Las Cajitas de Fósforo: The Solanda Housing Project

Valeria Vidal¹ + Francis Goyes²

¹Massachusetts Institute of Technology - MIT, SIGUS, Cambridge, MA, valeriav@mit.edu
²Massachusetts Institute of Technology - MIT, Center for Advanced Urbanism, SIGUS, Cambridge, MA, fgoyes@mit.edu

KEY IMAGE

Photo credit: Gabriel Muñoz Moreno

ABSTRACT

In 1980, the Ecuadorian government launched its first effort at the provision of large-scale affordable housing with the Solanda Housing Project in the country's capital city of Quito. Consisting of 6,211 housing units, Solanda is the largest affordable housing project in the country’s history. The unprecedented initiative brought forth four main innovations to the provision of affordable housing in Ecuador: introduction of incremental housing models, public-private partnerships, comprehensive community development programs, and institutional reforms for housing regulations.

In addition to analyzing these four innovations, this paper evaluates the successes and failures of the Solanda Housing Project through the four main stakeholders’ point of view: Municipality of Quito, Ecuadorian Housing Bank, United States Agency for International Development (USAID), and Foundation Mariana de Jesús. Additionally, we include findings
from structured longitudinal interviews with families that have lived in Solanda and have contributed to its evolution for the past 35 years. In the analysis of the project through these five perspectives, we provide a glimpse at the rich history and development of Solanda.

By contemplating the innovations of this seminal project, we intend to draw lessons for the future of affordable housing provision in Ecuador. As an incremental housing experiment, the evolution of Solanda is also a celebration of what people are capable of designing, financing and building. Our research does not only aim to evaluate the Solanda project, but also learn from the experience of families for the past 35 years to identify positive and negative policies that advance or deter affordable housing strategies today.

KEYWORDS
incremental, large-scale, affordable housing, housing policies, Quito, Ecuador

AUTHOR BIOGRAPHY:
Valeria Vidal is a summer fellow at Dalberg Global Development Advisors based in New York City and a research assistant at the Special Interest Group of Urban Settlement during the school year. She has worked for Harvard Law School, the United Nations and the Prime Minister of Peru during the last few years. Additionally, Valeria has experience across different sectors of development in Latin America, Asia and Africa.

Francis Goyes is an architect from Quito, Ecuador. She is currently working for the Municipality of Quito for the development of an informal housing regularization policy. During the academic year she is a research assistant at MIT’s Center for Advanced Urbanism and the Resilient City Housing Initiative, specifically focusing on applied research for affordable housing projects and policy in Latin America. She has collaborated in a variety of projects in Mexico, Ecuador, Guyana, Jordan, India, and the United States.

Introduction

The Solanda Housing Project was the Ecuadorian government's first effort to construct low-income housing with cost recovery. It was designed to be an integrated shelter and urban project comprising of an initial 4,500 low-cost housing units (ultimately 6,211 were built), complimentary basic and social infrastructure, employment programs for economic productivity, and the creation of community organizations. The project was developed on 1,581.33 m² of land that had previously served as the hacienda of one of the city’s wealthiest families.¹

The project was executed through a partnership between five main stakeholders: the Municipality of Quito, Banco Ecuatoriano de la Vivienda - BEV (Ecuador Housing Bank), Junta Nacional de la Vivienda – JNV (National Housing Board), Fundación Mariana de Jesús – FMJ, and the United States Agency for International Development - USAID. The housing units were designed to be affordable to families below the median income at the time

¹ RTI International, LAC Housing and Urban Upgrading Assistance Retrospective (2005), 1.
($233 per month) but beyond the capacity of families earning below the 35th percentile.² There were six different low-cost incremental housing design models, which were chosen by recipient families on a needs-basis.

Thirty-five years later, we evaluate the success and failures of Ecuador’s first effort at the provision of affordable housing that transcends beyond the standard evaluation of progress of the built environment. As such, Solanda serves as a case study for understanding the successes and failures of site and services projects, constricted to the underlying political and socio-economic factors of its context.

Main Text

Solanda’s Four Innovations

Introduction of official incremental housing model

While architectural designs for the Solanda housing units existed as early as 1980, models were altered due to the rise in construction materials and labor costs caused by monetary inflation.³ Ultimately, six different housing models with varying flexibility for incremental growth were built on lot sizes ranging from 60m² to 123m²:⁴

1. Sanitary Unit - most basic housing model, with 10m² of construction consisting of a bathroom and kitchen on a 60m² lot.
2. Piso-Techo Unit (floor-roof) - built on lots ranging from 60m² to 80m²; included a bathroom, kitchen, and multi-purpose space with no exterior walls but covered with a cement roof.
3 + 4. Basic Unit - included prior components, with the addition of exterior walls made from bricks. This unit came with two roof variations: concrete slab and corrugated plastic roof.
5. Tri-family Unit - three apartments, one on the first floor with the opportunity for a commercial store, a second floor apartment, and a contiguous two-floor apartment. This model was built on the corners of squares to promote commercial activity.

6. Bridge Unit - least popular model, created over pedestrian walkways and included a bathroom, kitchen and multi-purpose room.\textsuperscript{5}

In 2005, over 98% of all the housing units had expanded by at least one floor, 58% of households had added two floors, and 25% had added three floors.\textsuperscript{6} The estimated constructed area increased from 223,259m\textsuperscript{2} to 601,416m\textsuperscript{2}, representing a total buildout of 169%. Furthermore, although only the 'Tri-Family Unit' model was designed for commercial activity, it is estimated that over 40% of buildings have a business that is either ran by the homeowners or rented.\textsuperscript{7} Finally, over 20% of families rent between one and four rooms to third parties, significantly increasing affordable rental units in the neighborhood and contributing to the market supply of housing in Quito.\textsuperscript{8}

Public-Private Partnership

The Solanda Project was designed with the participation of five institutions: the Banco Ecuatoriano de Vivienda - BEV (Ecuadorian Housing Bank), Junta Nacional de la Vivienda - JNV (National Housing Board), Municipality of Quito, United States Agency for International Development - USAID, and the privately owned Foundation Mariana de Jesús - FMJ. Each organization was charged with fulfilling a separate role. The Municipality of Quito presided over basic service provision, BEV was responsible for creating cost-recovery policies, JNV produced construction materials, constructed the housing units, basic, and social infrastructure, USAID managed contracts for housing, community facilities and public transportation, and FMJ donated the land for the project and developed project’s social infrastructure and programs.\textsuperscript{9}

Through this collaboration, the project aimed to exert political, procedural, and institutional changes at national and local levels. The partnership intended to improve urban development integration across public and private sectors, with coordination improving technical and financial aspects of project development that would have otherwise been impossible. As governmental organizations received advice from USAID


\textsuperscript{6} RTI International, LAC Housing and Urban Upgrading Assistance Retrospective (2005), 4.

\textsuperscript{7} RTI International, LAC Housing and Urban Upgrading Assistance Retrospective (2005), 5.

\textsuperscript{8} RTI International, LAC Housing and Urban Upgrading Assistance Retrospective (2005), 10.

consultants national institutional capacity was heightened, including strengthening policies for affordable housing units for low-income families and overhauling technological deficiencies in governmental processes.\textsuperscript{10}

\textit{Comprehensive community development}

The integrated approach of the Solanda Project comprised community development programs and social infrastructure to be developed and managed by both public and private organizations. Included in the community development programs were the creation of neighborhood associations as well as support for local business creation.\textsuperscript{11} FJM was primarily in charge of promoting and managing such programs until 1998, when these programs were transferred to a local church within Solanda.\textsuperscript{12}

Planned social infrastructure for Solanda consisted of a day-care center, kindergarten, primary school, recreational facilities, commercial center, and a community space for every 1,100 families.\textsuperscript{13} Larger community facilities included a health clinic, boys' high school, cultural center, sports areas, administrative center, and larger community-owned enterprises.\textsuperscript{14} As of 2005 there were more than 18 day care centers, kindergartens and primary schools, eight high schools, one adult education center, two churches, four community centers, four health centers, a police office, a fire station, and a post office.\textsuperscript{15} Public and recreational spaces now include a linear nature park, neighborhood stadium, numerous football fields, and recreational spaces.

A major commercial street, 'La Jota', organically developed on one of the major arteries dividing the super-blocks, with stores ranging from clothing supply to banking offices and popular fast food chains opened past midnight. Currently, renting a commercial space in 'La Jota' can cost up to $1,000 per month. There are two large supermarket chain stores within Solanda and one of Quito's largest wholesale markets is adjacent to the project. Through interviews with Solanda households we learned that a concern is how the

\textsuperscript{12} Charlie Garcia (project manager for Foundation Mariana de Jesús) in discussion with the authors, May 14, 2016.
\textsuperscript{13} PADCO, Inc., \textit{The Solanda Project Evaluation and Lucha de los Pobres: A Comparison of Formal and Informal Community Development} (1989), 32.
\textsuperscript{14} PADCO, Inc., \textit{The Solanda Project Evaluation and Lucha de los Pobres: A Comparison of Formal and Informal Community Development} (1989), 32.
\textsuperscript{15} RTI International, \textit{LAC Housing and Urban Upgrading Assistance Retrospective} (2005), 2.
presence of the supermarkets drives business away from small family-owned stores in Solanda.

**Institutional reforms of housing regulations**

Initially, the plan for Solanda designed by FMJ called for complete affordable housing units on lots over 100m$^2$. Through negotiations, USAID was able to convince FMJ and other partnering institutions to accept lower standards for both housing and basic infrastructure. By modifying existing zoning laws to allow for smaller lot sizes and varying incremental housing models, 6,211 units were created instead of the 4,500 that were first planned for a comparable investment.

The reduction of lot sizes is in part the reason for the tremendous buildout in Solanda during the last thirty-five years. This has led to street light poles absorbed by house expansions, upward self-built floors of adjacent houses within centimeters of distance from each other, and entire webs of electrical lines running array. Additionally, reduced parking suggested by USAID has caused significant issues, as over 40% of Solanda residents have a vehicle and there are not enough spaces, leading many households to encroach on internal block gardens.

**Lessons Learned**

Thirty-five years after the implementation of the Solanda project, we conducted interviews with representatives of the five main stakeholders to reflect on successes and failures from their points of views. The Municipality of Quito sees Solanda as a positive example of integrated urban planning in response to affordable housing deficit in the city. However, they believe the success of Solanda was due to a very specific political context that could not be easily replicated in the present time, as in 1993 the Ecuadorian State shifted from directly supplying housing to providing financing mechanisms for low-income families seeking to buy a house.

---

16 Charlie Garcia (project manager for Foundation Mariana de Jesús) in discussion with the authors, December 2015.
to the incremental expansion of houses so as to prevent precarious infrastructure from built out.\textsuperscript{21}

An interview with a former representative of the Ecuadorian Housing Bank at the time of the Solanda project and consultations with homeowners have proved that the financing conditions provided were overall positive for low-income families.\textsuperscript{22} An integral element of success for current debt-free owners was a debt-forgiveness program introduced by then-President Rodrigo Borja. This program gave the option to homeowners to pay a considerable one-time payment for the forgiveness of the rest of the loan owned.\textsuperscript{23}

In the case of Fundación Mariana de Jesús, long-term sustainability of the social programs within Solanda remains a key issue. While FMJ was initially responsible for the creation and provision of such programs, a local church has now taken on the tasks to uphold the community’s social needs, which have evolved since the start of the project. The transition from FMJ to a local church is worth highlighting as a possible approach to social programs’ sustainability in similar projects.\textsuperscript{24}

From interviews with original house owners, we can conclude that their general consensus is that the Solanda Project was and continues to be a success. Nevertheless, there are some reservations about two issues that have resulted from both human and economic growth in the community in the past few years. The first is the conversion of the small square gardens in the middle of the housing blocks into parking lots. These spaces have been adapted by households as their economic means have increased to a middle-income class that values private ownership of cars.

Secondly, many community members mentioned the issue of insecurity which in their view is prompted by the influx of renters from both the city and its surroundings. It is perceived that new residents are to blame for robberies and increased drug use within Solanda. These type of changes within a community can potentially disrupt community cohesion and trust, as is the case in Solanda. While many original homeowners expanded their houses to provide a space for their children’s future families, there were other cases where families decided to move to another part of the city and rent the house. Residents

\begin{itemize}
  \item \textsuperscript{21} Rosa Elena Donoso (advisor to Quito’s Secretaría de Territorio, Hábitat, y Vivienda) in discussion with the authors, May 2016.
  \item \textsuperscript{22} Arq. José Ordoñez Villacreses (Instituto Metropolitano de Planificación Urbana) in discussion with the authors, December 2015.
  \item \textsuperscript{23} Charlie Garcia (project manager for Foundation Mariana de Jesús) in discussion with the authors, December 2015.
  \item \textsuperscript{24} Charlie Garcia (project manager for Foundation Mariana de Jesús) in discussion with the authors, May 2016.
\end{itemize}
also believe Solanda has become a desirable location to live in, creating an opportunity for families to make profit from renting apartments as well as space for commercial activities. We forecast that the real estate market in Solanda will only increase in the future due to the creation of a subway station in the center of the neighborhood that will improve accessibility to and from the North of Quito.

Lastly, USAID believes that one of Solanda’s greatest failures was not being able to reach the lowest income groups due to the fluctuating levels of inflation Ecuador which reached 48% by 1983.25 Although democracy returned to Ecuador in 1979 after a period of dictatorship, corruption within the government was responsible for allotting some of the houses to friends and family of officials involved in the project instead of to low-income families. In addition, Solanda did not become the precedent for further affordable housing projects in Ecuador, as USAID had hoped.

Conclusion

Thirty-five years later, we can succinctly identify and analyze the successes and failures of an integrated affordable housing and urban development project in the city of Quito. The provision of incremental housing models allowed for 6,211 houses to be built, instead of the originally planned 4,500 (38% more). Families’ expansion of their houses has made Solanda the home of more than 80,000 people, vastly surpassing the original population of 18,000 residents. Thus, the incremental strategy employed continues to provide affordable housing for homeowners and renters alike in the neighborhood.

The small lot sizes in Solanda and the lack of enforcement of housing regulations at the time of expansion have created a precarious living situation that could be devastating where a natural disaster to occur. We hypothesize that buildout would have been less acute if lot sizes had reflected family growth trends at the time. Many families accurately refer to houses in Solanda as “cajitas de fósforos” (matchstick houses) due to their small size. Furthermore, infrastructure issues residents face could have been avoided had the program provided professional technical assistance from engineers and architects for incremental expansions or by including a monitoring and evaluation stage in the years when expansion occurred.

25 International Monetary Fund, World Economic Outlook Database, April 2015.
Comprehensive basic and social infrastructure has made Solanda into an independent micro-habitat within Quito. Families rarely have the need to leave their neighborhood, as they have at their disposal one of the largest markets in the city, supermarkets, an assortment of commercial stores, corner delicatessens, police stations, schools, and parks. As such, ownership of a house in Solanda has increased the overall economic development of families, specifically due to housing tenure complemented with comprehensive social infrastructure.26

In Solanda, we can observe the role that policy interventions can have to advance or deter affordable housing strategies. The incremental model allowed low-income households to purchase land in a location that continues to increase in value. Public-private partnerships successfully executed an integrated urban shelter project that thirty-five years later is thriving with economic development and is connected to the surrounding city through bus-rapid transit and will soon have a subway station. Furthermore, due to the government’s debt-forgiveness program, families in Solanda are debt-free.

The Solanda Integrated Shelter and Urban Development Project introduced to the city of Quito a new comprehensive way of designing and creating sustainable communities that supplemented the standard construction of houses. As discussed throughout this paper, there are several lessons learned from this project that can serve as recommendations to take into consideration for the future or implementation to project even after 30 years. Disseminating the lessons learned from this project can contribute to the understanding of the capabilities of people and their process of designing, financing and expanding their houses.

Final Thoughts

An insight that resonated from the conference and the work that we do was the lack of investment that there is from governments to perform or include longitudinal studies in their social housing projects. Post-evaluation work is quite limited and even if performed by academia or the private sector does not have as a direct influence and impact as if it was within the public sector. From the conversations with other practitioners that attended the conference, there seems to be a concern of the failure of government to better understand the needs and uses of space of people throughout time. Investment on ethnographic

26 RTI International, LAC Housing and Urban Upgrading Assistance Retrospective (2005), 1.
research of communities before the projects seems obvious but is yet far from reality. The lack of understanding of the users then limits them government bodies in better shaping the project design and delivery that will support these programs to become better for the target group.

Furthermore, it is important that we refrain from viewing housing in a vacuum. Like a conference speaker said, “low-cost housing requires no-cost transport” as well as other public services and social infrastructure. Despite its multiple setbacks and failures, Solanda’s ability to integrate to the greater city through low-cost bus-rapid transit and other public transportation was essential to its continued success. Had we evaluated the project 5 or even 10 years after its completion, we would not have found it to be as bursting with life as it is 35 years later. A city and its components are living organisms that transform with time, and it is therefore essential to re-think the timeline of evaluations for past affordable housing projects.

Acknowledgements

First and foremost, we would like to thank Professor Reinhard Goethert for the support and advice he has given us throughout this process. This research would have never occurred had it not been for him. We would like to thank the Massachusetts Institute of Technology and the School of Architecture and Planning for their support, as well as the Kelly Douglas Travel Grant.

We are grateful for all the support we've received in Quito, including Charly García and the Fundación Mariana de Jesús, Roberto Carrión, Arq. José Ordoñez Villacreses from the Instituto Metropolitano de Planificación Urbana, PhD. Rosa Elena Donoso from the Secretaría de Territorio, Hábitat y Vivienda, and the Ministerio de Desarrollo Urbano y Vivienda del Ecuador.

Special thanks to Earl Kessler for his support and invaluable information.

Finally, our greatest thank you to the families of Solanda, that welcomed us into their neighborhood and their homes. This research is dedicated to them.
References

Charlie Garcia (project manager for Foundation Mariana de Jesús) in discussion with the authors, May 2016.


José Ordoñez Villacreses (Instituto Metropolitano de Planificación Urbana) in discussion with the authors, December 2015.


Rosa Elena Donoso (advisor to Quito’s Secretaría de Territorio, Hábitat, y Vivienda) in discussion with the authors, May 2016.
Graphic Work, Images

Economic Activity

‘La Jota’ – Solanda’s major commercial street
Photo Credit: Gabriel Muñoz Moreno
Parks to Parking
Conversion of internal block gardens to parking lots

Photo credit: Gabriel Muñoz Moreno

Over-expansion
expanded to four floors

Photo credit: Francis Goyes
Buildout of houses in Solanda, observe electric cable disarray

Photo credit: Francis Goyes
‘Basic-Unit’ in original state

Photo credit: Francis Goyes

Initial state

Solanda prior to incremental building in 1980s

Photo credit: Earl Kessler
Solanda housing models

Graphic credit: Francis Goyes
Superblock design

Legend
- Communal gardens
- Housing units
- Commercial area

Graphic credit: Francis Goyes

Solanda in Quito

Photo credit: Google Earth, 2016
Solanda Model

Photo credit: Fundación Mariana de Jesús