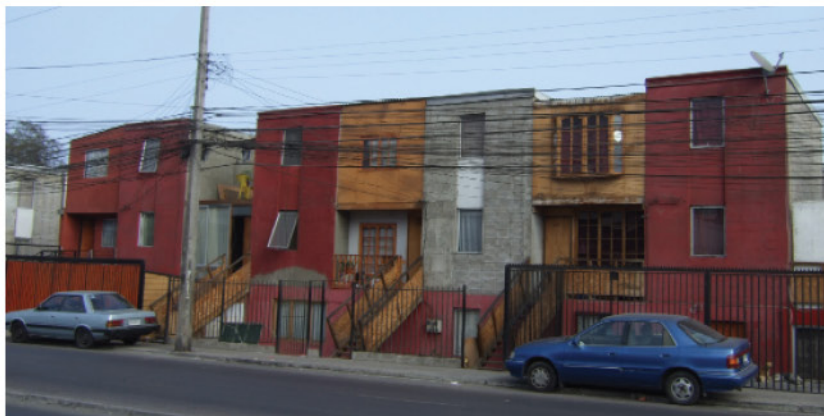


# The Evolving Process of Incremental Social Housing in Chile

A RCHI | MIT Case Study

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## Abstract

The Chilean government partnered with the architecture firm Elemental to develop incremental housing and infrastructure improvements for low-income families in informal settlements located in areas of risk. Projects prioritize thoughtful design, incremental construction techniques, on-site social support programs, and proximity to urban services and job opportunities. These ongoing programs developed in the context of Chile's strong economy, responsive public housing policy, and robust finance mechanisms. Elemental has completed over fourteen projects to date, with a handful of others in progress. Each project retains its signature design features—structural shell, critical interior amenities, basic infrastructure, quality public space—adapted to the individual size, geography, and budget of each project. It is this adaptive learning and iterative process of housing policy, design, and implementation that makes these projects typify a “successful struggle” towards housing for resilient cities.

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*The Resilient Cities Housing Initiative (RCHI) at MIT, directed by Professor Lawrence Vale, explores the ways that shelter and settlements can be designed to anticipate and respond to the 21st Century environmental and security challenges of an urbanized and urbanizing world. RCHI investigates the challenges of developing and redeveloping the housing environments of the least advantaged dwellers in a city-region. <http://rchi.mit.edu>*



## RCHI Criteria

Housing for resilient cities enhances: livelihood, environment, governance and security.

Note: A dotted circle denotes that this criteria is partially met. A solid circle denotes exemplary performance on the criteria.



Elemental's first incremental housing project, Quinta Monroy, in Iquique, Chile

## Overview

The Chilean government partnered with the architecture firm Elemental to develop incremental housing and infrastructure improvements for low-income families in informal settlements located in areas of risk. Projects prioritize thoughtful design, incremental construction techniques, on-site social support programs, and proximity to urban services and job opportunities. These ongoing programs developed in the context of Chile's strong economy, responsive public housing policy, and robust finance mechanisms. Elemental has completed over fourteen projects to date, with a handful of others in progress. Each project retains its signature design features—structural shell, critical interior amenities, basic infrastructure, quality public space—adapted to the individual size, geography, and budget of each project. It is this adaptive learning and iterative process of housing policy, design, and implementation that makes these projects typify a “successful struggle” towards housing for resilient cities.

Three components are key to understanding the evolution of these projects:



Children playing at Quinta Monroy at night

(1) Chile's strong economy and robust social housing policies have enabled experimentation with key housing programs. After a series of “self-help” housing policies in the 1950s, the government shifted responsibility for production by enacting laws that created incentives for private sector investment in housing development. The Ministry for Housing and Urban Development (MINVU) was created in 1965 to oversee the use of public funds to build housing for lower income households, coordinate the efforts of different government entities, and help establish more consistent housing policy (Rojas, 1999). In recent decades, the government has also introduced policies to address demand-side challenges, including up-front capital subsidies and savings programs designed to help low- and middle-income families purchase homes built by the private sector (Gilbert, 2004).

Despite these efforts, the number of housing units produced was insufficient to meet the needs of Chile's rapidly urbanizing population. Hundreds of thousands of people lived in informal settlements known as campamentos in urban centers and peripheral metropolitan areas (Jiron, 2010). They were characterized by insecure land tenure, dirt floors, and a lack of potable piped water and sanitary disposal of waste water. According to national surveys, one quarter of all houses experienced overcrowding and nearly half of those occupied by the poorest residents were overcrowded (Micco et al., 2012). Early government efforts to eliminate informal settlements resulted in displacement and forced relocation to areas with inadequate infrastructure.



A resident inside her new apartment in Elemental's Renca project in Santiago, Chile

MINVU's Chile-Barrio (“Chile-Neighborhood”) program from 1997 to 2007 was one of the first social programs to adopt an integrated approach to tackle the highly visible problem of informal housing settlements. The program was highly dependent on political will, and the complex administrative structure and necessary multi-sectoral collaboration yielded positive yet modest results (Frenz 2007). Nevertheless, it was an important step in an evolving set of policies to improve housing access and quality. In recent years the government has also worked closely with





A child at the opening of Elemental's Renca project in Santiago, Chile

Un Techo Para Chile (“A Roof for Chile”), a national non-profit organization providing housing, volunteer construction support, and social services in low-income communities. Un Techo Para Chile has since spread to seven other Latin American countries under the umbrella organization, Un Techo Para Mi País (A Roof for My Country) (Aguilar and Ferreira, 2012).

(2) A well-recognized architecture firm led a participatory design process and developed a model of adaptive, incremental design to fulfill the most essential needs of the residents. In 2003 the Chilean government contracted with Elemental, a prominent Chilean architecture firm, in partnership with Pontificia Universidad Católica de Chile, a private Catholic University in Santiago, and Empresas Copec, a Chilean energy and natural resources company. The objective was to provide housing for almost 100 families on a 1.25 acre site in the central city, where residents had been living in informal settlements for 30 years. Faced with insufficient funds to build complete houses for every family, the firm proposed a design based on incremental construction of housing over time by residents. The design of the half-built home featured basic structural elements (roof, walls, and stairs) and infrastructure (kitchen, bathroom, and connections to utilities). Residents would add to this basic unit over time based on their family structure, changing needs, accumulated savings, and access to financing. The architect Alejandro Aravena noted, “The design is packaged first in identifying which is the half that a family will never be able to modify over time, no matter how much time, money, or energy they spend on their houses. And simultaneously, what design conditions will guarantee that house will gain value over time” (Aravena interview, 2008).

(3) By continuing to adjust to evolving housing policies, economic conditions, design constraints, and geographic locations, these projects reflect the need for a creative, adaptive approach to affordable housing as resiliency in itself. Elemental has completed over fourteen projects to date, with a handful of others in progress in other Chilean cities and other Latin American countries. Each project retains its signature design features—structural shell, critical interior amenities, basic infrastructure, quality public space—adapted to the individual size, geography, and budget of each project. It is this adaptive learning and iterative process of housing policy, design, and implementation that makes these projects typify a “successful struggle” towards resilient housing as a part of a strategy for resilient cities.



The community center at Renca

#### **RCHI Criteria**

##### *Support social structure / economic livelihoods*

Public policies and programs under Chile-Barrio and Un Techo Para Chile adopted an integrated approach to housing development by including funding and infrastructure for social service components, such as childcare and job training facilities, to improve social capital and expand social networks both internally within the neighborhood and externally to the city as a whole (Aguilar and Ferreira, 2012).

While the Quinta Monroy project was funded through the Chile Barrio program, the architects specifically emphasized the need to build new housing on the same site as the informal settlement to ensure families

remained integrated into the network of opportunities the city had to offer (Aravena interview, 2008). The families at Quinta Monroy had been living there for three decades and had developed strong local ties, social capital, and a sense of community over that time. The informal settlement was located in the center of the city of Iquique, so there was good access to transportation networks, health care services, educational institutions, and employment opportunities. This siting decision helped preserve and strengthen the social networks embedded in the community and existing links to jobs and other income-generating activities.

#### *Reduce vulnerability to environmental stresses*

The new construction of incremental housing also helped reduce the vulnerability of residents to environmental risks and stresses by improving the physical structure and safety of their dwellings. Incremental housing replaced informal settlements that were built using found or cheap materials, subject to fire hazards, and rarely constructed according to building codes. The risk of building collapse was a major concern in the Quinta Monroy project given the seismic activity in Northern Chile. The incremental housing was designed around a strong structural core made of concrete and cement blocks that was engineered to support additional construction over time. The project resulted in structurally sound building construction that was resistant to earthquakes and flexible enough to accommodate residents' needs and changing conditions.



Elemental's second incremental housing project, Lo Espejo, in Santiago, Chile

#### *Enhance personal security to displacement*

The process of formalizing informal settlements inherently enhances the personal security of residents by integrating their housing into the existing legal protections. In Quinta Monroy, residents have ownership of their homes and face little immediate threat of displacement. However, little formal research exists that documents how individual homes may have changed owners, so it is difficult to understand how the original residents have fared over time.

#### *Empower communities to share in their own governance*

Architects used a participatory approach to engage residents in creating designs for their housing and to build a sense of ownership in the project. The incremental housing design relies on residents to take an active role in developing and adding to their homes, which can be a source of empowerment. A recent visit to the site reveals that the majority of the buildings have customized additions, which reflect the investment of time, money, and other resources that residents have made in their homes. Residents also benefit from the increased value of their house as a financial asset. According to Executive Director Alejandro Aravena, any house in the Quinta Monroy project was valued at over \$20,000 five years after construction (Aravena, 2011).

Few formal studies have evaluated the extent of the participatory process for the Quinta Monroy project. Research has emphasized that the Chile Barrio program nationally fell short in its lack of resident participation and local control of the housing projects it built. This is reflected in a lack of sense of ownership and overall dissatisfaction with projects over time (Jiron, 2010). While more research is needed to fully understand the extent and impact of resident participation in the Quinta Monroy project, the existing documentation of participation and the strong emphasis



on retaining social and economic integration with the city suggests that Elemental's approach was unique in the context of national housing strategies for informal settlements.

### **Final Thoughts**

The Quinta Monroy project in Chile represents one phase in an evolving process of learning how to address the housing and related infrastructure needs of low-income urban residents through incremental housing design. Elemental has completed over fourteen projects to date, with a handful of others in progress in other Chilean cities and other Latin American countries. Each project retains its signature design features—structural shell, critical interior amenities, basic infrastructure, quality public space—adapted to the individual size, geography, and budget of each project. Funding has expanded in more recent projects, and subsidies have allowed for incremental additions to be built at the time of original construction. Government partnerships with non-profit organizations, like Un Techo Para Chile (“A Roof for Chile”), helped provide essential services to residents on site in recent projects. Public funds were used to build childcare and job training facilities that were managed and operated by local organizations. These services supported residents in finding jobs and earning income that could be used to improve and expand on their homes.

The project architects and policymakers have taken the lessons from Quinta Monroy and applied them to other incremental housing interventions in Chile and other countries. The approach—identifying what can be designed upfront by architects and what can be built later by residents—remains consistent but the actual pieces have been adapted to respond to government funding, local climate, cultural context, and physical site constraints. Although careful evaluation of these projects is still needed, the case of incremental housing suggests that affordable housing should afford flexibility in its design, production, and use while being conscious of the need to provide basic structure. The case also shows how the challenge of developing infrastructure can be transformed into an opportunity to build low-income housing that contributes to urban resilience.

### **Basic Information**

Quinta Monroy

Completed 2004

93 housing units at initial construction

Area: total site of 1.25 acres, 270-390 sq. ft. initial unit construction, 775 sq. ft. final unit build-out

### **References**

Aguilar, L. and Ferreira, A. (2012). Provision for post-project evaluations for the United Nations Democracy Fund. Transtec Project Management. UDF- RCL-08-270.

Aravena, A. (2008). Interview with Alejandro Aravena conducted by Annemarie Gray.

Aravena, A. (2011). “Elemental: A Do Tank.” In *Latin America at the Crossroads: Architectural*

Design, edited by M. Leguía. Wiley.

Gilbert, A. (2004). Helping the poor through housing subsidies: Lessons from Chile, Colombia, and South Africa. *Habitat International* 28, (1), 13-40.

Greene, M. (undated). Incremental housing: The Chilean experience. Santiago: Pontificia Universidad Católica de Chile.

Jiron, P. (2010). The evolution of informal settlements in Chile: Improving housing conditions in cities. In *Rethinking the Informal City*, edited by F. Hernandez, P. Kellett, and L.K. Allen. New York: Berghahn Books.

Micco, A., Parrado, E., Piedrabuena, B., & Rebucci, A. (2012). Housing finance in Chile: Instruments, actors, and policies. IDB-WP-312. Washington, DC: Inter-American Development Bank.

OECD. (2013). *OECD Urban Policy Reviews, Chile 2013*. OCED Publishing.

Rojas, E. (1999). The long road to housing reform: Lessons from the Chilean experience. Inter-American Development Bank. Sustainable Development Department. Best Practices Series. SOC-113.