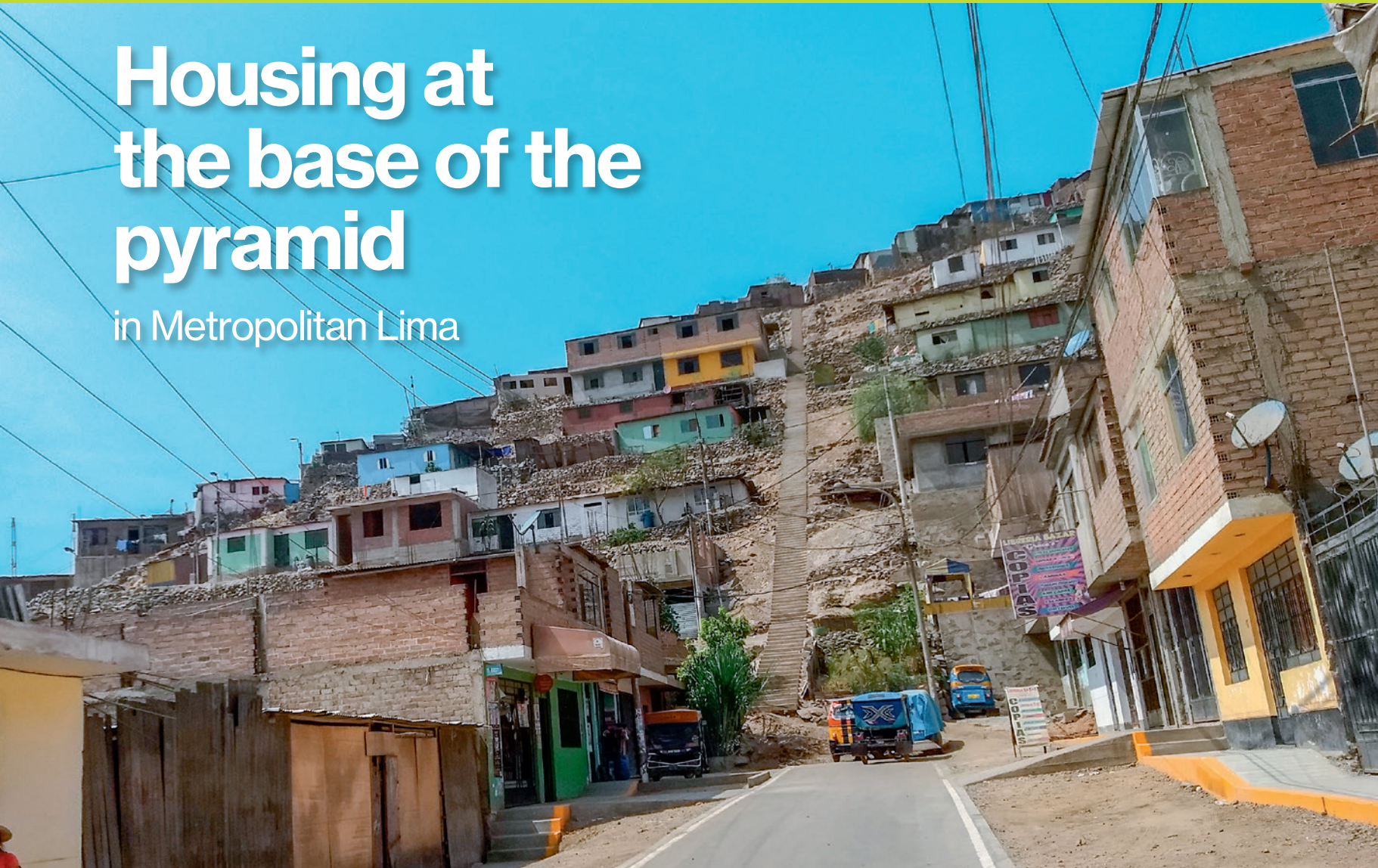




**Terwilliger Center for
Innovation in Shelter**

Housing at the base of the pyramid

in Metropolitan Lima



This research was developed by a team of employees and consultants working with Habitat for Humanity International's Terwilliger Center for Innovation in Shelter: Gema Stratico (Market Systems and Entrepreneurship Manager); Claudia Manrique (Qualitative Research Consultant); Suzette Yucra (Communication for Development Consultant); Norma Rosas (Financial Inclusion Consultant) and Juan Carlos Rodríguez (Market Systems Consultant).

Acknowledgments

The team thanks Belinda Florez for her technical contributions; Lucía Zúñiga for her help with the layout of this report; Sheldon Yoder and Scott Merrill for their support with the publication; and María Teresa Morales and Marco Calvo for their accompaniment. Special thanks to the interviewees, who gave their time and shared valuable information with the researchers. This report was sponsored by the Hilti Foundation.

Introduction

At the start of 2018, Habitat for Humanity International's (HFHI) program in Peru, which seeks to develop housing market systems, decided to carry out an in-depth qualitative study of consumers at the base of the pyramid (BoP) in San Juan de Lurigancho (SJL) district. The objective of the study was to collect first-hand information on the qualitative housing deficit in SJL, in order to adapt the housing market system facilitation model to the BoP.

Working with local partners, Habitat developed the program during the second quarter of 2018. Based on a BoP housing typology identified in 2015, the program was aligned with Habitat's financial inclusion framework. This study was based on ethnographic research with key stakeholders of the local housing market ecosystem (households, specialists, hardware store dealers, and neighborhood boards), and was complemented by focus groups to gain insight into the main findings presented in this report.

Because this study is mainly qualitative, it intends to identify the housing habitability conditions, expectations and needs of households residing in SJL district, and examine their decision-making strategies through a progressive construction process that, in some cases, is carried out over several decades.

Glossary

Market systems: An arrangement comprising the core function of exchange and the supporting functions and rules that are performed and shaped by a variety of market players. Market systems focus on interventions that modify the incentives and behaviors of businesses and other market players (public, private, formal, and informal) to ensure lasting, large-scale, and beneficial change to low-income segments (Beam Exchange, 2015).

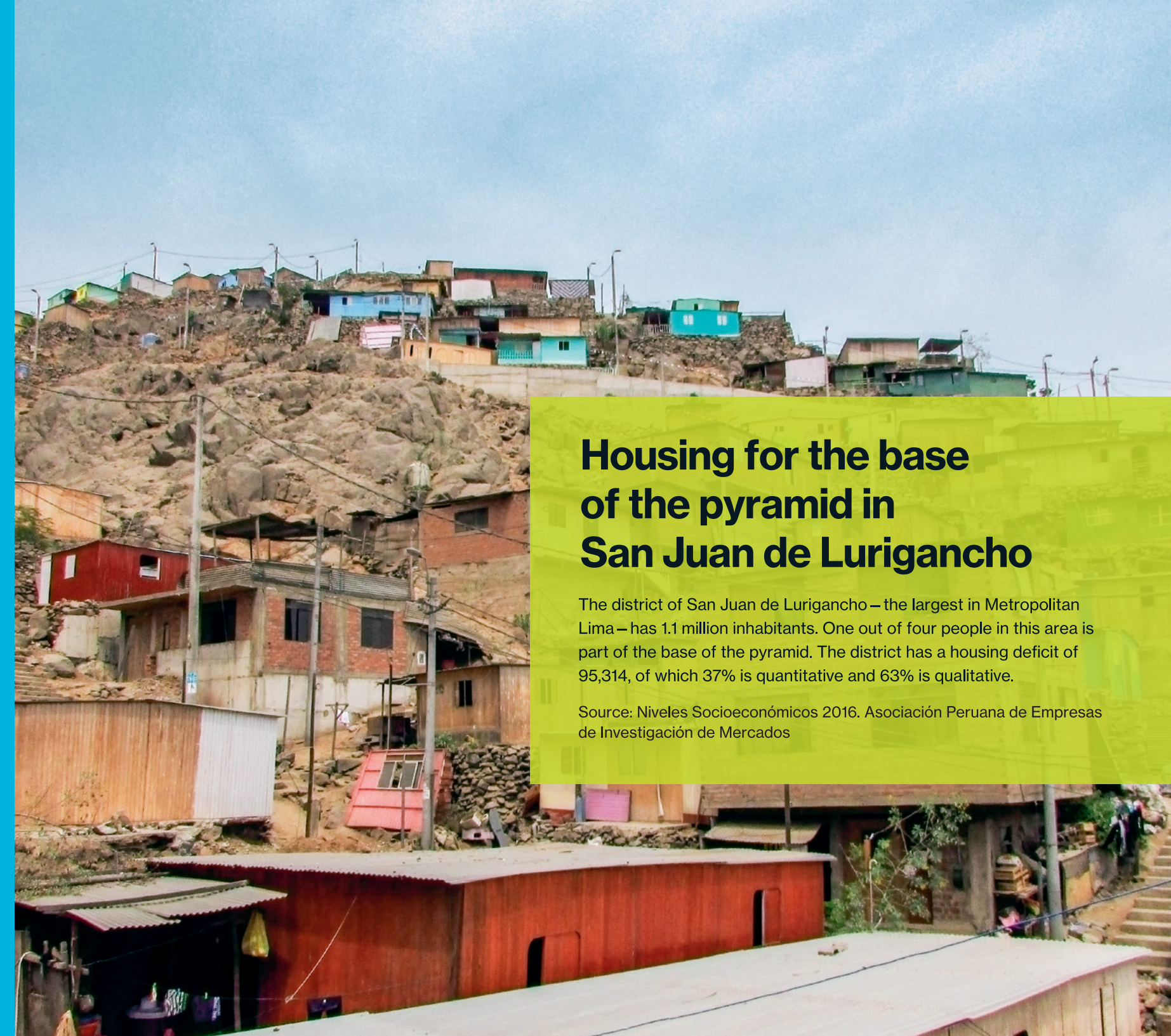
Base of the pyramid (BoP): This term is an evolution of the term “bottom of the pyramid,” used in 1998 by professors C.K. Prahalad and Stuart L. Hart in their book *The Fortune at the Bottom of the Pyramid*. Currently, the BoP is associated with the income variable, which includes those households with a daily per capita income equal to or less than US\$10 in purchasing power parity (PPP). For the Peruvian case, the BoP is comprised of 63.7% of the population, 34.2 % of which is considered vulnerable (earning a daily per capita income of US\$4-10), and 29.5% is considered poor (earning a per capita income of less than US\$4) (IEDEP, 2016).

Insights: An idea that faithfully represents other people’s “internal vision” or perception; in this case, the population participating in the research.

Overcrowding: For the purpose of this research, housing overcrowding is determined by “the relation between the

number of people in a house and the space or number of available rooms in which to sleep. This includes all rooms in the house used for sleeping, either exclusively or for multiple uses (e.g., living/eating/sleeping or living/eating/cooking/sleeping)” (Villatoro, 2017). To date, there is no clear definition of what constitutes housing overcrowding in Latin America; however, an average of 2.5 people per room is generally accepted as overcrowding (the established average is 2.33). Overcrowding also occurs when house observations indicate small room sizes (6.5 square meters or less).

Household life cycle: A composed variable used in marketing. The household life cycle is “created by the systematic combination of common demographic variables such as marital status, household size, age of household members (focusing on the ages of the youngest and oldest children), and employment status” (Schiffman & Kanuk, 2005). This variable implies a differentiated consumption behavior. Although there are currently various proposals for how to understand the household life cycle (through the inclusion of nontraditional households), Schiffman and Kanuk’s definition is still useful for understanding traditional households.



Housing for the base of the pyramid in San Juan de Lurigancho

The district of San Juan de Lurigancho – the largest in Metropolitan Lima – has 1.1 million inhabitants. One out of four people in this area is part of the base of the pyramid. The district has a housing deficit of 95,314, of which 37% is quantitative and 63% is qualitative.

Source: Niveles Socioeconómicos 2016. Asociación Peruana de Empresas de Investigación de Mercados

Housing types for the base of the pyramid

Houses for the BoP are classified into typologies that help in grouping and identifying the practices, products, and services used by households to build their homes. The location of the house (e.g., in a flat or sloped area) also influences classification. Certain types of housing are more prevalent in certain areas, and some houses have characteristics that fall into two or more typologies. It is worth mentioning that these housing typologies are strictly for methodological purposes.

Type A

These are located in flat areas, have two or more stories, are made with solid materials, and lack outer and/or inner finishing. Regarding access to basic services, 97% of Type A houses have access to water, electricity, and sewage systems. An average of 80% have two stories and six rooms, four of which are for sleeping. As for materials and supplies, 70% of Type A houses have cement floors, and 30% have tile or vinyl flooring. In 100% of Type A houses, cement is the predominant material used for walls and roofs. All Type A houses have at least one bathroom. On average, Type A houses have seven occupants; 50% of Type A households are composed of a single family, 40% of two families.



Hilario arrived in Lima in 1984. Years later, he bought a plot of land in San Juan de Lurigancho. Currently, his house has two stories and three rooms: one on the first floor (where his spouse, Hilario and his youngest daughter sleep), and two on the upper level (occupied by his sons, and their partners and children). There is also a textile workshop on the upper level that provides a livelihood for the members of his family.

Type B

These are more commonly located in flat areas than in sloped areas. While 90% of Type B houses have one story, they represent households that plan to build one or more additional stories. The absence of exterior and interior finishing is evident. Ninety percent have access to water, electricity, and sewage systems. Type B houses have an average of four rooms, two of which are intended for sleeping. As for materials and supplies used in their structure, 90% of Type B houses have cement floors and roofs, and 100% have cement walls. Ninety percent of the houses have one bathroom and 10% have a latrine. On average, four household members occupy Type B houses; half of the households are composed of a single family and the other half of two families.



Maria arrived in San Juan de Lurigancho in 1986, along with her spouse and first child. The house title is currently in her name. Her house has a living-dining room, a kitchen, a laundry room, a bathroom, and three bedrooms, in which Maria, her spouse, three sons and a granddaughter live. The house has strong external walls, but its internal divisions are made of brick and plywood.

Type C

These houses are more often located in sloped areas than in the flat areas. Forty-six percent have access to water, electricity, and sewage systems. Type C houses have average three rooms, one of which is intended for sleeping. Ninety percent of Type C houses are built with tongue and groove panels, and 10% use cement. Eighty percent of the houses have cement floors, 70% have corrugated galvanized steel roofs, and 30% use wood. Only 40% of Type C houses have a bathroom; 10% have latrines and septic tanks, and the rest did not provide an answer to this question. On average, four household members occupy Type C houses; 100% of the households are composed of a single family.



Samuel and Vilma bought a plot on a hill in San Juan de Lurigancho in 2006. Their house is 72 square meters, and is divided into two large spaces: one for the kitchen and one for the bedroom (used by the couple and their three sons). Another space is used for a workshop. They do not have a title for their house.

Type D

These are mainly located in sloped areas and are typically built with rustic materials such as wood, palm leaf matting, plastic and/or cardboard (in this case, 40% wood, 30% fiberboard, and 30% plastic). All houses have access to water, but lack electricity or sewage services. Type D houses have one room, which is also used for sleeping. 50% of the houses have cement floors and 100% have corrugated galvanized steel roofs. 50% have a latrine, and the rest did not provide an answer to this question. On average, four family members occupy Type D houses; 100% of the households are composed of a single family.

In 2014, with the arrival of a new baby daughter, Mary and Luis left their homes and moved to a small room located on the top of a hill. With the help of relatives, they expanded the room into a house large enough for them to live in. All of the households occupying the 60 plots in the community get their water from three public basins. None of the families have property titles.



Incremental housing and the housing life cycle for the base of the pyramid

After analyzing the information gathered by this study, we propose a seven-stage analytical model for the BoP housing life cycle – understood as the incremental housing process – from the selling of the land to the description of the housing types identified in the qualitative exploratory study carried out in 2015 by Habitat for Humanity. This construction process is led by the head of household, who devises a general plan for the incremental growth of their home. The implementation of these action plans is carried out independently, with the homeowner's own resources (savings or personal loans) or with funds from microfinance institutions and state or institutional programs working on housing.



Stage 1. Land acquisition

The BoP housing life cycle (incremental housing process) starts with the acquisition of land by the head of household, once economic and social factors have been evaluated. These factors include initial investment capacity, perceived urgency to build the first house, and recommendations from relatives and friends regarding location. Community boards are typically responsible for managing the land, creating zones for home additions, selling the plots, delimitating plot sizes, organizing blocks, and pricing (depending on the location of the land). Land acquisition is mainly funded through family savings or community loans that are based on kinship and trust. At this stage, heads of households do not turn to financial institutions because they perceive themselves as unable to obtain credit.

Stage 2. Lot preparation

Investment: US\$350

The second stage of the BoP housing life cycle is preparing the plot, a process locally known as “pampear”. This activity consists of the removal of stones, debris, and other objects found on the acquired land, in order to prepare the site for the foundation. This process lasts approximately two years, and is carried out directly by the land purchaser, who partially prepares the land according to the number of meters considered suitable for building the household's first home.

The investment in this phase may vary depending on the topographic conditions of the land and its extension. For example, preparing a sloped, rocky plot is considerably more expensive than preparing a flat, sandy plot. In this sense, information collected in the field confirms that households that own land that is difficult to prepare typically can't afford to pay for machines to flatten the ground and remove large rocks; rather, they choose to adjust the house design to the land's topographic conditions.

¹This activity is done manually, occasionally with support from relatives and/or neighbors.



Samuel and Vilma live in this house with their three children. It is a Type C house and is in the fourth stage of construction.

Stage 3. Type D house construction

Investment: US\$200 to include: a) four panels, b) door, c) plastic roofing, d) eight corrugated galvanized steel sheets, e) transportation of materials, and f) labor.

During the development of the third stage, a *pirka*² is prepared to be used as the foundation for future building. Today, however, due to budgetary restrictions and households' reduced investment capacity, many homes lack this stable cement base, and often even lack retaining walls. According to one mason that participated in the study, the construction budget for this stage is US\$249³ for a 30-square-meter Type D house. Construction typically takes four days, including the electrical installations inside the house. The financing strategy used by households to afford this construction is through family savings, personal loans, or community boards.

Stage 4. Type C house construction

Investment: \$1,600 to include: a) US\$1,000 for the structure, b) US\$200 for 15 bags of cement for the floor, c) US\$30 for transportation of materials, d) US\$220 for bathroom pipes; and e) US\$150 for wood beams, roof, electrical installations.

The head of household decides to progress towards a Type C house, taking into account the following four factors: a) more space needed for the household; b) land preparation for the total area of the plot; c) progressive deterioration of Type D house; and d) improved possibilities for the head of household to mobilize more financial resources and access loans. In this sense, the study shows that the construction process takes from seven to ten days depending on the size and the complexity of the process.

The construction of a Type C house implies the total demolition of the previous building (Type D house construction) and, therefore, it is necessary to complete it as quickly as possible. The investment required to build a Type C house, according to the budget validated by a master builder who participated in the study, is US\$1,144.69⁴. This budget does not include the floors, which add US\$1,246.56. According to information provided by Type C homeowners, additional expenses must be budgeted for transporting materials to the construction site (100 Soles), building the bathroom, and installing pipes and electrical lines (800 Soles), among other expenses. Participating households mentioned that at this stage they already had some experience with commercial loans through shops and retailers. These loans allow heads of households to begin to learn the dynamics of monthly installments, which helps develop a credit culture within the household and introduces homeowners to the financial system.

Stage 5. Type B house construction

Investment: US\$5,000-6,200 to include: a) 75 bags of cement, b) 100 half-inch planks, c) one truckload of mixed concrete, d) two truckloads of sand, e) 4,000 bricks, and f) one truckload of gravel. It does not include internal divisions, roof and finishing.

Based on the household's Type C house, this stage takes into account the need for more space, privacy, and security as the household grows. This stage has a special meaning for BoP households, since it involves the feeling of finally "living in decent housing built with adequate materials." According to participants in the study, the estimated investment for a one-story house is US\$4,201.90⁵ and construction takes approximately one and a half months. This budget does not include flooring, electrical installations, or a bathroom, so the total amount of the investment can amount to US\$6,180.73. In this stage, financing for construction and future structural improvements is carried out through the formal financial system. Here, heads of households are informed of the requirements, terms, and benefits offered by financial institutions so that they can choose the monthly fee that best suits their payment capacity. Therefore, the amount of the monthly installment is the deciding factor. The main barriers that households face in this stage relate to access to advisory services in housing designs and access to construction specialists (master builders) with proven experience. This stage of the BoP housing cycle lasts indefinitely, mainly due to the high costs it represents for households.

Stage 6. Type B house roofing

Investment: US\$5,000

The sixth stage might be one of the most significant in the BoP housing cycle. This activity is highly valued by the household, since it requires a similar economic investment to the previous stage and represents the household's self-improved wellbeing. The estimated cost for this stage is US\$4,881.62 (similar to the previous budget), plus electrical installations. The roof is particularly important because it provides the foundation to continue building vertically, adding decent, safe, and comfortable stories and additional rooms for new members of the household, which often comprises multiple families.

Stage 7. Vertical expansion of Type A house

Investment: US\$5,000 or more (for additional story)

This last stage is collectively funded by the heads of households and requires an average investment of US\$4,587.16 for each additional story and/or roofing with solid materials. Having two or more households in one house increases the possibility of accessing financial resources through loans. In this stage, the main barrier that households face is access to advisory services in housing designs and the construction of new rooms. How tall a house can be, and thus completion of the BoP housing cycle, depends on these three factors: soil type on the property, quality of the foundation, and the condition of weight-bearing supports. For the present intervention area, buildings are limited to a maximum of three stories.

²A technique that consists of stacking up natural stones aiming at leveling the plot

³Budget for an imaginary housing model with 100 square meters of prepared land.

⁴The amount considered for the construction of a 100-square-meter type C house.

⁵Budget for the construction of an 84-square-meter Type B house.

Housing qualitative deficit for the BoP

Based on the study's information analysis, it can be concluded that participating households do not meet all minimum adequate housing criteria; that is, their houses do not provide security or wellbeing for their occupants. To further evaluate BoP housing conditions within the framework of adequate housing criteria, the study prioritized the following factors: a) land tenure conditions, b) access to services, c) infrastructure, d) health and safety conditions, and e) resilience of construction against potential risks.

All households that participated in the study have some sort of legal documentation to prove they own the land or, in some cases, have a document proving they are in the process of obtaining a title. Access to services (water, sanitation, and electricity) inside the home is similar for all participating households, with the exception of houses located in

the highest zone. The neighborhood group that coordinates this zone was only recently created (within the last 10 years), and the distribution of services has not been implemented – a situation that significantly affects these households.

For the majority of participating households, infrastructure conditions have shortcomings that represent a risk to the safety and wellbeing of occupants, such as the accelerated deterioration of internal walls. Fixing this situation requires investing in materials that offer greater strength and durability at affordable prices. In addition, all households in the study lack appropriate electrical installations – covering electric transmitting cables and connections with protective material is not a regular practice.



What is adequate housing?

- **Safe:** The house is located in a safe area and households have proof of land tenure.
- **Stable:** Structural materials provide safe shelter.
- **Resilient:** Construction can withstand the impact of disasters.
- **Healthy:** Access to basic water and sanitation services.
- **Space:** Each person has at least 3.5 square meters of useful and finished floor space.

The study confirms that BoP houses have notable shortcomings that affect health and security conditions. Particularly notable are the environments used to prepare and store food – these spaces show shortcomings in size, ventilation, building materials, and hygiene conditions in general.

The study proves that overcrowding is frequent and significantly affects BoP household's privacy and personal space, which negatively affects social relationships among occupants. The sum of the previously mentioned factors increases unsanitary conditions and, as confirmed by field observation, promotes the spread of infectious diseases and insects inside the home due to poor ventilation, poor lighting, impractical organization of space, accumulation of objects and waste, etc.

Regarding exposure to risks, participating households agree that the main risk is construction deficiencies – a result of poor practices among masons and insufficient labor skills when families build their own homes. These practices affect incremental construction, and in many cases can also affect adjacent properties.

It is noteworthy that household members are aware of the structural deficiencies in their homes and readily admit that their houses do not provide safe shelter for their families. They express that this makes them feel hopeless and despaired. Household members are also aware of the need to receive advice from architects and engineers regarding adequate construction; however, this is beyond their investment capacity and, thus, they feel it is unrealistic.



Local stakeholders influence neighborhood consolidation

This study lists the main features, influence, roles and impacts of the key stakeholders involved in neighborhood consolidation in the district of San Juan de Lurigancho.



Neighborhood councils

The first stakeholder identified by participating households is the **neighborhood council**, also known as the “board of directors.” It is composed of neighborhood organizations, and is registered in the Registry of Social Organizations through a decision issued by the Neighborhood Participation Deputy Management office of the Municipality of San Juan de Lurigancho.

The council was developed as self-managed, grassroots and social organization, and each council inherits the traditions of its predecessors. Its role is to organize the territory and population and lead the planned growth of groups of households residing in the same area. Neighborhood councils are supported by the monetary contributions of member households. Currently, however, financial management is limited to raising fees for specific activities and managing the community fund. This fund includes contributions from various sources such as new land purchases within the neighborhood, payment of fines for incomplete tasks or community work, and penalty fees for missed assembly meetings.

Roles include managing the physical space in human settlements (e.g., the council is responsible for the limits and sizes of the plots and the allocation and sale of plots to potential users). The first

contact between a new household and the council occurs when the family reserves a plot through a partial payment. New households then have up to one year to complete payments. Once the plot is paid in full, they have up to three months to build a house and prove that they are living in it. Only after proving inhabitation does the council provide a housing certificate, a registration resolution, and a plotting blueprint from the neighborhood group – these documents are necessary for new owners to process their property titles with the municipality.



Gilder is a neighborhood leader in the Sagrado Corazón de María community



Masons

A second significant stakeholder for neighborhood consolidation is the **mason**. Masonry is typically done by heads of households. Technical skills, according to all of the masons who participated in the study, were learned on the construction site through the master-apprentice teaching technique. Learning the trade did not involve technical training; however, some companies in the district occasionally offer free training sessions.

In this district, masonry is mostly needed when lifting the house's initial structure. The main clients of construction professionals are BoP households that are carrying out stages four to seven of the BoP housing cycle, who contact masons through personal references and pay for services in cash.

Field work shows that in most cases these professionals have no real influence on the house design or the materials used to build the house; their work is limited to suggesting guidelines and preparing a detailed list of materials according to the household's requirements. Families then purchase their own materials.

The study shows significant differences between the quality of life of employed and freelancer masons. The former enjoy

benefits such as life and health insurance, while the latter lack these benefits. Thus, freelancer masons and their households are unprotected in case of work-related or other types of accidents, since they do not seek these benefits on their own. Freelancer masons are of the view that benefits such as health insurance are expensive and should not be priority in their monthly payment obligations.

Regarding construction income, the masons participating in the study say that the main way to reflect the value of their work is to set fair prices based on the quality and effort involved. Masons say that although they are flexible and can slightly reduce their fees to serve the SJL district population (called “social rates”), sometimes even these fees are too high for the local families to pay. Thus, evidence suggests that the most qualified masons in the district work in other areas of Lima instead of meeting the housing needs of BoP families in SJL district. In general, the masons who participated in the study express that they feel satisfied with their work, since their jobs allow them to provide security to the households that are able to hire them, and that through this work they are able to strengthen their construction expertise and skills.



Lenin works as a mason in his community and also makes improvements to his own home.



Emerson serves customers at his hardware stores in the communities of Saúl Cantoral and Cristo Rey.

Hardware dealers

The third stakeholder with a significant role in the neighborhood consolidation process is the local hardware dealer. There are 732 hardware stores⁶ in SJL district, representing nearly 5% of all hardware dealers in Metropolitan Lima. The study shows that hardware store customers include household members who are building their own homes, and local masons who buy materials for their own houses or those of their clients. Regardless of the type of customer, business transactions are made in cash.

Another important role of local hardware dealers is to coordinate

the supply and demand of construction labor. Local hardware stores often recommend masons to their customers, providing contact information without a contracting commitment or a sales commission. In addition, hardware stores sell products to trusted customers on credit. This payment arrangement is formalized in a contract, which includes a fixed price for the detailed amount of materials.

Regarding quality of life, the study shows that hardware dealers do not prioritize accident, health, or life insurance or other benefits for their workers. This is a major risk for hardware store owners and employees. It is important to note that hardware stores and distribution centers are potentially dangerous locations for all people.

An important aspect mentioned by

participants revolves around the perception that hardware dealers are showing signs of future unsustainability. Business owners perceive a constant multiplication of hardware stores in the area, causing the supply to exceed the demand, and likely affecting hardware-related jobs.

Finally, in terms of hardware dealers' current annual revenue, statements indicate that hardware store owners and their families are able to earn a decent living. Participants involved in the hardware business feel that their work is valuable to the community, since it contributes directly to the growth of urban spaces and the fulfillment of people's dreams by improving the quality of their home.



BoP expectations for housing

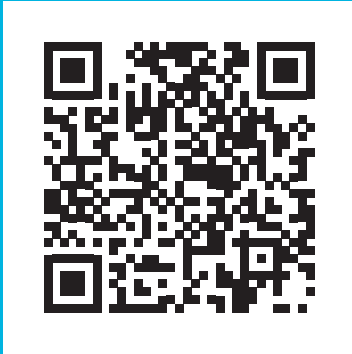
The study also inquired about the main needs, expectations, and perspectives concerning the following categories: decent housing, ideal housing, economic-use housing, housing expansion model, and feasibility of purchasing a finished house.

Participating households stated that decent housing should have a sound construction with solid materials – corrugated galvanized steel roofing; basic services with separated sewage and electrical connections; a single area for the kitchen, dining room, and living room; a bathroom; and two bedrooms to divide children by sex. When asked about the ideal house, participants expressed their desire for a second or third story; cement roofing and a rooftop; a family room; a laundry room; divisions between the kitchen, dining room, and living room; a room for the parents with a bathroom; and a room for each child. They also want some space to develop productive activities, and a garage. Expectations for the future include adding a space that generates income – for example, textile production, a clothing stores, a warehouse, a restaurant, etc.

In relation to the housing expansion model, households tend to prefer vertical designs, since parents expect to provide a space to their adult children that allows them to remain in their home.

Regarding participants' preferences on purchasing a finished house, most state that this is not something they have planned. This assertion reflects the refusal of BoP households – especially those residing in Type A and Type B houses – to sell their current homes and acquire a finished good with the money earned from the sale. This also relates to the efforts, memories, and high symbolic value that households attribute to their homes, as well as the likelihood of future modifications to the existing structure.

⁶https://repositorioacademico.upc.edu.pe/bitstream/handle/10757/622739/C%E9spedes_lp.pdf



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