Design strategies for residential buildings in the post pandemic era.

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Abstract- *During and after the pandemic the home became the epicenter for many people. Everything happened at home: work, school, exercise, play, and everything in between. Families' priorities and needs have changed in many ways, and how they use their homes is at the top of their list.*

An emerging priority among homeowners is health and wellness. People now not only want their homes to protect their health with great indoor air quality, but they also want adequate space to attend to their daily life activities at home. Furthermore, homeowners now realize their homes must fill many roles. No longer are homes mainly a place to gather and rest, but they must also serve as schools, offices with dedicated workspaces, gyms, outdoor living, and many other spaces. For this, are suggested modular interiors, with more segmented approaches than open floor plans.

This paper will present design strategies for residential buildings, in three scenarios, with different terrain conditions (flat terrain, slightly sloppy terrain, and very sloppy terrain) and low construction intensity, according to the "General Local Plan and Territorial Strategy", in the city of Lezha.

Three different building design typologies (Linear Typologies, Box Massing Typology, Unit House Typology) are chosen as the more suitable to be applied to the different terrain conditions.

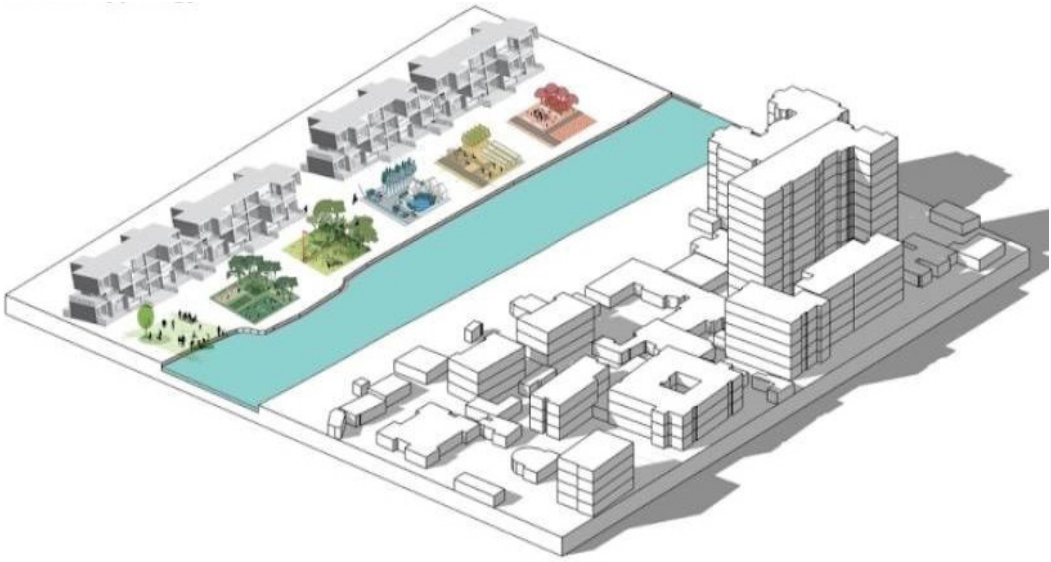
For each, it is going to be presented a conceptual project, based on modular volumes, which integrate into alternative ways, in terms of different crisis conditions such as the pandemic situation. The environmental conditions which have an impact on buildings are variable, but these design strategies are chosen to reduce the negative environmental impact of a built environment by using modular adaptive and repetitive typologies Also, to enhance indoor environmental quality is used natural ventilation.

The three different building typologies are going to be applied in three different terrain conditions:

A - The first scenario is the "Linear typology" in flat terrain; B - The second scenario is the "Box massing typology" in a slightly sloping ground near a hill; C - The third scenario is a "Unit house typology" in very sloping ground.

This study aims to propose new adaptive typologies and establish a set of design standards, taking into account the impact of the pandemic. By examining these strategies, we, designers and architects can understand the defects of the design products in the pre-epidemic period and make good design decisions in the post-epidemic era. The purpose of the study is to propose new residential communities, rather than a single multi-unit house appearing in the city.

Keywords: Pollution - Linear Typology, Box Massing Typology, Unit House Typology, Post Pandemic, Design strategy, Different Terrain Conditions, "General Local Plan and Territorial Strategy".



First s cenario, Linear typology. Reference from: The winning results of the Sydney Affordable Housing Challenge (link in the Webliography).

General description of Lezhe city

The Municipality of Lezha has the "General Local Plan and Territorial Strategy", ready to be implemented. The strategic development of the territory of the municipality (municipality and region), the strategic / priority action plan with capital investments, and pilot development projects propose to increase the intensity of construction. The consolidation and densification of existing urban centers are one of the priority goals. The population is projected to reach 120 000 inhabitants, from nearly 66 000 existing inhabitants.

The primary function of the house, since its creation, has been a hiding place for the bad weather and predatory animals. In post epidemic era, the design of the house must include and provide also social isolation. High-density urbanization will take a step back, and people will tend to relocate to small villages and city suburbs. This paper presents some possible intervention strategies for the post-pandemic society, with specific guidelines for the expansion of new residential areas, and integrating the new activities into the post-pandemic idea of living (recreation, sport, working, social aggregation).

Three different scenarios:

A - The first scenario: "Linear typology" in flat terrain.

In the first scenario, it is presented the "Linear typology". The area is selected in the center of the city, near the river Drin. In the east of the area, there are low-rise and high-rise, multi-story buildings, and in the west, there are practically no buildings. The river divides the area into two different sides. In the area where the land use is very low, will be applied housing densification through linear buildings. Each building will have a public area in front of it, with community open spaces and ecological landscapes. The linear typology is conceptualized with modular volumes interacting in different forms of composition. Each module will satisfy the needs of the new, post-pandemic homes. The home offers a living area, a night area, services, corridors, vertical connections, studio and recreative spaces, and balconies. They are not only apartments but homes, with more space for the living area, a terrace, office space, and recreation activities. Natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

B- The second scenario: "Box massing typology" in a slightly sloping ground near a hill.

For the second scenario, it is chosen an area near the hill of the city castle. The terrain is slightly sloping. The slope comes from west to east, increasing. The existing buildings are of different heights: from one floor to five floors, and of different typologies: public, institutional and residential buildings. The "Box massing typology" is presented in the area where the terrain begins to take the slope. The background of the building which is proposed will be the terrain of the hill. The box massing volume is differentiated to create full and empty spaces, to let "nature come in". This logic can be applied in ways that generate different articulations of volume composition. The module can

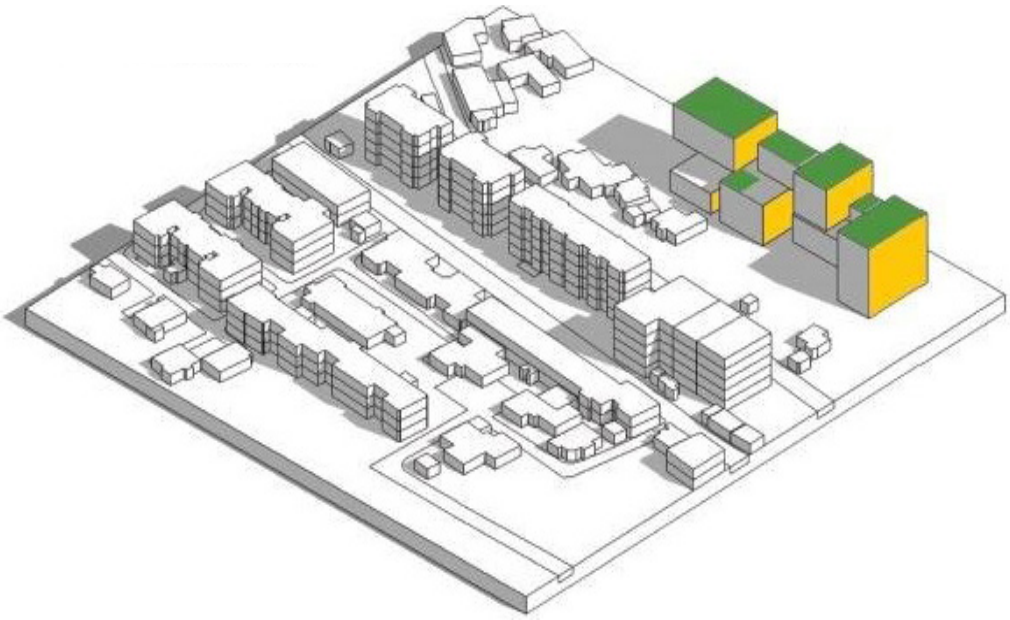


Fig. 2/ Second scenario, Box massing typology. Reference from: Formzero studio, Project: "Networked gardens" (link in the Webliography).

be repeated and modified according to the needs of the people. The massing breakdown is a design instrument used for garden infill to create a green vertical network. Also in this typology, natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

C-The third scenario: "Unit house typology" in very sloping ground.

The third area is chosen in a terrain with a great slope, near the port of Shengjin. The whole area has a low construction density. Most of the existing buildings are military service buildings. They have a low height, one to two floors. There are many options to select the areas for construction infill. The typology proposed for the area is "Unit house typology". Single modular homes can be applied in this typical slope terrain. The unit house offers a terrace, the day area, followed by the night area. Also in this typology, natural ventilation is projected in two dimensions: inter-structural for the building and interior for the home as a unit.

Conclusions

As we figured out some guidelines for the expansion of new residential areas, according to the proposed "General Local Plan and Territorial Strategy" for Lezha Municipality, and also the new conditions of living in the house, after the pandemic crisis, it is evident that in every terrain condition, it is possible to realize construction infilling. Environmental sustainability can be enhanced by using modular adaptive and repetitive typologies and also indoor natural ventilation. Modular buildings can be suitable in each of the three types of buildings: linear buildings, box massing buildings, and unit house buildings. The home, as a unit, should and can be modifiable and adaptive, to satisfy the new needs of the inhabitants and the different needs of social life, in the times of the post-pandemic crisis with higher environmental performance.

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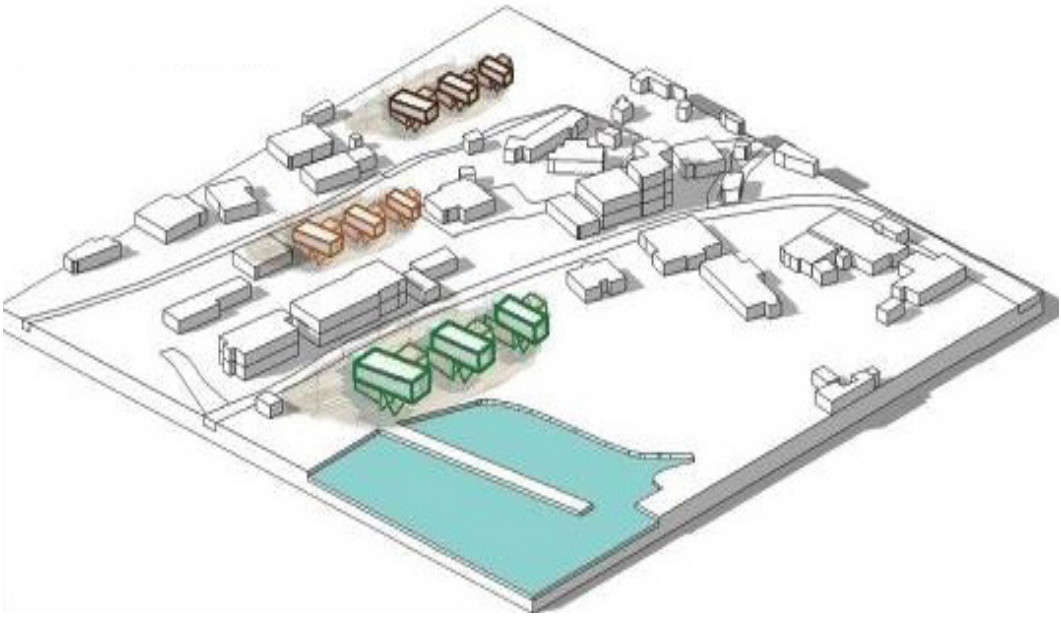

Fig. 3/ Third s cenario, Unit house typology. Reference from: Villa Allende, Argentina. Architect: Andres Alonso Arquitecto (link in the Webliography).

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