

# Recupera Chile – Local Recovery and Regional Resilience

Project Applicant

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In collaboration with **Ivan Cartes**, Professor and former Architecture Dean at Universidad del Bío Bío and the Reconstruction Coordinator of the North Zone, VIII Region, Chile

How can we ‘build back better’ to prevent the effects of the next disaster? This important question forms the basis of this research proposal in the aftermath of the earthquake and tsunami which struck Chile on February 27, 2010. The magnitude 8.8 earthquake caused over 520 fatalities and destroyed 370,000 homes. More than two years later, recovery in the region shows very little sign of progress with many barriers to recovery and construction that are pressing and urgent.

Purpose: To collaboratively create a catalogue and a timeline of seismically innovative Chilean precedents for publication and support of the Recupera Chile project. This will highlight Chilean architecture (modern and historic) as well as infrastructure (structural engineering and traditional modes of ecological engineering).

Methods: Research and travel to several regions of Chile to document, diagram, interview, and analyze

Products: Publication and working document for use in the Recupera Chile project.

## Critical Recovery Strategies

This project is a special research branch of the Recupera Chile Initiative being run by a group of multidisciplinary faculty from Harvard University with advisory support from the David Rockefeller Center of Latin American Studies. The Recupera Chile Initiative works with residents and government leaders of the towns of Dichato, Perales and Cobquecura developing recovery plans that address economic, environmental and social challenges to post-disaster redevelopment. This special research branch project will create a historic time-line and case study data-base of seismic safety strategies in Chile, ranging from building innovations to infrastructural techniques, functioning both as a reference and application for the Recupera Chile project. Drawing from the rich history of design excellence and innovation across Chile along with the cultural effects of impending geophysical hazards, this research involves the creation of a design and planning catalog with novel, case study information about seismically resilient buildings, evacuation spaces, and tsunami resilient infrastructure strategies across Chile. Working directly with Ivan Cartes, the Reconstruction Coordinator of the North Zone in the VIII Region and former Dean of Architecture at Universidad del Bío Bío, the research will cover cases across the country while focusing on untangling specific issues surrounding each of the three towns.

## Post-Disaster Challenges and Preventative Measures

To provide greater detail and insight into regional recovery conditions, the following descriptions of the towns of Dichato, Perales and Cobquecura give a preliminary understanding of the complexities and opportunities facing the region. The comparisons of these towns demonstrate the main challenges as well as the proposed research strategies which will help lead to solutions for intervention and empowerment at local and regional levels.

### Dichato, Chile - Building Reconstruction

Dichato is a town of 3500 people located on the Southern part of the Chilean coastline. Since the 2010 disaster, it has progressed quite quickly in comparison to the other two towns, due to its public outcries and being one of the most popular tourist destinations in Chile. A number of tsunami resilient buildings have already been built and construction has started on a tsunami-mitigation wall which embeds a pedestrian path and seating area along the beach. The efforts in Dichato will be analyzed and placed within the historic context of building practices in order to propose new alternatives and prototypes that stem from the design and planning recovery catalog.

### Perales, Chile - Coastal Reconstruction

Having lost over 130 buildings in the 2010 tsunami, the residents of Perales are struggling in camps of rough built temporary housing called mediaguas. Historically, Perales is one of the poorest communities in the region of Coelemu. Since the economy of Perales is based on the collection of algae and shellfish as well as a small percentage of fishing, farming and trading activities, the efforts in Perales will involve studying precedents that combine architecture, coastal planning and economic reconstruction. Since livelihoods of people in Perales are directly tied to land and water relationships, the research will search for former, historic solutions which look at the interrelationship between the economy, the ecology and the population.

### Cobquecura, Chile - Legislative Reconstruction

Since the 2010 disaster, the primary challenge to recovery in Cobquecura has been legislative restrictions that prevent or hinder the reconstruction of National Heritage buildings. For example, the main street in Cobquecura is designated as a "Zona Tipica" (Typical Zone) and falls under the strict law 17.288 of the Monument Council. Buildings within this zone must be built back in Adobe or Adobe "Style" but the Adobe Law for Heritage Construction is still undergoing approval and therefore severely impeding the reconstruction process. Furthermore, since the Adobe Law is limited to adobe reinforcement and repair - as opposed to full reconstruction - important questions remained unanswered by legislation for the total reconstruction of these historically significant buildings and culturally relevant architecture that are often completely destroyed and razed during earthquakes. The design and planning catalog will help propose strategies and solutions for seismically-safe and historically-sensitive reconstruction by analyzing prior cases in regards to their successes and weaknesses.

In conclusion, the Recupera Chile Initiative at Harvard University is dedicated to working with these three disaster-affected communities in a multi-year commitment from 2012 to 2017 to increase their resilience to seismic events in the future.

### About the Principal Project Investigator & Grant Applicant

Miho Mazereeuw is a professionally registered architect and landscape architect from the Netherlands and Japan who has been researching disaster mitigation and design strategies for cities in seismically vulnerable countries for the past 10 years. She has created and taught an annual course called "Disaster Design and Development" at the Graduate School of Design and is currently writing a book entitled Preemptive Design: Disaster and Urban Development along the Pacific Ring of Fire featuring case studies on infrastructure design, multifunctional public space and innovative planning strategies in earthquake prone regions.

### Key members of Harvard Recupera Chile Initiative

Doug Ahlers - Lecturer at the Harvard Kennedy School who has taught the class which officially kicked off this Project in Chile in January 2012 and teaches an annual course called "Disaster Recovery Management and Urban Development: Rebuilding Cities After a Disaster".

Judith Palfrey - T. Berry Brazelton Professor of Pediatrics, Harvard Medical School - has a long history of working in Chile especially highlighted by the extremely successful Un Buen Comienzo program.

Ned Strong - Program Director of the David Rockefeller Center of Latin American Studies.

Marcela Renteria Program Officer of the David Rockefeller Center of Latin American Studies.