

## HOUSING RECONSTRUCTION BALANCE FIVE YEARS AFTER THE 27F EARTHQUAKE

- 92.5% (211,009 homes) of the reconstruction's housing requirements has been completed, while 6.3% is being executed and 1.2% will begin shortly.
- The delivery speed for housing solutions was significantly reduced last year. The current administration has completed 11,917 housing solutions between March 2014 and January 2015, which corresponds to an average of 1,083 per month, far below the almost 5 thousand per month delivered between 2012 and 2013.
- The housing deficit decreased significantly between 2011 and 2013. Both the quantitative and qualitative deficit of the affected zones were reduced by 4.8% and 16.5% respectively in that period.

On February 27<sup>th</sup>, 2010, an earthquake of 8.8 degrees impacted from the region of Valparaíso to the region of La Araucanía. The earthquake did not only destroy educational facilities, hospitals and urban infrastructure, but also approximately 370 thousand housing units, from which 220 thousand could be subject to reconstruction subsidies, according to estimates of September 27<sup>th</sup>, 2010.<sup>i ii</sup>

With 92.5% of completed homes, according to the last Progress Report of the Ministry of Housing and Urban Development (MINVU, in Spanish), the reconstruction process can be qualified as highly successful, compared to both the domestic<sup>iii</sup> and international experience, where the reconstruction is expected to last 10 years at least in the cases of Tohoku 2011, Japan, and Haiti 2010.

On the other hand, in the 5 year anniversary of the 27F, the MINVU set 2016 as the completion term for the reconstruction process. Therefore, the remaining housing solutions need to be addressed, including those that have not yet started (2,710), handing over those that are being executed (14,468), giving solution to the completed homes presenting problems (3,913) and handing over the homes that are still waiting for the municipal reception certificate (38,083).

### **SIGNIFICANT PROGRESS IN THE RECONSTRUCTION, EVEN THOUGH THE DELIVERY SPEED WAS REDUCED IN 2014**

92.5% of the homes with earthquake subsidies were handed over by January 31, 2015, while 6.3% (14,468) are being built and 1.2% of the works (2,710) has not yet started. Despite this impressive achievement, the delivery speed of housing solutions in the last year was significantly reduced. According to the MINVU Reconstruction Progress Report, by February 27<sup>th</sup>, 2014, 200,269 housing solutions had been delivered. That is, in the current administration, 11,917 housing solutions have been completed, which corresponds to an average of 1,083 per month between March 2014 and

January 2015; a very low average compared to the almost 5,000 solutions delivered on a monthly basis between 2012 and 2013. It is estimated that 5,207 solutions per month were delivered in 2012, and 4,862 per month in 2013.<sup>iv</sup>

The biggest progress has been accomplished in the region of La Araucanía, where 4,921 of the 5,005 valid subsidies have been completed, that is, 98.3%. In the O'Higgins region, 89.1% of the homes have been handed over.

As for the works to be initiated and already being executed, the Biobio region presents the highest delay, presumably explained by the complexity and potential dispersion of the housing solutions. 52.6% of the 2,710 missing solutions belong to this region. From the 1,426 pending solutions that need to be started in this region, 921 correspond to the province of Concepción and 320 to the commune of Coronel. As for the solutions being executed, the province of Concepción in the Biobio region presents the highest execution, 4,379 from 6,276 housing units (69.8%).

Currently, 5 from 107 villages built in order to give a transitory solution to the families who lost their home are still in place, which host 152 families, also belonging to the Biobio region.

#### **92.5% OF THE AFFECTED HOMES HAVE BEEN COMPLETED**

**Table 1: Reconstruction Progress by January 2015**

Region	Current subsidies	Starting shortly	Being executed	Completed	% Completed housing units
Valparaiso	14,260	179	621	13,460	<b>94.4%</b>
Metropolitan	36,130	119	1,812	34,199	<b>94.7%</b>
O'Higgins	27,550	690	2,311	24,549	<b>89.1%</b>
Maule	55,144	273	3,387	51,484	<b>93.4%</b>
Biobio	90,098	1,426	6,276	82,396	<b>91.5%</b>
La Araucanía	5,005	23	61	4,921	<b>98.3%</b>
<b>Total</b>	<b>228,187</b>	<b>2,710</b>	<b>14,468</b>	<b>211,009</b>	<b>92.5%</b>

Source: LyD based on the MINVU Reconstruction Progress Report.

#### **SITUATION OF THE AFFECTED REGIONS**

The following paragraphs analyze the progress of the six regions affected by the 27F earthquake, corresponding to 75% of the national population. In the last data release of the 2013 CASEN Survey, it is possible to observe an important progress through the quantitative and qualitative deficit, which are indicators that summarize the existing housing needs in our country.

The quantitative deficit corresponds to housing solution requirements, either because the house is in a non-repairable condition, households sharing their homes with a second household ("*allegados*") or shared nucleus with overcrowding. While the qualitative deficit corresponds to the homes' extension or upgrading needs, either due to high overcrowding levels, home improvements due to sanitation problems, low quality materials, and/or preservation.

#### a) Quantitative Deficit:

As shown in Table 2, the earthquake increased the housing needs in the affected regions from 355,503 to 393,078 between 2009 and 2011. However, we observe a significant reduction in 2013. Then, if the Metropolitan Region is excluded, we observe a still higher reduction: 24.4% between 2011 and 2013.

The increase of the quantitative deficit in the Metropolitan Region between 2011 and 2013 may respond to other factors not related to the earthquake that need to be studied with more detail.

At domestic level, the quantitative deficit drops 6.9% in relation to 2011, when 493,355 families required housing solutions, compared to 459,347 in 2013. The regions of Maule, Biobio and La Araucanía show the biggest reductions in this type of housing needs, 33.8%, 29.8% and 28.7% respectively.

In the aggregate, results show that during this period it was not only possible to deliver solutions to the families affected by the earthquake, but also to the regular housing program. On the other hand, during the studied period, the Metropolitan Region shows an increased quantitative deficit, whose explanation requires further study.

#### QUANTITATIVE DEFICIT OF REGIONS AFFECTED BY THE EARTHQUAKE INCREASES 5.2% BETWEEN 2009 AND 2013 AND THEN DROPS 4.8% BETWEEN 2011 AND 2013

Table 2: Evolution of Quantitative Deficit, 2009-2013

Region	2009	2011	2013	Variation 2009-2013	Variation 2011-2013
V. Valparaíso	35,104	43,492	38,196	8.8%	-12.2%
VI. O'Higgins	28,056	19,458	16,775	-40.2%	-13.8%
VII. Maule	22,463	36,514	24,173	7.6%	-33.8%
VIII. Biobío	41,728	56,306	39,544	-5.2%	-29.8%
IX. La Araucanía	14,800	19,808	14,117	-4.6%	-28.7%
XIII. Metropolitan	213,352	217,500	241,326	13.1%	11.0%
<b>Total affected regions</b>	<b>355,503</b>	<b>393,078</b>	<b>374,131</b>	<b>5.2%</b>	<b>-4.8%</b>
<b>Total affected regions By 27F w/o MR</b>	<b>142,151</b>	<b>175,578</b>	<b>132,805</b>	<b>-6.6%</b>	<b>-24.4%</b>
<b>Other regions</b>	<b>92,056</b>	<b>100,277</b>	<b>85,216</b>	<b>-7.4%</b>	<b>-15.0%</b>
<b>Total</b>	<b>447,559</b>	<b>493,355</b>	<b>459,347</b>	<b>2.6%</b>	<b>-6.9%</b>

Source: LyD based on CASEN surveys.

#### b) Qualitative Deficit:

The qualitative deficit is reduced both in the regions affected by the earthquake and those that were not, even if compared to the period prior to the earthquake. Between 2009 and 2013, qualitative requirements dropped 13.1%, and between 2011 and 2013, 15.2%. The tendency is

similar in the regions affected by the earthquake, where this deficit is reduced by 13.5% between 2009 and 2013, and 16.5% between 2011 and 2013.

The fact that qualitative deficit decreases between 2009 and 2013 can seem counterintuitive, especially in the regions affected by the earthquake. However, sometimes, when disasters like the earthquake occur, housing presenting requirements for extension, material or sanitation upgrades, may require another type of health measures, thereby being included in the quantitative deficit. Additionally, extensions or housing upgrading are cheaper and easier to implement. Moreover, housing repair solutions were mainly delivered at the beginning of the reconstruction process.

#### THE QUALITATIVE DEFICIT DECREASES IN THE AFFECTED REGIONS AS IN THE OTHER ONES

Table 3: Evolution of Qualitative Deficit, 2009-2013

Region	2009	2011	2013	Variation 2009-2013	Variation 2011-2013
V. Valparaíso	152,154	157,484	145,283	-4.5%	-7.7%
VI. O'Higgins	85,939	89,453	73,790	-14.1%	-17.5%
VII. Maule	107,179	114,133	96,235	-10.2%	-15.7%
VIII. Biobío	211,389	195,731	167,618	-20.7%	-14.4%
IX. La Araucanía	122,891	121,466	104,734	-14.8%	-13.8%
XIII. Metropolitan	447,848	489,535	387,889	-13.4%	-20.8%
<b>Total affected regions</b>	<b>1,127,400</b>	<b>1,167,802</b>	<b>975,549</b>	<b>-13.5%</b>	<b>-16.5%</b>
<b>Total affected regions By 27F w/o MR</b>	<b>679,552</b>	<b>678,267</b>	<b>587,660</b>	<b>-13.5%</b>	<b>-13.4%</b>
<b>Other regions</b>	<b>308,376</b>	<b>304,238</b>	<b>272,341</b>	<b>-11.7%</b>	<b>-10.5%</b>
<b>Total</b>	<b>1,435,776</b>	<b>1,472,040</b>	<b>1,247,890</b>	<b>-13.1%</b>	<b>-15.2%</b>

Source: Prepared by LyD based on CASEN surveys.

## CONCLUSION

Despite the devastating earthquake of February 27<sup>th</sup>, 2010, our country shows significant progress in reducing the housing needs, mainly explained by the successful reconstruction process following the earthquake. By January 31<sup>st</sup>, 2015, 92.5% of the housing requirements caused by this disaster had been delivered.

However, we observe an important speed reduction in the delivery of the housing solutions. Between 2012 and 2013, almost 5 thousand homes were delivered on a monthly basis; instead, between March 2014 and January 2015, a delivery of 1,083 homes per month is estimated. Both the quantitative and qualitative deficit of the affected regions were significantly reduced. Between 2009 and 2013, the affected regions increased their quantitative deficit by 5.2% and reduced their

qualitative deficit by 13.5%. While between 2011 and 2013, the affected regions reduced their quantitative deficit by 4.8% and the qualitative deficit by 16.5%.

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<sup>i</sup> In order to estimate housing units that could have access to subsidies by August 27<sup>th</sup>, 2010, 285,500 families had registered in the register of damaged people, which did not include tenants and overcrowding in repairable housing units, people having a score in the *Ficha de Protección Social* (FPS) higher than 13,484 points, and repairable housing; damaged people with 3 or more addresses; registered people without FPS; registered people with a second home; drop-ins (*allegados*) and tenants who cannot corroborate their condition.

<sup>ii</sup> The past administration finally allocated 222,418 subsidies, and according to the last MINVU report of January 31<sup>st</sup>, 2015, there are 228,187 subsidies in force, that is, 5,769 more.

<sup>iii</sup> According to the DICTUC report (Center of Scientific and Technological Research of the Pontificia Universidad Católica de Chile), 99.7% of the subsidies have been executed according to the information of the past administration. Moreover, the reconstruction process was internationally recognized by its important progress and quality of the housing solutions. There are studies on the subject, "Housing Recovery in Chile: A Qualitative Mid-program Review" (2013) by Mary Comerio of the University of Berkeley, and "Chile Earthquake 2/27/2010: Stories and Lessons" (2014) by Richard Jungwoo Hong of the University of Pennsylvania. There is also a book of the University of Wharton "Leadership Dispatches: Chile's Extraordinary Comeback from Disaster" (2015) by Michael Useem, Howard Kunreuther and Erwann Michel-Kerjan. And the former Housing Minister, Rodrigo Pérez, was named President of the Council on Catastrophic Risk of the World Economic Forum, between 2012 and 2014.

<sup>iv</sup> It is important to note that housing solutions include repair and building solutions. Repair solutions have a greater execution level than the construction solutions, since their procedure and the type of solutions is less complex. Therefore, there is also a certain effect that in a reconstruction process, less complex solutions are dealt with first, which can positively affect the number of completed housing units.