

REGENERATIVE HOMES

Agroproductive Dwelling for Tenjo, Cundinamarca, Colombia

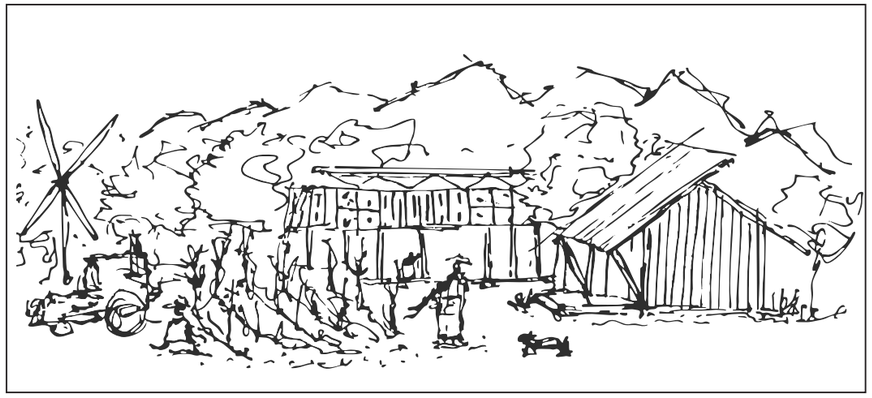
Master of Science Program in Architecture for Sustainability

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Because of God, who has held me all this time,
for my parents, family and loved ones, who built this path with me
and for you, who always believed and supported me.

It all started with an idea.

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Abstract

The continuous urbanization of the Bogotá Savanna has transformed municipalities such as Tenjo into dormitory towns for urban residents, driven by population growth, limited urban land, and an unsustainable housing market. This process has generated complex territorial transformations, including gentrification, pressure on agricultural land, threats to food security, and the loss of native ecosystems. At the same time, the arrival of new inhabitants opens possibilities for alternative ways of inhabiting rural areas while preserving their productive character.

Today, our challenge is focused on accommodating new inhabitants coming from Bogotá without risking the productive and ecological character of the surrounding rural municipalities. Housing therefore needs to be conceived not as an isolated element, but as part of a productive and ecological system. New ways of producing from the land, such as aquaponics and beekeeping, a deep understanding of the site's climatic conditions, and the allocation of collective cultivation areas are some of the strategies followed in this design proposal.

Starting from the redefinition of our way of relating to nature, the project discusses, as a theoretical basis, how rurality and the way of living in it have been transformed across different periods of Colombia's recent history. Conceptions of nature have shaped rural territories, making them unstable and vulnerable to urban pressure. Rediscovering ourselves as part of natural cycles, rather than as entities apart from nature, is a fundamental shift needed to reflect a transformation in our lifestyle through our footprint in the world: architecture. A look into how ancient civilizations occupied and lived in the place can also broaden our understanding of how to work the land and inhabit the landscape.

This thesis explores what it means to inhabit the countryside today through an architectural approach in which design mediates social and ecological relationships. The project proposes an agroproductive housing model integrated into the site as an alternative way to live in the rurality of Tenjo, part of the Bogotá Savanna region. While social values characteristic of rural territories, such as fraternity and cooperation, are recovered from the negative bias surrounding rurality in the country, natural and ecosystemic relationships are enhanced through the agricultural and architectural model.

Furthermore, the project aims to provide a reference proposal for future rural development in the Bogotá Savanna region, hoping to contribute to better models of living in the countryside while addressing today's challenges. The proposal understands that living in rurality is more than merely occupying it; it is about integrating its social, productive and ecosystemic dynamics positively as part of a broader system.

Regenerative Homes

Agroproductive dwelling for Tenjo, Cundinamarca, Colombia

Objective

To design a housing model based on productive cells that integrates rural activity, strengthens the relationship between the inhabitants and the territory, repositions the role of rurality in contemporary society and fosters more integrated community dynamics.

Justification

Landscape transformation in rural territories requires new architectural approaches capable of integrating habitation, production, and ecological regeneration within a single system, in order to achieve more sustainable and resilient communities and territories.

Personal connection

I have been a first-hand witness of the territorial transformation behind the urbanization of Tenjo. Even though our ways of inhabiting contributed to the problem, there is still time to explore better ways of relating with rurality and shifting its current trajectory.

Problem

Rururbanization of Tenjo, Bogotá Savanna
- Tension between Bogotá and the countryside
- Tenjo territorial complexity

Living in the countryside, is not inhabiting rurality

Living concerns
- Population growth
- Urban housing models in rurality

New actors and homogenized housing models call for alternative ways of inhabiting rural territories

Users concerns
- New agents in rurality
- Rural appeal and historical role through Colombian history

Current rural practices are degenerative and unsustainable

Activity concerns
- Traditional ways of land labor analysis
- Agricultural activity around Tenjo
- Nature relationship

State of art

Current ideas and research about the topic

- Guide of rural housing in Bogotá
- Traditional rural house
- Urban-inspired alternative

Theoretical framework

Key concepts and theories

- Nature
- Neo-rurality
- Regenerative Architecture
- Ecoproductivity
- Circular Economy
- Permaculture

Conceptual Map synthesis of the research - Self elaboration

Proposal

Architectural response

Design categories
- Bioclimatic strategies
- Climate resilience
- Adaptive spaces
- Ecoproductivity and site integration
- Community fostering

Productive Cell

That could operate as a system rather than as an isolate element

- Connect to local productive networks
- Redeem relationship with the territory
- Offers ecosystem services
- Reinterpretates rurality´s role

Local materials application
- Wood
- Brick and clay materials

Innovative production techniques
- Permaculture
- Aquaponics
- Bee Keeping

Regenerative Architecture
- As part of the natural cycles

Conclusions

Expected outcomes and applicability
- Lifestyle adapted to rural requirements
- Dignified rural inhabitation
- Applicable strategies for real rural contexts

Referential framework

Hortus - Herzog & de Meuron	Technical reference
Steirereck am Pogusch - PPAG Architects	Productive rural systems reference
Quinta Monroy - Elemental	Community and adaptability reference
Waru Waru agricultural fields	Landscape and productive reference

Introduction

Urban population has increased significantly over the past centuries. In the 19th century, approximately 10% of the world's population lived in urban environments. Today, more than half of the global population resides in cities, with even higher figures in highly urbanized countries such as Colombia, where 83% of the population lives in urban areas. Global organizations and observatories project that by 2050, nearly two-thirds of the world's population—around 6 billion people—will live in cities. This trend is expected to intensify in South America, where countries such as Colombia may reach close to 90% urban population (Our World in Data, 2025).

This scenario represents a major challenge for present and future generations. Agricultural and rural activities appear to be increasingly marginalized, as populations continue to migrate from rural areas to urban centers. This shift raises critical concerns regarding food production and long-term food security. While cities and towns have grown exponentially over recent decades, rural populations have not increased at the same rate. In Colombia, despite urban populations increasing fivefold between the 1950s and 2010s, the rural population has remained relatively stable. Today, approximately one-sixth of the population is responsible for producing food for the entire country, and projections suggest that by 2050, this figure may decrease to just 10% (Solano, 2012).

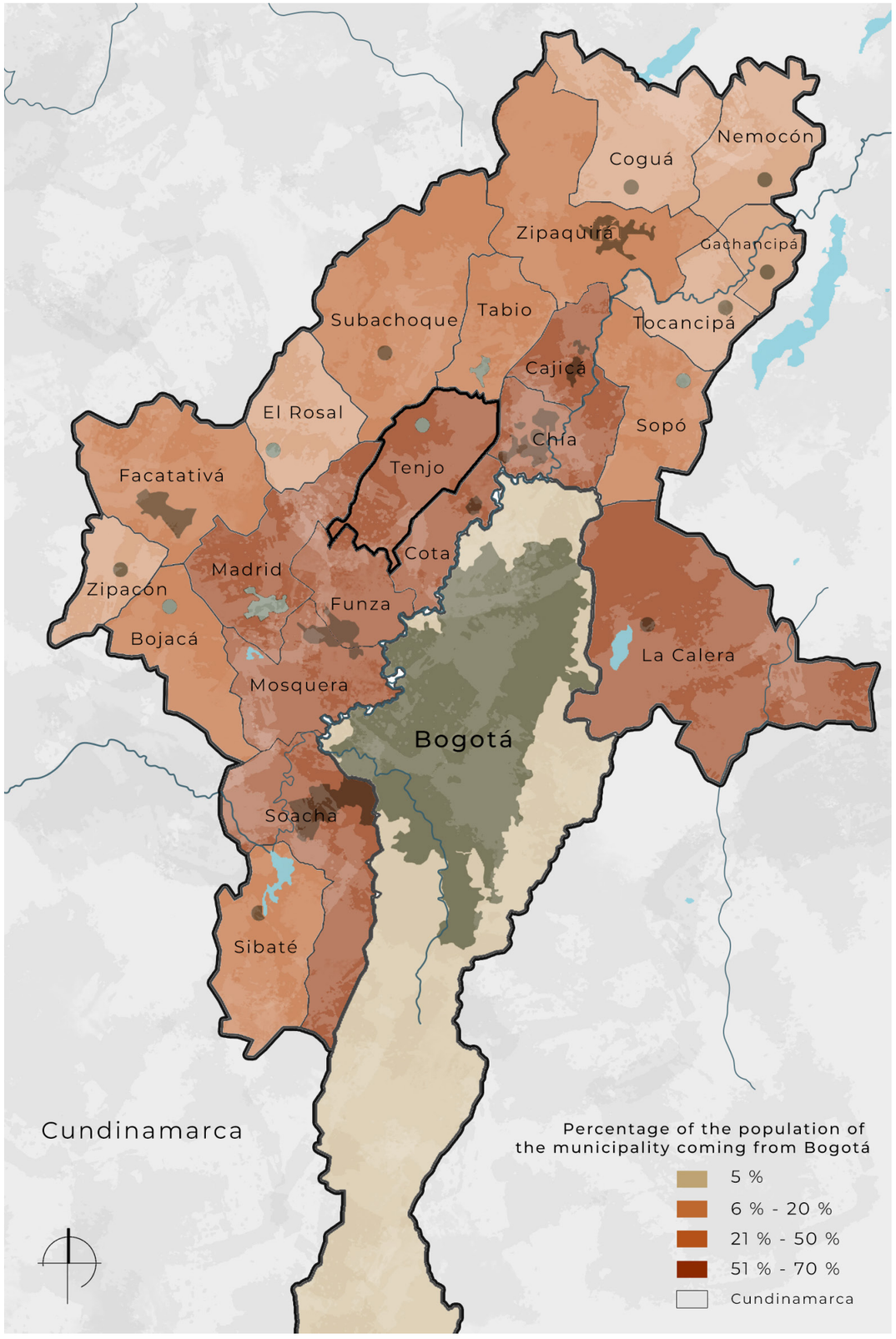
The rural landscape is being transformed. A growing population does not necessarily mean that cities alone are expanding; it also means that what we used to understand as rural is no longer the same. Rural settlements are increasingly becoming urbanized, and what we once recognized as rural is gradually disappearing from our memory. While towns may be growing in population, agricultural producers are not.

In the Bogotá region, one of the largest metropolitan areas in Latin America, representing around 20% of the national population, this situation reflects what is happening worldwide. The urban population has grown due to various factors, but infrastructure has not developed at the same pace. Today, the city faces a critical situation in terms of well-being, with traffic congestion and gentrification as major concerns. The "city of all" may not have room for everybody and urban life has become a thing to avoid for many citizens. Just in 2014, 167,763 people from Bogotá moved to nearby towns, significantly increasing the population of surrounding municipalities. Nearly 60% of the inhabitants of the municipalities in the first metropolitan ring comes from Bogotá (Alcaldía Mayor de Bogotá, 2016). The search for a better quality of life in the countryside has become a defining trend among Bogotá's inhabitants. Escaping from the chaotic conditions of urban life has become one of the main reasons for moving toward more rural settlements.

In response to this demographic trend, the real estate market has delivered numerous projects aimed at meeting this demand. However, these developments often contradict the traditional activities and ways of living of rural territories. They are, after all, a direct translation of urban dwelling into rural contexts: larger gardens and more shared spaces, perhaps, but ultimately the same types of apartments and houses found in Bogotá's neighborhoods.

Tenjo, a medium-sized municipality of approximately 25,000 inhabitants located west of Bogotá, is one of the places that has received significant migration from the city and is therefore undergoing a transformation of its rural landscape. Areas that were historically used for vegetable and tuber cultivation are now being replaced by large gated housing developments. Agricultural land and large plots have become objects of real estate speculation.

My own family has also been part of this ongoing process of inhabiting rurality from an urban background. Throughout my childhood, I witnessed my parents' attempt to understand how rurality could be inhabited in a better way, bridging contemporary ways of living with productive land practices. However, the lack of knowledge and experience related to rural activities became a major barrier to this aspiration. We built an urban house in the middle of agricultural land, and progressively over the years, the desire to inhabit a traditional landscape in a more integrated way became more of an idea than a reality.



Alcaldía Mayor de Bogotá (2016) - Self elaboration

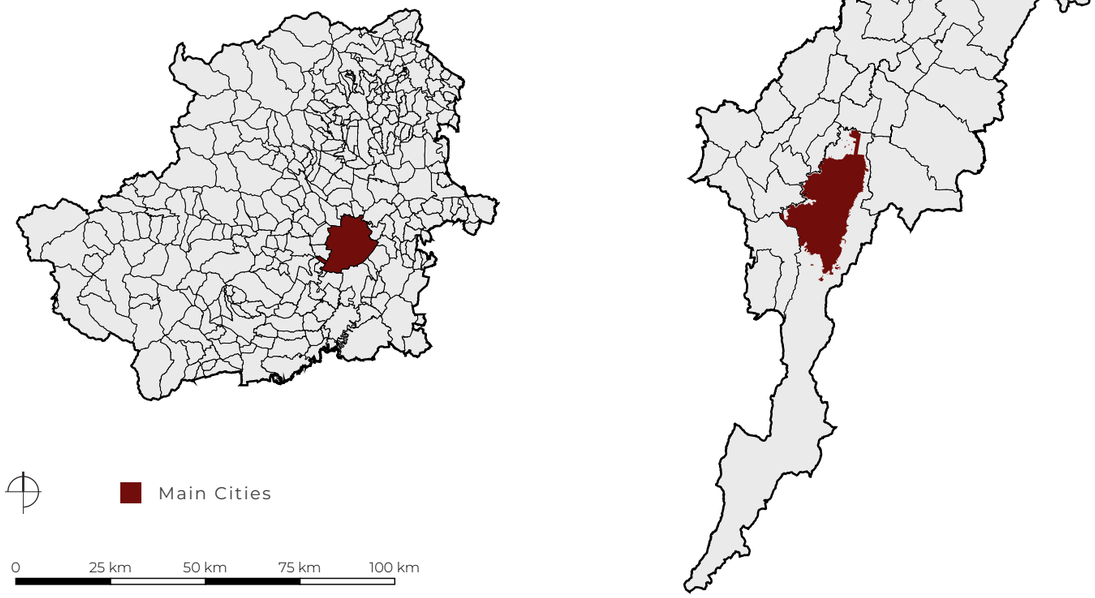
Tenjo, the town where I grew up and where my parents decided to settle 20 years ago, like any other human settlement, is shaped by a high degree of complexity. Behind its seemingly natural landscape lies a highly artificial productive system: greenhouse-based flower cultivation, which represents Tenjo's main economic activity. Nearly 3% of the territory, over 360 Ha, is occupied by around 60 greenhouse operations. The implications of this form of agriculture, which depends on controlled environments and constitutes Colombia's second-largest export industry after coffee (Marín Benítez et al., 2018), raise important questions, particularly regarding the environmental sustainability of current rural practices.

From this increasingly complex and, at times, discouraging panorama, several questions emerge: How should we inhabit rurality today? How can our ways of living engage with the rural landscape? And more fundamentally, how must our ways of living adapt in order to truly integrate with natural systems?

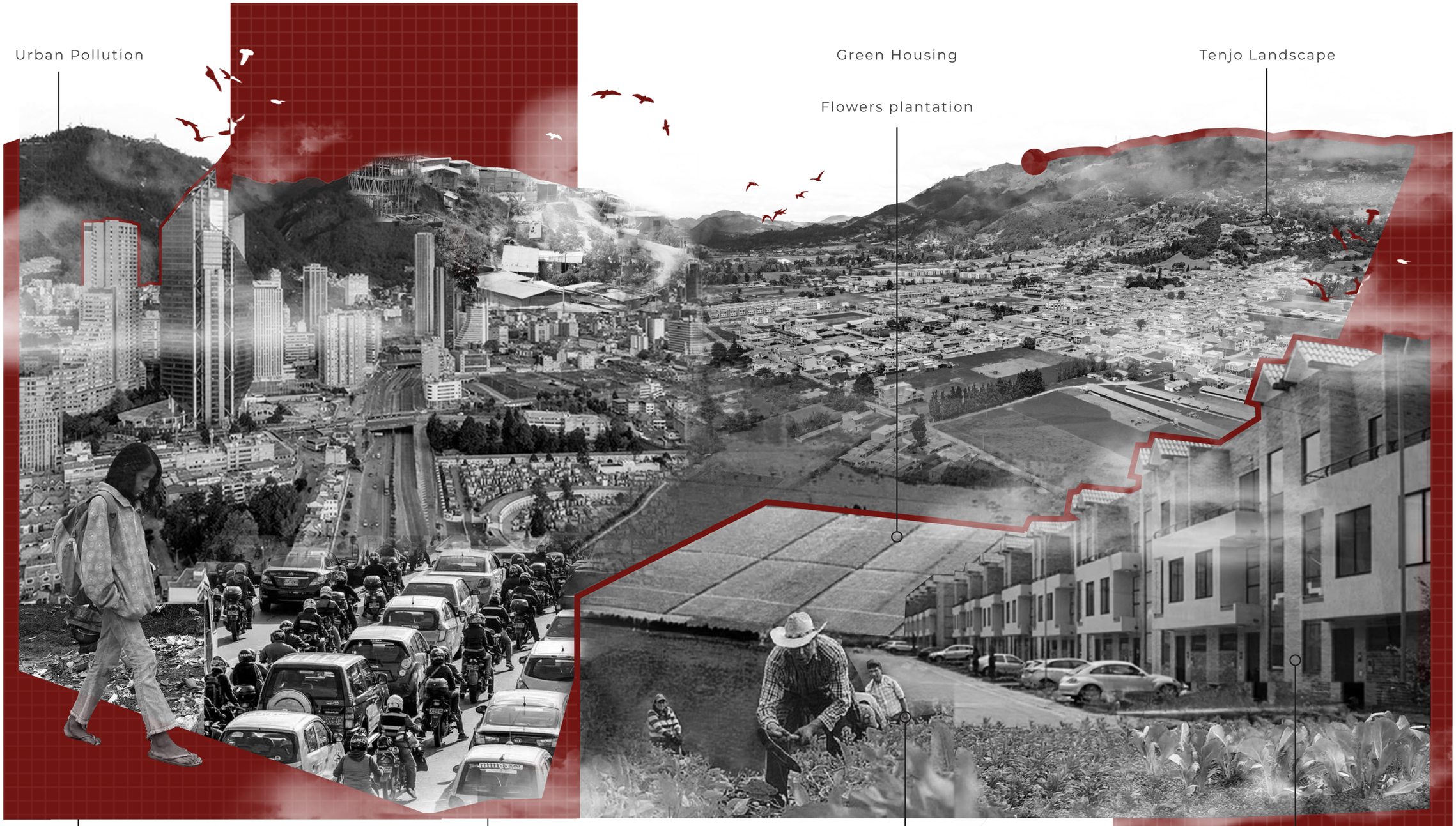
This thesis explores this discussion from a personal concern, proposing an architectural project that redefines ways of living in rurality to address current environmental and productive needs, while advancing a more integrated and relational approach to inhabiting rural territories.

Turín
6.830 km^2
2.2 million inhabitants
322 hab/km^2

Bogotá
7.150 km^2
10 million inhabitants
1.400 hab/km^2



Context comparisson: Metropolitan city of Turín and Bogotá Savanna - Self Elaboration



Bogotá Savanna Landscape Collage - Self elaboration

Problem: Rururbanization of Tenjo, Bogotá Savanna

The migration trend of Bogotá's citizens toward neighboring municipalities is a phenomenon that seems unavoidable. It is a reality to which both society and architecture must adapt in order to maintain better living conditions. These rural, vocation-based towns are being transformed into dormitory towns, where people settle while continuing to work in the main city. However, the problem is broader and more complex, and requires a deeper understanding in order to propose a suitable response.

It is a topic with diverse faces and realities, making it an ongoing and complex discussion. Even though there are many concerns related to the main issue that is the urbanization of rural areas in the Bogotá Savanna, and specifically in the case of Tenjo, Cundinamarca, it is necessary to be strategic in identifying the most relevant aspects that can be addressed through architecture. Being aware of this complexity is the first step in opening a space for dialogue and in looking toward an uncertain future.

The discussion is then structured around three main statements: (1) living in the countryside is not inhabiting rurality; (2) new actors and homogenized housing models call for alternative ways of inhabiting rural territories; and (3) current rural practices are degenerative and unsustainable. These statements address specific concerns, beginning with the conditions of living in Tenjo's rural context, followed by questions related to users and ways of living, and concluding with issues linked to rural productive activities. In order to frame the problem, these statements are developed to provide an overview of the conflicts that currently shape the experience of inhabiting rural Tenjo. These arguments ultimately support the relevance of the architectural project and position it within the broader contemporary discussion.

Living in the countryside is not inhabiting rurality

There are many real estate projects in Tenjo and its surrounding region that claim, as a marketing strategy, to be "rural." Even though, as will be discussed later, these urban developments are closer to conventional urban projects than to true countryside dwellings, the incorporation of "rurality" in their discourse functions as a form of greenwashing for most buyers. This raises an important question: what does it actually mean to be rural, and why are people attracted to it?

Despite variations in its definition across countries, according to the Departamento Nacional de Planeación (National Planning Department of Colombia – DNP, 2014), rurality is generally associated with two main conditions: (1) dispersed settlement patterns and (2) activities related to the use of the land. These real estate developments may be spatially dispersed, but they do not establish a meaningful relationship with the site or with the agroproductive vocation of the territory. This is not only a theoretical or marketing misunderstanding, but a categorical error in defining what rurality should be.

At this point, it is necessary to zoom out and reflect on what rurality has meant within Colombian society over time. Rural areas have historically been shaped by processes of forced migration due to armed conflict, as well as by persistent inequality and lack of opportunities. As a result of violence alone, 3.8 million rural inhabitants, more than a third of the rural population, have been displaced toward urban areas. Rurality has often been associated with conditions of poverty and marginalization. There is a structural lack of access to education and productive assets such as land, financial support, technology, and entrepreneurial opportunities (Osorio, 2017).

This recent trend of people returning to rural areas presents an interesting opportunity to redefine and reclaim rural territories, in what is often referred to as neo-rurality. Recent global phenomena, such as the pandemic, have further increased the movement of urban populations toward the countryside, as is also the case in the Bogotá region (González-Leonardo et al., 2022).

Among the motivations driving this shift, there are also several positive values associated with rurality. Most of the people interviewed by Méndez (2011) stated that rural inhabitants are often perceived as warm, welcoming,



Colombian Peasant Farmer

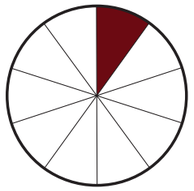
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of the minimum weighted salary of a colombian citizen is the average monthly income of an average peasant farmer.

Since 1951

7

million out of 11 million rural inhabitants work in land related activities.



Of the total population is expected to produce the food for all the country by 2030.

Diagram of rurality national reality. based on Osorio (2017) - Self elaboration.

and honest, qualities that seem to be disappeareing in urban life. Rural communities maintain cultural structures and social foundations that are considered desirable, even idealized, by some. In addition, there is a strong attraction to nature, as well as a need to alleviate physical and mental fatigue, associating natural environments with well-being and healing.

As a first-hand witness of what is happening in the territory of Tenjo, the urbanization of traditional rural plots is striking. For years, people were used to a rural landscape where crops and agricultural activity were central to the identity of the place. Today, these farms and cultivated areas have progressively disappeared, while gated housing developments and multifamily buildings have increased. The transformation appears to be ongoing and difficult to reverse, and the available data confirms that this transformation will continue over the years.

These countryside developments may offer greener environments and a calmer way of living for their users, but they do not truly engage with rurality. Living in rural areas implies establishing a connection with the land and actively working it, and this relationship must prevail in the construction of more sustainable societies and territories.

Territory itself is calling for architecture to explore better ways of inhabiting rural areas. The concern is not directed toward inhabiting natural landscapes themselves, but rather toward how we inhabit them. Since the answer remains blurred in our minds, it is our responsibility, as the generation that will inherit these territories, to explore more suitable and integrated ways of living in the countryside.



2007 - Agricultural Hacienda



2013 - Recreational Hacienda



2024 - Apartments development



2013 - Agricultural land



2024 - Sports facility and apartments



2013 - Agricultural land



2024 - Diverse housing developments

Rural land transformation overtime in Tenjo (example) - Images from google earth.

New actors and homogenized housing models call for alternative ways of inhabiting rural territories

Even though there is a growing interest among new inhabitants in engaging with land-based productive practices, there is still no architectural response that adequately addresses this emerging demand. None of the current habitational models in the territory are designed to truly reinhabit rurality in a way that improves the relationship with the surroundings or supports proper rural activity.

Mónica Ramos Mejía, a professor from the Department of Administration at the Pontificia Universidad Javeriana, represents an example of this new rurality—individuals moving from Bogotá to nearby municipalities in search of a better quality of life. Her perspective on why people choose to move to the countryside, and how they relate to their new environment, provides valuable insight for the development of this proposal.

As she explains, many people still believe that living in rural areas is desirable only if these environments resemble urban conditions. Walls and fences, common features in new rural housing developments, are contributing to the fragmentation of communities that were traditionally based on cooperation and social cohesion. Gated developments, where interaction between inhabitants and the surrounding environment is limited, reduce the potential for establishing new agroproductive systems.

Although users like Mónica, coming from diverse professional and knowledge backgrounds, are able to develop productive activities on their land and contribute positively to rural territories, these individual efforts are still insufficient to address the broader challenges. She currently manages her own greenhouse and a couple of chicken coops for household support, while also contributing to the local ecosystem through agroforestry practices and the planting of native species. She represents a Metarural condition of actively involve in rural dinamics attending social needs.

Metarurality appears at this point as a new way of understanding the role of this active neo-rural users in the countryside. They go beyond the regular condition of inhabiting rural territories from urban origins, to engage fully or partially in rural activities. This new concept is defined throught this thesis as urban-origin migrants who choose to develop their lives within a rural context, embracing the virtues of the countryside while engaging in productive land-based activities, whether for complete or partial subsistence. They possess an affinity for agricultural and ecological practices, and bring diverse forms of knowledge that enrich rural communities and generate new ways of inhabiting rural territories.

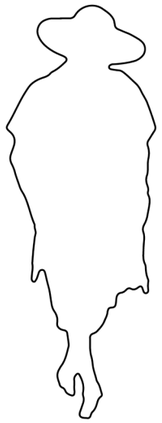
Cooperation between local actors is fundamental for strengthening rural landscapes. Integrating metarurals with traditional peasant farmers becomes the basis from which rural activity can be reactivated. One actor contributes new and interdisciplinary knowledge, while the other brings empirical and inherited knowledge rooted in the territory. Together, they may offer new answers to the current discussion. The proposal must integrate both conditions in order to involve the different actors capable of transforming the future of rural territories through interaction and hybridization.

Peasant farmers represent a social group that is gradually disappearing. Agricultural activity is increasingly at risk, as it is often based on inherited knowledge and family traditions that are being displaced by real estate pressures. The search for alternative housing models and new agroproductive systems must also consider and include traditional rural populations.

Preserving productive land use while enabling new ways of inhabiting becomes one of the central challenges for architecture. Architecture must act as a bridge between users and the land, demonstrating how society can organize itself in more integrated and systemic ways for future generations. Through direct, horizontal, and non-hierarchical relationships, both social groups—insiders and newcomers—can contribute to bringing a complex territory together around a shared purpose.

Rather than designing to specific user type, this thesis evolves by designing for a condition: Inhabiting productively rurality. In this way, all agents that match this desire can be part of the solution. This condition demands not only a rethinking of rural habitation from a social and territorial perspective, but also a redefinition of architecture's role within these systems. Rather than reproducing urban housing models, architecture must operate as a mediator between habitation, production, and landscape, enabling new forms of interaction between inhabitants and the land.

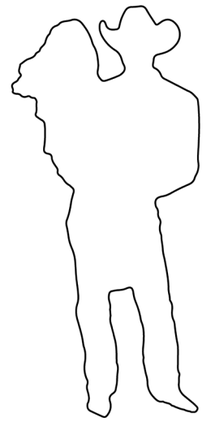
Rurality Agents involved with land activity



Peasant Farmer

Connection with rural activity

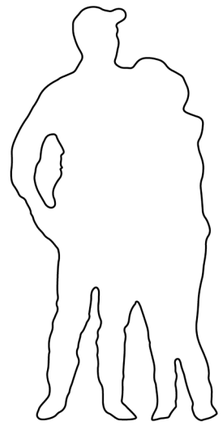
Origin	Rural - Local
Knowledge	Empiric Inherited
Economic activity	Agriculture and animal farming
Characteristics	Good values as social perception Cooperation and fraternity
Main conflict	Gentrification Equality conflicts



Neo-rural

Connection with rural activity

Origin	Urban
Knowledge	Diverse
Economic activity	Diverse
Characteristics	Urban way of living Idyllic perception of countryside Passive involvement
Main conflict	Limited connection with rural activity



Metarural

Connection with rural activity

Origin	Urban
Knowledge	Diverse / Hybrid
Economic activity	Diverse, Partially related to land labor
Characteristics	Community integration Active participation Operates within systems
Main conflict	No architecture solution Alternative responses

Diagram of current rurality users - Self elaboration.

Current rural practices are degenerative and unsustainable

Realizing that the way we have historically related to the land from a productive perspective is inappropriate was unexpected. Our rural practices and the efforts toward modernization intended to respond to global food demand have transformed Colombian agriculture into a degenerative and unsustainable system. However, this issue must be understood from a historical perspective.

Since the 1960s, the Colombian government has implemented nationwide plans to homogenize plantations and technify agricultural production. Motivated by the global food crises of the 1940s in developing countries, and by the subsequent Green Revolution—in which genetically modified seeds were promoted to guarantee food supply under initiatives supported by the Rockefeller Foundation—Colombia decided to adopt these international standards within its own agricultural sector (Medina, 2017). During the 1950s, global agricultural production increased by 12%, while harvesting areas were reduced by approximately 25%.

During the 1970s, the adaptation to new global market rules began to affect local producers. Farmers were forced to technify production processes, leading to the progressive displacement of smaller local producers by larger competitors. Land values increased and crop diversity was gradually lost. Adaptation became essential for local producers to survive within a more aggressive and demanding market.

By the end of the 20th century, under the country's neoliberal economic model, competition among producers became crucial for survival. The pressure to guarantee efficiency and profitability led to the excessive use of agrochemicals, pesticides, and fertilizers. Not using them became almost synonymous with economic failure after an insufficient harvest. Producers who managed to adapt to these conditions gradually turned chemicals into essential components of agricultural production, despite the environmental and human health risks associated with their use. As Medina (2017) states: "Current production systems cannot be sustained under this technological model, since the increasing application of these types of inputs has degraded soils and generated impacts on human health, while also contributing to water contamination, among other consequences" (p. 43).

However, the conflict may go beyond the ways in which we cultivate the land and extend toward how we understand ourselves in relation to nature.

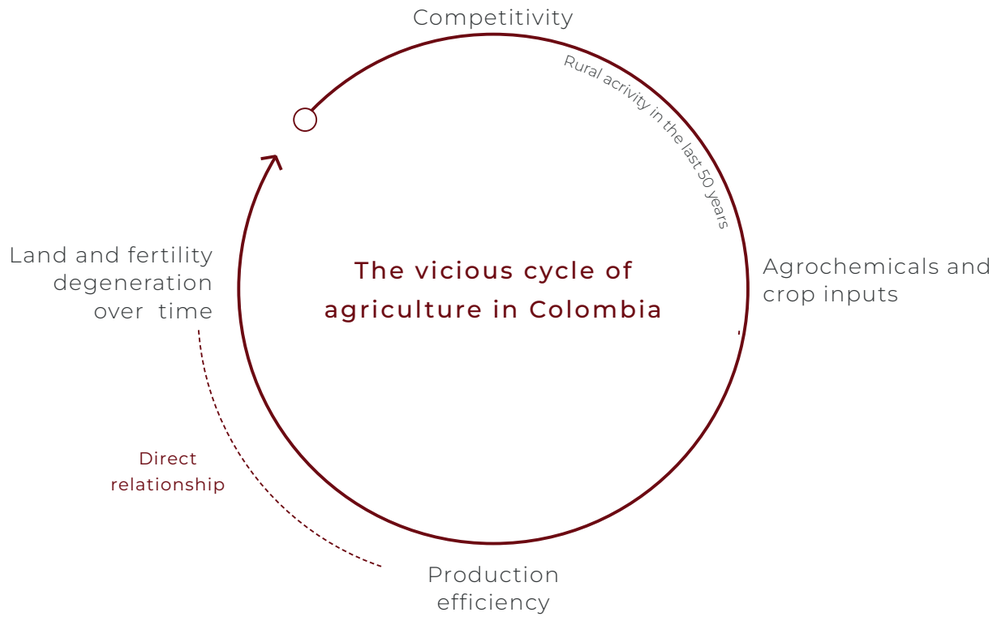


Diagram of the vicious cycle of agriculture in Colombia - Self elaboration.

Since ancient civilizations, humans have often treated nature as something that belongs to us, almost as a divine right that legitimizes its exploitation (Gudynas, 1999). Transforming our relationship with nature becomes necessary in the search for more sustainable forms of rural development and human activity. Belonging to nature, rather than owning it, may be the basis from which meaningful change can emerge. This perspective could transform how we understand agricultural activity, shifting it from a system focused exclusively on human maintenance toward one that also promotes

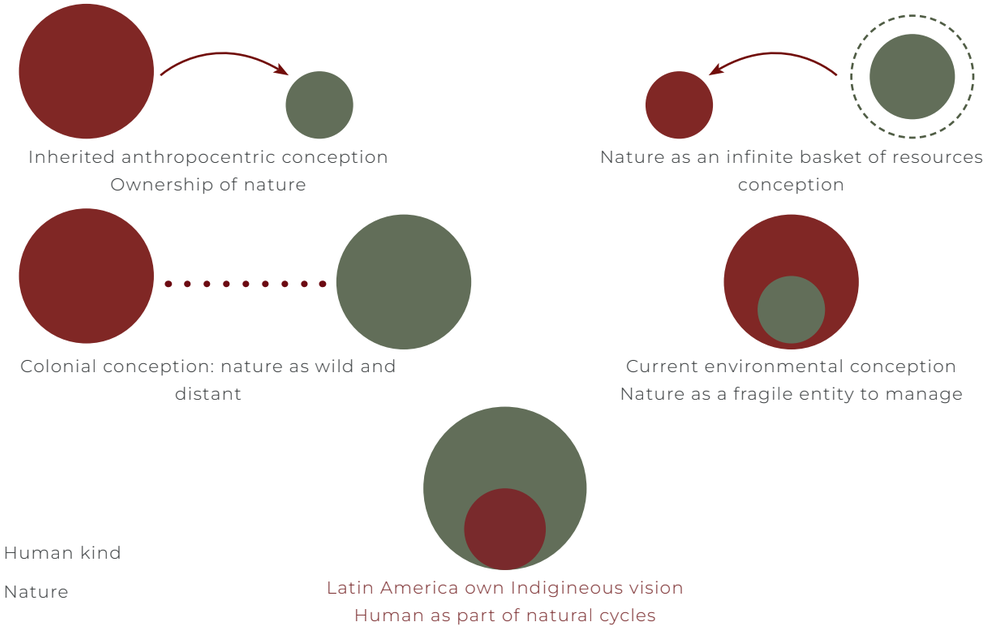


Diagram of human and nature relationship - based on Gudynas, 1999.

ecosystemic repair and landscape regeneration. This vision also resonates with the ways in which many Latin American indigenous cultures historically understood their relationship with nature.

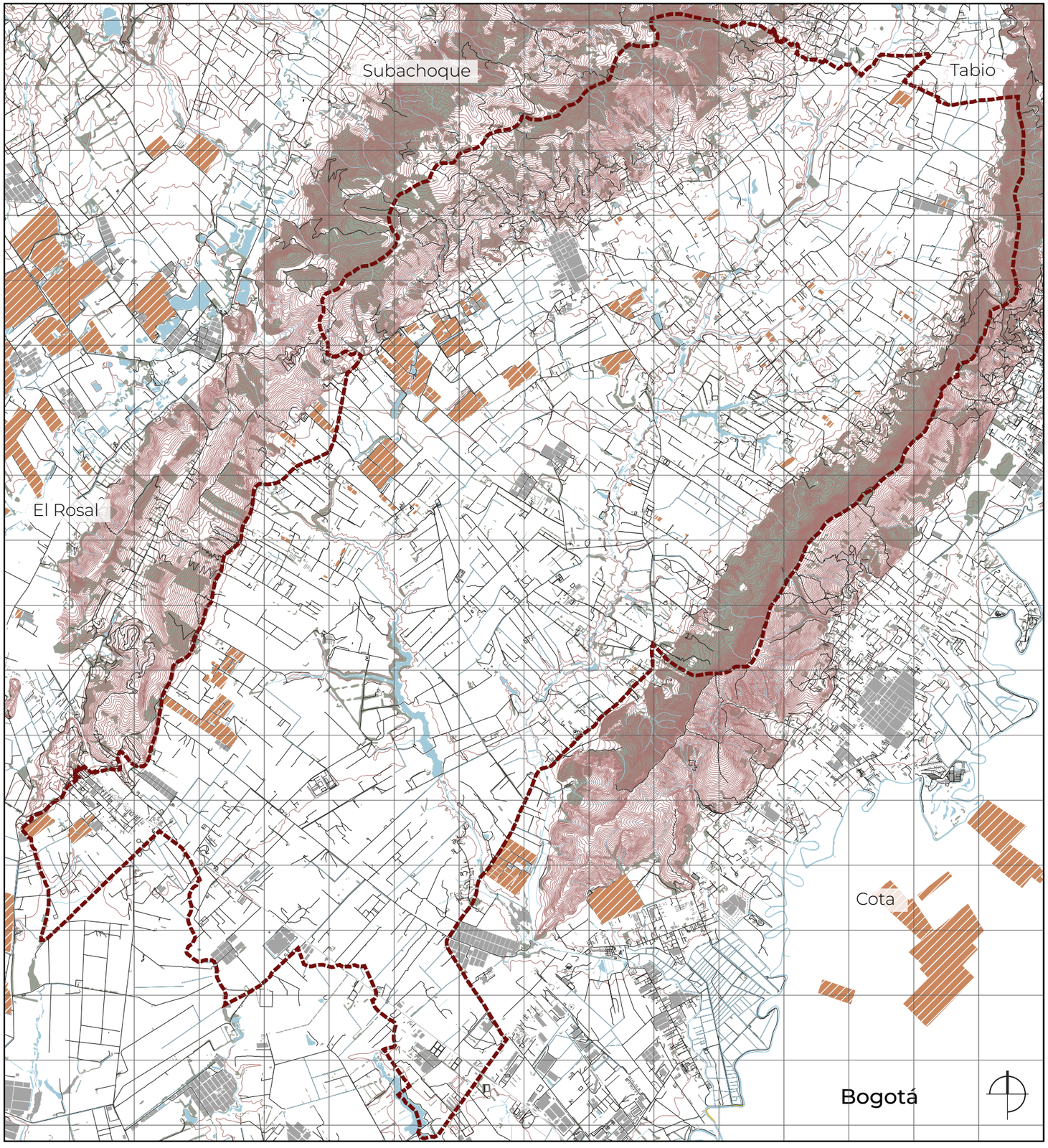
In Tenjo, the panorama reflects this broader context. Greenhouse plantations, especially flower cultivation, constitute a major environmental concern. In Tenjo, these crops are highly dependent on water resources, particularly groundwater sources that have been classified as environmentally critical for years (Marín Benítez et al., 2018). Greenhouse productive systems in the municipality require approximately one million cubic meters of water daily, an amount comparable to the monthly domestic consumption of hundreds of thousands of Colombians.

Tenjo produces more than 8 million flower stems, buds, and cuttings every month, representing around 560 tons of flowers destined for exportation monthly. The use of agrochemicals is inherent to this type of cultivation, and in many cases these substances are improperly dosed, putting at risk not only workers' health, but also other species that, although not harmful to crops, are fundamental parts of the surrounding ecosystem.

According to an interview conducted for this thesis with Juan Carlos Vera Camargo, Secretary of Economic Development and Environment of the municipality, this agricultural activity has also driven migration processes from other regions of the country toward Tenjo, particularly into its urban areas. This phenomenon, which is intrinsic to the broader Bogotá Savanna region, demonstrates how dependent rural activity has become on a single productive system, reducing agricultural diversity and distancing land labor from its role in supporting local food systems and communities. Although greenhouse crops provide employment opportunities, they contribute very little to local food supply and ecosystemic regeneration.

Roundup, Malathion, and Monocrotophos are among the pesticides and agrochemicals on which local plantations have become dependent in order to maintain productivity, often at the expense of the long-term regenerative capacity of the land. These products can be easily found in agricultural supply stores throughout the municipality and represent significant risks for biodiversity, particularly for birds, insects, and microorganisms (Rivas & Patiño, 2021). Human health may also be threatened through the excessive use of these chemical inputs in food production systems.

The transition from current production methods—which are degenerative and unsustainable for rural environments—toward more regenerative and ecologically conscious practices becomes fundamental within this proposal. Alternative ways of working the land, such as permaculture, may offer opportunities to develop cyclical and sustainable systems capable of guaranteeing a healthier relationship with nature and contributing to the construction of a more environmentally conscious rural society. Architecture must become the tool through which these regenerative methods can be spatially expressed within new ways of inhabiting the Bogotá Savanna countryside.



Map of Greenhouse crops in Tenjo, Cundinamarca, Colombia - Self elaboration.



Greenhouse crops in Tenjo - Made with Google Earth and Gemini - Self elaboration.



Vegetable Greenhouse in Tenjo - El Campesino (2016)



Flowers Greenhouse in Colombia - Metroflor Colombia (2024)

- Greenhouse crops in the municipality
- Built environment
- Tenjo Area
- Water Bodies
- Protection Areas

Objective

To design a productive housing model based on regenerative cells that integrates dwelling and agricultural production within the rural context of Tenjo, Cundinamarca, proposing an architectural alternative that strengthens the relationship between inhabitants and territory, repositions the role of rurality in contemporary society, and fosters more integrated community dynamics.

Specific objectives

1. To analyze the territorial, social, and productive dynamics of Tenjo, identifying tensions between urbanization, agricultural production, and new ways of inhabiting.

2. To define the spatial and functional principles of a productive housing development based on regenerative design and permaculture criteria.

3. To develop an architectural systemic proposal that articulates multiple regenerative cells capable of supporting ecosystem functions and enhancing the environmental value of the territory.

4. To propose an alternative way of inhabiting rurality through an architectural approach that responds more closely to the environmental and social needs of the territory.

Justification

The Bogotá Savanna needs new ways of inhabiting its rural territories. Population will continue to grow, and surrounding municipalities will increasingly become home to people migrating from the city. Architecture must therefore become a tool through which the countryside can be inhabited differently.

Inhabiting rurality is not a problem in itself; the problem lies in the way we are currently doing it. Proposing new ways of living within these fragile territories may offer both the city and the country a new chapter of hope for present and future generations. Bridging people with nature, creating resilient and cooperative communities, and reactivating rural activities through sustainable and regenerative production standards are among the goals that contemporary rural housing should pursue.

Lifestyles must adapt to new habitats. Translating urban ways of living directly into natural territories is a debt we are only beginning to recognize. Rural living should imply a relationship with the land and engagement in activities that support agroproductive systems, regardless of scale. Perhaps imagining hundreds of hectares being cultivated again may sound idealistic, but it is still possible to contribute positively to local economies and damaged ecosystems through smaller and more conscious interventions.

Territorial transformation requires new architectural approaches capable of integrating habitation, production, and ecological regeneration within a single system. These challenges must be addressed from a holistic and environmentally conscious perspective, in which the built environment becomes part of the ecosystem in which it is placed.

Architecture must therefore operate as a mediator between ecological, productive, and social systems, configuring housing units that not only accommodate domestic life, but also structure processes of production, social engagement, and territorial regeneration.

Guide for Rural Housing in Bogotá

Private agents and public initiatives have made efforts to provide a theoretical and architectural framework for inhabiting rural territories, particularly in terms of housing. An architectural competition led by the Alcaldía Mayor de Bogotá (Bogotá City Government) and the Sociedad Colombiana de Arquitectos (Colombian Society of Architects) in 2018 aimed to rethink rural housing in the Bogotá region. It sought to address three main challenges: the rural housing deficit, the low quality of existing rural housing, and the urgency of improving current living conditions. The results were later published in 2019 in the book Guía de vivienda rural para Bogotá (Guide for Rural Housing in Bogotá).

The outcomes of this initiative are valuable for establishing a current state of the art on this topic. Most of the architectural proposals developed archetypes based on the recognition of the need to differentiate between rural and urban housing solutions. Flexibility and the integration of productive activities were identified as key requirements for rural users. The proposed prototypes aimed to improve the quality of life of vulnerable populations by offering systemic, replicable, and economically accessible solutions. It was, fundamentally, a socially driven initiative.

Productivity was generally treated as an addition rather than a structural element across some proposals. The focus remained primarily on housing as an object, with productive activities considered secondary rather than essential. Even though the proposals considered conceptual aggrupation models, they can be further developed into a stronguer resolution for community engagement. Indeed, the guide that serve as a synthesis of the contest is also a base from which designers can start new approaches. There is not an unique and complete solution, but this reference settled the foundations of how a rural house should work in the Bogotá Savanna region, from bioclimatic approaches to resolutive replication models.

Traditional rural housing

Traditional rural inhabitants are also key elements to consider when discussing about the countryside society. The ways in which rural territories have been inhabited since the colonial period are largely inherited from Spanish models, adapted to local materials and environmental conditions. Throughout the 20th century, various national initiatives sought to improve rural housing by introducing modern infrastructure and minimum architectural standards, aiming to align Colombian agricultural production with global development trends (Jaramillo et al., 1989).

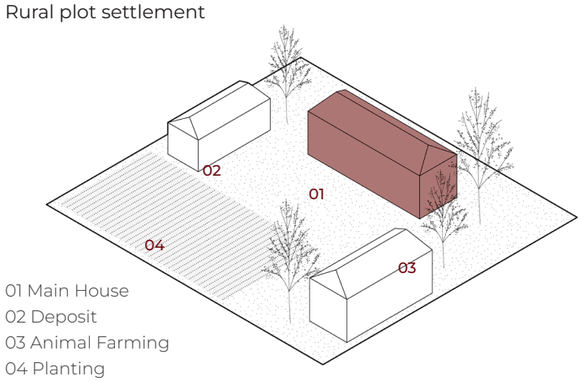
In the 1930´s, the colombian governement sought to improve rural quality of life and populate through some colonization procesess the countryside in order to guarantee food supply and economic growth. Since then, new construction methods and materials have been progressively introduced to the known traditional rural housing. Inhabitants passed from vernacular and local techniques, to prefabricated and industrial materials in recent years.

The traditional rural house is recognized for its simplicity and efficiency. Even though there are diverse housing types depending on the economic conditions of their inhabitants, the most common model among low- and middle-income families is generally organized around a central patio that distributes the rest of the domestic spaces. Historically, the house has been conceived separately from the buildings associated with the productive vocation of the land, such as barns, stables, and storage structures.

Self-construction and unplanned development have also left a mark on rural territories. The lack of economic resources and technical expertise has historically resulted in the empirical construction of many of these dwellings. As a consequence, many remain outside the formal regulatory framework, as is also the case in Tenjo.

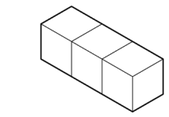
Architectural strategies such as thick walls and reduced openings have historically been used by rural inhabitants to ensure thermal comfort in cold climates, especially in the Bogotá Savanna region. Local materials such as wood, ceramics and earth based materials, particularly adobe and brick,

Rural plot settlement

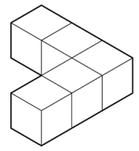


01 Main House
02 Deposit
03 Animal Farming
04 Planting

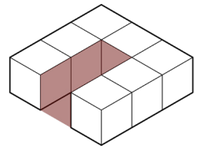
Volumetric Typologies



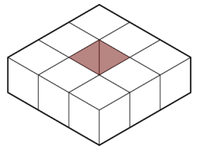
Linear



L type

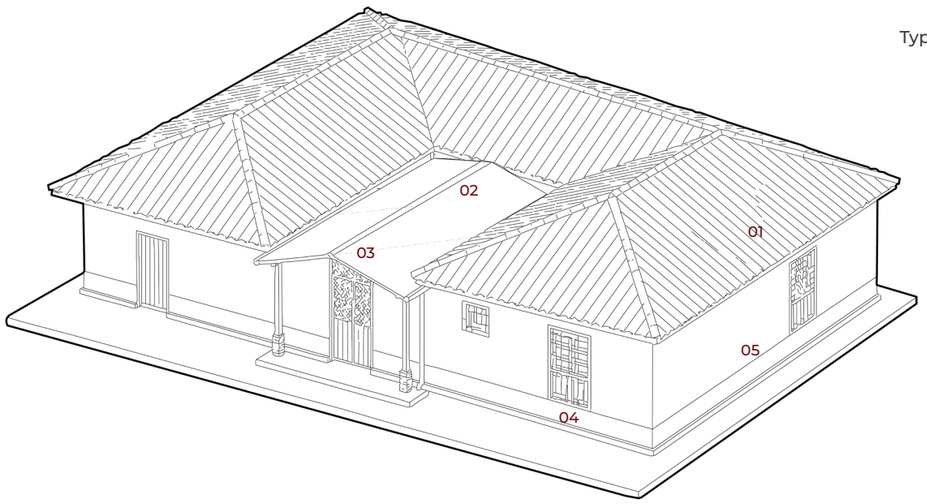


U Type



Patio type

Traditional rural house reference



Types of rural dwellings

A *Haciendas*
B *Ranchos*
C Regular Housing

Materiality

01 Clay Tiles
02 Adapted Patio
03 *Zaguán*
04 Wooden Finishes
05 Adobe Walls

Based on Arango (1989) - Self elaboration









Traditional rural Housing in Tenjo (example) - Images from google earth.

continue to define construction practices. While traditional rural housing has often been perceived as vulnerable or inadequate, it has effectively responded to climatic conditions and territorial constraints.

Urban inspired alternatives

Urban-inspired housing typologies have already been mentioned throughout this thesis. They are, by far, the most common type of “rural” housing developed in Tenjo over recent years. Under this category, we can find conventional housing models such as apartment towers, bifamily houses, gated developments, and single-family houses repeated in series.

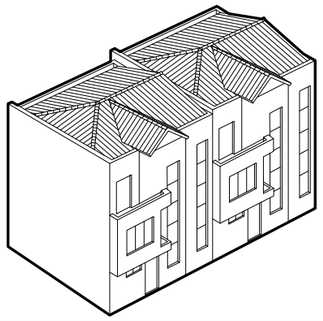
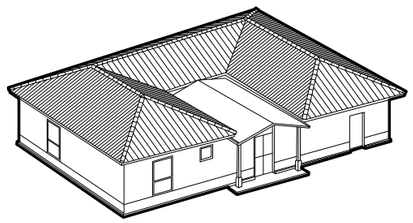
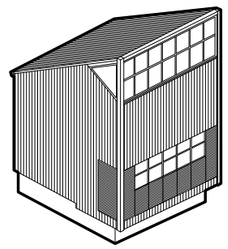
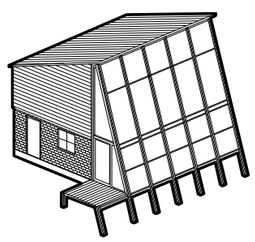
In Tenjo, these developments are regulated according to the municipality’s current Plan de Ordenamiento Territorial (Land Use and Territorial Development Plan), updated in 2011. According to its regulations, this type of housing must not exceed three stories in urban expansion areas and two and a half stories in rural areas, depending on land-use classification. Social housing apartments are the exception, reaching up to five stories. Although these projects resemble housing models commonly found in larger cities, they are still constrained by lower heights and reduced footprints according to the territory where they are located.

These developments are mainly intended to attract population from nearby municipalities and especially from Bogotá. Over the years, the number of projects has increased together with land pressure and real estate prices. Most examples found in Tenjo are multifamily projects aimed at middle- and upper-income users, often including outdoor amenities such as playgrounds, sports areas, and shared green spaces that increase market appeal.

Newer buildings are commonly constructed using concrete and brick, while metal structures and prefabricated systems are gradually being introduced into the local construction market. As in most commercial real estate developments, efficiency and low construction costs remain priorities for developers seeking maximum profitability. These projects range from small local investors to large nationally recognized companies such as Amarilo.

The analysis of these urban-inspired alternatives seeks to distinguish between what rural housing currently is in Tenjo and what it could become. Although these projects are marketed as rural developments, they largely reproduce conventional urban housing models and rarely incorporate productive land-based activities as part of everyday inhabitation. The intention of this category is therefore to establish a contrast between contemporary suburban expansion and the type of rural housing this thesis aims to propose.

Analysis Matrix of Current Housing Models

Typology analyzed	Description overview	Site and bioclimatic approach	Materials	Community engagement	Productivity and land connection	Architecture adaptatibility
Urban inspired alternatives 	Most common housing typology currently developed in the Bogotá Savanna region, especially in Tenjo. Urban housing model translated into rural territories.	Regular standards and applications of the whole region. No bioclimatic or site-specific design approach. Based on repetition patterns and standardized aggregation models.	Industrialized and traditional materials used, such as concrete, bricks and metal sheets for the roof. Efficient system and price aimed selection of materials. Materials allow fast construction and repetition of units.	Creation of segregated and exclusive communities of the residents of the aggregation. Segregation for the towns cooperative spirit and dynamics. Gated developments that increase social fragmentation.	In gated developments there is no consideration for connection with the land or rural productive activities. In private residential developments, there can exist limited approaches to land activity.	The spatial layout is fixed and conditioned by real estate development logic. Progressive growth and spatial adaptability are generally absent from this housing typology.
Traditional rural housing 	Traditional rural housing used in the Savanna Region. Derived from Spanish colonial housing traditions adapted to rural landscapes in the region.	Empirical approach to climate and territory, with ancient understanding on how to inhabit the territory. Chimneys, thick walls, and thermal mass strategies used for the internal comfort.	Wooden, concrete or Load-bearing wall systems are commonly used. Simplicity and economic suitability lead the materials selection. Local materials used, such as adobe, clay tiles and bricks.	Isolated plots but community-oriented dynamics. Usually organized by *veredas* or sectors. Architecture does not directly reflect community dynamics, although spatial proximity influences social relationships.	Productive activities are usually located in complementary buildings separated from the dwelling. These areas are spatially distant from the house, and serves as storage, barns or structures for animal farming.	Spatial adaptability is limited by the plot possibilities, Depending on regulations, resources, and available space, transformations can occur over time. However, the architecture is not meant to do so since the design conception.
Biosustentos Arq. Henry Augusto Medina Villareal 	Honorable mention in the 2018 Bogotá rural housing competition.	Optimized shape for solar exposure over the year. Thermal insulation strategies and optimized openings maximize solar gains while reducing heat loss. Isolated from the ground. Rainwater collection in the basement/foundation.	Low thermal-transmittance materials selected for the envelope. Double glass for the windows and metal sheets for the roof. Wooden structure and material finishes for the building.	Speculative collective housing model based on the aggregation of different families within the same project. However, there is no a formal proposal of integration of the users to the surrounding municipality through architecture.	Productive activities are considered through collected rainwater and agricultural spaces within the plot. Still, there is not a formal proposal of what the activities can be, as the competition was based more on an habitational and housing inquery.	The proposed aggregation system allows spatial expansion of the dwelling, although this potential remains unresolved architecturally.
Biosustentos FP Oficina de Arquitectura S.A.S 	Winner of the rural housing competition made for Bogotá in 2018.	Trombe wall and insulation systems designed to maintain thermal comfort throughout the year. Greenhouse-inspired envelope designed to retain thermal gains during nighttime. Isolated from the ground.	Compressed Earth Blocks used for the trombe wall system in the inner facade. Gravel layer for ground isolation and roof made up from recycled material. Wooden structure and plastic envelope for the greenhouse space.	No available information about the conceptual agrupation model included in the competition products. The proposal remains conceptual and disconnected from broader municipal dynamics.	Productive activities are suggested as complementary uses surrounding the dwelling. It is conceptual and speculative indeed, but considered as a secondary element of the proposal.	Although the use of mechanical joints allows disassembly and future reconfiguration, this adaptability was not fully developed within the proposal. It is an opportunity for the thesis project.

Analysis Matrix of Current Housing Models - Self elaboration

Theoretical Framework

Nature

One of the main lines of discussion that appears when considering how to inhabit rurality and natural landscapes is precisely what we understand as nature and how we relate to it. This topic can be seen from different lenses and areas of knowledge, such as economic, environmental, or even spiritual perspectives, and each of them can provide different answers.

Eduardo Gudynas, in his text “Concepciones de la naturaleza y desarrollo en América Latina” (Nature conceptions and development in Latin America) published in 1999, proposes a valuable approach to understanding nature in relation to human beings. He argues that nature is a social construction that needs to be understood within a specific culture and time, and that it has evolved over the years alongside economic and technological development.

The main problem lies in the way we see ourselves in relation to nature. Since ancient Jewish and Christian perspectives, we have treated nature as something that belongs to us and from which we have rights—or even a divine instruction—to exploit for our convenience. This way of understanding nature increased during the Renaissance, with the idea of nature as an infinite resource from which humankind could grow. Endless resources also meant endless development and infinite ways of exploring reality.

Over time, after periods such as the Industrial Revolution—particularly unfortunate in terms of environmental impact—we have realized that nature is not an endless source of resources. With the emergence of science and the contributions of figures such as Charles Darwin, we now understand that nature has its own balance and behavior, and that in order to continue existing, we must preserve it.

Today, nature is even seen by some as fragile and delicate. Environmental movements have raised awareness about the need for conservation and protection. Without a doubt, there is an enormous environmental debt to be addressed, but we still tend to see ourselves as something distant and different from nature, as protectors of something we own.

In Latin America, the perspective that is most relevant for the development of this thesis, we have inherited a European way of understanding nature, which displaced indigenous ways of interacting with it. From the accounts of explorers and conquerors who arrived in the New World, we can observe their perception of the landscape as wild and untamable. Nature was associated with both fear and respect, but also with the idea of a resource to be exploited, a kind of treasure that they ultimately pursued. The extraction of natural resources in Latin America continues today, often serving the demands of more developed countries.

Indigenous ways of understanding nature were close to being forgotten from collective memory. Although this knowledge is still being researched and remains partially limited, it is possible to recognize that in many Latin American cultures, humankind was understood as part of nature. The goal of these civilizations was to live in balance with natural systems over time. Nature was often understood as a form of divinity and was approached from a spiritual perspective, where respect and reciprocity were fundamental values.

As Gudynas states, being aware of these differences and making them visible is the first step toward finding solutions. Our responsibility now lies in understanding that humans belong to nature, and not the other way around. Breaking this dualism of seeing ourselves as separate from ecosystems and other species is a necessary step toward creating more sustainable and environmentally conscious ways of inhabiting. Architecture must act as a bridge between nature and human beings, recognizing the environment as the system that sustains life.

Furthermore, understanding how conceptions of nature have shaped different historical periods helps explain the evolution of rural housing in the Bogotá Savanna. The following timeline illustrates how changing relationships between society and nature have influenced ways of inhabiting and transforming the countryside over time. Recognizing these transformations is essential for understanding current rural dynamics and for proposing alternative ways of inhabiting rurality in the future.

Timeline: Evolution of Rural Housing in the Bogotá Savanna through the changing conceptions of Nature

Conceptions and visions of nature

Based on Gudynas, 1999.

Nature as economical capital conception

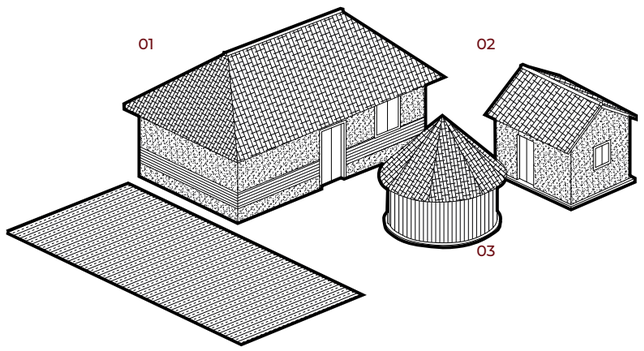
Productive value - Agriculture | Recreational value

Inherited anthropocentric conception | Nature as an infinite basket of resources conception

Indigenous Latin American Vision of Nature | Nature as wild and distant conception | Nature as a fragile entity to manage conception

1500 — 1810 — 1950

Prehispanic housing



Rural Housing composed by:
1. House.
2. Kitchen.
3. Multipurpose building.

House built with bahareque walls and straw roofing.

Rural housing typologies that persisted from pre-Hispanic times into later periods.

Gradually abandoned over time, with only a few vestiges remaining today.

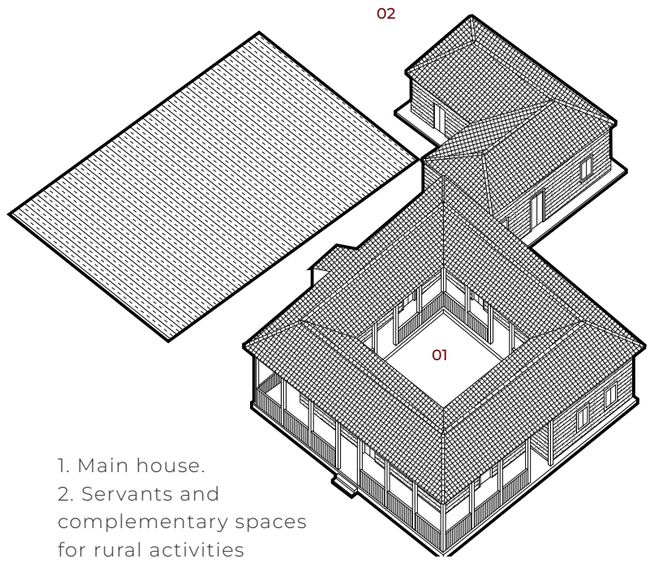
Closely integrated with the surrounding environment and productive land activities.

Colonial housing

Hacienda central courtyard typology derived from Spanish urban housing models.

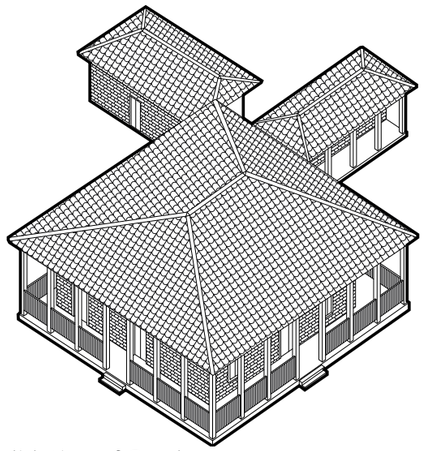
Earth, clay and stone masonry as main inheritance.

Expansion of the agricultural frontier.“Ranchos” as the place for indigenous, afrodescendants and mestizos.



1. Main house.
2. Servants and complementary spaces for rural activities

Independence and republican housing



Consolidation of Creole landownership in rural territories.

Expansion of “haciendas” and increasing agricultural specialization to meet international market demands.

The countryside increasingly acquired recreational and symbolic value beyond agricultural production.

Brickwork, glass, gypsum finishes, and carpentry became part of the construction heritage that persists today.

Modernity | Contemporary Housing

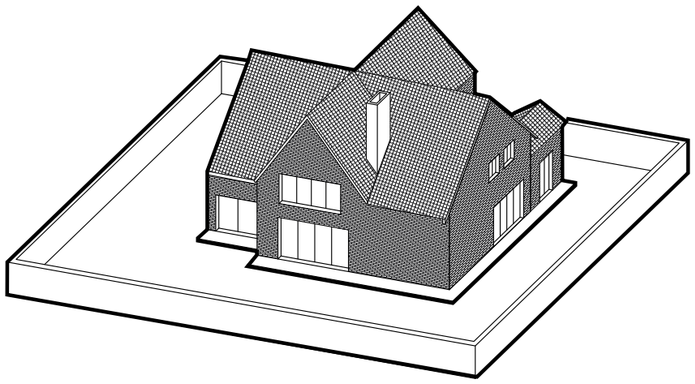
Previous transformations led to increasingly heterogeneous rural territories.

Population growth and housing demand promoted standardized and repetitive housing models.

Industrialization and technological advances enabled rapid construction and accelerated the urbanization of rural areas.

Rural territories became increasingly inhabited by urban-origin populations. Nature became associated with economic value and residential well-being.

Traditional housing typologies and rural populations progressively declined.



Evolution of the rural housing in the Bogotá Savanna

Based on Saldarriaga, 2006.

Timeline diagram - Self elaboration - Based on Gudynas, 1999, and Saldarriaga, 2006

Neo-rurality

Neo-rurality is a concept that has been growing, both in research and in practice, over the last decades. It refers to a new form of rurality, framed not only by the emergence of new settlements and inhabitants in rural areas, but also by new ways of inhabiting and thinking about the countryside. In Colombia, there are several examples and case studies that address this phenomenon. The individual establishes a new relationship with their bio-physical and social environment, transforming the conception of rurality from its historically moral, sensory, and circumstantial descriptions—often negative—into a renewed perspective. In this sense, neo-rurality seeks to reshape the mental construct of what rurality represents.

It refers to “Actors who, based on a philosophy of self-revitalization, seek to reclaim rural culture, promote the advantages of living in the countryside, and advocate for the preservation of its virtues” (Méndez, 2011). These new rural inhabitants tend to generate particular social and community dynamics, acting as active agents in the transformation of their bio-social environment. They adopt a commitment to preserving available natural resources, often developing a more environmentalist and conservation-oriented profile, and seek to explore technologies of production and consumption with low socio-ecological impact.

Among their main strategies are small-scale production, organic agriculture, crop rotation, reduced consumption of non-renewable resources, nutrient recycling, and composting. They oppose urban individualism through forms of collective and fraternal coexistence, and pursue values traditionally associated with rural life, such as kindness, simplicity, honesty, respect, and a strong work ethic. At the same time, they seek to mitigate physical and mental exhaustion through a new model of society, a shift in land use, and an appreciation of the landscape.

Neo-rurality serves as the foundation from which the concept of metarurals, this thesis’ contribution to the theoretical discussion, is developed. Metarurality, in this sense, can be understood as a way of living through which new rural agents actively engage in rural dynamics from environmental, social, and economic perspectives. This new category of users allows us to identify individuals who productively reactivate rural territories, generating a positive impact on the landscape and establishing new ways of relating to nature.

Regenerative Design

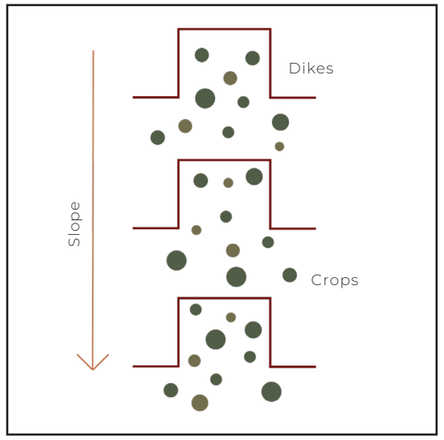
Based on the environmental damage and unsustainable practices that have shaped design and architecture over the years, many designers have developed theories about how architecture can actually contribute positively to ecosystem restoration. Regenerative Design appears as a way through which architects can approach the creation of more environmentally aware buildings from the design phase itself.

John Tillman Lyle, one of the precursors of this movement, published in 1994 the book Regenerative Design for Sustainable Development, which even nowadays, more than thirty years later, serves as a foundation for understanding and applying feasible regenerative design strategies. Lyle defines regenerative design as the replacement of linear systems of throughput flows with “cyclical flows at sources, consumption centers, and sinks” (Lyle, 1994); shifting from linear industrial systems toward cyclical living systems.

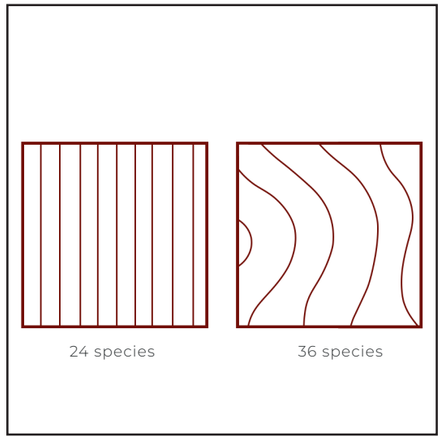
Nature’s diversity and uniqueness have been replaced by human uniformity of processes and landscapes. Territorial resilience has been progressively lost through our attempts to inhabit and understand the world that surrounds us. The continuous flow of materials and energy within ecosystems is one of the main conditions that contemporary architectural practices should seek to restore (Mang & Reed, 2012). Regeneration means, ultimately, creating and maintaining healthy relationships with nature. Our built environment should be capable of reconnecting people with the ecosystems they inhabit.

Regenerative design proposes that the order and logic behind each project should emerge from the ecosystemic conditions of the site in which it is placed. Nature should guide design, and therefore architecture. Ecosystems are dynamic wholes from which simply adapting is no longer enough; becoming part of them is required in our collective search for a more sustainable future. Regenerative approaches seek “not only to reverse the degeneration of the earth’s natural systems, but also to design human systems that can co-evolve with natural systems” (Mang & Reed, 2012, p. 3).

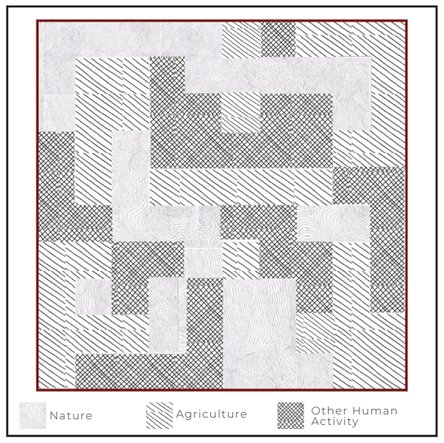
The evolution from restoring damaged ecosystems and landscapes toward actively participating in their regeneration is one of the main challenges of contemporary architecture. Changing the architectural mindset requires exploring new ways of inhabiting and interacting with natural landscapes, and rurality becomes a key element within this ongoing discussion.



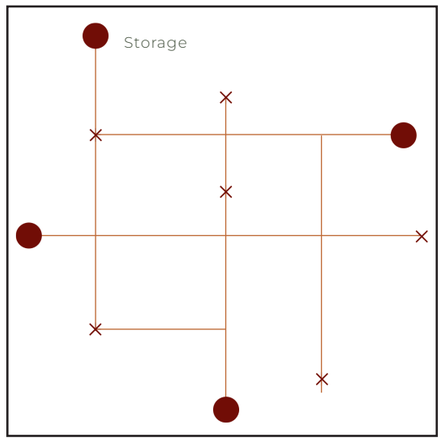
1. Letting Nature do the work
5. Matching Technology



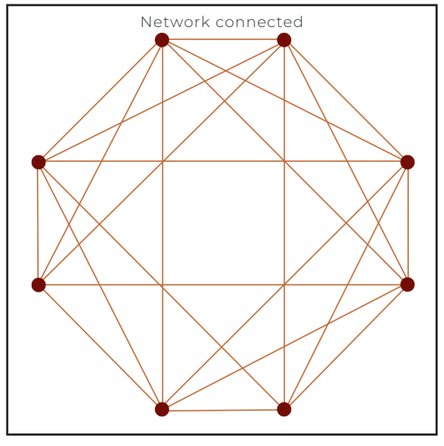
2. Considering Nature as both model and context
11. Shapping form to manifest process



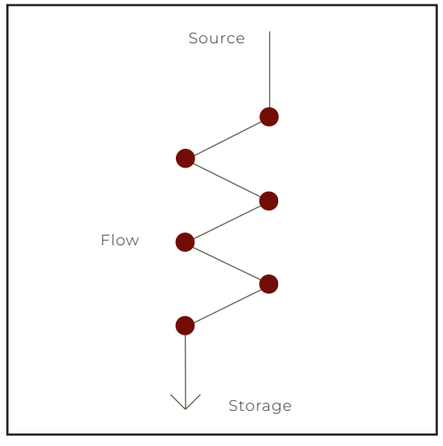
3. Aggregating, not isolating
8. Seeking common solutions for disparate problems



4. Seeking optimum levels for multiple functions, not maximum or minimum level for any one
9. Managing Storage as a key for sustainability



6. Using information to replace power
7. Providing Multiple pathways



10. Shaping form to guide flow
12. Prioritizing for sustainability

Strategies for Regenerative Design, Lylle (1994) - Self elaboration,

Eco-productivity

The urgency of addressing environmental concerns related to the built environment and human activity has led different movements of thinkers and designers to propose new ways of approaching the relationship between humans and nature. Going beyond sustainability and merging more deeply with the environments in which we are placed has become a new way of designing and doing architecture.

The recognition of the reduction of human well-being as a direct consequence of ecosystem degradation (Millennium Ecosystem Assessment, 2005) represented a major step forward in the evolution of sustainability and in the awareness of nature as the foundation of life and human existence. Nature operates as a life-support system through what are defined as ecosystem services, understood as the non-paid benefits through which humans and other species sustain life on the planet.

According to the United Nations report Ecosystems and Human Well-Being (2005), there are four categories of ecosystem services: (1) provisioning services, (2) regulating services, (3) supporting services, and (4) cultural services. An example that may help illustrate how ecosystem services function is pollination. It is part of the biological activity of certain insects and animals, and even though humans do not directly pay for it, it remains essential for the survival of both human and non-human life.

Eco-productivity appears as a theoretical framework through which architecture is understood as a system capable of generating positive ecological contributions by providing ecosystem services and creating environmental value for both human and non-human communities (Ibáñez, 2017). Different from regenerative design, previously discussed in this thesis, eco-productivity is about making productive systems active ecological contributors to the lost or ongoing ecosystem dynamics of a site.

Buildings should contribute more than they consume while simultaneously addressing past and current environmental damage (Pedersen Zari, 2012). Ecosystem services are not only goals to be achieved through design, but also design strategies that guide the conception and materialization of architecture. Ecosystems themselves should be analyzed as examples of how life can function effectively within a given site and climate, helping to inform architectural design processes.

The discussion is now evolving from the idea of harmonious architecture inserted into the landscape toward architecture becoming part of the landscape itself. This shift requires the built environment to assume an active role in supporting life through the ecosystem services it can provide, not only for human beings but for all species involved within the ecological system. The built environment therefore becomes part of a broader ecosystemic infrastructure.

Eco-productivity, rather than a fully consolidated theoretical framework, is understood in this thesis as a way of interpreting current environmental needs through architecture. It implies shifting from the assumption that all architectural and human activities are inherently negative for the environment, toward the possibility of transforming the built environment into an active and positive contributor to ecosystem services. The proposal developed through this thesis aims to explore how habitational, regenerative, and productive architecture within the rurality of Tenjo can perform ecosystemic functions that enhance the natural dynamics and environmental value of the territory.

Circular Economy

So far, the theoretical framework has explored ways in which housing and productive systems in rurality can coexist within a single project. However, there is still a missing component: a way in which resources and products can be managed over time under the purpose of achieving a regenerative and sustainable lifestyle for contemporary rural communities.

Circular Economy appears as a framework through which agroproductive systems can be organized to guarantee both environmental and economic sustainability. Its principles may establish the foundation for strategies and methodologies that can be translated into new ways of inhabiting rurality, particularly in Tenjo. Even though it is currently a highly discussed topic and part of many public and private initiatives, its growing popularity can sometimes lead to a progressive loss of what truly defines a circular system.

Walter R. Stahel, former architect and pioneer in the conceptualization and application of Circular Economy to industrial systems, summarized the main ideas of this concept in his article “The Circular Economy “(2016). Due to the environmental emergency and the need for feasible solutions to reduce greenhouse gas emissions, creating circular systems in which waste can become a resource has been identified as a holistic approach to building more resilient communities based on environmentally aware human activities.

Circular Economy proposes a way to solve the problem of open loops in production and consumption systems. In opposition to linear models, where mass production is accelerated through the rapid consumption and disposal of goods and services, circular alternatives encourage society to find ways in which discarded products can re-enter the production cycle as new inputs. Repairing and reusing products is often a more sustainable and economically viable way to maintain resources within the same system. According to Stahel (2016), a Circular Economy could reduce greenhouse gas emissions by up to 70% at the scale of a national economy.

GDP and many other economic indicators reward cash and energy flows. Circular Economy, however, is based on preserving resources, saving energy, and maintaining materials and human activities within the same productive cycle. It is ultimately concerned with maximizing value while minimizing waste. Even current policies often reward mass production while discouraging more environmentally conscious alternatives. Public policies

should instead promote circular initiatives among both large industries and small and medium-sized enterprises.

“Ownership gives way to stewardship” (Stahel, 2016). Consumers must become users and active participants, while industries should guarantee the durability of products and the recovery of materials after disposal. Circular Economy ultimately seeks to preserve physical stocks and guarantee the availability of resources for future producers and consumers.

In architecture, housing refurbishment, material reuse, and the selection of reusable construction systems are ways through which buildings can become part of a broader circular economy. Disassemblable systems and constructive methods that allow materials to be easily recovered are also strategies that support this approach. Beyond these apparent solutions, rurality offers a unique opportunity to address food security and preserve the long-term productive capacity of the land.

Changing lifestyles is, ultimately, the way through which rurality can truly create circular systems capable of securing the needs of present and future generations. How we consume and understand available resources shapes our relationship with the countryside. Agriculture should not only be measured through efficiency and mass production, but also through the value of stewardship and the responsible management of resources over time. Degenerative systems are the opposite of what we should aspire to, and the way we inhabit rural territories may become a first step toward redefining rurality in the Bogotá Savanna and Colombian society.

Permaculture

How agriculture and land-based activities can effectively operate within regenerative, ecoproductive, and circular economy systems remains a significant challenge. Permaculture appears as a way to understand and progressively apply an operational and systemic productive logic through the productive cell proposed in this thesis.

Permaculture emerged during the 1970s through the work of Bill Mollison and David Holmgren. Their research intended to show how we can allow nature to do its work, because agriculture and animal farming are, ultimately, natural activities manipulated by humankind for survival. It represents a cultural shift toward a new way of understanding the relationship between human activity and nature.

Permaculture proposes productive activities as systems of relationships in which design becomes a way to achieve long-term self-regulation with minimal intervention (Holmgren, 2002). It is a way through which design and architecture can operate as prevention strategies rather than corrective responses to unsustainable systems. Mollison and Holmgren also proposed that indigenous knowledge can serve as a source of ecological intelligence that is highly relevant for regenerative design applied through permaculture.

Spatially, energy and resource flows should define the organization of the plot. Design then becomes a consequence of a deep understanding of the natural systems that support human habitation and productive activity (Mollison & Slay, 1994). This way of proposing sustainable productive systems understands nature as a source of knowledge that is fundamental when relating to the land. Broader environmental problems can be approached by observing how nature has already solved them. Diversity as a strategy for creating resilient systems is, for instance, a logic that must be restored in a world increasingly dominated by monocultural crops and industrial farming.

As a design methodology, permaculture somehow replaces the conventional agricultural approach. It is based on ethical values and holistic understanding rather than solely on efficient land exploitation. Waste and by-products generated through agricultural activity should become part of cyclical systems. Transforming human activity in the pursuit of making it sustainable for present and future generations is a challenge that rurality must address not only in Tenjo, but across the entire world.

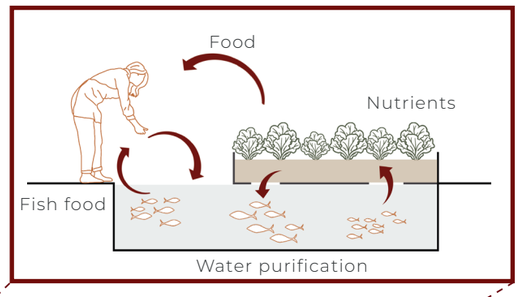


Traditional productive system

- Degenerative system
- Limited productive outcomes
- Land and ecosystem deterioration
- No natural recovery
- Nutrients and soil fertility loss
- High environmental impact and carbon foodprint

Aquaponic productive system

Example of cooperative relationships



Regenerative system

- Renewable system
- Natural and ecosystemic restoration
- Provision of ecosystem services
- Landscape regeneration
- Permaculture and regenerative practices
- Enhancement of human and non-human dynamics

Diagrammatic sections of a traditional productive system vs. a regenerative system - Self elaboration.

Referential Framework

The referential framework explored throughout this thesis aims to provide design categories and strategies that can support the development of a functional and relevant architectural response to the rururbanization phenomenon of the Bogotá Savanna.

These projects provide valuable insights into how architecture is addressing contemporary challenges related to the main problem explored in this thesis. Even though they are not strictly rural housing or agroproductive projects, the solutions adopted by their designers offer useful knowledge that can inform the proposal in different dimensions.

Hortus by Herzog & de Meuron, Steirereck am Pogusch by PPAG Architects, and Quinta Monroy by Alejandro Aravena are the reference projects analyzed during the research phase of this thesis. Each of them responds to key questions regarding how architecture can address specific challenges. Together, these projects provide complementary lessons regarding environmental performance, productive systems, and community formation, which are identified as key components of the proposed housing model.

Hortus provides a technical reference for innovative architectural solutions through the use of low-carbon, renewable, and local materials. Its achievements in interior comfort and energy performance are the inevitable result of an architectural approach deeply rooted in bioclimatic principles.

Steirereck am Pogusch responds to the question of how architecture can mediate a rural productive economic practice. This restaurant is part of the “farm-to-table” movement, which seeks to incorporate food cultivated within the same productive and circular economy system into the gastronomic experience.

Finally, Quinta Monroy, a social housing project located in Chile, provides insights into how architecture can foster resilient communities through the configuration of common spaces. Although developed in an urban context, the project offers valuable lessons regarding adaptability, user participation, and community formation that can be translated into rural housing environments.

Architectural reference projects analysis

Design Criteria	Hortus	Steirereck am Pogush	Quinta Monroy
Productive Systems	● ● ●	● ● ●	●
Community Generation	●	● ●	● ● ●
Environmental Performance	● ● ●	● ●	●
Architectural Adaptability	● ●	●	● ● ●
Landscape integration	● ●	● ● ●	●
Circular Economy	● ●	● ● ●	●
User participation	●	● ●	● ● ●
Local Materials	● ● ●	●	●
Climatic Response	● ● ●	● ●	● ● ●

Analysis Matrix of the referential framework through design criteria - Self elaboration.

Hortus - Herzog & de Meuron (2025)

Hortus is an office and commercial building located in the city of Basel, Switzerland. It is one of the most recently completed projects by Herzog & de Meuron and has been nominated for several environmental and sustainability awards in architecture. Its innovative architecture and materiality derive from a design process driven primarily by technical and constructive considerations rather than aesthetic intentions, a sequence that is often reversed in contemporary architectural practice.

For this thesis, the project serves as a technical reference for innovative low-carbon solutions that can be applied to contemporary construction. The building is entirely supported by a timber structure, from columns and beams to internal wall partitions, making it one of the few large-scale timber buildings in Switzerland. As a renewable material, timber components can be recovered at the end of the building's life cycle, allowing them to be reused in future construction and industrial processes.

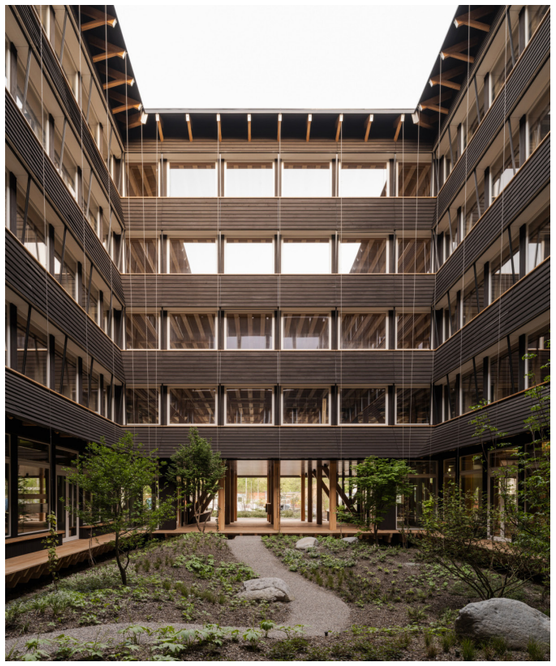
Its ceiling system, one of the most innovative elements of the project, is made of compressed raw earth panels. Although this technology is not yet widely developed within the construction industry, the use of this local material provides excellent acoustic, thermal, and fire performance. The system was designed to provide sufficient thermal mass for the building, improving its performance during winter and colder seasons.

In addition, its façade is composed of integrated photovoltaic panels, transforming the building from an energy consumer into an energy producer. Currently, Hortus generates approximately 80% more energy than it requires for operation, reducing energy demand within the urban grid. This strategy is particularly relevant for seasonal buildings in Northern and Central Europe. Rainwater collection systems also contribute to landscape irrigation and other building functions.

A free-plan layout, conditioned only by the timber structural grid, allows multiple spatial configurations. The result is a highly flexible and adaptable environment that can be customized according to users' needs. Hortus remains an example of how technically driven design can successfully combine sustainability, spatial quality, and architectural expression while responding to the environmental challenges faced by the contemporary construction sector.







Images retrieved from From Hortus, by Herzog & de Meuron (n.d.).

Steirereck am Pogusch - PPAG Architects (2023)

Steirereck am Pogusch, located in the Austrian Alps, is part of one of the most renowned restaurant brands in Austria, Steirereck, whose main location is in Vienna. The project consists of the renovation and expansion of the restaurant's rural headquarters, creating a small rural village that combines contemporary hospitality, gastronomy, and agricultural production.

This development is relevant to the thesis proposal because it serves as a benchmark for how contemporary architectural projects can be conceived under the principles of Circular Economy to reactivate rural territories. Through the renovation of existing buildings and the consolidation of new infrastructure, Steirereck has established a resilient and sustainable system supported by architecture and its spatial possibilities.

PPAG Architects introduced three greenhouse structures into the complex, intended not only for hospitality and amenity uses but also to guarantee the production of seasonal crops throughout the year. The harvest obtained from these small-scale productive spaces is used directly in the restaurant's kitchen, becoming an integral part of the project's operational model.

The orchards also receive organic leftovers from the restaurant, transforming what would normally be treated as waste into fertilizer for cultivation. In this way, discarded products re-enter the productive cycle as new inputs for the system. In addition, the incorporation of a biomass power plant allows the complex to achieve a high degree of energy self-sufficiency and significantly reduce its operational energy demand.

The hospitality facilities incorporated into the project, which did not exist before the intervention, also expand its possibilities. They create a mixed-use system of complementary functions that strengthen the long-term viability of the development. Adaptability, permanence, and a long-term vision of the business are also embedded within the architectural solution.

Furthermore, the holistic architectural and environmental approach implemented in Steirereck am Pogusch represents a valuable example of a resilient project capable of addressing present and future needs through a single intervention. It brings together concerns related to Circular Economy, sustainable agriculture, and rural development within a contemporary architectural proposal. Production, consumption and architecture are part of a single system proposal.



Images taken by Hertha Hurnaus and retrieved from Steirereck am Pogusch Restaurant / PPAG Architects, ArchDaily (2023).

Quinta Monroy - Elemental (2003)

Quinta Monroy by Alejandro Aravena's studio ELEMENTAL is perhaps one of the most recognized social housing developments in South America. Located in the city of Iquique, Chile, the project was commissioned to relocate 100 families living in informal settlements while guaranteeing access to adequate housing and improving their living conditions.

Even though this project may seem distant from the aspirations and discussions developed throughout this thesis, it provides valuable insights into how housing and inhabitation should be conceived for their users. It demonstrates how adaptable and flexible spaces can support an ongoing process of community territorialization. Recognizing diversity and individual needs is also a way to foster user engagement within housing developments.

Faced with significant budgetary and economic constraints, Quinta Monroy proposed a solution in which houses could continue growing and increasing their value over time. The concept was simple: to provide a self-sufficient housing unit that could be progressively expanded according to each family's needs and possibilities. In this way, every dwelling shared a common architectural foundation while allowing for personalization over time.

Common spaces and courtyards were also fundamental components of the architectural strategy. Shared front courtyards serving groups of approximately twenty families helped neighbors build social bonds and develop collective forms of organization. Architecture, and particularly housing settlements that relate each dwelling to a broader system, can become a tool for fostering community management through spatial design.

Architecture in communities with limited resources, such as many rural environments in Colombia, can also contribute to overcoming conditions of poverty. Housing developments have the responsibility to provide basic standards of inhabitation while creating opportunities for personal and family development. Housing should go beyond merely satisfying the need for shelter and instead become an expression of its inhabitants' identity.

Moving from an object-based perspective toward a systemic approach that embraces individuality and diversity is one of the main lessons of Quinta Monroy. The transition from house to home is also a challenge that belongs to the discipline of design and can contribute to strengthening rural communities such as those of the Bogotá Savanna.



Images taken by Tadeuz Jalocha and retrieved from Viviendas Quinta Monroy, Arquitectura Viva (n.d.).

Waru Waru Agricultural Fields

Landscape and productive reference

The previous architectural references aim to understand how some of the problems and situations addressed by this thesis can be translated into spatial and technical solutions. However, understanding how the landscape and the territory can be transformed through a design that supports productive systems while becoming part of the site's natural cycles represents a different, yet closely related, challenge.

Waru Waru, an Indigenous agricultural system developed in the Andean mountains of Peru, is an example of ancient knowledge applied to the territory for productive purposes. These raised agricultural fields take advantage of the topography and humid soil conditions to redirect water, irrigate the crops, and maintain productive land throughout the year. Their floodable man-made channels are the result of a careful reading of the landscape, integrating human labor and food cultivation into the natural water cycle.

Its hydraulic network distributed water across the cultivated fields while maintaining adequate soil moisture and naturally transporting nutrients through the landscape. Although many Waru Waru systems were abandoned after the Spanish colonization, they have been rediscovered and restored by researchers in recent decades. Today, they remain a reference for cultivating and supporting human life in the challenging climate of the Andes.

The ancient Peruvian civilization transformed the need for food into a hydraulic landscape that sustained life. The channels became key elements for biodiversity, water availability, soil fertility, and temperature regulation in a place where crops frequently suffered from frost. Rather than seeing the rainy season as a limitation, they transformed it into an advantage that allowed the land to remain productive even during dry periods.

As in the Bogotá Savanna, these soils naturally present wetland characteristics. A similar technique, known as juncales, was developed by Indigenous communities, allowing seasonal rainwater to infiltrate the cultivated fields through shallow channels and later support food production during drier periods. Indigenous knowledge continues to be studied by researchers, but what remains unquestionable is its capacity to develop nature-based solutions through a profound understanding of the territory.







Images taken by David Arias and retrieved from Waru Waru Agricultural Fields, World Monuments Fund (n.d.)

Proposal: Regenerative Homes

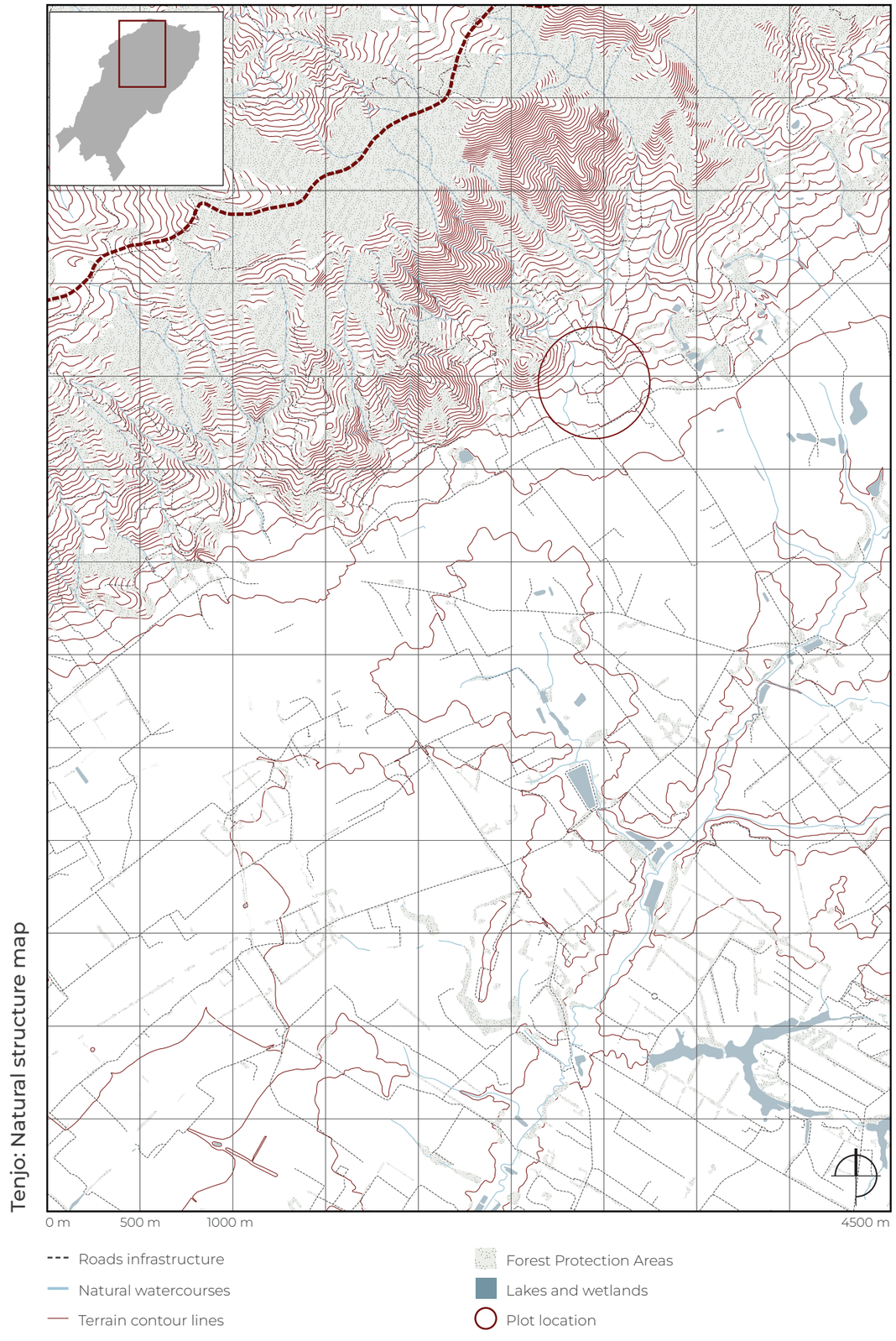
Site Analysis

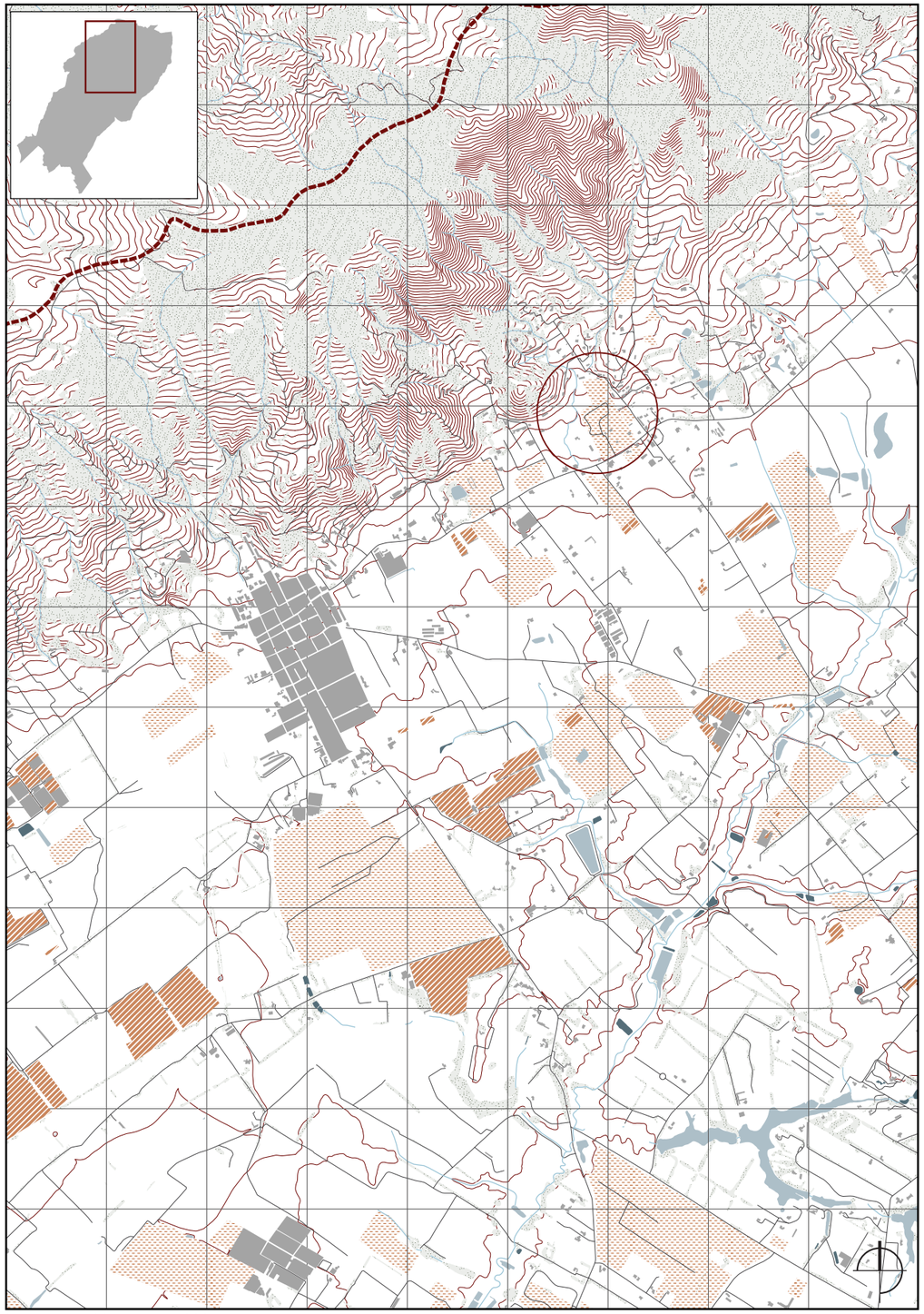
Moving into the design phase also requires a deeper understanding of the territory and its complexity. Even though analyzing the entire municipality can lead to an overgeneralization of certain characteristics due to the scale involved, it is still important to define a buffer zone through which the main territorial dynamics can be understood as part of the project context.

The natural structure, built structure, and socio-cultural structure are the three main ways through which a territory can be interpreted in its essence. The first one, independent of human intervention, provides the foundation upon which human settlements and activities develop. Identifying ecosystem elements can support a more relevant architectural intervention and a better understanding of the environmental conditions of the site.

On the other hand, the built structure aims to reveal the human footprint within the buffer zone, highlighting agricultural activity as one of the most representative territorial elements. Greenhouses and seasonal crops, as discussed previously, are among the clearest examples of how society has historically related to the natural structure.

Finally, the socio-cultural structure seeks to explain relationships beyond the physical environment, showing how society interacts with both the natural and built structures. Human behavior, including the sense of belonging to a place, often has a physical expression in the territory. Therefore, understanding these dynamics is essential for developing a project that responds appropriately to its surroundings. Integrating the proposal within these three structures is part of the objective of creating a project capable of generating positive impacts for both the environment and the local community.



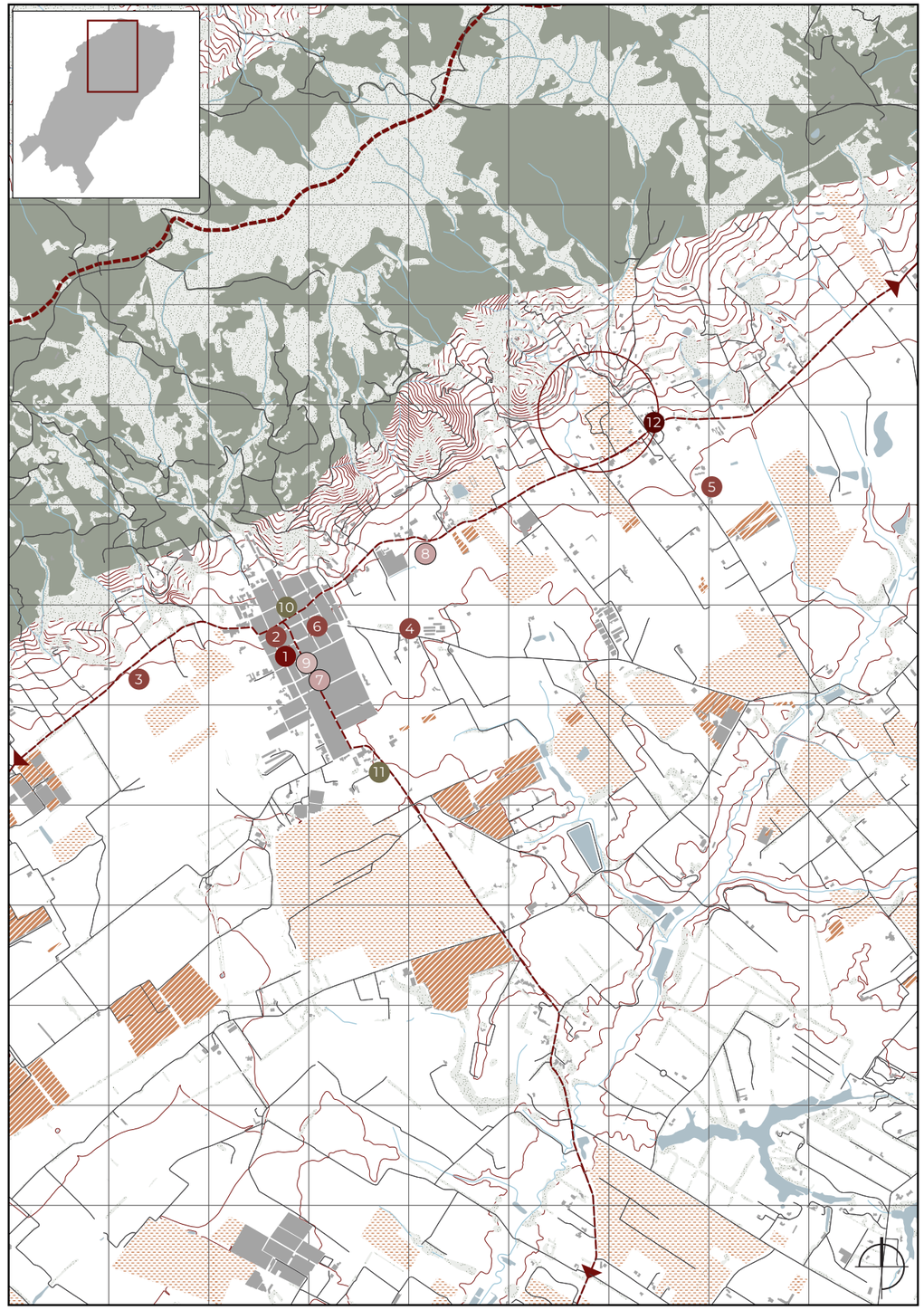


Tenjo: Built structure map

0 m 500 m 1000 m 4500 m

Built Environment map - Self elaboration. Layers extracted from Servicio Geológico Colombiano

- Roads infrastructure
- Built environment
- Man made ponds
- Seasonal crops
- GreenHouses crops



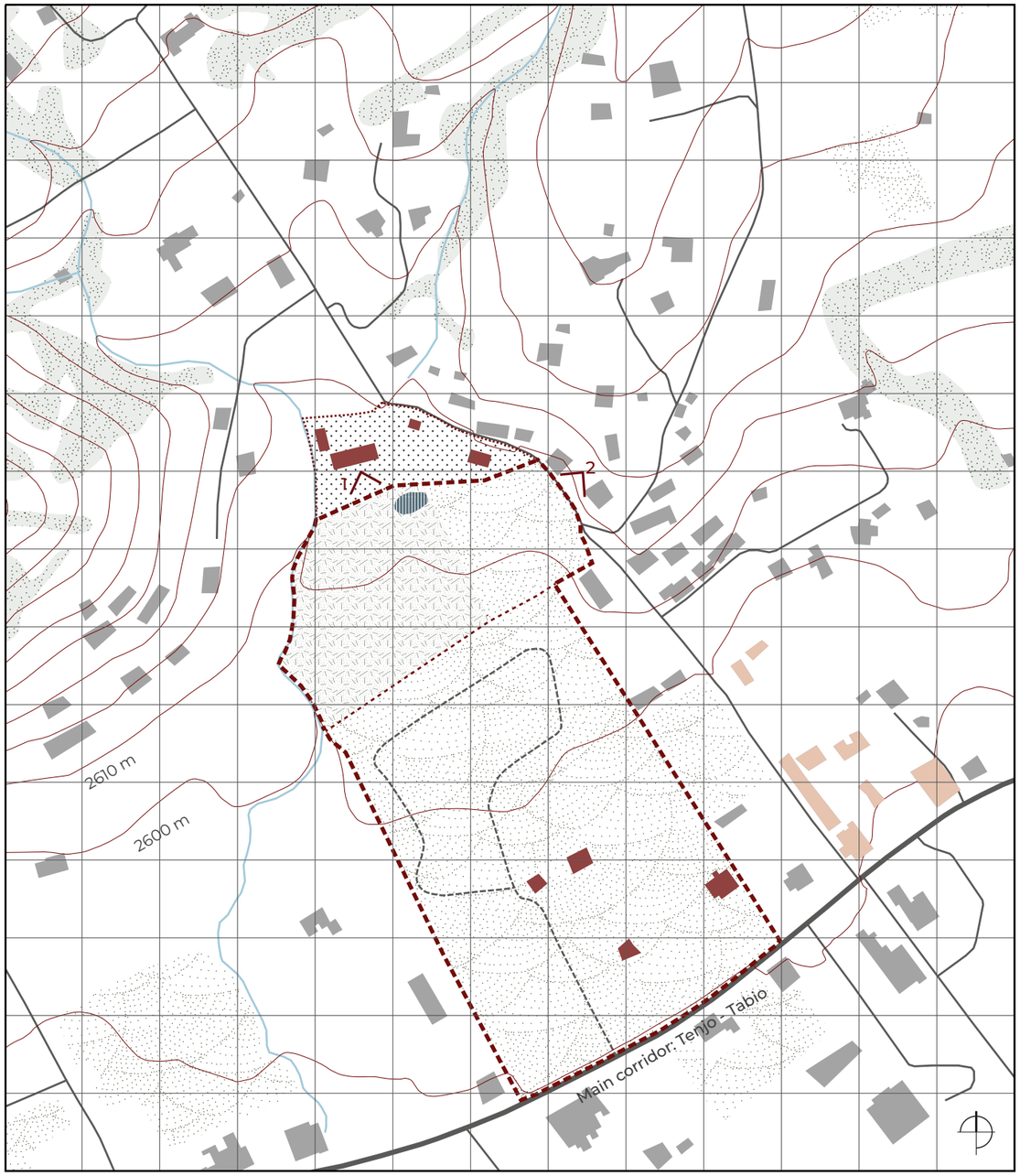
Tenjo: Socio-Cultural structure map

0 m 500 m 1000 m 4500 m

Socio Cultural map - Self elaboration. Layers extracted from Servicio Geológico Colombiano

- Main corridors - High daily flow
- 1. City Hall
- 2. SENA - Technical formation center.
- 3. Public Library
- 4. Public High School
- 5. Nursery School
- 6. Middle School
- 7-8. Sports and recreational Facilities
- 9. Public Hospital
- 10. Municipality Market
- 11. Rural activities assistance facility
- 12. Local Transport station
- Indigenous traditional sacred territory - Juaica Mountain

Plot Selection



- Existing Water flow
- Plot current division
- Plot working area
- Existing house (not intervened)
- Built environment
- Current plot buildings
- Forest protection area
- Current Agricultural use
- Current Animal farming use
- Local transport station
- Old rainwater pond - out of use

Plot map - Self elaboration. Layers extracted from Servicio Geológico Colombiano

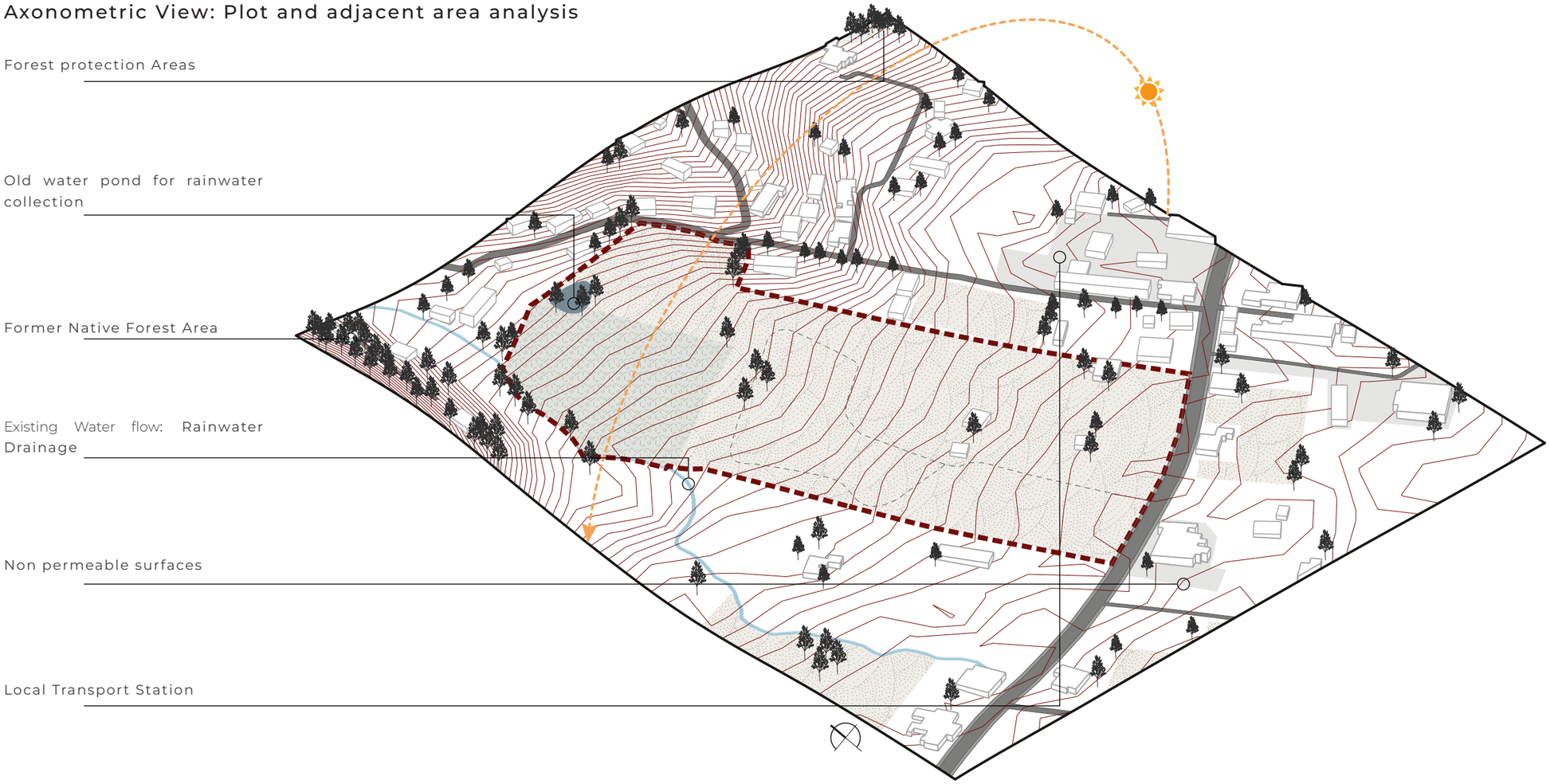
The selected plot is located within an area identified for future development in the municipality of Tenjo. Situated along one of its main corridors, the Tenjo–Tabio road, the site presents commercial uses along the roadside, while its interior remains dedicated to agriculture and complementary rural activities. The plot is currently used for livestock farming and seasonal agriculture and is composed of two adjacent properties under different ownership.

The site includes an inhabited house that will not be intervened and is therefore excluded from the proposal. The remaining buildings, located further south, are abandoned and represent traditional rural housing typologies. New buildings are proposed within the site, while the existing rainwater pond will be restored and incorporated as a key element of the project. The plot was selected because it represents the current rururban transformation of Tenjo, where agricultural land, emerging commercial activities, and future urban development coexist within the same territorial condition.

For the purposes of this thesis, the proposal assumes a hypothetical scenario in which the two properties are merged into a single housing development. This academic exercise aims to locate the proposal within a real territorial context that can serve as a reference for future developments. Ultimately, the intention is to provide a replicable model capable of inspiring more sustainable ways of inhabiting rural territories.



Axonometric View: Plot and adjacent area analysis



Axonometry of the plot analysis - Self elaboration

The plot represents an opportunity to reclaim agricultural activity in a territory of great significance for the pre-Hispanic civilization that inhabited this region centuries ago. The nearby Juaica mountain range is considered a sacred and protected territory by the Muisca culture, whose spiritual beliefs were deeply connected to the forests and their native species. It was understood as a ceremonial landscape where spiritual, natural, and sacred forces converged. Today, many legends and myths still surround this mountain, the highest point in the Bogotá Savanna.

Reclaiming the place's dignity and historical value is a process that must be pursued for its inhabitants and their way of living. Architecture, as the expression of our footprint in the world, can become the first step toward a better path. Although recovering the spiritual vision itself is not the goal of the project, providing spaces that foster a spiritual connection with nature can be achieved through an appropriate architectural proposal.

From a normative perspective, the plot also presents a series of conditions that guide the architectural proposal within a real scenario. Although its primary land use is agricultural and its complementary activities, its location along one of the municipality's main corridors also allows commercial uses in the southern portion of the site. The plot is situated at the transition between the agricultural border and the forest protection area. While it lies below the 2,700 m elevation limit, the proposal recognizes the importance of preserving the surrounding ecosystem and its native species through both the architecture and the settlement strategy.

Responding to the current regulations places the project within a realistic framework for both current and future inhabitants of the territory. Beyond the academic exercise that this thesis proposes, the project is intended to serve as a reference for future developments. For this reason, the proposal understands the site not as an isolated parcel, but as part of a broader productive, ecological, and cultural territory, where past and present continue to shape its identity.

Normative overview

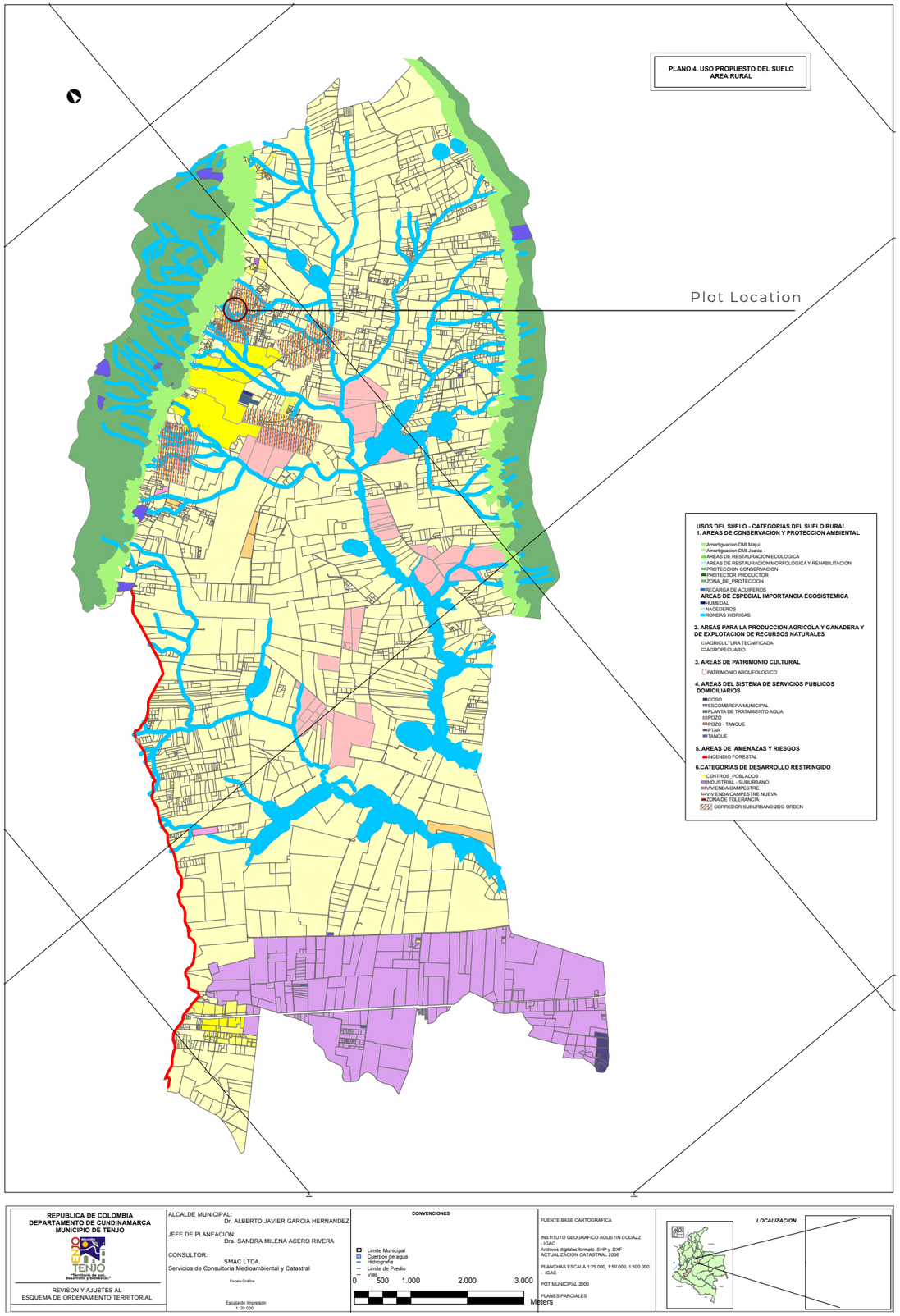
Location: Vereda Chince, rurality of Tenjo.
Area: 70.297 sqm (7 Ha).
Use: Agricultural production, animal farming, and explotation of natural resources.

Part of the suburban corridor of second order: Commercial and gastronomic uses approved.

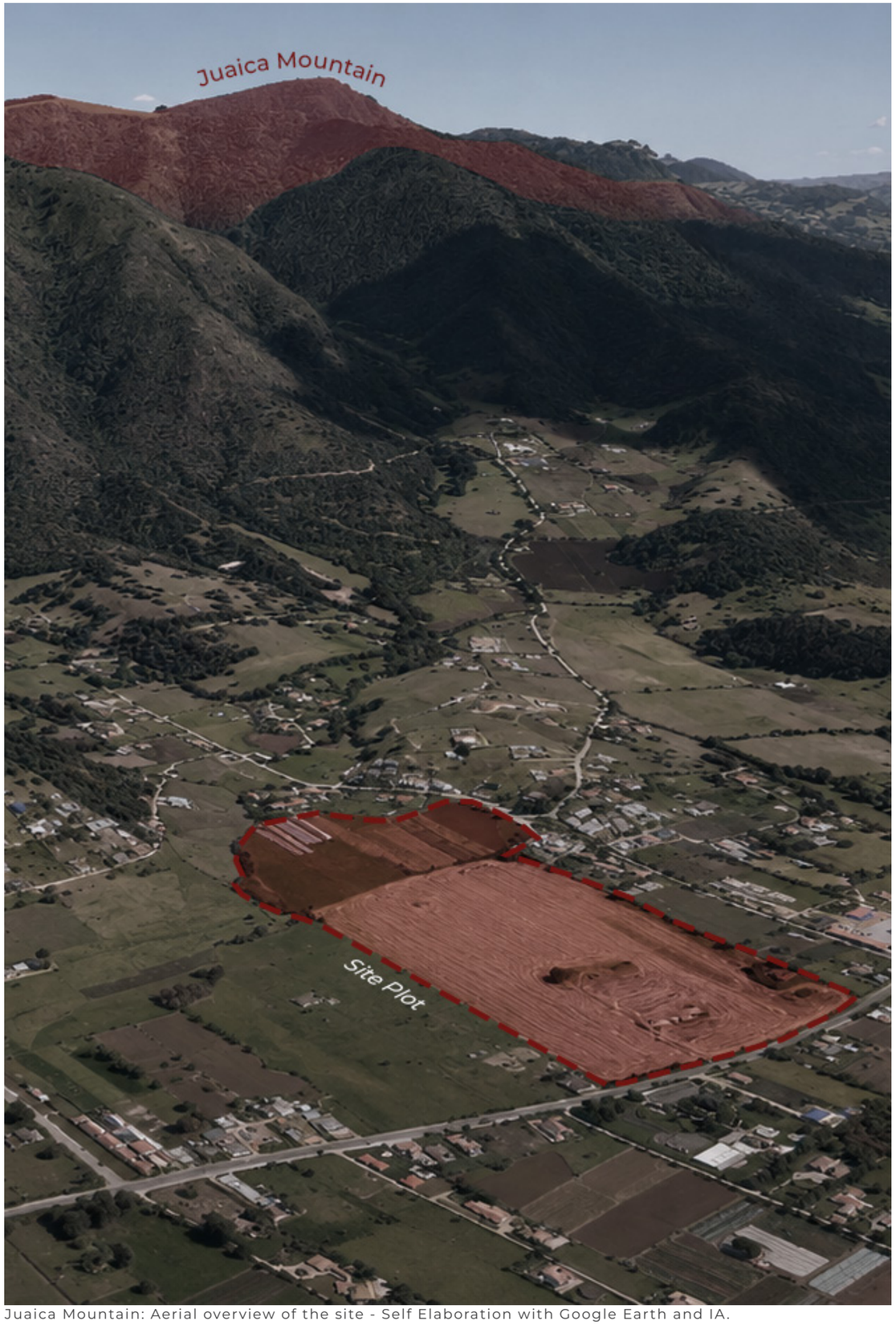
Over the 2700m over the sea level, all uses become natural reserve and developments and uses are highly restricted.

Building rules

Minimum subdivision of 2 Ha (UAF)
Maximum footprint of 10%
4 Dwellings per plot (12 - 16* in total)
Max. 2.5 Stories and 9m of total height



Technical map of plot development regulations - Retrieved from Alcaldía municipal de Tenjo (2011).

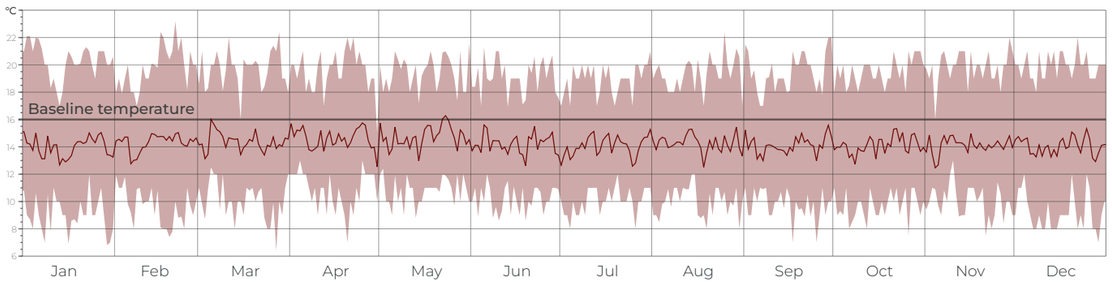


Juaica Mountain: Aerial overview of the site - Self Elaboration with Google Earth and IA.

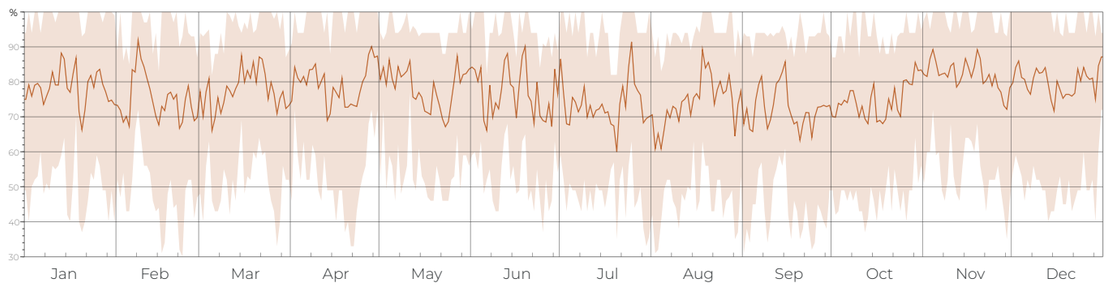
Climatic Characterization

Climate across Colombia, and especially in the Bogotá Savanna, is generally favorable for achieving indoor comfort without active heating or cooling systems. This contrasts with countries where seasonal variations and extreme temperature fluctuations strongly influence architectural design and material selection. Tenjo maintains a relatively stable climate throughout the year; however, it is important to distinguish between the specific characteristics of the rainy and dry seasons in order to respond appropriately through architecture and its bioclimatic strategies.

Annual outdoor dry-bulb temperature



Annual Relative Humidity

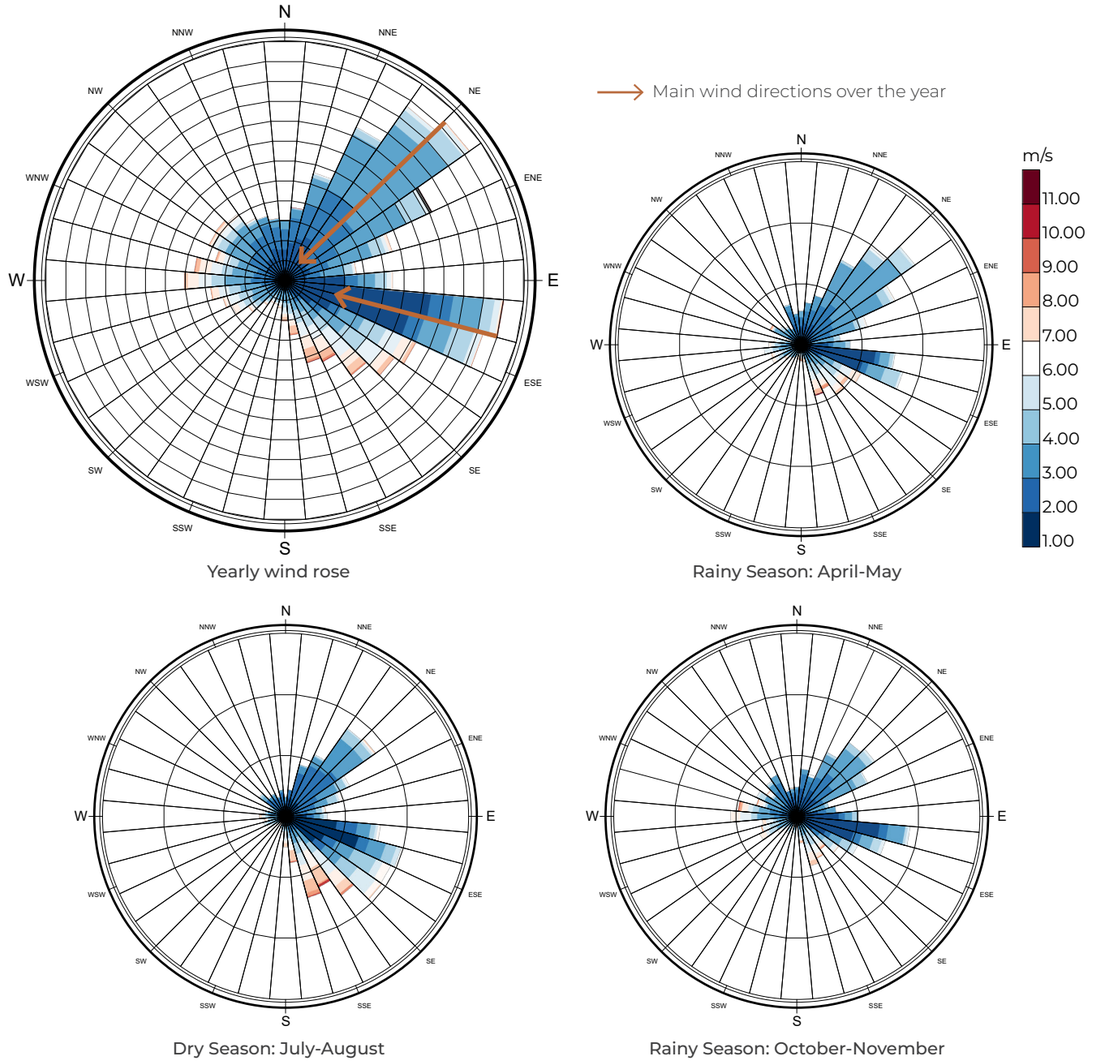


Climatic visualization diagrams - Self elaboration using EPW climatic file from Onebuilding.org

Temperatures remain relatively constant throughout the year, oscillating between approximately 4°C during the coldest nights and 22°C on sunny afternoons. The annual average temperature is around 14°C. Considering a comfort threshold of 18°C and a baseline temperature of 16°C—assuming indoor spaces are typically around 2°C warmer due to human activity and internal gains—buildings remain within the comfort range approximately 35% of the time without the application of specific bioclimatic strategies.

Relative humidity remains above 70% for most of the year, allowing the site to be classified as humid. As a result, material selection and protective construction strategies become essential to ensure the long-term durability of building components. Allowing materials to dry properly and protecting them from prolonged exposure to outdoor moisture are fundamental considerations for rural housing in Tenjo.

Wind rose

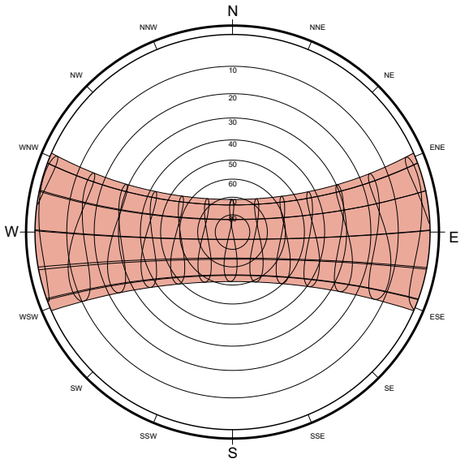


Wind Rose diagrams - Self elaboration using EPW climatic file from Onebuilding.org

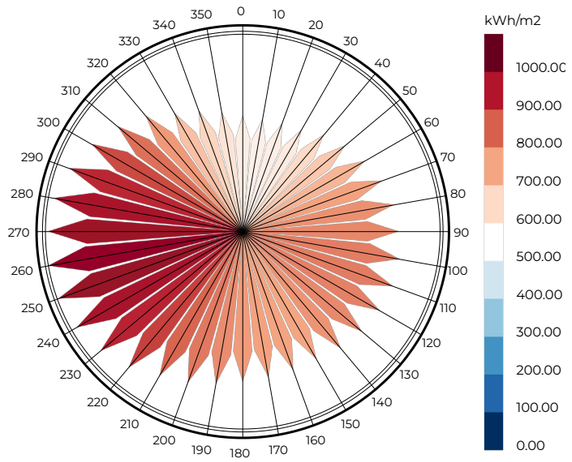
Wind is an important climatic element to consider before designing. Building orientation and the placement of openings can strongly depend on prevailing wind directions and their intensity. In the case of Tenjo, the dominant winds come from the eastern sector, with Northeast (NE) and East-Southeast (ESE) being the most frequent directions throughout the year. Taking advantage of these constant winds from the east can enhance building performance through natural ventilation.

Although less frequent, winds coming from the Southeast and southern sectors tend to reach higher velocities. During August, traditionally one of the windiest periods of the year in Colombia, wind speeds can exceed 9 m/s. Providing partial protection against these stronger winds can help reduce heat losses and improve indoor comfort, especially during colder periods and nighttime conditions. Building shape, vegetation, and envelope design are therefore important considerations during the conceptual phase.

Sun Path



Solar Irradiance



Solar diagrams - Self elaboration using EPW climatic file from Onebuilding.org

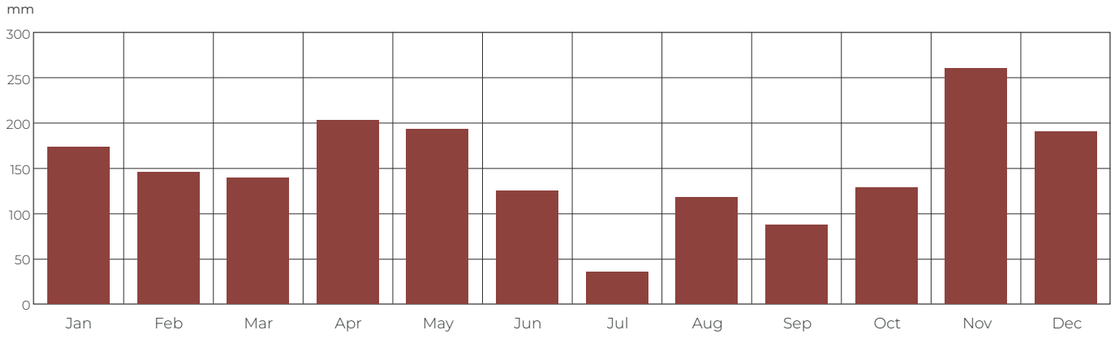
Due to its proximity to the Equator, solar exposure in Tenjo remains relatively constant throughout the year. Morning and afternoon solar radiation become key considerations for solar-oriented design strategies, with east and west orientations receiving the most relevant solar gains. Orienting heat gain strategies towards the west, especially in bedrooms and spaces mainly inhabited during the evening and nighttime, can improve indoor comfort by taking advantage of the afternoon irradiance.

Furthermore, photovoltaic panels can contribute to the production of renewable energy within the project. Their orientation and inclination towards western exposures and the sky can maximize energy generation and support the building's operation.

Rainwater collection is one of the most interesting bioclimatic strategies that can be applied to a building in the Bogotá Savanna, especially when considering a project related to agriculture and productive land activities. April–May and November-December are the periods during which the highest amounts of rainfall can be potentially captured for future use within the buildings or for crop irrigation.

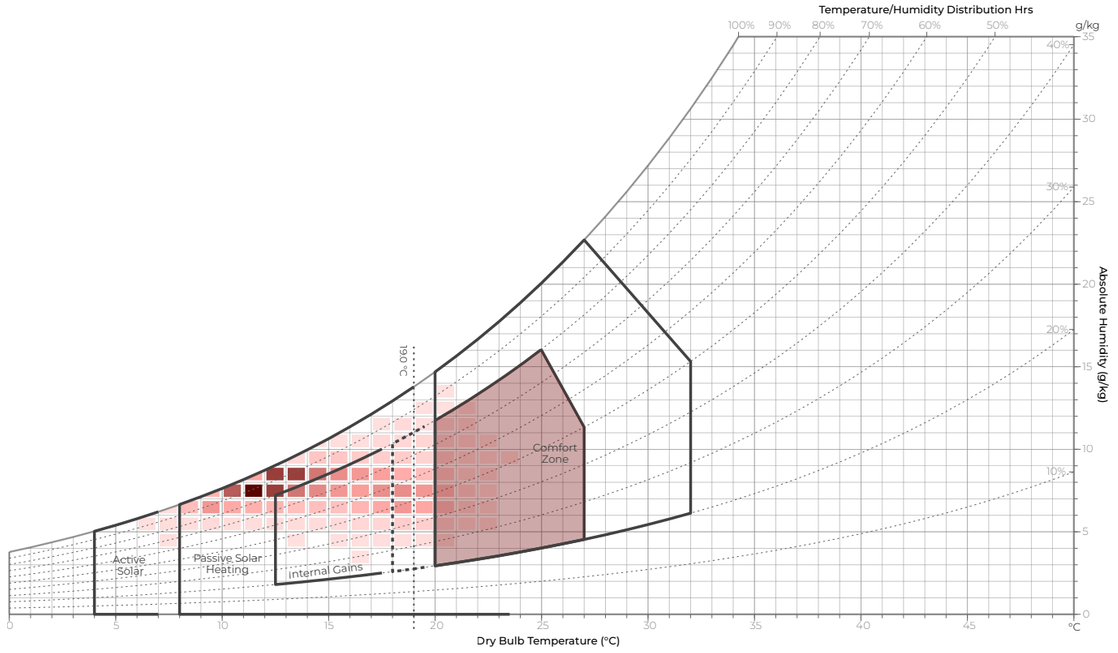
Further analysis of the building roof surfaces will be conducted in order to determine how much water is required, how much can be collected through the project's impermeable surfaces, and how much should be infiltrated into the ground to avoid flooding and other related environmental problems.

Monthly Rainfall



Rainfall diagram - Self elaboration using EPW climatic file from Onebuilding.org

Bioclimatic strategies: Psychometric chart



Psychometric chart - Self elaboration using EPW climatic file from Onebuilding.org

The Givoni Psychrometric Chart is a valuable synthetic diagram for understanding which passive or active strategies should be prioritized according to a data-driven approach. In the case of Tenjo, passive solar heating appears as the most important strategy to achieve indoor comfort conditions throughout the year.

Passive solar heating can be addressed through a proper building orientation in relation to solar geometry and the sun path. Fostering an environmentally aware way of inhabiting should be a requirement when discussing sustainable practices. In places such as the Bogotá Savanna, where comfort can largely be achieved through passive strategies, the incorporation of climatic principles from the early design stages can lead to a more site-oriented architecture for rural communities.

Program and uses

The following program and uses correspond to an approximation of the proposal's areas and dimensions, which may slightly change during the design phase. They should be understood as design objectives rather than fixed architectural realities.

As a statement of the thesis, the goal is to allocate 85% of the total plot area to productive land activities, including environmental protection areas and agroforestry that help preserve local ecosystems and foster native species. Polycultures and orchards will be the main uses within this category, serving as the primary economic activity for the inhabitants.

Category	Use	Units	Area	%
Land Activity	Polycultures	m2	35.851,73	85
	Agroforestry	m2	17.925,86	
	Orchards	m2	1.792,59	
	Protection Area (Water current)	m2	4.182,70	
		Total	59.752,88	

Land activity will be complemented by other low-impact productive uses aligned with the principles of regenerative architecture, ecoproductivity, and permaculture. The project will incorporate beekeeping, vermiculture, mushroom cultivation, and aquaponics as alternative productive systems to conventional farming, which remains one of the main sources of environmental pollution associated with rural human activities worldwide.

Category	Use	Module (20 m2)	Area (m2)	%
Other Land Activity	Beekeeping (Module 1/4)	20	100	2,08
	Honey extraction room, Honey storage, Equipment Storage, Outdoor Hive area			
	Vermiculture	18	360	
	Worm Beds, Organic waste reception, Vermicompost storage, tool room			
	Mushroom Cultivation	18	360	
	Substrate preparation, growing room, Harvest and packing, cold storage			
	Aquaponics	32	640	
	Fish tanks, Hydroponics growing beds, pump room, seeding area, storage			
		Total	1460	

Regarding housing, one of the most relevant architectural components of the project, a modular approach will be applied to allow flexibility and adaptability for each user and family inhabiting the development. A single dwelling can be composed of different modules, allowing personalized layouts while maintaining a consistent architectural language and construction logic.

Category	Use	Module (16 m2)	Area (m2)	%
Housing	Room Module	1	20,00	3,2
	Bathroom, working area			
	Double Room Module	2	40,00	
	Bathroom, storage, room, studio			
	Social and Services Module	4	80,00	
	Kitchen, Laundry, Storage, Dinning, Living room			
	Total single house		140,00	
	Regenerative cell (x4)		560,00	
	Total Houses		2.240,00	

As a housing settlement, the project also requires complementary infrastructure that supports both domestic life and productive activities. This infrastructure is essential for ensuring the efficient functioning of the settlement and for implementing the circular economy principles that organize the relationships between its different components.

Additionally, some of these spaces are intended to connect the project with the surrounding community by providing shared facilities and common spaces. This welcoming character seeks to avoid the isolated "ghetto" developments that have become increasingly common in the Bogotá Savanna, encouraging instead a more open and integrated relationship between the settlement and its territorial context.

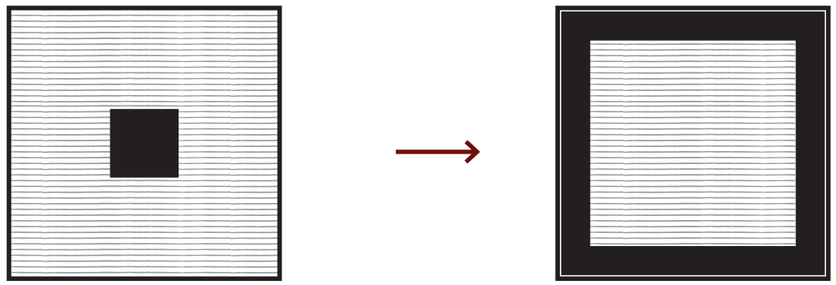
Category	Use	Units	Area (m2)	%
Infraestructure	Roads and sidewalk	m2	3.163,39	9,6
	Parking	m2	1.054,46	
	Granary	m2	120	
	Machinery Storage	m2	100	
	Shared Cold Room	m2	80	
	Packing and distribution	m2	100	
	Laboratory	m2	60	
	Restaurant	m2	200	
	Community Workshop	m2	100	
	Solar Farm	m2	300,76	
	Water Ponds	m2	1500	
	Total		6.778,61	

Total	70.245,70	99,9
Plot Total	70.297,50	100

Program and uses schedules - Self Elaboration

Concept Design

Agroproductive haciendas have traditionally been understood, since the colonial period, through a center-periphery relationship, in which the house occupies the center of the plot surrounded by crops and productive land. This project proposes a shift: placing the productive landscape at the center of the project as the main articulating element, while the housing units surround and support the common agricultural activity.

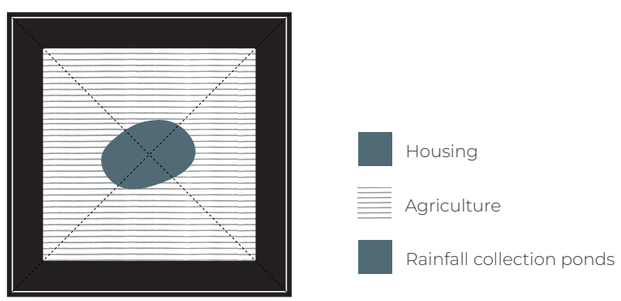


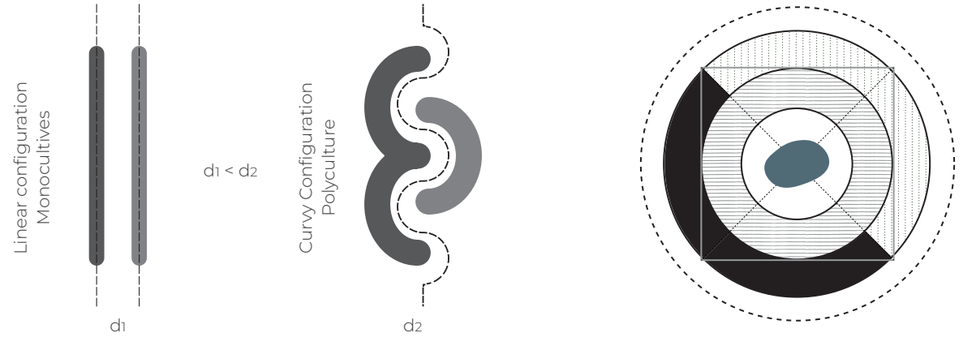
Traditional Hacienda System — Regenerative Homes proposal

Housing — Agriculture

This new configuration leads to a different kind of center, understood as the main resource for productive land activity: water. Rainwater ponds become crucial for the development of the project and represent one of the main opportunities provided by the site's rainy climate.

Keeping housing in the outer ring allows agricultural activity to occupy the center of the settlement as the common space shared by all inhabitants. Rather than being understood solely as a productive use, agriculture becomes the element that brings the community together. The concentric configuration reinforces this relationship through architecture, preserving the productive landscape as the heart of the project.





Linear vs circular crops
Same area - more cultivated length

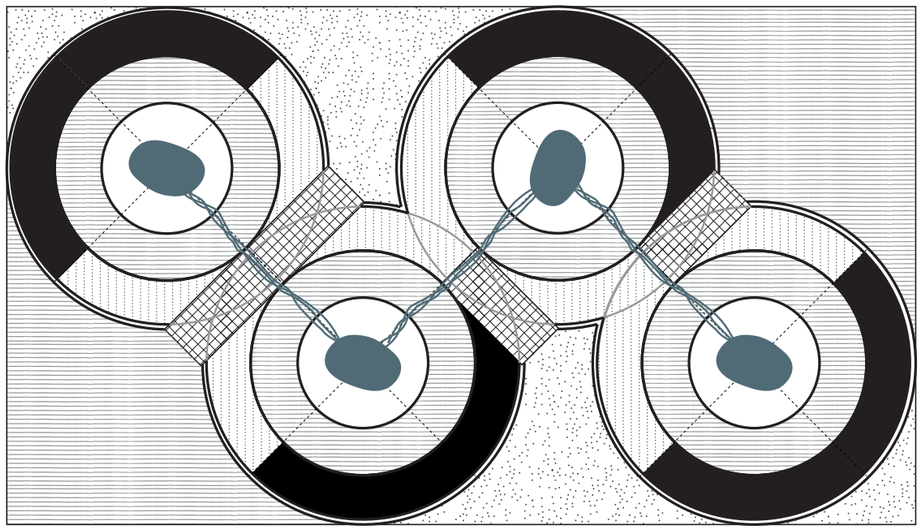
Regenerative Cell
Radial configuration: Rings of uses

Housing — Agriculture — Rainfall collection ponds — Complementary land uses — Future expansion rings

Circular configurations are more efficient for productive purposes. Their perimeter provides a greater cultivable edge compared to traditional linear agricultural layouts. Applying a radial principle to this configuration allows the cell to organize different rings of uses according to the objectives.

Once the regenerative cell is established, it needs to connect with others to function as a productive system. Arranging the cells according to the natural slope of the terrain allows the creation of new water centralities connected by channels that store and distribute rainwater for future use.

At the intersections between cells, new service spaces emerge to support agricultural activities, such as granaries and storage buildings. In this way, complementary uses can serve more than one cell, making the overall system more efficient. The spaces outside the radial configuration can be used for additional agricultural production or agroforestry, contributing to the restoration of a humanized natural ecosystem.

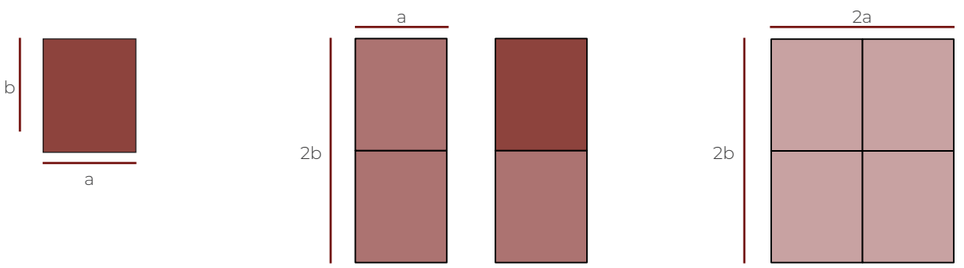


Conceptual Settlement diagram - Self Elaboration

Rather than proposing a fixed geometric solution, the conceptual diagram establishes an organizational principle between water, agriculture, productive land, and housing. These relationships can later be expressed through concentric configurations adapted to the specific characteristics of the site, especially to the understanding of water natural flow in the plot.

Architectural buildings concept

The housing typological proposal needs to reflect the flexible and adaptable spirit of the settlement system. A modular approach, in which the room is the key building block, allows different dwelling configurations by aggregating modules according to the users' needs and preferences. A single-room module, a double-room module, and a social module (kitchen, living room, and dining area) are the key elements that compose each home within the architectural proposal.

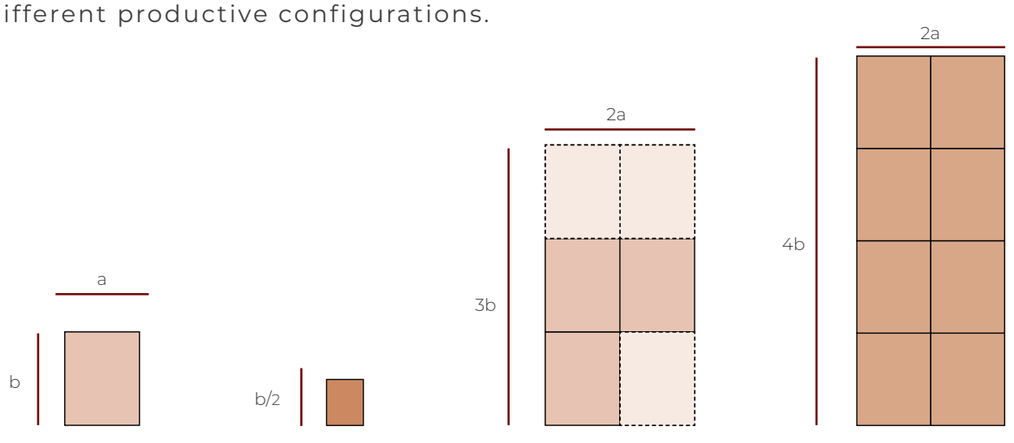


Single room module

Double room module
Room + Studio, customizable

Social module
Kitchen, living room, dining

This same logic of modularity can also be applied to the complementary buildings and infrastructure of the project. The second ring accommodates productive land uses such as aquaponics, vermiculture, and mushroom cultivation. Arranging these elements along the sectorized strip allows different configurations according to the needs of each productive cell. The following diagrams illustrate how the modular system can be adapted to different productive configurations.

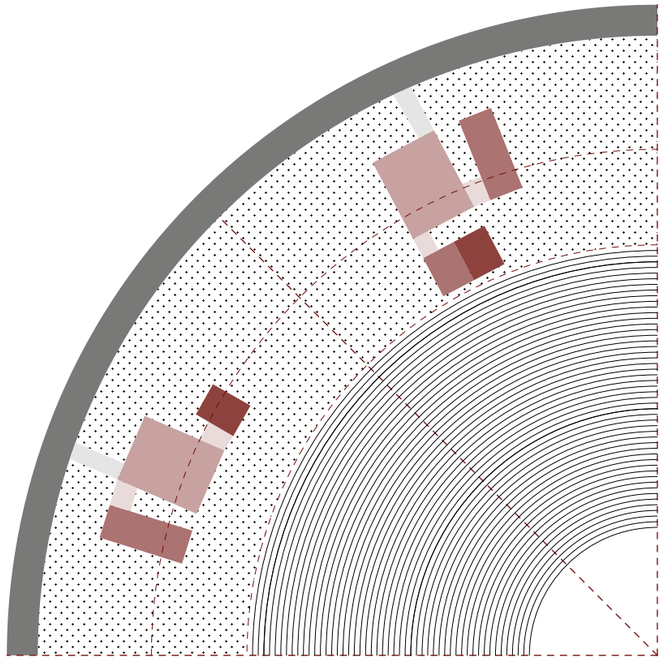


Vermiculture

Beekeeping

Mushroom Cultivation

Aquaponics
Pisciculture + Hydroponics



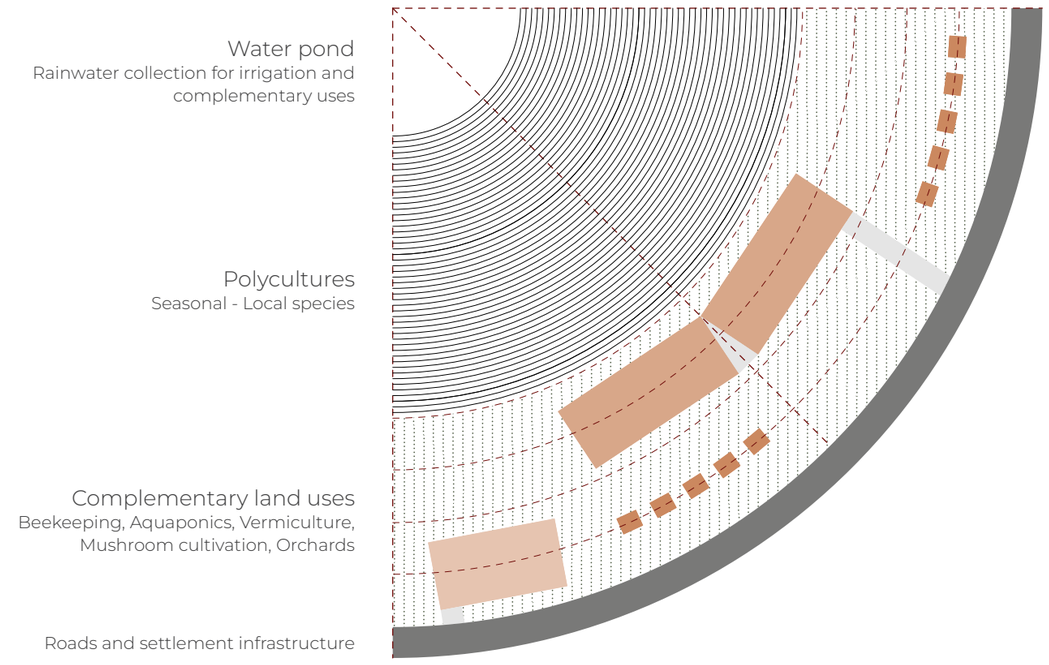
Roads and settlement infrastructure

Housing
3 - 4 Houses per regenerative cell

Polycultures
Seasonal - Local species

Water pond
Rainwater collection for irrigation and complementary uses

Within the cell system, the buildings are connected through a network of peripheral roads and infrastructure that brings the different components together as a whole. Furthermore, buildings associated with complementary uses, such as granaries, laboratories, and storage facilities, follow the same modular typology, allowing the entire project to be understood as a single architectural language. Progressive growth remains a fundamental concern for a rural development that seeks to overcome the current limitations of productivity within the territory.



Water pond
Rainwater collection for irrigation and complementary uses

Polycultures
Seasonal - Local species

Complementary land uses
Beekeeping, Aquaponics, Vermiculture, Mushroom cultivation, Orchards

Roads and settlement infrastructure

Conceptual Regenerative cell diagrams - Self Elaboration

Masterplan

The masterplan is organized through five different regenerative cells, starting from the existing water pond, which will be restored and incorporated into the project. From this point, different water channels and secondary ponds are organized according to the site's topography, identifying the lowest points of the terrain to estimate the natural flow of water. These ponds become new centralities and articulate the remaining regenerative cells.

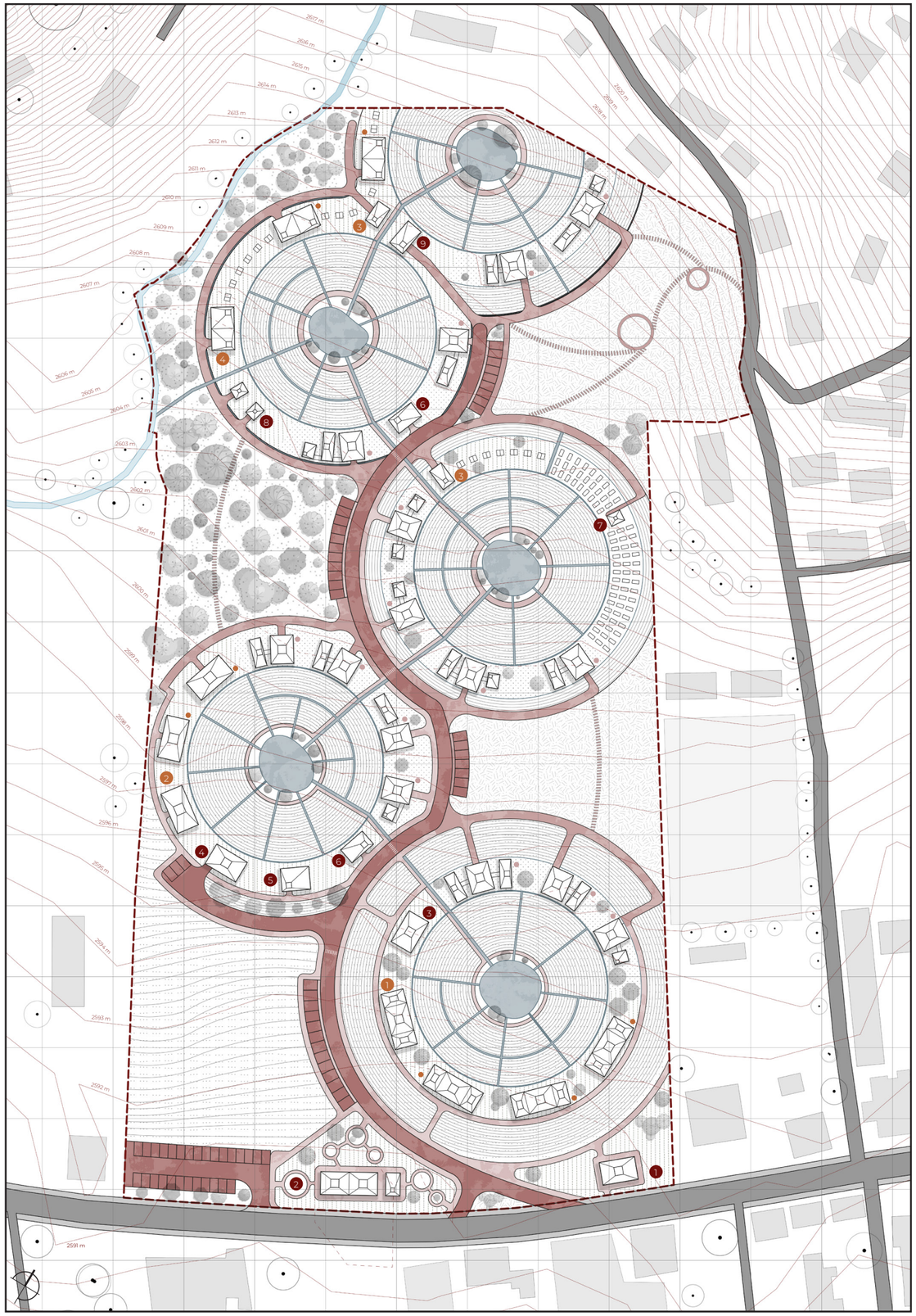
Across each cell, the inner productive rings are traversed by secondary drainage channels that provide irrigation for the crops. As the Bogotá Savanna was part of an ancient lake thousands of years ago, the land naturally presents wetland characteristics during the rainy seasons. Rather than understanding this as a disadvantage, indigenous communities developed a pre-Hispanic cultivation technique known as "juncales", in which shallow water channels allowed seasonal flooding to be used as a natural irrigation system. The proposed cells reinterpret this technique through a network of secondary and tertiary channels that distribute water across the productive landscape while connecting the crops to the central and intermediate ponds. In this way, water is understood not only as a resource,

- Pedestrian and ecological paths
- Pedestrian paths / Restricted vehicular transit
- Vehicular paths
- Human-made water channels and ponds
- Current Existing Water flow - drainage
- Polyculture
- Other land uses and infrastructure areas
- Housing
- Agroforestry area
- Orchards and Native Fruit Trees

Housing

Land Activities
1. Aquaponics
2. Vermiculture
3. Beekeeping
4. Mushroom Cultivation

Infrastructure
1. Community Workshop
2. Restaurant with parking area
3. Packing and distribution
4. Machinery Storage
5. Shared Cold Room
6. Granary
7. Solar Farm infrastructure
8. Forest ranger cabin and storage
9. Laboratory



Master Plan - Self Elaboration

Vegetation and species



Traditional Indigenous polyculture system

Corn + Green Beans + Squash
3-6 months harvesting period
2-3m Height

but also as the organizing element of the settlement, structuring both the productive landscape and the relationships between the regenerative cells.

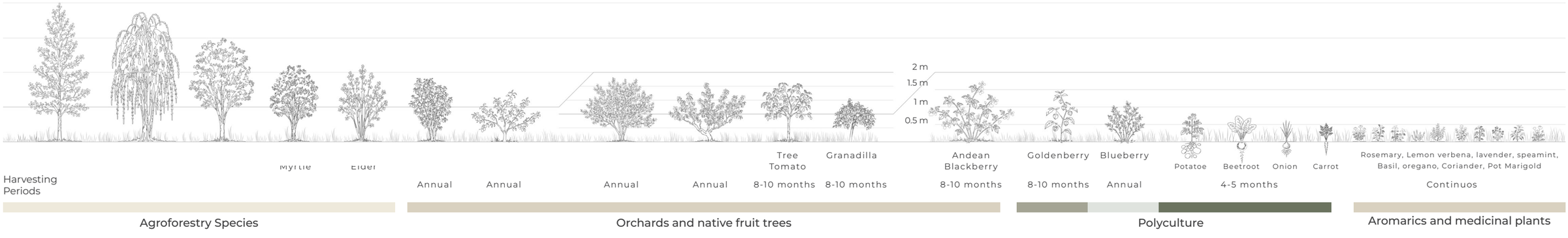
Around the ponds, life begins to grow. The concentric rings gradually organize different functions and uses, while agricultural activity remains the productive core of each cell. Surrounding the productive land, architecture accommodates the dwellings and the infrastructure required to support the proposed land activities explained in the program. Understanding the land itself as the common space is a way to foster human connections and strengthen an emerging community.

To connect the cells, different types of paths are introduced, always prioritizing pedestrian movement and walkability throughout the project. Although vehicles are part of the settlement, their circulation is limited, and parking areas are concentrated along the main road spine. Access to the houses and some productive buildings is permitted, but always in a controlled manner.

Planting and cultivating native species is essential to the proposal. Different species were carefully selected for their local character and the ecological value they provide to the developing ecosystem. In the agroforestry areas, for instance, willows were selected to provide shade from the low-angle afternoon sun, reducing overheating and glare, while also helping to restore the watercourses and improve soil conditions.

Polycultures, as the main strategy for introducing a regenerative productive system, are based on understanding ecosystem cycles and selecting compatible species that maintain healthy and resilient cultivation. Indigenous techniques such as the Three Sisters increase the project's resilience through biodiversity, allowing three complementary crops to grow together within a single productive system.

Finally, the dwellings are arranged in different layouts to demonstrate the versatility and flexibility of the proposed modular approach. A house should go beyond the simple need for shelter and become a home, designed and built according to the needs of each family. A common architectural language unifies all the buildings into a single proposal that reclaims the value of the territory while expressing a regenerative vision for its future.



Project's vegetation catalogue - Self elaboration

Other Land Activities: Architectural approach

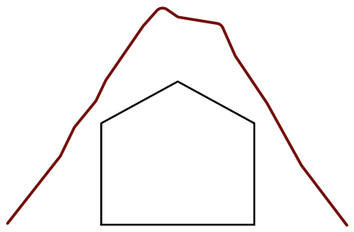
The land activities proposed in this thesis as part of the program of the project are meant to complement and diversify the productive uses of the development. Rather than competing with the traditional agricultural practices, these low-impact uses complement the project as a whole.

Aquaponics, vermiculture, mushroom cultivation, and beekeeping need specific and separate infrastructure to run properly. For this reason, architecture must correlate their requirements with the volumetric approach. Even though the scope of this thesis is not to fully develop these kinds of productive systems, the intention is to provide a schematic architectural framework to establish the main characteristics these buildings might have for future explorations.

In this sense, in order to keep a unique architectural language related to the site, the type and style of architecture is similar between buildings. It is born from the inspiration of the Juaica mountain as an emblematic natural element of the territory and from the deconstruction of the traditional housing style of the double-slope roof. The result is a valuable and innovative shape that is going to change through the different uses and can be adaptable to any function, providing a connection with the surroundings and improving the daylight conditions in the indoor spaces.

Architecture conceptual diagram

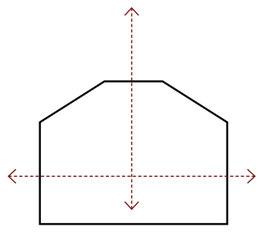
Local Reference



Traditional Housing silhouette - double slope roof

Juaica Mountain profile

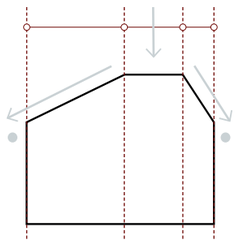
Geometric Transformation



Housing silhouette decomposition

Vertical and horizontal connection with the site
+ Daylight

Adaptable Architectural system



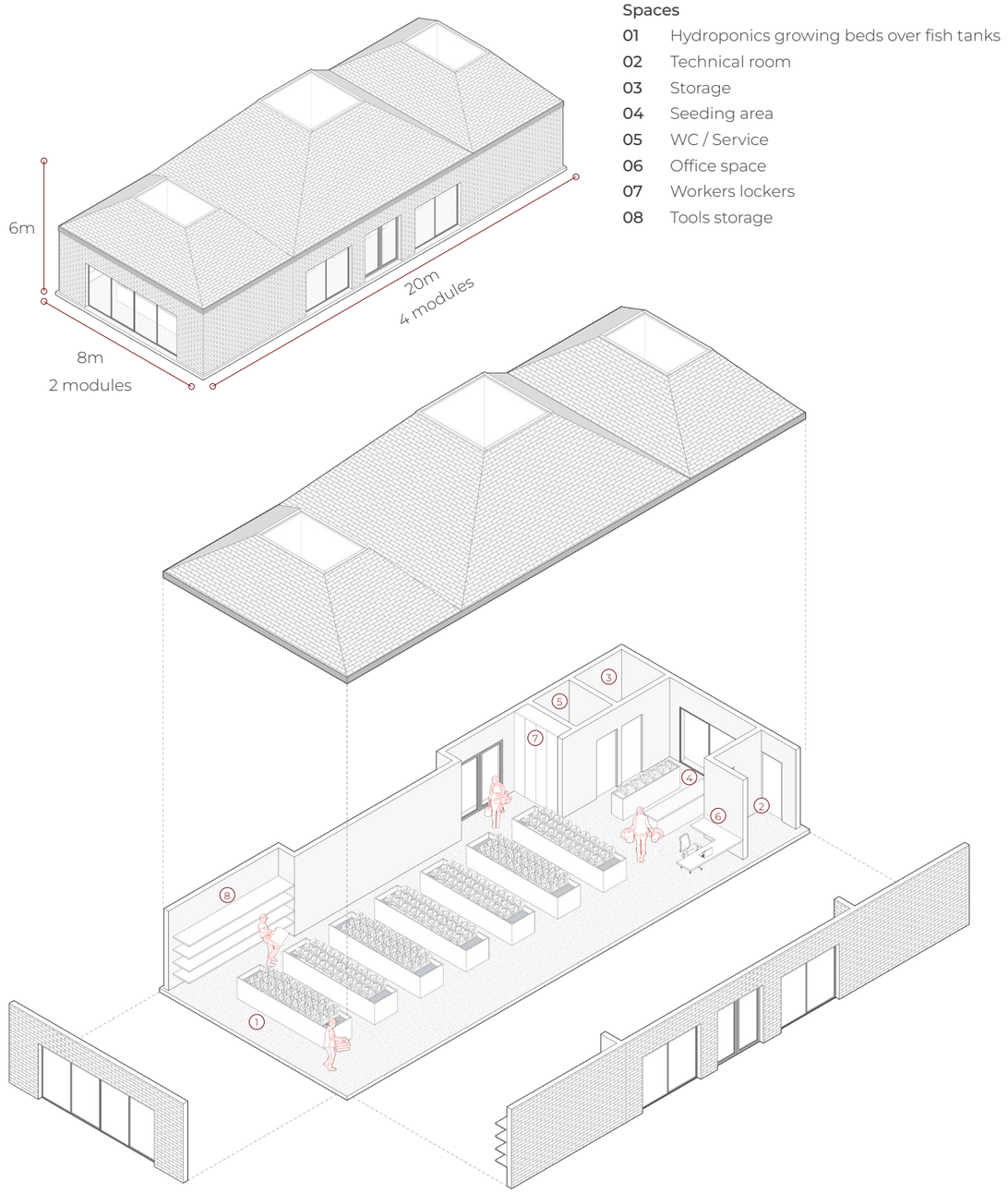
Adaptable housing geometry

Variations and displacements according to use and function

Water collection and management

Conceptual Diagram: Architecture shape and geometry - Self elaboration

Aquaponics



Main requirements and characteristics

A Good daylight exposure
Supports plant growth and reduces dependence to artificial lighting.

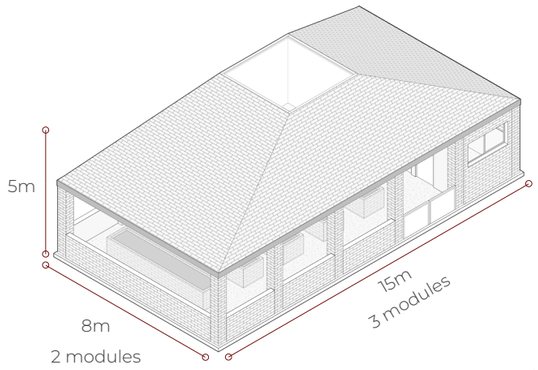
B Controlled ventilation
Needed to manage humidity and maintain a stable internal environment.

C Clear circulation
Sufficient space around aquaponics beds for harvesting, maintenance and monitoring.

D Continuous harvesting
A seeding area is key for keeping a constant germinating and harvesting period in the system.

Aquaponics: Schematic design axonometric views - Self Elaboration

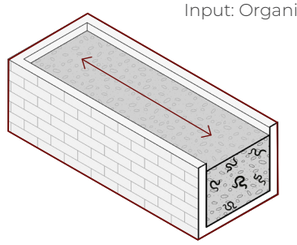
Vermiculture



Spaces

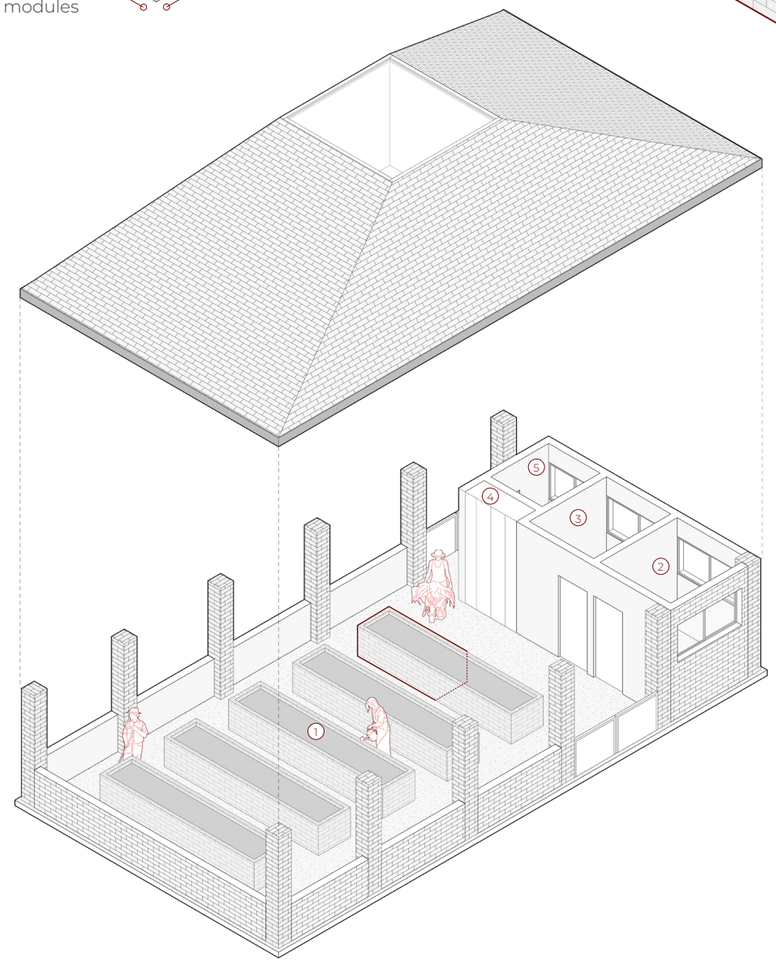
01 Worm Beds
02 Organic waste reception
03 Vermicompost Storage
04 Tools storage
05 WC / Service

Input: Organic waste



Output: Vermicompost

Controlled movement of organic material allows the worms to be concentrated in one section of the bed, facilitating vermicompost harvesting.



Main requirements and characteristics

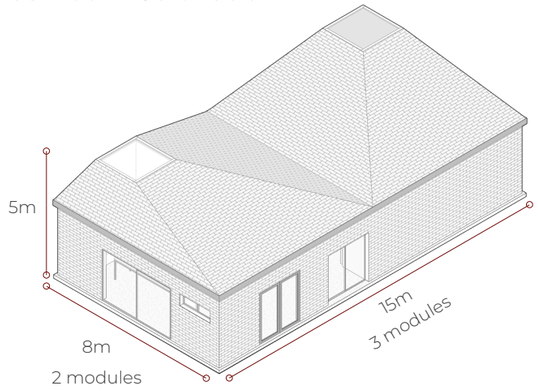
A Controlled moisture
Beds must remain humid but not waterlogged; drainage below the beds is essential.

B Natural ventilation
Permeable façades maintain air circulation and prevent excessive humidity and heat.

C Organic waste reception
Small area for receiving, sorting and temporarily storing organic material before feeding the worms.

Vermiculture: Schematic design axonometric views - Self Elaboration

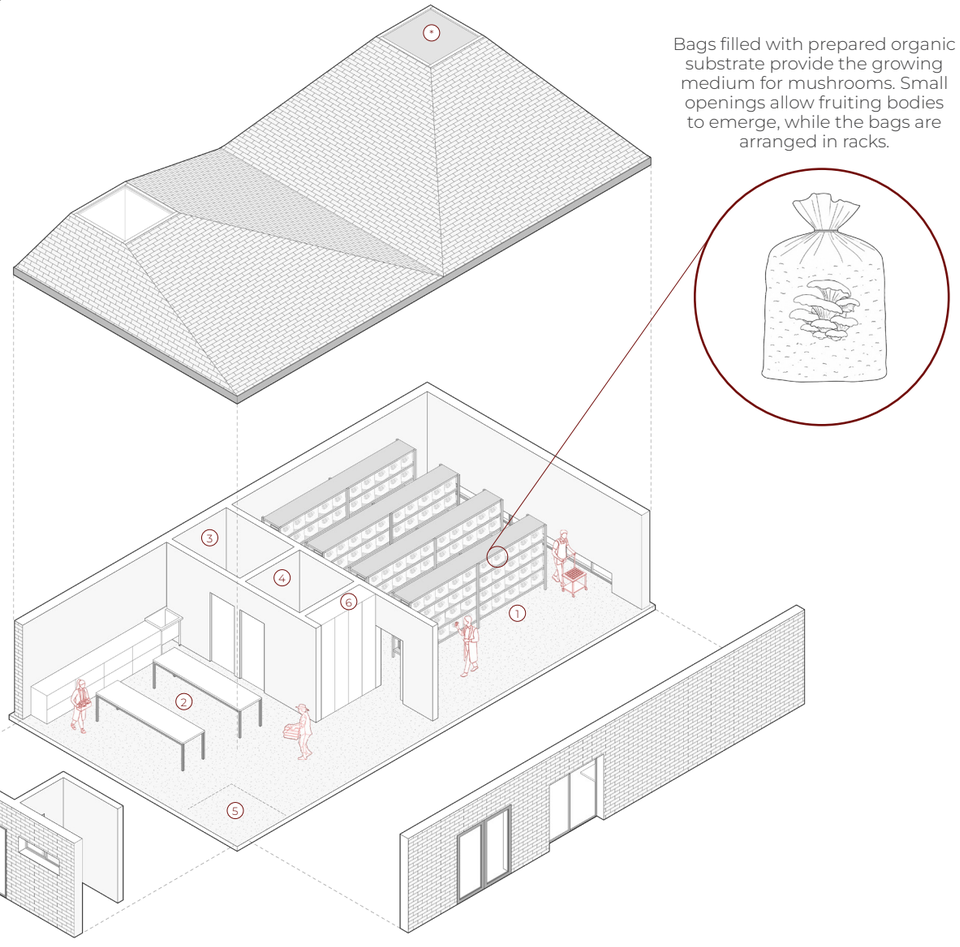
Mushroom Cultivation



Spaces

01 Growing Room
02 Harvest / Packing / Substrate preparation
03 Cold room
04 Storage room
05 WC / Service
06 Tools storage
***** Opaque skylight

Bags filled with prepared organic substrate provide the growing medium for mushrooms. Small openings allow fruiting bodies to emerge, while the bags are arranged in racks.



Main requirements and characteristics

A Controlled humidity
Growing rooms must maintain high and stable humidity to support mushroom development, while avoiding condensation and stagnant water.

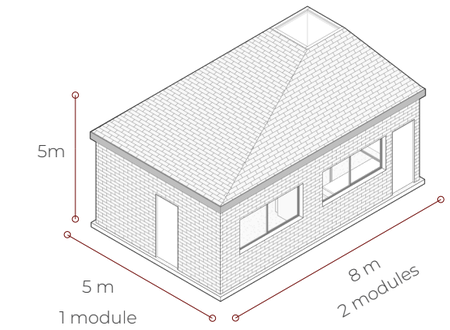
B Controlled temperature and ventilation
Stable temperature and continuous air exchange to regulate heat, humidity and CO_2 levels.

C Limited daylight
Mushrooms do not require direct sunlight. Controlled, indirect or low-level lighting is sufficient, reducing the need for large glazed openings.

D Thickened envelope
A insulated envelope buffers external variations, supporting a stable environment for mushrooms.

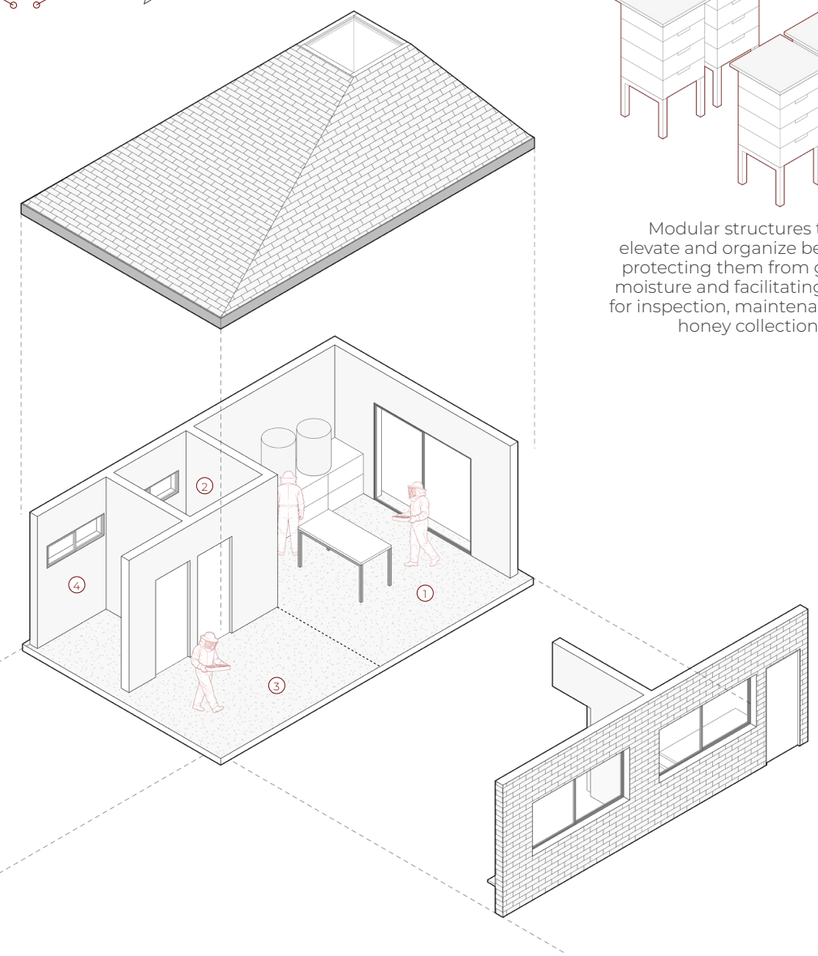
Mushroom Cultivation: Schematic design axonometric views - Self Elaboration

Beekeeping



Spaces

01 Honey extraction room / Packaging
02 Honey storage
03 Equipment storage
04 WC / Service



Beehives are placed in the proximity of the beekeeping infrastructure

Modular structures that elevate and organize beehives, protecting them from ground moisture and facilitating access for inspection, maintenance, and honey collection.

Main requirements and characteristics

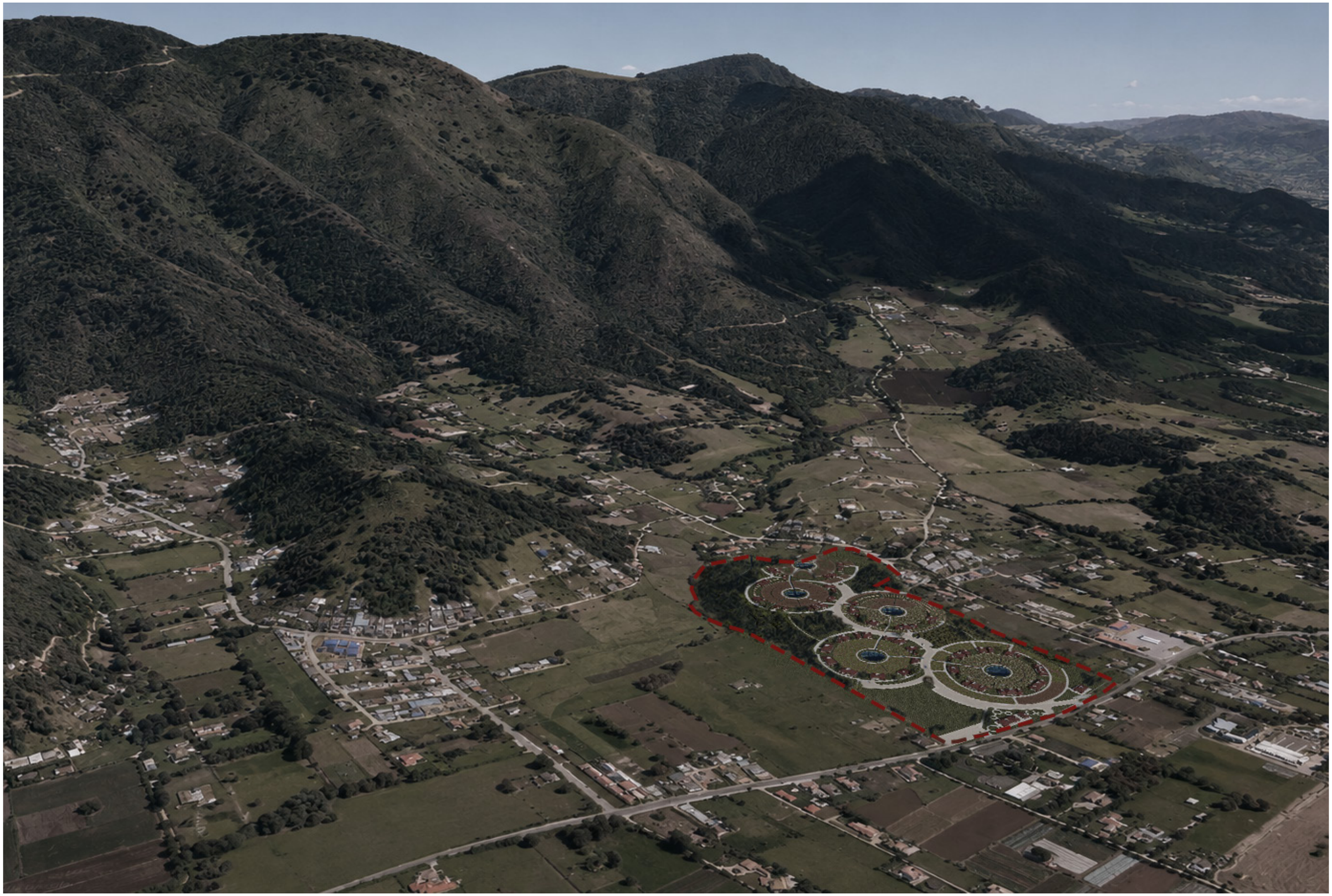
A Protected outdoor environment
Beehives require outdoor exposure with good airflow, protection from strong winds, and partial shelter from excessive rain and direct sun.

B Honey extraction
A clean, enclosed space is required for honey extraction, filtering, packaging, and temporary storage.

C Connection to vegetation
The apiary should be located close to flowering and native vegetation, providing accessible sources of nectar and pollen while supporting pollination.

D Ventilation and controlled daylight
Natural ventilation and controlled daylight provide a comfortable working environment while avoiding excessive solar exposure.

Beekeeping: Schematic design axonometric views - Self Elaboration



Aerial overview of the site with the master plan - Self Elaboration.

Housing architectural development

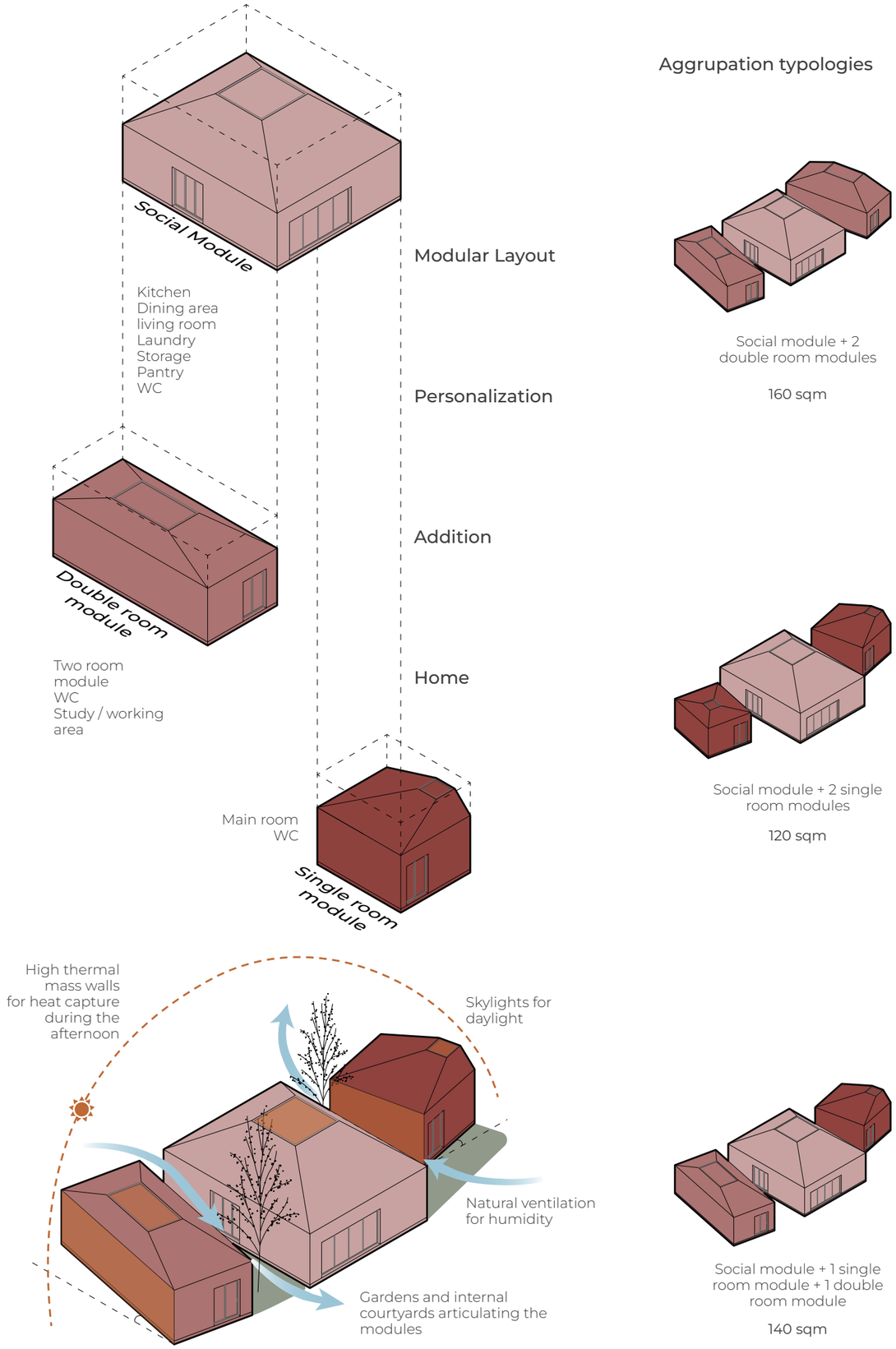
Providing an alternative way of living for rural inhabitants demands an architecture that is assembled within the site. Local materials, bioclimatic solutions, spaces intended to connect inhabitants with rural activities, flexibility, and adaptability are some of the characteristics established throughout the thesis. The proposed housing model translates these qualities into a design solution that maintains the same architectural language and typology as the buildings presented previously.

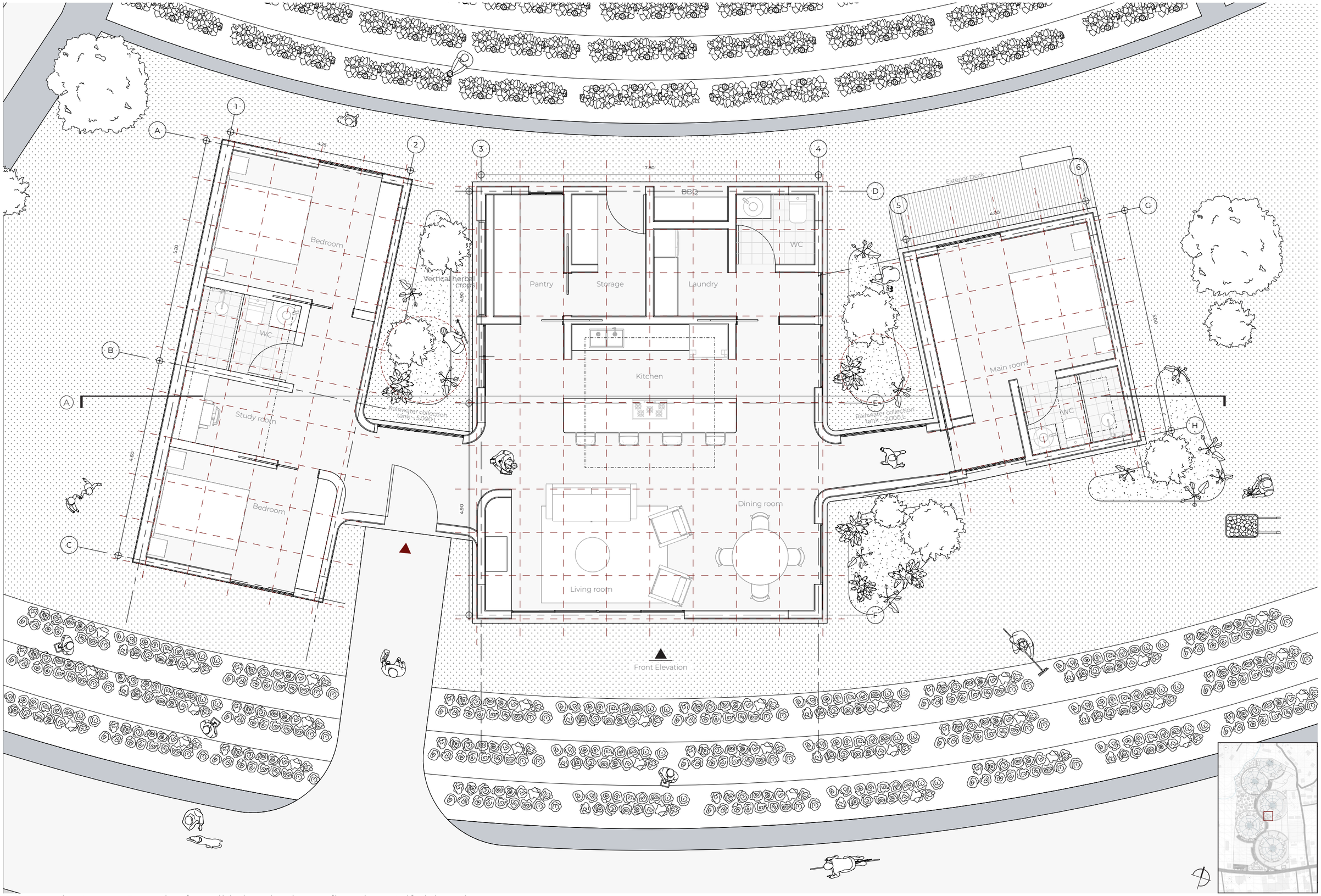
As the roof is probably the most evident characteristic of the architectural form established in the concept, it also becomes an opportunity to capture solar radiation and introduce natural daylight into the interior spaces. Each type of module has a different roof configuration, intended to reinterpret the surrounding mountain landscape from an aesthetic perspective.

The house is composed by combining the social module with the double-room and single-room modules. Different configurations can be arranged through the addition or subtraction of modules within the plot, allowing users to adapt the dwelling according to their needs. For couples or single people, a social module combined with a single-room module may be sufficient, while larger families can choose from several possible configurations according to the number of inhabitants and their needs.

Although the possibilities are extensive, the thesis explores only one reference layout, composed of one module of each type. The connection between them is articulated through additional spaces that bridge the modules and frame the entrance to the dwelling. Courtyards emerge between the modules, allowing natural ventilation while connecting the architecture to herbal gardens for domestic use. In addition, semi-interior spaces integrated into the dwelling provide opportunities for food production and small-scale cultivation, such as the vertical crop system located in one of the courtyards.

Landscape and vegetation are used as a means of merging the productive vocation of the exterior with the domestic use of the house. The dwelling





Regenerative Home - Example of possible housing layout floorplan - Self elaboration.

is directly connected to the agricultural fields that surround it, blurring the traditional boundaries between rural production and inhabitation. The courtyard that traditionally surrounded rural houses is here replaced, or extended, by crops and agricultural activity, making rural production the nucleus and a shared space between neighbours.

Spatial organization

The layout is organized around a main social module, where the common domestic spaces and the services related to exterior activities are concentrated. It contains an open kitchen integrated with the living and dining areas, while the pantry, storage, laundry, and bathroom are located towards the back. The storage area acts as a transition between the domestic interior and the central productive areas, allowing users to use it as a place to change before going outside and vice versa. In the courtyard between the social and double-room modules, an exterior furniture element provides a space for vertical cultivation for the inhabitants.

The single-room module is intended to accommodate the main bedroom. It includes the sleeping area and a bathroom. Both this module and the double-room module are characterized by a high-thermal-mass wall located along their western façades. These walls are designed without openings to maximize their capacity to absorb heat during the afternoon and release it gradually throughout the night. In this way, nighttime discomfort caused by the cold temperatures of the Bogotá Savanna can be addressed through a passive bioclimatic strategy.

The double-room module is formed by combining two single-room modules. It maintains the same logic and a similar spatial organization; however, instead of including two bathrooms, it incorporates a working space for the inhabitants. Here, the skylight plays a key role in providing sufficient natural light to the interior during the day, since the high-thermal-mass wall needs to remain blind to minimize heat losses during the night. Views and openings are oriented towards the north and south, where crops and communal spaces are located, as well as towards the interior courtyards.

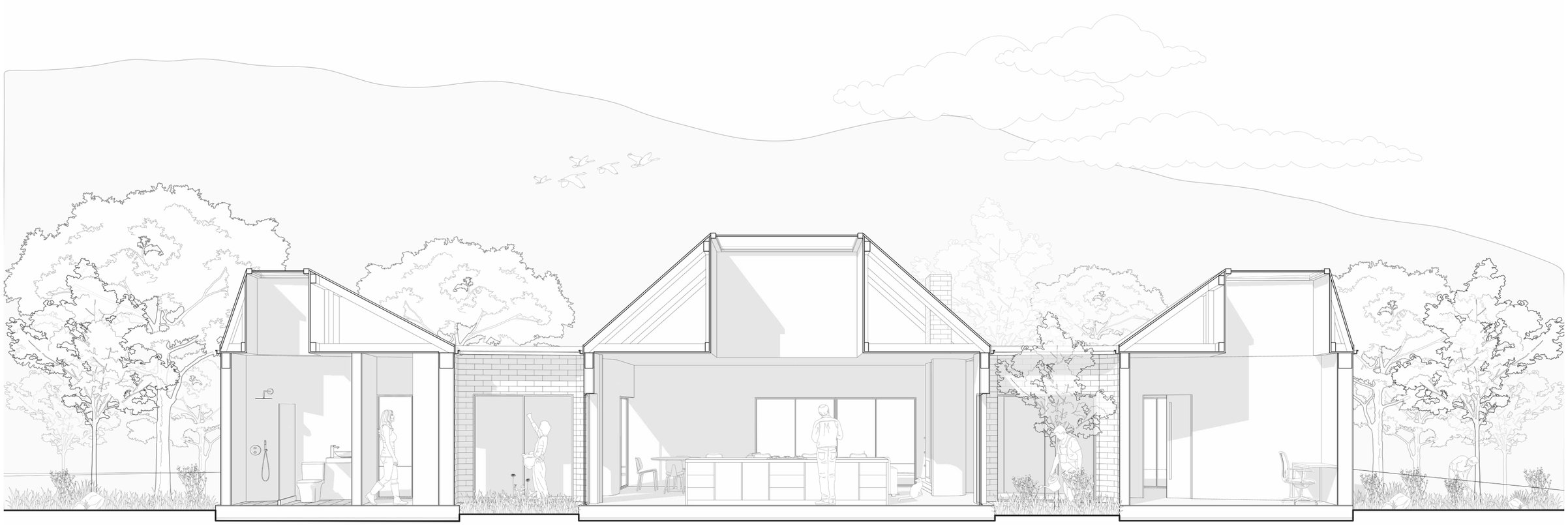
Architecture, territory, and adaptability

The dwelling reinterprets the landscape through its architectural form, with the skylights also acting as elements that establish a visual connection with the sky. The interior spaces are organized through a modular grid, allowing the layout to be adapted to future users and changing needs. The house is planned to change over time, making it possible to progressively expand it according to the users' needs and decisions.

On the other hand, as a network of cells, houses become a way to appropriate the development of the settlement and foster a cooperative spirit among its inhabitants around rural activity. Even though it is not agroproductive or regenerative on its own, as part of a bigger network, the conceptual framework reinforces the relevance of the proposal in addressing a bigger and more complex challenge: the rururbanization of this rural site.



Reference dwelling ront Elevation - Self elaboration.



Perspective Section - Self elaboration

Rainwater collection tank 2,000 L

Rainwater collection tank 5,000 L

Roof Area m2	171			Estimated capturable roof area due to geometry: Around 80%	To infiltrate into the site: Around 20%
	Monthly Rainfall mm	Monthly water received m3	Weekly water received L	Collected weekly L	Infiltered weekly L
March Average	139,1	23,79	5.946,53	4.757,22	1.189,31
July Driest	35,6	6,09	1.521,90	1.217,52	304,38
November Rainiest	269,6	46,10	11.525,40	7.000*	4,525.40*

* During the rainiest month, excess collected water is directed towards infiltration once the tanks reach full capacity.

Rainwater collection calculation - Self elaboration

There will be two water tanks in the project, located in the internal courtyards and operating according to the rainy and dry seasons for crop irrigation and domestic uses. The smaller 2,000 L tank will be used mainly during the dry season, when there will be less water to harvest and store. In an average month, the 5,000 L tank should be enough to store the collected water, while during the rainy season, both tanks will work together to collect as much water as possible. For the purpose of the estimation, a weekly use of the stored water is considered. Only 80% of the roof area is considered useful for water collection due to the high slope of some of its parts.



Regenerative cell axonometric view - Self Elaboration with Revit, D5 render and IA.

Materiality and envelope

Regarding materiality, the housing and the other buildings are conceived with clay tiles, derived from the local and identity-defining material of brick. Clay has shaped the architecture of Bogotá and its surroundings and is one of the most widely produced construction materials in the region. Derived from local earth and widely available within the construction market, it offers a variety of architectural possibilities. The same modular logic that defines the construction system also contributes to shaping the final architectural expression.

The clay tiles give identity to the envelope, creating a monolithic appearance in which walls and roofs share the same material and aesthetic language. This continuity simplifies the architectural reading of the building while reducing the number of different materials required. The solution requires a timber substructure attached to the wall, onto which the tiles are fixed. The roof beams are also made of timber, with an insulation layer placed below a water resistant breathable membrane under the tile system.

On the interior, a ceiling controls the height and proportions of the spaces. Diffuse daylight enters through the skylights and is distributed throughout the interior, providing adequate illumination during the day while allowing solar heat gains. The floor consists of a polished concrete slab, which also contributes thermal mass to the dwelling. Proper insulation between the slab and the ground is essential, particularly given the considerable humidity conditions of the site.

Rainwater collection is another key component of the house. The roofs are surrounded by gutters that redirect rainwater towards the interior courtyards, where part of the water can infiltrate into the ground while the remainder is collected for use in the crops and within the house. These surrounding elements are integrated into the façade, reinforcing the intention of the architecture to respond directly to the climatic conditions of the site.

Bearing walls or panels are supported by concrete foundation beams and tied by reinforced concrete beams at the top, while the roof is made up of a timber structure that rests on the wall system. It is relevant at this point to highlight the necessity for the house to be properly insulated, especially from the ground, to reduce heat losses and address the high humidity conditions of the soil. The insulation must also be installed on the exterior of the façades, with the purpose of keeping heat inside during the night after gaining solar heat during the day, allowing the heat stored in the wall to be released gradually through the thick envelope.



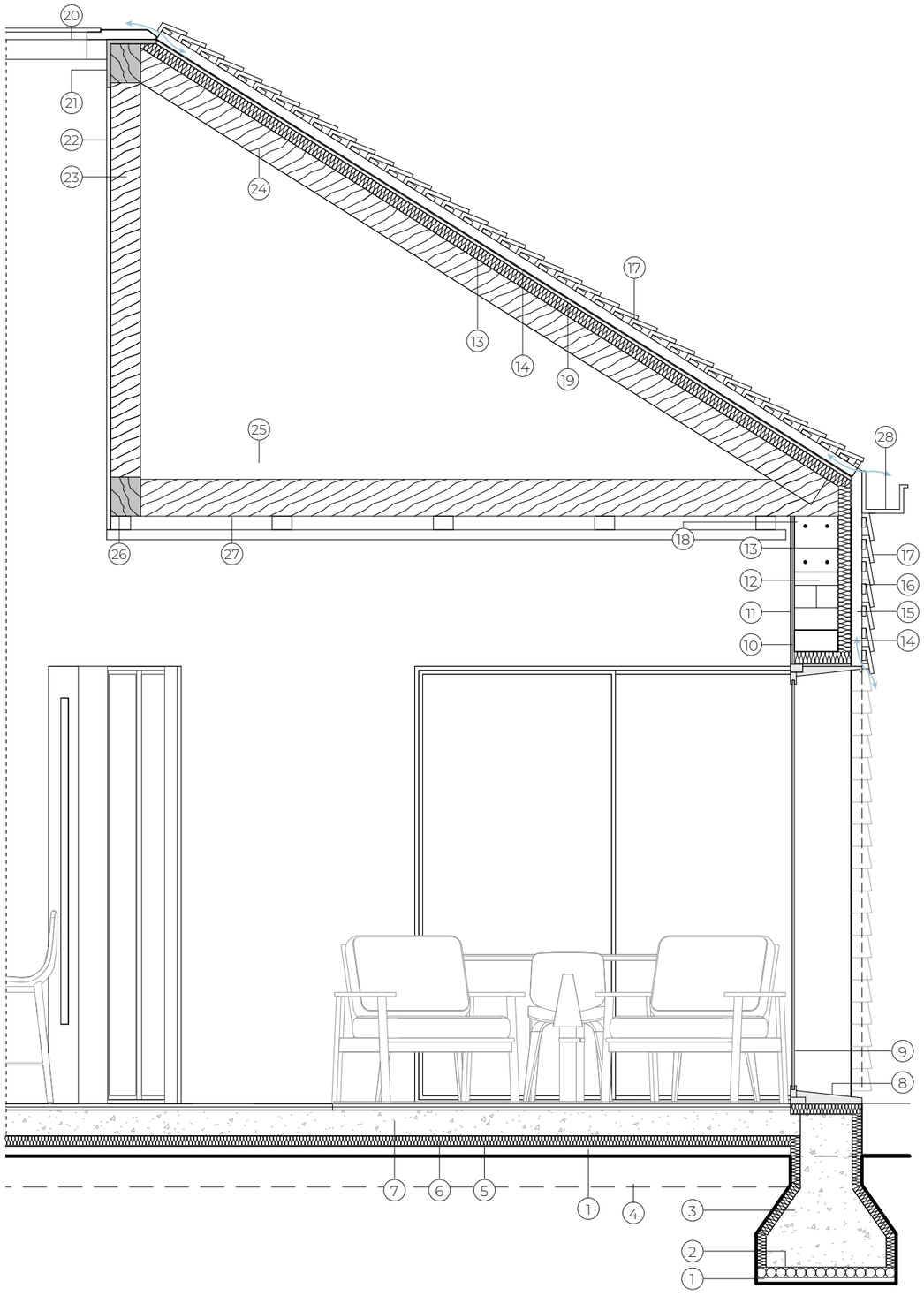
Exterior view - Self elaboration with D5 Render and AI.

Facade Detailing



Horizontal section B-B

Vertical section C - C



Materials Layers

01 Compacted fill 5cm.
02 Cyclopean Concrete.
03 Reinforced concrete footing
04 Foundation beam
05 Rigid Thermal Insulation.
06 Water resistant membrane.
07 Concrete slab with polished finish.
08 Aluminium window frame and sash
09 8 mm safety glazing
10 Interior finish: white paint
11 Mortar.
12 Ceramic block wall - Thermal mass
13 Rigid mineral wool insulation panels.
14 Water-resistant breathable membrane.
15 Timber battens for façade substructure.
16 Timber counter-battens.
17 Exterior cladding: clay tiles.
18 Reinforced concrete tie beam.
19 OSB panels for roof
20 Aluminium-framed skylight with safety glazing and waterproof flashing.
21 Timber roof joist.
22 Gypsum board with white finish.
23 Timber substructure.
24 Timber roof beam.
25 Secondary timber beam
26 for ceiling.
Timber slatted ceiling.
27 Rainwater collection
28 gutter

0 m 0.10 m 0.25 m 0.50 m 1.00 m 2.00 m



Interior view - Self elaboration with D5 Render and AI.

Conclusion

The exploration of a new way of inhabiting for families moving from Bogotá to the countryside led to a complex and challenging scenario: what can we change through architecture to attend to the population needs and trends while preserving the rural vocation of the Savanna countryside? Through this thesis, the problem was overcome by proposing a regenerative cell that allows people to live in rurality while being part of a productive natural ecosystem. It responds to the territorial and social conditions identified throughout the research by defining an alternative housing model that integrates dwelling, production, and the rural landscape.

Architecture became the bridge that reconnects people with the surrounding ecosystem. Our expression of who we are as a society and as individuals, our home, is a perfect mirror of what we intend and what we want to achieve. It is then difficult to try to keep producing food in a rural settlement if we live in 60 sqm apartments. The change should start in our own architecture to explore new ways of living in the countryside. People's lifestyles are meant to change through how and where they live, but the answer seems still to be beyond just this.

How to see ourselves from nature's perspective?

One of the main discussions explored throughout this document is our relationship with nature. This is for sure the origin of this and many other different problems that humankind is facing nowadays. The misreading of who we are in the world, of our role in relation to other species with whom we share the same place, has led us to a difficult situation from which it is hard to escape.

But generalizing the thoughts and philosophy of all human beings throughout history is also a misreading and an easy way to hold those who were here before us responsible. Indigenous people that inhabited Tenjo and Cundinamarca centuries ago, among many other cultures and civilizations, did a better job of trying to understand who we were in relation to what surrounds us.

We humans are part of nature, as are all other living things on this planet. We are no different from nature; we belong to it. And under this truth, we can do something to change our ways. Attending to this principle could be translated into new ways of living and relating to nature-related activities, such as agriculture and rural labor.

Architecture also becomes a productive member of the natural system. Offering ecosystem services is an important consideration within an architectural project, and it is even more important if it is inserted in a rural territory. The proposal understands that dwellings and productive infrastructure should therefore be related. Understanding both as separate things can become an obstacle in our mission to properly populate rural territories without risking food security or natural infrastructure. Designing with the objective of contributing positively to the environment can help overcome challenges related to the construction sector.

How to foster rural communities

One of the main barriers found in the current architectural ways of inhabiting Bogotá's countryside lies in how neighbours relate to one another and how space is planned to be used for that purpose. There is, of course, public space and public facilities in Tenjo and its developments, open to many different users. There are public and private facilities meant to be used by users in order to relate with others. However, architecture is still a segregating element between people.

Fenced developments were the example that best explained the phenomenon. At the same time, this reality is breaking apart the rural cooperative spirit that was so characteristic decades ago. Rural developments tend to separate those who live there from everyone else. Access to land, and therefore the ability to do agriculture and cultivate, is restricted to those who have the money to buy it, and unfortunately, rural activity is not part of the developers' agenda or the users' intentions.

There is, however, a rising trend of people looking forward to continuing the rural vocation. Meta-rurals are the target population sector that can give rural communities a new perspective. Merging their expertise in different

fields of knowledge can enrich how communities face productive needs together. But for that, as the proposal established, there must be a common-ground vision between all neighbours in which fraternity and cooperation can be raised once again.

Agriculture can be that missing piece that completes the puzzle of bringing rural inhabitants together, but it needs to be expressed also in our space. For this reason, the masterplan locates agriculture at the center of the settlement, making domestic life correlated to the action of working the land. What users do is now an extension of their homes. Architecture is now an expression of what we want to achieve. This organization translates the productive and regenerative principles established into a spatial system, where each cell becomes part of a larger network rather than an isolated dwelling.

A regenerative approach

Even if we managed to solve how we see nature and understand ourselves as part of it, and bring communities together once again, there is still a question of what we can do. Current crops and agricultural practices, heavily dependent on pesticides and agrochemicals to secure food-chain production, are not what we are supposed to do. But also, going back to a non-massively industrialized way is not a proper response. Even what we think was adequate decades ago was already working negatively for ecosystemic relationships, as explained before. We have been overloading the land for quite a long time.

Going even further back and looking at how the original civilizations of the site managed to survive here is a good starting point. But their ways also need to be translated to today's reality. Across this exploration and the search for better ways to work the land, new alternative productive systems emerged. Beekeeping, mushroom cultivation, vermiculture, and aquaponics are examples of how rural work can look today. These methods not only guarantee a certain food supply for the users, but are also useful for managing a constant productive system in which circular economy is embedded.

The proposal not only attends to the apparent human needs, but also contributes to the ecosystem by diversifying and giving a place to the natural species of the site that have been progressively set back due to urban expansion. Bees, for instance, play a fundamental role in sutaining live in our planet, and fostering their hives and activities is a way in which an architectural proposal can go beyond the simple need for having somewhere to live. What we do in the territory also becomes an implicit step forward in extending natural dynamics through our own actions, and blurring the apparent distinction between what nature is and what we actually do. The thesis therefore proposes architecture not as an isolated object within the rural landscape, but as a system that connects dwelling, production, water, community and ecosystem.

Regenerative architecture then makes sense. An architectural approach can redirect human efforts into a positive result for a natural ecosystem. Recovering what we have disregarded for so long is a duty that we now need to carry. It is in the hands of current and future rural users to re-explore our role in the environment and how our lifestyle can be developed according to what happens in our surroundings. As part of a single system, architecture is a self-aware action in our search for repairing and redefining our boundaries with nature and the landscape.

Circular systems and a diversified, and therefore resilient, productive system can be a proper response to addressing current and future needs across the territory. At the same time, our ways of guaranteeing human supply from a food and economic perspective can become an opportunity to integrate human needs into natural ecosystemic dynamics by proposing ecoproductive systems that create value for the site. Agroforestry and other land uses included in the proposal are intended for the recovery of the site and the enhancement of its relationships through design and architecture.

Furthermore, this thesis is done to contribute to the state of the art of the discussion. Exploring new ways of thinking about and facing the problem, also in different social and spatial contexts, can give designers new reference points to propose in the future. Rather than being a unique solution, the thesis sets an academic background for addressing social and natural phenomena that directly involve architecture and similar disciplines.

For sure, the journey is much longer than what can be said in these few pages. This is just an attempt at a resolution to a broader challenge that our people are facing all around the world. Rururbanization is something that seems to be increasing rather than being stopped. But what we need to remember, as social agents and reality changers, is that there are always better ways to inhabit and relate to a place. Architecture can be more than aesthetics and geometry, and can be a resolutive tool for this and many other different problems the world is facing.

Finally, as the author of this thesis, I look forward to seeing how the territory will evolve in the upcoming years. This is somehow a manifesto of my concerns and thoughts about the territory where I live and grew up, and how I will address some of its conflicts through design and architecture. There is always a need to converge knowledge and experience around a problem that concerns everyone. Such a complex challenge requires the participation of us all, and this document represents another step forward in the search for a better future for our people.



Exterior view of the Regenerative Cell - Self elaboration with D5 Render and AI.

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