

2017 ERESEE

2017 UPDATE

OF THE LONG-TERM STRATEGY FOR ENERGY RENOVATION IN THE BUILDING SECTOR IN SPAIN

1. INTRODUCTION	3
1.1. REQUIREMENT IN ARTICLE 4 OF DIRECTIVE 2012/27/EU	3
1.2. EXTERNAL ASSESSMENT OF THE 2014 ERESEE.....	3
1.3. GENERAL APPROACH OF THE 2017 UPDATE	4
2. ANALYSIS OF THE ENERGY CONSUMPTION TREND IN THE BUILDING SECTOR AND RENOVATION TEND	6
2.1. ANALYSIS OF THE ENERGY CONSUMPTION TREND IN THE BUILDING SECTOR 6	
2.2. ANALYSIS OF THE BUILDING RENOVATION TREND IN SPAIN.....	15
3. FOLLOW-UP ON MEASURES IMPLEMENTED TO PROMOTE ENERGY RENOVATION.....	19
3. 1. MEASURES PUT FORWARD BEFORE THE 2014 ERESEE THAT ARE STILL VALID	19
3.2. BALANCE OF FOLLOW-UP ON MEASURES INCLUDED IN THE 2014 ERESEE TO PROMOTE RENOVATION (July 2014-March 2017).....	29
3.3. MEASURES RELATED TO ENERGY EFFICIENCY IN PUBLIC ADMINISTRATION BUILDINGS	43
3.4. OTHER MEASURES NOT INCLUDED IN THE 2014 ERESEE THAT HAVE ALSO BEEN CARRIED OUT BETWEEN 2014 AND 2017	43
4. ANALYSIS OF THE MAIN STRUCTURAL CHALLENGES	47
5. PROPOSED NEW MEASURES AND LINES OF ACTION	64
ANNEXES.....	69
ANNEX 1. SUMMARY OF DETAILS ON SPAIN FROM THE JRC ASSESSMENT REPORT (2016) ON THE 2014 ERESEE	69
ANNEX 2. GLOSSARY.....	71

1. INTRODUCTION

1.1. REQUIREMENT IN ARTICLE 4 OF DIRECTIVE 2012/27/EU.

Article 4 of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, states that: *‘Member States shall establish a long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private’*, with the following content:

- ‘(a) an overview of the national building stock based, as appropriate, on statistical sampling;*
- b) identification of cost-effective approaches to renovations relevant to the building type and climatic zone;*
- c) policies and measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations;*
- d) a forward-looking perspective to guide investment decisions of individuals, the construction industry and financial institutions;*
- e) an evidence-based estimate of expected energy savings and wider benefits.’*

Spain delivered this strategy in 2014, with the title *‘Long-term strategy for energy renovation in the building sector in Spain pursuant to Article 4 of Directive 2012/27/EU’*¹ (hereinafter, 2014 ERESEE).

According to Article 4, updates are required every three years, i.e. in 2017, which must be forwarded to the Commission in the framework of the National Energy Efficiency Action Plans (NEEAP), coinciding with the review of the 2014-2020 NEEAP also done in 2017.

1.2. EXTERNAL ASSESSMENT OF THE 2014 ERESEE.

The European Commission’s DG Energy commissioned a Synthesis Report on the assessment of Member States’ building renovation strategies from the Joint Research Centre (JRC), published in 2016² Although this study is not binding in terms of the update to the strategies that must take place in 2017 – since it is an independent assessment of the requirements and compliance with Article 4 of Directive 2012/27/EU – it seems advisable to take it into account as a starting point for this update, as also indicated by the 2016 Buildings Performance Institute Europe (BPIE) report³.

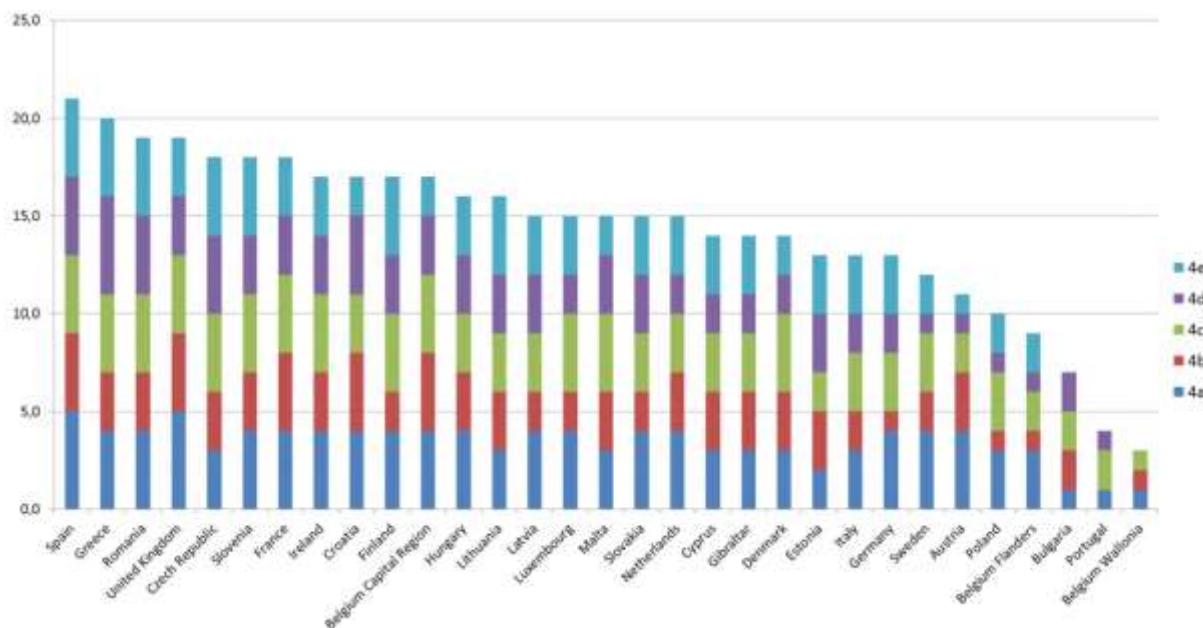
The JRC report analyses the 31 strategies presented by the 28 Member States, assessing their compliance with the requirements in Article 4 of Directive 2012/27/EU. The report assesses six national strategies as ‘not compliant’ with these requirements, two as ‘non fully compliant’, 13 as ‘almost fully compliant’ and just 10 as ‘fully compliant’.

¹ Available at: http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/PLANES/ELPRESEESP/

² Castellazzi L., Zangheri P., Paci D. (2016). *‘Synthesis Report on the assessment of Member States’ Building Renovation Strategies’*, EUR 27722 EN; doi 10.1790/052530 (2016).
Available at: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/synthesis-report-assessment-member-states-building-renovation-strategies>

³ BPIE (2016). *‘Building Renovation Strategies under the spotlight. Delivering the Energy Efficiency Directive Article 4 – Survey-Based Recommendations’*. ISBN: 9789491143168.
Available at: <http://bpie.eu/publication/survey-article-4-eed/>

Figure 1: Comparison of the scores from the assessments of the 31 national strategies from the 28 Member States. Scoring as per paragraphs (a), (b), (c), (d) and (e) of Article 4 of Directive 2012/27/EU.



Source: Castellazzi L., Zangheri P., Paci D. (2016), p. 14

Spain’s 2014 ERESEE is not only among the 10 ‘fully compliant’ strategies, it also scores highest out of all 31 strategies assessed, with a 21 out of maximum 25 points⁴.

The JRC report also reviews and evaluates the five points required by Article 4, one by one. Spain’s strategy received a score of 4 out of 5 on sub-paragraphs (b), (c), (d) and (e) and the maximum 5 points⁵ on sub-paragraph (a), corresponding to the segmentation and characterisation of the building stock. The report (p. 15) indicates that, in general, the sub-paragraph misinterpreted most commonly by the Member States was (d), while Spain was not only one of just four countries that interpreted it correctly (by presenting different scenarios and measures to implement them), it was even the example highlighted by the report as ‘best practice’ regarding this sub-paragraph, together with Greece.

Lastly, the JRC report also contains a final part with a detailed evaluation and comments on each national strategy; the part corresponding to Spain is attached to this document as Annex I (pp. 101-102 of the report).

1.3. GENERAL APPROACH OF THE 2017 UPDATE.

Pursuant to Article 4 of Directive 2012/27/EU, the 2014 ERESEE was done using the segmentation of the Spanish housing stock (based on the data in the 2011 Population and Housing Census), as well as a segmentation of the energy consumption in the building sector based, on the one hand, on the

⁴ A similar assessment had already been given in the national strategy evaluation reports done by the Buildings Performance Institute Europe (BPIE) in 2014 and 2015, according to which the Spanish strategy was also in the top four out of the 10 evaluated by this study, scoring a 72 out of 100.

References:

BPIE (November 2014) ‘Renovation Strategies of selected EU countries. A status report on compliance with Article 4 of the Energy Efficiency Directive’. ISBN: 9789491143113. Available at: <http://bpie.eu/publication/renovation-strategies-of-selected-eu-countries/>

BPIE (2015) ‘Addendum Renovation Strategies of selected EU countries. A status report on compliance with Article 4 of the Energy Efficiency Directive’. Available at: <http://bpie.eu/news/eceee-summer-study/>

⁵ Only two other Member States have a sub-paragraph that scored a 5: the United Kingdom, on sub-paragraph (a) as well, and Greece, on (d).

general data from the Institute for Energy Diversification and Saving [Instituto para la Diversificación y Ahorro de la Energía – IDAE] for the year 2010 (*Annual Energy Consumption Report. Final Energy Consumption: Residential Sector/Households*), and on the other, in the SECH-SPAHOUSEC Project⁶, published in 2011, but also with data from 2010.

As the Population and Housing Census is carried out in Spain every 10 years (there are no plans to carry out a new census until 2021), and since there are no updated results from the SECH-SPAHOUSEC Project either, as at the start of 2017 there is no new statistical information that will make it possible to update either the segmentation of the housing stock or the segmentation of the energy consumption in the residential sector.

Moreover, and as will be seen further on, the statistical data at national level regarding the energy consumption trend in the residential sector indicate a significant decrease in this consumption in the last period for which data are available, corresponding to the years 2010-2015, on track for the targets established by the 2014 ERESEE. Therefore, at the moment it does not seem necessary to reconsider the targets or the strategic scenarios proposed by the ERESEE in 2014.

In light of the above, this 2017 update of the ERESEE is seen, fundamentally, as an analysis of the impact of the measures established to promote energy efficiency in the building sector in Spain, both with regard to those approved before 2014 and that are still valid; as well as those that have been adopted between 2014 and 2017; and, in particular, of the follow-up on the specific measures the ERESEE put forward in 2014 as necessary to promote the strategic scenarios set out in that report, examining their development and analysing whether new measures, a bigger push or a reorientation of existing measures are necessary. Thus, a quantitative update is not considered at the moment as there is no new relevant statistical information. The update is instead qualitative, focused on analysing the public policies and policies on the instruments used in Spain to achieve the fundamental targets in the Strategy, which are to promote energy efficiency in the existing building stock, as well as promote investments in building renovation to improve the quality of this stock.

Nevertheless, once new statistical data are available – in particular the detailed results on consumption in the residential sector from the new SPAHOUSEC project, which are expected by the end of 2017 – then it will be time (regardless of complying with the three-yearly update requirement set out in Article 4 of the Directive) to consider a quantitative update of the 2014 ERESEE, incorporating these data and the reflections in this document.

This text begins by analysing the trend subsequent to the 2014 ERESEE in energy consumption in the building sector and in the main figures regarding building renovation behaviour in Spain.

Next, there is follow-up on the measures to promote energy renovation that have been implemented, including both follow-up on the measures proposed before the 2014 ERESEE that are still in force, as well as those established in the 2014 ERESEE itself and others that have been implemented additionally.

An analysis is included of the outstanding main challenges, with a view to identifying any structural barriers, so as to take them into account in designing new measures.

Finally, the proposals for work for the future are outlined based on the conclusions that have been brought to light over the course of the document.

⁶ The SECH project (*Development of Detailed Statistics on Energy Consumption in Households*) was a Eurostat initiative between Member States that arose in 2009 within Eurostat's Statistics Working Group. Spain, represented by the Institute for Energy Diversification and Saving (IDAE), joined Eurostat's project through the project '*SPAHOUSEC (Analysis of energy consumption in the Household sector in Spain)*', which is the Spanish version of the SECH project.

The final report was published in July 2011 with the title '*SECH-SPAHOUSEC PROJECT. Analyses of the energy consumption of the household sector in Spain. Final report.*' http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_Informe_SPAHOUSEC_ACC_f68291a3.pdf

2. ANALYSIS OF THE ENERGY CONSUMPTION TREND IN THE BUILDING SECTOR AND RENOVATION TREND.

The availability timetable for statistical data on energy consumption in Spain does not allow for an exact analysis of the period 2014-2017 that could be used to analyse the impact of the ERESEE and the repercussion of the measures set out therein on the trend for this consumption. This is because the consumption data are presented with a certain time lag, meaning at the start of 2017, both the data series from the Final Energy Balance, as well as the series providing data disaggregated by uses regarding consumption in the building sector only allow for going up to the year 2015. Thus, it is only possible to analyse the trend between the year 2010 (date used as reference to draft the ERESEE in 2014, as it was the latest available at that time) and the latest data corresponding to 2015, i.e., just one year after the Strategy was approved. Therefore, it is not going to be possible to draw direct conclusions about the impact on consumption of the ERESEE and the measures set out therein.

In the case of the statistical data on renovation, there is much less time lag from when the data are published, which allows for having a historical series that stretches up to December 2016, thus making it possible to cover the years 2014, 2015 and 2016 in a close and complete way.

Taking these clarifications into account, below is the analysis of the statistical data available on the energy consumption trend in the building sector and the number of renovated buildings and dwellings.

2.1. ANALYSIS OF THE ENERGY CONSUMPTION TREND IN THE BUILDING SECTOR.

The building sector in Spain has an approximate weight of 30 % in the final energy consumption (31.03 % in 2015), spread between 18.5 % in the residential building sector and 12.5 % in the non-residential sector made up of trade, services and public administrations. It has even more significance as a consumer of certain energy sources: as can be seen in the table below, in Spain, the building sector accounts for 98 % of thermal solar energy consumption, 84 % of LPG consumption, almost 79 % of geothermal energy, 65 % of biomass, 61 % of electricity and 42 % of the total gaseous fuels. The building sector is where renewable energies are most well established (accounting for 54.86 % of total national consumption); however, it has very little weight (barely 10 %) in that 50 % of total national consumption represented by petroleum products as a whole.

Table 1. Weight of the building sector in final energy consumption. (2015)

(ktoe)	COAL TOTAL	LPG	Diesel	PETROLEUM PRODUCTS TOTAL	GASES TOTAL	Solar thermal	Geotherm al	Biomass	RENEWABLE ENERGY SOURCES TOTAL	ELECTRIC POWER TOTAL	TOTAL
SPAIN TOTAL	1 515	1 457	27 101	40 323	13 218	277	19	3 925	5 290	19 955	80 303
RESIDENTIAL BUILDING	89	1 045	1 941	3 001	3 017	221	11	2 489	2 749	6 025	14 881
TERTIARY BUILDING	-	181	842	1 052	2 640	52	4	80	153	6 192	10 039
BUILDING TOTAL	89	1 226	2 783	4 053	5 657	273	15	2 569	2 902	12 217	24 920
% BUILDING TOTAL	5.87	84.15	10.27	10.05	42.80	98.56	78.95	65.45	54.86	61.22	31.03

Source: Prepared by the authors based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

It is possible to analyse the consumption trend between 2010 and 2015 using the Final Energy Balance series, which is available for 1990 to 2015. The tables below show the final energy consumption trend in all sectors and in the residential sector, disaggregating the sector corresponding to residential building and non-residential tertiary building (trade, services and public administrations).

Table 2. Total Final Energy Consumption 2011-2015 (ktoe).

(ktoe)	SECTORS TOTAL	RESIDENTIAL BUILDING	TERTIARY BUILDING		BUILDING TOTAL
2 010	89 007	16 924	9 801		26 725
2 011	86 504	15 631	10 206		25 837
2 012	83 014	15 529	10 044		25 573
2 013	80 468	14 886	9 618		24 504
2 014	79 050	14 713	8 848		23 561
2 015	80 303	14 881	10 039		24 920

Source: Prepared by the authors based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

Table 3. Year-on-year absolute change in Final Energy Consumption (ktoe).

(ktoe)	SECTOR S TOTAL	RESIDENTIAL BUILDING	TERTIARY BUILDING	BUILDIN G TOTAL
2010-2011	-2 503	-1 293	405	-888
2011-2012	-3 490	-102	-162	-264
2012-2013	-2 546	-643	-426	-1 069
2013-2014	-1 418	-173	-770	-943
Cum. 2010-2014	-9 957	-2 211	-953	-3 164
2014-2015	1 253	168	1 191	1 359
Cum. 2010-2015	-8 704	-2 043	238	-1 805

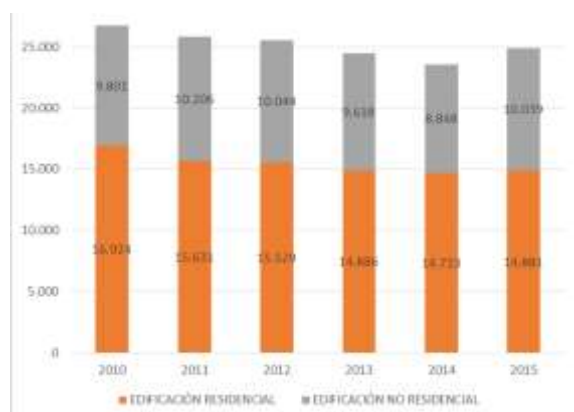
Source: Prepared by the authors based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

As can be seen, between the years 2010 and 2014, there was a notable decrease in final energy in Spain, both in all the sectors as a whole (-9 957 ktoe) as well as in the building sector (-3 164 ktoe⁷). However, this trend changes starting in 2015, and the year-on-year consumption increases by 1 253 ktoe with regard to 2014. One possible hypothesis explaining this trend could be the impact of the financial crisis on consumption, justifying the decline experienced between 2010 and 2014 as well as the upturn in consumption based on the consolidation of economic recovery, clearly shown from 2015. In that regard, the apparent change in trend experienced in that year is very significant, and it is especially pronounced in the non-residential building sector, which went from a year-on-year change of -953 ktoe in 2013/2014 to a year-on-year increase in consumption of 1 191 ktoe in the year 2015 alone. Although it is difficult to establish explanatory hypotheses in this respect, and even more so taking into account the methodological change that took place between 2014 and 2015⁸, it is possible that this behaviour is also a reflection of the economic recovery in the tertiary sector. With regard to the residential sector, the behaviour in 2015 also indicates a growth in consumption that reverses the series of uninterrupted decrease experienced in the four previous years, although with a much lower volume (+168 ktoe) than in the tertiary sector.

⁷ This accounts for a weight of 31 % in the decrease in all sectors, practically identical to the decrease in the building sector, which indicates parallel behaviour.

⁸ As will be seen below in point 2.1.2, in talking about the non-residential sector, this increase is especially focused on gas consumption, and it also coincides with a decrease in the amounts that marketing companies were reporting up to now as 'Not specified'. Therefore, in principle in 2015 consumption would be reported from the services sector that was not identified before.

Figure 2. Final Energy Consumption Trend in the building sector (residential and non-residential) 2011-2015.



Source: Prepared by the authors based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

2.1.1. ENERGY CONSUMPTION TREND IN THE RESIDENTIAL SECTOR.

As mentioned above, between the years 2010 and 2014, the final energy consumption of the residential sector shrank significantly, going from 16 924 ktoe to 14 713 ktoe, a total decrease of 2 210.8 ktoe (-13.1 %), although during 2015 – the last year with data available – there was a slight increase in this consumption, growing to 14 881 ktoe (+168 ktoe). Thus, there was a cumulative decrease of 2 043 ktoe over the entire period 2010-2015, a 12.07 % decrease on the initial consumption figure.

The series prepared by IDAE for Eurostat (*‘Questionnaire for statistics on energy consumption in households’*) makes it possible to analyse the consumption trend by energy source and disaggregated uses in the residential sector.

By energy source, between 2010 and 2015 the consumption of all sources fell in the residential sector, with a net result of -2 043 ktoe, with the sole significant exception of diesel. Except for this source, all the others also showed a constant downward trend even up to the year 2015, despite the abovementioned increase in consumption experienced between 2014 and 2015. The fuel for which consumption fell most in absolute terms was gas, which dropped 1 206.9 ktoe (-28.4 % compared to 2010), followed by electricity, which dropped 537.6 ktoe (-8.2 %) and LPG, for which consumption dropped 332.3 ktoe (-24 %). Diesel, consumption of which dropped from 2010 to 2012, then grew from 2012 until 2015, so the total 2010-2015 balance represented a net increase of 42.4 ktoe (+2.3 %), although the increase of almost 300 ktoe in the last year alone (2014-2015) is significant. Meanwhile, the other fuels, which represent a much lower proportion of the total consumption, showed a very positive trend from the environmental perspective: coal consumption dropped 48.7 % between 2010 and 2015 (-84.2 ktoe in total), while the use of renewable energy sources was increasing, especially solar power, which increased 42.5 % (+61 ktoe), and biomass, to a lesser extent (+2.2 %, equivalent to 53.1 ktoe), although both had their growth paths interrupted in 2014, with their consumption decreasing from that point onwards.

With regard to distribution by use, all of them experienced a decrease in consumption between 2010 and 2015, with a total result of -2 004.4 ktoe⁹. The bulk of this decrease was in almost equal parts recorded in heating (-686.2 ktoe; -9.5 % compared to 2010) and to DHW (-642.4 ktoe; -19.6 % compared to 2010), followed by the reduction in electricity consumption for lighting and electrical household appliances (-411.9 ktoe; -8.5 %), energy for cooking (-250.7 ktoe; -18.4 %) and cooling (-13.2 ktoe; -8.6 %).

⁹ For methodological reasons, there is a slight difference in the totals from the Final Energy Balance and those from IDAE’s series for Eurostat, *‘Questionnaire for statistics on energy consumption in households’*.

Since overall consumption in the residential sector fell by 11.9 % in the period analysed, the different relative trend in each use has meant slight readjustments to the relative weight of each of these out of the total, so the proportional weight of heating (from 42.9 % to 44 %) and electricity for lighting and electrical household appliances (from 28.7 % to 29.8 %) has gone up slightly, to the slight detriment of the proportional weight of DHW and energy for cooking. Finally, it is also important to bear in mind that, despite the change in trend in 2014 and the subsequent upturn in 2015, consumption has continued to drop in all uses, except for heating, where consumption increased by 236.8 ktoe between 2014 and 2015.

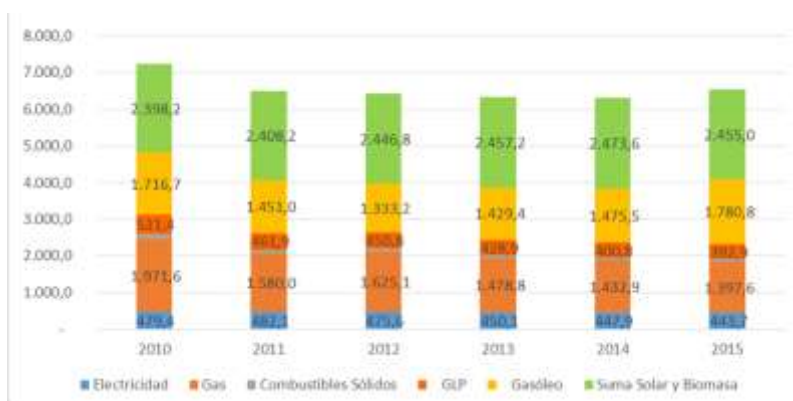
Table 4. 2010-2015 trend in consumption by uses in the residential building sector in Spain (ktoe).

	2010	2011	2012	2013	2014	2015
HEATING	7 228.6	6 482.8	6 421.0	6 321.8	6 305.6	6 542.4
COOLING	153.8	152.8	150.7	142.7	142.0	140.6
DHW	3 272.9	2 835.8	2 860.0	2 692.3	2 627.7	2 630.5
COOKING	1 363.4	1 240.3	1 236.4	1 157.7	1 130.6	1 112.7
LIGHT+APPLIANCES	4 842.8	4 813.5	4 749.1	4 494.3	4 472.2	4 430.8

Source: Prepared by the Ministry of Public Works based on IDAE data for Eurostat (*Questionnaire for statistics on energy consumption in households*).

Going into detail for each use, and starting with heating, the use with the most weight, it should be noted that it fell by 686.2 ktoe between 2010 and 2015, with the largest part of this decline corresponding to gas (574.1 ktoe, -29.1 % compared to 2010), to LPG (which fell by 128.5 ktoe; -24.6 %) and to coal, which was the fuel that fell most in percentage terms (68.9 ktoe; -48.8 %). The consumption of electricity for heating also decreased, although at a slower pace (35.6 ktoe; -7.4 %). Biomass remained the fuel consumed most for heating, accounting for nearly 40 % of the total, and in the period 2010-2015 it recorded slight growth of 2.1 %. Although solar energy still has very little weight, it experienced the greatest relative increase (54 %), going from consumption of 10.6 ktoe to 16.4 ktoe. Finally, the fuel with the most absolute growth was diesel (with a net increase of 64.1 ktoe/3.7 % between 2010 and 2015). It is important to point out that between 2010 and 2014, although presenting a downward trend approximately in parallel to the other fuels, it changed direction starting in 2014, and already by 2015 it had experienced an increase of 305.3 ktoe (+20.7 % in one year), so this year-on-year increase in diesel is what in itself explains the upturn in total heating consumption between 2014 and 2015, since the other fuels have steadily declined without interruption since 2010.

Figure 3. 2010-2015 heating consumption trend in the residential building sector in Spain (ktoe).



Source: Prepared by the Ministry of Public Works based on IDAE data for Eurostat (*Questionnaire for statistics on energy consumption in households*).

With a view to a future quantitative review of the Strategy, special attention would have to be paid to the topic of biomass, since, as has already been mentioned – according to the official data available – today it accounts for around 40 % of total energy consumption in domestic heating. Given that it is a renewable energy source with a neutral final balance in terms of CO₂ emissions, it should

merit close attention with regard to other fuels where a decrease in consumption is a priority to achieve the national emissions targets. Another aspect to be analysed is the potential increase that may occur in the consumption of other fuels if the households currently consuming biomass evolve or swap to using other fuels, and therefore this issue will have to be considered as well in the intervention menus that are proposed and measures established in that regard.

In relation to the consumption of electricity for cooling, it still has a very small relative weight out of total residential consumption, as it barely hovers around 1 % of this consumption. It also had a downward trend between 2010 and 2015, decreasing by 8.6 % (-13.2 net ktoe over the entire period).

Figure 4. 2010-2015 electricity consumption trend for cooling in the residential building sector in Spain (ktoe).



In relation to the topic of cooling and its low weight in households' total energy consumption, it is worth looking at the data from the recent study published by IDAE about the heat pump stock in Spain¹⁰, according to which there are 11.3 million heat pump units in Spain: 8.5 million installed in homes¹¹, another 2.3 million in the trade/services sector and 1 million in industry (IDAE, op. cit, p. 20), with around 80 % of them located in the Mediterranean area. According to the data from the survey carried out for this study, of the 11.3 million units, 5.4 million (48 %) are only used for cooling, although they also have a heating function.

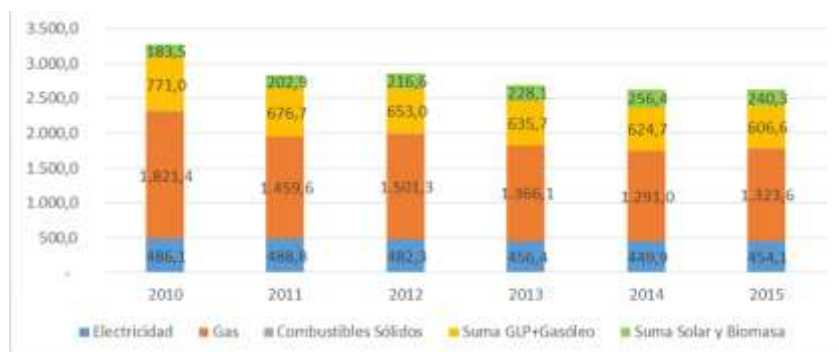
Given that the total installed power in heat pumps is estimated at 77 673 MWt (IDAE, op. cit, p. 24), there seems to be a clear divergence between the large size and power of the existing heat pump stock and the meagre impact of electricity consumption for cooling on the total energy consumed in homes. Therefore, and looking to the future, the potential increase in consumption will have to be taken into account that could occur if the factors (culture, adaptive thermal comfort, etc.) that could be explaining this divergence changed, examining preventative measures in this regard in future versions of the Strategy.

Energy consumption for DHW is the use that has experienced the greatest relative decrease (-19.6 %) out of all uses, which in absolute terms means a drop in consumption of 642.4 ktoe in 2015 with regard to 2010, a very similar volume to the overall decrease seen in heating. By fuels and as would also occur in heating, the greatest absolute decrease has been in gas (-497.7 ktoe; -27.3 %), which, in spite of this, continues to be the fuel consumed most (approximately half of the total of the use for DHW), followed by LPG (-142.7 ktoe; -23.1 %). However, unlike the increase that has taken place in heating, the consumption of diesel for DHW has also fallen (-21.7 ktoe; -14.1 %), even between 2014 and 2015, although there had previously – between 2013 and 2014 – been an increase in this consumption. Solid gases had the greatest relative decrease: -46.9 % (-5.2 ktoe). Both electricity consumption for DHW as well as consumption of biomass experienced changes on a smaller scale: electricity decreased by 6.6 % (-31.9 ktoe) while biomass rose by 3 % (+1.5 ktoe). Finally, it is worth highlighting the sharp increase in the consumption of solar energy for DHW: +41.6 % (+55.3 ktoe in absolute terms), which has caused its relative weight to increase from 4 % to 7 % in the overall energy consumed for DHW.

¹⁰ IDAE 'Estudios IDAE 001: Parque de Bombas de Calor en España. Síntesis del Estudio' ['IDAE Studies 001: Heat Pump Stock in Spain. Overview of the Study'].

¹¹ According to the study data, in the universe of 18 million homes, nearly 5.8 million (i.e. approximately 32 %) had a heat pump (IDAE, op. cit, p. 20).

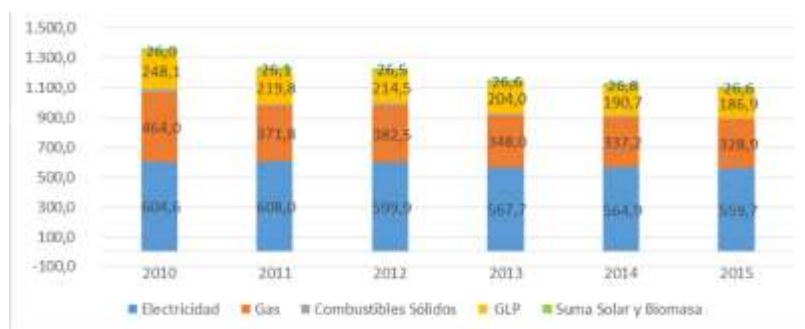
Figure 5. 2010-2015 DHW consumption trend in the residential building sector in Spain (ktoe).



Source: Prepared by the Ministry of Public Works based on IDAE data for Eurostat (Questionnaire for statistics on energy consumption in households).

In terms of the energy consumed for cooking, which accounts for approximately 8 % of the total in the residential sector, it decreased overall by 250.7 ktoe (-18.4 %) between 2010 and 2015, with the more prominent drops corresponding in absolute terms to gas (-135 ktoe; -29.1 %) and LPG (-61.1 %/-24.6 %), followed by electricity (-44.9 ktoe; -7.4 %). As in the other uses, coal dropped by 48.8 % (-10.1 ktoe) The consumption of biomass for cooking remained almost constant, although it is not very significant (around 26 ktoe).

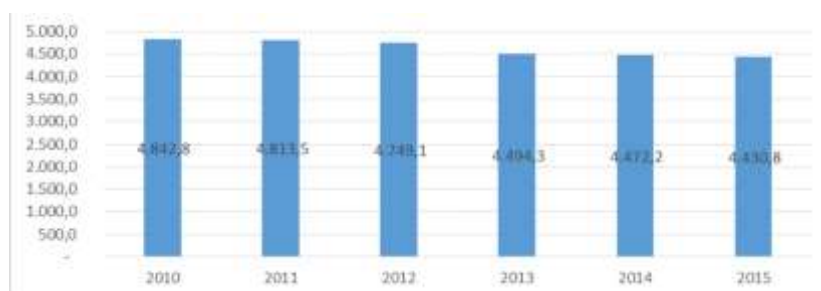
Figure 6. 2010-2015 cooking consumption trend in the residential building sector in Spain (ktoe).



Source: Prepared by the Ministry of Public Works based on IDAE data for Eurostat (Questionnaire for statistics on energy consumption in households).

Finally, the consumption of electricity for lighting and electrical household appliances, which accounts for nearly 30 % of total residential consumption and approximately 73.5 % of the total electricity consumed in households (61.8 % on electrical household appliances and 11.7 % on lighting), fell – in a constant and uninterrupted way – by 8.5 % between 2010 and 2015, which in absolute terms corresponds to a net decrease of 411.9 ktoe. According to the IDAE data (SPAHOUSEC, 2010), the highest-consuming electrical household appliances are refrigerators (18.9 % of all electrical consumption), followed by TVs (7.5 %), washing machines (7.3 %), devices in standby mode (6.6 %) and ovens (5.1 %).

Figure 7. 2010-2015 electricity consumption trend for lighting and electrical household appliances in the residential building sector in Spain (ktoe).



Source: Prepared by the Ministry of Public Works based on IDAE data for Eurostat (Questionnaire for statistics on energy consumption in households).

These general data can be put into the context of the domestic economies of Spanish households by looking at the Household Budget Survey and Living Conditions Survey, both available in statistical series covering the years 2006 to 2015, which therefore make it possible to analyse events before and after the onset of the financial crisis.

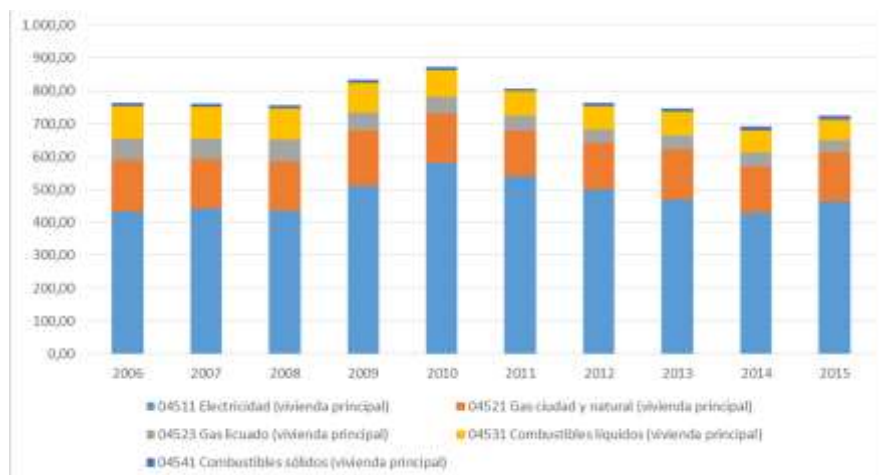
The Household Budget Survey shows that from 2006 until around 2010 there was a parallel increase in the amounts of both energy and fuel consumed per household, as well as the average spending dedicated to heading 045, corresponding to electricity, gas and other fuels (includes all uses, not just heating but also DHW, cooking, electricity on electrical household appliances and lighting, etc.).

However, from 2009 or 2010 to 2014, there is a constant decrease in both indicators: thus, for example, the average annual consumption per household of electricity fell by 40.5 % between 2010 and 2014 (going from 3 953.2 to 2 686.8 kWh/year), while gas fell 24.5 % between 2010 and 2014 (from 224.1 to 199.6 m³/year), which, in terms of average spending per household, corresponds for example to a 35.1 %¹² decrease in average spending on electricity between 2010 and 2014 (from €581.04 to €428.90). The annual average spending per household on the abovementioned heading, which in 2006 stood at €763.30, continued rising until 2010, reaching €872.20 in 2010, to then drop to €723.50 in 2014.

The decrease in average amounts consumed per household on gas and solid fuels was interrupted between 2014 and 2015, with these amounts experiencing an upturn, and the fall in electricity consumption slowed down as well (while the constant trend since 2006 of reducing liquefied gas consumption continued, however). In terms of average total spending per household under heading 045, the increase in spending between 2014 and 2015 is confirmed, due to increasing by 4.5 % from €692.10 to €723.50.

¹² The reduction is less pronounced due to the rise in electricity prices during the same period.

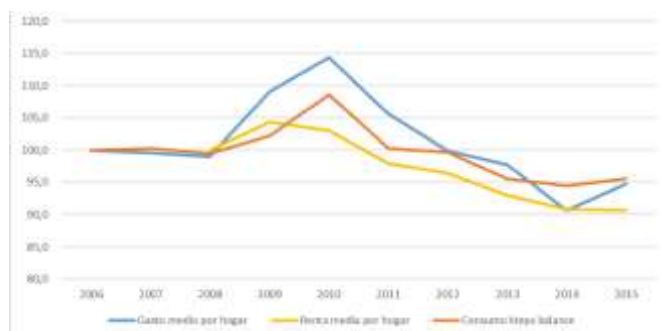
Figure 8. 2006-2015 average spending trend (in €) by household under heading 045 Electricity, gas and other fuels by household type (only main dwellings).



Source: Prepared by the Ministry of Public Works based on the Household Budget Survey (Spanish National Statistical Institute – INE).

These data on average consumption trend by household are consistent with the trend in aggregate consumption in the Final Energy Balance analysed above. Since the data show growth, both of energy consumption as well as of average spending per household, until approximately 2010, to then drop until 2014 and rebound again between 2014 and 2015, in a way that is parallel – although with a certain delay or time lag – to the trend both in the macroeconomic figures as well as in the average disposable income per household¹³, these data could indicate that households might have responded to the financial crisis by reducing their energy consumption, with the decrease of its percentage weight in average spending per household, prioritising other basic family needs. Then from 2014 they would be recovering this consumption, once economic growth and employment were already clearly consolidated.

Figure 9. Trend with base value of 100 in 2006 of Average spending per household under heading 045, average income per household and total final energy consumption in households.



Sources: Prepared by the Ministry of Public Works based on average spending per household under heading 045 (Household Budget Survey, INE), average income per household (Household Budget Survey, INE) and total final energy consumption in households (Final Energy Balance, IDAE-MINETAD).

The increase in the number of households that cannot afford to keep their home at an appropriate temperature – which, according to the Living Conditions Survey, went from 6.2 % in 2008 to 11.1 % in

¹³ The Living Conditions Survey shows that the average annual net income per household fell by more than 13 % from 2009 to 2015 (from €30 045 to €26 092), at the same time as the at-risk-of-poverty-or-social-exclusion rate (ARPE indicator) increased from 23.8 % in 2008 to 28.6 % in 2015. However, both indicators also show signs of recovery since 2014: the decrease in average income has slowed down considerably, while the at-risk-of-poverty rate improved between 2014 and 2015.

2014¹⁴ t – also points to the fact that this reduction in energy and fuel consumption by Spanish households has meant sacrificing comfort conditions in certain households in order to save on energy bills.

In conclusion, the abovementioned reduction in consumption that has been seen in recent years may be caused by several factors, including the effect of the actions implemented to improve energy efficiency and the reduction in consumption arising from the past period of economic decline, an effect that may be hiding a containment of consumption through sacrificing thermal comfort conditions. Therefore, the future consumption trend may be conditioned by opposing factors such as continued improvement in the energy efficiency of buildings and, on the other hand, a potential expansion of consumption when the economic situation of households allows for having resources to be able to recover comfort conditions.

2.1.2. ENERGY CONSUMPTION TREND IN THE NON-RESIDENTIAL (TERTIARY) SECTOR.

As was mentioned above and can be seen in Table 2, according to the Final Energy Balance data (1990-2015) from IDAE-MINETAD, during the period 2010-2014 consumption in the tertiary or non-residential building sector (corresponding to the statistical series ‘Trade, Services and Public Administrations’) fell by 953 ktoe, to rebound in 2015, with an increase in consumption of 1 191 ktoe in just one year. Unlike what happened in the residential building sector, where despite the slight increase in 2015 the total balance for 2010-2015 still represented a net reduction in consumption with regard to 2010, in the tertiary sector the global balance for 2010-2015 shows a growth in consumption of 238 ktoe. Nevertheless, the data from 2015 should be treated with caution, as they coincide with a methodological change mentioned above¹⁵, justifying that significant increase in gas consumption and explains the entire year-on-year increase between 2014 and 2015. Therefore, it is not possible to draw a decisive conclusion on the year-on-year trend in the final year.

Table 5. Summary of final energy consumption 2010-2015 by energy sources. Tertiary sector (ktoe).

(ktoe)	TOTAL PETROLEUM PRODUCTS	GASES TOTAL	RENEWABLES TOTAL	ELECTRICITY TOTAL	TOTAL
2010	1 422	1 064	99	7 215	9 801
2011	1 355	1 755	104	6 992	10 206
2012	1 414	1 617	114	6 898	10 044
2013	1 490	1 497	132	6 499	9 618
2014	1 208	1 450	143	6 047	8 848
2015	1 052	2 640	153	6 192	10 039

Source: Prepared by the authors based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

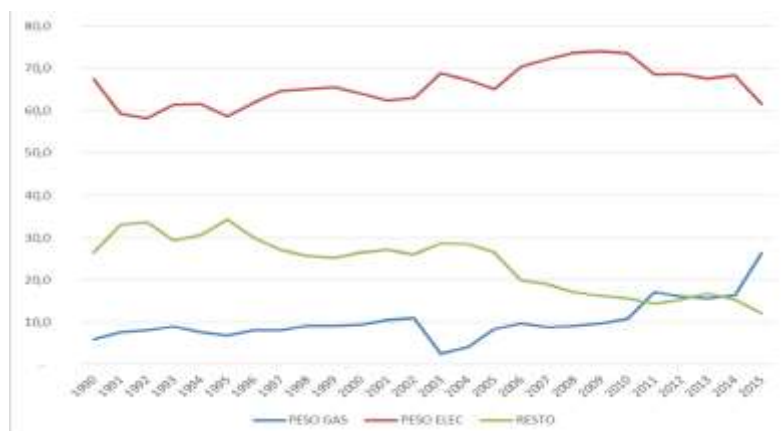
The Final Energy Balance series also makes it possible to break down consumption according to the various energy sources. Given the methodological change in 2014, which affects the gas data, what is most significant is to look at the trend in the historical series available since 1990, which illustrates long-term trends.

This long-term series makes it possible to see that in the tertiary sector there has been a redistribution of consumption since the 1990s, when electricity accounted for approximately 60 % of the total, petroleum products (diesel and LPG) 30 % and gas somewhat less than 10 %. This redistribution took place as follows: the weight of electricity increased to around 70 %, at the same time as diesel and LPG progressively lost weight (until standing around 15 %), and, in parallel, gas consumption increased up to approaching or exceeding its weight relative to the weight of the petroleum products.

¹⁴ The 2015 data also confirms the improvement, as this percentage dropped to 10.7 %.

¹⁵ See footnote 8.

Figure 10. 1990-2015 trend in the proportional weight of gas, electricity and the other energy sources in energy consumption in the tertiary building sector (%).



Source: Prepared by the Ministry of Public Works based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

In absolute terms, and focusing on the period 2010-2014, in order to prevent the abovementioned methodological change in 2015 from distorting the analysis, of the total balance of -953 ktoe in this period, electricity had the greatest decrease (-1 168 ktoe; -16.2 %), followed by petroleum products (which decreased by 214 ktoe; -15 %), at the same time as gas consumption increased by 36.3 % (+386 ktoe) and renewables by 44.4 % (+44 ktoe).

The IDAE series also makes it possible to compare the analysis disaggregated by branches and energy sources, and their trend between 2010 and 2014. A summary of these tables is included below:

Table 6: Energy consumption (ktoe) of the services sector in Spain (2014 and 2010). Disaggregation by branches and energy sources. Not including non-energy uses.

2010	Petroleum Products	Gases (*)	Electric Power	Total Renewables	TOTAL
Offices	501.4	230.8	2 431.4	74.9	3 238.6
Hospitals	127.1	98.8	393.7	1.0	620.6
Trade	370.8	494.4	2 435.2	13.4	3 313.8
Restaurants and Accommodation	69.5	52.9	638.2	3.0	763.7
Education	205.9	72.2	385.9	4.1	668.1
Other Services	147.5	115.2	930.3	2.6	1 195.7
SERVICE CONSUMPTION TOTAL	1 422.3	1 064.4	7 214.7	99.1	9 800.5

2014	Petroleum Products	Gases (*)	Electric Power	Total Renewables	TOTAL
Offices	411.5	310.3	2 047.8	39.5	2 809.0
Hospitals	109.1	141.1	352.6	5.5	608.2
Trade	307.4	686.8	2 066.0	3.8	3 064.0
Restaurants and Accommodation	93.2	75.8	510.1	18.8	697.9
Education	178.5	95.1	320.3	5.5	599.4
Other Services	108.1	141.2	749.8	67.5	1 066.6
SERVICE CONSUMPTION TOTAL	1 207.8	1 450.2	6 046.6	143.0	8 847.6

(*) 99.9 % of gas consumption is due to natural gas

Source: Prepared by the Ministry of Public Works based on the Final Energy Balance series (1990-2015). IDAE-MINETAD.

As can be seen, in 2014, the distribution of consumption between branches of activity is distributed approximately into one-third in offices (31.7 %), one-third in trade (34.6 %) and the final third between hospitals (6.9 %), restaurants and accommodation (7.9 %), education (6.8 %) and other services (12.1 %). Furthermore, this distribution is fairly stable and has not changed significantly between 2010 and 2014.

The distribution of the different energy sources into each branch in 2014 indicates that the breakdown of petroleum product consumption is 34.1 % in offices, 25.5 % in commercial buildings and 14.8 % in educational buildings. Trade particularly stands out in gas consumption, where it

consumes nearly half of the all the gas in the non-residential building sector, followed by offices, which consume 21.4 %. While the distribution of electricity consumption is very stable over the years and practically parallel to the distribution in thirds of the total consumption mentioned above, renewables have much more differentiated patterns that are not as well defined over time (in 2010, 75.6 % corresponded to offices, whose relative weight dropped to 27.6 % in 2014, the year in which 47.2 % of renewable consumption went to the other services branch).

If every branch is now analysed individually, it can be seen that trade, the branch with the highest consumption (3 064 ktoe in 2014), fell by 249.8 ktoe in the period analysed 2010-2015, a decrease that was especially pronounced in electricity (-369.1 ktoe), and to a lesser extent in petroleum products (-63.4 ktoe), at the same time as gas use grew by 192.4 ktoe.

Offices, which are the second biggest branch in terms of highest consumption (2 809 ktoe), were the branch with the biggest decrease in the period analysed: -429 ktoe, which is nearly half the total by which consumption in the non-residential building sector as a whole fell between 2010 and 2014. Once again, this increased reduction corresponds to electricity consumption (-383.7 ktoe), and, to a lesser extent, to petroleum product consumption (-90 ktoe), while there is an increase in gas consumption (+79.5 ktoe) in this branch as well between 2010 and 2014.

Consumption in the restaurants and accommodation branch decreased by 65.8 ktoe from 2010 to 2014, to stand at 697.9 ktoe, a result of the 128.1-ktoe drop in electricity, in contrast to the increase in consumption in the other energy sources (23.6 ktoe for petroleum products, 22.8 ktoe for gas and 15.8 ktoe for renewables).

Buildings for hospital use consumed 608.2 ktoe in 2014, 12.4 ktoe less than in 2010. In this total, electricity represents 58 %, gas 23.2 % and petroleum products 17.9 %.

Finally, buildings for educational use consumed 599.4 ktoe in 2014, with a reduction of 68.7 ktoe since 2010. In this branch, despite being higher than half, the relative weight of electricity (53.4 %) is lower than in other branches, while the relative weight of gas accounts for 15.9 % and the weight of petroleum products stands out, reaching 29.85 %, very much above what occurs in the other branches.

2.2. ANALYSIS OF THE BUILDING RENOVATION TREND IN SPAIN.

Of the two statistical series from the Ministry of Public Works the 'Building Works' ['Obras en Edificación'] series (with information from master builders' association approvals) is used, being the most up to date, as it makes it possible to have data up to December 2016, as opposed to the 'Building Construction' ['Construcción de Edificios'] series (based on municipal building permits), where the latest published data are from August 2016.

The general trend data on the number of renovated buildings, renovated dwellings and overall estimate for the relevant works make it possible to affirm that the renovation sector underwent sustained growth in the years 2014, 2015 and 2016. In effect, the number of works management approvals for refurbishment and/or restoration increased by 12.8 % between 2014 and 2016. Moreover, the number of approvals to renovate buildings used for housing annually went from 22 413 in 2014 to 25 880 in 2016, representing an increase of 15.47 %. The number of approvals to renovate buildings for other uses grew less intensely, going from 5 665 in 2014 to 5 735 in 2016. In terms of overall estimates for the renovation works approved annually, there was even more growth, almost around 30 %, totalling EUR 2.053 billion in 2016 (EUR 1.129 billion in residential buildings and nearly another EUR 1 billion in non-residential).

Table 7. Works management approvals: Building renovation and/or restoration. Number of buildings and overall estimate according to main use.

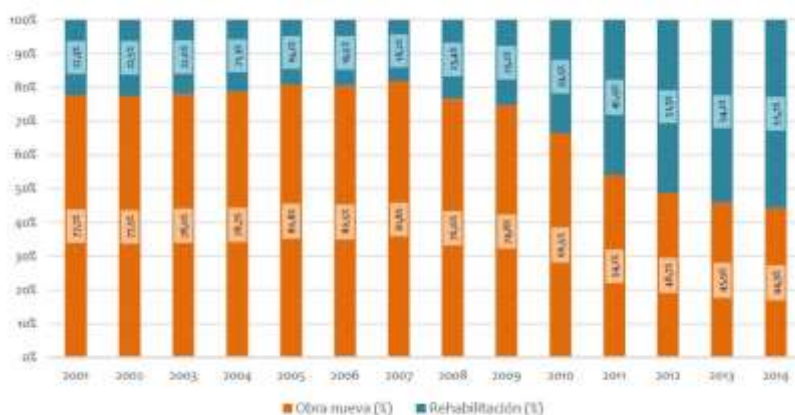
YEAR	NUMBER OF BUILDINGS			OVERALL ESTIMATE (thousands of €)		
	TOTAL	USED FOR DWELLINGS	USED FOR OTHER USES	TOTAL	USED FOR DWELLINGS	USED FOR OTHER USES
2016	31 615	25 880	5 735	2 053 283.5	1 129 327.5	923 956.0
2015	31 285	25 288	5 997	2 078 238.3	1 126 738.9	951 499.4
2014	28 068	22 413	5 655	1 590 321.6	822 201.9	768 119.7
2013	27 303	22 290	5 013	1 450 572.8	793 044.1	657 528.7
2012	27 674	22 934	4 740	1 598 690.6	935 757.6	662 933.0

Source: Ministry of Public Works. Building Works series (approvals from master builders' and technical architects' associations).

This all provides an important balance in the whole of the three years in the 2014- 2016 period analysed: approvals were granted to renovate a total of 90 968 buildings, 73 581 used for dwellings and 17 387 for other uses, amounting – according to the overall estimates – to EUR 5.721 billion (EUR 3.078 billion in residential and EUR 2.643 for other uses)¹⁶.

According to the latest data¹⁷, in 2014 renovation activity reached an annual turnover of EUR 29.5914 billion, which means a 9.7 % increase with regard to the previous year, surpassing the turnover of new construction building for the third consecutive year. Thus, renovation accounted for 55.7 % of the total turnover for the building sector, a rate very much above what it accounted for in 2007 (when it stood at 18.2 %).

Figure 11. Trend in building turnover: proportions between turnover in new construction and renovation.



Source: Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016). <https://www.fomento.gob.es/MFOM.CP.Web/handlers/pdfhandler.ashx?idpub=BAW043>

In terms of volume of housing approvals, the total number of approvals to renovate dwellings in the whole period 2014-2016 accounted for over 30 % of the total, although the significant recovery of approvals for new construction in 2016 (64 038 approvals for newly constructed housing, compared to 49 695 in 2015 or 34 873 in 2014) caused the percentage corresponding to approvals for housing renovations to decrease (26 094 in 2016, 25 413 in 2015 and 22 418 in 2014).

¹⁶ This produces an average estimate, per building and for 2016, of EUR 43 637 for residential buildings and EUR 161 108 for buildings for other uses.

¹⁷ Construction Industry Structure Survey [Encuesta de la Estructura de la Industria de la Construcción – EEIC], Ministry of Public Works, 2014, analysed in Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016), p. 5.

Table 8. Works management approvals. New construction, extension and/or refurbishment of buildings. Number of dwellings according to type of works.

YEAR	TOTAL	NEW CONSTRUCTION	EXTENSION	REFURBISHMENT AND/OR RESTORATION
2016	92 135	64 038	2 003	26 094
2015	76 542	49 695	1 434	25 413
2014	58 776	34 873	1 485	22 418
2013	58 740	34 288	1 853	22 599
2012	69 656	44 162	2 487	23 007

Source: Ministry of Public Works. Building Works series (approvals from master builders' and technical architects' associations).

Regional distribution by autonomous communities.

The latest data available¹⁸ for the regional analysis of renovation in the residential sector correspond to 2015 and show very unequal behaviour in terms of this activity in the various autonomous communities, both in number of buildings renovated as well as in level of investment. The following graphs illustrate these differences:

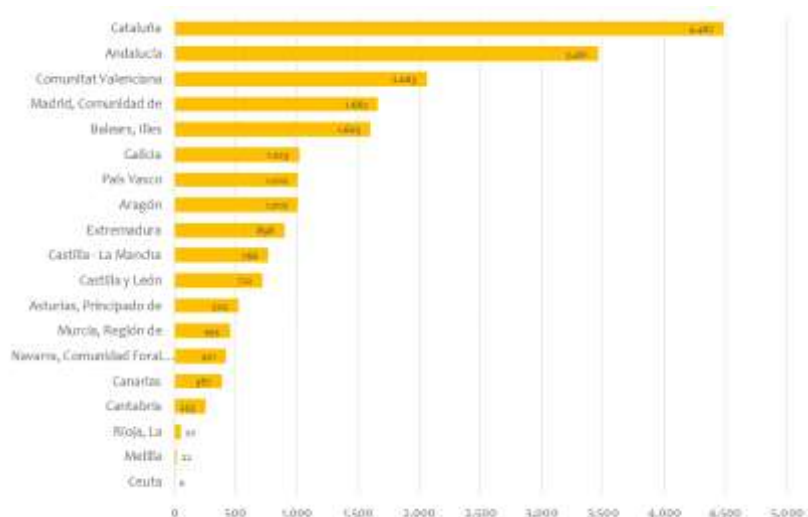
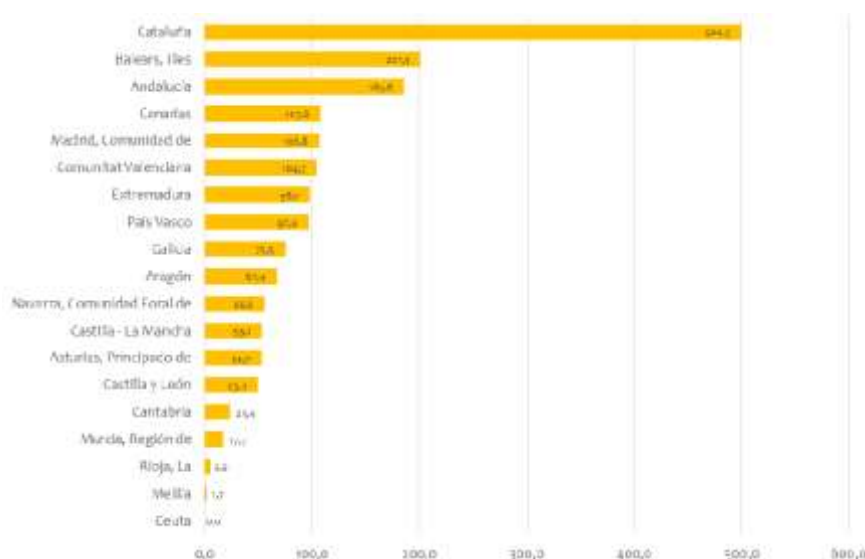


Figure 12. Number of residential buildings to be renovated according to use by autonomous community in 2015.

Source: Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016). <https://www.fomento.gob.es/MFOM.CP.Web/handlers/pdfhandler.ashx?idpub=BAW043>

¹⁸ Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016)

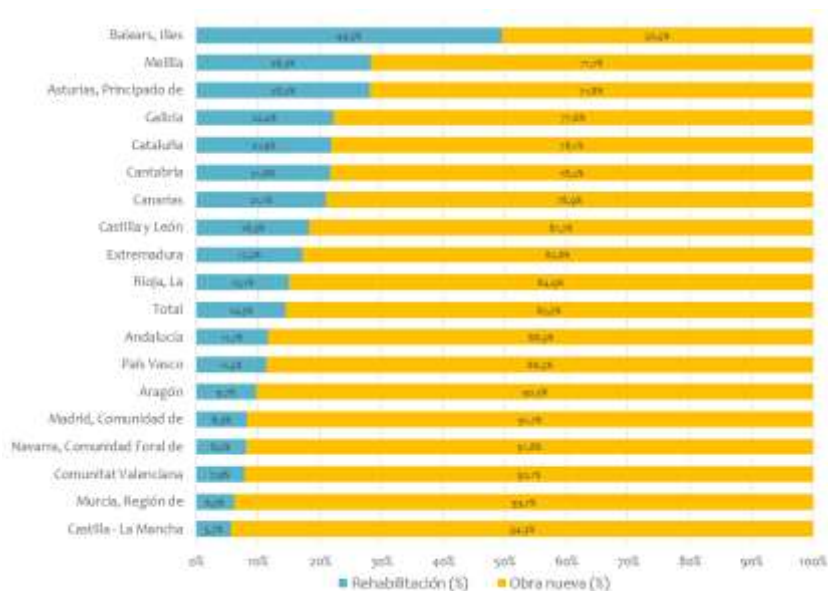
Figure 13. Overall estimate for renovation by autonomous community in 2015 (millions of euros).



Source: Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016). <https://www.fomento.gob.es/MFOM.CP.Web/handlers/pdfhandler.ashx?idpub=BAW043>

As a result of this, the weight of residential renovation in the building sector as a whole is very different between autonomous communities as well. The following graph makes it possible to compare the percentage of permits for newly constructed dwellings and permits to renovate dwellings in each autonomous community.

Figure 14. Percentage of housing according to permits by autonomous community in 2015: renovation and new build.



Source: Ministry of Public Works (2016). Housing and Land Observatory. Special Bulletin on Renovation (12 December 2016). <https://www.fomento.gob.es/MFOM.CP.Web/handlers/pdfhandler.ashx?idpub=BAW043>

Comparison with Europe.

Spain has experienced very positive performance in terms of renovation in recent years (12.8 % increase in the number of works management approvals for refurbishment and/or restoration between 2014 and 2016), but work must still be done to get the sector closer to the European

average. According to data from the European Commission¹⁹, the renovation values of the residential stock in our country are still low with regard to other countries in the EU: in Spain in 2014, approximately 0.8 % of residential buildings underwent deep renovations each year, compared to 1.82 % in Austria, 1.75 % in France and 1.49 % in Germany.

¹⁹ Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

3. FOLLOW-UP ON MEASURES IMPLEMENTED TO PROMOTE ENERGY RENOVATION.

3. 1. MEASURES PUT FORWARD BEFORE THE 2014 ERESEE THAT ARE STILL VALID.

As explained in the 2014 ERESEE, the Spanish Government through the Council of Ministers had on 5 April 2013 – the year before the ERESEE was published – approved a ‘Comprehensive Housing and Land Plan’²⁰ including regulatory and development measures. The fundamental objectives of this Plan were focused on facilitating access to housing for more disadvantaged people, assisting with rent, promoting renovation and improving the energy efficiency of buildings.

Of note within the regulatory package developed is Law 8/2013 of 26 June on Urban Renovation, Regeneration and Renewal (*Official State Gazette* of 27 June 2013), which has since been consolidated with the Land Law by means of Royal Legislative Decree 7/2015 of 30 October approving the consolidated text of the Land and Urban Regeneration Law (*Official State Gazette* of 31 October 2015); Royal Decree 235/2013 of 5 April approving the basic procedure to certify the energy efficiency of buildings (*Official State Gazette* of 13 April 2013); Royal Decree 238/2013 of 5 April amending certain articles and technical instructions in the Regulations on Building Heating Installations [Reglamento de Instalaciones Térmicas de los Edificios – RITE] of 20 July 2007 to set out stricter requirements concerning the energy performance of heating and cooling equipment, as well as equipment used to move and transport fluids (*Official State Gazette* of 13 April 2013); and Order FOM/1635/2013 of 10 September updating the Basic Document DB-HE ‘Energy Saving’, from the Technical Building Code [Código Técnico de la Edificación – CTE], approved by Royal Decree 314/2006 of 17 March (*Official State Gazette* of 12 September 2013).

This new regulatory framework introduced important new features in the building renovation and energy efficiency sector in Spain, in conjunction with other development measures in force during these years, for which detailed follow-up is provided below:

3.1.1. STATE PLAN TO PROMOTE RENTAL HOUSING, BUILDING RENOVATION AND URBAN REGENERATION AND RENEWAL 2013-2016 (extended to 2017).

Royal Decree 233/2013 of 5 April forms the regulatory framework that regulates the State Plan to promote rental housing, building renovation and urban regeneration and renewal, 2013-2016²¹ (hereinafter, State Plan), in force until 31 December 2016 and currently extended until 2017²².

The State Plan has different housing aid programmes, including the Programme (no 1) to subsidise agreed loans, two programmes dedicated to promoting rentals (Programme no 2 to support rented housing and Programme no 3 to promote public rental housing), as well as a transversal Programme (no 8) to support the implementation and management of the Plan. The following are the programmes directly related to renovation: Programme no 4 to promote building renovation; Programme no 5 to promote urban regeneration and renewal; Programme no 6 to support the roll-out of the Building Assessment Report; and Programme no 7 to promote sustainable and competitive cities, of which the first two will be analysed below.

²⁰ http://www.lamoncloa.gob.es/docs/refc/pdf/refc20130405e_1.pdf

²¹ https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-3780

²² Since there was a caretaker government until November 2016 and its competences were limited in accordance with Article 21 of Law 50/1997, making it impossible to approve a new quadrennial State Plan, Royal Decree 637/2016 of 9 December was approved to extend the 2013-2016 State Plan through 2017, to prevent the State financing for housing aid from being abolished as of 1 January 2017 due to not taking any measures.
https://www.boe.es/diario_boe/txt.php?id=BOE-A-2016-11737

Programme no 4 to promote building renovation.

The aim of this programme is to finance the execution of works and maintenance and intervention jobs in fixed installations and proprietary equipment, in the common private elements and spaces, of collective residential buildings that meet certain requirements, including dating from before 1981.

The actions eligible for subsidies in the buildings are modular in nature, and can therefore be directed towards one or several of the following categories: a) conservation; b) improving quality and sustainability; and c) making reasonable adjustments regarding accessibility.

The beneficiaries may be fundamentally homeowners' associations and their groupings, or individual owners of residential buildings.

Given their modular nature, modular aid is established according to the action categories: maximum unit aid of €2 000 per dwelling for conservation (with an additional €1 000 if actions to improve the quality and sustainability are carried out simultaneously, and another €1 000 if accessibility is done as well), of between €2 000 and €5 000 for actions to improve quality and sustainability, including those to improve energy efficiency, and of €4 000 to improve accessibility. All these amounts can also be increased by 10 % for buildings declared Sites of Cultural Interest.

In relation to energy efficiency, in order to be eligible for subsidy, the actions aimed at promoting quality and sustainability must act on the building envelope, so as to achieve a reduction in the global annual energy demand for heating and cooling of the building, in terms of energy certification, of at least 30 % with regard to the situation prior to these actions, in which up to €2 000 can be received, and, if the reduction is over 50 %, this can go up to €5 000. In a bid to find synergies between the conservation and energy efficiency works, works on the envelope (roofing, facades and party walls or other shared elements) can only be financed where they are executed simultaneously with energy renovation works, except in the case of buildings of cultural or historical/artistic interest, that are listed or protected, etc. as it is considered that it is more complex or unviable to work on the envelope.

The total maximum subsidy per dwelling and per 100 m² of premises can reach up to €11 000 (€12 100 in buildings declared Sites of Cultural Interest), so long as it does not also exceed 35 % of the eligible cost of the action (exceptionally in accessibility actions, and only for the relevant item, may it reach up to 50 %).

Programme no 5 to promote urban regeneration and renewal.

The aim of this programme is to improve residential fabrics and to functionally recover historical complexes, urban centres, run-down neighbourhoods and rural centres. It can be used to finance the joint execution of renovation works in buildings and dwellings, of development and redevelopment of public spaces and, where applicable, of building to replace demolished buildings, always within action areas with at least 100 dwellings, previously delimited by agreement of the competent administration, which are known as ARRUs (Urban Regeneration and Renewal Areas).

In addition to its delimitation, each ARRU must have a Report-Programme, which will include at least the following documents: a) an assessment regarding the area's social, economic and environmental situation (justified based on objective indicators and statistical indices), which will also include the aims and public purposes of the actions; b) an Integrated Actions Programme (supplementary measures proposed in the social, economic and environmental areas, specifying in detail the public and private institutions involved and the commitments established to implement, develop and monitor them), with a table of follow-up indicators; c) a Technical Viability Report confirming its compatibility with the urban planning and an Economic Viability Report that will analyse the profitability and balance between the benefits and burdens stemming from the action for the owners; d) where applicable, the Plan on temporary relocation and return of inhabitants.

The beneficiaries of this Programme may be whoever assumes responsibility for the integral

3.1.2. PAREER AND PAREER-CRECE PROGRAMMES ²³.

This programme was initially provided with €125 million with the aim of encouraging and promoting the execution of integral actions that would favour energy saving, the improvement of energy efficiency and the use of renewable energy sources in existing buildings for residential use (dwellings and hotels), under the PAREER Programme. The programme was implemented by the former Ministry of Industry, Energy and Tourism (now Ministry of Energy, Tourism and the Digital Agenda) through IDAE in September 2013.

Once more than a year had elapsed, and in light of the experiences gained, it was considered appropriate to expand the target of the PAREER Programme to the highest possible number of existing buildings throughout Spain, in conformity with the objectives of Directive 2012/27/EU, extending its validity period as well as also introducing certain changes that would help facilitate management and broadening its scope.

In this context, the Plan on Measures for Growth, Competitiveness and Efficiency (CRECE), approved by the Council of Ministers on 6 June 2014, included, inter alia, actions in building for energy refurbishment of the existing building stock. As part of this plan, Law 36/2014 of 26 December 2014 on the General State Budget for 2015 included a budget allocation of €75 million, which made it possible to strengthen and boost the actions set out in PAREER as well as address the expansion of its objective.

Consequently, the name of the programme was changed to the Aid Programme for the Energy Renovation of Existing Buildings, PAREER-CRECE Programme, including with this the expansion to integral actions in existing buildings for any use (dwelling, administrative, commercial, health, educational, etc.) that would favour energy saving, the improvement of energy efficiency, the reduction of CO₂ emissions and the use of renewable energy sources, while new construction was expressly excluded. The aid from this programme could be co-financed with the European Regional Development Fund (ERDF) within the Sustainable growth ERDF 2014-20 Operational Programme.

These actions fit into one or more of the following types:

1. Improving the energy performance of the thermal envelope.
2. Improving the energy performance of heating and lighting installations.
3. Swapping conventional energy for biomass in heating installations.
4. Swapping conventional energy for geothermal energy in heating installations.

The actions eligible for aid, chosen on a competitive basis, had to improve the building's total energy rating by at least one letter, measured on the carbon dioxide emissions scale (kg CO₂/m² year), with regard to the building's initial energy rating. This improvement in energy rating is achieved by carrying out one type of action or a combination of several actions.

The aid consisted of the provision of funds without consideration regarding the eligible cost of the action, which could be enhanced with additional aid depending on the following three criteria, up to reaching a maximum aid:

- a. Social criterion: actions carried out in buildings that have been qualified as public housing and special social housing by the competent body of the relevant autonomous community, or the actions are carried out in residential buildings located in Urban Regeneration and Renewal Areas, in accordance with the State Plan to promote rental housing, building renovation and urban regeneration and renewal 2013-2016.
- b. Energy performance: actions that raise the building's energy rating to attain energy category 'A' or 'B' on the CO₂ scale, or to increase the starting energy rating by two letters.
- c. Integrated action: actions that simultaneously carry out a combination of two or

²³ <http://www.idae.es/index.php/id.858/reلمenu.409/mod.pags/mem.detalle>

more types of action.

In addition, a repayable loan could be applied for up to 90 % of the eligible cost, for what is not covered by direct aid.

The types of beneficiaries included in this aid programme have been the following:

- a. The owners of existing buildings used for any purpose, either natural persons or private or public legal persons.
- b. Homeowners' associations or groupings of homeowners' associations from residential buildings for dwelling use, officially established as commonhold property.
- c. Owners who as a group are building owners and have not signed a deed establishing commonhold property.
- d. Building operating, tenant or concessionaire companies.
- e. Energy service companies.

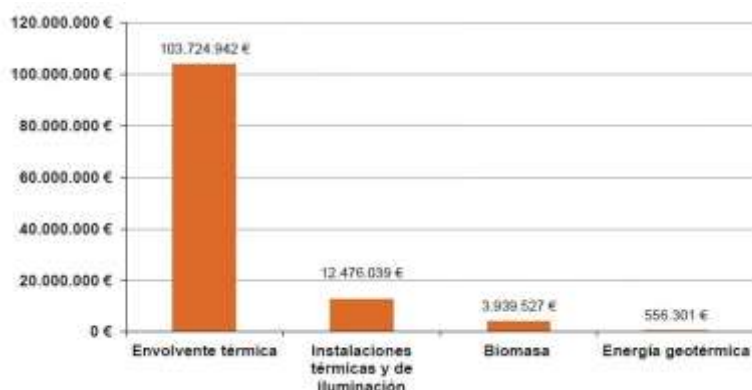
The programme closed on 5 May 2016 due to exceeding the request for aid by 35 % in relation to the €200 million in aid allocated to the programme. As at 24 March 2017, the PAREER-CRECE Programme had reached 2 488 applications submitted, representing €269 million in requested aid, exceeding the planned budget by 35 %.

To date, 1 010 applications have been assessed favourably, accounting for €120 696 809 in aid. The programme, which is under evaluation, has 241 applications pending assessment, and therefore these results as at 24 March 2017 are provisional²⁴. The applications assessed favourably to date (1 010) account for improving the energy efficiency of 32 798 dwellings, 4 031 rooms in 28 hotels and 3 082 310 m² of total conditioned area.

The average investment ratio per application submitted is €200 000 and the average aid is €120 000 per application.

In terms of the type of aid granted, 48 % of the aid relates to direct aid and the remaining 52 % to repayable loans. As regards the type of action carried out, of the four types of actions included in the programme, the thermal envelope action received the most economic support, with 86 % of the aid, followed by the action to improve heating and lighting installations (14 %), swapping fossil fuels for biomass (3 %) and, lastly, swapping conventional heating installations for geothermal energy, with 1 % of the aid. The following graph shows this distribution of the amount of aid granted by type of action:

Figure 16. Aid granted by type of action from PAREER-CRECE



Note: Provisional data. Source: IDAE

In terms of the type of beneficiary, resident communities are the beneficiaries that have received the

²⁴ There are 436 applications in the rectification phase in relation to which neither a favourable or unfavourable decision has yet been issued by the programme manager.

most aid, with 89.1 % of the aid, followed by hoteliers with 3.3 % and energy service companies with 2.8 % of the aid.

Figure 17. Aid granted by type of beneficiary from PAREER-CRECE



Note: Provisional data. Source: IDAE

In terms of the list of applications submitted (which do not include applications that were rejected) and favourable applications by autonomous community, Madrid, the Basque Country and Asturias all stand out. Since these data are provisional, it is expected that the number of favourable applications will increase by autonomous community (AC) by the close of the programme.

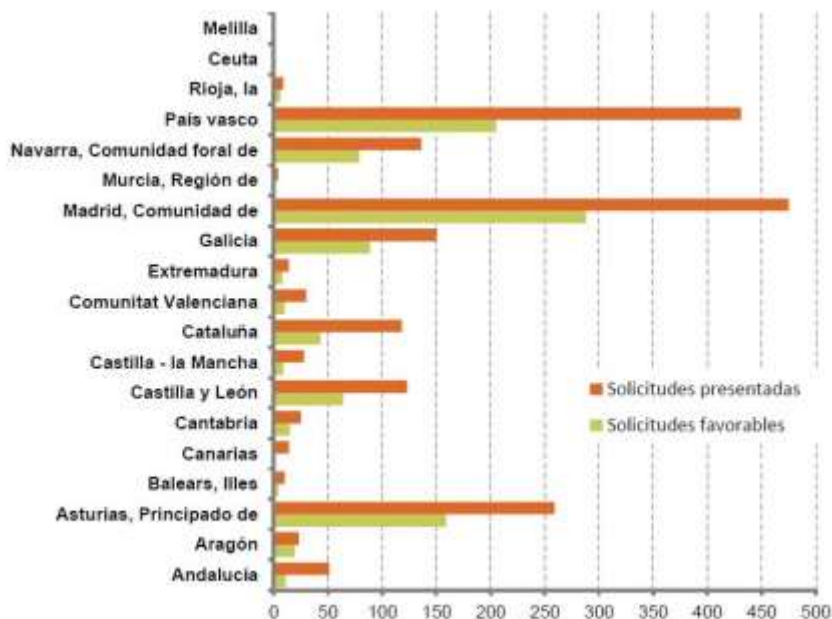


Figure 18. Applications and favourable decisions PAREER-CRECE AC

Note: Provisional data. Source: IDAE

Continuing with the analysis of the 1 010 favourable applications to date, the €120 696 809 of aid allocated is split between 44 % basic aid, 4 % additional aid and 52 % pertaining to the repayable loan. Of the additional aid granted in the favourable applications, 52 % relates to the social criterion, 43 % to integrated actions and the remaining 5 % to the energy performance criterion, so the renovated increases the energy performance category by two letters or to letters 'A' or 'B'. Lastly, the total aid approved to date means the mobilisation of just over €200 million in eligible investment.

A new call for applications will soon be published for this programme, which will be called PAREER-II and will be provided with €125 658 000 from the Energy Efficiency National Fund.

3.1.3. ICO FINANCING FACILITY.

For nearly a decade, individuals and homeowners’ associations have also been able to apply for financing through the Spanish Official Credit Institute’s [Institutos de Crédito Oficial – ICO] SMEs and Entrepreneurs Facility²⁵, exclusively for renovating dwellings and buildings. Any items that are renovation works in dwellings and/or buildings and/or the refurbishment of their shared elements, are eligible for financing; this can also include labour and professional fees.

Owners, tenants (as long as they have a lease agreement that is valid over the life of the financing) and homeowners’ associations may all access this financing facility. In the case of the latter, due to not having legal personality, in order for this facility to work it is necessary for the loan policy to state the homeowners’ association with its relevant tax ID number. Nonetheless, the loans can be signed by either the owners in the association or by the chair of the association on its behalf, attaching the list of owners in this case, as agreed between the credit institution granting the financing and the customer, provided that the association in question is identified in the policy. In cases in which not all the residents agree with applying for the financing jointly, and therefore with signing for the loan, it is possible to make loans for the individual balances according to each resident’s percentages of share of ownership, subject to an authorisation document from the homeowners’ association itself to formalise these loans separately.

The transactions are processed directly through the credit institutions. The conditions of the loans are as follows: the maximum amount per customer is up to EUR 12.5 million, in one or several transactions. The interest rate may be fixed or variable, plus the margin established by the credit institution according to the maturity period, which can be up to 20 years with up to two years’ grace period.

The results for the years 2014-2016 are as follows:

Table 10. Data on execution of the ICO Financing Facility for renovation (homeowners’ associations and individuals) (2014, 2015, 2016).

	2014	2015	2016	TOTAL
NO OF ACTIONS	2 429	1 902	995	5 326
INVESTMENT (Loans)	55 282 723	43 092 280	30 427 282	128 802 285

Source: ICO.

The regional breakdown by autonomous community was as follows, by volume of investment:

Figure 19. Regional distribution of the execution of the ICO Financing Facility for renovation (homeowners’ associations and individuals) (2014, 2015, 2016).



Source: Prepared by the Ministry of Public Works using data from the ICO.

²⁵ <https://www.ico.es/web/ico/ico-empresas-y-emprendedores/-/lineasICO/view?tab=general>

As was already stated in relation to the building renovation programme from the 2013-2016 State Plan, as this is not a financing facility dedicated specifically to energy renovation, there are no data available that will make it possible to evaluate the energy savings obtained.

3.1.4. CLIMA PROJECTS²⁶.

Law 2/2011 of 4 March on Sustainable Economy created a fund for purchasing carbon credits attached to the Secretariat of State for Climate Change, with the aim of generating low-carbon economic activity and contributing to meeting the targets assumed by Spain regarding reducing greenhouse gas emissions. With the creation of this fund, the Government of Spain, like other countries in the European Union, was equipped with a very useful tool to follow up on its participation in the carbon markets, making it possible to take advantage of the opportunities they offer to achieve reductions in greenhouse gas emissions in a cost-efficient way.

The Clima Projects on the Carbon Fund for a Sustainable Economy (FES-CO2) are projects to reduce greenhouse gas (GHG) emissions undertaken in Spain, designed to mark a path for transforming the Spanish productive system towards a low-carbon model.

These Clima Projects must be located in Spain and be undertaken in what are known as 'non-ETS sectors' (not subject to the EU Emissions Trading Scheme), such as the transport sector, the agriculture sector, the residential sector, the waste sector, etc., although carrying out projects to absorb emissions through sinks is not covered by the scheme.

The reductions in emissions gained through FES-CO2 require meeting a series of requirements, including those set out in Article 7 of Royal Decree 1494/2011 of 24 October 2011 governing the Carbon Fund for a Sustainable Economy:

- being additional to those arising from the sectoral rules established in the applicable legislation currently in force;
- coming from installations and sectors that are not subject to the emissions trading scheme;
- being measurable and verifiable, so they can be reflected in Spain's greenhouse gas inventory;
- being calculated pursuant to methodologies that must be approved by the Fund's Governing Council.

FES-CO2 seeks to enable the development of programmatic initiatives that include several projects within the same programme. This programmatic approach broadens the scale of the project, enabling similar activities, with low volumes of greenhouse gas reduction, that are spread over different geographical points of Spain, to be able to form a group based around one programme.

There are currently more than 10 types of projects for six sectors (agriculture and livestock breeding, transport, residential, waste management, fluorinated gases and industry and mining).

Since 2012, FES-CO2 has launched an annual call to select Clima Projects within the first four months of each year. The list of calls from 2012 to 2017 and the projects selected in each of them is available at: <http://www.mapama.gob.es/es/cambio-climatico/temas/proyectos-clima/>.

The execution data for the period 2014-2016 are as follows:

²⁶ <http://www.mapama.gob.es/es/cambio-climatico/temas/proyectos-clima/>

Table 11. Clima Project execution data (2014, 2015, 2016).

	2014	2015	2016	TOTAL
INVESTMENT (CO ₂)	393 370	1 128 697	2 434 037	3 956 104

Source: Prepared by the Ministry of Public Works using data from the OECC, MAPAMA.

Some final energy savings can be estimated as a result of these projects, within the residential, industry not subject to the emissions trading scheme and transport sectors equivalent to 40.5 ktoe and 80.2 ktoe in 2014 and 2015, respectively.

3.1.5. PIMA SOL PLAN

The PIMA SOL Plan to Promote the Environment²⁷ was an initiative aimed at reducing GHG emissions as well as to improve efficiency in the use of energy and the resources of the Spanish tourism sector. Specifically, it has promoted the reduction of direct emissions of GHGs at hotel facilities by means of the energy renovation of these facilities.

The former Ministry of Agriculture, Food and Environment [Ministerio de Agricultura, Alimentación y Medio Ambiente – MAGRAMA] purchased the reductions of direct emissions of greenhouse gases that took place in hotels through the renovation projects, with a financial allocation of EUR 5.21 million. The application period ran from September 2013 to December 2014.

The beneficiaries of PIMA SOL were hotel facilities with energy renovation projects that met the conditions for project eligibility and the purchase of CO₂ reductions set out in Royal Decree 635/2013 approving the plan. Specifically, the renovation projects had to achieve a minimum energy improvement that would translate into going up at least two letters in energy rating or reaching letter 'B'.

The potential measures to be included to achieve reductions in CO₂ emissions included actions on the envelope (facade and roof) and windows, improvements in insulation, introducing control systems in climate control and lighting, water heating systems using plates, passive climate control systems through better architecture, more efficient heating and cooling equipment, geothermal energy and biomass in climate control and efficient water management systems.

The final energy savings as a result of these plans are estimated to be equivalent to 0.8 ktoe in 2014.

3.1.6. JESSICA-FIDAE FUND.

The FIDAE Fund²⁸ is a fund implemented by IDAE as intermediate body delegated by the European Regional Development Fund – ERDF management authority (Directorate General of Community Funds, Ministry of Finance and Civil Service), endowed with around €123 million, the aim of which is to finance sustainable urban development projects that improve energy efficiency and/or use renewable energy sources. It is a fund that is co-financed by the ERDF and IDAE and operated by the European Investment Bank (EIB). This fund can be compatible with other sources of public or private financing, as well as certain subsidies that may be co-financed with European Funds. The EIB has selected three managers to channel the financing to the final recipients. These managers are: Banco Bilbao Vizcaya Argentaria, Banco de Santander and GED Infrastructure.

Project promoters may be public entities, energy service companies, as well as other private companies.

The projects must meet the following conditions:

- be located in the following autonomous communities: Andalusia, the Canary Islands, Castile and Leon, Castile-La Mancha, Valencia, Extremadura, Galicia, Murcia or autonomous cities of

²⁷ <http://www.mapama.gob.es/es/cambio-climatico/planes-y-estrategias/pima-sol.aspx>

²⁸ <http://www.idae.es/index.php/id.805/recategoria.3957/mod.pags/mem.detalle>

Ceuta and Melilla;

- be included in any of the following sectors: building, industry, transport, or energy-related public service infrastructures and be part of any of the following priority topics: energy efficiency and energy management projects; solar thermal, isolated solar photovoltaic and biomass projects; or projects related to clean transport that contribute to improving energy efficiency and the use of renewable energy sources.
- In addition, the projects must:
- guarantee an acceptable return on investment;
- be included in integrated sustainable urban development plans, or contribute to their objectives without having to be entered or identified in the plan;
- still be unfinished when the financing is received.

The specific financial conditions applicable to each project are determined by the managers, in accordance with the provisions of the regulations and the investment strategy of the Fund. In general, up to 70 % of the eligible expenditure can be financed, with the limit of the budget allocation available in each autonomous community. The maturity period can extend up to 15 years, with a three-year grace period, and the interest rate is calculated as the Euribor plus a margin depending on the credit score and guarantees provided; the rates usually range from Euribor +0.75 % to Euribor +4 %.

The validity period for the disbursement of financing ended on 16 June 2016.

The recipients of the FIDAE Fund to date can be viewed on the IDAE website (<http://www.idae.es/index.php/id.805/relcategoria.3957/mod.pags/mem.detalle>).

3.1.7. EUROPEAN FUNDS FOR SUSTAINABLE URBAN DEVELOPMENT AND LOW-CARBON ECONOMY.

During the programming period 2014-2020, a total of EUR 1.5204 billion in ERDF aid will be allocated to financing actions in the urban area, of which EUR 507.6 million will be earmarked for unique projects in low-carbon economy (managed by IDAE) and EUR 1.0128 billion will be earmarked for integrated sustainable urban development actions in accordance with Article 7 of the ERDF Regulation, which sets out that at least 5 % of the resources from this fund must be used for these kinds of actions.

The DUSI Strategies. Spain's 2014-2020 Partnership Agreement was approved on 30 October 2014 and is the framework instrument used as reference for the set of actions financed by EU funds. It specifically states that the Urban Initiative Network [Red de Iniciativas Urbanas – RIU] must coordinate the calls for urban strategies and form the working groups to select these strategies. Moreover, the Sustainable Growth Operational Programme was approved on 23 July 2015, which detailed the intervention areas in which local authorities can receive financing, in the framework of the so-called Integrated and Sustainable Urban Development Strategies [Estrategias de Desarrollo Urbano Sostenible Integrado – EDUSI], selected through open calls. To date, two calls have been published to select DUSI Strategies, a first one that has already ended and a second that is currently in the technical evaluation stage.

First EDUSI call. Order HAP/2427/2015 of 13 November was published in the *Official State Gazette* on 17 November 2015, approving the terms and first call to select Integrated and Sustainable Urban Development Strategies (EDUSI) that will be co-financed through the Sustainable growth ERDF 2014-20 Operational Programme, with an endowment of EUR 730.9 million in ERDF aid, aimed at cities and

urban areas with over 20 000 inhabitants. The lines of action to be financed in the framework of the DUSI Strategies must be within any of the following four Thematic Objectives (TO) for the period: TO2, Improve the use and quality of ICT and access to them; TO4, Favour the transition to a low-carbon economy in all sectors; TO6, Conserve and protect the environment and promote resource efficiency; and TO9, Promote social inclusion and the fight against poverty. When the evaluation stage had ended, a total of 83 DUSI Strategies had been approved in the first call, granting EUR 711 million in ERDF aid (State Secretariat for Budgets and Expenditure Decision of 12 December 2016 issuing a final decision on the first call to select DUSI Strategies).

Second EDUSI call. Order HAP/1610/2016 of 6 October was published in the *Official State Gazette* on 7 October 2016, approving the second call to select Integrated and Sustainable Urban Development Strategies that will be co-financed through the Sustainable growth ERDF 2014-20 Operational Programme. It has an allocation of EUR 281.8 million in ERDF aid and is also aimed at cities and urban areas with over 20 000 inhabitants. The application submission period ended on 15 December 2016 and the call is currently in the technical evaluation stage. It is anticipated that approximately 30 more DUSI Strategies in Spanish cities will be selected in the second call.

Promotion of renovation and the low-carbon economy. In accordance with the terms of the calls, an indicative percentage of investment of around 20-30 % must be allocated in each of the DUSI Strategies to financing actions in the area of Thematic Objective 4, Favour the transition to a low-carbon economy in all sectors. One of the results to be achieved is the reduction of emissions and improvement of energy efficiency in building, and this includes the financing of renovation actions that include, inter alia, improving the thermal envelope of buildings, heating, air conditioning or domestic hot water installations, as well as financing projects to demonstrate nearly zero-energy buildings.

Other planned calls. New calls from the IDAE are planned for energy efficiency in central government buildings (EUR 96 million in ERDF aid) and for unique low-carbon economy projects for local bodies with fewer than 20 000 inhabitants (EUR 480 million in ERDF aid). Moreover, a call is also planned for tertiary sector companies, that will also include actions in building renovation.

3.2. BALANCE OF FOLLOW-UP ON MEASURES INCLUDED IN THE 2014 ERESEE TO PROMOTE RENOVATION. (July 2014-March 2017)

The 2014 ERESEE included the section '*III.3. Measures to drive different scenarios*', which set out different lines of work to implement the strategy. In the time since it was approved (July 2014-March 2017), intense work has been done to develop these measures. A follow-up balance of these actions is outlined below, following the order in which they appear in the 2014 ERESEE.

3.2.1. MEASURES TO RAISE AWARENESS AND CREATE A PRO-RENOVATION CULTURE.

The 2014 ERESEE identified that both renovation with exclusively private financing, as well as renovation supported through the various lines of public aid in force were not achieving the desired response, largely due to the lack of awareness and pro-renovation culture that already exists in other European countries. This could noticeably improve if the public were aware of the potential of renovation in relation to quality of life through improving their homes and dwellings, as well as through reducing their energy bills and the revaluation of properties for their owners.

The following were some of the awareness-raising measures identified:

A.1. Designing and carrying out publicity and awareness-raising campaigns.

-In 2014, the then Ministry of Industry, Energy and Tourism [Ministerio de Industria, Energía y Turismo – MINETUR], through IDAE, launched the communication campaign 'You control your energy' ['Controlas tu energía'], which received wide media coverage (TV, radio, advertising posters,

etc.). The ‘You control your energy’ campaign seeks to promote energy saving and efficiency among the public by establishing lines of action and providing information on the aid available in the different action areas. The campaign has three lines of communication, two of which are focused on buildings: the energy renovation of existing dwellings and the energy certification of buildings. Another campaign was launched in 2015, called ‘Energy Saving and Efficiency 2015’ [‘Ahorro y Eficiencia Energética 2015’].

Figure 20. Images from the institutional campaigns from MINETUR, IDAE and the Ministry of Public Works.



Sources: IDAE, Ministry of Public Works, MINETAD.

- In autumn 2014, the Ministry of Public Works launched an extensive national advertising campaign for outreach and institutional awareness-raising to promote renovation, which included TV and radio advertisements, as well as advertising posters, leaflets, etc²⁹. The campaign slogan was ‘Improve your building, improve your life’.

A.2. Launching specific training and participation days of a technical nature, as well as information days more focused on users and resident communities.

The Ministry of Public Works organised and took part in various information and training days on energy renovation, highlights of the one held at the National Environmental Congress (CONAMA 2014) in November 2014, entitled: ‘The Roadmap for Renovation in Spain’ [‘La Hoja de Ruta para la Rehabilitación en España’]³⁰, which had significant representation from the main agents involved in renovation, and the event held in Málaga on 7 and 8 October, where a plenary session was organised in conjunction with the CONAMA Foundation itself, under the theme ‘The energy renovation of buildings, driver of development and employment’ [‘La Rehabilitación Energética de los edificios, motor de desarrollo y empleo’].

²⁹ <http://www.fomento.gob.es/rehabilitacion/campana.html>

³⁰ <http://www.conama2014.conama.org/web/generico.php?idpaginas=&lang=es&menu=259&id=259&op=view>

Moreover, in 2015 IDAE held a series of information sessions around different areas of Spain, providing information on renovation and energy efficiency in buildings and the PAREER Programme³¹.

In addition, over the past three years, representatives and technicians from the ministerial departments involved have done intense outreach work in different forums and sessions, as well as at events organised by other entities, for example and inter alia, the AUREhA (Efficient Renovation and Saving Classroom³²) forums organised by ANERR (National Association of Renovation and Refurbishment Companies) throughout Spain.

A.3. Preparing and disseminating explanatory guides.

- From the MINETUR/IDAE 'You control your energy' campaign portal, it is possible to access the edition of the Practical Guide to Energy in Buildings in its digital version, which can also be accessed directly from the website www.guiadelaenergia.idae.es ; it contains all the information about domestic energy consumption and the tips needed to use energy efficiently in the home.

- In the framework of the institutional advertising campaign 'Improve your building, improve your life', the Ministry of Public Works created an explanatory leaflet aimed at raising awareness among the general public about the importance of renovation and the aid available in the framework of the State Plan³³.

- The IDAE published a 'Practical guide to energy for building renovation. Insulation, the best solution' [*Guía práctica de la energía para la rehabilitación de edificios. El aislamiento, la mejor solución*]³⁴, as an informative guide aimed at the public in general and at the chairs of resident communities and property administrators. The IDAE has also developed a series of 'Technical Guides on Insulating Materials' [*Guías Técnicas de Materiales Aislantes*]³⁵, which is a collection of technical guides focused on each type of insulating material. These are additional to the general information provided by the above informative guide and are aimed at professionals in the building sector, with more detailed information at technical level. The implementation of the measures suggested by these guides, aimed at improving the thermal insulation of buildings, can mean savings on energy, money and carbon dioxide of 30 %, due to less energy being consumed by the buildings' heating installations.

- Furthermore, the Spanish Federation of Municipalities and Provinces [Federación Española de Municipios y Provincias – FEMP] and the *La Casa que Ahorra* [The House that Saves] Foundation have developed a 'Document on recommendations on incentives for renovation with energy-efficiency criteria from a municipal perspective' [*Documento de recomendaciones sobre incentivos a la rehabilitación con criterios de eficiencia energética desde una perspectiva municipal*]³⁶ focused on municipalities and local managers.

A.4. Developing websites, as portals for information and assistance.

As mentioned, the portal <http://www.controlastuenergia.gob.es>, and the website www.guiadelaenergia.idae.es were created in the framework of the 'You control your energy' campaign from MINETUR/IDAE.

A new web portal was created as well in the framework of the institutional advertising campaign from the Ministry of Public Works, specifically regarding renovation, which is available at <http://www.fomento.gob.es/rehabilitacion/>. The aim of this website is to encourage renovation and inform citizens about the basic aspects of the Ministry of Public Works' aid for building renovation

³¹ <http://www.idae.es/index.php/id.883/relcategoria.4037/mod.pags/mem.detalle>

³² <http://anerr.es/proyecto-aurhea.html>

³³ http://www.fomento.gob.es/rehabilitacion/pdf/triptico_campana_final.pdf

³⁴ <http://www.idae.es/index.php/relcategoria.1030/id.226/re/menu.349/mod.pags/mem.detalle>

³⁵ <http://www.idae.es/index.php/relcategoria.1030/id.48/re/menu.349/mod.pags/mem.detalle>

³⁶ http://femp.femp.es/files/566-1802-archivo/Documento_incentivos_rehabilitacion.pdf

and for urban regeneration and renewal from the 2013-2016 State Plan. The page has an FAQ section where the main concerns of members of the public are addressed: *What aid programmes exist for building renovation?, What is the amount of the aid?, What requirements need be met to be able to apply for the aid?, What do I need to do to apply for renovation aid?* A citizen information hotline has also been set up, available from Monday to Friday from 9.00 to 18.00 , on 900 900 707, as well as an e-mail address for receiving queries from the public: portal.vivienda@fomento.es.

Moreover, the different driver agencies for public aid established to encourage renovation, as well as the other administrations with competences in this area, have disseminated this aid through specific websites, with all the information the public need to access the aid³⁷.

There is also a Citizen Information Service on Energy Efficiency and Renewable Energy Sources [Servicio de Información al Ciudadano en Eficiencia Energética y Energías Renovables – SICER] available via the e-mail address ciudadano@idae.es, or by calling 913 14 66 73.

A.5. Spreading good practices, pilot projects and model examples.

When the 2014 ERESEE was prepared, there was a shortage of initiatives concerning energy renovation. However, the measures developed over the past three years have already started to generate results. Thus, in various places throughout Spain, some projects have been put into practice that are unique, due either to their scale, innovative forms of management or the inclusion of supplementary financing mechanisms, etc. and that can be considered as initiatives or pilot projects where the experience can be useful for other town or city councils.

Some examples include the Illa Eficient Pilot Project³⁸, the PREI³⁹ Project promoted by ANERR [National Association of Renovation and Refurbishment Companies], the Lourdes RENOVE project carried out in Tudela by NASUVINSA⁴⁰ and the initiatives from the city councils in Madrid, Barcelona, Zaragoza, Valladolid, etc. Some of these pilot projects are part of networks or demonstration programmes at European level, such as the following: the Torrelago project in Laguna de Duero (Valladolid)⁴¹, part of the CITYFIED project (*RepliCable and InnovaTive Future Efficient Districts and Cities*); the REMOURBAN project (*REgeneration MOdel for accelerating the smart URBAN transformation*)⁴², in the FASA district in Valladolid; the Sestao project in EU-GUGLE (*European cities serving as Green Urban Gate towards Leadership in sustainable Energy*)⁴³.

The Central State Administration designed a project entitled 'Promoting sustainable and competitive cities' ['Fomento de las ciudades sostenibles y competitivas']⁴⁴, in the framework of the 2013-2016

³⁷ For example, the Ministry of Public Works, in relation to the State Plan: http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/ARQ_VIVIENDA/APOYO_EMANCIPACION/

Or IDAE, in relation to the PAREER-CRECE Programme: <http://www.idae.es/index.php/id.858/reImenu.409/mod.pags/mem.detalle>

³⁸ Project framed within the Catalan Strategy for the Energy Renovation of Buildings (<http://edificisdecatalunya.cat/ca/lecree/>), with three stages. The first stage is holding a call for tenders regarding the renovation of a typical block in Barcelona's Esquerra de l'Eixample district, organised jointly by the Government of Catalonia and the Hàbitat Futura Group, with support from Barcelona City Council and the collaboration of the Official Property Administrator Association, as well as the involvement of the ECREE Forum. The second stage consists of preparing and executing the Energy Renovation Master Plan, together with the technical teams that have won the call in the first stage. The third stage consists of the outreach and advertising campaign on the experience gained in this pilot block, with the aim of increasing awareness of this initiative in other areas of the city of Barcelona and of Catalonia, and thus getting other communities involved in energy renovation processes.

<http://edificisdecatalunya.cat/eixos-de-treball/campanas/isla-eficiente/>

³⁹ <http://anerr.es/proyecto-prei.html>

⁴⁰ <http://www.nasuvinsa.es/es/proyecto-lourdes-renove>

⁴¹ <http://www.cartif.com/internacional/europa/proyectos-en-marcha/vii-programa-marco/item/704-cityfied.html>

⁴² <http://es.remourban.eu/>

⁴³ <http://eu-gugle.eu/es/>

⁴⁴ http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/ARQ_VIVIENDA/APOYO_EMANCIPACION/

State Plan, which aimed to finance the execution of projects with particular significance, based on the following thematic strategic lines: Improving neighbourhoods, centres and historic centres; Renewing functionally obsolete areas; Renewing areas for the replacement of substandard housing; Eco-neighbourhoods; and Tourist areas. However, despite the interest in its design, the programme did not have the anticipated results due to lack of initiatives.

A.6. Incorporating renovation and energy efficiency into training plans in university activity related to intervention techniques in the consolidated city and in existing buildings.

There are currently numerous university institutions, as well as other training centres and institutions (professional associations, etc.) that include energy renovation and efficiency in their degree, postgraduate, university master's or specialist courses, either replacing the traditional town planning courses, or in parallel and simultaneous to these courses. These include the Energy Renovation and Efficiency Executive Programme launched by the School of Industrial Organisation in collaboration with the Ministry of Public Works, in 2014.

A.7. Adapting vocational training so as to train the workforce and specialist craftsmen that are required by intervention in existing buildings.

The consortium formed by the Construction Labour Foundation, the National Institute for Qualifications (INCUAL), the Spanish National Research Council's Eduardo Torroja Institute for Construction Science (CSIC-IETCC) and the State Foundation for training in Employment developed the project 'Construye 2020 Build Up Skills Spain'⁴⁵, with the aim of improving education and training and the catalogue of professional qualifications, as well as developing training tools and training courses that enable building professionals to receive training in energy efficiency and renewable energy sources with a view to meeting the energy targets set by Europe for the year 2020.

The Construction Labour Foundation⁴⁶ has also developed a new training course corresponding to the Restoration and Renovation Area, with new courses and training material specifically dedicated to building renovation, also including energy renovation.

3.2.2. MEASURES TO DEVELOP BUSINESS STRATEGIES.

The 2014 ERESEE also identified the importance of the private business sector developing new business strategies with a particular focus on the needs of homeowners' associations, seeking to facilitate the restructuring of development and construction companies towards a new role as integral managers of renovation processes as well as the change in model of energy supply companies, stressing the new emerging values.

Although the initiative behind many of these measures lies exclusively with the business sector, it should be noted that since 2014 some new innovative business models have begun to be implemented, with the appearance of companies that have started to offer integral renovation services to homeowners' associations, from a multi-sectoral perspective.

Moreover, as established by Article 18(1) of Directive 2012/27/EU, Member States will promote the energy services market by making publicly available and regularly updating a list of energy service providers, meaning a natural or legal person who delivers energy services or other energy efficiency improvement measures in a final customer's facility or premises, pursuant to the regulations currently in force. In Spain, this activity is regulated by Royal Decree 56/2016 of 12 February 2016 transposing Directive 2012/27/EU on energy efficiency, as regards energy audits, accreditation of service providers and energy auditors and promoting the efficiency of the energy supply. Specifically, Article 7 governs the requirements for exercising the professional activity of energy service provider; Article 8, qualification and the affidavit regarding compliance with the requirements to exercise this

[CION/PRGM7.htm](#)

⁴⁵ <http://construye2020.eu/construye2020/descargas/informe-resultados-build-up-skills-construye2020>

⁴⁶ <http://www.fundacionlaboral.org/>

activity; and Article 10, the public list of energy service providers.

According to this Royal Decree, the list of energy service providers may comprise any natural or legal persons that have presented an affidavit to the relevant body responsible for energy efficiency in the autonomous community or city of Ceuta or Melilla, in which the company owner or legal representative declares that they meet the requirements stipulated, that they have the documentation to prove this and that they undertake to maintain them during the period in which the activity is being performed. The presentation of the affidavit serves as qualification to exercise the activity from the time at which it is presented, throughout the territory of Spain, indefinitely, without prejudice to subsequent checks that may be carried out by the competent administration. The responsible body from the autonomous community or city will forward the affidavit from the relevant energy services provider to MINETAD, which will send it to IDAE so that it may be included in the List of Energy Service Providers available on its website⁴⁷. This list contains the necessary information that makes it possible to identify energy service providers in order to make publicly available a list of qualified providers, facilitate inspections for the competent administration and provide other information that may be deemed necessary for the purposes of statistics and sectoral classification or the scope of companies' energy services.

In that regard, ANESE (Association of Energy Service Companies) has also developed a database⁴⁸ of certified quality companies that includes the ESCOs that have passed an independent external audit and that meet the standard created by ANESE setting out the main points that a professional ESCo must fulfil. In order to be included in this database, these companies have to prove they have the required technology, that they follow a methodology, that their staff are qualified and that they work under the ESCo savings guarantee model, among other requirements. An 'ESCo plus' quality seal has also been developed, which can be awarded to companies that already have contracts and projects that follow the savings guarantee model in addition to demonstrating their qualifications (as regards technology, staff, etc.).

ANESE has also recently presented the '2016 Energy Efficiency Observatory. The Energy Service Company market' ['Observatorio de Eficiencia Energética 2016. El mercado de las Empresas de Servicios Energéticos']⁴⁹, which analyses the ESCo sector in Spain, defines the business model used by an ESCo, presents the characteristics of the profile and activity carried out by these companies, as well as the barriers and opportunities in the sector.

3.2.3. REGULATORY MEASURES.

The various Spanish public administrations have made special effort in recent years to promote regulatory measures that facilitate the launching of the renovation sector. The 2014 ERESEE identified the following regulatory measures:

C.1. Promoting the regional and municipal regulatory development of the potentialities of Law 8/2013 of 26 June on urban renovation, regeneration and renewal. To do this, and particularly in the municipal sphere, the 2014 ERESEE recommended that a model by-law on energy efficiency and renovation should be created that would offer standardised solutions for this kind of action.

The first State-level law on urban renovation, regeneration and renewal had been approved in Spain barely one year before the ERESEE was published: Law 8/2013 of 26 June, which sought to reverse the traditional imbalance of Spanish urban development, historically more focused on urban growth and the production of new housing than on the urban regeneration of the existing city and the renovation of its buildings. Given the magnitude of the new changes introduced by this Law 8/2013, in 2015 the 2008 Land Law was redrafted, with two fundamental objectives: to clarify, regularise and

⁴⁷ http://eses.idae.es/eses_empresas_list.asp

⁴⁸ <http://www.anese.es/empresas-clasificadas-como-empresas-de-servicios-energeticos/>

⁴⁹ <http://www.anese.es/observatorio/>

harmonise the terminology and regulatory content of both legal texts, on the one hand, and to structure and order into a single general provision the precepts of a different nature and the scope they contain, on the other. The result of this redrafting work is Royal Legislative Decree 7/2015 of 30 October approving the consolidated text on the Land and Urban Renovation Law, currently in force.

At autonomous community level, many communities have already approved specific legislation on renovation, or have amended their regulations to adapt it to the requirements of the national law. These include:

Autonomous community	Regulatory amendments by the autonomous communities to adapt to national regulations concerning renovation.
ARAGON	- Legislative Decree 1/2014 of 8 July, approves the consolidated text of the Urban Planning Law.
BALEARIC ISLANDS	- Law 2/2014 of 25 March on Land Use and Planning.
CANTABRIA	- Law 7/2014 of 26 December on Fiscal and Administrative Measures amends Law 2/2001 (adds Article 102 bis, Actions on the urban environment).
CASTILE-LA MANCHA	- Law 3/2016 of 5 May on Administrative and Tax Measures amends the Law on Land Use Planning and Development Activities (Article 138, Building Assessment Report).
CASTILE AND LEON	- Law 7/2014 of 12 September on measures concerning urban renovation, regeneration and renewal, and concerning sustainability, coordination and simplification regarding urban development. - Decree 6/2016 of 3 March amending the Urban Development Regulations of Castile and Leon to adapt them to Law 7/2014 of 12 September on measures concerning urban renovation, regeneration and renewal, and concerning sustainability, coordination and simplification regarding urban development.
VALENCIA	- Law 5/2014 of 25 July on Land Use Planning, Urban Development and Landscape in Valencia.
EXTREMADURA	- Law 15/2001 of 14 December on Land and Land Use Planning (by means of Law 10/2015 of 8 April amending it).
GALICIA	- Law 2/2016 of 10 February on land and urban development.
MADRID	- Decree 103/2016 of 24 October governing Building Assessment Reports and creating the Single Integrated Register of Building Assessment Reports of Madrid.
MURCIA	- Law 13/2015 of 30 March on Land Use Planning and Urban Planning.
NAVARRRE	- Regional Law 35/2002 of 20 December on Land Use Planning and Urban Development (amended by Regional Law 5/2015 of 5 March on measures to encourage sustainable urban development, urban renewal and development activity).
RIOJA	- Law 13/2013 of 23 December on Fiscal and Administrative Measures for 2014 amending Law 5/2006 of 2 May on Land Use Planning and Urban Development.

Source: Subdirectorate-General for Planning. Ministry of Public Works.

Furthermore at municipal level, to improve energy efficiency in renovation, the Municipal Renovation Observatory was set up in 2014 within the framework of the partnership agreement signed by FEMP and the *La Casa que Ahorra* Foundation. Municipal officials from town and city councils from all over Spain (Madrid, Barcelona, Valencia, Málaga, Santander, Vitoria, Segovia, Pamplona, Santiago de Compostela, Aranjuez, etc.) are well represented within the observatory, as well as officials from the Ministry of Public Works, MINETUR and IDAE, in order to collaborate, contributing their different experience concerning renovation in all types of actions that might be of interest to other Spanish municipalities.

Within the framework of this agreement, and on the advice of the observatory, a working group was

formed that prepared a *'Model Renovation By-Law'*⁵⁰ that is currently available to all Spanish municipalities, implementing Law 8/2013 and particularly stressing the aspects related to conservation, accessibility and energy efficiency. The *'Document on recommendations on incentives for renovation with energy-efficiency criteria'* was also created with the same aim, setting out all the aid valid at that time to be able to carry out these types of actions, as well as the procedures to be able to access this aid.

C.2. Achieving the necessary flexibility in the application of the Technical Building Code to renovation works.

Law 8/2013 of 26 June on urban renovation, regeneration and renewal called for the application of the Technical Building Code to interventions that would be carried out on existing buildings, resolving a series of problems posed by applying this standard to renovation actions, largely highlighted by the main agents in the sector. These amendments contain the inclusion of some necessarily flexible and non-worsening criteria in the application of the Code itself to the interventions in existing buildings and, naturally, the obligation to declare the level of features achieved and conditions for use and maintenance arising from the intervention effectively carried out.

The amendment contained in the abovementioned Law introduced in Part I of the Technical Building Code the need to comply with the basic requirements, in the form established by regulation, for interventions in existing buildings, together with what was initially planned for the project, construction, maintenance and conservation of buildings and their installations.

Moreover, the update of the Basic Document DB-HE 'Energy Saving', from the Technical Building Code, approved by Order FOM/1635/2013 of 10 September 2013, included the energy-efficiency criteria for intervention in existing buildings, and also considered the procedure for verifying compliance with the requirement and criteria for determining the scope of the intervention.

As a continuation of the changes in Part I of the Technical Building Code, there are plans to promptly amend some of the Code's Basic Documents to incorporate, into each one, specific criteria applicable to existing building, including differentiated regulatory requirements, as well as a new revision of the Basic Document DB-HE and the update of the Basic Document on Energy Saving, from Order FOM/1635/2013 of 10 September 2013.

Moreover, the Supporting Document for Basic Document DB-SUA 'Safety in Use and Accessibility', from the Technical Building Code (DA DB-SUA/2 'Effective adaptation of accessibility conditions in existing buildings') was published in December 2016 in order to provide criteria of flexibility for the effective adaptation of existing buildings and establishments to the basic conditions of accessibility and non-discrimination of persons with disabilities.

C.3. Popularising Building Assessment Reports as a tool to measure the situation of the Spanish building stock and to inform homeowners of the extent to which their property could be improved.

One of the most prominent changes introduced by Law 8/2013 was the design of Building Assessment Reports as an informative instrument, in principle, but one that can play an important role as a potential catalyst for carrying out energy renovation works.

The Building Assessment Report [Informe de Evaluación de los Edificios – IEE] is a document that confirms a building's situation, at least in relation to its conservation status, with the compliance with current regulations on universal accessibility and with the degree of its energy efficiency (including the building's energy performance certificate for this, with the content and by means of the procedure established for this certification by the current regulations⁵¹), turning it into a very

⁵⁰ http://femp.femp.es/files/3580-1152-fichero/Modelo_Ordenanza_Rehabilitacion.pdf

⁵¹ In other words, in Spain, besides the cases of dwellings put up for sale or rent, all collective housing buildings required to have an IEE must have an energy performance certificate.

important assessment instrument for the future design of renovation and housing policies in Spain.

This is a compulsory report the administration may require from the owners of properties located in buildings of the collective housing type that meet certain characteristics, and in accordance with an established schedule⁵². IEEs must also be submitted whenever a building is going to apply for public aid to carry out conservation, accessibility or energy efficiency works.

In the event that deficiencies are identified in the building's conservation status in the IEE, the administration may order that these deficiencies be remedied, as in Spain, by virtue of the 'duty of conservation' (Article 15 of Royal Decree 7/2015), owners are obligated to conserve buildings *'in the legal conditions of safety, health, universal accessibility, decoration and any other conditions required by law to serve as support for these uses'*. Because the majority of conservation deficiencies identified in properties occur in facades and roofs⁵³, the carrying out of mandatory conservation works – in the event they correspond to 'significant alterations' – may also entail the obligation to improve energy efficiency.

This idea was introduced in Directive 2010/31/EU on the energy performance of buildings, Article 7 of which set out that, in existing buildings, *'Member States shall take the necessary measures to ensure that when buildings undergo major renovation, the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements set in accordance with Article 4 in so far as this is technically, functionally and economically feasible'*. Based on this, it was incorporated into Technical Building Code (DB HE Energy Saving, in part HE1 Limitation of demand), which currently establishes the following in section 2.2.2.1 Limitation of building energy demand in existing buildings:

'1. Where the intervention brings about changes in the interior or exterior conditions of a component of the "thermal envelope" that entail an increase in the building's "energy demand", the characteristics of this component will be in line with those set out in this Basic Document.

2 In refurbishment works where more than 25 % of the total area of the building's final "thermal envelope" is renovated, and in those intended to change the building's "typical use", the building's "overall energy demand" will be limited so that it will be lower than that of the "reference building".

3 In refurbishment works not considered in the above case, the "building envelope" components being replaced, incorporated or modified substantially will comply with the limitations set out in Table 2.3. Where there is simultaneous work on several components of the "thermal envelope"⁵⁴, the "thermal transmittance" values in this table may be exceeded if the resultant "overall energy demand" were equal to or lower than the demand obtained by applying the values in the table to the components affected'.

In other cases, i.e., where remedying the conservation deficiencies identified does not give rise to 'significant alterations' where more than 25 % of the total area of the 'thermal envelope' is

⁵² In a simplified way, this schedule establishes that buildings of the collective housing type that were already over 50 years old in 2013 must have an IEE before 2018 at the latest; and the buildings of this type that will be 50 years old after 2013 must have a IEE within up to five years from the date on which they reach this age. Buildings applying for public aid to carry out conservation, universal accessibility or energy efficiency works must also have an IEE, regardless of what building type they are.

⁵³ According to data from the Castile and Leon Construction Institute's Technical Building Inspection [Inspección Técnica de Edificios – ITE] Observatory (<http://www.iteweb.es/>), approximately 30 % of ITEs or IEEs are unfavourable, of which approximately 60 % have deficiencies in facades and/or another 40 % in roofs, very much above other deficiencies such as those in the structure or installations.

⁵⁴ The terms in quotes are defined precisely in the Basic Document itself. Specifically, the building's thermal envelope is defined as follows: *'The building's thermal envelope comprises all the enclosures that delimit the habitable spaces from the outdoors, the ground or another building, as well as all the interior partitions that delimit the habitable spaces with the non-habitable spaces in contact with the external environment. The thermal envelope may include, at the planner's discretion, non-habitable spaces adjacent to habitable spaces'*.

renovated, the IEE may also be an instrument that generates synergies between these works and an improvement – in this case voluntary – in energy performance. In effect, Article 6(f) of Royal Decree 235/2013 of 5 April approving the basic procedure for the energy performance certification of buildings stipulates that the certificate must include a *'document on recommendations to improve the cost-optimal or cost-effective improvement of the energy performance of a building or part of a building, unless there is no reasonable potential for an improvement of that nature in comparison with the energy performance requirements currently in force'*⁵⁵. Therefore, and although these recommendations are merely just that, the time at which the owners must address the mandatory works to remedy the deficiencies detected regarding the conservation status of facades and/or roofs represents a unique opportunity for them to consider the need to follow the energy certification recommendations and voluntarily and jointly carry out energy renovation works on the envelope.

Based on all the above, the IEE in Spain can play a fundamental role as catalyst and driver of synergies between mandatory conservation works and energy renovation works⁵⁶. To boost these effects and with the aim of facilitating their implementation, the Ministry of Public Works created a website about the IEE (<https://iee.fomento.gob.es/>, launched in autumn 2014) that, on the one hand, includes all the important information for the public regarding the IEE (*What is the Building Assessment Report (IEE)?, What regulations exist?, Who is liable? What are the deadlines for preparing the IEE? What is the content of the IEE? How is the IEE prepared? Which officers are competent? Where should the IEE be submitted? Is there aid or subsidies?*) and, on the other, forms a computer tool for competent officers to prepare the IEE, allowing them to obtain it in PDF format and generate an XML file that will allow it to be processed electronically. The tool also has an IEE queries mailbox to address questions from the public and officials in relation to this topic: consulta.iee.dgavs@fomento.es.

The extraordinary interest in and good reception the IEE website has had is evidenced by the fact that there are currently nearly 14 000 officials registered as users and that the number of annual hits in its first year has more than quadrupled, going from 64 397 in 2015 to 295 310 in 2016 (800 hits per day), and 59 905 just in the first three months of 2017.

In addition, and with the aim of rolling out the IEE in the various autonomous communities, the

⁵⁵ It is also established that:

'The recommendations included in the energy performance certificate shall cover:

- i. measures carried out in connection with a major renovation of the building envelope or technical building system(s); and*
- ii. measures for individual building elements independent of a major renovation of the building envelope or technical building system(s).*

The recommendations included in the energy performance certificate shall be technically feasible and may provide an estimate for the range of payback periods or cost-benefits over its economic lifecycle.

It shall provide an indication as to where the owner or tenant can receive more detailed information, including as regards the cost-effectiveness of the recommendations made in the energy performance certificate. The evaluation of cost effectiveness shall be based on a set of standard conditions, such as the assessment of energy savings and underlying energy prices and a preliminary cost forecast. In addition, it shall contain information on the steps to be taken to implement the recommendations. Other information on related topics, such as energy audits or incentives of a financial or other nature and financing possibilities may also be provided to the owner or tenant. To do this, the relevant criteria from Commission Delegated Regulation (EU) No 244/2012 of 16 January 2012 may be applied, which makes it possible to calculate the cost-optimal levels of minimum energy performance requirements for buildings and building elements.'

⁵⁶ According to the data from the Ministry of Public Works' Building Works series, in 2015 there were applications for municipal permits for roof renovation works in 9 527 buildings and for facades in 9 318 buildings. If it is hypothesised that at least 50 % of the permits correspond to multi-family buildings and they represent six dwellings on average, there would be over 25 000 annual dwellings where these synergies would be taking place.

In this respect, see the report from the ITeC (Catalan Construction Technology Institute) for the *La Casa que Ahorra* Foundation (July 2016), *'Opportunity costs in the facade renovation market'* [*Costes de oportunitat en el mercat de rehabilitació de fachadas*]. <http://www.lacasaqueahorra.org/ficheros/esp/Documentos/2BC80FE9-9D4C-5C52-7DA8-37BD140C8C88.pdf/>

autonomous communities have been given information about the IEE within the Administrative Subcommittee on Quality in Building [Subcomisión Administrativa de Calidad en la Edificación – SACE]. Following the principle of inter-administrative cooperation and to encourage compatibility between the IEE formats, and in particular with the computer tool developed by the Ministry of Public Works, the XML and XSD files that enable this compatibility have also been provided to any autonomous communities interested. Notwithstanding the above, there are also several autonomous communities – and even private companies – that have already developed their own websites and even computer applications to prepare, process and manage IEEs, as well as the relevant registers with the information contained in the IEEs.

It is also worth noting that the FEMP, in collaboration with the Ministry of Public Works and the Municipal Renovation Observatory, formed by municipal officials, has created a *'Model By-Law regulating Building Assessment Reports'*, which is now available to all Spanish municipalities⁵⁷, to facilitate their implementation.

Despite the importance the IEE may have in future, and despite the advances made with regard to rolling it out, its catalysing effects are going to be shown more clearly in the medium term, once it has been fully rolled out. For the moment, as per national law and without prejudice to the fact that the regional law may be more restrictive, buildings that were already over 50 years old in 2013 have until 2018, and those that will be reaching the age of 50 starting in 2013 have up to five years counted from the date on which they reach this age.

C.4. Strengthening the ability of programmes for the energy certification of existing buildings to make it possible to assess different options to improve energy performance.

The relaxation of the energy performance certification system is being encouraged through the possibility of incorporating new certification tools. The recognition criteria have been updated for the Energy Performance Certification Recognised Documents, to increase the chances of including advanced solutions to improve the energy performance of buildings and promote technological innovation in the sector.

In addition, since January 2016, the recognised programmes for energy performance certification have to generate a digital file in XML format, containing all the data from the certificate, which must be provided at the time of registering. To jointly assess different options for improving a building's energy performance, and to facilitate their inclusion in the certification, a computer tool has been developed called VisorXML (<https://www.codigotecnico.org/index.php/menu-recursos/menu-aplicaciones/330-visor-cte-xml>). This tool makes it possible, among other functions, to generate energy performance certificates from a valid XML file or several XML files where improvement measures are to be included on the certificate, in order to allow for moving away from standard solutions or measures to improve energy performance by making it easier to consider specific improvement measures for each building.

C.5. Creating the 'Building Book, for existing buildings'.

As part of promoting renovation culture among owners, the 2014 ERESEE identified that it would be beneficial for existing buildings to voluntarily have a 'Building Book' – similar to what is already required in Spain for all newly constructed buildings – as a continuously updated set of documentation on all the actions, reports (including the IEE), certificates, revisions, works, etc. that are carried out on each building.

In that regard, the creation of a new module of the IEE computer application has been completed (at internal level), called 'Existing Building Book', which allows the officials who complete the IEE to voluntarily add the 'Existing Building Book' to it, with maintenance recommendations for each and every one of the construction systems and installations in the building, as well as an annual schedule

⁵⁷ <http://femp.femp.es/files/3580-765-fichero/Modelo%20OrdenanzaIEE.PDF>

for the operations that must be carried out on the buildings in order to conserve them well, which they can offer to owners as a supplementary document to the IEE.

3.2.4. ADMINISTRATIVE MEASURES.

The 2014 ERESEE identified a series of regulatory measures linked to improving the coordination between the three tiers of public administration – state, regional and municipal – in order to drive renovation and prevent, as far as possible, any duplication and contradictions that might occur. These measures were the following:

D.1. Simplifying, standardising and reducing time in administrative procedures. Procedures for licences and authorisations should be sped up and use should be made of electronic administration platforms.

In addition to the regulatory measures introduced by Law 8/2013, which were already aimed at expressly regulating urban renovation, regeneration and renewal actions, and removing the obstacles that traditional urban development regulations were imposing on intervention in the consolidated city, there are many initiatives that seek to coordinate the actions of the various levels of the administration and relax the regulations that are applicable in each case. These initiatives include the gradual updating of regional regulations in line with the new basic national regulations, thus encouraging their application by municipalities.

Moreover, the inter-ministerial working group created by agreement of the Government's Delegate Commission for Economic Affairs [Comisión Delegada del Gobierno para Asuntos Económicos – CDGAE] of 29 August 2013, has presented a report on the main conclusions of the work to review the environmental, urban development and sectoral regulations that apply to the various economic activities. These measures also affect interventions in the consolidated city and propose working from all areas of competence and levels of the administration, to simplify procedures, relax regulatory requirements without undermining the safety of the actions, simplify the regulatory guidelines and prevent duplication, etc. This is all aimed at ensuring the proportionality and effectiveness of the existing regulations, the complexity of which sometimes forms a challenge as well for building renovation actions. Although the majority of the measures proposed are the responsibility of the autonomous communities, the State has begun the reforms for which it is responsible concerning regulatory simplification, with the approval of the consolidated text of the Land and Urban Renovation Law, approved in October 2015.

D.2. Promoting 'Local Agencies or Municipal Services for Building Renovation, Urban Regeneration and Renewal' in order to inform private actors, guide developers throughout the renovation process, mediate in any conflicts that arise, prepare intervention programmes, draw up regulations on renovation aid (renovation by-laws) and the terms for organising subsidies, etc. This measure would also include management and information through so-called 'one-stop shops'.

As has already been explained, the Ministry of Public Works works with the Spanish Federation of Municipalities and Provinces to provide training on and disseminate all the policies on renovation and energy efficiency that are carried out by the State, and it also contributes to sharing experiences and good practices through the various working groups and forums in which it is involved. A good example of this is its participation in the Municipal Renovation Observatory mentioned above.

In terms of managing the urban regeneration operations, worth noting is the possibility introduced by the 2013-2016 State Plan (Article 29) of financing the cost of the municipal planning, information, management and social support equipment and offices in the framework of the Programme to promote urban regeneration and renewal.

With regard to the centralisation of information, the web portal created by the Ministry of Public Works (<http://www.fomento.gob.es/rehabilitacion/>) offers not only information about State aid, but also links to the websites of the various autonomous communities.

D.3. Introducing the relaxation criteria approved in relation to the Technical Building Code into works authorisation processes.

The relaxation criteria included in the Technical Building Code have been clarified through the Model By-Law on Renovation prepared with FEMP, facilitating their application by municipal officers in the relevant works authorisation processes to which the Technical Building Code applies.

3.2.5. MEASURES TO IMPROVE FINANCING.

The ERESEE particularly highlighted the importance of financing as the main bottleneck that was hindering renovation. In that regard, it must be considered that its publication in July 2014 was practically simultaneous to the launch of the main public aid programmes implemented to encourage renovation, which had been designed prior to the ERESEE, so at that time they were not yet in operation in practice or, if they were, they were not yet fully operational.

The follow-up on these programmes is set out in section 3.1.

The 2014 ERESEE recommended completing the traditional subsidy schemes with new forms of financing (loans) for undertaking renovation initiatives specifically tailored to homeowners' associations, under conditions that would be advantageous for them. In reality, both the existing ICO financing facilities for homeowners' associations and IDAE's PAREER Programme already included this possibility, with conditions that in the latter case made it possible to supplement 30 % of aid in the form of direct subsidies by covering up to another 60 % of the cost of the works with a loan at an interest rate of Euribor +0.0 % and a maximum repayment period of 12 years (including an optional one-year grace period). These loans were also compatible with the State Plan subsidy line.

The ERESEE outlined how certain sectors (particularly property managers and the banking sector) had highlighted some weaknesses of the outright grant model, including the extensive processing period, or the fact that they are always paid after the fact, once the works have been completed. This causes owners to have to deal with a large initial outlay and receive the subsidy after the works are completed, all with some reasonable margin of uncertainty. Therefore, from the economic point of view, the ERESEE highlighted that, in the short, medium and long term, other mechanisms would have to be devised that would go beyond traditional subsidies, or subsidising loans, or that at least were able to be aligned with these. These would include the following:

E.1. Channelling resources from the Energy Efficiency National Fund (from contributions, inter alia, from liable companies and from ERDF funds from '*Thematic Objective 4: Towards a Low-Carbon Economy*') towards building energy renovation initiatives.

As stated in section 3.1.2, the Energy Efficiency National Fund earmarked EUR 75 million for the PAREER-CRECE Programme.

E.2. Working with the European Investment Bank (EIB) to design programmes to support the funding of building renovation, particularly energy renovation. This would make it possible to inject liquidity from the European Central Bank to our banks.

Of note in this regard is the JESSICA-FIDAE Sustainable Urban Development Fund, the follow-up for which was outlined in section 3.1.6.

E.3. Making it possible for energy services companies, construction companies or renovation management companies to receive aid directly from public administrations, with explicit consent from the customer.

As has been mentioned, the 2013-2016 State Plan to promote housing rental, building renovation and urban regeneration and renewal was approved prior to the 2014 ERESEE and did not expressly include the possibility of renovation or energy service companies being direct aid beneficiaries, although it did seek to drive public-private partnership, and therefore dedicated Article 31 fully to

this. A short time later, the PAREER Programme⁵⁸ did expressly include this possibility, including among the potential beneficiaries not only the owners of existing buildings (whether natural or legal persons, of a private or public nature) and homeowners' associations or their groupings, but also building operating, tenant or concessionaire companies and energy service companies.

E.4. Reinforcing the ICO financing facility for homeowners' associations that has been available since 2013, seeking to improve two aspects as far as possible: making it cheaper to raise funds on the capital markets and obtaining 'soft' funding from international financial institutions (or institutions such as KfW, CEB, etc.).

In that regard, the development of the ICO financing facility has already been outlined in section 3.1.3.

E.5. Supporting financial entities in designing specific products to fund renovation.

Various meetings have been held with financial institutions since 2014 to try to promote the design of loans specifically adapted to financing renovation, particularly aimed at homeowners' associations.

There are now several financial institutions that offer this kind of product in Spain, although the interest rates offered are not very different from consumer credits, so they do not end up being attractive to owners. Moreover, although Royal Legislative Decree 7/2015 of 30 October approving the consolidated text of the Land and Urban Renovation Law already sets out in Article 9(5)(h) that homeowners' associations may *'apply for credits in order to obtain financing for conservation works and actions regulated by this law'*, the majority of credits continue to be granted on an individual basis and not to homeowners' associations.

With regard to the issue of guarantees in the event of non-payment, the financial institutions have been calling for the public administrations to develop a limited guarantee fund or some type of guarantee that would make it possible to cover the risk of late payment by homeowners' associations, which have been identified by the financial institutions as having a high risk of non-payment, although they have very low default rates and there are already procedures in the Commonhold Property Law to guarantee the payment of fees by members. In that regard, the change set out in Article 14(d) of the abovementioned Royal Decree 7/2015 is also worth mentioning, pursuant to which *'the relevant administrative consent or authorisation to carry out any actions on the urban environment [...] will determine the actual direct and immediate effect, by legal determination, of the properties constituting private elements of commonhold property schemes or private building complex schemes, regardless of their owner, on fulfilment of the duty to pay for the works. The actual effect will be recorded by means of a comment entered in the margin of the Property Register, expressly stating its status as security in rem and with the same scheme of preference and priority established for the actual effect on the payment of urban development fees in urban transformation actions'*.

Finally, the work done by the Financing Renovation Working Group, through which various meetings have been held and working documents on financing have been created.

3.3. MEASURES RELATED TO ENERGY EFFICIENCY IN PUBLIC ADMINISTRATION BUILDINGS.

Section 4.3.1 of the National Energy Efficiency Action Plan 2017-2020 (NEEAP) sets out the measures developed in relation to central government buildings (Article 5 of Directive 2012/27/EU), such as defining the criteria and the scope of the inventory of central government buildings, taking stock of these buildings, describing the main results, as well as the follow-up data on the obligation to

⁵⁸ State Secretariat for Energy Decision of 25 September 2013 publishing the Institute for Energy Diversification and Saving Board of Directors' Decision of 25 June 2013 establishing the regulatory bases and organising the programme of aid for the energy renovation of existing buildings in the residential sector (housing and hotel use). <https://www.boe.es/boe/dias/2013/10/01/pdfs/BOE-A-2013-10201.pdf>

annually renovate 3 % of the total floor area.

In addition, section 4.3.2 of the 2017-2020 NEEAP sets out the information related to the measures taken by the other administrations such as the autonomous communities and local administration, also highlighting actions aimed at social housing.

3.4. OTHER MEASURES NOT INCLUDED IN THE 2014 ERESEE THAT HAVE ALSO BEEN CARRIED OUT BETWEEN 2014 AND 2017

It is important to highlight the change in context that took place between 2014 and 2017. On the one hand, Spain is showing a solid recovery in terms of the figures for macroeconomic activity and employment, although difficulties persist for one segment of households. On the other hand, it can be affirmed that renovation is starting to be a reality in Spain and it is being assumed as a clear future investment. While the ERESEE was being prepared in 2013, it was found in the working groups set up to that end (with construction companies and companies from the energy sector, professionals from the sector, public administrations, etc.) that although there was a widespread consensus about the importance of renovation, it was nearly impossible to find completed actions or results from innovative initiatives. Significant advances have taken place in these years, which, even though they still may not be considered widespread practices, do make it possible to now analyse completed experiences and compare specific results. In that regard, it is worth pointing out in particular the independent initiatives and work of various agents such as those mentioned below by way of example:

1. Initiatives to articulate the dialogue between agents in the sector at national level.

Following up on the initial push from the Ministry of Public Works in the creation of working groups to prepare the 2014 ERESEE, several projects and initiatives have appeared from different professional sectors and sectors of society:

BUILD UPON is a project financed within the EU's Horizon 2020 Programme, in which 13 European Green Building Councils (GBCs) are taking part, coordinated by GBC Spain and supported by WorldGBC. Its main aim has been to contribute to the development of the 2017 update of the national Strategies required by Article 4 of Directive 27/2012. To do this, each of the countries in which it has been carried out has first mapped out the panorama and the key actors and initiatives in each country⁵⁹, and then carried out a collaborative process of participation by these agents, which in Spain materialised in the holding of various themed workshops on the multiple aspects of renovation⁶⁰, based on which conclusions have been drawn and a series of proposals made.

FOSTER REG⁶¹ (Fostering public capacity to plan, finance and manage integrated urban REGeneration for sustainable energy uptake) is also a European project, with significant Spanish participation, focused on building public authorities' capacity for designing, planning, financing and managing measures geared towards integrating energy-efficient renovation of buildings within urban regeneration strategies. Various themed workshops have also been held in Spain in the framework of FosteREG⁶².

The Renovation Working Group [Grupo de Trabajo para la Rehabilitación – GTR]⁶³, which already

⁵⁹ <http://es.buildupon.eu/>

⁶⁰ <http://buildupon.eu/es/dialogue/countries/spain/>

⁶¹ <http://www.fosterreg.eu/index.php>

⁶² http://www.fosterreg.eu/jdownloads/WP%205/D3.4_Integrated%20Report_Spain_v1.2_FINAL_31-03-2016.pdf

⁶³ The Renovation Working Group (GTR) is a group of experts coordinated by the Green Building Council España and the CONAMA Foundation, aimed at promoting the transformation of the current building sector based on the construction of new buildings, towards a new sector aimed at creating and maintaining the socially necessary habitability and, within this building sector, the creation of a new sector with economically viable housing and job creation, which will ensure the right to housing, assuming the environmental and social challenges of the Global Change. <http://www.gbce.es/es/pagina/gtr->

collaborated on the technical work for the 2014 ERESEE, has continued working and has formed the Autonomous Communities GTR⁶⁴, the Cities GTR and the Financing GTR.

Moreover, and as has been mentioned, FEMP set up the Municipal Renovation Observatory with the participation of officials from various town and city councils, the Ministry of Public Works and IDAE.

2. Carrying out prospective studies and analyses directly related to the strategy.

Various independent, unofficial works were also published between 2014 and 2017 on prospective studies and analyses directly related to the Renovation Strategy that show the interest these topics are beginning to have within Spanish society.

3. Development of Renovation Strategies and other studies related to ERESEE at autonomous community level.

The interest aroused by renovation has led some autonomous communities to develop their own strategies at regional level. Thus, in 2016 Castile and Leon approved the ERUrCyL (Urban Regeneration Strategy in Castile and Leon⁶⁵) in order to have a guidance document that will be used to direct any urban renovation, regeneration and renewal processes that are carried out in this autonomous community, whether developed by private initiative or by the various public administrations. Although the ERUrCyL is not regulatory in nature or planning in scope, it seeks to be a guide or tool that will enable or facilitate the transition from abstract regulatory provisions to specific action in the region for all the players – fundamentally public – concerned with urban renovation and regeneration. In that regard, the strategy aspires to become a reference that makes it easier for town and city councils in Castile and Leon to prepare their own municipal inventories of vulnerable areas and municipal renovation strategies. This will be possible in the light of the analysis on the homogeneous residential complexes in the file by cities included as an annex to the document, and in accordance with the methodology therein. The ERUrCyL includes some urban regeneration indices calculated with uniform parameters, which will also make it possible to prioritise the urban renovation, regeneration and renewal actions in the municipal area and, in turn, carry out a comparative assessment and monitoring of all these actions at autonomous community level.

Furthermore, in this autonomous community, AEICE⁶⁶ (Efficient Construction Innovative Business Group) Habitat and Efficient Construction Cluster of Castile and Leon has developed the 3R Action Plan or Sustainable Renovation Plan of Castile and Leon 2016-2020⁶⁷. This 3R Action Plan is developed in line with both the 2014 ERESEE as well as the ERUrCyL, and comprises a strategic plan and an operational plan that develop the specific action measures, with assignment of a schedule, means, investment and indicators. The 3R Action Plan is structured around five large strategic areas whose development into programmes and measures associated with each one establishes a roadmap focused on citizens, owners and users as central figures.

In the case of Catalonia, the government of this autonomous community approved the ECREE (Catalan Strategy for the Energy Renovation of Buildings)⁶⁸ in February 2014, i.e. before the ERESEE was published. The ECREE develops the previous work carried out in the framework of the MARIE European project and contains an Action Plan with the executive description of each of the agreed actions, covering six areas (Information system; Communication and awareness raising; Training and employment; Products and services; Organisational model and regulations; and Investment programme and financial mechanisms). There is also an Entities Forum to implement the Catalan

[2014](#)

⁶⁴ In 2016 it published the 'Renovation Assessment in the Autonomous Communities' ['Diagnóstico de la Rehabilitación en las Comunidades Autónomas']. <http://www.gbce.es/es/pagina/informe-gtr-comunidades-autonomas-2016>

⁶⁵ <http://www.jcyl.es/junta/cp/ERUCyL.pdf>

⁶⁶ <http://www.aeice.org/>

⁶⁷ <http://planaccion3r.org/plan-a3r/tenemos-un-plan/>

⁶⁸ <http://edificisdecatalunya.cat/>

Strategy for the Energy Renovation of Buildings.

In Valencia, in 2015 the IVE (Valencian Building Institute) published a *'Study on the potential for energy saving and reduction of CO₂ emissions in Valencia'* [*'Estudio del Potencial de ahorro energético y reducción de CO₂ en la Comunitat Valenciana'*]⁶⁹, in relation to the EPISCOPE⁷⁰ project (Energy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks), financed by the EU with the aim of promoting energy renovation processes, and that provides continuity for the previous TABULA project, which identified residential typologies and characterised the building stock of the participant countries⁷¹. The RENHATA website was later created, which announced an Action Plan for the Renovation and Refurbishment of Dwellings in Valencia, the aim of which is to plan the main long-term actions to transform the construction sector towards a smart, integrating sustainable growth model based on the integral renovation of residential buildings, with four areas of work: Financing and management, Training and employment, Information and awareness raising and Innovation and development. The Valencia Renovation Committee has also been set up as the coordination and management body for the Action Plan, with the aim of forming a platform for cooperation, promotion and exchange, where the agents involved will find a suitable framework to discuss their problems, concerns, needs, experiences and to promote and carry out projects of common interest that will encourage and facilitate the process of renovating and refurbishing the building stock.

It is worth highlighting another initiative, developed in the Basque Country between 2009 and 2012, that was pioneering not only in Spain but across Europe, even though it came before the 2014 ERESEE, and even before Directive 2012/27/EU. This initiative rolled out a set of strategic and regulatory instruments, as well as instruments for economic and technical support, culminating in the BULTZATU 2025 Roadmap. This initiative set targets and indicators related to improving conditions regarding accessibility, energy efficiency, reducing energy poverty, improving habitability conditions, employment, innovation, etc., with a higher level of ambition than the more traditional plans, based on defining a short-term plan where only quantitative indicators were established regarding the number of files to be processed. The *'Assessment of the intervention requirements in renovating the building stock of the Autonomous Community of the Basque Country'* [*'Diagnóstico de las necesidades de Intervención en la renovación del parque edificado de la Comunidad Autónoma del País Vasco'*]⁷² was prepared in 2011 in the framework of this initiative, identifying areas for intervention based on vulnerability indicators.

Finally, despite not having a strategy at regional level, other autonomous communities have set up some kind of network or cluster to promote renovation, such as e.g. the Committee for Building Renovation and Urban Regeneration in Aragon.

4. Innovation and advances in renovation management at municipal level.

In terms of **municipal renovation planning**, below are some new features put into practice recently by some of the most important Spanish municipalities, simply to illustrate the variety of innovative initiatives that are cropping up all over Spain, without intending to offer any kind of assessment of them:

In relation to financing actions in low-income neighbourhoods and/or neighbourhoods with little or no ability to join together, for example:

- Establishing repayable renovation aid, for certain socioeconomic profiles, guaranteeing the payment thereof with the agreed registration of the charge in the Land Register, as Barcelona

⁶⁹ http://episcopes.eu/fileadmin/episcopes/public/docs/pilot_actions/ES_EPISCOPE_RegionalCaseStudy_IVE.pdf

⁷⁰ <http://episcopes.eu/welcome/>

⁷¹ <http://episcopes.eu/building-typology/country/es/>

⁷² http://www.etxebide.euskadi.eus/contenidos/nota_prensa/npetxe120307_inventario_parque/es_npetxe/adjuntos/informe.pdf

has done.

- Declaring the public interest of the renovation by delimiting *Areas of Conservation and Energy Renovation and of Accessibility* at census section level, with the use of mechanisms equivalent to those of urban development management through cooperation, as in the case of Santa Coloma de Gramenet⁷³.

In terms of **municipal renovation planning**, and promoting this through subsidies and support for communities with a greater capacity for financing and organisation, for example:

- Planning by sectors and social and administrative support for homeowners' associations, as in the case of Zaragoza⁷⁴, with a management process that has been extensively proven over recent years.
- Delimiting Priority Areas for Urban Renovation Intervention (APIRUs), based on the urban vulnerability indicators study, and establishing a specific management process to implement them, as in the case of Madrid (Mad-Re Plan)⁷⁵.

In terms of **planning by stages** for the interventions in each building, for example:

- Introducing and granting public subsidy, under certain circumstances, for *Global Intervention Projects*⁷⁶, which make it possible to have a roadmap of the actions to be carried out on a building or group of buildings, regardless of whether these actions are done in stages, as in the case of Navarre and specifically Pamplona City Council, which subsidises the preparation of a Global Intervention Project in a specific area by means of an open call⁷⁷.

As regards establishing **regional partnership frameworks** between municipalities, for example:

- Introducing platforms for meeting and collaboration between municipalities about urban renovation and regeneration, such as Valencia's experience with the RENHATA network⁷⁸.

⁷³ <https://www.gramenet.cat/es/temas/territorio/renovem-els-barris/inforenovem/info/article/lajuntament-endega-el-pla-renovem-els-barris/>

⁷⁴ http://www.zaragozavivienda.es/M07_REHABILITACION-URBANA/

⁷⁵ <http://www.madrid.es/portales/munimadrid/es/Inicio/Vivienda-y-urbanismo/Plan-MAD-RE?vgnextfmt=default&vgnextoid=e000cb5ee0993510VgnVCM1000001d4a900aRCRD&vgnextchannel=593e31d3b28fe410VgnVCM1000000b205a0aRCRD>

⁷⁶ Article 56. *Priority Renovation Areas and Global Intervention Projects*, in Regional Decree 61/2013 of 18 September regulating the protectable actions concerning housing. <http://www.lexnavarra.navarra.es/detalle.asp?r=32564>

Article 83. *Global Intervention Projects* in Regional Decree 2/2016 of 27 January amending Regional Decree 61/2013. http://www.gobiernoabierto.navarra.es/sites/default/files/decreto_foral_9.pdf

⁷⁷ Open call for tender to procure the preparation of the Global Intervention Project GIP 6. <https://www.boe.es/boe/dias/2004/05/14/pdfs/B04240-04240.pdf>

⁷⁸ In the framework of the Action Plan for the Renovation and Refurbishment of Dwellings in Valencia. The network includes, for the time being, the municipalities with ARRUs under way. <http://renhata.es/es>

4. ANALYSIS OF THE MAIN STRUCTURAL CHALLENGES.

Below are a series of structural challenges for developing energy renovation in Spain that were identified in the assessment carried out for the 2014 ERESEE and still persist or have come to light during its subsequent development. The purpose of this section is not only to highlight them, but to establish some conclusions that will make it possible to design the optimal measures to tackle them.

4.1. COMPLEXITY OF THE PROBLEMS FACING THE SPANISH RESIDENTIAL STOCK.

There are several tools for analysing the Spanish residential stock that have made it possible, both at national and regional, and even provincial level, to do an exhaustive analysis of the characteristics of residential buildings and an assessment of their renovation needs⁷⁹. A large part of this information is also available at census section level, which even makes it possible to prepare thematic maps at a very detailed level⁸⁰.

Starting with the most serious topic, substandard housing (dwellings smaller than 30 m², and/or without a bathroom, running water, waste water discharge, etc.) it should be pointed out that this has become a very limited problem, affecting less than 1 % of the total stock and where significant progress has been made in recent years as well⁸¹.

With regard to the conservation status of residential buildings, Spain is positioned slightly behind the EU average: as can be seen in the graph below, according to data from the European Commission corresponding to the year 2013, in Spain 16.7 % of the population was living in dwellings with conservation problems, compared to 15.7 % on average in the EU28. In absolute terms, according to the last census in 2011, in Spain there were 1.8 million dwellings whose conservation status was dilapidated, poor or deficient, accounting for approximately 7 % of the total (although the differences between a dilapidated state or a merely deficient state are huge).

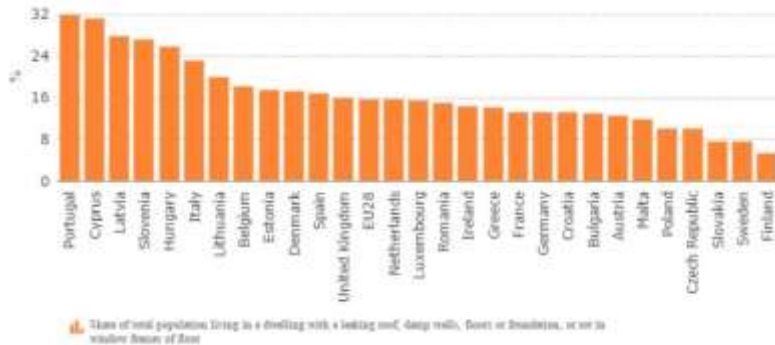
⁷⁹ This is the 'Analysis of the characteristics of residential building in Spain' [*Análisis de las características de la edificación residencial en España*]: http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/ARQ_VIVIENDA/SUELO_Y_POLITICAS/OBSERVATORIO/ANALISIS_CARAC_EDIF_RES/

These reports present, at national level, the main characteristics of the Spanish residential stock, by autonomous community and province, analysing different variables related to residential building (type, age, surface area of the dwellings, conservation status, accessibility, etc.) based on the data available in the INE's Population and Household Censuses from 2001 and 2011. Data are offered that make it possible to characterise the housing stock at each of the reference dates, the priority intervention stock is identified (deficiencies in the conservation status, accessibility and substandard housing) and its development between 2001 and 2011 is analysed.

⁸⁰ The 'Atlas of Residential Buildings' in Spain 2001-2011 is an online application created from the Population and Housing Censuses from 2001 and 2011 that offers statistical information and makes it possible to analyse – at census section level and in all the municipalities in Spain – different variables related to building and, in particular, the buildings predominantly used for housing, generating thematic maps with different indicators, organised into four domains: Basic characteristics of buildings and dwellings; Typical use, ownership and tenancy regime; Conservation status and availability of installations; and Urban development characterisation. http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/ARQ_VIVIENDA/SUELO_Y_POLITICAS/OBSERVATORIO/AtlEdiResEsp/

⁸¹ Ministry of Public Works (2014) 'Analysis of the characteristics of residential buildings in Spain in 2011. Volume I' [*Análisis de las características de la edificación residencial en España en 2011. Tomo I*], pp. 42 et seq. Significant progress has also been made in eradicating the problem of shanty towns and in improving housing conditions for specific groups, such as the Roma population. In this regard, please see: Ministry of Health, Social Services and Equality. 'Map/Study on Housing and the Roma Population. Executive Summary' [*Estudio Mapa sobre Vivienda y Población Gitana. Resumen Ejecutivo*] (September 2016). http://www.eapn.es/ARCHIVO/documentos/recursos/4/1473319238_resumen_ejecutivo_estudio_vivienda_pob_gitana_2015.pdf

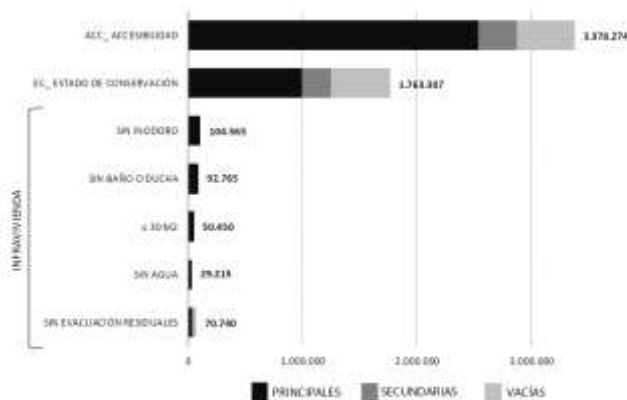
Figure 21. EU countries according to the percentage of population whose dwelling has conservation problems (leaks, damp on walls, floor or foundation, window frames in poor state, etc.). (2013).



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

In relation to accessibility, it should be taken into account that Spain is one of the countries with the highest percentage of population in collective housing in buildings with more than four storeys, and that despite being, according to Credit Suisse, the country with the highest number of elevators per inhabitant, according to the 2011 census data, there were 3.4 million dwellings located in buildings with four storeys or more that do not have a lift, which affected approximately 13.5 % of the housing stock. As can be seen in the graph below, this is the most significant problem from the quantitative point of view of all those analysed:

Figure 22. Main problems of the residential stock in Spain (2011).



Source: Ministry of Public Works.

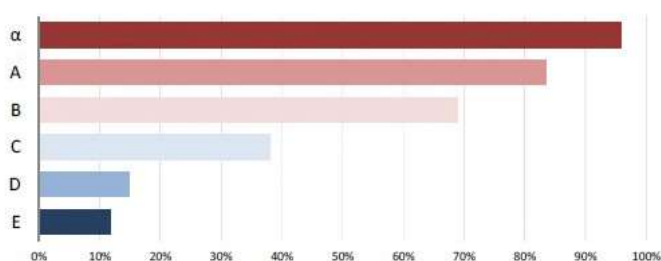
From the qualitative point of view, this problem is particularly serious for disabled persons and older people, and that is surely why it is the issue that concerns Spaniards most with regard to the building in which their home is located, according to the latest large survey done nationally on housing conditions in Spain (the Centre for Sociological Research (Centro de Investigaciones Sociológicas – CIS) Housing Barometer, carried out in 2014, after the ERESEE), which showed that 43.9 % of those surveyed were somewhat dissatisfied (26.5 %) or totally dissatisfied (17.4 %) with the accessibility conditions of their building.

With regard to the energy behaviour of the Spanish residential stock, it should be pointed out that as outlined in the 2014 ERESEE based on the 2011 census data, nearly 60 % of Spanish dwellings (i.e. 13.8 million, of which 9.8 million correspond to main dwellings and the other 4 million to secondary and empty dwellings) are older than the first Spanish law requiring minimums in terms of energy efficiency, which in our country, like in many other European countries, was approved after the oil crisis at in the late 1970s (NBE-CT-79 standard). For the other dwellings older than the Technical Building Code, although they had to strictly comply with the minimums established by the CT-79 standard, their construction coincided with a context of increasing household incomes and

continuously falling energy prices, which meant little attention and public awareness about energy efficiency.

With regard to installations, of the total 17.5 million main dwellings in existence in Spain according to the 2011 census data, around 9.9 million dwellings (56.7 %) had a heating installation; almost 5.2 million did not have any proper heating system or installation, although they did have at least some kind of heating appliance; and there were nearly 2.4 million dwellings that did not have anything⁸². As can be seen in the graph below, the difference in terms of being equipped with heating installations varies a great deal according to the climatic zone, and it is a more worrying issue – although it may proportionally have a much lower incidence – in zones with harsher winters.

Figure 23. Percentage in each climatic zone of dwellings without heating installation.



Source: Ministry of Public Works/Juan de Herrera Institute. 'Analysis of the characteristics of residential buildings in Spain according to the 2011 census. Volume II'. p. 13.

http://www.fomento.gob.es/NR/rdonlyres/BDE3A416-114C-498B-9F1A-0286545535E0/135889/Tomoll_Fichasestatalyautonomicas.pdf

With regard to the social consideration of energy efficiency, according to the Housing Barometer, 32.8 % of Spaniards are somewhat (25.2 %) or totally (7.6 %) dissatisfied about their home's insulation against heat and cold, which indicates greater concern over thermal comfort than over conservation status (regarding which only 18.9 % say they are somewhat or totally dissatisfied), but slightly behind other problems such as noise (36.3 %) or security against theft (34.3 %).

In conclusion, the Spanish residential stock has problems that are very different in nature, which could be condensed into three aspects: conservation, universal accessibility and energy efficiency. Although energy efficiency is one of the most significant deficits with regard to the challenges and demands of present-day society, it does not raise the same degree of concern, or public awareness, as the others affecting existing buildings. Hence, the renovation perspective must overcome partial or sectoral approaches and be seen as an integrated set of actions, aimed at improving the quality and comfort of the building stock as a whole. This means, on the one hand, that any policies designed to tackle these problems must try to establish interrelationships between them and achieve synergistic solutions and, on the other, that the available public funds will be distributed appropriately to deal with this problem, prioritising attention for the most serious problems.

4.2. CLIMATOLOGY-RELATED FACTORS.

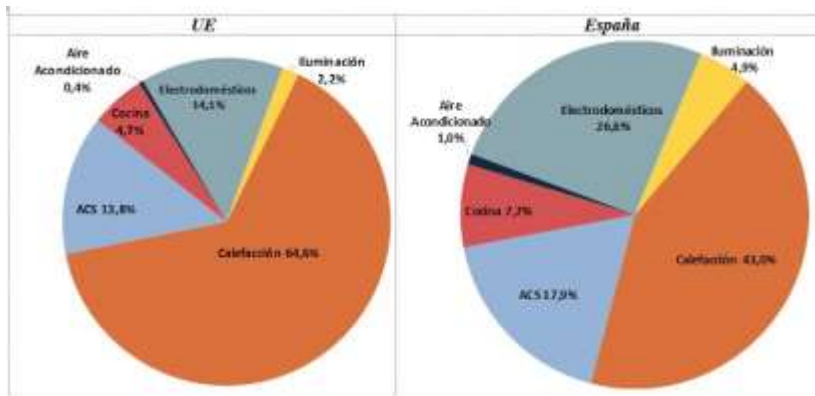
Article 4(b) of Directive 2012/27/EU calls for the inclusion in national strategies of cost-effective approaches to renovations relevant to the building type and climatic zone. Both this requirement of economic profitability as well as the cost-optimal methodology imply the assumption that the energy renovation works can be financed through long-term capitalisation of the energy savings obtained.

⁸² The most recent data from the CIS Housing Barometer from 2014 indicate the following: 67.9 % of households surveyed responded that they had a heating installation; 25.6 % said they did not have a heating installation, but they did have appliances to warm a room; and just 6.4 % said they did not have either.

Following Article 4, this assumption was used in the 2014 ERESEE, where, based on fixed data and on the value of some input variables, 'the calculation model determines the point from which it is cost effective to renovate a dwelling from a particular cluster and band, insofar as the costs of its intervention menu are economically viable due to being lower than the future energy savings that can be achieved' (2014 ERESEE, p. 56).

However, in order for this hypothesis to work properly, high scenarios of energy prices are needed, as well as high energy consumption on climate control, which will make it possible to obtain savings where the capitalisation over time may be significant. In this sense, Spain, together with other Mediterranean countries, is part of the group of countries with the lowest energy consumption in the residential sector in the whole EU, and, in particular, with a lower weight of energy used on climate control out of total household consumption. Thus, for example, according to data from the 2017-2020 NEEAP regarding the year 2014, the building sector only represented 29.7 % of the total final energy demand, compared to 38.5 % on average for the EU, while the weight of heating in total consumption in the residential sector is just 43 %, compared to 64.4 % for the EU average⁸³.

Figure 24. Structure of energy consumption by uses in the residential sector in Spain and the EU, 2014.



Source: IDAE/EC. Note: Consumption by uses has been modelled based on the SECH-SPAHOUSEC I Study and on the Manual of household energy consumption statistics (MESH).

In that regard, it is worth noting that there are notable differences between countries in annual unit consumption per dwelling, and Spain is among those with lower consumption, since, as can be seen in the graph below, the average consumption of a household in Spain is 9 422.1 kWh/dwelling compared to 26 568.1 kWh/dwelling in Luxembourg.

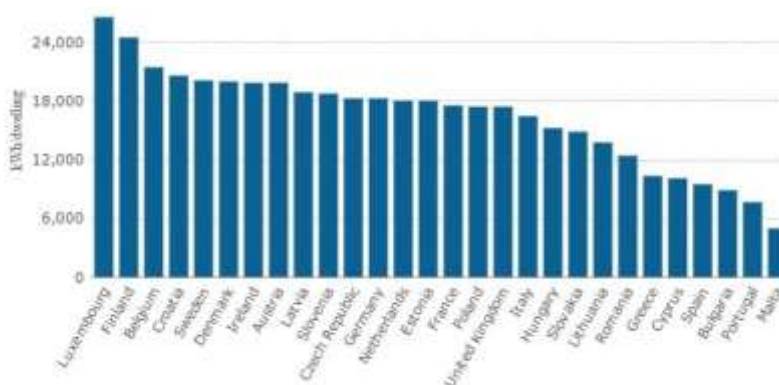


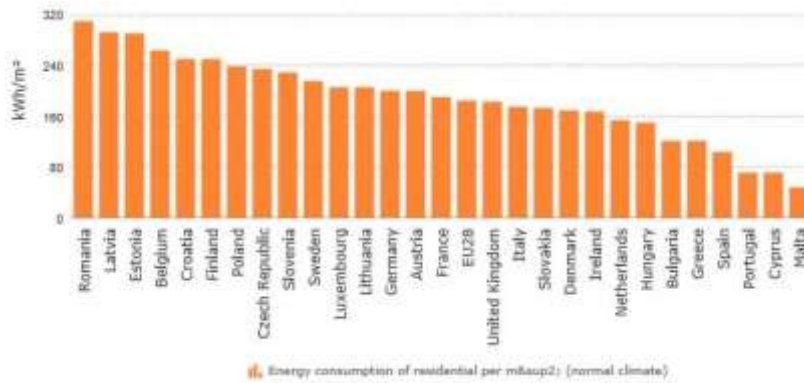
Figure 25. EU countries according to energy consumption in residential buildings per dwelling (normalised climatic conditions).

Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

⁸³ On the other hand, this makes the weight of energy consumed for cooking, electrical household appliances and lighting be much higher in Spain (7.7 %, 26.6 % and 4.9 %, respectively) than in the EU (4.7 %, 14.1 % and 2.2 %).

The same thing occurs in terms of unit consumption of energy in residential buildings per m², where consumption in Spain (103.04 kWh/m²) is among the lowest in Europe, compared to 184.14 kWh/m² on average in the EU28 or 308.09 kWh/m² in Romania.

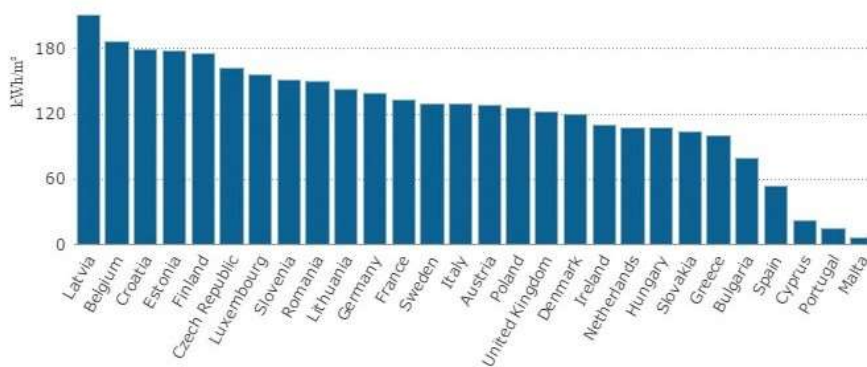
Figure 26. EU countries according to energy consumption in residential buildings per square metre.



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

Likewise, unit consumption per square metre by heating is also very much lower in Spain than in other European countries: 53.6 kWh/m² compared to 209.09 kWh/m² in Latvia.

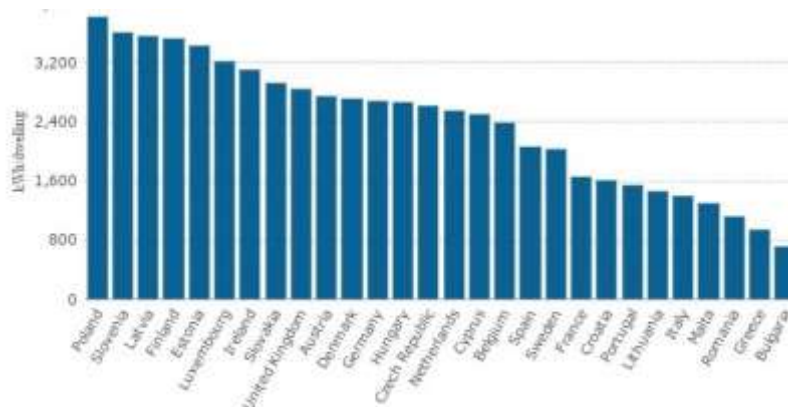
Figure 27. EU countries according to unitary energy consumption per square metre by heating in residential buildings.



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

In DHW, annual consumption is also in the bottom third of countries for lowest consumption in absolute terms: 2054.3 kWh per dwelling compared to 3 814.5 kWh per dwelling in Poland.

Figure 28. EU countries according to energy consumption for DHW per dwelling.

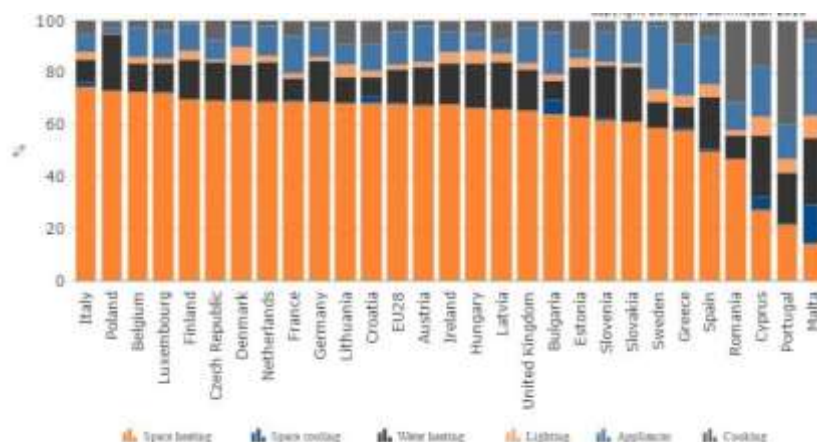


Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

This all results in notable differences in households' consumption structures in the different

countries, which can be seen in the graph below, where Spain is found among those with the lowest percentage of energy consumed for heating (around 49.3 % in 2013, compared to 74.51 % in Italy).

Figure 29. EU countries according to energy consumption by uses (2013).



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

Ultimately, as a result of its climate, since Spain is one of the countries with the lowest household energy consumption, and particularly in terms of consumption by heating (both in absolute and relative terms regarding total domestic consumption), the savings potential that can be obtained is much lower than in other EU Member States, and therefore the possibility of financing the amount of the initial works that must be undertaken through the long-term capitalisation of these energy savings, is also reduced or becomes very difficult.

As a downside to these climatic conditions, it might seem that in Spain there would be high potential for saving energy on cooling in summer, but the data show that consumption by cooling is barely 1 % of the total for households, and therefore again there is little potential for significant savings on cooling and, consequently, little profitability in the capitalisation of these savings.

Another factor to consider is the existence of a tariff structure (for example, in electricity), where the fixed costs of bills (billing by power contracted) has a very high impact on the variable term corresponding to the billing for energy actually consumed, which, together with the climatic factors outlined, contributes to making the capitalisation of energy savings difficult within a reasonable period of time.

Therefore, it seems logical that in Spain and in the other Mediterranean countries, the hypothesis of the economic returns on the investment in energy performance is not the only one used in the analyses of the national strategies and that it will be necessary to match energy renovation with other objectives, so it can achieve the push needed. On one hand, the macroeconomic perspective should be incorporated, regarding the global returns on the public investment through taxes, savings on healthcare, reduction of unemployment, etc., so a first step would be to make precise estimations about these returns and establish the paths via which they need to reach each renovation work. On the other hand, it is worth incorporating as triggers for the renovation works not only economic profitability, but also synergies with other mandatory works, the comfort of the inhabitants, etc.

4.3. CONSIDERATIONS REGARDING THE AVAILABILITY OF FINANCING BY HOUSEHOLDS.

Another circumstance that must definitely be taken into account is the difficult economic context that some Spanish families have gone through in recent years. As shown by the Living Conditions Survey, the annual net income per household fell by more than 13 % from 2009 to 2015 (from €30 045 to €26 092, respectively), at the same time as the at-risk-of-poverty-or-social-exclusion rate (AROPE indicator) increased from 23.8 % in 2008 to 28.6 % in 2015.

Therefore, in order to talk about the availability of financing by owners, it is necessary to put the cost

of the measures proposed by the intervention menus estimated in the 2014 ERESEE into context with the economic conditions of the households, outlined above. If the cost range is compared for the interventions⁸⁴ proposed in the ERESEE

– which ranged from approximately €5 000 to €10 000 in investment, just for the envelope, and from €12 000 to €40 000 on full actions, with a complete change in climate control and DHW installations. With the average monthly income of households in the Household Budget Survey⁸⁵, it is confirmed that these kinds of interventions are not affordable for a good part of households, because there is no prior savings or supplementary public aid.

Table 12. Distribution of households (as percentage) according to the household's level of regular net monthly income (2015)

	2015
Total	100.00
Up to 499 euros	4.64
From 500 to 999 euros	19.17
From 1 000 to 1 499 euros	21.89
From 1 500 to 1 999 euros	16.95
From 2 000 to 2 499 euros	13.43
From 2 500 to 2 999 euros	9.78
From 3 000 to 4 999 euros	11.49
5 000 euros or more	2.65

Source: INE Household Budget Survey (EPF), 2015.

Also worth noting is the distance between what would be the actual amount for these kinds of interventions and the preliminary idea the public have (according to the 2014 Household Barometer) of the cost of the renovation works for their building⁸⁶, which also indicates the need to provide them with better information in this regard.

With regard to their financial capacity to take on these works, according to the 2014 Household Barometer, 35.3 % of homes were just able to pay their bills or other household expenses; 20.5 % were not able to or it was difficult to pay their bills or other household expenses; 30.3 % paid their bills or other expenses without any problems; and just 10.7 % paid without any problems and were even able to save some money. Taking these data into account, and the amount indicated above as the initial outlay necessary to carry out energy renovation works, at least three segments can be identified: one with sufficient financial capacity to take on the works (for which the long-term capitalisation of energy savings could work), another for whom a certain level of public aid would be necessary (subsidies or loans) that would make it possible to cover a percentage of the costs and thus deal with the initial outlay required and, finally, a third segment that already has problems coping with ordinary household expenses, for whom this kind of works would therefore be difficult to undertake.

There are also significant data from the 2014 Housing Barometer about the anticipated manner of financing the works in households considering undertaking refurbishment works in their building in

⁸⁴ These interventions were always deep in nature, with reductions in heating demand between 60 % and 90 %, and covering 50 % of the DHW demand with renewable energy sources

⁸⁵ The data from the 2014 Household Barometer (Question 34) are equally expressive in this sense: regarding the level of net average household income (31.9 % did not respond), 16.9 % said it is lower than €900; 31.9 % between €900 and €1 800; and 19.4 % higher than €1 800.

⁸⁶ According to the Barometer, 37.1 % of those surveyed estimate the anticipated costs to refurbish the dwelling to be less than €2 500; 21.4 % between €2 501 and €5 000; 12.5 % between €5 001 and €10 000; and just 10.6 % consider it to be above €10 001. In terms of the interventions on the building, the majority (45.1 %) do not know the anticipated costs; 32.5 % estimate they will have to pay less than €2 500; 9.2 % between €2 501 and €5 000; 5.8 % between €5 001 and €10 000; and just 7.3 % estimate an amount above €10 001.

the following 12 months, as they denote a lack of trust in external financing sources outside of those that are the household's own resources. Thus, 58.7 % considered (multiple response) financing them through contributions in the homeowners' association fees; 9.9 % through the savings the association or each owner had; 6.8 % considered the possibility of getting subsidies or public aid; 3.4 % resorting to credit; and just 0.5 % considered the possibility of financing them through energy savings.

With regard to the way in which those surveyed think the administration should encourage the renovation of residential buildings (up to two responses), 58.7 % believe through subsidies; 32.7 % by providing cheap credits; 22.5 % through tax breaks; and 22.5 % by directly promoting the works to be carried out.

Ultimately, it is necessary to take into account that there is a segment of Spanish households for whom it would be difficult to take on energy renovation works without having external financing or, directly, with public aid. It therefore seems necessary to introduce social criteria in the design of the public aid, to consider more disadvantaged families in particular, for whom the current partial subsidy schemes – for example, those from the 2013-2017 State Plan that cover 35 % of the works – do not solve the problems of the remaining percentage that is not covered by the subsidy. This solution would also prevent the personal situation of certain owners from being a burden to the other owners of the building in question. Hence, it might seem advisable to either increase the subsidised percentage in certain specific cases, or provide access to supplementary financing mechanisms that cover a greater percentage of the costs.

4.4. CONSIDERATIONS REGARDING VULNERABLE CONSUMERS AND ENERGY POVERTY.

Even with what has been explained in the previous section, it will be difficult for certain mechanisms to work in the third segment, identified as the group of households that already have problems coping with ordinary household expenses. This population is going to need specific social support and an approach to the problem that is not from the perspective of economic profitability by capitalising on energy savings (not even assisted partially), but instead from the social perspective of reducing energy poverty and/or protecting vulnerable consumers.

The European Union has shown particular sensitivity towards these problems. Directive 2009/72/EC of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC highlighted the importance of the Member States adopting the measures necessary to protect vulnerable consumers, in the context of the internal market in electricity.

In Spain, the government has addressed the issue of vulnerable consumers through the so-called 'bono social'⁸⁷, which is a special discount that acts as a mechanism to protect consumers who belong to certain groups defined as this type of consumer. This mechanism was implemented on 1 July 2009 and, currently, consumers defined as vulnerable have the right to take advantage of the 'bono social'. These consumers are defined in Article 45 of Law 24/2013 of 26 December on the Electricity Sector as any electricity consumers who fulfil specific social, consumption and purchasing power characteristics. According to the Tenth Transitional Provision of Law 24/2013 of 26 December, consumers who are natural persons and meet any of the following requirements have the right to apply the 'bono social' to their main residence:

- Having contracted power lower than 3 kW in their main residence.
- Being 60 years old or over and being a Social Security system pensioner due to retirement, permanent disability and widowhood, thereby receiving the minimum amount in force at any time for these types of pension with respect to pensioners with a dependent spouse or pensioners without a spouse living as single-person financial unit.
- Being 60 years old or over and being a beneficiary of pensions from the defunct Required

⁸⁷ <http://www.minetad.gob.es/energia/bono-social/Paginas/bono-social.aspx>

Ageing and Invalidation Insurance and of non-contributory retirement and disability pensions.

- Being a large family.
- Being part of a family unit in which all the members are unemployed.

The 'bono social' works by applying the relevant last-resort tariff (with or without time-of-day differentiation), calculated as a 25 % discount on the Voluntary Price for the Small Consumer, the methodology for which is regulated in Royal Decree 216/2014 of 28 March establishing the method for calculating voluntary prices for the small consumer for electricity and its legal contracting arrangements. There is only one last-resort tariff across Spain and it must be applied by the reference marketers.

Royal Decree-Law 7/2016 of 23 December regulating the financing mechanism for the cost of the 'bono social' and other protection measures for vulnerable electricity consumers was approved very recently, at the end of 2016⁸⁸. Besides regulating the mechanism for financing the 'bono social', this Royal Decree-Law goes in depth into the protection measures for vulnerable electricity consumers, which are alluded to in Directive 2009/72/EC. One thing these new measures do, for example, is to clarify respectively, on the one hand, that the definition of vulnerable consumers may include different vulnerable groups, in consideration of their social characteristics and purchasing power, as well as the income thresholds established. Secondly, a new feature of these measures is that the supplies to consumers who have the status of seriously vulnerable, who are covered by last-resort tariffs and who are being attended to by the social services of the competent public administrations in relation to these supplies due to being at risk of social exclusion based on their income, will be classed as essential according to Article 52 of Law 24/2013. Thirdly, this definition is supplemented with other amendments to Article 52 of the abovementioned Law 24/2013 regarding the exception for this group of seriously vulnerable consumers from the application of the provisions regarding suspension of the supply, as well as the application of extra charges or effects by distribution companies on the payments they receive, from any of their customers who have supplies associated with services declared as essential, in arrears.

Moreover, and although there is no official definition at European level, the EU has also shown interest in the issue of energy poverty⁸⁹, so much so that in its recent proposal of November 2016 to revise Directive 2010/31/EU – by means of which current Article 4 of Directive 2012/27/EU would be added to it – it stipulates that future long-term national energy renovation strategies must contribute to alleviating energy poverty⁹⁰.

In Spain, although there is no regulatory definition of the concept of energy poverty, some unofficial studies on the topic have been published⁹¹. If the percentage of households or of population that cannot afford to keep their home at an adequate temperature, according to European Commission data from 2014, is used as reference, then in Spain the percentage of population unable to keep their home at an adequate temperature in winter was slightly higher than the EU28 average (11.1 % compared to 10.2 %), although this figure has since improved.

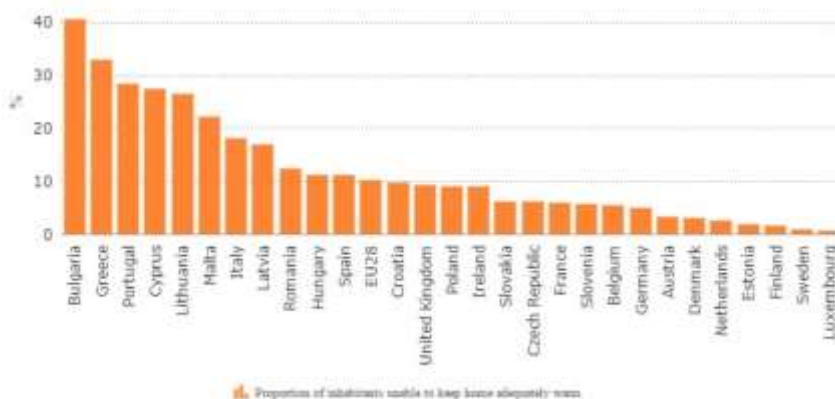
Figure 30. EU countries according to the percentage of population unable to keep their home at an adequate temperature in winter (2014).

⁸⁸ https://www.boe.es/diario_boe/txt.php?id=BOE-A-2016-12267

⁸⁹ In 2015, the European Commission commissioned a comparative study on energy poverty and vulnerable consumers in the EU.

⁹⁰ The original text says 'In addition, the long term renovation strategy shall contribute to the alleviation of energy poverty'. Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2010/31/EU on the energy performance of buildings. Brussels, 30.11.2016 COM(2016) 765 final 2016/0381 (COD). http://ec.europa.eu/energy/sites/ener/files/documents/1_en_act_part1_v10.pdf

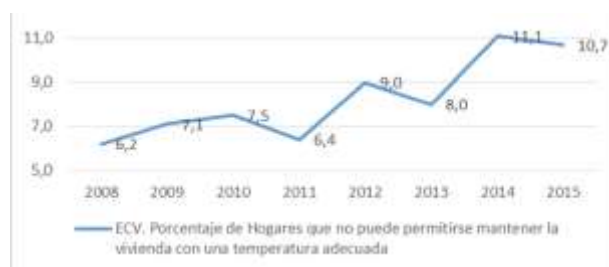
⁹¹ ACA: Environmental Sciences Association: <http://www.cienciasambientales.org.es/index.php/cambio-climatico-y-sector-energetico/pobreza-energetica.html>.



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

Given that this indicator is included in the Living Conditions Survey, this survey shows how it has evolved in a very similar way to the other indicators on energy consumption, undergoing a worsening in parallel with the economic crisis and an improvement more recently, as a result of the consolidation of economic growth, as shown by the decrease experienced between 2014 and 2015.

Figure 31. ECV. Percentage of households that cannot afford to keep the home at an adequate temperature.



Sources: Prepared by the authors based on the Living Conditions Survey (ECV). INE – Spanish National Statistical Institute.

With regard to the regional dimension of the issue of energy poverty, according to the latest study from the Environmental Sciences Association⁹², 'the four regions affected most according to the indicators compiled are, both in 2007 and in 2014, Andalusia, Castile-La Mancha, Extremadura and Murcia. The three autonomous communities affected least are the Basque Country, Asturias and Madrid. These results suggest that the climatic conditions are not decisive for explaining the regional differences in the incidence of energy poverty. Furthermore, disaggregated results by population density of the place of residence indicate a higher proportion of households affected in rural or semi-urban areas'.

Lastly, it should be remembered that both the issue of vulnerable consumers, as well as of energy poverty, in addition to having a fundamentally social dimension, can also have a possible impact on aggregate energy consumption at national level. Thus, an improvement in economic conditions, such as the one now taking place in Spain, could mean that households that currently cannot afford to keep their homes at an adequate temperature, would increase their energy consumption. Similarly, there is also – as stated above – a significant number of dwellings that still do not have systems (5.2 million dwellings) or means (2.4 million) of heating and that, therefore, either consume little or do not consume (those that do not have systems or means) energy for climate control.

Ultimately, the possible existence of contained consumption that could emerge in parallel to the improvement of the economy and that could, consequently, reverse the path of decreasing consumption experienced in recent years, should add the necessary long-term dimension to the way

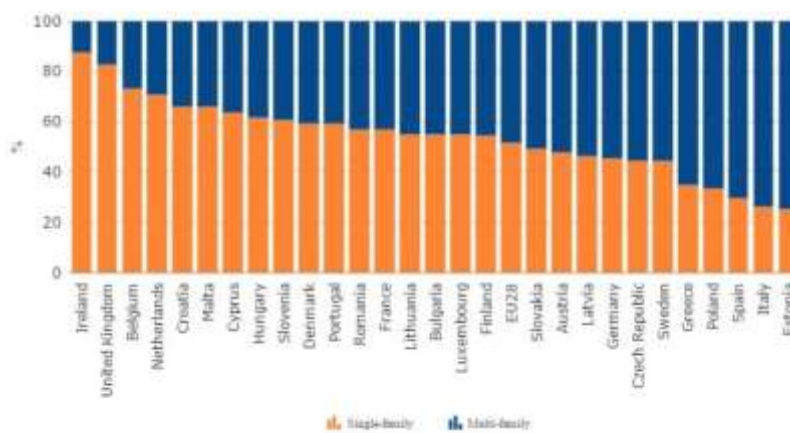
⁹² ACA (2016) 'Poverty, Vulnerability and Energy Inequality. New focuses for analysis. Spain 2006-2016' ['Pobreza, Vulnerabilidad y Desigualdad Energética. Nuevos enfoques de análisis. España 2006-2016']. <http://www.cienciasambientales.org.es/noticias/567-3er-estudio-pobreza-energetica-en-espana-nuevos-enfoques-de-analisis.html>

of proposing these solutions to these problems, considering that energy renovation can be a preventive measure that contributes to avoiding future increases in consumption.

4.5. FACTORS RELATED TO THE STRUCTURE OF THE PROPERTY.

In addition to economic barriers, there are also others related to the structure of the property. The 2014 ERESEE indicated, based on data from the 2011 census, over three-quarters (78.9 %) of main dwellings in Spain are owned, while just 13.5 % (2 438 575) are rented and the remaining 7.6 % are made available free of charge or in another way. Moreover, and unlike the majority of European countries, there is an absolute predominance of multi-family dwellings (71.8 %) compared to 28.2 % single-family dwellings, which, as a whole means that in Spain, the majority of dwellings correspond to owned dwellings located in collective residential buildings, established as homeowners' associations governed by Law 49/1960 on Commonhold Property.

Figure 32. Countries according to distribution of the residential stock in single-family and collective dwellings.



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

This statement can be confirmed by looking at the 2001 census data (assuming this variable has not changed significantly since then), as the results published in the 2011 census do not allow for differentiating the type of owner. The 2001 data show that, at that time, single-family dwellings (which accounted for approximately one-third of the total) were in 98.7 % of cases owned by one person, while multi-family dwellings (67 % of the total) mostly corresponded (in 69.4 % of cases) to homeowners' associations (thus subject to the commonhold property regime), with 29.1 % being owned by single owners.

Thus, out of the total dwellings in Spain in 2001, 46.5 % were multi-family organised into homeowners' associations, 32.5 % single-family owned by one person and 19.5 % multi-family with a single owner.

This predominance of commonhold property means that in Spain, unlike what occurs in other European countries, in the majority of cases, the decision making regarding undertaking works has to be a collective process, in which the different property owners – each, additionally, with their own financial circumstances – must come to an agreement, and this is much more complicated than in the case of other countries with a predominance of single-family dwellings, where the decision exclusively lies with the owner, or of publicly- or semi-publicly-owned social housing, where the decision is also made by a single body. This collective decision-making process is subject to rules of agreement, including a majority system according to the type of works to be undertaken, established, as has been said, by the Commonhold Property Law. This complexity also plays a role in applying for and granting public aid for renovation in collective residential buildings, or granting loans as these homeowners' associations lack their own legal personality.

Consequently, and despite the fact the Commonhold Property Law, which dates from 1960, has been altered on several occasions to facilitate renovation works (the last time through Law 8/2013), there

is still room to make some adjustments that will make it possible to fully respond to the demands of today's society. On the other hand, and beyond these strictly legislative aspects, special effort must also be made in terms of communication with homeowners' associations, in which property managers and other officers who usually deal with the associations can play an important role.

4.6. CULTURAL BARRIERS AND RELUCTANCE TO CARRY OUT WORKS ON THE COMMON ELEMENTS OF BUILDINGS.

There are also significant challenges from the cultural point of view, such as encouraging the culture of maintenance and preventive conservation, especially of the common elements of buildings with multi-family dwellings.

The recent data from the last large survey done at national level on housing conditions in Spain (the abovementioned Housing Barometer, from 2014), provide information about the willingness and foresight of Spanish households in terms of carrying out renovation work. The results⁹³ indicate that the vast majority of Spaniards (87 %) do not plan to carry out improvements or refurbishment on their dwelling in the next 12 months (65.9 % because they believe the dwelling does not need it and 26.3 % because they do not have economic resources to do it), compared to the 9.1 % who say they are considering it. Regarding the type of improvements planned (multiple response), those that are merely decorative or updates stand out: 46.4 % consider renovating bathrooms or kitchens and 18.3 % changing flooring, compared to the much lower weight of improvements in some way related to energy performance (24.1 % plan to change doors or windows, 13.4 % to fix water, electricity or gas installations and only 8.5 % heating or DHW installations).

With regard to the plans to undertake works in the buildings where they live, the results of the survey also show little willingness to undertake works: 81.8 % say they are not considering carrying out renovation works on the building, compared to 8.3 % that answered in the affirmative. With regard to the works to be carried out in the building (multiple response), an important piece of data to take into account is the fact that the planned actions are mainly focused on the envelope (44.2 % plan to act on the facade and 19.4 % on the roof), compared to other interventions on common elements of the building⁹⁴.

Based on all of this, it is advisable, on the one hand, to promote the culture of maintenance and preventive conservation, especially among homeowners' associations and, on the other, to reorient the message to be conveyed, stressing not only the economic profitability (returns on savings) of energy renovation, but also the comfort, improved health and quality of life, property revaluation, insulation against noise, etc. that may be obtained.

4.7. DIVERSITY OF DOMESTIC CLIMATIC CONDITIONS AND NEED TO CONSIDER THEM IN THE REGIONAL DEVELOPMENT OF THE STRATEGY.

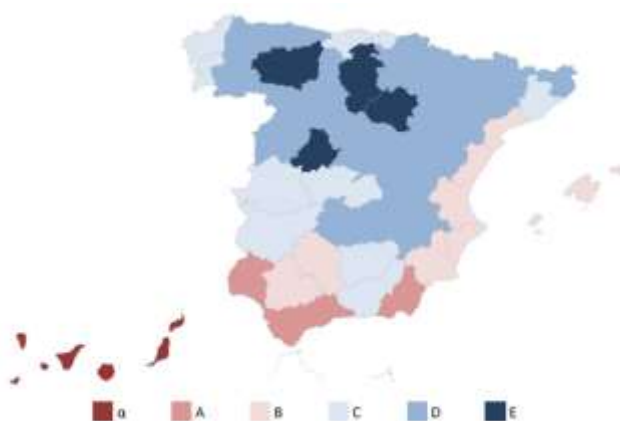
In addition to the reflections outlined in section 4.2, derived from the comparison of the climatic conditions in Spain with those of other EU countries, it must also be taken into account that domestically, Spain is a country of contrasts and very diverse climates. The Technical Building Code has six winter climatic zones defined, as well as four summer climatic zones, which can be seen on the map below:

Figure 33. Winter climatic zones in Spain according to the Technical Building Code, assigning the climatic zone of the capital to the province.

⁹³ Response 16. 'Housing Barometer', by the Centre for Sociological Research (CIS), 2014.

⁹⁴ 19.4 % plan to act on the stairs; 16 % on the lift; 13.1 % on the plumbing and sanitation networks; 12.1 % on the electrical installation; 10.7 % on the structure or foundation; and just 2.4 % on the heating systems.

Response 17. 'Housing Barometer', by the Centre for Sociological Research (CIS), 2014.

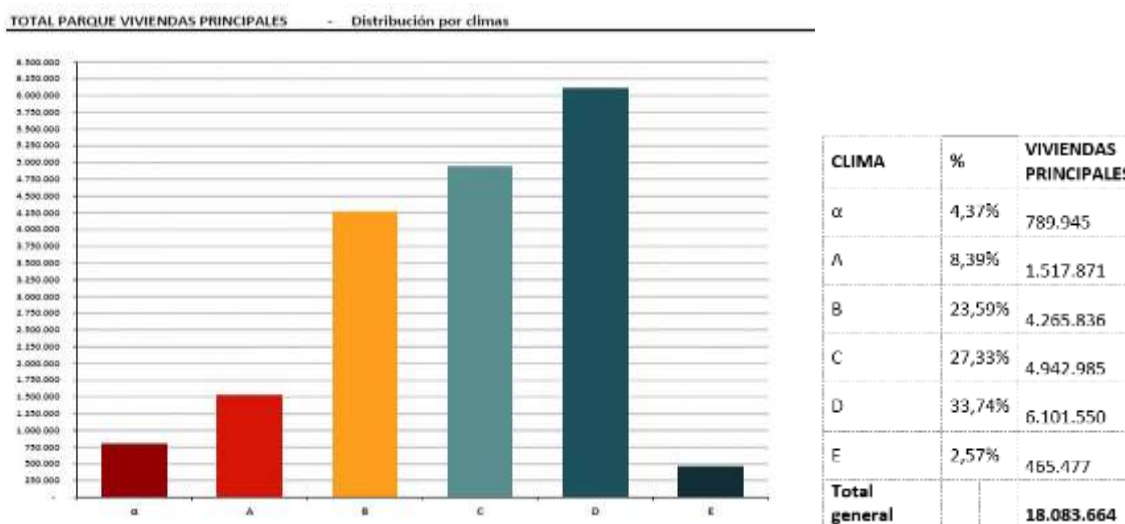


Source: Ministry of Public Works/Juan de Herrera Institute. ‘Analysis of the characteristics of residential buildings in Spain according to the 2011 census. Volume II’. P. 13. http://www.fomento.gob.es/NR/rdonlyres/BDE3A416-114C-498B-9F1A-0286545535E0/135889/Tomoll_Fichasestatalyautonomicas.pdf

The differences between the climatic conditions of these zones are very significant, so while zones E and D – continental climatic zones located inland –have a high number of degree-days (approximately more than 2 750 degree-days and between 2 200 and 2 750, respectively), zones A and B are clearly Mediterranean (up to 850 and 1 100 degree-days), while zone C corresponds to intermediate conditions (up to 1 650 degree-days) and the alpha zone, in the Canary Islands, is situated from 0 to 150 degree-days.

Given these differences, it is significant to analyse the distribution of dwellings into each one of these climatic zones, which, as can be seen in the graph and table below, can be summarised by grouping just over one-third of the total main dwellings in zones D and E, another third in the mildest climate (alpha, A and B) and just less than the remaining third in the intermediate temperate climate (C).

Figure 34. Distribution of the main dwelling stock according to climatic zones in the Technical Building Code.



Source: Prepared by GTR for the Ministry of Development, based on the 2011 census (INE).

The analysis at provincial level of the climatic zones also show notable differences in the number of dwellings located in each zone, as do the annexes of the 2014 ERESEE (including the detailed distribution at provincial and climatic zone level according to the different dwelling clusters identified⁹⁵).

⁹⁵ Annex to the Long-term strategy for energy renovation in the building sector in Spain: http://www.fomento.gob.es/NR/rdonlyres/56481167-4418-4BDE-9FED-C5E8C5556742/130071/ANEXO_ESTADISTICO_imagenes_calidad.pdf

This all leads to an initial conclusion: the difficulty in financing works through the capitalisation of energy savings – which was mentioned above in terms of the country as a whole in comparison with the other EU Member States – is also relevant in several Spanish climatic zones (home to as little as more than half of existing housing), where the relatively benign climate means the savings that can be obtained on heating may be small and, therefore, there is little probability that the owners will find these investments appealing or that the returns obtained on these savings may be able to finance the cost of the works.

The second conclusion comes from the fact that the hypothesis of capitalising on energy savings only works clearly in the climatic zones with the coldest winters (such as E and D⁹⁶). That means that these would be the zones where it would be most cost-effective to act in economic terms and in terms of impact on aggregate consumption at national level, at the clear expense of other zones, where, according to this criterion, intervention would not be a priority.

Without losing sight of the achievement of the national energy saving targets, for which it is unquestionably necessary to set in motion, as a priority, the actions on the climatic zones and typologies with the greatest heating consumption (which are significantly concentrated in the provinces with the climatic zones with the harshest winters and that should be identified by doing a detailed study on the national distribution of consumption), it seems necessary to introduce other supplementary criteria that will allow for a greater regional balance of the actions to be carried out.

Although it could be considered that one of these criteria could be reducing consumption for cooling, as this would theoretically allow for regional compensation by activating certain provinces in the centre and in the south where the winter conditions were mild, in reality and given the small impact of cooling on households' total energy consumption, which has already been mentioned, there is no possibility of obtaining significant aggregate savings by specifically designing energy renovation menus for summer conditions. However, this does not mean that it will not be advisable to design energy efficiency improvement menus in a future review of the Strategy for any zones with benign winter climates, including actions to reduce energy consumption for cooling and DHW, which are fully justified if, instead of strict economic profitability, the improvement of comfort or preventing an increase in potential consumption by the stock of cooling equipment already installed are considered.

Nonetheless, there is another series of considerations, such as the age of the stock – and, therefore, the need to update – as well as the socioeconomic condition of the households or energy poverty, which create regional investment requirements other than those to improve direct performance and that are to a large extent supplementary.

For example, investments in improving energy efficiency aimed at protecting households vulnerable to energy poverty may be regionally supplementary to those that can obtain economic returns thanks to energy saving. Since these kinds of investments also mean anticipating a potential increase in the energy consumption that is currently contained, when there is an improvement in the economic conditions of households, it may be of interest to incorporate its analysis as a hypothesis in future versions of the Strategy.

Something else that has also already been mentioned is the potential catalysing nature of the conservation works, thanks to which the costs associated with renovation covered by the duty of conservation allow for the cost of energy renovation to be much lower by taking advantage of these works. This favours their profitability, their economic efficiency, by achieving savings with smaller investments, as they overlap the investments for renovation due to conservation. Moreover, due to the time that elapses between significant renovations in the same building, the opportunity must not be missed to emphasise energy renovation when launching simple conservation works on the

⁹⁶ Of the total 6.56 million dwellings in provinces with climatic zones D and E, the province of Madrid itself concentrates 38 % with respect to the other 24 provinces of inland Spain, of which only Asturias and Zaragoza have a volume that accounts for more than 5 % of this total.

envelope. Therefore, the synergies between conservation and energy renovation are another factor to explore among the hypotheses for outlining scenarios. This is also going to make it possible to expand the regional dissemination of energy renovation, outside of the areas restricted by the strict economic profitability of capitalising on the savings, and make it also about the areas with more dilapidated residential stock, also coinciding, to a large extent, with lower income areas.

All these considerations suggest the need for effective coordination between the different investment policies on the existing building sector, both concerning the aid aimed at strict building renovation ('ayudas a la piedra') as well as aid that is more social in nature ('ayudas a los hogares'), or aid that, where appropriate, might be considered to redistribute the returns on the macroeconomic benefits of the renovation.

4.8. LACK OF REGIONAL STRATEGIC FRAMEWORKS FOR PLANNING URBAN RENOVATION AND REGENERATION.

In relation to the above considerations, it should be pointed out that, once the general reference framework at State level for energy renovation in building was established by the 2014 ERESEE, and since in Spain the competences for urban development and housing are part of the exclusive powers of the autonomous communities, and therefore the State does not have the ability to develop urban renovation and regeneration planning regionally, it is necessary for this regional development to take place at autonomous community level.

As regards regulations, in the framework of its competences, in 2015 the State approved the consolidated text of the Land and Renovation Law, adding the important changes and reforms introduced concerning renovation in Law 8/2013. As has been seen, some autonomous communities have recently incorporated these changes into their own legal systems, and it is important for the rest to do so as quickly as possible.

From the strategic point of view, the current 2013-2017 State Plan set out in Article 3 that any partnership agreements signed with the autonomous communities had to include a global Strategic Plan proposed by each of them in relation to the execution of the different programmes in the plan, at least with an estimation of the number of actions to finance annually. The development of these Strategic Plans and the importance the autonomous communities have attached to it as an opportunity to provide themselves with a strategic document has been very inconsistent, and, moreover, few have had the initiative to develop a real strategic plan for urban renovation and regeneration in their regions.

Furthermore, and as outlined in the document entitled '*Assessment of Renovation in the Autonomous Communities*' [*Diagnóstico de la Rehabilitación en las Comunidades Autónomas*]⁹⁷, the regional development of renovation policies, in terms of volumes of dwellings renovated, total investment made, unit amount of the aid, percentages subsidised, etc., is also very different in each autonomous community.

The '*Analysis of residential building characteristics in Spain*' [*Análisis de las características de la edificación residencial en España*] also shows the different characteristics of the residential stock in each autonomous community in terms of age, conservation status or distribution according to municipality size, as there are mostly urban autonomous communities, compared to others with a predominance of single-family dwellings in rural municipalities⁹⁸, for which it would be advisable to

⁹⁷ <http://www.gbce.es/archivos/ckfinder/51files/Informe%20Rehabilitaci%C3%B3n%20CCAA.pdf>

⁹⁸ In Spain as a whole, of the total 25.2 million existing dwellings in Spain, nearly half (47.6 %: 11 987 675) are in urban municipalities with over 50 000 inhabitants, with the remaining half being distributed between 15.7 % in municipalities with 20 001 to 50 000 inhabitants (3 969 298 dwellings) and 20 % in municipalities with 5 001 to 20 000 inhabitants (5 029 342 dwellings) and another 16.7 % in municipalities with fewer than 5 000 inhabitants (4 222 297 dwellings). To give an example of the differences between the autonomous communities, in Madrid 82.7 % of dwellings are in municipalities with over 50 000 inhabitants, and only 3.7 % are in municipalities with under 5 000 inhabitants, compared to Extremadura, where 44.8 % of dwellings are in rural municipalities with under 5 000 inhabitants.

propose in a differentiated way specific menus of rehabilitation actions.

In light of the above, it would be very important to encourage the autonomous communities, in the framework of their competences, to develop strategic urban renovation and regeneration planning tools, based on the assessment of the status of the building stock in each of them. With regard to this assessment – which could be done based on the existing work and tools mentioned above – each autonomous community could plan, regionalise and develop their own targets.

4.9. POTENTIAL OF RENEWABLE ENERGY SOURCES IN THE BUILDING SECTOR IN SPAIN.

Spain is one of the EU countries with the most potential to use renewable energy sources in building, particularly solar energy, thanks to the hours of sunshine and the considerable development of this business and industrial sector in Spain.

The introduction of requirements in the Technical Building Code in 2009 to ensure minimum coverage of the electricity demand from newly constructed tertiary buildings by means of photovoltaic energy, has been very positive. As an illustration of this, according to European Commission data, in 2013 Spain was the EU country with the highest percentage of photovoltaic energy produced locally out of the total energy consumed in buildings.

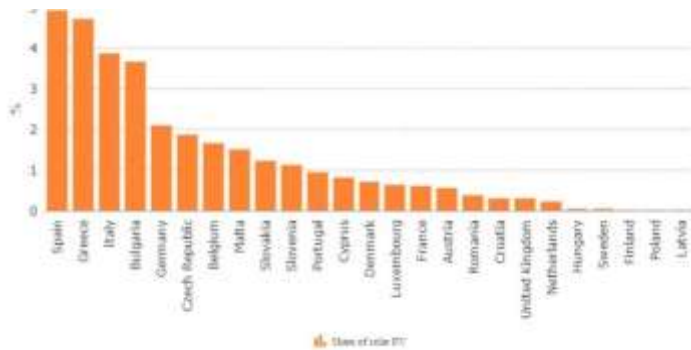


Figure 35. EU countries according to the percentage of photovoltaic energy produced locally out of the total energy consumed in buildings (2013).

Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

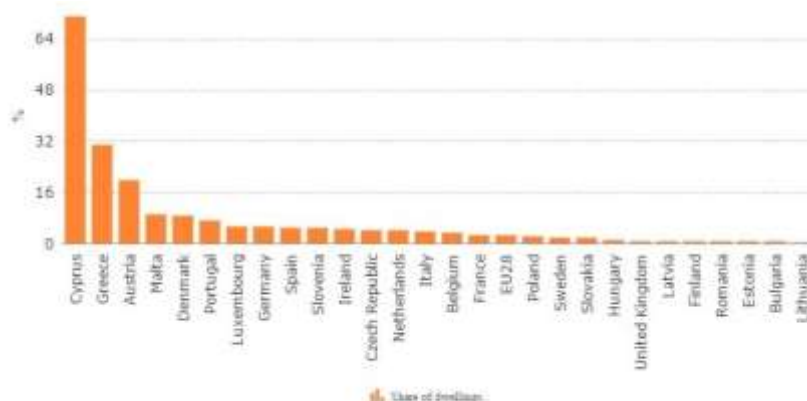
In the near future, the appearance of new concepts, developments and systems for generation and control are going to allow for the gradual evolution of the current energy model towards another model where distributed electricity generation, generally with small capacity, will begin to be integrated effectively into the grid as an element of efficiency, production and management. In this sense, it is worth pointing out some important recent legislative changes regarding self-consumption⁹⁹. Article 9 of Law 24/2013 of 26 December on the Electricity Sector defined self-consumption as the consumption of electric power from generating installations connected within a consumer’s network or through a direct power line associated with a consumer, and distinguishes several modes of self-consumption. The regulation set out in the abovementioned Law 24/2013 of 26 December, concerning self-consumption, aims to ensure that the activity takes place in an orderly way that is compatible with the need to guarantee the technical and economic sustainability of the electricity system as a whole. More recently, the self-consumption regulation in Spain has been completed by means of *Royal Decree 900/2015 of 9 October regulating the administrative, technical and economic conditions of the electricity supply modes with self-consumption and of production with self-consumption*.

Another very important aspect is solar power for Domestic Hot Water (DHW). The Technical Building Code also introduced this requirement in 2009 for newly constructed housing, although in the existing building stock there is still lots of potential to roll it out. In effect, the European Commission

⁹⁹ <http://www.minetad.gob.es/energia/electricidad/autoconsumo-electrico/Paginas/autoconsumo.aspx>

data (both that express the percentage of dwellings equipped with DHW systems with solar power), shown in the graph below, show not only other Mediterranean countries ahead of Spain (Cyprus, Greece, Malta, even Portugal), but also some central European countries (Austria, Germany) where the climatic conditions are not as advantageous for these systems.

Figure 36. EU countries according to the percentage of dwellings equipped with solar DHW (2014).



Source: European Commission (2016). <https://ec.europa.eu/energy/en/eu-buildings-factsheets>

In that regard, and taking into account that in Spain the relative weight of energy consumption for DHW is relatively high in comparison with the European average (17.9 % compared to 13.8 % due to the lower weight of heating consumption) an increased use of solar power and other renewable energy sources for DHW in existing buildings could help reduce CO₂ emissions.

4.10. DIFFICULTIES ARISING FROM THE CURRENT ACCOUNTING RULES FOR ENERGY PERFORMANCE CONTRACTING.

The current accounting rules for energy performance contracting (EPC) in the public sector make it necessary to count all investment in energy renovation as public spending, even where this investment is undertaken and financed, in full or in part, by the private sector, unless the investment accounts for 50 % of the value of the asset after the action. This currently represents a deciding factor that can hold back energy efficiency actions by the public sector, and therefore, it is impeding the development of the energy service market in countries like Spain that are subject to strict fiscal discipline.

Currently, the Eurostat Working Group is negotiating a working document that includes various possibilities so that these contracts are not counted in the deficit and the public debt, where it would not be necessary to modify the SEC2010 or the Eurostat Manual on Government Deficit and Debt, with it being enough to revise Eurostat’s explanatory note regarding the impact of EPC on public accounting. However, the options put forward up to now would not apply to some works (those involving actions on non-removable assets) and, where they could be applied, they would mean significant changes in the management of these contracts, with uncertain results.

5. PROPOSAL OF NEW MEASURES AND AREAS OF ACTION.

Taking into account the measures already outlined in the 2014 ERESEE, as well as the reflections set out in this document to update and follow up on it, next, a series of areas of action will be proposed, each of which includes, in turn, a set of short-, medium- and long-term measures to promote energy renovation and performance in the building sector.

5.1. STRUCTURING AREA (SECTORAL, VERTICAL AND HORIZONTAL COORDINATION).

The aim of this area would be to develop and promote the ERESEE at national and regional level, putting together the necessary coordination vertically, between the various administrations (State, regional, municipal); sectorally, between the various ministerial departments involved; and horizontally, taking into account the key players in the renovation sector and bringing together other existing initiatives. The following actions are proposed to do this:

- Creating a National Renovation Committee, incorporating the most relevant players from the renovation sector in Spain, including the autonomous communities and town and city councils, and forming thematic working groups.
- Creating an inter-ministerial technical working group (MINFOM, MINETAD, IDAE, MAPAMA, ICO, etc.) on energy renovation and performance in the building sector.
- Aligning the successive versions of the ERESEE with the future National Integrated Climate and Energy Plan.
- Revising the 2014 ERESEE once new data are available from the SPAHOUSEC project, incorporating the regional perspective.
- Coordinating the development at regional level of strategic frameworks for urban renovation and regeneration, articulated with the ERESEE.
- Promoting studies on the impact of renovation on employment, health, economic returns on the public investment, etc., so they can be used in the ERESEE.
- Completing the assessment of the existing building stock with the regionalised analysis of the energy consumption in the residential sector.

5.2. INFORMATION AND SOCIETY AREA.

The aim of this area would be to promote a cultural change among the public, arousing greater social awareness of energy-saving and building maintenance and renovation, highlighting the value and urban regeneration of neighbourhoods in our towns and cities. Moreover, effort would also be made to circulate – at a more technical level – any pioneering or innovative experiences in urban renovation and regeneration that it would be of interest to transfer to other places. Two lines of actions are proposed to do this:

Information and dissemination to the public.

- Continuing with the general awareness-raising and communication campaigns. It is proposed to go beyond the strict approach of economic return on the investment through the energy savings obtained, also emphasising the improvement in comfort and quality of life, improvements in property value, and the synergies that can take place between the mandatory envelope conservation works and voluntary works to improve the envelope's energy performance.
- Holding specific campaigns to disseminate the new lines of public aid that are being approved (this includes the State Plan to be approved for the period 2018-2021, etc.).

In both cases, it is proposed to pay special attention to audiovisual media, the internet and social networks, as well as on demonstrating the benefits of renovation and communication with examples

of cases of real, close-to-home success where the users themselves talk about their experience and the benefits obtained.

- Development or support for initiatives to create specific tools to make energy renovation understandable and accessible for the public (this would include everything from specific guides to online tools).

Dissemination at technical level.

- Holding outreach days throughout Spain, coordination with the various administrations (autonomous communities, town and city councils through FEMP) and the main agents involved in the renovation sector.
- Selecting good practices (actions, management mechanisms, new financing developments, etc.) to generate an 'experience bank' that may be used as an example for other initiatives.
- Promoting awards at any scale (national, regional or municipal) for urban renovation, regeneration and renewal actions that add prestige (even though they might only be honorific awards).

5.3. TECHNICAL, PROFESSIONAL AND BUSINESS AREA.

The aim of this area would be to develop the technical, not strictly regulatory aspects related to renovation, with particular attention on promoting the existing instruments from the Building Assessment Report (IEE) and Building Energy Certification [Certificación Energética de Edificios – CEE].

- Ongoing development and updating of the IEE computer tool.
- Promoting and coordinating the development of the IEE and regional registers in the autonomous communities.
- Promoting the Existing Building Book.
- Improving Building Energy Certification, adapting the scales and improving the improvement measures proposed in the CEE programmes.
- Developing the intervention menus proposed by the ERESEE by types and climatic zone, and promoting the knowledge and public dissemination of these menus to make them accessible to officials and the public.
- Cooperating with the business and professional sectors involved to develop the 'AGREE', the Renovation and Energy Performance Managing Agent. Encouraging the possibility for these functions to be performed by multidisciplinary working teams that can offer companies and the public clear information and legal advice.
- Supporting the establishment of renovation cooperatives. The use of this kind of association can represent an extra guarantee for banks, with a view to granting loans for renovation. Moreover, in their relations with the administration, dialogue with this kind of cooperative can facilitate access to public aid and speed up the processing and granting of this aid.

5.4. REGULATORY DEVELOPMENT AND ADMINISTRATIVE MEASURES AREA.

This area seeks to promote the development of the existing regulatory framework on renovation, considering the framework of competences, as well as to provide instruments and tools to the municipalities so that they can implement urban renovation, regeneration and renewal actions.

National legislation.

- Completing the integration of renovation into the Technical Building Code.

- Assessing the need to strengthen the role of homeowners' associations in the Commonhold Property Law (with a view to obtaining loans, improving accessibility, carrying out renovation works in common areas, etc.).

Regional legislation.

- Promoting the adaptation of the autonomous communities' laws to the changes introduced by Law 8/2013 now included in the consolidated text of the Land and Renovation Law.

Municipal legislation and instruments.

- Preparing a guide aimed at local administrations explaining the changes introduced by Law 8/2013 now included in the consolidated text of the Land and Renovation Law.
- Updating of the Model Renovation By-Law prepared by FEMP, where necessary including in it any ground-breaking innovations in the management models being developed by town and city councils.
- Support for the local assessment of renovation needs and the creation of urban renovation, regeneration and renewal municipal strategies and plans by developing a standard methodology based on existing tools from the Vulnerability Observatory (Vulnerability Atlas and Residential Building Atlas).
- Support for the creation of local management offices for Urban Regeneration and Renewal Areas by means of financing through the State Plan for the management, social and administration support teams.
- Establishing, in coordination with existing initiatives (FEMP Municipal Renovation Observatory, City GTR), a permanent platform for dialogue between municipalities and the exchange of innovative experiences.

5.5. FINANCING AREA.

Financing, both public and private, has been identified as one of the most significant bottlenecks for the taking off of the renovation sector.

5.5.1. Public financing.

The aim is to continue with the public aid programmes from recent years, resolving the aspects that have been identified as areas for improvement. To do this, some new actions are established and some general criteria are recommended to take into account in the definition of new programmes or in the reform or continuation of existing programmes:

New general actions:

- Integrating into a regularly-updated online portal the available public aid, including the deadlines for the calls, to facilitate access to them by the public.
- Analysing the possibility of establishing a system of tax breaks for renovation works, complementing or replacing the current subsidies, as this system is easier for the public and may contribute to bringing out works currently being done within the shadow economy.
- Analysing the possibility of amending the Subsidies Law so as not to count aid for housing renovation as income of the dwelling unit, to avoid the loss or failure to receive other social subsidies or aid in families with fewer economic resources.

General criteria for public aid in the renovation sector:

- Encouraging the combination of different financing sources, both public and private, and of different types such as loans and subsidies.
- Strengthening the synergies between compulsory conservation works and voluntary works to

improve energy performance on the envelope.

- Adjusting the aid in accordance with the types, paying particular attention to the differences between collective and single-family dwellings.
- Incorporating social criteria into the aid, to pay special attention to families with fewer economic resources.
- Where objective requirements are called for to apply for the public aid, to associate them with the energy performance certification, before and after the actions to be carried out, preferably with the percentage of saving, due to being quantified more easily and homogeneous than the jump between letters.
- Establishing an agreed system of minimum indicators (number of actions, number of dwellings, budget, aid granted, energy and CO₂ savings, etc.), broken down annually and regionally, so that there can be consistent and comparable monitoring of both the assessment and the impact of the measures adopted.
- Analysing the advisability of qualifying the requirements called for to grant aid according to the climatic zones, as well as adjusting this aid, prioritising the deepest or integral interventions.
- Examining the possibility of permitting partial interventions or interventions in stages, following the logical sequences proposed in the 2014 ERESEE, in any cases where there is an integrated project that may be approached in stages, and where there are not enough resources to undertake it all at once. In this sense, it is also worth evaluating the potential entry into competition of possible RENOVE Plans for isolated elements that could be approached with other more integral lines of aid, to improve the envelope or the systems.

Specific proposals for designing the new State Plan.

- Permitting the financing of renovation works in single-family dwellings and extending the age range for the dwellings that can access aid.
- Including social support measures for families with more limited resources, by increasing the percentage subsidised.
- Encouraging synergies between energy renovation and compulsory conservation works.
- Qualifying the demand savings requirements to access energy renovation aid taking the different climatic zones into account.
- Adapting the execution deadlines required for urban regeneration actions.

Drawing up a new PAREER Programme.

- Drawing up a new PAREER Programme.

Specific proposals for the ICO SMEs and Entrepreneurs Facility.

- Promoting its dissemination and knowledge among individuals and homeowners' associations.
- Seeking to promote energy renovation within this line.

5.5.2. Private financing.

Trying to get new financial products to be developed that are specifically adapted to the renovation of dwellings, with a special focus on homeowners' associations. The following actions are proposed to do this:

- Assessing the possibility of amending the Commonhold Property Law to facilitate the granting of loans to homeowners' associations and thus facilitate the financing of renovation

works with full legal guarantees.

- Continuing to maintain the dialogue with financial entities so they develop new financial products specifically for renovation.
- Continuing to work on the possibility of creating a system of guarantees or a 'Limited Guarantee Fund' to cover potential default on the loans.
- Analysing the possibility of opening up financing facilities for energy service companies (ESCOs) or construction, development or property companies that carry out 'turnkey' renovation projects, including financing for the owners.

ANNEXES.

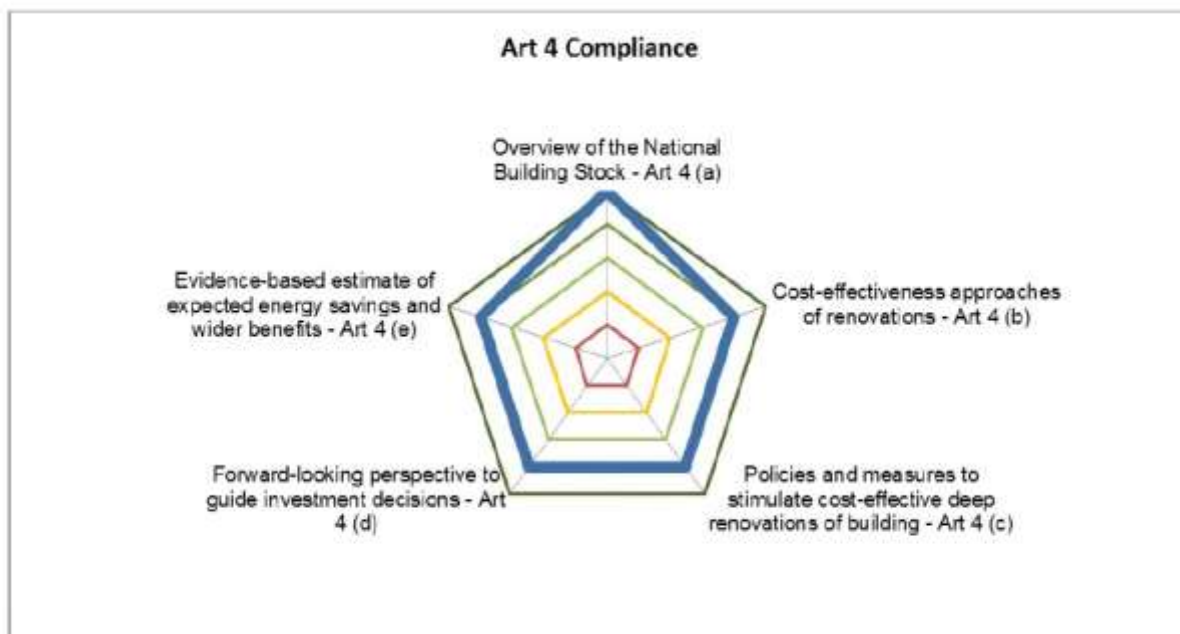
ANNEX 1. SUMMARY OF DETAILS ON SPAIN FROM THE JRC ASSESSMENT REPORT (2016)¹⁰⁰ ON THE 2014 ERESEE.

SPAIN

Country	SPAIN	
Document Information	The Spanish strategy has been provided as a separate stand-alone document in June 2014. The document is available in English.	
National Building Renovation Strategy (Art 4 EED) Introduction	The Spanish strategy is a comprehensive technical analysis provided by IDAE (Instituto para la Diversificación y Ahorro de Energía), which is the results of an extensive work involving different groups of stakeholders (e.g. National Councils of Architects, Engineers, multifamily housing managers, ESCOs, local authorities, financial institutions). It also built upon technical input provided by the GTR (Grupo de Trabajo de Rehabilitación).	
Overview of the National Building Stock - Art 4 (a)	yes	Spain provided a good detailed and comprehensive overview of the national building stock. It uses official data from two sources (2011 building census and cadastre). The data presented in the report are a small selection of the data available. The residential and non residential buildings are treated separately for conceptual and data reasons. The approach is correct and the segmentation appropriate. More details on climatic zones would be reported in an Annex. Moreover, in the report the building stock is divided in clusters with common combination of features (typologies, age, use), this enables to identify specific groups of buildings for targeted interventions and to set priorities
Cost-effectiveness approaches of renovations - Art 4 (b)	yes	The strategy identified different set of measures for different clusters of buildings defined in the previous section. For each of the clusters, relevant energy saving measures (insulation, window replacement, solar protection, ventilation, heating/cooling system) are provided. The costs and savings potential for a typical property in each cluster are provided. Savings range between 60% to over 90% depending on building type and main energy carrier. For the non-residential sectors, "menus" of typical interventions are provided for four sectors: Offices, Health, Hotels & Leisure, and Retail. The methodology is correctly applied, however not all costs are accounted (e.g. transaction costs). Prioritization and planning for the renovation measures are not defined in details
Policies and measures to stimulate cost-effective deep renovations of building Art 4 (c)	yes	The Spanish strategy provide a comprehensive description of the existing building renovation strategies. A number of measures are in place or planned, both financial and regulatory ones. Among the first it is worth mentioning the PIMA SOL project and the PAREER plan (now PAREER-CRECE). Barriers are also well identified together with some idea on how future legislation should target them. The link between building renovation, rehabilitation and urban regeneration is made throughout the strategy. However, a more articulated package of measures could have been planned (including for example specialized training) and more details on future plans would also help in having a clearer picture of the strategy in the long term.
Forward-looking perspective to guide investment decisions - Art 4 (d)	yes	The report identifies and describes five scenarios: three for the residential sector and two for the non-residential one. A baseline is provided for each group. The assumptions are explicitly stated, the results are expressed in terms of number of properties renovated, investment (including public subsidy level), energy saving, carbon emission reduction and renovated, investment (including public subsidy level), energy saving, carbon emission reduction and jobs created.
Evidence-based estimate of expected energy savings and wider benefits - Art 4 (e)	yes	Spain provides clear pictures of the main benefits (energy savings and CO2 emission reduction) for the considered renovation scenarios. Moreover investing in building renovation is seen as a strategically important action, especially in terms of employment: the report estimates 55 additional jobs created for every Million of public spending in the sector. Other benefits are listed: improved public finances, reduced energy bills, revitalisation of the construction sector, increasing property values, reduction of noise transmission due to insulation, and increased energy security.

¹⁰⁰ Castellazzi L., Zangheri P., Paci D. (2016). 'Synthesis Report on the assessment of Member States' Building Renovation Strategies', EUR 27722 EN; doi 10.1790/052530 (2016).

Summary	The Spanish strategy provides a very good and comprehensive and detailed technical appraisal of the building stock and energy saving opportunities. It recognises the strategic importance of building renovation, including the link to wider urban regeneration, and broader social and economic benefits (job creation, quality of life, etc.). Specific actions that reduce the barriers, and help the financing of renovation measures, have been identified and described as well as the policies in place and planned to reach the energy efficiency target.
Level of details	The strategy offers a very good level of details in the description of the building stock; on the policies, and on the cost-effectiveness and benefits calculation exercise. Data, cluster and methodologies are well described.
Level of ambitions	The goals of the Spanish strategy are clear and the level of ambition is high (from 60 to 90% reduction in energy consumption for renovated buildings)
Appropriateness	The measures and policies designed for the strategy are appropriate and suitable to reach the goals established
Comprehensiveness	Spain has in place a good set of measures for the building sector, however, a more articulated package could be more effective in fostering building energy renovation plans (e.g. including also dedicated information campaigns and specialized training)
Strengths	Very detailed and robust analysis of the building stock. Building stock segmentation in clusters to target renovation measures.
Weaknesses	No concrete timeline for interventions provided
Innovative approach	n/a
Recommendations	More details on actual timeline for implementation should be provided.



ANNEX 2. GLOSSARY

BPIE: Buildings Performance Institute Europe.

CEE: Energy Certification of Buildings
[Certificación Energética de Edificios].

CTE: Technical Building Code [Código
Técnico de la Edificación]. EED: Energy
Efficiency Directive.

DHW: Domestic Hot Water.

EDUSI: Integrated and Sustainable Urban Development
Strategies [Estrategias de Desarrollo Urbano Sostenible e
Integrado]. ESCos: Energy service companies.

EIB: European Investment Bank.

EU: European Union.

FEMP: Spanish Federation of Municipalities and
Provinces [Federación Española de Municipios y
Provincias]. GHG: Greenhouse Gases.

GBCe: Green Building Council España.

GTR: Renovation Working Group [Grupo de Trabajo para la rehabilitación], coordinated by
GBCe and the CONAMA Foundation. IDAE: Institute for Energy Diversification and Saving.

IEE: Building Assessment Report [Informe
de Evaluación de los Edificios]. INE:

Spanish National Statistical Institute
[Instituto Nacional de Estadística].

IPT: Immovable Property Tax. ICO:
Official Credit Institute.

ktoe: kilotonne of oil equivalent. LOE: Building Planning
Law [Ley de Ordenación de la Edificación].

MAGRAMA: Ministry of Agriculture, Food and Environment [Ministerio de
Agricultura, Alimentación y Medio Ambiente]. MAPAMA: Ministry of

Agriculture, Fisheries, Food and the Environment [Ministerio de Agricultura y
Pesca, Alimentación y Medio Ambiente]. MINETUR: Ministry of Industry,
Energy and Tourism [Ministerio de Industria, Energía y Turismo].

MINETAD: Ministry of Energy, Tourism and the Digital
Agenda [Ministerio de Energía, Turismo y Agenda Digital].

NBE: Basic Building Standard [Norma Básica de la
Edificación].

NEESP: National Energy Efficiency and Savings Plan.

OECC: Spanish Office for Climate Change [Oficina Española de Cambio Climático].

PAREER: IDAE aid programme for integral energy efficiency and savings projects in residential buildings.