

HABITABILITY PARAMETERS AND STANDARDS

For an extended definition of quality in housing in Chile

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ABSTRACT: In this work, we examine the set of habitability parameters and standards currently being used for both slum management and formal housing provision in Chile, as a specific approach regarding quality in the current context. The notion of habitability goes beyond conventional quality assessment based on comfort (higro-thermal, acoustic, lighting), including elements such as sanitation, health, perception, safety and privacy. The analysis elaborates on the compared study of tools and regulations currently in use by public agencies that work in the area of housing and informal dwellings and proposes the process of negotiation as an alternative source of parameters and standards.

Keywords: habitability, comfort, standards, housing

1. PARAMETERS AND STANDARDS

Construction parameters and standards are technical, science-based protocols conveying an agreed body of knowledge in order to put it into practice in the building site. Because of their technical grounding, supported by rigorous scientific research, parameters and standards are seen as neutral, non problematic tools that help streamline the production process, fine-tune coordination and check progress or results.

However, the fulfilment of standards requirements can turn into an extremely conflictive issue among the parties involved in the process (e.g. a dispute between patron and contractor, almost a routine in the construction site). Such conflicts are always separated from the neutral condition of the standards themselves, accepted as benchmarking to which the solution of the problems is referred. Parameters and standards are thus regarded as a-priori definitions referred to codes that work as tools reducing the complexity in building by

encoding technical procedures and performances, and promoting agreements around the assumed neutral condition of parameters.

This process of negotiation is bound to the prescriptions established. Should these prescriptions be absent or incomplete, the social dimension of the process is put to the fore as an alternative source of parameters and standards. That is, negotiation can turn into the source of their definition instead of a process depending on them.

With recently established basic thermal (2000) and acoustic regulations (2005), environmental quality standards are a relatively new professional concern in Chile, and the field remains largely open to contesting definitions. In a country where parameters and standards are not always settled by an overarching institution, the parties involved in the process of construction have found themselves in a position to make their own. Taking this scenario as a case of study, we attempt to show how standard making can be a bottom-

up process, where de-facto definitions are made along the building process, instead of a top-down process based on previous, coded definitions.

2. HABITABILITY IN HOUSING

The idea of habitability (*habitabilidad*, *bewohnbarkeit*) has gained relevance in the professional milieu as an extended concept regarding quality standards of living, especially in housing. It goes beyond the traditional definition of comfort (*comodidad*, *confort*) and conventional quality assessment based on higo-thermal, acoustic, and lighting comfort conditions, including elements such as sanitation, health, perception, safety and privacy.

Habitability is defined as [1]:

"Level of behavior of certain space and psycho-social factors and variables, which can be observed, alluding to the relationship between a community and its residential environment. Accordingly, these factors and variables are a different expression of value in each of the sets observed, where the cross-reading of them, leads to the definition of categories of desired levels of habitability in residential complexes"

This definition of standards and evaluation criteria on housing *"seeks to define the minimum quality requirements that should have housing, as place to live and develop, understood in its multiple scales, to achieve secure housing comfort (wellbeing) of its inhabitants"* [1].

The relevance of these concepts stems to the broader scope of evaluation for the quality of the houses performance they convey, both on the variety of problems comprised and on the scales of analysis and intervention. Habitability is yet a relatively unsettled concept accounted for in the academic milieu, and even if recognized in general is yet loosely defined overall. In addition, it isn't an internationally settled concept, and we have seen it being used in this scope only in Chile. In Spain, where the

very same word "*Habitabilidad*" is used, it equals comfort conditions [2].

2.1 Habitability in Chilean Public Policies

In parallel to the academic definition, the concept of Habitability is used in an uneven way in the context of the Chilean Housing policies, both in the formal housing provision, built under the financial support and supervision of the Ministry of Housing (Ministerio de la Vivienda, MINVU); and in the informal housing sector, undertaken by the Solidarity and Social Investment Fund [3].

MINVU housing programs are oriented to satisfy the housing needs of the poorest segments of the population depending on their incomes and savings capacity. By means of the "*Fondo Solidario de Vivienda*" (FSV), providing starting housing solutions (Fig. 1) which have since 2001 become the prevailing. The Ministry paid in 2005 for 33,421 units out of the total 56,155 houses built in the country [4].

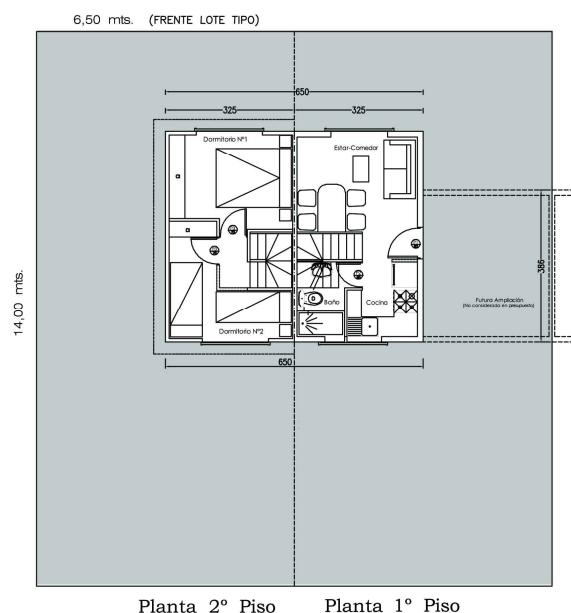


Figure 1: FSV Typical Starting Unit Plan.

The Social and Solidarity Investment Fund – FOSIS is a decentralized public agency of the Chilean Government, which finances – in whole or in part – development plans, programs, projects and special

activities that contribute to poverty reduction. “Habitabilidad - Chile Solidario” is one of FOSIS programs, which focusing on the segments of the poor population not covered by MINVU, promotes the improvement of the dwellings, usually informal housing (Fig. 2), of their basic equipment and of the family habits, in order for the families to live in basic acceptable conditions.



Figure 2: FOSIS Informal settlements intervention.

Both these programs target the poorest segments of the Chilean population, and very often their public is migrating from one program to the other. FOSIS covers the requirements of families in extreme poverty conditions, a group whose needs are not covered by MINVU’s programs. Those who take part in the Programs by FOSIS and eventually decide to take a further step into the formal housing system will enter the system by means of FSV.

2.2 MINVU Habitability Definitions

In regard of Habitability, the operation of the Ministry of Housing and its departments is circumscribed to the prescriptions of the

Building Code (Ordenanza General de Urbanismo y Construcciones, OGUC) [5]. Even if the Code doesn’t define the term itself, it does define its scope (chapter 4.1. “General Conditions for Habitability”, Condiciones Generales de Habitabilidad). Other bodies of regulation apply, such as the Guidelines for the FSV.

Recent innovations in the Code have enforced requirements for energy efficiency since 2000, by establishing a set of U-Value requirements in roofs and defining climatic zones to apply them. A second stage defines U-Values for walls, windows and ventilated floors, and is being enforced since March 2004 (Table I).

Table I: U-Value Requirements according to geographical Zones (W/m²K). Source: Art. 4.1.10. OGUC

Zone	Roofing	Walls	Floors
1	0,84	4,0	3,60
2	0,60	3,0	0,87
3	0,47	1,9	0,70
4	0,38	1,7	0,60
5	0,33	1,6	0,50
6	0,28	1,1	0,39
7	0,25	0,6	0,32

New requirements were also set in 2005 regarding noise insulation in elements separating housing units that are part of a collective building, paired in a row of houses or by non-inhabitable rooms. Horizontal elements such as slabs should have a noise reduction index of at least 45 dB(A) to airborne noise and 75 dB to impact noise. The vertical elements slabs should have a noise reduction index of at least 45 dB.

Other definitions regarding sun exposure require maximum angle of obstruction of direct sun incidence according to the different latitudes (Table 2). For the purposes of lighting and ventilation at least one window is required in every room,

allowing airflow and light directly from the exterior, except kitchen and bathrooms.

Table II: Sun radiation protection. Maximum construction angle measured from the lot limits. Source: Art. 4.1.6. OGUC

Region	Latitude	Angle
I - III R	17° - 28° S	80°
IV - IX R	28° - 38° S	70°
X - XII R	38° - 56° S	60°

Fire protection and materials conditions as established by the Building Code for housing of the kind in the MINVU system set F60 for walls dividing units. As an additional minimum feature set by the Ministry, every housing unit must have at least two bedrooms for two beds each.



Figure 3: Ruined Houses due to faults in the fulfilment of building standards. Villa El Volcán, Santiago. Source: www.liberacion.cl

As it is for the code, for the Ministry the idea of Habitability is equivalent to that of Comfort. MINVU's contractors comply all Code standards with a very minimum, and

very seldom further requirements are made. Minimum Standards play a critical role in the very tight budget scenario the formal housing provision faces. Experiences of poor enforcement of standards has led to disastrous results in the past, where houses provided by the system have failed to withstand a hard winter and suffered severe leaks, with significant damage for the houses and losses for the owners (Fig. 3).

2.3 FOSIS Habitability Definitions

The scope FOSIS work regarding habitability conditions is to achieve an acceptable set of conditions of habitability, within the current conditions of informal dwelling in slums and other irregular circumstances. Their effort focuses therefore in the solution of urgent matters that arise in such contexts.

The strategies for the implementation of its goals are in principle under the technical rule of the OGUC and other technical regulations, yet they allow themselves to draw criteria from other sources and to adapt all of them to the circumstances of their work [3].

FOSIS establishes by itself 12 minimum habitability conditions:

H1: the household should have a clear situation regarding the ownership of the lot and the house they inhabit.

H2: the household should be applying to the regular housing system, if that is their will.

H3: the household should have non contaminated water available.

H4: the household should have an appropriate energy system

H5: the household should have an appropriate drainage system

H6: the house should not leak or flood and it should be properly sealed.

H7: the house should have at least two inhabitable rooms (excludes toilets)

H8: every member of the household should have his/her own bed and basic bed ware

H9: the household should have the basic ware required for preparing food.

H10: the household should have an appropriate system for elimination of waste.

H11: the surrounding of the house should be free of pollution

H12: the household should have access to the subsidy for the consumption of potable water.

Even if these definitions are claimed to be based on the code prescriptions, they go notoriously beyond its definitions and simply ignore others, notoriously departing from the concept of comfort, and opening new demands. The priorities that arise from the local circumstances of those in need are very differently defined even if the target groups can be said to be equivalent.

3. COMPARATIVE ANALYSIS

Despite of being in principle complementary, the habitability definitions by the two institutions differ, and as a result differs also what is meant by acceptable conditions, and the emphasis by each when it comes to action. FOSIS and MINVU set their standards based on the needs of individuals and on the possibilities the instruments they use, but their work and definitions are not converging. The same concept, the same public, the same government, yet different definitions subject to different circumstances.

These differences between the policies in both institutions turn the transition of the public of FOSIS into the formal sector quite problematic, even if it is expected that once they have covered their basic needs, they will come to meet conditions that would allow them to aspire to a formal solution according to housing supply by MINVU.

The instruments to operate in the realm of housing habitability contain then different criteria according to the public they are directed to, which result in: scattered definitions of parameters that are not shared and criteria that do not recognize diversity, relevance, location and participation

(currently priority in the system of housing provision); uneven Parameters according to strata that do contribute to the continuity of action by the State or the clarity of such action by users; lack of progressive Standards promoting improvement over time, that actually reinforce the split between the field of emergency or informality, which can result in that past actions have to be discarded to give way to changing the housing situation.

According to the analyses, specific questions arise in three areas, which are presented as those required to address extensively the issue of habitability. First, even if parameters and standards for comfort conditions are the most clearly elaborated, complete definitions across scales that incorporate the immediate environment and in its analysis are still needed. Secondly, an emphasis in security and maintenance, appears as a new demand, including issues of durability. Third, perception, is emphasized: a dimension of uncertain measurement, but relevant as it makes an emphasis on qualitative elements rather than the quantitative and that focuses on assessing how visitors interact with the space and how they relate to people.

3.1 Comfort and Hygiene Parameters

The parameters of comfort are the most clearly established through the recent regulations, yet not homogeneously.

As of higo-thermal comfort, there is a general consensus on the need families to have a space that will maintain the ideal temperature required. The Building Code establishes U Value standards and minimum requirements for noise attenuation. FOSIS defines basic protection from weathering and a minimum of insulation yet o noise insulation.

On health preservation grounds, it is emphasized the need for windows, which should be at least size 15% of the floor area. FOSIS addresses the issue from the perspective of having the energy required for the basic operation of the house

requirements.

In the scale of housing all actors refer to the need for access to drinking water. OGUC refers to the structural conditions that allow adequate ventilation of housing. From the perspective of health it is emphasized the need for families to have healthy habits that are carried out in housing, as in the environment and joint strategies through community participation.

3.2 Safety and Maintenance Parameters

In general, there are no clearly defined standards for Safety and Maintenance, only vague descriptions of what is required. General characteristics of the home and people behavior are given as to prevent accidents. SERVIU emphasizes the structural conditions of housing that make it safe and also considers the need for community participation for the security in the neighborhood. It also stressed that the availability of basic services of such as transport, access, supplies, etc., are elements that contribute to community safety.

3.3 Perception Parameters

All instances reflect a concern for privacy and an attempt to reduce overcrowding, as a determinant of health. FOSIS considers within the need of separating cooking and eating from sleeping, and also emphasizes the need for an individual bed for each member of the family group. MINVU proposes a standard defined by square footage and a minimum number of rooms in a house.

As for the scale of the immediate environment, access to basic services is stressed as a critical for the development of people. The Code highlights criteria for privacy protection of the neighbours, which are defined in lot enclosure conditions and prevention of sunlight obstruction. FOSIS makes no mention in this regard.

4. CONCLUSION

A space is being open by the wider definitions used by FOSIS, in particular to qualitative elements. Thus the question: How can such elements be accounted for in order to be used? No rigorous technical definitions are yet available to the interested parties for a wider definition to be operational, and they have no other solution but to make their own definition and operate by means of it.

In defining Habitability, an extended concept of comfort is required encompassing other dimensions of human well-being. The practice of housing provisions demands further definitions that are settled even if provisionally, in spite of previously defined academic or technical standards. The process of stabilizing parameters and standards is triggered from the building site itself, creating the need for further definitions and a comprehensive approach that enable operational flexibilities beyond conventional prescriptions.

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