



**DESIGN FOR EXISTENCE OR FOR DEVELOPMENT? A CRITIQUE OF  
URBAN INTERVENTION AT THE QUEBRADA VERDE TOWN CENTER**

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## **Abstract**

In the town of Quebrada Verde, urban intervention initiatives are not aligned with the magnitude of the socio-environmental problems facing this community. The infrastructure gap and the focus of municipal proposals may not currently be focused on advancing the community by providing efficient urban infrastructure for a populated center with a vulnerable ecosystem next to it, such as Lomas de Lucumo, one of the green lungs of the capital city of Lima in Peru.

This research establishes the guidelines for the growth of Quebrada Verde in relation to a landscape with the fragile ecosystem of Lomas de Lucumo for its conservation. This study focuses on the critique of urban improvements implemented to enhance Quebrada Verde and identifies the barriers that could be preventing better urban quality in the area.

Through document analysis, direct observation of the site, collection of complementary documents, and interviews with specialists in this context, it is confirmed that the measures taken by the municipality towards the population aim to remain educational and even symbolic. However, the scale of the needs, together with spatial development, suggest proposals that respond directly in the urban environment, not only for the benefit of the community but also for the ecosystem in which they coexist.

This study concludes that a dignified and permanent intervention proposal could be more effective when there is collaborative work with the community. Design strategies and examples that can be replicated in the urban context are proposed to generate resilience and activate public spaces for community interaction.

**Keywords:** Community participation; ecosystem impacts; population growth; vulnerable Population; urban strategies; built environment.

## 1. Introduction

### 1.1 Problem Statement

Unplanned urban growth represents one of the greatest challenges in the capital city of Lima, and ecosystems are also affected despite their great biodiversity. Lomas de Lucumo is one of the nine main coastal hills of Lima, located in the district of Pachacamac, representing a large ecotourism area for locals and visitors. These hills maintain incredible biodiversity among plant and animal species, making them one of the most important and vulnerable green valleys in Lima. As a result, they are now legally protected for conservation purposes.

Despite its great value, Lomas de Lucumo faces threats from society. Among the problems are land invasion, resource extraction, overgrazing, poor management of local tourism that has led to the accumulation of waste, deterioration of flora, and even damage to the rock art in the area (Alonso Quispe & Solórzano, 2021). Studies on this ecosystem explain that the community of Quebrada Verde - neighbor and main access point to these hills - reports environmental complaints that highlight the need for sustainable practices in the area. Among the initiatives, the local council's programs such as EDUCCA, had an initial impact. However, there is also a need for strategies that link urban planning and environmental education with the help of community participation.

This research focuses on criticism of the preservation of Quebrada Verde through architecture and urban planning. The analysis will focus on the axis connecting the access road and the main entrance to Lomas de Lucumo.



**Figure 1:** Photo of the boundaries between the urbanization and the Lúcumo hills (360 EXPLORA, n.d)

## **2. Literature Review**

In fragile ecosystems such as the Lomas de Lúcumo, which are characterized by seasonal vegetation and high biodiversity, environmental degradation is often exacerbated by a lack of ecological awareness, leading to harmful actions such as illegal dumping, vegetation extraction, and land encroachment (Espinoza, 2021; Alvarez, 2024).

A recent research on environmental degradation in Quebrada Verde supports this view. Studies document the expansion of informal housing directly into the Lomas ecosystem, often justified by a lack of knowledge about land value and ecological importance (Requejo & Yangali, 2021). Additionally, residents report not recognizing the seasonal ecological functions of the hills and this leads to habitat destruction, as people consider the land suitable for settlement (Gupta et al., 2021; Vega et al., 2022). That is why it is necessary to reform urban spaces, which have been abandoned in many places.

### **Urban Reform Strategies**

After clarifying the importance of urban reform in this area, I made an analysis of urban interventions or reforms in similar conditions to understand many of the strategies that had a positive impact on communities in Latin America. The “Ecological Design: Strategies for the Vulnerable City,” involved specific problems that affected and caused environmental degradation, compared in this table (Figure 2) (Vera, Doherty-Bigara, Patiño, & Sordi, 2022).

#### **A. Urban growth control**

Of all the strategies proposed, the most theoretical was “Rehabitar la Montaña” (Reinhabiting the Mountain) in Colombia, as a pilot project. Although it has not yet involved significant collaboration with the community, it proposes to combat informal urban growth and establish limits to ensure the safety of citizens and maintain existing ecosystems on hillsides. The strategy proposes allocating projected spaces for future expansion and limiting them with actively used agricultural spaces, thus avoiding encroachment beyond the established limits.

#### **B. Living spaces**

In terms of renovating abandoned or degraded spaces, the following projects had interesting proposals: The “Paseo de los Estudiantes” decided to transform an abandoned pedestrian alley into a street lined with street furniture and artwork on the walls created by the community and children. In the case of "Plaza de la Cruz," this project transformed the streets that were being used as garbage dumps into public squares. The additional strategy was to create a new route so that the garbage would remain in order until collection time, thus solving both problems. The last case in this section is that of Paseo Urbano de la Calle 107, which was considered a crime hotspot many years ago and was transformed into an extension of the pedestrian walkway and the creation of a cable car. The value of this project lies in how it enhanced natural surveillance within the area, which brought the community closer together and boosted commerce in the area, creating an economic opportunity for them by lowering crime rates in the area.

### **C. Using climatic conditions as a resource**

Finally, the case of Foq Water Farm Park + Garden is a crucial reference point. This project solved a problem similar to that of Quebrada Verde: the lack of drinking water. How was this possible? By taking advantage of the area's climate, which is characterized by fog, and using a fog collection system to obtain usable water. This not only maintained the project's green areas, but also maintained the crops of families in the community, creating unity and respect for the strategies implemented. The conclusion of the cases analyzed was:

- Main problems in communities are often not only pollution or insecurity, but also climatic conditions that can affect the functioning of a community.
- Many settlements are often occupied without much control over the quality of life that these people will have.
- The redirection of population growth could work depending on the local context.
- Instead of seeing problems, the projects took advantage of the potential to ensure not only the well-being of the environment, but also of the people who live there.






CASE / YEAR OF INTERVENTION	Fog Water Farm Park+Gardens (2011-2017)	Paseo de los Estudiantes (2017)	Plaza La Cruz, La Palomera (2016-2017)	Rehabilitar la Montaña (2013 - Today)	Paseo urbano de la calle 107 (2004 - 2005)
PHOTO OF THE PROJECT					
LOCATION	Eliseo Collazos, Lima, Perú	El Consejo, Aragua, Venezuela	Caracas, Venezuela	Medellin, Colombia	Medellin, Colombia
SPECIFIC PROBLEM	<ul style="list-style-type: none"> <li>Lack of drinking water (water stress)</li> <li>Access to green spaces</li> </ul>	<ul style="list-style-type: none"> <li>Deteriorated public space (Pedestrian Alley)</li> </ul>	<ul style="list-style-type: none"> <li>Garbage dump in the neighborhood (pollution and insecurity)</li> </ul>	<ul style="list-style-type: none"> <li>Risk of landslides and housing on vulnerable slopes</li> <li>Informal occupation of areas in settlements</li> </ul>	<ul style="list-style-type: none"> <li>Insecurity, segregation, and marginalization</li> </ul>
STRATEGY / SOLUTION	<ul style="list-style-type: none"> <li>Fog water harvesting (fog collectors)</li> <li>Vegetable gardens and community gardens</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of recycled street furniture</li> <li>Creation of an artistic mural designed by the community</li> </ul>	<ul style="list-style-type: none"> <li>Transformation of landfill into public square</li> <li>Improvement in waste management system</li> </ul>	<ul style="list-style-type: none"> <li>Alarm and evacuation system.</li> <li>Ecological restoration and urban agriculture to prevent further residential occupation.</li> <li>Rainwater management and slope stabilization.</li> <li>Planning of serviced lots and adaptation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Cable car connecting neighborhoods and informal settlements as a transit system</li> <li>Expansion of the pedestrian walkway for existing public spaces</li> </ul>
COMMUNITY INVOLVEMENT	Workshops were held where the community participated in the six participatory interventions	The community designed and built the artistic elements	The municipality works with the community and university student volunteers to remove waste and debris	Collaborative work between the Center for Urban and Environmental Studies (URBAM) and universities	Community participation in the stages of the project through the construction of reforms
KEY FINDINGS	<ul style="list-style-type: none"> <li>Access to water, neighborhood stabilization</li> <li>New community spaces</li> </ul>	<ul style="list-style-type: none"> <li>Restoration of deteriorated alleyway with murals, pergola, and vegetation</li> </ul>	<ul style="list-style-type: none"> <li>New public square.</li> <li>Waste management plan.</li> <li>Neighborhood-city integration.</li> </ul>	<ul style="list-style-type: none"> <li>Anticipate disasters and mitigate slope risk</li> <li>Discourage occupation</li> <li>Direct growth</li> </ul>	<ul style="list-style-type: none"> <li>Higher percentage of public areas</li> <li>Decrease in crime</li> <li>Increase in local commerce</li> </ul>
VALUE FOR RESEARCH	Using weather conditions to maintain educational and productive spaces	Community involvement in designing for blind walls or degraded spaces	Converting degraded land into educational spaces	Limiting urban growth through agricultural spaces	Convert unsafe spaces into common areas

Table 1: Comparative table of strategies for similar projects

### **3. Research Questions and Objectives**

#### **Research Question:**

- What are the guidelines for the growth of Quebrada Verde in relation to a landscape with the fragile ecosystem of Lomas de Lucumo for its conservation?

#### **Research Sub Questions**

- What are the urban and institutional obstacles that limit a sustainable urban proposal in Quebrada Verde?
- What viable and replicable design strategies offer the greatest opportunities to generate urban and environmental resilience in Quebrada Verde?

#### **Research objectives:**

- Establish the guidelines for the growth of Quebrada Verde in relation to a landscape with the fragile ecosystem of Lomas de Lucumo for its conservation

#### **Research Subobjectives:**

- Identify urban and institutional obstacles that limit a sustainable urban proposal in Quebrada Verde
- Establish viable and replicable design strategies that offer the greatest opportunities to generate urban and environmental resilience in Quebrada Verde.

### **4. Methodology**

For this research, I decided to take a qualitative approach, as it is necessary to understand the environmental problems of this community on an urban scale and how they relate to the Lómas de Lucumo in order to obtain a clear vision of how to intervene in the area. The similar case study will be my main methodological strategy, as it allows me to identify and propose solutions for a place with the same environmental conditions as Quebrada Verde.

#### **4.1 Site Analysis**

The area to be investigated is in the rural town of Quebrada Verde, located in the district of Pachacamac in the capital city of Lima, Peru. The study area will specifically be the strip from the beginning of Quebrada Verde to the beginning

of the road to Lomas de Lucumo, as this section is crucial in terms of the transition between the community and the green ecosystem.

In recent years, population growth has been unregulated and has been directed closer to Lomas de Lucumo every month, despite the complexity of the slope and the difficulty of obtaining basic resources in the area (one of which, and a problem that persists, is access to water).



**Figure 2:** Urban growth between the 2002 and 2025 (Google Earth, 2025)

Due to the significant change and in order to understand the current urban context, it was necessary to draw up a master plan that outlined the existing conditions of the project. This included the locations of existing trees and lampposts, as well as activities carried out (such as animal husbandry) that could be considered in an urban intervention. Another factor to consider was public safety, so crime reports were used to identify frequent crimes in each area.



**Figure 3:** Master Plan of existence Data. Source: Own elaboration

## **4.2 Research Design**

The research design will be based on an applied qualitative case study, focusing on the section established in the study area. This option was chosen because it allows me to delve deeper into the interaction with the community and the arrival of the natural ecosystem. This section is also chosen because it is the busiest in terms of ecological tourism in the area and presents problems such as unregulated population growth, lack of access to basic resources, and general public insecurity.

This research will adopt methodological triangulation, specifically within the case study section, which will combine three information-gathering tools: document analysis, direct observation, secondary data research and expert's interview. This triangulation is applied specifically to support a critical analysis of the site assessing existing conditions, challenges, and interventions.

## **4.3 Data and Measures**

To answer the research questions, these tools were defined with the following purposes:

### 1.- Document analysis:

- Data: Municipal plans for Pachacamac, previous studies of Quebrada Verde, and academic reports and scientific articles on the socio-environmental problems of the current situation.
- Measures: Research on existing conservation programs, previous diagnoses, and recommendations from the municipality of Pachacamac.

### 2.- Direct observation:

- Data: Environmental characteristics and risks of the area, urban infrastructure, and citizen insecurity.
- Measures: Photographic record and field notes.

### 3.- Secondary Research:

- Data: National and local news reports (press, TV, radio, web) on problems and progress in Quebrada Verde and Lomas de Lúcumo.

- Measures: Identification of key urban and environmental issues reported by the press. Evolution of environmental management, social dynamics, and infrastructure.

#### 4.- Experts Interview

- Data: Perspective and knowledge from the point of view of urban planners regarding the conditions, opportunities and limitations of the site.
- Measures: Questions about professional experience, questions about site diagnosis, recommendations and solutions.

In this way, the design of this research aims to critically examine and evaluate the current conditions, challenges, opportunities, and interventions within Quebrada Verde and Lomas de Lucumo.

### 5.4 Tools

The methods used to collect data with these tools are as follows:

- Document analysis:

Based on the data collected, this study will be organizing the data into what was planned (urban zoning), environmental conservation (existing strategies being implemented to mitigate problems), and community participation (the level of community involvement in environmental activities).

- Direct observation:

Information from visual records and field notes will be used to create maps that reflect the points of conflict in the area, which will serve as the basis for a diagnosis of space.

- Secondary Research:

This tool will conduct research and select sources using keywords. I will also extract and compare data to organize information and detect patterns and contradictions.

- Experts Interview:

This tool will identify specific problems and complications in the study, which will be compared in a comparative table that will detect the most repeated concepts or ideas in the responses.

These tools, through the integration of various sources and methods, will support a critical assessment of spatial, environmental, and community dynamics in the study area, generating evidence-based insights and recommendations for improving current management and future practices.

## **5. Results**

### **5.1 Document analysis**

First, the study gathered information on the actions taken to mitigate environmental problems in the area, including the municipal program for Education, Culture, and Environmental Citizenship of the district municipality of Pachacamac (EDUCCA 2025 Program). Compared to previous years, the Municipality of Pachacamac (2025) is considering the need to identify, design, and implement public spaces that educate about the environment (planned for March 2025). Among the tasks involved in this activity, they explain that the first task will be:

- The identification and refurbishment of public spaces, including the installation of street furniture that promotes more appropriate environmental education: bins, recycling stations, etc.
- The implementation of municipal nurseries with guided tours and composting demonstrations, in addition to reuse workshops.

All these tasks make up just one of the four activities planned to combat environmental problems, but the only one mentioned is the one that comes closest to urban reform. Obviously, it is not the same thing, as it involves adding street furniture and refurbishing it to raise environmental awareness among residents, but is this really the only thing that could be done in this place?

While these initiatives represent progress, they are mainly educational and symbolic, rather than transformative from a spatial point of view. The proposal to install street furniture is valuable, but it may not address the urban challenges that Quebrada Verde faces, such as accessibility and natural surveillance by blind

walls, among others. The EDUCCA 2025 plan may be aligned with the principles of sustainability, but in a way, it reveals the gap that exists in environmental education as well as the lack of urban planning within this place.

On the other hand, there is the academic article “Analysis from co-management and tourism,” which also presents a community perspective on environmental management.

This analysis shows how community participation is essential for the conservation of the natural ecosystem, while also highlighting how accessibility and urban infrastructure are still weak points in the area.

Within this research, I identified the following findings:

- There is a deficit in urban infrastructure. Although 11 SNIP (National Public Investment System) projects were formulated between 2004 and 2010 for works and equipment in Quebrada Verde, none were implemented.
- This community has problems with the demarcation of territorial boundaries, which leads to conflicts over land titles, taxes, and the functional role of the district.
- The community is dependent on external support from the Peruvian Ministry of Foreign Trade and Tourism (MINCETUR), the Education and Environment Group (GEA), and the Italian-Peruvian Fund (FIP) for reforestation, training, and trails.

Among the findings, it is important to highlight that Peru's Ministry of the Environment, despite appearing to be primarily responsible for conservation, still has certain limitations. Its main function within the community is generally solid waste management, however, it has introduced programs such as EDUCCA. Although these are socially aligned with some of the environmental problems in this area, the proposals tend to be educational and, in many cases, symbolic in nature. This is due to the limitations revealed in this research, such as land invasions and unplanned land use changes, among others.

On the other hand, one of the most interesting findings is the dependence on external support, as mentioned by architect Liliana Miranda Sara (2019), who recognizes that community organizations were key to local protection. In addition, she also mentions how conservation comes mainly from local income from ecotourism visits and support from NGOs. Thus, it makes sense that Peru's

Ministry of Foreign Trade and Tourism is one of the main actors in the current situation in this area.

## **5.2 Direct observation**

When visiting the section that transitions from Quebrada Verde to the beginning of the Lomas de Lúcumo route, I found some elements that showed a certain intention to implement urban furniture within the area.

- **Spontaneous vegetation**

Among these, the first thing I noticed was the vegetation. The implementation of trees does not seem to follow a pattern or be controlled throughout the entire section. The tree species vary between *Quillaja saponaria* and *Corontillo de Escallonia*, and there are also cacti and grass.

- **Deteriorated Urban Elements**

There are different types of urban furniture, but these are scarce and the state is generally deteriorated or abandoned, so this criterion is vulnerable within the area. Signage is generally abandoned or non-existent, as there are no other signs indicating street names or the boundary between the pedestrian crossing and the vehicular crossing beyond the fence at the entrance to the community.

An interesting feature is the large ditch at the beginning of the section, where the Lurín River is also located. This ditch remains exposed and, as mentioned before, since there are no pedestrian barriers, the exposure of the ditch appears to be a hazard when driving. Due to the insecurity in the area, residents opted to install bars to limit vehicular traffic on some of the streets.

- **Urban problems in the area**

I decided to locate the blind walls in the section, the longest of which is provided by an industrial area on Miguel Grau Avenue. However, the rest of the blind walls that I could see were put up by neighbors as perimeter walls to prevent people from seeing inside their homes. This is a clear tactic for security and to prevent trespassing, but it could become a problem in the long term if all the neighbors adopted this solution, as it would only generate much more insecurity within the section, since it means less natural surveillance. Another problem is the burning of trash, which I only saw happening during my visit, although there were also areas where traces of this same activity could be seen from previous days. What

is worrying is that this problem is located right next to vehicular and pedestrian traffic, exposed and also located near areas where vegetation is growing.

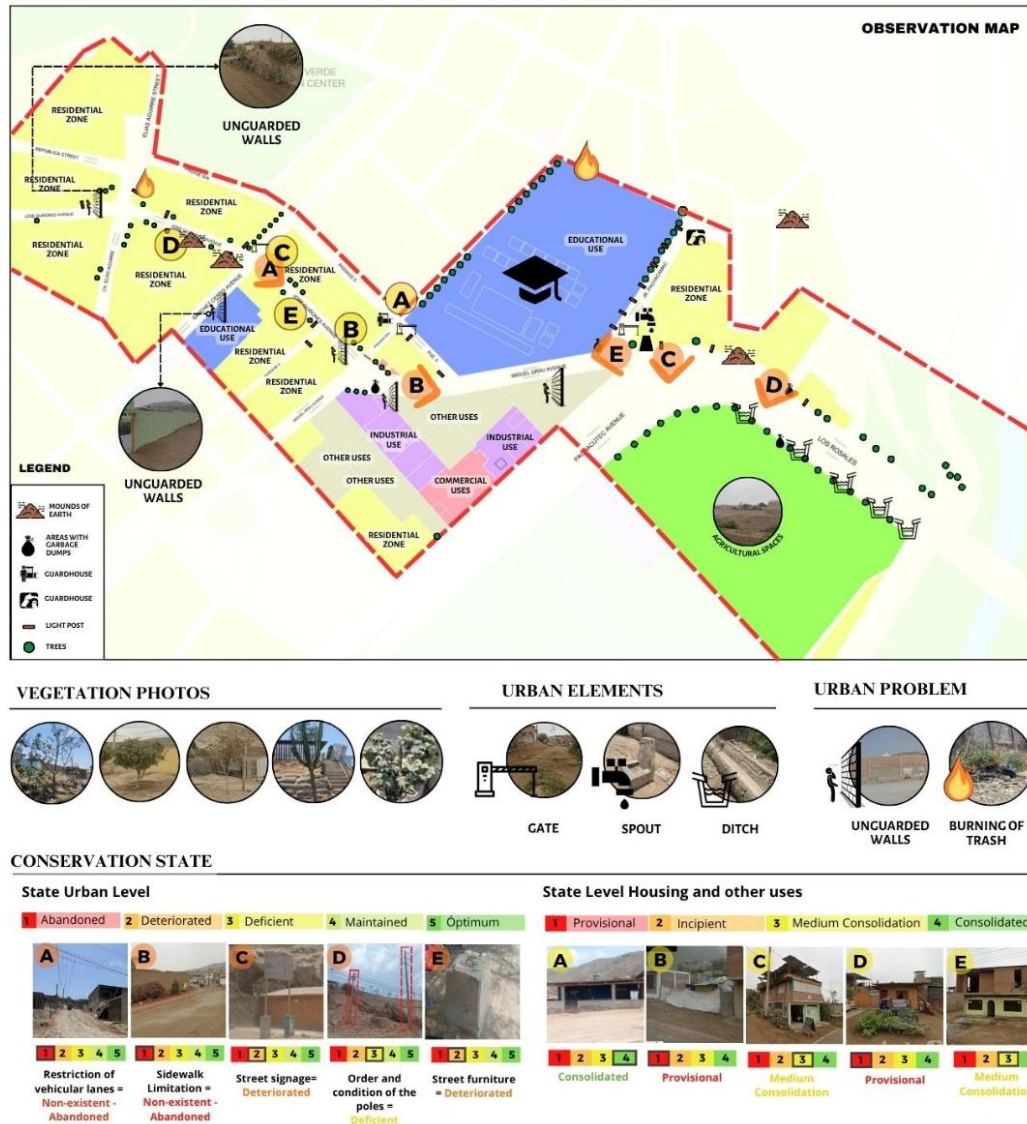


Figure 4: Observation Data

### 5.3 Secondary Research

While searching for information on reports about the current state of Quebrada Verde with the border towards Lomas de Lúcumo, I found the first article published by El Comercio in 2024 called: Pachacamac: “*Could Lima's last green space be turned into asphalt?*”

This article mentions that in the district of Pachacamac, there are a total of 6,700 unregistered inhabitants occupying fragile hillsides and non-developable areas. The Municipality of Pachacamac implemented ordinances and fines to curb illegalities and created the Defensoría de las Lomas (Hillside Ombudsman) with

school campaigns and enforcement, which includes Quebrada Verde among all the hillsides. It also mentions this community's perception of environmental protection with regard to the Lomas de Lucumo, where there were mixed reviews, with some highlighting municipal efforts and others perceiving a lack of protection in certain areas.

Another recent document is the testimony of Ana Violeta Rojas Vargas, defender and resident of Quebrada Verde for 24 years. In her testimony, she explains the transformation and the challenges faced by the community, highlighting problems such as the indiscriminate distribution of land and the weakening of community participation in the area. She also mentioned community organizations are currently being set up, environmental campaigns are being carried out, and defenses against industrial threats are being put in place, such as the enactment of laws to protect natural resources (Leon, 2023).

These two documents were the closest I found to explaining or updating the information available on the community and the changes made so far in public spaces, such as the protection of the area's boundaries. It is important to note that in my research, I found that all the studies are mainly about the Lomas de Lúcumo, while research on Quebrada Verde and its importance as an access route to these hills seems to have been largely overlooked.

#### **5.4 Experts Interview**

In the focused interview, the target audience is to understand the diagnosis and proposals of architects specializing in urban planning or with experience in public treatment, so that I can supplement the information and recognize opportunities within this urban space. To begin the interview, I will first give a presentation containing mainly basic information about the place: location, context, general issues. This presentation will be neutral and objective, without presenting any diagnosis or opinion, to avoid the influence of any personal opinion. After this presentation, the interview will begin and will identify the key results of their answers in a comparative table. (Table 2)

	INTERVIEW QUESTION	URBAN SPECIALIST 1 (ART AND CITY)	URBAN SPECIALIST 2 (PUBLIC PROJECT MANAGEMENT)	URBAN SPECIALIST 3 (CULTURAL HERITAGE CONSERVATION)	URBAN SPECIALIST 4 (SUSTAINABILITY IN FRAGILE ECOSYSTEMS)
OPENING	What is your professional experience in urban interventions and public spaces?	Master's degree in Urban Planning, teaching architecture at the urban scale	PhD in Public Policy 'Security and Sustainable Development' and Civic Designer	Research on ecosystems and heritage alongside the conservation of heritage and real estate	Research on fragile ecosystems and public spaces with the Municipality.
	Have you participated in projects like the study area (Quebrada Verde and Lomas de Lúcumo)?	Yes, in theoretical exercises on urban reforms	Yes, in reserve centers in Peru, Chile, and Argentina regarding the loss of urban spaces through invasions	Yes, in academic and research projects.	Yes, in coastal hill research projects in 2022
SITE	How would you describe the current state of urban infrastructure and facilities in the area?	At first glance, it's precarious, lacking basic infrastructure.	Precarious, there doesn't seem to be any care/maintenance from the municipality	It is in the process of consolidation; for the moment, there doesn't seem to be an urban design or any management plan of what is going to be done.	Water infrastructure is really low, along with deterioration in the hills due to urban pressure.
	What is the main physical, social, and environmental issues (apart from those mentioned) that you identify based on what has been presented?	Vulnerable community. It would be to evaluate if they are aware of the need for protection and non-urban expansion that makes the hills/lomas vulnerable.	The physical problem would be the topography. In my experience, I know that putting basic services in these types of settlements can present high or unattainable costs compared to the assigned budget.	As a physical problem, it would be soil erosion, and environmentally, the vulnerability of the fragile ecosystem (Lomas de Lúcumo) nearby.	The deficient physical infrastructure forces the population to leave the population center to maintain their economy. The lack of recognition of tourism as an economic opportunity.
	What elements do you consider critical for the functioning and appropriation of public space?	If the community is autonomous, it would be good to establish limiting 'locks' (or 'safeguards') that curb population growth and avoid ecosystem vulnerability.	Improve the sense of culture. The idea is to start listening to the citizen and the needs.	The presence of public gathering spaces and creating comfortable streets in order to incentivize community participation.	The environmental value of the place as a potential economic source for the population, an example being the urban bio-gardens (or allotments) that were forgotten.
RECOMMENDATIONS	Based on your experience, what type of intervention would be ideal to improve the urban and environmental quality of the sector?	A more solid communication network with external and internal actors.	Performing placemaking and mapping with the neighbors to develop active and passive activities with the population. Generating awareness from them toward their public space.	Planning and design together with the community, focused on environmental quality and sustainability, such as the use of local materials.	Low-impact intervention due to being close to a fragile ecosystem, such as green paths, trails, viewpoints with rest areas, and more control points. Only concrete roads where truly needed.
	What limitations do you see in municipal actions and how could they be overcome?	Budgetary limits and technical knowledge about preservation. Many proposals lack sensitivity.	Budgetary limitations, further study of the needs of the community and the environment.	Limitations in resources, initiatives, and appropriate management in municipal and ministerial actions.	Lack of continuity in management (or administrations) and municipal articulation. Financial and technical resources and corruption hinder the proper function of the space.
	Which actors (municipality, community, private sector) should lead or collaborate in the implementation of proposals?	There should be a greater inter-institutional alliance between the Ministry of the Environment and the Municipality for more proposals.	Multidisciplinary work among the municipality, community, and private sector. Technical work by urban planners in collaboration with sociologists to understand social dynamics.	The Ministry of Environment with organizations such as the United Nations Development Programme for sustainable initiatives that involve the community.	The municipality could lead the sustainable planning and regulate land use alongside conservation. The community would focus on participating actively. The private sector, such as UNACEM, could provide financial support and social responsibility. Universities could conduct research along with workshops for technical advice and proposals.
	Are you aware of experiences in other urban or rural contexts that could be replicated or adapted to this case?	Not exactly replicable, but regarding limiting strategies, people in Asia directly build perimeter walls to prevent growth.	Yes, the 'Querido Barrio' project in Chile, the changes they made in Brazil with the favelas, many of these proposals were made thanks to the collaboration and participation of the community and their own initiative.	Yes, initiatives exist in other coastal Lomas of Lima that could be applicable. Primarily, the idea of recovering traditional construction systems that recapture the adaptation of projects with the environment is being explored.	Yes, the Cerros Isla project in Chile about how to make an ecosystem resilient. Another project is APUS 'Acupuncture for Sustainable Landscapes,' which also performs an urban transformation, like the previous example.
	What indicators or monitoring mechanisms would you propose to evaluate the impact of future interventions?	Make proposals that are constantly monitored by the population and turn them into the protective eyes of the area.	It would have to be classified into phases: The first one with a Guru, who discusses and analyzes these problems, then conducting a pilot project to see how people react to it. Lastly, it is evaluating how people assimilated and accepted the idea.	Many exist; these could be interviews with the community and evaluations of the amount of tree coverage. It would also be good to evaluate the quality of life through the distance traveled toward academic or daily activities (like going to work). Depending on the type of intervention.	Mainly social indicators, such as asking about the satisfaction level. Also, analyzing, for example, whether the plant coverage improved. An economic indicator also, such as how many local businesses could be generated and evaluating the impact. Finally, constantly fulfilling the activities in the established schedule.

LEGEND OF KEY MENTIONS

<span style="background-color: #fce4d6; border: 1px solid #ccc; padding: 2px;"> </span> PERCEPTION OF THE URBAN STATE	<span style="background-color: #e8f5e9; border: 1px solid #ccc; padding: 2px;"> </span> MAIN PROBLEMS OF THE SITE	<span style="background-color: #fff9c4; border: 1px solid #ccc; padding: 2px;"> </span> RELATIONSHIP WITH THE COMMUNITY	<span style="background-color: #ffe0b2; border: 1px solid #ccc; padding: 2px;"> </span> NEEDS AND RECOMMENDATIONS REGARDING THE SITE
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Table 2: Interview results and findings

In their assessment of the current state of urban conditions and infrastructure, two architects agreed that it was precarious, one described it as poor, and the last referred to it as being in a process of consolidation. The main physical problem with this space is the topography, since in this type of settlement the costs can be high and, according to one of the specialists, could even be unattainable in terms of installing basic services such as the water network due to municipal budget constraints.

The main environmental problem, all four agreed, is the future degradation of the fragile ecosystem connected to this community, which, with its constantly growing population, could be one of the greatest dangers to this place. Additionally, the urban specialist 4, who has experience with fragile ecosystems, specified how environmental value could become a stronger economic resource. One example she mentioned was the creation of organic gardens. In her experience with the residents, this was something they used to do, but the population stopped doing it because their goal was really to sell and make money rather than keep the space green.

Regarding key elements for the functioning and appropriation of public space, the first highlighted the importance of a sense of culture and belonging. However, throughout the interview, absolutely everyone emphasized at least once the importance of community participation in order to prove that the proposal responds to the real needs of the population.

The recommendations for types of interventions were mainly based on prior planning of proposals based on the social dynamics of the community. One of the specialists emphasized that one option would be to involve the community in the process of mapping recurring movements, routines, and identifying the most unsafe locations. This would be one of many options, so that locals could be made aware of the need to create a better relationship between themselves and the space they inhabit. Finally, the specialist questioned how urban planning methods can become strict and professional, as he believes that, given today's conditions, they should above all be humane.

Regarding the limitations that the actions and initiatives taken by the municipality may have, everyone agreed that they are due to a lack of resources, sometimes

initiatives, and appropriate management. Despite budgetary constraints, they highlighted the importance of preserving places that will endure in the long term. Architect specialist number 4 explained her previous experience working in the municipality and explained how at one point there was a pending project that offered change to this community, but after a short time, the mayor changed and all plans were halted, forcing them to start again from scratch.

Regarding the roles that different actors should assume within their perspective, one of the architects proposed multidisciplinary work, explaining that each entity should be responsible for its specialty but that they should launch proposals that resolve issues based on their professional experience. He mentioned this not only in reference to specialists in landscaping and urban planning, but also sociologists, because he reaffirmed that professionals who understand the community are necessary.

Finally, the indicators that could be proposed for monitoring future interventions varied according to each architect. One of them explained that each of these processes requires evaluation in three phases: the first phase would be the analysis of the problem and the proposal, the second phase would be the pilot approval, where the proposal is implemented on a smaller scale, and the third phase would be to review the results, how people assimilated the proposal, and the state of the project after the trial.

The third and fourth architects mentioned that this evaluation would have to be carried out depending on what is being evaluated, whether it be accessibility, the number of trees, the relationship between quality of life and distance traveled in daily activities, etc. Additionally, the fourth architect added that it would also be good to have an indicator of how many local businesses the project could support, if it offers the space to do so.

Some other comments made regarding the community varied in terms of the importance of their participation in any process, such as their perception of feeling forgotten. Within this comment, there is also talk of their need to go out every day and tend to find work outside this populated center to support themselves financially, only to end their day in the afternoon and return with the sole purpose of resting.

## 6. Discussion

The results of the analysis highlight the complexity of the challenges and opportunities that characterize Quebrada Verde and its connection with Lomas de Lucumo. Among the main problems, and one of the most recurrent, is unplanned population growth, land use regulation, and the limited implementation of urban infrastructure in this territory. Although EDUCCA programs, like other initiatives by other organizations, seek to improve environmental preservation, they remain educational proposals or small conservation initiatives. However, they do not yet address the concern for improving accessibility, security, or natural surveillance, which are also factors that would contribute to the care of this space.

Direct testimonies from the population reveal an interesting factor, which is the loss of a sense of community and increased tension over land distribution. This fact can easily go unnoticed, but the absence of a sense of belonging may be key to the increasing degradation of public spaces, including the hills. From unused dead spaces to the presence of mounds of garbage, these are some of the problems that show the deterioration and abandonment of this space in certain sectors. The presence of this problem may indicate a lack of supervision and, as a result, an increase in invasion and degradation due to the perceived absence of authorities.

If we compare the findings with the literature and cases in Latin America, we can see how successful reforms in places such as Quebrada Verde are possible, but they tend to depend on alliances, stable sources of funding such as ecotourism, and the importance of formal and informal roles in the management of green spaces.

Finally, there are the perspectives of specialists in urban planning and public spaces. Within the interview, there were different proposals, but one of the most striking factors was the sense of belonging and community. It is clear that urban projects are necessary, especially in these contexts, where the quality of life can be low due to a lack of resources and topographical complexity, as is the case in Quebrada Verde. However, even though the proposals could address socio-environmental problems, this does not mean that they necessarily have to be resolved through awareness-raising. Perhaps these proposals, despite having a limited budget, could be used to analyze not only how to persuade, but also to

understand the patterns that this community follows and what kind of change they are looking for in order to value their space.

Mainly, the sense of community would be a priority. In this way, as one of the architects mentioned, this would mean more eyes watching over the space, that is, natural surveillance. Many of the neighbors put up blind walls on their properties, and simply increasing these would leave this street vulnerable. Therefore, this concept could be a starting point for the initiative to increase public spaces that generate active activities within the space. When the proposal mentions “public spaces,” it does not only mean parks, but also the implementation of open squares, boulevards, or tree-lined promenades that could connect this section of the community and make a smooth transition from the urban to the natural. This space, by including squares, can offer commercial spaces for local businesses, as well as being meeting places for the community. Clearly, these ideas must be subject to directly responding to the needs of the population as a community. Within the proposal, this would not only mean carrying out a theoretical analysis of the place, but also collaborative work between the entities and the community, which would consist of:

- Community data collection: The community mapping unsafe spots, access preferences, most frequently used routes in their daily activities, among other things.
- Analysis and proposal with specialists: Design open to guidance from professionals in each specific area on how they would address this problem.
- Pilot test: This test could be applied to a small section to analyze the community's response to this proposal.
- Conclusion on the result: Depending on the result, it is analyzed to see if it is replicable throughout the urban context.

These are some of the proposals based on the recommendations of specialist architects. Another important factor would be to discuss the limited investment offered to human settlements that face difficulties due to topographical conditions. One of the specialists stated that, having worked on similar projects, carrying out projects that seek to provide basic services to these places can be a fairly high investment that may not be considered a viable option for municipalities. This

information could open the discussion on whether the approach of the relevant entities is really aimed at making progress in the infrastructure of this community or just helping them to coexist despite the shortcomings it presents. This discussion is not intended to judge, but to open the conversation on what the final approach should be to all the proposals already made in this case by the relevant municipality or the ministries involved.

Finally, there is population growth and difficulties with property boundaries and layout. One preventive measure being explored is Rehabitar la Montaña (Reinhabiting the Mountain) in Colombia, which explores the idea of establishing a boundary by assigning an active use to a boundary space, such as crop areas. Assigning this boundary with the active use of space would make the boundary much more noticeable, and the population would be unable to cross it.

## **7. Conclusion**

After analyzing the situation, the study highlights that the major problem is the unplanned population growth in this type of a populated center and affects the fragile ecosystem with which it coexists but also impacts on the routine and quality of life of the population.

That is why the guidelines for growth and relationship with the Quebrada Verde ecosystem are to prioritize the improvement of public spaces that directly understand the needs of the two actors: the population and the fragile ecosystem.

The findings of this research show how urban conditions can affect the socio-environmental resilience of the community and the conservation of the system. Among the specific conditions, the study identified the lack of infrastructure that maintains not only jobs but also environmental value within this population center. Some of the obstacles are the population's treatment of public spaces, the complexity of the topography in providing future water infrastructure for the population, processes and proposals interrupted by changes in management by the municipality, and the focus of municipal initiatives.

It was also demonstrated that it is possible to establish architectural strategies that improve environmental awareness, such as participatory and collaborative design

by the community with entities, but focused on a response that directly addresses the urban needs of the site.

There are programs that seek to improve the environment and raise awareness, but when they are contrasted with the scale of the current urban state, this suggests a broader proposal that involves the community participation and improves its sense of belonging, as well as offering preservation of future urban proposals in this context. The analysis with interviews with specialists confirms that there is a need for greater alliance between the institutions working on the preservation of the site, combining different urban and social specialties.

### **7.1 Recommendations**

There is the possibility that future urban proposals could include spaces that integrate cultural appropriation, such as plazas, green corridors, and even local businesses that maintain the transition between the community and the fragile ecosystem (Lomas de Lúcumo).

As shown, increasing natural surveillance, proposals focused on urban improvement of the area, and collaborative work with the population could offer a better quality of life for this community. The challenge now is to identify the next steps to take in order to further develop this idea and one day make it a reality.

### **7.2 Limitations**

One of the main limitations of this research was the scarcity of academic studies that directly address the case of Quebrada Verde as a key point of access and community within the framework of Lomas de Lúcumo; most previous studies focus on the coastal hills, leaving aside the socio-spatial dynamics of urban infrastructure. Another limitation was the search for specialists with experience in this type of urban context. Despite having approached 10 architects with experience in urban planning, only four agreed to be interviewed due to their expertise in the subject.

The scope of the interview analysis was focused on a smaller scale, taking a section of the community as a reference. However, a longer investigation would benefit the effectiveness of a greater number of interviews, not only with specialists but also with the population.

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