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Territorial occupation in the Andean Piedmont: future conurbation in communes of the northeastern sector of the Metropolitan Region of Santiago, Chile?

This research examines urban growth and land occupation in the communes of the northeastern sector of the Metropolitan Region of Santiago, Chile, which are in the Andean foothills. The study focuses on the evolutionary process of generating a conurbation in this area and analyses the factors that may be influencing this process.

To this end, the document first analyses urban growth in the communes of Colina and Lo Barnechea, in the northeastern sector of the Metropolitan Region of Santiago, Chile. The existence of an intercommunal road called Paseo Pie Andino, which favours connectivity between both communes, stands out here. However, this area is under official protection as an Ecological Preservation Area, which limits urban development in the sector. In this context, it is mentioned that urban expansion in Santiago has been explosive from the sixteenth to the twentieth centuries, due to rural-urban migrations and land liberalization. In recent decades, there has been an occupation of pre-Andean spaces in the communes of Colina and Lo Barnechea, the first case manifests itself in a morphological and functional change with the development of megaprojects and the consolidation of gated communities. On the other hand, in Lo Barnechea, the occupation of the valley of La Dehesa and the presence of settlements at the bottom of the ravines stand out. Regarding the type of urban growth, a dispersed trend is identified in Colina, with the proliferation of plots of land. This implies a more fragmented and decentralized development model compared to Lo Barnechea, where occupation has been concentrated in the valley of La Dehesa. These processes of urban occupation have been car-

ried out without adequate territorial planning. The existence of the Paseo Pie Andino has favoured connectivity between Colina and Lo Barnechea, but at the same time, it has generated a conflict due to its protection as an Ecological Preservation Area.

In the second section, the area of study and the methodological tools used in the document are presented. The Metropolitan Region of Santiago de Chile is described as the main urban centre of the country in terms of extension, density, and intensity of occupation. The region is divided into 52 communes, and the study area is in the communes of Colina and Lo Barnechea, in the Andean foothills. The methodology used is mentioned, which includes trend analysis, review of bibliographic sources and fieldwork. In addition, the importance of using spatial research tools, such as geographic information systems, for land analysis and urban planning is highlighted. The study is based on the collection of georeferenced information through secondary sources, such as cartography and databases, as well as fieldwork for direct observation and primary data collection.

Chapter III deals with the proliferation of gated condominium-type dwellings in the so-called Ecological Preservation Area. These types of areas are defined as those that are maintained in a natural state to preserve the balance and quality of the environment, as well as the landscape heritage. The current territorial regulations establish that in these areas only activities that ensure the preservation of natural values are allowed, such as scientific, cultural, educational, recreational, sports and tourist activities, with minimum and essential facilities.

In addition, it is mentioned that ecological preservation areas do not allow divisions of land, parcels, or farms. Territorial planning instruments are responsible for delimiting urban centres to regulate urban functions, but there are also regulations that allow and guide occupation in rural areas according to their territorial vocation. In the 1990s, the formation of an urban nucleus defined in pericentral communes up to the commune of Santiago Centro was identified. However, there is also a process of dispersion with the formation of settlements in peri-urban areas, especially in communes with a rural vocation. This reflects a search for better environmental conditions and quality of life in low-density, exclusive, and gated residential neighbourhoods. In relation to urban growth in the foothills of the Andean foothills, since the 1960s, there has been pressure and degradation of the natural landscape, vegetation and soil quality. This expansion has led to suburbanization or periurbanisation, characterized by horizontal and continuous urban growth. The chapter also highlights the critical view of experts on urban sprawl and its negative effects in the context of the metropolis of Santiago. During the 1990s, an incipient process of occupation was observed in the pre-Andean spaces of the eastern sector of the city, in communes such as Lo Barnechea and La Dehesa, covering the demand for residential land for high-income sectors. This process is characterized by the privatization of public space and control through gated condominiums. Finally, the dispersed urban growth in the commune of Colina, in the northern and northeastern sectors of the area studied, is mentioned. This growth has generated a morphological and functional change in the commune, contributing to the expansion of the urban sprawl.

Chapter IV analyses the aspects of natural value, landscape, environmental and cultural richness present in the territory between the urban areas of Colina and Lo Barnechea. This space is in mountain ranges in the foothills with streams and watercourses that are characterized by little intervention or occupation due to the location of the urban centres in the central valley of the foothills. According to the Santiago Metropolitan Regulatory Plan (PRMS), this sector is part of the environmental heritage of the foothills, recognized for its natural scenic beauty and where only activities associated with agrotourism equipment and recreational tourist corridors are allowed. The climate in this area can be classified as Mediterranean winter rainfall, with plant formations typical of Andean Mediterranean sclerophyllous forest and Andean Mediterranean thorn forest. These natural features contribute to the existence of a microclimate that offers eco-

system benefits to the city. The sector is also considered a priority site for the conservation of biodiversity, due to its natural, ecosystem and landscape quality, and 14 archaeological sites have been identified with vestiges of heritage, anthropological and cultural value. However, urban development in this sector is restricted by territorial regulations and the difficulties of the morphology of the site. Although there may be occupation processes, these must consider a minimum degree of urbanization and respect environmental protection regulations. Currently, non-compliance with the regulations by real estate agents has been detected in the execution of works without corresponding permits. Territorial occupation in this sector has been developed through the construction of high-standard single-family houses, in a low-density and dispersed clustering system. In conclusion, this chapter highlights the importance of conserving and protecting the natural, landscape, environmental and cultural values of this area, as well as the need to apply effective regulations and oversight to ensure urban development that respects these aspects.

Chapter V, entitled “Elements of Real Estate Advancement in the Configuration of a Territorial Occupation Model”, examines the progress of the real estate industry in the formation of a territorial occupation model in the study area. It is highlighted that the wide availability of services, infrastructures, and equipment in the urban areas of Colina and Lo Barnechea, added to the natural attractions of the territory, have attracted a demand generated by a high socioeconomic profile of the population. However, the development of this model is restricted by territorial regulations that seek to protect, safeguard, and conserve the characteristics of natural value that the area possesses. New management and regulatory instruments have been implemented to limit occupation in areas of natural value and prevent the generation of unplanned urban settlements. The morphological difficulties of the sector also influence the constraints on urban development. Although some occupation is allowed, it must consider a minimum degree of urbanization and it is difficult to carry out civil works to enable these spaces in the consolidation of urban settlements in areas of low and middle foothills. It is evident that the real estate model in this area has been skilful in favouring the construction of high-standard single-family homes in condominiums or gated communities. Instead of building housing complexes, land is subdivided and allotted, allowing future owners to build their own homes. However, the importance of maintaining conditions of occupation and conservation of the natural and ecosystem

characteristics of the area is emphasized. The process of advancing urban occupation in this area has been slowed down both by the regulations established in the territorial planning instruments that limit urban expansion and by the restrictions imposed due to the biogeographical richness and landscape value of the territory. Although specific projects that show real estate progress in the sector are recognized, a conurbation process that consolidates continuous urban development between the communes of Colina and Lo Barnechea is not foreseen. This is due to regulatory restrictions and protected areas, such as the Ecological Preservation Area defined in the territorial planning instruments of the Metropolitan Region of Santiago. Recent changes in jurisprudence and the incorporation of regulations seek to protect natural spaces and prevent urban occupation in protected areas. An opinion by the Office of the Comptroller General of the Republic emphasizes the importance of protecting ecological preservation areas and maintains that residential land use is not allowed in these areas, in line with the principle of non-regression established by the Framework Law on Climate Change.

The chapter on Results of the study describes the process of urban occupation in the communes of Colina and Lo Barnechea, in the metropolitan region of Santiago, Chile. The presence of real estate projects that show an incipient advance in the configuration of a territorial occupation model in the study area is highlighted here. These projects are characterized by the subdivision of land into plots of different surfaces and the construction of single-family homes in gated communities. It is observed that these projects could generate a system of concentrated, closed urban settlements with a high landscape and environmental impact. However, limitations and restrictions for urban development in the study area are also identified. Mention is made of the prohibition of property division into Ecological Preservation Areas, which prevents the individual occupation of land in these areas. However, subdivision processes that occurred

before the entry into force of the preservation norm are identified, which generates a deficiency in the face of individual occupation.

The provision of basic services by real estate agents has helped to generate credibility among buyers and to position the rural area as a place of high-standard occupation. However, the paradox is that this occupation is on the margins of territorial planning and offers landscape quality and a natural environment, according to the marketing strategies of housing developers. To conclude, in the conclusions and discussion of the study, a summary of the most important findings and results is proposed. The authors highlight the importance of the Santiago Metropolitan Regulatory Plan (PRMS) as a territorial planning instrument that establishes limitations and restrictions for urban development in the study area. Likewise, the relevance of the protection of Ecological Preservation Areas and the role of the competent bodies in the evaluation and approval of real estate projects is also mentioned. With this, one of the main conclusions has to do with the dichotomy between the clear real estate progress observed in the study area and the existence of significant barriers and restrictions for conurbation and continuous urban development between the communes of Colina and Lo Barnechea. These limitations are due both to territorial regulations and to the protection of the natural and landscape values of the territory.

It also highlights the importance of the management and conservation of natural resources and the environment, as well as adequate urban planning, to ensure sustainable development compatible with the protection of the quality of life of the inhabitants and the conservation of the natural and cultural heritage of the studied area. Overall, the results and conclusions of the study underline the need for a balance between urban development and the protection of natural and landscape resources, as well as the importance of adequate territorial planning for the occupation and conservation of these spaces.