



Terwilliger Center for Innovation in Shelter

An approach
to the world of
construction
workers and
their environment

Lima, Peru
March 2019

**We build strength,
stability and
self-reliance
through
shelter**



#smallchangesthatchangelives

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Cover photo: In Mexico, Habitat for Humanity partnered with families and volunteers to rebuild homes after the 2017 earthquake.
 Photo page 1 and 2: Families like as Valentina and her son Armando, families in Mexico team up with Habitat for Humanity to improve their homes.

Introduction

This report is the result of quantitative and qualitative exploratory studies conducted since 2017 by Habitat for Humanity International, through the Terwilliger Center for Innovation in Shelter in Metropolitan Lima (Peru).

One of the main findings has to do with **the leading role of construction workers¹ in the owner driven progressive construction sequence** that most of the families of the base of the pyramid (BOP)² usually undertake.

This report aims to bring together the actors of the housing market system in Peru, and present opportunities to **expand the availability, accessibility and affordability of quality labor**. Under this logic, the Terwilliger Center for Innovation in Shelter in Peru aims to facilitate market solutions in favor of safe housing construction, through small changes that change lives.



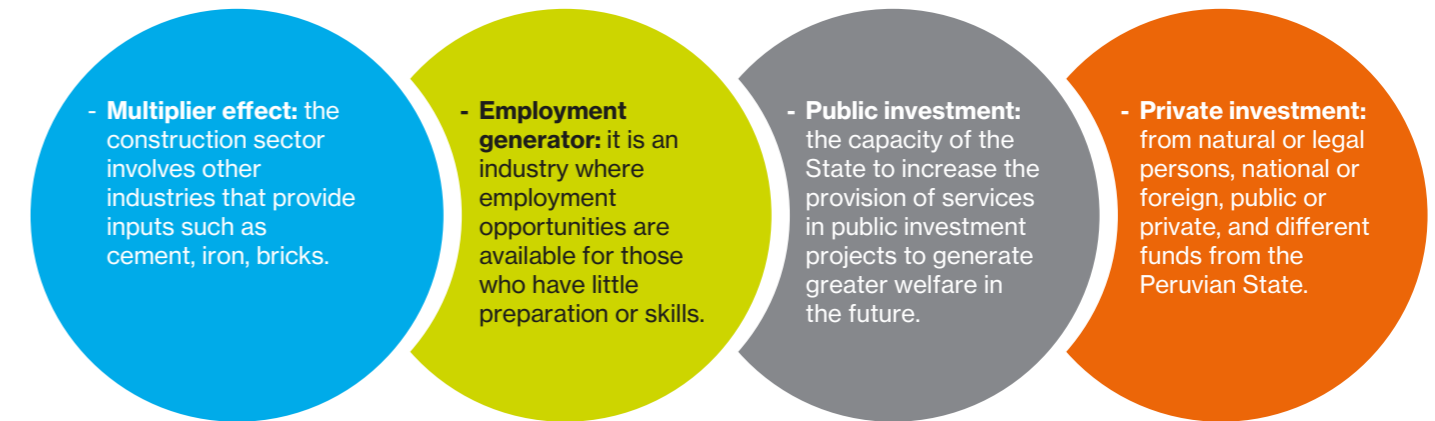
1. Construction worker is any natural person who freely and/or temporarily carries out construction work for another legal or natural person in exchange for a salary or remuneration.
 2. According to the report, "A growing market: Discovering opportunities at the base of the pyramid in Peru" prepared by the Inter-American Development Bank (IDB) and Catholic CENTRUM, the market segment of the BOP is composed of approximately 19 million Peruvians, about 62% of the Peruvian population, who represent a market of at least US \$ 43,000 million annually.

The construction sector



SECTOR IMPORTANCE

Because of its multiplier effect and job creation, the construction sector is closely related to the growth of a country's economy and depends on the dynamism of public and private investment.



According to the World Bank, "the housing market's functional limitations, as well as the lack of affordability of homes, make illegal occupation and informal construction the alternatives most used by low-income households, to meet their housing needs."³

Peru registers the third largest housing deficit in the region (72%). Of the country's 31.5 million inhabitants, 10.8 million Peruvians live in inadequate housing (World Bank 2016).

Low-income households that hire the services of construction workers are **part of a vibrant, informal and unregulated market**. Consequently, understanding their practices is essential to focus coordinated efforts with actions aimed at:

- improving the situation of construction workers who are hired by low-income families,
- improving housing quality standards, and
- contributing to reducing the qualitative housing deficit in the country.

Focusing on the construction sector also helps grow national economies.

In Peru, and according to BBVA Research,⁴ a 1% reduction in the GDP of the construction sector reduces the national GDP by 0.2%. An overall stagnation of construction in 2018 would reduce growth forecast of the global GDP from 3.5% to 2.7% in 2019. This means a loss of 70,000 new jobs, since the construction sector depends on other sectors such as manufacturing and services.

GDP contribution
5.79%
(2017)

Workforce contribution
5.8%
(2018)

Employment generation
957k
(2017)

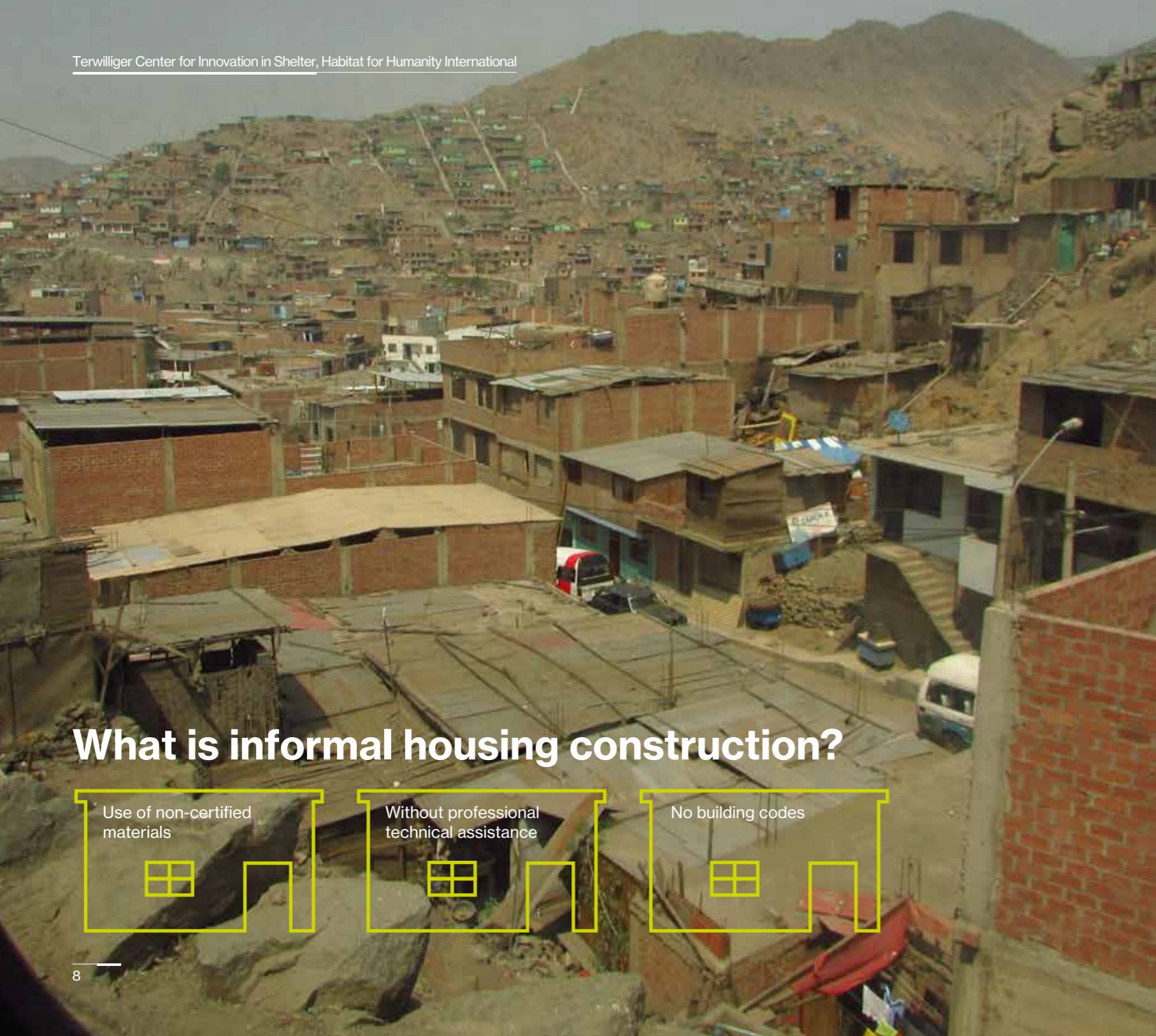
Self-employment
79%

Informal housing
70%

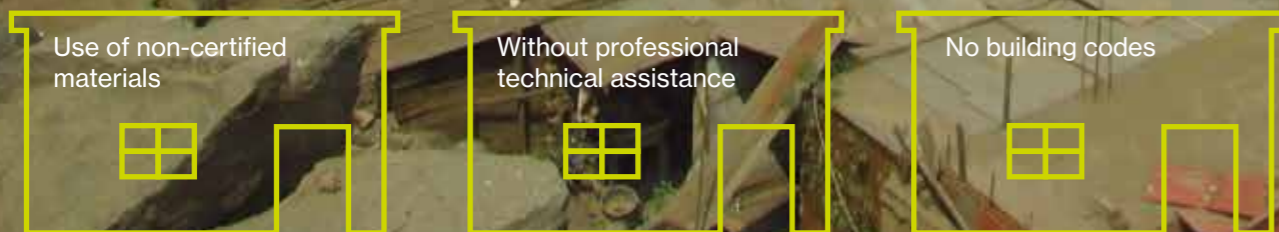
Owner-driven construction
80%

3. <http://documentos.bancomundial.org/curatedd/es/102591476435696623/pdf/109103-BRI-P160939-Series-Per%C3%BA-Notas-de-Pol%C3%ADtica-2016-PUBLIC-Viviendaparatos.pdf>

4. BBVA Research. Risk on growth projections paralysis in the construction sector? February 2018.



What is informal housing construction?



INFORMALITY AND DISASTER RISKS

Estimates from the Ministry of Housing, Construction and Sanitation (MVCS) indicate that about 70% of housing construction in Peru is informal. In Metropolitan Lima, it has been estimated that around 68.5% of the homes built between 2007 and 2014, are informal.

In 2017, 957,000 workers were registered in the construction sector, which represents 5.8% of the employed population of the country (INEI, 2018). 79.1% of the employment generated by the construction sector is informal (INEI, 2018).

Peru is a country prone to natural disasters. Faced with an eventual large-scale earthquake or a huaico (avalanche of mud and stones), homes are permanently at risk of collapse or being severely damaged. In metropolitan Lima, it is estimated that

there are more than 500,000 homes with this type of risk (INDECI, 2017). At the national level, vulnerability affects 60% of families living in unsafe homes.

- According to field interviews, families are aware of the structural deficiencies in their homes and easily admit that their houses do not provide safe shelter for their families. They express that this makes them feel disappointed. From their perspective, risks and the consequences of those risks are, unavoidable.
- Most of the houses observed seem to be inadequately designed and with low-quality workmanship, with special attention to structures and walling systems. It is socially accepted, that the house "must look good" on the outside; regardless of the structure.

As the minister of housing, Javier Piqué del Pozo (La Republica,⁵ 05/19/18) indicated, "People do not appreciate that they are risking their lifelong investment. They would have to make their houses more resistant, following building codes. **The construction of the structures is only 30% of a house; so when doing a poor structure, this puts at risk the remaining 70% of the investment**".

5. <https://larepublica.pe/sociedad/1245295-autoconstruccion-informal-casas-lima-llega-70-advierite-ministro-vivienda>

PROGRESSIVE HOUSING PLAN AND PROFESSIONAL TECHNICAL ASSISTANCE

In 2018, the Terwilliger Center in Peru conducted a consumer study that aimed to understand the needs and aspirations of its target market segment: households earning US\$ 5 and US\$ 15 per day. After analyzing this information, we developed an analytical model that follows a sequence of four housing types. Over several years, an **informal urbanization process takes place**.



Type A

Typically located in the flat areas of the district. Most are two-story houses. Seven inhabitants on average.



Type B

More commonly located in flat areas. Most are one-story houses. Four inhabitants on average.



Type C

More often located in sloped areas. Four inhabitants on average.



Type D

Mainly located in sloped areas and are typically built with rustic materials. Four inhabitants on average.

DATA

The quality of the construction of the house is very poor.

There is no government agency that supervises construction work practices.

Construction materials, labor and financing are available in the local market.

Self-construction can cost up to 40% more. (Source: Capeco, 2017).

Repairing informal housing can raise the cost up to 100% (Source: CAP, 2018).

LIMA - PERU

16% of the construction is directed by the owner
(Source: Arellano Marketing, 2015).

57% of construction is carried out by women, who on average are 40 years old.
(Source: Arellano Marketing, 2016).

65% of housing construction in Lima does not have a license.
(Source: Arellano Marketing, 2015).

Up to 200,000 homes could collapse with an earthquake of magnitude 8.
(Source: Indeci, 2017).



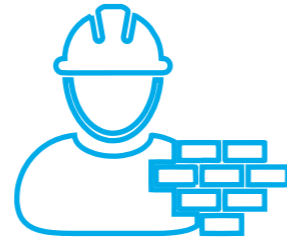
An impact study on the quality of construction by Habitat for Humanity (2018), showed serious structural construction failures in 7 out of 10 homes due to bad practices and insufficient skills.



San Juan de Lurigancho, Lima
(30 minutes away from the Jorge Chavez International Airport)

Profile of construction workers

Sample of 591 construction workers. Data collected during 2018 in 8 cities in Peru.



Gender quota

94%

Men



Average Age

41.5



Instruction

44%

Technical education



Experience

11.8

average years



Family size

4.6

members



Access to services

63%

home

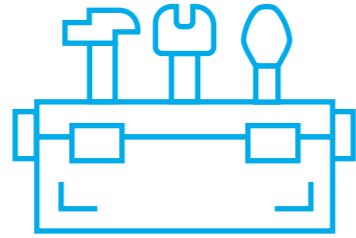
TPOLOGY OF CONSTRUCTION WORKERS

- Construction workers develop their knowledge "on the job" and earn a reputation in the neighborhood.
- Working for the BOP market represents their first job that will serve as a "bridge" to access better jobs in the future.
- The mason provides construction services to low-income households.
- Families hire masons according to availability, payment terms and, fundamentally, due to their experience.
- Construction work is perceived as a respectable profession for those who can afford formal education.
- Workers walk a progressive path of specialization.
- Construction workers are often supervised by an engineer, architect or foreman who directly or indirectly trains them at work.
- The mason usually consults a foreman for critical construction decisions.

Figure 1. Professional pathway and on the job training.



Supply of services



Perception of their job

73%
positive



Services offered

2.0
on average



Clients per month

4.8
on average



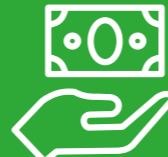
Annual workload

7
months per year



Annual income

US\$ 326
on average



Collection of fees

81%
cash

THE QUALITY OF WORKMANSHIP

According to field research, there is no shortage in the supply of construction labor services, however, there is a notable deficit in the quality of workmanship. Based on this finding, in order to present opportunities to expand the availability, accessibility and affordability of quality labor, it will be important to consider:

Resistance to the use of new materials.

Loyalty and reputation are the way masons keep their place in the market, and this makes them reluctant to use materials and techniques with which they have no previous experience. Unless customers demand precise techniques or that masons find that improves their references, there is very little interest beyond what they already know and use.

Resistance to implement new techniques.

Construction workers have little motivation to adapt and implement safer and more durable housing construction techniques due to the lack of incentives, control mechanisms, access to work tools, knowledge and skills.

Appearances are more important.

Families usually verify construction work based on surface indicators, such as the quality of the plastering and not on the long-term durability of the construction, as they lack knowledge of how to recognize durable and quality structures.

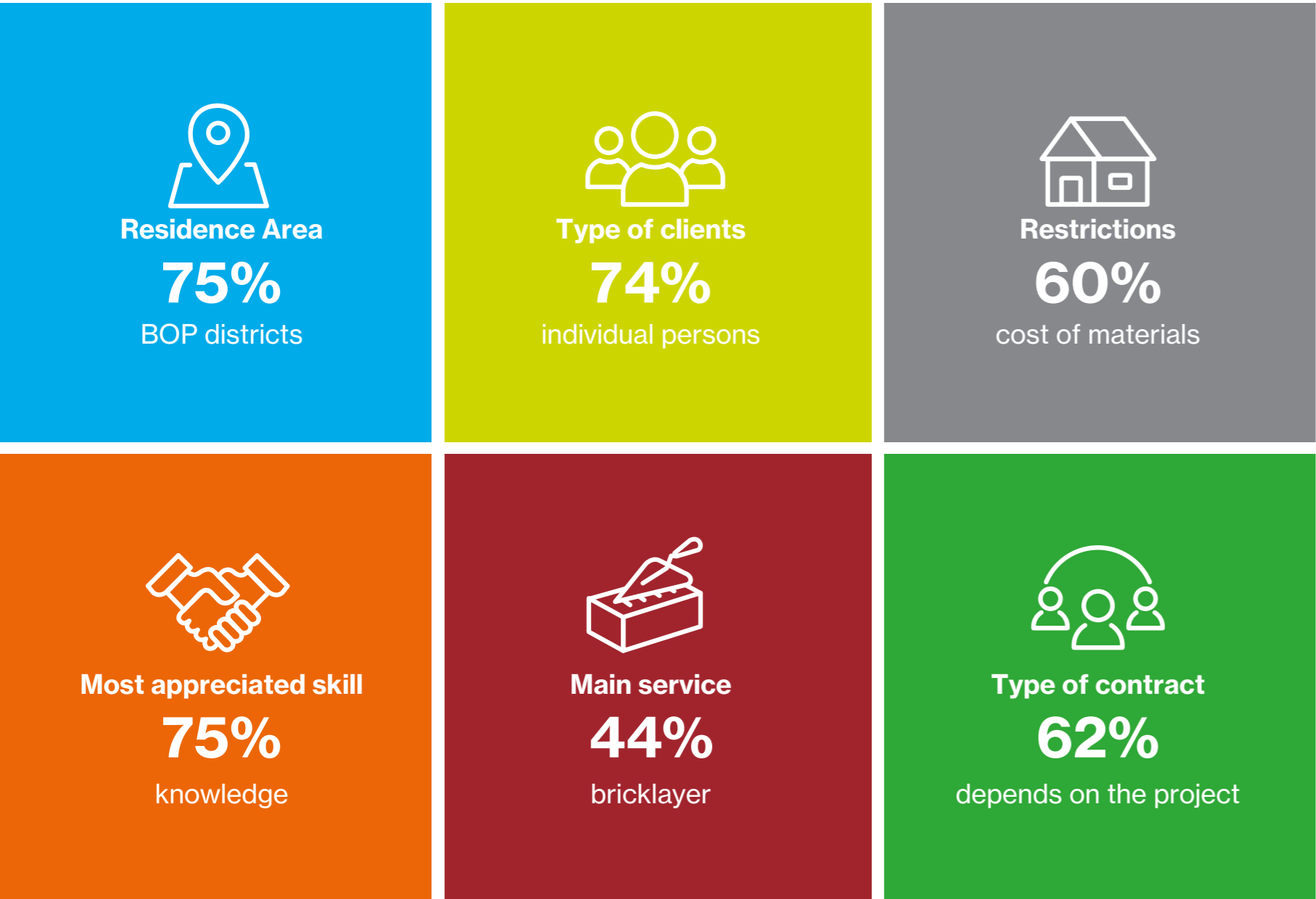
The communication between masons and their clients is dysfunctional.

Construction workers are often hired through referrals and by word of mouth, but low-income clients rarely report "problems" related to housing construction. The problems are considered part of the process and the masons receive little feedback.

DATA

72.5% of the salaried population does not have a contract, so they run the risk of not receiving non-monetary labor benefits (INEI, 2017). Construction workers have a total employment of approximately 7 months per year (CTGP, 2018). Some of these workers are seasonal and often work where they see better wages and benefits.

Demand of services



THE CONSTRUCTION PROGRESSIVE PLAN

The construction sequence is led by the head of the family, who prepares a general plan for the incremental growth of their home for many years. Based on this finding, in order to present opportunities to expand the availability, accessibility and affordability of quality labor, it will be important to consider:

Accessibility.

Construction materials, labor and financing are generally available in the local market. The concern of most families and masons is about economic access (financing / affordability). The construction sequence is financed with own resources (savings or personal loans) or with microfinance institutions, state or institutional housing programs.

Decisions on housing construction have a strong gender component.

Women have something to say, but not the last word, in most housing construction decisions. Women are expected to monitor construction progress, but not technically. Men exercise greater control over construction decision making. It is perceived that they have better skills to select materials, interact with masons and hire workers.

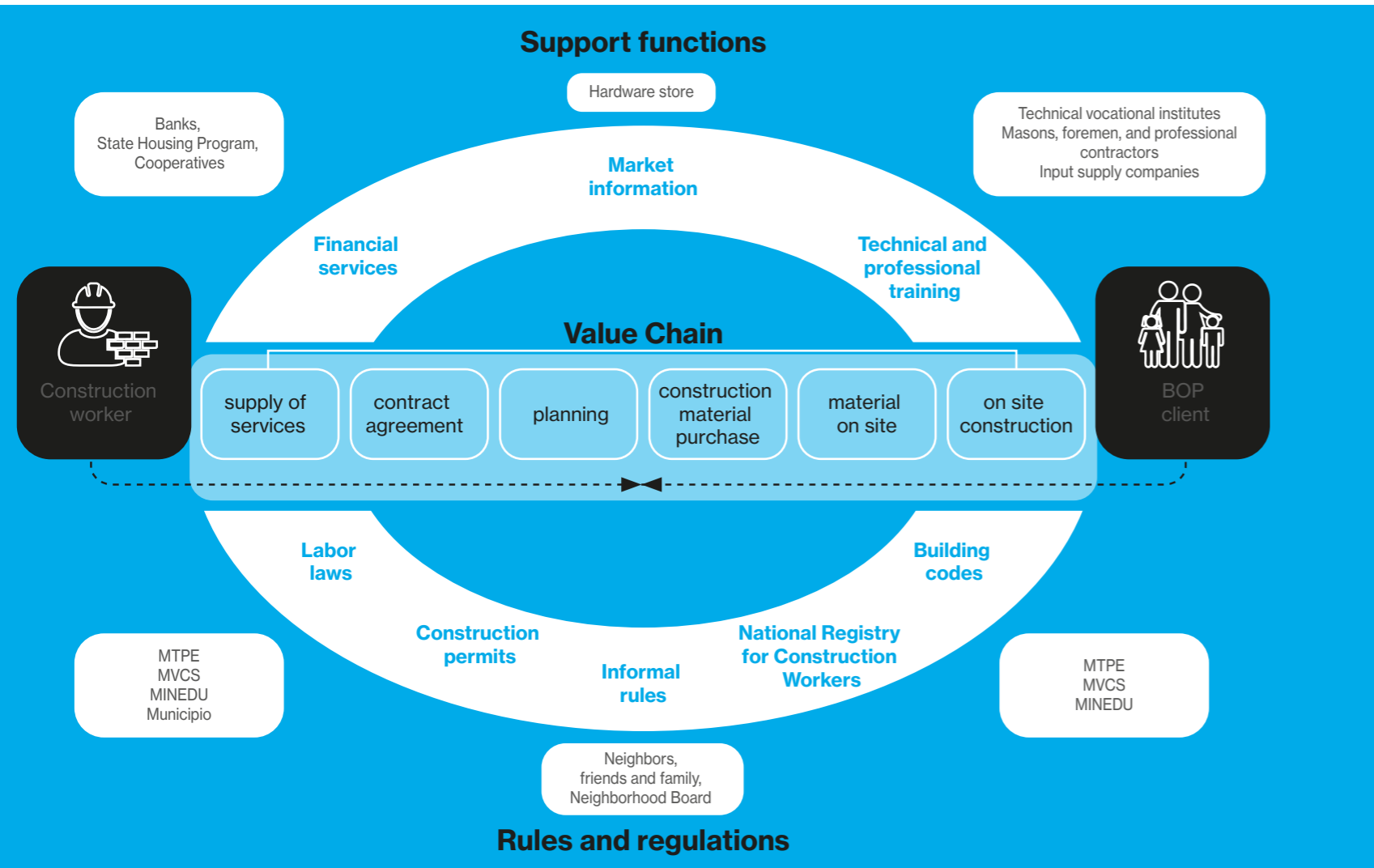
Resistance to implement new techniques or materials.

Families are reluctant to be the first to try new materials or technologies. They are reluctant to risk, often expect "others" to make the first move.

Fatalistic attitudes prevail.

Disasters and risks are inevitable. Families see risk as inevitable and perceive that they have little incentive to build disaster-resistant housing.

Market environment and key actors in the system



THE HOUSING CONSTRUCTION SERVICES VALUE CHAIN

- Construction workers have a strong influence, both on women and men, and are the source for information for other actors in the housing market, such as hardware stores and other construction professionals (foreman, architects, etc.).
- In general, families have very limited contact with other construction professionals, except when female heads of household are involved in construction efforts in the community or when applying for formal loans.
- The family finds the masons by two means: personal references and hardware stores.
- For decisions about the types and quantities of construction materials, the mason advises the family and provides a list; however, the family is the one that buys the material at the hardware store.
- Heads of family play an important role in the power dynamics of the construction site and this limits the application of construction practices. This challenge has been recognized by different actors consulted, which emphasizes the need to sensitize families about the benefits of construction practices.
- The transport of materials is carried out by the customer or by the transportation service provided by the hardware store. The price of the transfer of the materials depends on the amount of materials and the conditions of the roads (distance and difficulty) to get to the construction site.
- Families at the BOP depend mainly on the experience of a family member or a close friend to build foundations, walls, ceilings.



For families that have D-type homes, such as Mary and Luis, bringing materials uphill is especially difficult, as there are no roads that trucks can access. All transportation must be done manually through.

SUPPORT FUNCTIONS

Local hardware stores

- It is usual practice to recommend trusted masons to clients, without hiring commitment. It was found that in some cases, hardware store owners with small and medium enterprise (SME) bank loans obtain insurance that covers accidents at work or even in the transport of materials.

Financial services

- For the demand for construction services: families can

access loans from financial institutions or other informal mechanisms. It is the lowest monthly payment that determines the option for one or another financial institution.

- For the supply of construction services: the supply of SME loans is diverse. Although construction and masons associations exist in practice, it is not common for them to formally establish or access SME credits, or when they do, their target public service is not the BOP.



Emerson has a hardware store in Saul Cantoral and Cristo Rey



Training and certification.

From research, we found that there is currently no enough training required in the sector that responds to the high demand for technical skills.

It is estimated that training services can serve a **maximum of 20,000 construction workers per year for a sector of almost one million.**

- Training services tend to focus on the needs of private companies, which usually pay for training courses for their own workers.
- The Ministry of Labor and Employment Promotion (MTPE) launched the "Impulsa Perú" program in 2017, which promotes certification of labor competencies. As part of this process, they have authorized 19 certification centers in 17 regions of the country.



Business development and training

Several initiatives combine efforts of stakeholders interested in strengthening the capacity and entrepreneurial skills of construction workers, such as: Swisscontact in partnership with SENCICO, CAPECO and the School of Engineers of Moquegua, by June 2018, facilitated training of 848 workers in business management.

The ILO offers a training program in business management focused on the construction sector "Mejore su Negocio" (MESUNCO) and has an availability of five trainers of trainers to work with business training institutes.

In addition, citizens has at its disposal the "Emprender" platform of the National Superintendence of Customs and Tax Administration (SUNAT) that provides information on how to start and manage a business, as well as information to formalize. However, workers and self-employed workers in the BOP sector make little or no use of this information.



Health insurance schemes

The current situation on access to health insurance differs greatly between formal and informal workers, in which the formal workers enjoy social benefits (such as life and/or health insurance), while the latter group lacks them. Such behavior is explained in the perception that potential users have about informal labor, life and/or health insurance, which are perceived as expensive and not a priority.

During fieldwork, evidence show that some of the self-employed workers who serve the BOP are subscribed to social insurance; however, the numbers are still low in terms of membership.



"According to CAPECO, 60% of housing is informal".

Technical and professional training

Private construction input companies

- Construction input companies such as Cementos Pacasmayo has the highly selective PROCER program graduating between 30 to 60 participants every year. The program is implemented by TECSUP, a higher education institution focused on the formal sector. These trainings are funded through corporate social responsibility funds.
- SODIMAC Peru organizes capacity and training fairs throughout the country where they exhibit vendors and promote their Circle of Specialists. Through this initiative, they promote the Ambassador of Progress program, where they select prominent construction workers and "professionalize" them with training in personal development and business skills.

Private contractors

- There are several construction projects, related to the

expansion of public investment for the construction of large infrastructure projects (airport, electricity networks) and mining.

- Large contractors often hire medium- and small-scale contractors as aggregators to recruit workers.
- Migration and movement of these workers affect the stock of labor for construction in rural communities.

Foreman, engineers and professional services

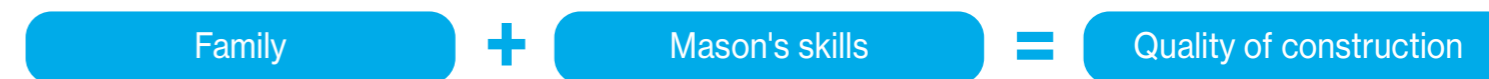
- At every level, construction workers get their training and knowledge through on-the-job training and mentoring from their peers. Engineers who work in large projects influence the quality of workmanship.
- Access tools, information on new technologies, knowledge of design and disaster-resilient construction techniques are transmitted orally from professionals to foremen, and from foreman to masons.

RULES AND REGULATIONS

Informal rules in construction

Quality of the home. Interviews with construction workers verify that the families define the actions regarding the construction processes.

"You propose the work you want to do, but if the client tells me that he wants his idea to materialize, everything must be done. People always require **lower prices**, it is what they demand the most, **although there are a few that ask for quality in terms of materials and products**" - area mason.



- **Price over quality.** Families often negotiate the price of the service with construction workers, who tend to lower their prices to get the job. In this process, when masons make budgets, they reduce margins in the investment of materials, opting for lower quality brands, to "save" costs in the construction processes.
- **Exterior finishes and structure.** The concern for exterior finishes downplays the structure. Families worry that it looks good externally without giving more importance to the structure and walling systems. This suggests that owners associate durability and security with "exterior looks" and judge the final product of masons from finishings.

"... we use less iron, fewer columns, among other details that can be left out so that construction is cheaper" (MarketShare Associates, unpublished).

GOVERNMENT CONTROL AND REGULATIONS

Neighborhood boards

- A Neighborhood Board is a self-managed organization, registered in the Municipality.
- The Board receive monetary contributions from families for the purchase of land and payment of fines.
- Manages the physical space of the settlement (they are responsible for the size of the plots of land and the allocation).
- The first contact between the family and the Board occurs when land is purchased. Families 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 show that they are living in it.

- Only after testing habitability, the Board provides a housing certificate, a registration resolution and a layout plan, these documents are necessary for the new owners to process title deeds with the municipality.

Codes and construction standards

- In general, there is not enough effort on the part of the authorities to enforce the applicable building codes for low-cost housing and progressive housing construction. Owner-driven construction is not regulated considering the progressive housing plan, and compliance agencies focus on formal sector construction projects.

Recommendations for the design of interventions



Look beyond the obstacles

Look beyond the obvious obstacles faced by families (land tenure, lack of funding, access to materials and design tips) and pay attention to the information flows that impede or encourage the results.



Market forces

When designing interventions, recognize that there is widespread informality in housing markets for low-income families and try to influence, or at least consider, ways to use market forces to encourage behaviors that facilitate optimal housing decisions.



Behavioral change

Identify ideal behavior changes by masons, families and market actors that serve them, to improve opportunities for access to adequate housing in the market.

POSSIBLE AREAS FOR INTERVENTION

Market-based solutions have been identified in three main areas:

Training and certification of construction workers for the informal sector.

Workers' associations and business education for formalizing and professionalization of the construction sector.

Access to information, training and awareness generation in construction for BoP families.

The Terwilliger Center for Innovation in Shelter is a unit of Habitat for Humanity that works with housing market systems to support local actors and expanding customer-sensitive services, products, and financing. The ultimate goal of the program is to make housing markets work more effectively for people who need decent and affordable housing, thereby improving the quality of life of low-income households.

During 2017 and 2018 a series of quantitative and qualitative exploratory research generated inputs for the development of market-based solutions for market actors in the housing value chain. This report summarizes key findings and insights.

Thanks

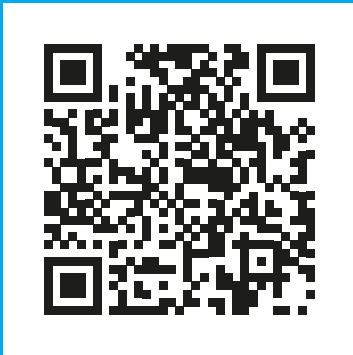
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Driven by the vision that every person needs a decent place to live, Habitat for Humanity is a global nonprofit leader that works in nearly 1,400 communities across the USA and in almost 70 countries around the world. Through a commitment to the housing sector, the Terwilliger Center for Innovation in Shelter at Habitat for Humanity strives to work as a facilitator in housing market systems that result in more accessible, inclusive and resilient markets in the long term for families at the base of the pyramid. The Terwilliger Center offers advice, mentoring and capital to market players and housing companies who wish to interest base-of-the-pyramid clients with financial and non-financial products and services.

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