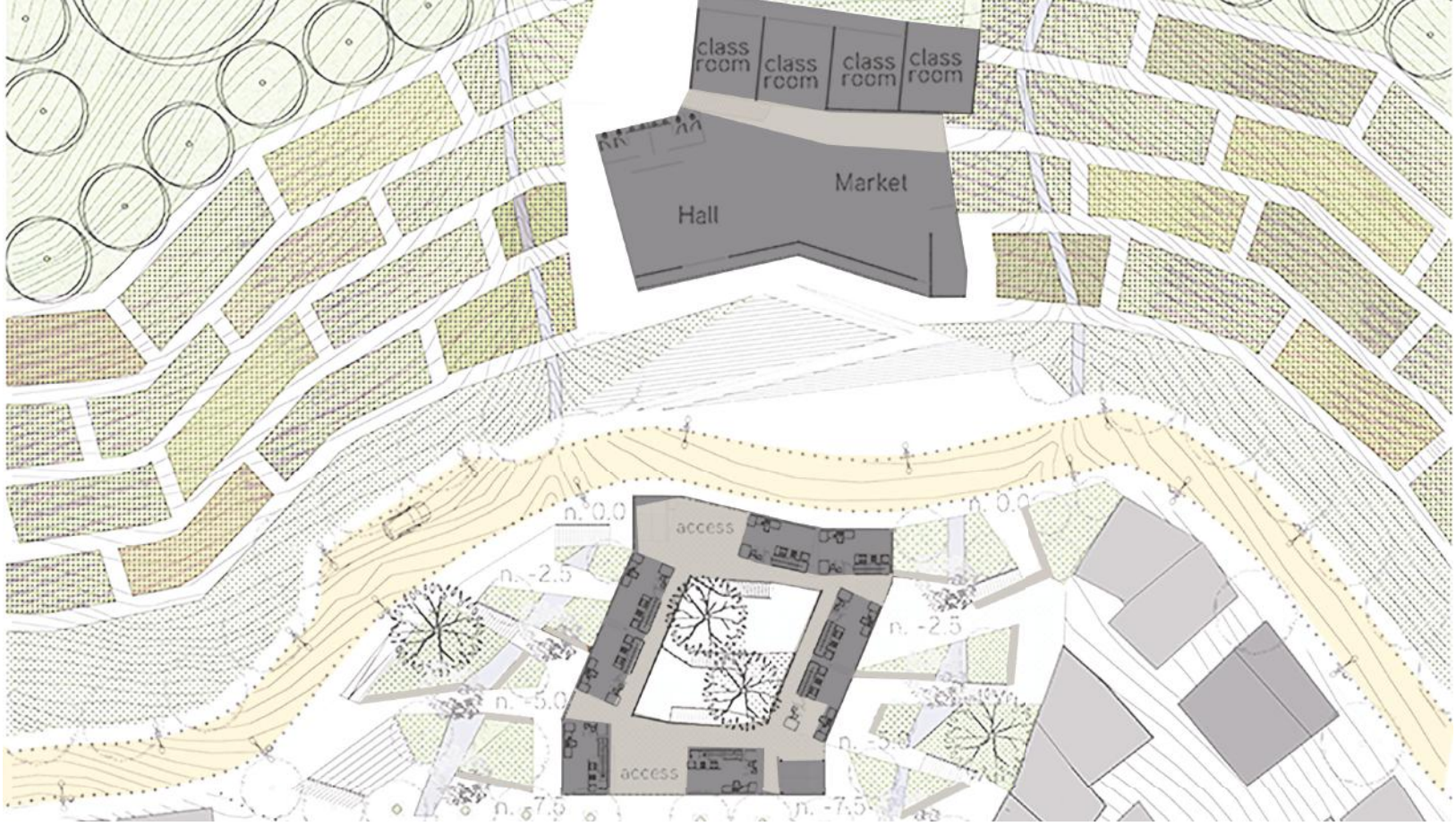
-Insertion of new public amenities

-Generation of learning spaces for the comunity

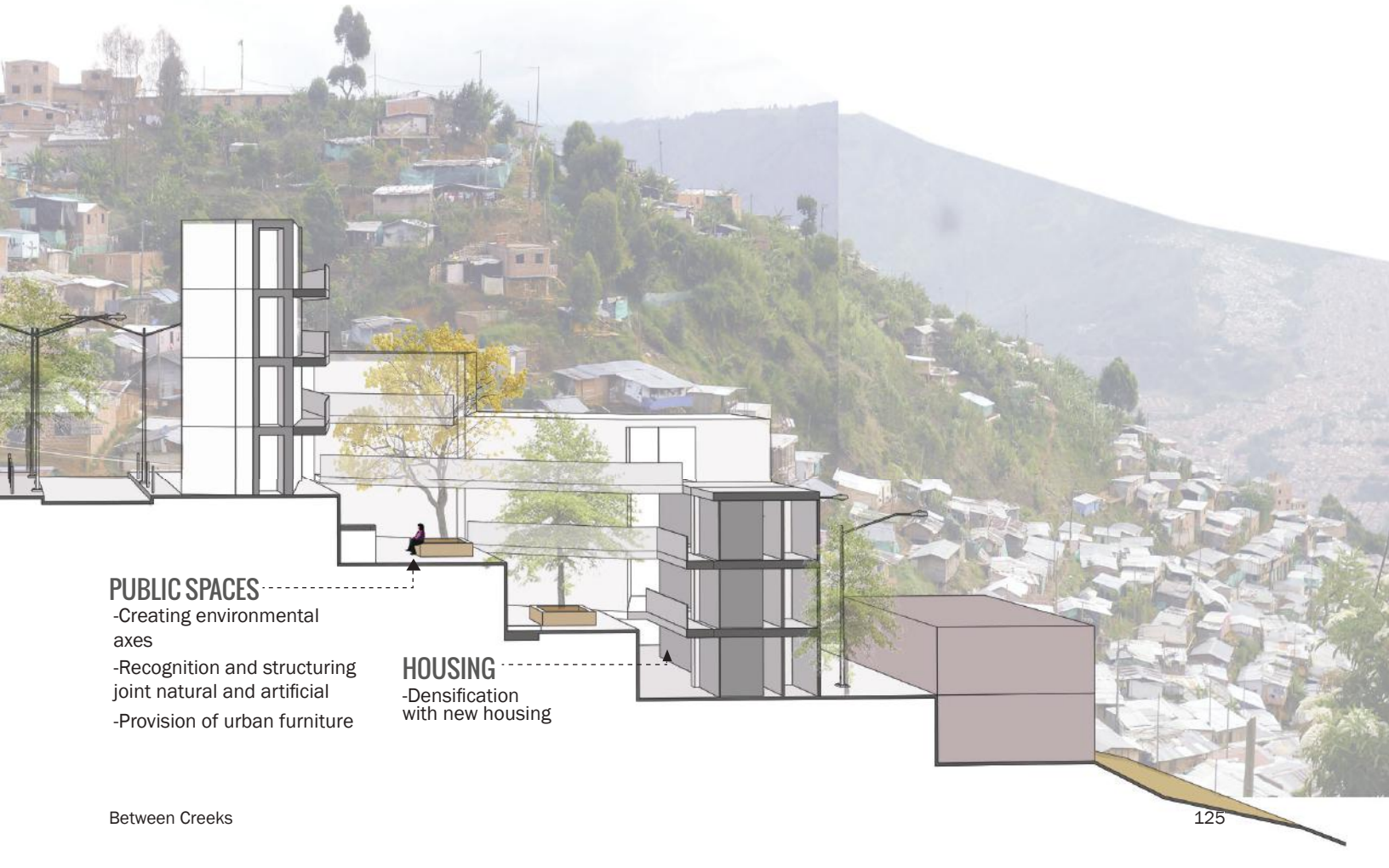
MOBILITY

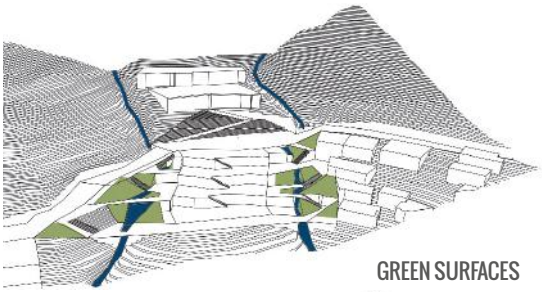
-Join path system with public space

-Improving mobility network

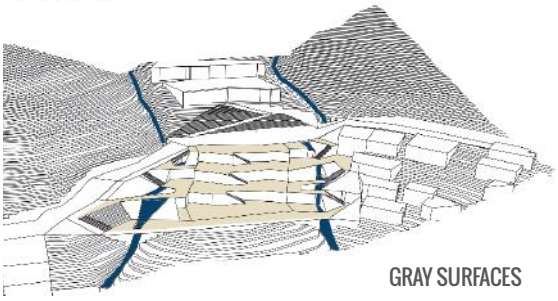

class room
class room
class room
class room
Market
Hall
access
access
n. 0.0
n. -2.5
n. -5.0
n. -7.5

SITE PLAN

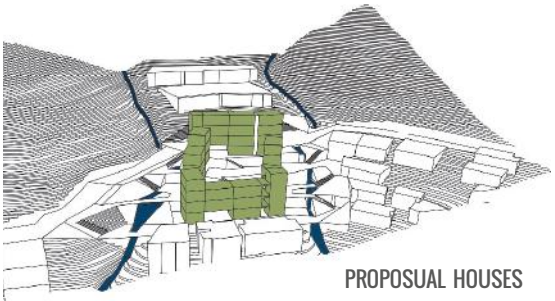

PUBLIC SPACES
-Creating environmental axes
-Recognition and structuring joint natural and artificial
-Provision of urban furniture
HOUSING
-Densification with new housing



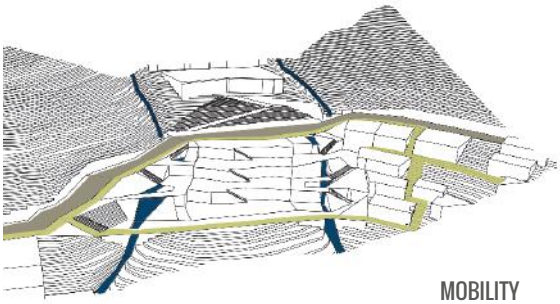
GREEN SURFACES



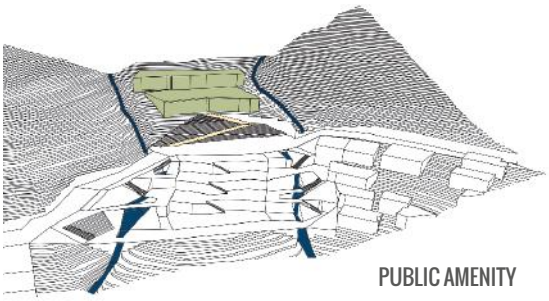
GRAY SURFACES



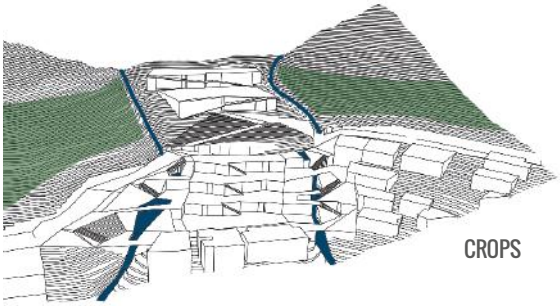
PROPOSUAL HOUSES



MOBILITY



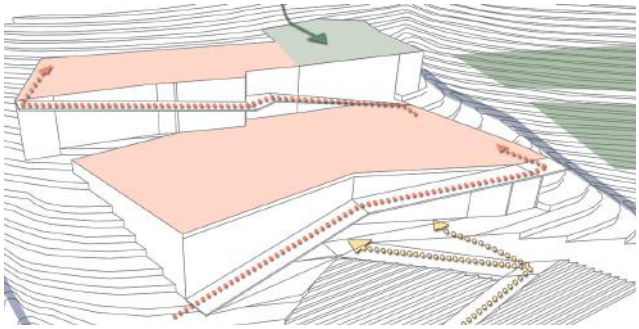
PUBLIC AMENITY



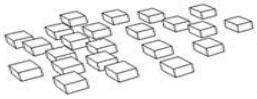
CROPS

PUBLIC AMENITY

A productive park, consisting of crops and production center and training to ensure food security, income generation, employment and growth control in areas with high slope. The connection to the housing is given through the street and the steps that make access to the amenity Direct relation since the crops to upper floor of the center of agriculture and production to make the most of topography and views.The crops are divided into edible and purification of water basins. The builing will be an accompaniment to the people to make the most of the product of crops.Take advantage of the topography to build crops for income improving the quality of life of residents with food safety and employment generation



ISOLED HOUSE



-Can be built by user according to their opportunities

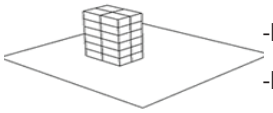
-Allow expansion

-Relationship with the street

-No common spaces

-More land ocupation in relation to the number of housing units

BLOCK MONOFUNCTIONAL



- It is built entirely from the beginning

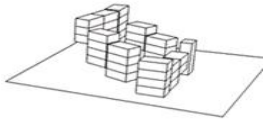
-Not allow expansion

-Poor relationship with the street

-Generates comon spaces

-Less land ocupation in relation to the number of housing units

HIBRID



-Can be built by user according to their opportunities

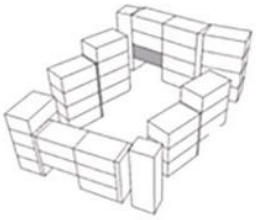
-Allow expansion

-Relationship with the street

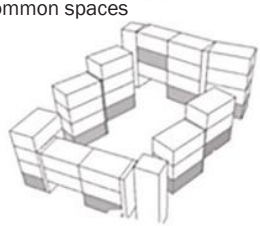
-Generates common spaces

-Less land occupation in relation to the number of housing units

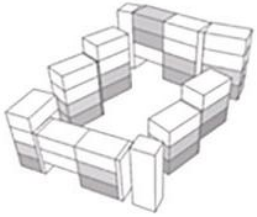
HOUSING



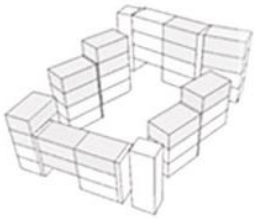
Common spaces



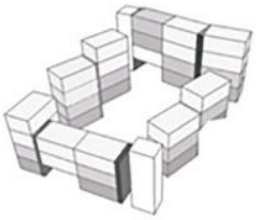
Productive housing



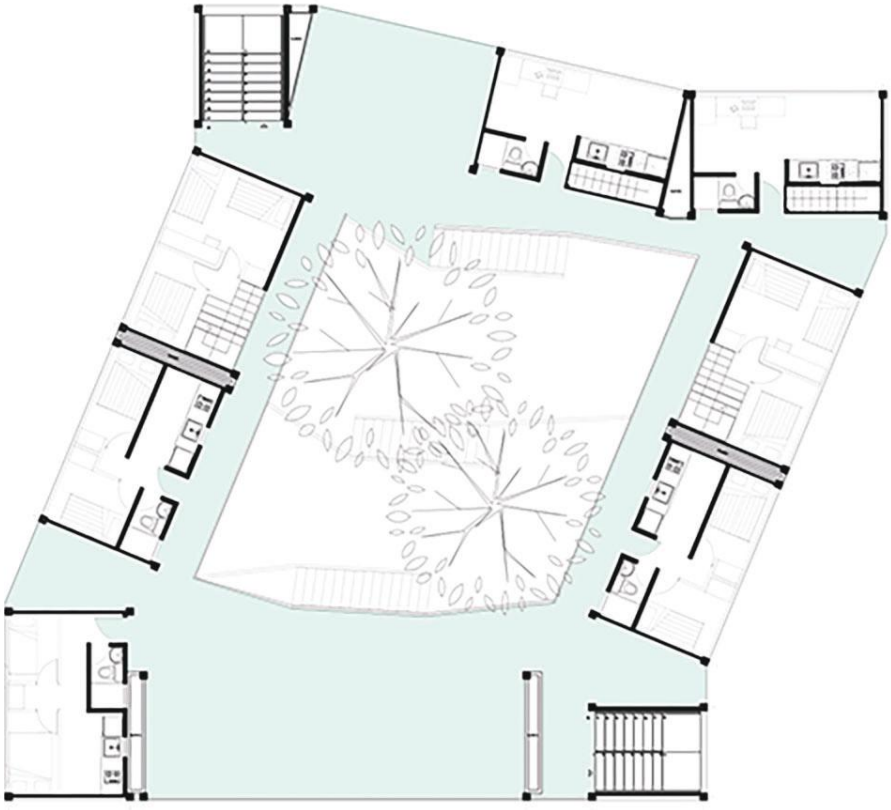
Productive expantion



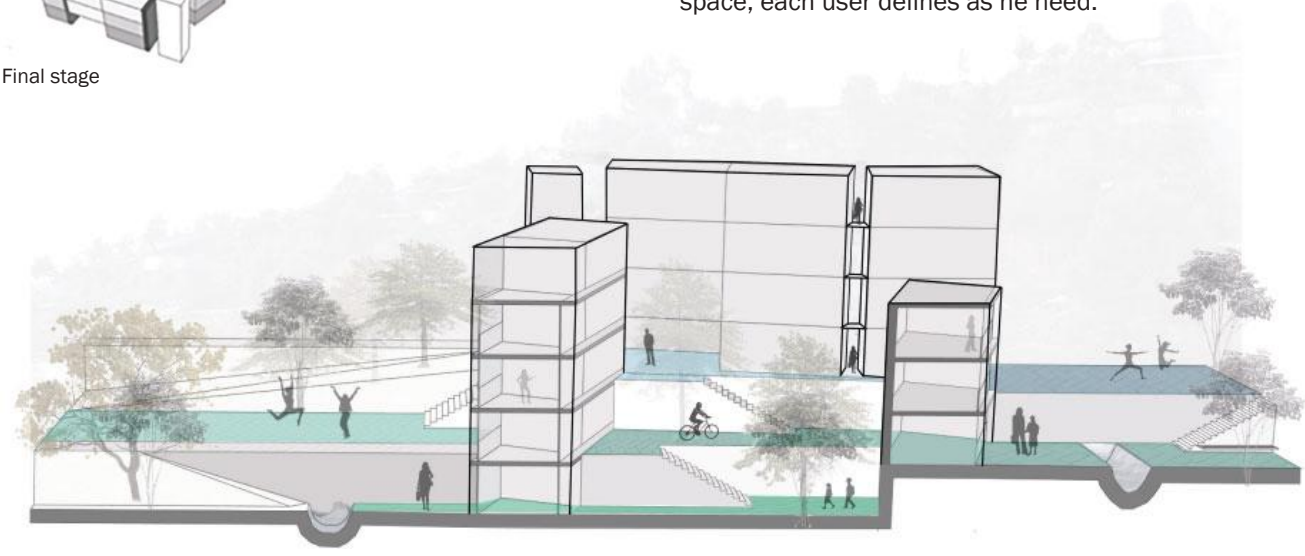
2nd Typology



Final stage

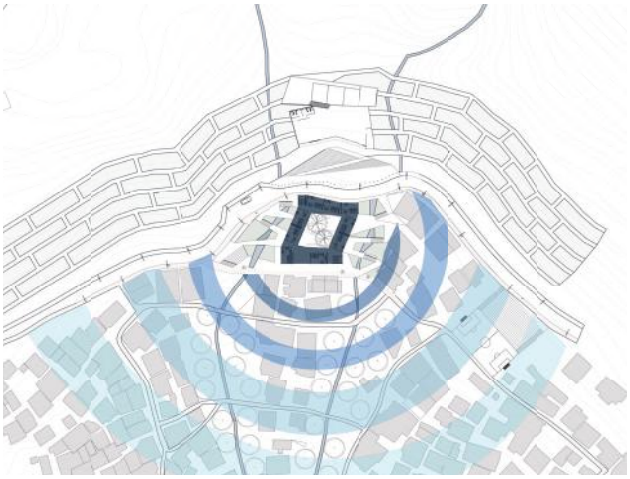


The building is born as an assembly, where the union of the housing units conforms a whole building, these units act as autonomous pieces, like boxes on a shelf, they also have a wide variety of uses and open spaces that the users can make use of.The building have diferent uses , commercial, productive , common spaces and housing. This is divided into two types, one or two levels , these uses are not zoned , allowing diversity in the building.The building is open to the visual of the creek and ranges to have access offered by the valley.Housing modules , start with the basic services area, accompanied by a genreric space, each user defines as he need.



INCREMENTAL HOUSING

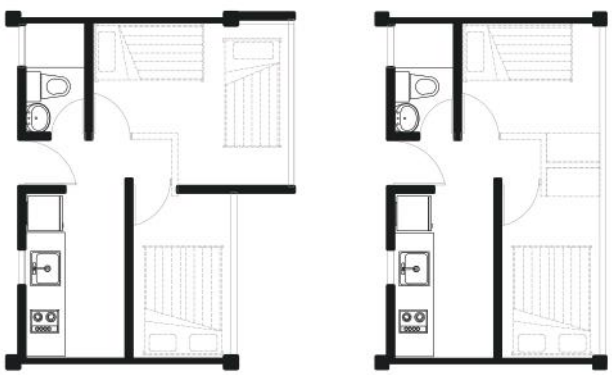
Typology of buildings proposal acts as a catalyst for growth, it is the first stage of intervention, which eventually can be replicated in the rest of neighborhood, considering it was intended to respond to the particular characteristics of the place, adapting to the slope and social conditions thereof. It is an idea incremental growth and land occupation.

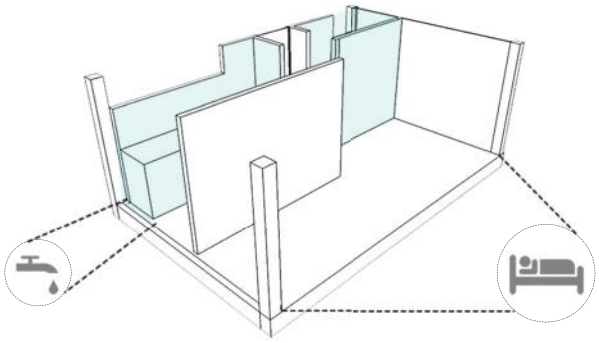


PROTOTYPE

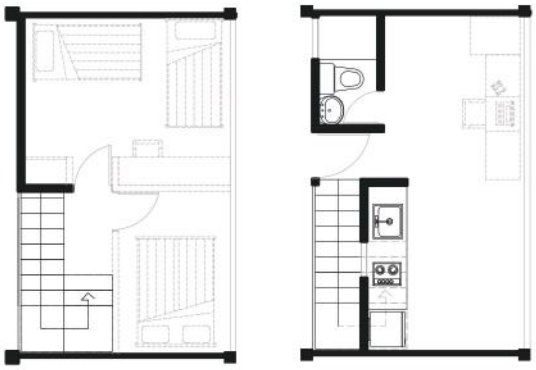
IMPLEMENTATION

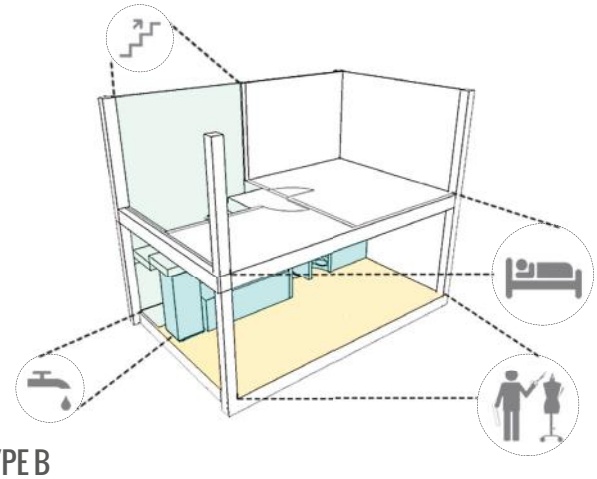
TYPES OF HOUSING





TYPE A





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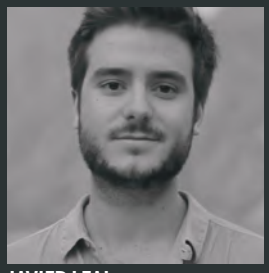

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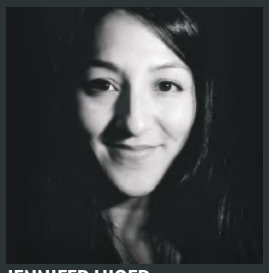

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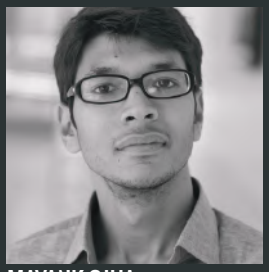

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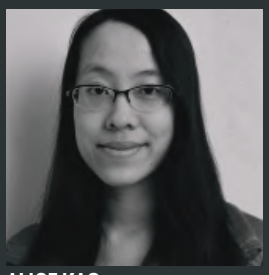

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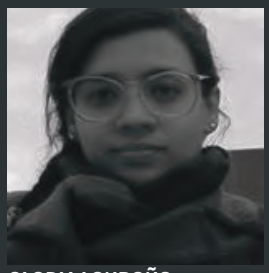

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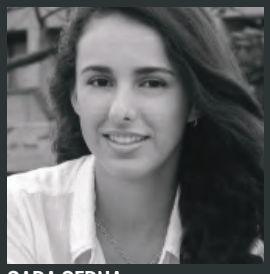

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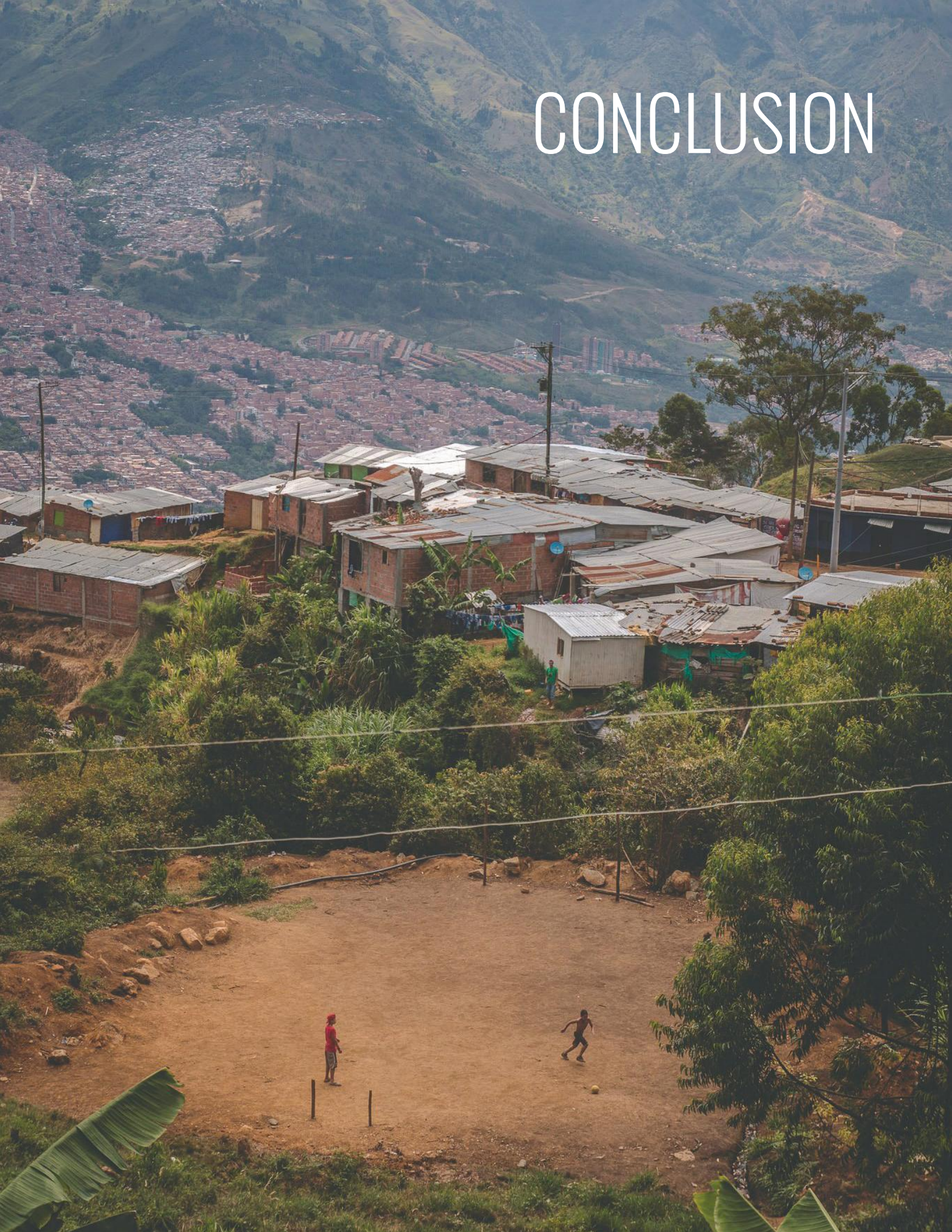
CONCLUSION



Behind the overused fact that the planet has crossed the threshold of being 50% urban lies a hidden factor that has become an important motivation for research: Most of that growth is the result of informal settlement development, or in what are pejoratively called "slums." In fact, if we just look at urban growth, we have seen, over the last century, an accelerated growth of informal settlements (slums). Today, informal settlements represent one-third of the urban population and account for one-third of all urban forms on the planet—making them the most common form of urbanization in the world. By the year 2050, informal settlements will represent one-third of the total world population and half of the urban population. Given the scale of growth of informality in the last half-century, the traditional practices of destruction and eviction as tools of control can be seen as failing. In short, the current legal framework to control the growth of informal cities is insufficient to supply the needs of the millions of urban poor.

What this data show us is that today, we lack the disciplinary tools to stop this phenomenon. In general, the tools that municipalities, governments, and international organizations use to deal with the concept of informality can be divided into two types of practices: removal and palliation. In removal practices, the informal urban form is demolished and replaced by a planned one. The most common tool of this type is the Urban Renewal practice. Urban renewal was a champion in England in the 1850s (Palliser, Clark, and Daunton 2000). This tool was also widely applied in the United States in the 1940s' "urban renewal" (Weiss 1980; Chronopoulos 2011). The tool of urban renewal deals with poverty as an urban pathology that the city must remove for it to survive. Here, the problem resides in linking economic, political, and social issues of urban poverty with its physical manifestations.

The second group of tools can be called palliative practices. In these practices, acceptance of the informal urban form is the norm. Projects are generated to provide these spaces with the services of the formal city: water, sewer, power, transportation infrastructure, public amenities, and land tenure. From this group, perhaps the most popular tool consists of giving land tenure to individuals, promulged by Hernando de Soto (Soto and Instituto Libertad y Democracia (Lima 1989)). This tool has been publicized as a mantra by the World Bank across the globe. Significant improvements to the quality of life of communities living in informal settlements are achieved with these tools. However, these improvements only arrive after years—and in most cases, decades—of state neglect, with grave consequences in terms of social capital, the environment, health, and security.

Today, the large number of new informal settlements are making it more and more evident that new tools and strategies are needed to intervene in these places if we want to create better conditions for those living in them. We argue that two important research efforts are necessary: first, better understanding the process in which urban informality flourishes, and second, presenting strategies to be applied during that process. This studio focuses on that second goal: creating strategies that look at the current process of informal development, anticipating what could happen, and proposing an intervention on the informal process of city-building as a way to improve present and future conditions in these spaces. The Manantiales de Paz community, in the municipality of Bello, part of the metropolitan area of the Aburra Valley commanded by the city of Medellin, is an example of such a process.

Manantiales de Paz is a neighborhood in the threshold between the urban and rural divide in the city of Bello. The neighborhood was founded in 2009 through the process of land-taking, or "invasion," as such a process is called in Colombia, on a plot of land that is predominantly state-owned. Over the past few years, this area has seen unprecedented growth, resulting from limited land resources in the region and the elevated number of migrants arriving to the region. These migrants come to the area for two important reasons: first, because of the attractiveness of the metropolitan area of Medellin to rural dwellers, and second, because Colombia's internal violent conflict generates a large number of displaced families seeking refuge in cities, which are seen as safer places. Colombia is among the countries with the largest numbers of Internally Displaced Persons (IDPs) in the world. Due to its ongoing conflict, Colombia today has around four million IDPs. These IDPs arrive to the cities with all their economic resources depleted and cannot find housing in the formal market.

Manatiales de Paz has gone from 320 inhabitants in 2009 to 7,400 today (2015). This current process of urban growth presents immense challenges for all stakeholders. For city officials, it is impossible to address the issue of illegal land-taking through traditional methods like massive evictions. The city is unable to evict them because relocating 7,400 people is a complicated task, for which the city has neither the institutional capacity nor the political capital. For the community of Manantiales de Paz, population growth is taxing their local organizational system beyond the abilities of its members. In the absence of state presence, this creates the opportunity for new entrepreneurial (illegal and armed) actors to co-opt community services that should be provided by the city. Moreover, landowners are presented with the challenge of losing more land in the coming years if a concerted agreement is not reached. It is at this crucial moment that the work of this studio arrives at Manantiales de Paz.

The goal of this studio has been to understand Manan-

tiales de Paz's past, present and future challenges and to provide alternative projects at three spatial scales: (1) the regional and city regulations, (2) the challenges of urban growth and infrastructural provisioning in the context of informality at the expense of the urban design, and (3) a project-based solution to the condition of current neighborhood upgrades. The multiple scales of intervention that each group tackles deal with some of the most pressing questions with which the community of Manantiales de Paz is engaging today: How can they initiate a conversation with state regulators that guarantees a secure land future and the provision of services? How can a demographically expanding neighborhood grow in a sustainable way? Moreover, how can the current condition of housing and public space can be improved?

In this way, our studio has two larger goals. The first is to anticipate the future informal city and intervene creatively in the process of informal city creation. A creative intervention like this includes tackling problems that are not yet visible and, in some cases, not yet present and not yet necessarily identified by the current stakeholders. The second is to deal in advance with the currently defined list of needs and priorities of the community of Manatiales de Paz.

The goal here is to intervene in the process of informal city-building by correcting some city-building processes and providing corrective measures for conditions that can generate problems in the future. These corrective measures are implemented at the physical, regulatory, and organizational scales. Immediate corrective actions entail finding common ground between the goals of local governmental organizations and the community, with the understanding that the community would continue to be housed there, and that state services and policies would need to be provided at some point. In the long run, infrastructure provisioning becomes a significant hurdle in which preventive measures can possible lower future costs of the final upgrading that happens at later stages of informal city development.

The first section of the book focuses on the future of Manantiales de Paz and on how to anticipate future needs of the neighborhood based on its current trends. It concentrates on the provisioning of infrastructure in the context of informal settlements. All projects in this section were led by the planning and architecture groups at the MIT School of Architecture + Planning. They first engage in mapping and forecasting a particular issue of concern (water, mobility, growth, security, and housing) and later develop a design process that tackles the outcomes of that identified issue. An example of that mapping and forecasting process is in the project *Growth Buffer: Risk Management and Mixed-use* (Jin You and Quiying Sun). Here, a series of mapping and forecasting measurements provide a glimpse into the future of the informal growth of the metropolitan area and the Manantiales de Paz neighborhood. The project focuses on how to redirect the expected growth away from the high-risk slopes.

This studio is informed by an interest in community work and the knowledge and recognition of their narratives and building processes. The projects presented here value those community processes and provide ways in which they can be used as venues to increase social capital and produce better urban spaces. A good example of this is the project *Urban Interplay: Incremental Growth Strategies for an Inclusive Transit-Oriented Development* (Lindiwe Rennert and Mayank Ojha). Here, local mobility practices are scaled up over time in an ever-growing spiral in which community-managing capacity and economic capital growth go hand-in-hand. The interlocking of community resources with city mobility infrastructure and private landowners' interests creates a possible future in which all parties' goals are met.

Other projects tackle future problems that are not visible at this point, like the project *Democratic Network* (Alice Kao and Javier Leal Navarro), which links the way in which the informal city develops its urban form with the way in which criminal actors exert spatial control on these territories. As a way to tackle this known phenomenon (Samper Escobar, Massachusetts Institute of Technology and Department of Urban Studies and Planning, 2014), this project proposes a way to provide a more permeable and secure urban grid that is enhanced by establishing public buildings that distribute community security homogeneously along the present and future territory of Manantiales de Paz.

The latter two sections, developed by the Universidad Nacional de Colombia (its schools of planning and architecture), the local partners, focus on projects that tackle current problems using existing local regulatory and technical tools. The section by participants of the Unal–Master planning program, *Enclaves Of Solidarity*, designs a strategy that creates opportunities for the community and local government to engage in concrete projects. This project uses the input of community actors, generated through exercises of social cartography, to develop and understand the main needs of the community: environment and risk management, urban growth and morphology, housing and land tenure, food security, and income generation. This project identifies current stakeholders and presents each one with concrete tasks to develop in the short and long term to improve each of the community interests.

The final section, *Structuring Borders: Designing On The Edge*, presents an urban upgrading strategy for Manantiales de Paz, dividing the neighborhood into five homogeneous sectors and providing innovative housing solutions for each one. This section focuses on understanding

the relationship between formal housing design and the traditional incremental process of housing that currently happens in informal settlements. These projects explore different typologies that, by improving current conditions, can also be expanded and modified as their counterparts in the informal city. An example of such a process is the project *Between Creeks* (Valeria Henao, Juanita Montes, and Sara Serna), in which individual units grow incrementally, forming a new type of block. This incremental process replaces inadequate housing and also creates a new cluster block (urban block), which modifies the urban grid of the neighborhood and improves the connectivity and quality of urban public space.

This project as whole contributes to the current academic and institutional discussion of how to intervene in informal settlements around the world. In academic terms, this contribution comes out of exploring the potential for thinking about the process of informal city building not as pejorative or as an urban pathology, but as a given condition that needs to be understood—a process that can be a tool of urban design. In taking this view, new futures for hybrid city building processes (formal and informal) have been imagined. The academic exercise provided a space for exploration that cannot emerge from the offices of international agencies or local planning offices that are restricted by the tight regulations and complex political processes that are attached to the complexity of dealing with informal settlements all over the world.

In concrete ways, the charrette (the first phase of the studio, on-site in Medellin) served to put the community association leaders of Manantiales de Paz in the same room with the directors of the planning department of the city of Bello. This is a first step to start any negotiations. The work of the students also provided the first accurate map of Manantiales de Paz and a physical model that is now housed at the community center and library in the informal settlement, which helps community leaders determine how to move ahead in their continued growth. These products, alongside the projects in this book, are small contributions in terms of the immense challenges with which this community is confronted, but we believe they are important steps toward achieving the community's goals. They are examples for how academic work can positively engage with improving the quality of lives in informal communities. Finally, this academic project has consciously used the leverage that academic institutions bring to the problems of Manantiales de Paz as a way to bring parties together and awareness to the challenges and potentials of working with this specific community.

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WHAT IF INFRASTRUCTURAL INTERVENTIONS COULD ARRIVE EARLIER?

This book is the product of an international collaboration between Massachusetts Institute of Technology's School of Architecture + Planning, Universidad Nacional de Colombia sede Medellín's Architecture Department and School of Planning, and Manantiales de Paz. The goal of this project is to envision, plan, and design prototypical criteria and design alternatives as relevant proposals for decision makers in the community. The project also aims to make institutions and other stakeholders aware of various alternatives for the growth of informal settlements in Manantiales de Paz.

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