

POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
Master of Science in Architecture (Construction)
Honors theses

Earthquake reconstruction in Chile_Bucalemu village

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Over the last decade, the world has witnessed the devastation and destruction caused by numerous large natural disasters. These events help highlight the importance and relevance of post catastrophe reconstruction.

The architect responsible for managing these situations must respond to many different complex problems. The reconstruction process involves much more than simply reconstructing what has been destroyed in the natural disaster but is in fact a large organized intervention. First of all the architect must think about how to reconstruct the infrastructure, the social networks and commercial activities and services. These must be constructed again and improved to guarantee the future development of the city and of the country.

The response to natural catastrophes varies considerably in relation to the economic and social conditions of the country affected.

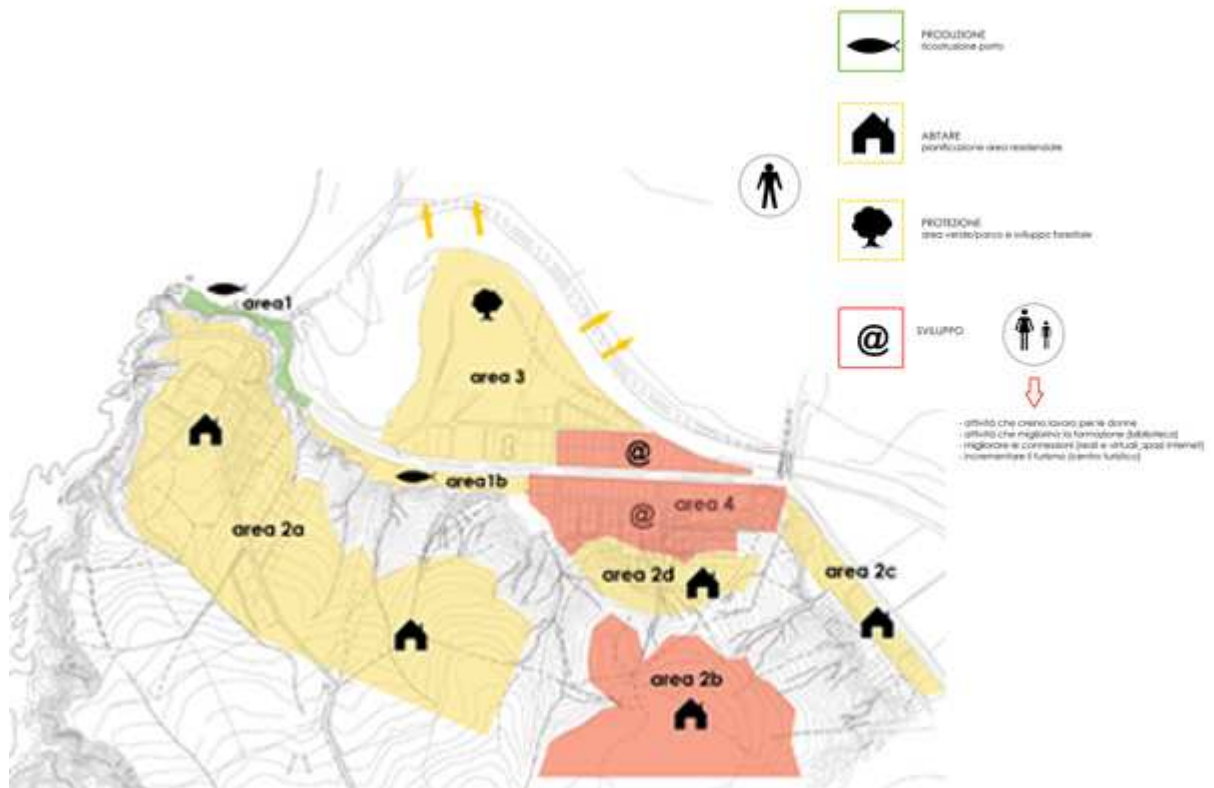
It is possible to see some common denominators, one of which is the management of the emergency services and the transfer from the emergency housing units to the reconstruction of houses and cities.

This study examines and analyzes the tsunami in Chile on the 27th February 2010.

Here, the country has been able to react efficiently to the reconstruction and some pre-existing terrain problems, exploiting what happened as an opportunity to develop. I have some firsthand experience in this area, as I attended a design unit for the reconstruction effort on the coast of the VI Region.

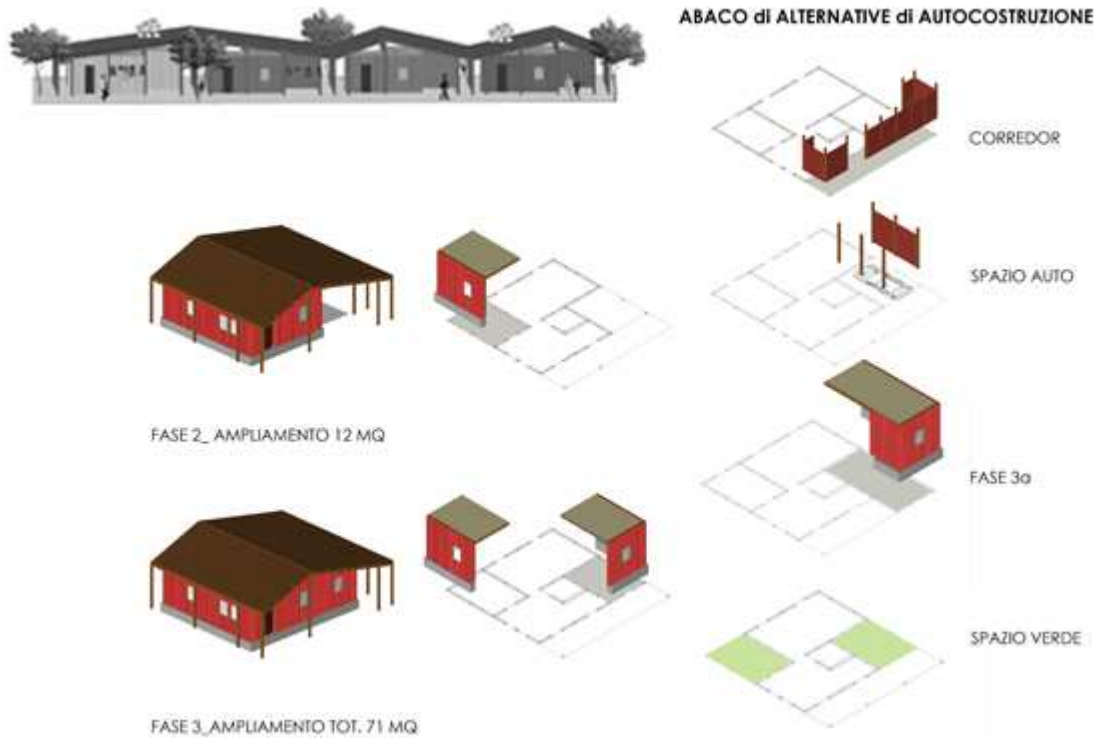
The objective was to learn methodology to respond and follow to this type of planning practice. This includes the ability to know how to manage a multidisciplinary trial; knowing how to integrate the different aspects of connecting these in the existing context including the management of changing the site in question from a state of emergency to a state of stability and development.

The thesis will be divided into three sections: the analysis of the event, the analysis and studies of Bucalemu, a village struck by the tsunami (situated on the Chilean coast) and the proposal of '*Plan de Regeneracion Urbana*'. This plan was devised for the village of Bucalemu, with planning of new productive and residential areas, through the study of a housing model realized with self-construction with mixed structures made of mud.



Plan de regeneracion urbana

The program will foresee the planned proposal of a new productive zone that will include a market and a storeroom, offices and a restaurant. The complex is connected to pedestrian walkways and an emergency staircase that is connected to a safety area above the 20 m quota. The market project begins on an existing base and to the side of that will also include small docks for the fishermen's boats.



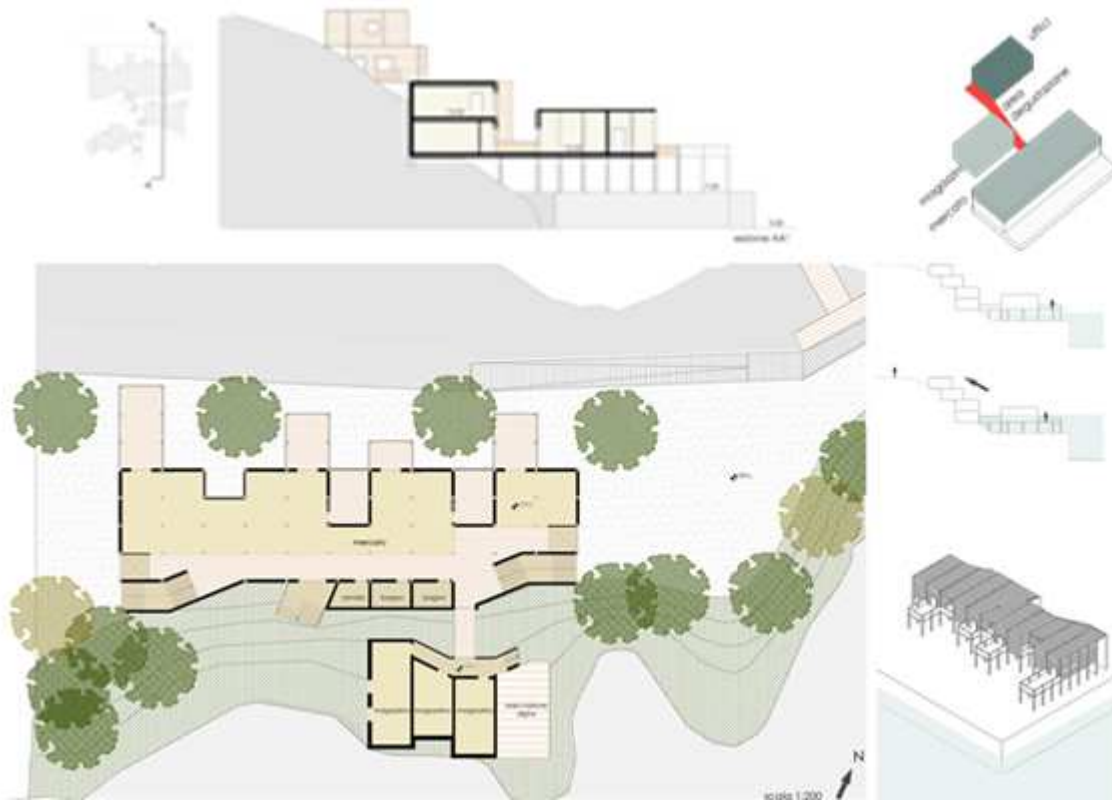
Project productive area

In the residential area the housing reconstruction is planned in way that takes advantage of the State benefits, respecting the standard of habitability and comfort, working with traditional systems.

The house form involves different phases. In the first phase basic services will be provided and in the following phases, the block will be completed through self-construction. For this reason the house is composed of two blocks of 4 x 3m in dimension and stagger of 3 m.

The techniques involved in reconstruction the housing involve the prefabricated quincha (panels and structure made of wood and filled with mud).

The constructive system can be used as a type of community job and mutual help. One of the causes of a high number of collapsed houses in earthquakes is the tendency to widen houses through interventions of self-construction in height and adding rooms vertically. For that reason a continuous roof is planned to stop any expansion in height, as the foundations are not proportionate. A continuous roof will also be used to horizontally bind the expansion form.



Project residential area

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