

2017-2020 NATIONAL ENERGY EFFICIENCY ACTION PLAN



GOBIERNO DE ESPAÑA
MINISTERIO DE ENERGÍA, TURISMO Y AGENDA
DIGITAL

GOVERNMENT OF SPAIN
MINISTRY OF ENERGY, TOURISM AND DIGITAL
AGENDA

**2017-2020 NATIONAL ENERGY EFFICIENCY
ACTION PLAN**

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CHAPTER 1: INTRODUCTION

1. INTRODUCTION

1.1. PURPOSE

The 2017-2020 National Energy Efficiency Action Plan **fulfils the requirement** laid down in Article 24(2) of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, whereby all Member States of the European Union must submit such plans, doing so by 30 April 2014 in the first instance, and then every three years thereafter.

In accordance with Article 24(1), Member States shall report by 30 April each year on the progress achieved in meeting national energy efficiency targets. The annual reports submitted by Spain to the European Commission from 2013 to 2016 are available here: <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>.

Given that the 2017-2020 National Energy Efficiency Action Plan and corresponding 2017 annual report are to be submitted before the end of April, the decision was made to integrate them both into this document, which is accompanied by the template provided by the European Commission for the submission of annual reports from 2016 onwards.

Meanwhile, in accordance with Article 4 of Directive 2012/27/EU, Spain must update and submit, within the framework of the National Energy Efficiency Action Plans, the long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private. The update to the strategy submitted by Spain in June 2014 in compliance with Article 4 will be sent to the European Commission as a separate document by the Ministry of Public Works.

1.2. METHODOLOGY

The **structure** of the 2017-2020 National Energy Efficiency Action Plan closely follows the content requirements set out in Annex XIV (Part 2) of Directive 2012/27/EU (which details the information that action plans must include) as well as the template defined by Commission Implementing Decision of 22 May 2013 (Brussels, 22.5.2013, C(2013) 2882 final) to ensure consistent presentation.

In general, and in accordance with Article 24(2), action plans should include the energy efficiency improvement measures being implemented in the Member State and/or those planned for implementation, indicating the energy savings achieved or anticipated with a view to meeting the national energy efficiency targets referred to in Article 3(1).

1.3. CONTENT

The **content** of the 2017-2020 National Energy Efficiency Action Plan is organised into **four chapters**, the **first** being an introduction and presentation of the plan's objective and structure.

The **second chapter** provides an analysis of energy consumption and intensity in Spain up to 2015 and in comparison with the European Union.

The **third chapter** focuses on the energy efficiency targets and the progress made in attaining them.

The *first part* of the chapter presents the indicative target set by Spain in accordance with Article 3 and analyses the consistency of this target with that of the European Union, quantified in the text of the Directive as consumption by 2020 of 1 474 Mtoe of primary

energy or 1 078 Mtoe of final energy.¹

The *second chapter* discusses how the 2020 binding energy savings target is calculated in accordance with Article 7, which requires that Member States set up an energy efficiency obligation scheme that ensures the achievement each year — from 1 January 2014 to 31 December 2020 — of new savings of 1.5 % of annual energy sales to final customers of all energy distributors or all energy retailers.

The *third part* of the chapter assesses the progress made in attaining the energy savings target set by Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services. This Directive was repealed by Directive 2012/27/EU with the exception of Article 4, which established a national indicative final energy savings target of 9 % by 2016.

To this effect, Spain declared in the 2011-2020 National Energy Efficiency Action Plan that, by 2010, it had already met the 9 % savings target set for 2016. In the 2014-2020 National Energy Efficiency Action Plan, Spain reiterated achievement of this target in 2013, and again, in this 2017-2020 National Energy Efficiency Action Plan, it confirms achievement of this target in 2016.

The **fourth chapter** of this Plan revisits the various measures which led to achievement of the savings targets required by Directive 2012/27/EU.

The *first part* focuses on horizontal measures affecting all energy end-use sectors. Following the template created by the European Commission to standardise the presentation of Member States' action plans, the measures taken to satisfy the requirements set out in the various articles of the Directive are reviewed. Information is given on establishment of the energy efficiency obligation scheme (Article 7), on the obligation to carry out energy audits and implement energy management systems (Article 8), on metering and billing (Articles 9, 10 and 11), on consumer information programmes and training (Articles 12 and 17), on qualification, accreditation and certification schemes (Article 16), on energy services (Article 18) and on other energy efficiency measures of a horizontal nature (Articles 19 and 20).

The *second part* reviews energy efficiency measures in **Buildings**; the *third*, those implemented in **Public Bodies**, such as the exemplary role of their buildings (Article 5) and purchasing by public bodies (Article 6); the *fourth*, those aimed at **Industry**; the *fifth*, those regarding **Transport**; and the *sixth*, those concerning **Agriculture and Fisheries**, which concludes the review of efficiency measures in end-use sectors.

The *seventh part* of chapter four focuses on the promotion of high-efficiency cogeneration and district heating and cooling systems in response to the requirements set forth in Article 14 of the Directive.

The *eighth and final parts* of this chapter complete the review of the Directive with an analysis of energy efficiency in transformation, transmission, distribution and demand response (Article 15).

¹ Article 3 of Directive 2012/27/EU was amended by Article 1 of Council Directive 2013/12/EU of 13 May 2013 adapting the previous Directive on energy efficiency, by reason of the accession of the Republic of Croatia. Thus, the Union's 2020 energy consumption must be no more than 1 483 Mtoe of primary energy or no more than 1 086 Mtoe of final energy.

The measures in this Plan that are financed by budget appropriations by the various competent bodies must be implemented within the overall budgets assigned to those bodies.

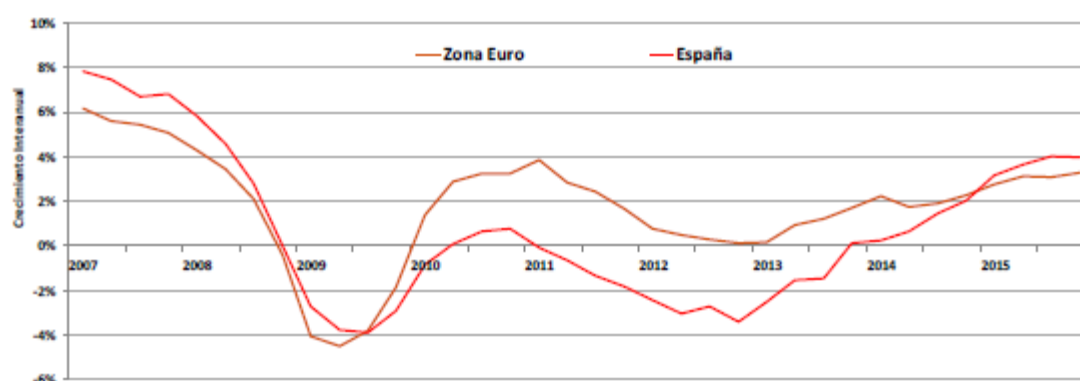
**CHAPTER 2:
ENERGY CONSUMPTION AND INTENSITY:
SITUATION IN 2015**

2. ENERGY CONSUMPTION AND INTENSITY: SITUATION IN 2015

2.1. MACROECONOMIC CONTEXT

The results of the energy saving and efficiency policy implemented by Spain following the adoption of Directive 2012/27/EU on energy efficiency cannot be understood without prior analysis of the country's macroeconomic context. This analysis confirms that since 2014, and after five years of recession, Spain's economy has been showing signs of recovery. Gross domestic product (GDP) grew in 2015 by 3.2 %, well above the 1.4 % of the previous year, confirming recovery of the drive the country had sustained until the beginning of the financial crisis in 2008. Recent developments in Spain's economy have followed those of the leading economies in its immediate environment, achieving expansive growth even greater than that of the Economic and Monetary Union (EMU) as a whole (Figure 2.1.1).

Figure 2.1.1. GDP in Spain and the EMU, 2007-2015



Nota: PIB en precios corrientes

Source: OECD/INE

Crecimiento Interanual	Year-on-year growth
Zona Euro	Euro area
España	Spain
Nota: PIB en precios corrientes	Note: GDP at current prices

This improvement in both Spain and the euro area was driven by a decrease in the uncertainties associated with financial tensions, as well as by less restrictive fiscal policies and a favourable monetary policy. In addition, the drop in oil prices made a positive contribution to this improvement.

As regards Spain's situation, in terms of expenditure, the behaviour of **domestic demand** stands out, as in 2015 it continued its upward trend, offsetting the foreign sector's negative contribution for that year. Within that demand, the trend in **public spending** — as a result of a more expansive fiscal policy following the adjustment process applied in previous years — is noteworthy. Private demand continues to follow an upward trend. Household spending has risen in line with employment growth, reaching a rate of 3.1 % in 2015, a figure similar to the 3.0 % increase in employment. The increase in household spending occurred in an environment characterised by favourable financing conditions and improved incomes boosted by job creation, cheaper oil prices and the early implementation of the tax cuts originally scheduled for the beginning of 2016.

GDP growth was underpinned by the increase in investment, particularly in capital goods, which rose by 10.2 % in 2015. This was joined by recovery in the construction sector, including housing, which grew for the first time since the beginning of the financial crisis to rise by 2.4 %.

Meanwhile, net **foreign demand** experienced a downturn as a result of faster growth of imports (5.6 %) than exports (4.9 %), which made a negative contribution to GDP growth. As regards exports, most notable was the increase in non-tourist services, while imports were characterised by a drop in energy products. However, this decline was unable to offset the sharp increase in purchases of other products.

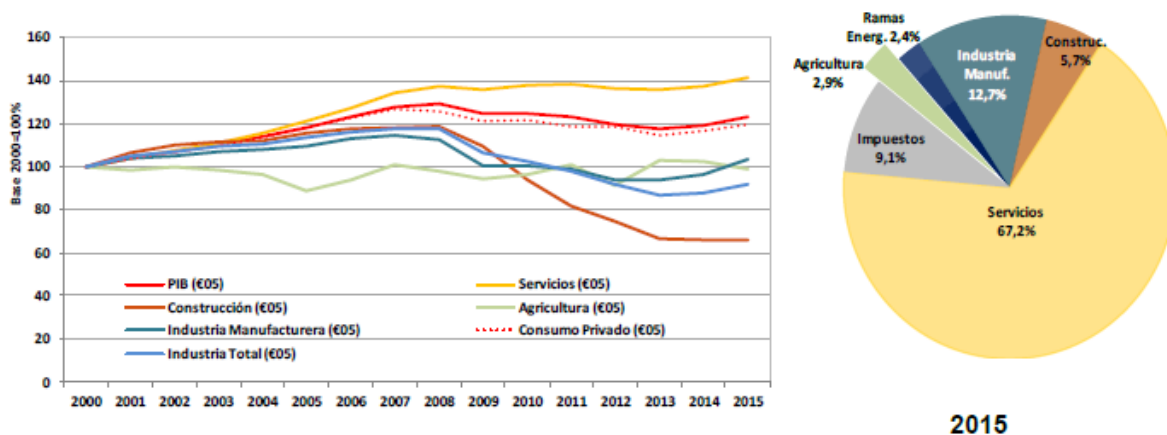
From a **supply** perspective, in 2015, business in the main productive areas grew, with gross value added by the service sector and manufacturing industry contributing just over 70 % of GDP growth.

In the case of market services, most notable was the greater impetus in areas related to trade, particularly wholesale, followed by the fields of accommodation/food, transport and communications. As a whole, these areas contributed approximately 40 % of the service sector's added value.

The industrial sector followed a pattern similar to that of general economic activity, albeit with more intense fluctuations. From mid-2014 onwards, added value recovered, though the level of industrial activity still remains below that of 2008. The industrial sector's performance was due, among other factors, to the adjustment in the construction sector and the real estate crisis, which lasted until the end of 2014. This is explained by the locomotive effect the construction sector has on demand for industrial products.

Of all the EU Member States, Spain is the country in which the construction industry has lost most ground and in which the sector has been slowest to show signs of recovery. The adjustment measures implemented and their impact on consumption and investment have greatly conditioned the development of industrial activity, whose contribution to the economy as a whole has been declining, currently holding steady at around 13 %. This development is not exclusive to Spain's economy; it is linked to tertiarisation of the economy and, in the case of Spain, it is combined with the performance of the construction sector, whose contribution to added value has been decreasing since 2008 (Figure 2.1.2).

Figure 2.1.2. Macroeconomic Developments in Spain, 2000-2015



Fuente: INE/IDAE

Base 2000 = 100%	Baseline 2000 = 100 %
PIB (€05)	GDP (€05)
Construcción (€05)	Construction (€05)
Industria Manufacturera (€05)	Manufacturing (€05)
Industria Total (€05)	Total industry (€05)
Servicios (€05)	Services (€05)
Agricultura (€05)	Agriculture (€05)
Consumo Privado (€05)	Private consumption (€05)
Agricultura 2,9%	Agriculture 2.9 %
Impuestos 9,1%	Tax 9.1 %
Servicios 67,2%	Services 67.2 %
Construc. 5,7%	Construction 5.7 %
Industria Manuf. 12,7%	Manufacturing 12.7 %
Ramas Energ. 2,4%	Energy sectors 2.4 %
Fuente: INE/IDAE	Source: INE/IDAE

In 2015, the construction sector's added value showed improvement, which was especially notable during the third quarter. This was followed by a certain slowdown in construction, primarily in the non-residential segment, which could have been offset by an upturn in house-building.

From mid-2008 onwards, manufacturing industry followed a generally downward trend. However, in 2014, after seven years of decline, it began to recover. In 2015, this trend continued, with a 7 % increase in gross value added, which is also reflected in other indicators such as employment and the sector's productivity. Within manufacturing industry, the dynamism of the capital goods sector — particularly as regards output in the vehicle, electronics, information technology and telecommunications segments — is noteworthy. Also significant is the improvement in several industrial fields directly linked to construction, as in the case of metallurgy, non-metallic minerals and wood, furnishings and cork.

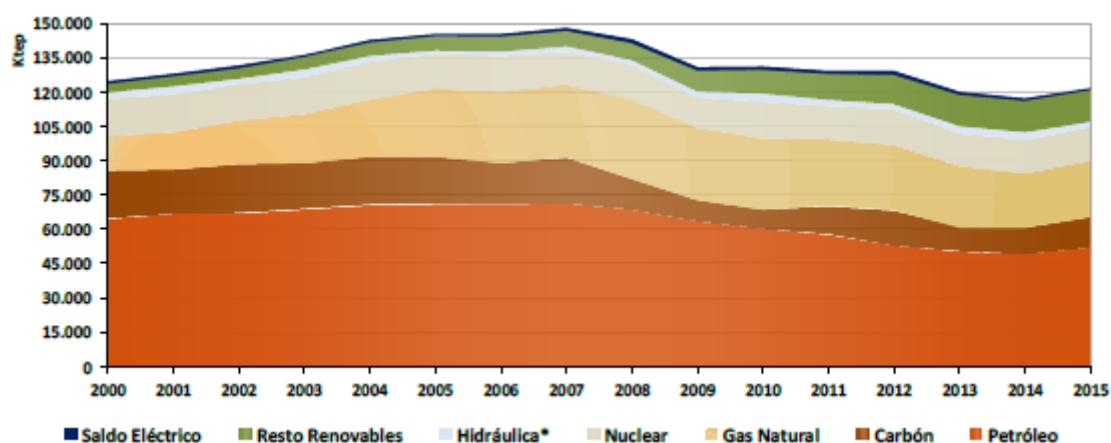
Finally, development in the industries which produce consumer durables, which showed increased dynamism towards the end of the year, deserves mention. This is consistent with the context of economic recovery, which triggers consumer demand for these types of products.

2.2. PRIMARY AND FINAL ENERGY CONSUMPTION AND INTENSITY

During the last few decades, primary energy consumption in Spain has become more diversified, with renewable energy sources and natural gas accounting for greater proportions (Figure 2.2.1). After a long upward trend in energy demand, 2007 marked a change and the beginning of a downturn, mainly due to the drop in demand for coal and petroleum products. This decreasing trend intensified from 2008 onwards, affected by the economic crisis, the impact of which became most evident in 2009 when primary energy demand dropped by 8 %.

Thereafter, although demand continued to fall, the decrease slowed and stabilised. This downward trend was reversed in 2015 by a 4.1 % increase in consumption, which rose to 121 418 ktoe. Consequently, 2015 appeared to mark a new turning point after seven consecutive years of shrinking energy demand, which contracted by 20 % between the start of the financial crisis and 2014.

Figure 2.2.1. Primary energy consumption, by energy source (2000-2015)



Note: Non-renewable waste included in oil; *mini hydro-electric included in hydro-electric

Source: Eurostat/MINETAD

Ktep	ktoe
150.000	150 000
135.000	135 000
120.000	120 000
105.000	105 000
90.000	90 000
75.000	75 000
60.000	60 000
45.000	45 000
30.000	30 000
15.000	15 000
Saldo Eléctrico	Electricity balance
Resto Renovables	Other renewables
Hidráulica*	Hydro*
Nuclear	Nuclear
Gas Natural	Natural gas
Carbón	Coal
Petróleo	Oil

The increase observed in 2015 is the result of the rise in demand for oil (6.1 %) and natural gas (3.7 %), which together met 63.2 % of overall demand. Demand for coal also rose, registering a notable 15.2 % surge in 2015. These increases in coal and natural gas correlate with their increased role in electricity generation: the decrease in hydro-electric and wind output in 2015 due to their reduced availability resulted in a rise in conventional electricity production associated with coal-fired thermal power plants and natural gas combined-cycle

plants. Consequently, primary demand for renewable energies fell to 6.5 % that year, slightly reducing their contribution to primary energy demand from 15.2 % to 13.7 %.

The renewable energies trend observed in 2015 was mainly driven by the decrease in demand for hydro-electric (-28.2 %) and wind power (-5.2 %), which, as a whole, represent 40.1 % of renewable energy primary consumption. Apart from these two energy sources, and as regards the trend for the other renewable technologies, biomass remained broadly stable, while the contribution of solar energy rose by 2.5 %. However, this increase was not enough to offset the impact of the decline in hydro-electric and wind power.

Table 2.2.1. Breakdown of primary energy consumption (ktoe), by source. 2007-2015

Ktoe source	2007	2008	2009	2010	2011	2012	2013	2014	2015
Coal	19 748	13 979	10 609	8 159	12 455	15 395	10 860	11 487	13 238
Petroleum products	70 983	68 031	63 171	60 610	57 905	53 091	50 510	49 270	52 254
Gas	31 826	34 954	31 264	31 163	28 939	28 576	26 163	23 667	24 538
Nuclear	14 214	15 212	13 610	15 991	14 889	15 856	14 633	14 782	14 782
Renewables	10 008	10 552	12 569	15 048	14 832	16 135	17 744	17 768	16 619
<i>Biomass (2)</i>	5 142	5 351	6 297	6 553	7 142	7 690	6 943	6 802	6 754
<i>Hydro</i>	2 348	2 009	2 271	3 638	2 631	1 767	3 170	3 368	2 420
<i>Wind</i>	2 370	2 833	3 278	3 807	3 690	4 254	4 785	4 472	4 241
<i>Solar photovoltaic</i>	43	220	513	552	640	704	716	707	711
<i>Solar thermal (including low-Geothermal)</i>	95	1 299	1 989	482	713	1 703	2 1120	2 401	2 474
<i>Geothermal</i>	9	11	14	16	17	18	18	19	20
Balance (imp. -	-495	-949	-697	-717	-524	-963	-581	-293	-11
TOTAL	146 28	141 77	130 52	130 25	128 49	128 09	119 32	116 68	121 41

Note: (1) Including MSW, biogas and biofuels; (2) including non-renewable waste.

Source: Eurostat/MINETAD

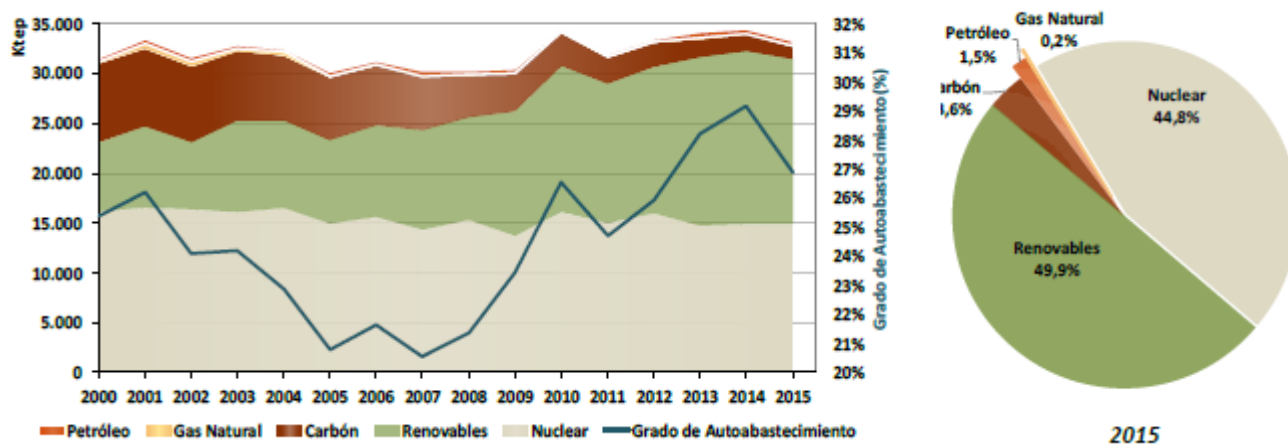
Domestic production potential (Figure 2.2.2), along with the energy supply structure's level of diversification, affects the capacity for self-sufficiency and, therefore, energy dependency, which currently remains high at 73.1 %, some 20 percentage points above the European average.

Nonetheless, recent years have been characterised by an improvement underpinned by the upward trend in renewable energies' contribution to the energy system. This represents domestic production which exceeds that of nuclear origin. In 2015, the slight decline resulting from the aforementioned decrease in hydro-electric and wind power led to increased use of fossil fuels to meet demand, which, in turn, increased energy imports, to the detriment of energy self-sufficiency.

The trend in the **primary energy intensity indicator** for Spain is consistent with that of primary energy demand (Figure 2.2.3), showing the steepest downturn between 2004 and 2009 and less intense decline after that, consistent with the first years of the financial crisis.

As with other countries in Spain's immediate environment, energy intensity is following an overall downward trend largely stemming from structural changes and shifts in activity.

Figure 2.2.2. Domestic energy production vs Degree of self-sufficiency (2000-2015)

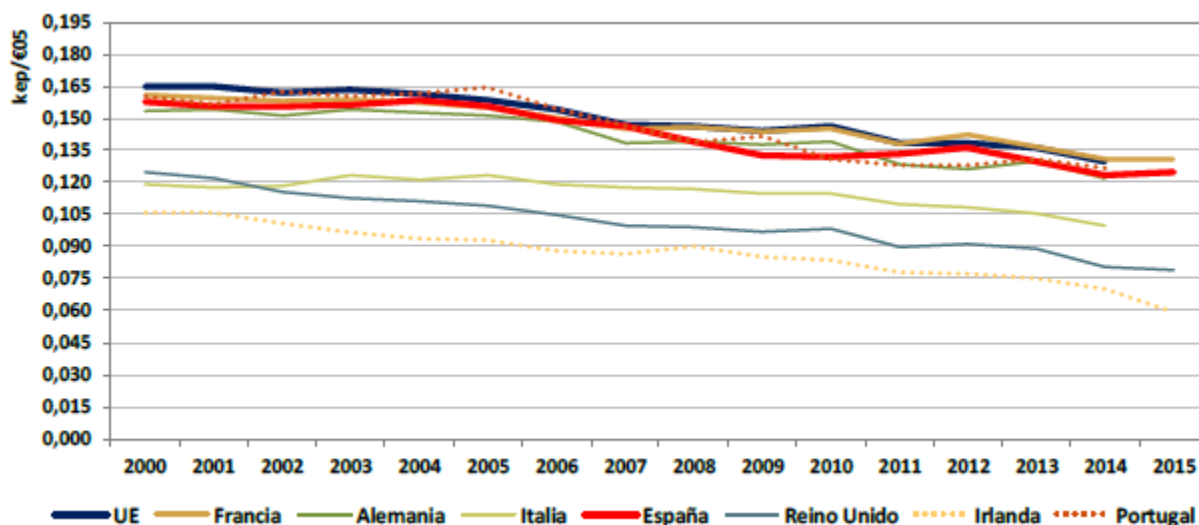


Note: Non-renewable waste included in 'oil'

Source: MINETAD/IDAE

Ktep	ktoe
35.000	35 000
30.000	30 000
25.000	25 000
20.000	20 000
15.000	15 000
10.000	10 000
5.000	5 000
Petróleo	Oil
Gas Natural	Natural gas
Carbón	Coal
Renovables	Renewables
Nuclear	Nuclear
Grado de Autoabastecimiento	Degree of self-sufficiency
Grado de Autoabastecimiento (%)	Degree of self-sufficiency (%)
Gas Natural 0,2%	Natural gas 0.2 %
Petróleo 1,5%	Oil 1.5 %
Carbón 3,6%	Coal 3.6 %
Renovables 49,9%	Renewables 49.9 %
Nuclear 44,8%	Nuclear 44.8 %

Figure 2.2.3. Primary energy intensity in Spain and the EU (2000-2015)

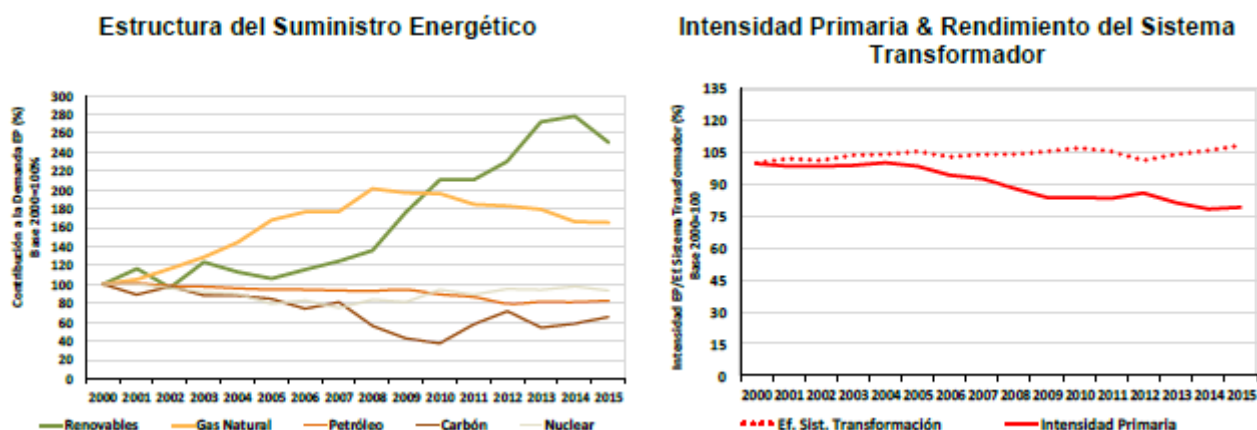


Source: IDAE/EC. Reference = EU-28

kep/€05	kgoe/€05
0,195	0.195
0,180	0.180
0,165	0.165
0,150	0.150
0,135	0.135
0,120	0.120
0,105	0.105
0,090	0.090
0,075	0.075
0,060	0.060
0,045	0.045
0,030	0.030
0,015	0.015
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Irlanda	Ireland
Portugal	Portugal

Between 2004 and 2014, Spain achieved an annual average improvement of 2.4 %, slightly higher than the corresponding EU average (2.2 %). Various factors underpin the improvement seen in the national indicator since the years before the financial crisis, one of which is the favourable effect of renewable-energy- and natural-gas-based electricity-generation technologies, such as cogeneration and combined-cycle plants (Figure 2.2.4). This effect has resulted in improved performance of the conversion system and, consequently, of primary energy intensity, by reducing the energy required to generate electricity. The apparent trend change observed in 2015 is due to lower hydro-electric output, which led to a reduction in conversion system efficiency.

Figure 2.2.4. Energy mix vs Primary intensity & conversion system performance (2000-2015)



Source: Eurostat/MINETAD

Estructura del Suministro Energético Contribución a la Demanda EP (%) Base 2000 = 100% Renovables Gas Natural Petróleo Carbón Nuclear	Energy supply structure Contribution to PE demand (%) Baseline 2000 = 100 % Renewables Natural gas Oil Coal Nuclear
Intensidad Primaria & Rendimiento del Sistema Transformador Intensidad EP / Ef. Sistema Transformador (%) Base 2000 = 100 Ef. Sist. Transformación Intensidad Primaria	Primary intensity & Conversion system performance PE intensity / Conv. system efficiency (%) Baseline 2000 = 100 Conv. system efficiency Primary intensity

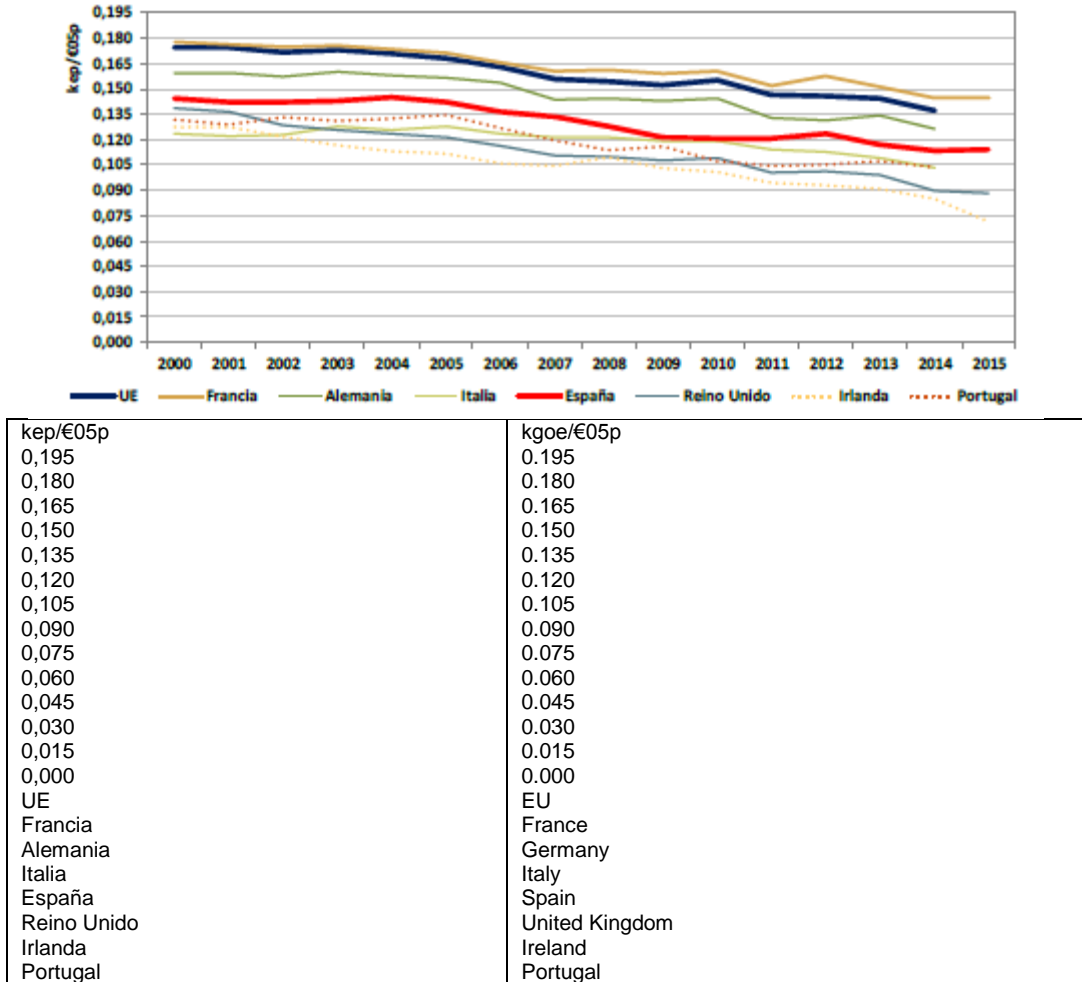
Adding to this effect are those stemming from structural changes to Spain's economy — implemented prior to the financial crisis and consolidated afterwards — and the impact of the measures introduced under the Energy Efficiency Action Plans approved since 2004. All of these factors have contributed to the overall downward trend in primary energy intensity.

In 2015, primary energy intensity registered a 0.8 % increase as a result of a year-on-year rise in primary energy demand (4.1 %) that outstripped GDP growth (3.2 %). As was seen in 2012, this trend is linked to the entry into operation of coal-fired power plants — in this case in 2015 — which led to a decline in the performance of the conversion system with respect to the previous year, when hydro-electric resource availability was greater.

The energy intensity indicator adjusted to purchasing power parity (Figure 2.2.5) provides an additional analysis.

Figure 2.2.5. Primary intensity at purchasing power parity in Spain and the EU (2000-2015)

Source: IDAE/EC. Reference = EU-28

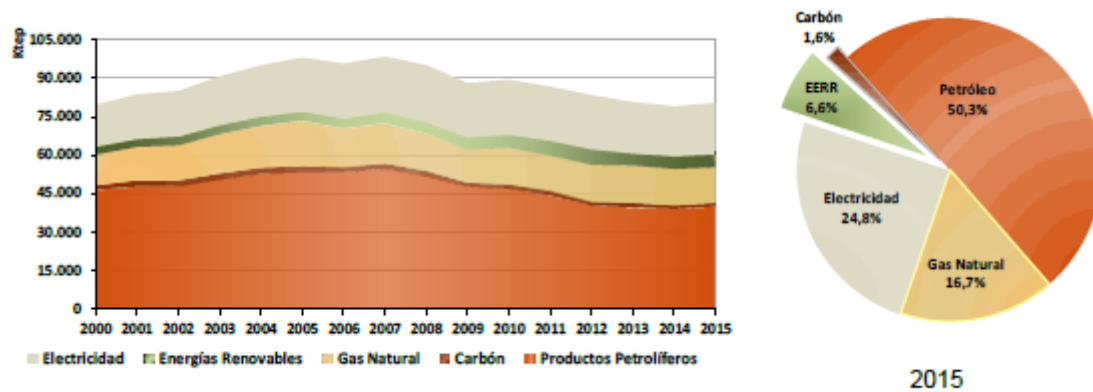


This type of adjustment provides a more realistic comparison between international intensity levels, as it includes information regarding prices and purchasing power, which differs according to each country, resulting in a vertical shift in intensity ratings. In the case of Spain, the adjustment does not alter the intensity profile and the country's position even improves, registering further below the EU average in this category.

The trend in **final energy demand** by energy source (Figure 2.2.6) is consistent with that of primary energy, with both demonstrating common singularities. In 2015, final energy consumption — excluding non-energy uses — rose to 80 461 ktoe, an increase of 1.6 % over the previous year. This marks a break in the downward trend which began in 2007 and lasted until 2014, with the exception of the upturn in 2010.

Increased consumption in 2015 was mainly the result of the rise in demand for petroleum products (4.3 %) and electricity (2.3 %), which together represented 75.1 % of overall final energy demand. Coal and renewable energies also contributed, although to a lesser extent, with respective demand increases of 0.7 % and 3.6 %, although these two sources only account for 8.2 % of final energy demand.

Figure 2.2.6. Final energy consumption, by source (2000-2015)



Note: Excluding non-energy uses.

Source: Eurostat/MINETAD

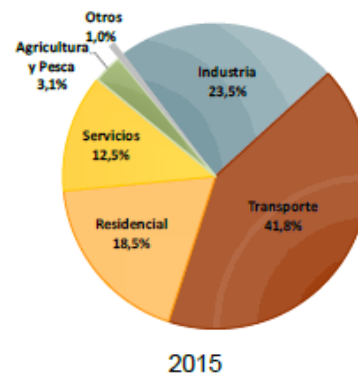
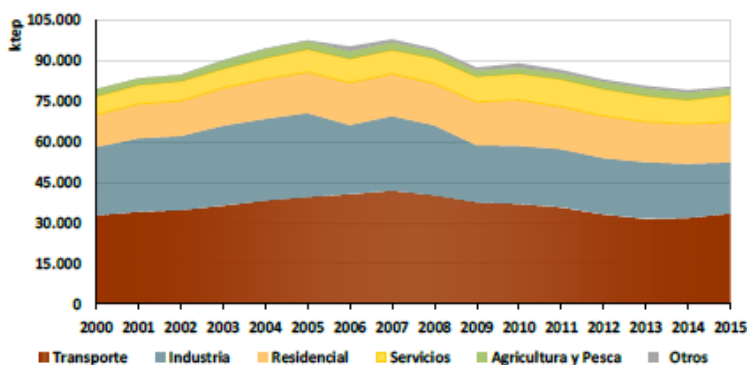
Ktep	ktoe
105.000	105 000
90.000	90 000
75.000	75 000
60.000	60 000
45.000	45 000
30.000	30 000
15.000	15 000
Electricidad	Electricity
Energías Renovables	Renewables
Gas Natural	Natural gas
Carbón	Coal
Productos petrolíferos	Petroleum products
Carbón 1,6%	Coal 1.6 %
EERR 6,6%	Renewables 6.6 %
Electricidad 24,8%	Electricity 24.8 %
Gas Natural 16,7%	Natural gas 16.7 %
Petróleo 50,3%	Oil 50.3 %

In 2015, demand for renewable energies was driven by biomass and biofuels, which together made up 93.4 % of heating demand associated with renewable energies. That year, their consumption rose by 4.6 % and 5.1 %, respectively. In addition, geothermal and solar thermal energy contributed to the overall increase, although to a lesser degree, given their relatively minor significance (5.6 %) in overall demand for renewable thermal energy.

One exception among renewable energies was biogas demand, which plummeted by 49.9 % due to reduced use of biogas-fired cogeneration plants. As a whole, energy from renewable sources accounted for 6.3 % of overall final energy demand in 2015, contributing slightly less than in the previous year.

The prevalence of oil and natural gas in final consumption was linked to sector-specific influence on structural demand (Figure 2.2.7), led by transport, which was responsible for 41.8 % of energy consumption in 2015. This sector, which depends highly on petroleum products, largely conditions energy demand characteristics and needs.

Figure 2.2.7. Trend in final energy consumption, by sector (2000-2015)



Note: Excluding non-energy uses.

Source: Eurostat/MINETAD

ktep	ktoe
105.000	105 000
90.000	90 000
75.000	75 000
60.000	60 000
45.000	45 000
30.000	30 000
15.000	15 000
Transporte	Transport
Industria	Industry
Residencial	Residential
Servicios	Services
Agricultura y Pesca	Agriculture and fisheries
Otros	Other
Otros 1,0%	Other 1.0 %
Agricultura y Pesca 3,1%	Agriculture and fisheries 3.1 %
Servicios 12,5%	Services 12.5 %
Residencial 18,5%	Residential 18.5 %
Transporte 41,8%	Transport 41.8 %
Industria 23,5%	Industry 23.5 %

Accounting for 23.5 % of demand, the industrial sector contributed significantly, although it has been progressively declining as regards its significance within the overall demand structure. The opposite occurred with the sectors grouped together under the 'Mixed use' category,² which accounted for 34.1 % of demand in 2015. These sectors' collective demand continues to climb well past that of the industrial sector, which they have been exceeding since 2006.

What is described above is consistent with the decline in the industrial sector's contribution to GDP and closely corresponds to the tertiarisation of Spain's economy (Figure 2.1.2), which intensified during the financial crisis.

² The 'Mixed use' category combines Residential, Services, Agriculture and Others.

Table 2.2.2. Breakdown of final energy consumption (ktoe), by sector 2007-2015

Ktoe source	2007	2008	2009	2010	2011	2012	2013	2014	2015
Industry	27 449	25 832	21 205	21 449	21 371	20 774	20 800	20 006	18 915
Transport	42 328	40 531	37 911	37 192	36 037	33 348	31 785	31 989	33 595
Residential	15 624	15 495	15 923	16 920	15 627	15 525	14 882	14 709	14 876
Services	8 819	9 296	9 405	9 797	10 203	10 046	9 615	8 845	10 037
Agriculture and Other	2 943	2 695	2 359	2 240	2 401	2 714	2 851	2 769	2 491
TOTAL	98 124	94 636	87 769	89 084	86 671	83 152	80 771	79 225	80 461

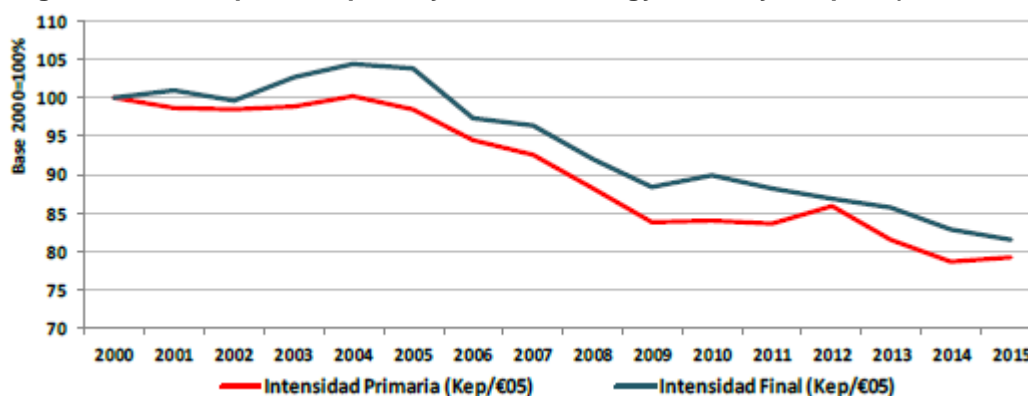
Note: Excluding non-energy uses.

Source: Eurostat/MINETAD

When comparing the **primary and final energy intensity** trends (Figure 2.2.8), the former performed more favourably in general and appeared to be related to the steadily growing contribution that renewable energies and natural gas make to the energy mix (Figure 2.2.4). Thus, the impact of energy-generation technologies associated with these sources resulted in a general improvement in conversion system efficiency and, therefore, in a reduction in primary intensity which was more marked than the decrease in final intensity.

More recently, in 2015, the -1.5 % decline in final energy demand — in contrast with GDP growth of 3.2 % — led to a 1.6 % reduction in **final energy intensity** during that year. The drop in final intensity and increase in primary intensity were due to coal-fired power plants' increased contribution to the electricity generation system caused by reduced availability of wind and hydro-electric resources in 2015, as indicated above. This results in lower conversion system efficiency, and therefore, in greater primary energy consumption to produce electricity, which explains both the greater increase in primary as opposed to final intensity and the upswing in primary intensity in 2012.

Figure 2.2.8. Comparison: primary and final energy intensity in Spain (2000-2015)



Source: IDAE

Base 2000 = 100%
Intensidad Primaria (Kep/€05)
Intensidad Final (Kep/€05)

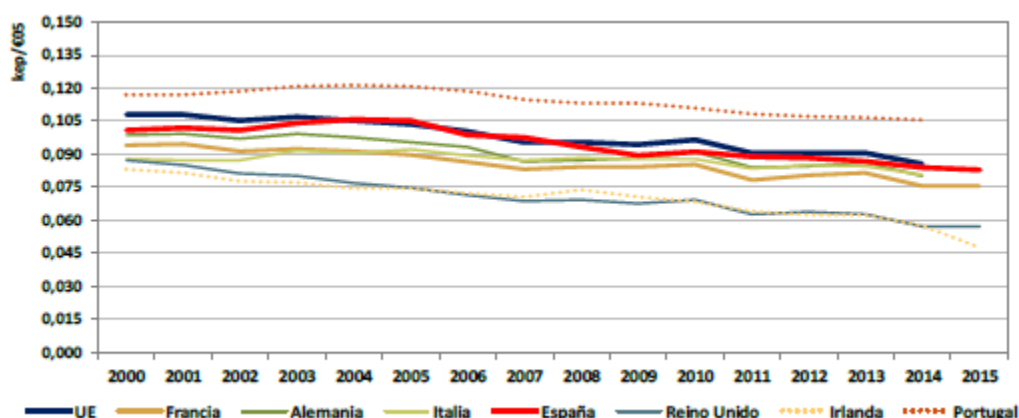
Baseline 2000 = 100 %
Primary intensity (kgoe/€05)
Final intensity (kgoe/€05)

As was seen with the primary energy indicator, a comparative analysis of Spain's immediate

environment shows that this indicator runs almost parallel to the EU average (Figure 2.2.9). A close match can be seen between the national and European indicators, with the year-on-year improvement being even slightly more marked in the case of Spain.

Between 2004 and 2014, which includes the years of the financial crisis, Spain recorded an average annual improvement of 2.3 %, slightly above the 2.1 % registered by the EU as a whole for that period. This downward trend in final intensity has continued in recent years, although the improvement observed in 2015 (Figure 2.2.11) appears to be due not only to the structural effect, but also to other factors stemming from the modest recovery in economic activity during that year.

Figure 2.2.9. Final energy intensity in Spain and the EU (2000-2015)



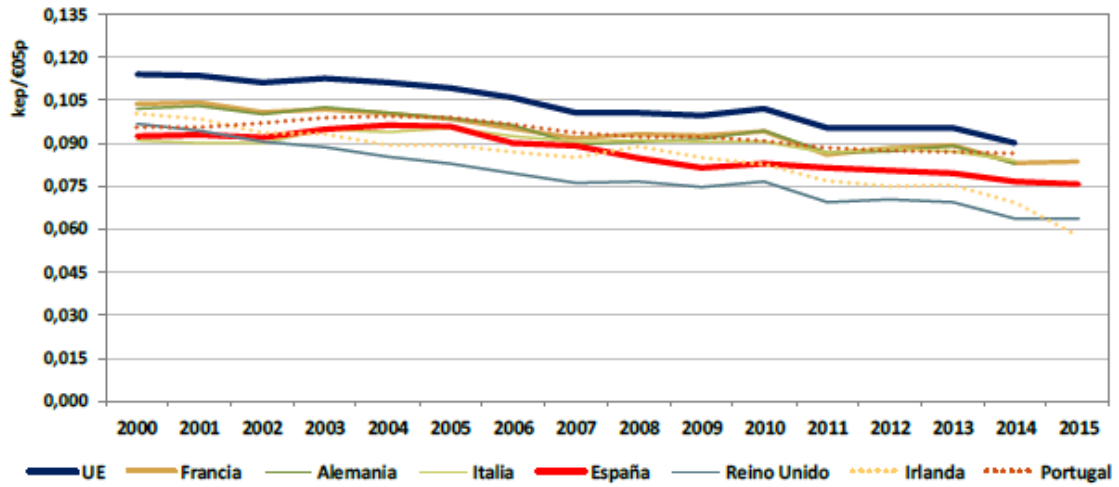
Note: Excluding non-energy uses.

Source: IDAE/EC

kep/€05	kgoe/€05
0,150	0.150
0,135	0.135
0,120	0.120
0,105	0.105
0,090	0.090
0,075	0.075
0,060	0.060
0,045	0.045
0,030	0.030
0,015	0.015
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Irlanda	Ireland
Portugal	Portugal

Analysis of the final intensity indicator at purchasing power parity (Figure 2.2.10) produces similar conclusions, showing Spain's position to improve in relation to the European average, consistent with the data shown in Figure 2.2.5 corresponding to the same adjustment as regards primary intensity.

Figure 2.2.10. Final intensity at purchasing power parity in Spain and the EU (2000-2015)



Note: Excluding non-energy uses.

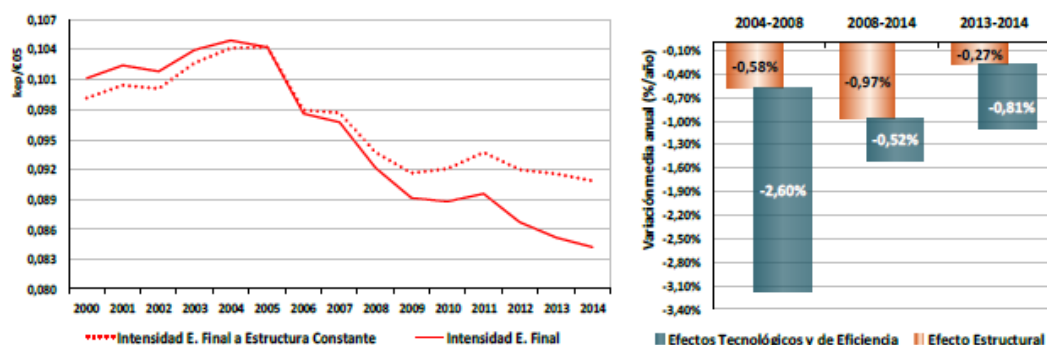
Source: IDAE/EC. Reference = EU-28

kep/€05p	kgoe/€05p
0,135	0.135
0,120	0.120
0,105	0.105
0,090	0.090
0,075	0.075
0,060	0.060
0,045	0.045
0,030	0.030
0,015	0.015
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Irlanda	Ireland
Portugal	Portugal

Comparative analysis of the trend in actual final energy intensity against 2005 constant values (Figure 2.2.11) shows the effects of various factors which, simplified, can be classified as structural and technological factors.

The figure shows that from 2004 onwards, factors linked to technological improvements and to energy-efficiency policies made a significant impact and did so until 2008, when this trend began to level off. This change resulted from the decline in production capacity utilisation due to the economic crisis, causing operational inefficiency in various sectors.

Figure 2.2.11. Final energy intensity at constant values (2000-2014)



Note: Climatic corrections made to intensities. Excluding non-energy uses.

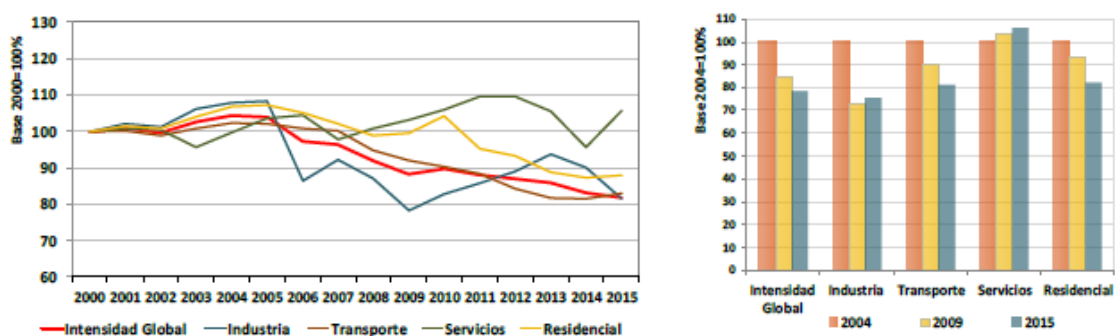
Source: IDAE

kep/€05	kgoe/€05
0,107	0.107
0,104	0.104
0,101	0.101
0,098	0.098
0,095	0.095
0,092	0.092
0,089	0.089
0,086	0.086
0,083	0.083
0,080	0.080
Intensidad E. Final a Estructura Constante	Final energy intensity at constant values
Intensidad E.Final	Final energy intensity
Variación media anual (%/año)	Average annual variation (%/year)
-0,10%	-0.10 %
-0,40%	-0.40 %
-0,70%	-0.70 %
-1,00%	-1.00 %
-1,30%	-1.30 %
-1,60%	-1.60 %
-1,90%	-1.90 %
-2,20%	-2.20 %
-2,50%	-2.50 %
-2,80%	-2.80 %
-3,10%	-3.10 %
-3,40%	-3.40 %
-0,58%	-0.58 %
-2,60%	-2.60 %
-0,97%	-0.97 %
-0,52%	-0.52 %
-0,27%	-0.27 %
-0,81%	-0.81 %
Efectos Tecnológicos y de Eficiencia	Technological and efficiency effects
Efecto Estructural	Structural effect

Nevertheless, the most recent analysis available, corresponding to 2014, indicates that technology and efficiency factors have played a more significant role recently, which could be due to the effects of economic recovery that year, when production levels became more synchronised with the optimal operation of facilities, equipment and processes.

Comparison of the overall and sector-specific trends in final energy intensity (Figure 2.2.12) reveals the differences between the end-use sectors over various analysis periods. The influence of the transport sector stands out in terms of overall intensity, given this sector's significance within the demand structure. Also contributing, albeit to a lesser extent, were the service, residential and industrial sectors, the last of which has performed slightly more erratically since the beginning of the crisis.

Figure 2.2.12. Final energy intensity trend: overall and by industry (2000-2015)



Note: Excluding non-energy uses.

Source: Eurostat/MINETAD

Base 2000 = 100% Intensidad Global Industria Transporte Servicios Residencial	Baseline 2000 = 100 % Overall intensity Industry Transport Services Residential
Base 2004 = 100% Intensidad Global Industria Transporte Servicios Residencial	Baseline 2004 = 100 % Overall intensity Industry Transport Services Residential

**CHAPTER 3:
OVERVIEW OF NATIONAL ENERGY
EFFICIENCY TARGETS AND SAVINGS**

3. OVERVIEW OF NATIONAL ENERGY EFFICIENCY TARGETS AND SAVINGS

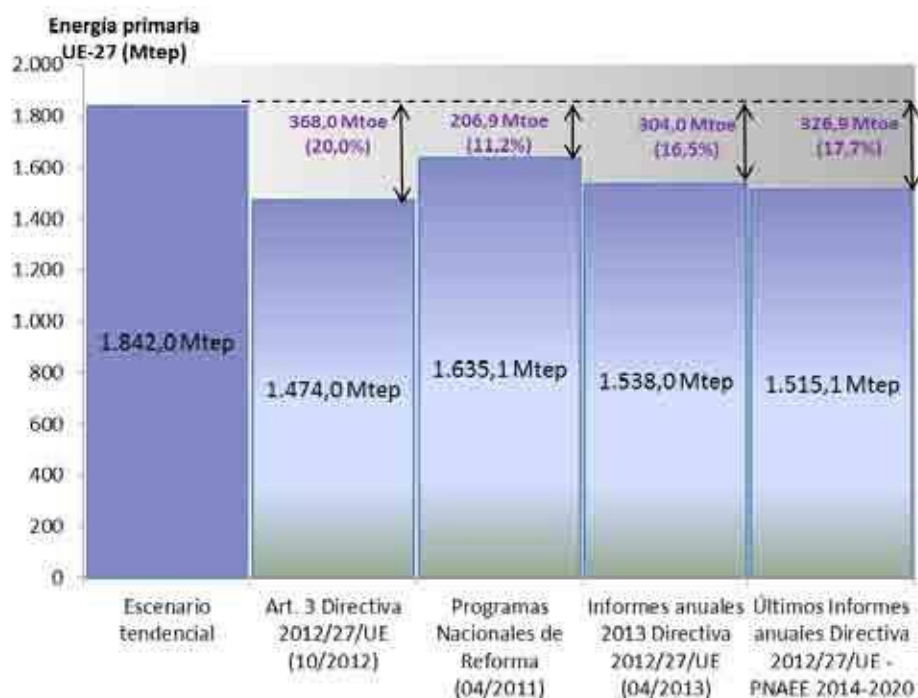
3.1. NATIONAL INDICATIVE ENERGY EFFICIENCY TARGET FOR 2020 (ARTICLE 3.1)

Article 3(1)(a) of Directive 2012/27/EU of 25 October 2012 lays down that ‘the Union’s 2020 energy consumption has to be no more than 1 474 Mtoe of primary energy or no more than 1 078 Mtoe of final energy.’³

This 2020 primary energy consumption target for the European Union means a reduction of 368 Mtoe in a trend-based or business-as-usual scenario that takes 2007 (PRIMES 2007) as the baseline for analysis.

The above-mentioned reduction represents a **20 % decrease in primary energy consumption** and, along with the 20 % reduction in CO₂ emissions and 20 % renewable energy consumption, completes the set of quantitative targets taken from the climate and energy package, which was presented by the European Commission on 28 January 2008 and was approved by the European Council and Parliament in December of that same year.

Figure 3.1.1. Indicative target reduction in primary energy consumption (Mtoe) (2020: EU-27)



Source: European Commission.

Energía primaria UE-27 (Mtep)	Primary energy EU-27(Mtoe)
2.000	2 000
1.800	1 800
1.600	1 600
1.400	1 400
1.200	1 200

³ As already indicated in the Plan’s introduction, Article 3 of Directive 2012/27/EU was amended by Article 1 of Council Directive 2013/12/EU of 13 May 2013 adapting the previous Directive on energy efficiency, by reason of the accession of the Republic of Croatia. Following the amendment, the EU-28’s 2020 energy consumption has to be no more than 1 483 Mtoe of primary energy or no more than 1 086 Mtoe of final energy.

1.000	1 000
368,0 Mtoe (20,0%)	368.0 Mtoe (20.0 %)
206,9 Mtoe (11,2%)	206.9 Mtoe (11.2 %)
304,0 Mtoe (16,5%)	304.0 Mtoe (16.5 %)
326,9 Mtoe (17,7%)	326.9 Mtoe (17.7 %)
1.842,0 Mtep	1 842.0 Mtoe
1.474,0 Mtep	1 474.0 Mtoe
1.635,1 Mtep	1 635.1 Mtoe
1.538,0 Mtep	1 538.0 Mtoe
1.515,1 Mtep	1 515.1 Mtoe
Escenario tendencial	Baseline scenario
Art. 3 Directiva 2012/27/UE (10/2012)	Art. 3 Directive 2012/27/EU (10/2012)
Programas Nacionales de Reforma (04/2011)	National Reform Programmes (04/2011)
Informes anuales 2013 Directiva 2012/27/UE (04/2013)	2013 Annual reports – Directive 2012/27/EU (04/2013)
Últimos Informes anuales Directiva 2012/27/UE – PNAEE 2014-2020	Latest annual reports – Directive 2012/27/EU – 2014-2020 NEEAP

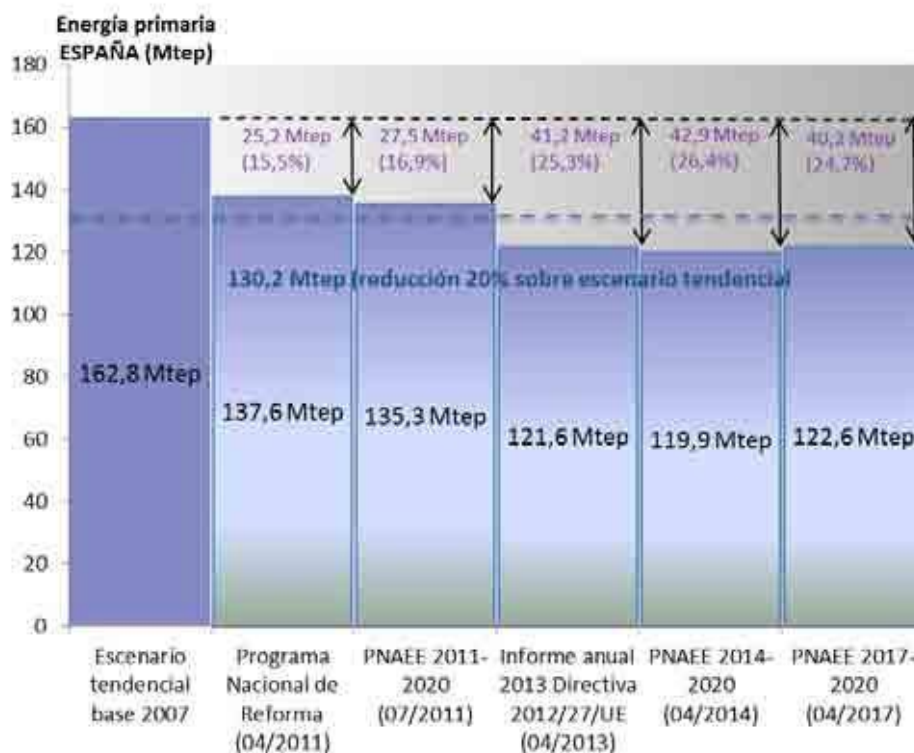
As the Directive states in its third recital, the energy efficiency target was included as one of the main objectives of the Union's new strategy for jobs and smart, sustainable and inclusive growth (Europe 2020 Strategy). Under the process defined in this Strategy, Member States are required to set national targets and to indicate, in their National Reform Programmes, how they intend to achieve them.

In accordance with the Europe 2020 Strategy, Spain's 2011 National Reform Programme, presented in April, established the target of reducing primary energy consumption by 25.2 Mtoe. The sum of the national reduction targets for the 27 Member States amounted to a total reduction in primary energy consumption of 206.9 Mtoe, less than the 368 Mtoe set as the target for the European Union as a whole.

Following Spain's announcement of this consumption reduction target, on 29 July 2011 the Council of Ministers approved the 2011-2020 Energy Efficiency Action Plan for submission to the European Commission as Spain's second National Energy Efficiency Action Plan in accordance with the requirements of Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services.

The 2011-2020 National Energy Efficiency Action Plan set a 2020 primary energy consumption target (excluding non-energy uses) of 135.3 Mtoe by 2020 which, compared to the baseline scenario, represented a 27.5-Mtoe reduction.

Figure 3.1.2. Indicative target reduction in primary energy consumption (Mtoe) (2020: Spain)



Source: MINETAD

Energía primaria ESPAÑA (Mtep)	Primary energy SPAIN (Mtoe)
25,2 Mtep (15,5%)	25.2 Mtoe (15.5 %)
27,5 Mtep (16,9%)	27.5 Mtoe (16.9 %)
41,2 Mtep (25,3%)	41.2 Mtoe (25.3 %)
42,9 Mtep (26,4%)	42.9 Mtoe (26.4 %)
40,2 Mtep (24,7%)	40.2 Mtoe (24.7 %)
130,2 Mtep (reducción 20% sobre escenario tendencial)	130.2 Mtoe (20 % reduction on baseline scenario)
162,8 Mtep	162.8 Mtoe
137,6 Mtep	137.6 Mtoe
135,3 Mtep	135.3 Mtoe
121,6 Mtep	121.6 Mtoe
119,9 Mtep	119.9 Mtoe
122,6 Mtep	122.6 Mtoe
Escenario tendencial base 2007	2007 baseline scenario
Programa Nacional de Reforma (04/2011)	National Reform Programme (04/2011)
PNAEE 2011-2020 (07/2011)	2011-2020 NEEAP (07/2011)
Informe anual 2013 Directiva 2012/27/UE (04/2013)	2013 Annual reports – Directive 2012/27/EU (04/2013)
PNAEE 2014-2020 (04/2014)	2014-2020 NEEAP (04/2014)
PNAEE 2017-2020 (04/2017)	2017-2020 NEEAP (04/2017)

In Spain's 2013 annual progress report, required under Article 24(1) of Directive 2012/27/EU and submitted on 17 May of that year, the country reported, as an indicative target pursuant to Article 3(1), an improved national primary energy consumption target for 2020 of 121.6 Mtoe. This target translated as a 41.2-Mtoe reduction on baseline primary energy consumption by 2020, i.e. a 25.3 % decrease, well above the 20 % overall target established for the European Union in Directive 2012/27/EU.

The reduction in primary energy consumption undertaken by Spain represented 11.2 % of the primary energy consumption reduction target for the European Union as a whole (368 Mtoe). With this reduction, Spain would be contributing to the European reduction target by over 2 per cent more than its primary energy consumption's relative weight within EU-27 primary energy consumption. In other words, while Spain's primary consumption amounts to less than 9 % of

total EU-27 consumption, the reduction would represent more than 11 % of the total EU-27 reduction required. In practice, this would constitute a national contribution well above the 20 % average set for the Union, the contribution being 25.3 % less than the trend-based target while the EU average reduction would remain at 16.5 %, a pattern which is shown in Figure 3.1.1.

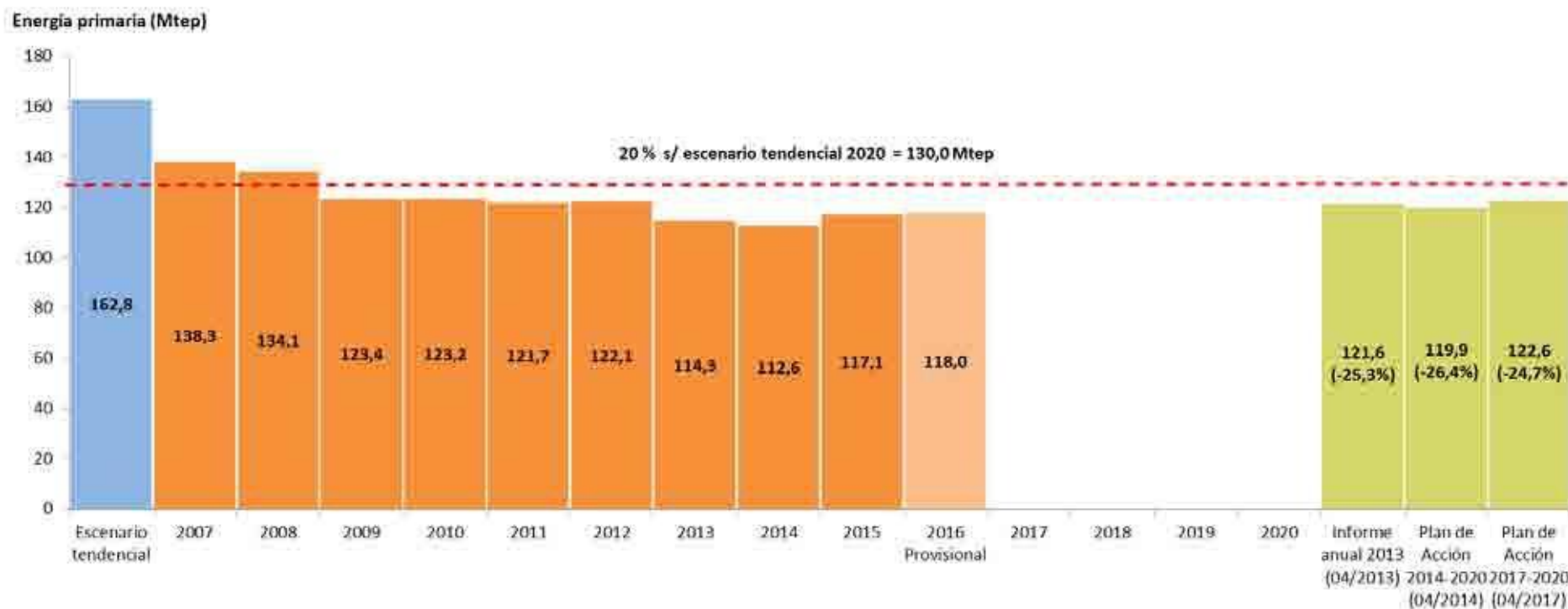
In the 2014-2020 NEEAP, the change in the macroeconomic scenario meant that the primary energy consumption forecasts for 2020 had to be revised, with Spain notifying the European Commission of a new energy consumption target — expressed in terms of absolute level of primary and final energy consumption by 2020 — in accordance with Article 3(1) of the Directive.

Primary energy consumption by 2020 is estimated at 125 280 Mtoe including final non-energy consumption. Excluding these uses, consumption would be 119 893 Mtoe. This again represents a downward revision and an improvement by Spain of its 2020 primary energy consumption target and, in terms of reducing primary energy consumption on the baseline scenario considered by the European Commission, a reduction of 43 Mtoe (rather than the 25.2 Mtoe initially notified by Spain in its 2011 National Reform Programme), representing a 26.4 % reduction on the baseline scenario.

In this new **2017-2020 National Energy Efficiency Action Plan**, and based on the most recent macroeconomic forecasts, Spain has recovered the target set out in the 2013 annual progress report sent to the European Commission on 17 May of that year. Under this scenario, primary energy consumption in 2020 is envisaged to stand at 122.6 Mtoe, representing a **24.7 % reduction compared to the baseline or reference scenario**.

The following figure shows annual primary energy consumption (excluding final non-energy consumption) since 2007, comparing it with the 20 % reduction in primary energy consumption for 2020 (130.0 Mtoe) — represented by the dotted line — and with the target established for the new 2017-2020 NEEAP (122.6 Mtoe).

Figure 3.1.3. Indicative target reduction in primary energy consumption (Mtoe) (2020: Spain)



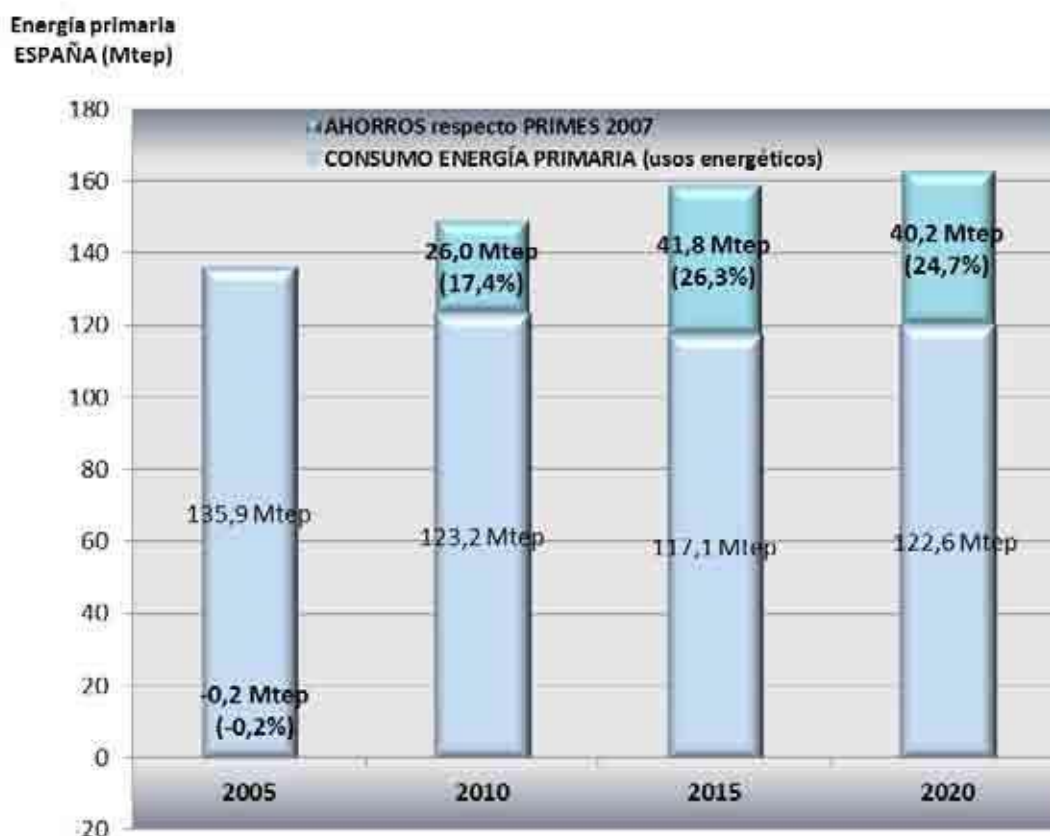
Source: MINETAD

Energía primaria (Mtep)	Primary energy (Mtoe)
20% s/ escenario tendencial 2020 = 130,0 Mtep	20 % of 2020 baseline scenario = 130.0 Mtoe
162,8	162.8
138,3	138.3
134,1	134.1
123,4	123.4
123,2	123.2
121,7	121.7
122,1	122.1
114,3	114.3

112,6	112.6
117,1	117.1
118,0	118.0
121,6 (-25,3%)	121.6 (-25.3 %)
119,9 (-26,4%)	119.9 (-26.4 %)
122,6 (-24,7%)	122.6 (-24.7 %)
Escenario tendencial	Baseline scenario
2016 Provisional	2016 (provisional)
Informe anual 2013 (04/2013)	2013 annual report (04/2013)
Plan de Acción 2014-2020 (04/2014)	2014-2020 Action Plan (04/2014)
Plan de Acción 2017-2020 (04/2017)	2017-2020 Action Plan (04/2017)

As evidenced in Figure 3.1.4, by 2015 Spain had managed to achieve savings of more than 20 % on the baseline scenario and these savings are expected to be sustained through to 2020, even in a scenario characterised by economic recovery. GDP growth at the close of the 2016 financial year is estimated to be 3.2 %, which more than doubles the growth forecast for that year and which was taken into account in the 2014-2020 National Energy Efficiency Action Plan. Likewise, for the upcoming financial years, the economic growth forecasts exceed the former plan's forecasts by half a percentage point.

Figure 3.1.4. Primary energy savings (Mtoe) (2020: Spain)



Source: MINETAD

Energía primaria ESPAÑA (Mtep)	Primary energy SPAIN (Mtoe)
AHORROS respecto PRIMES 2007	SAVINGS on PRIMES 2007
CONSUMO ENERGÍA PRIMARIA (usos energéticos)	PRIMARY ENERGY CONSUMPTION (energy uses)
135,9 Mtep	135.9 Mtoe
-0,2 Mtep (-0,2%)	-0.2 Mtoe (-0.2 %)
26,0 Mtep (17,4%)	26.0 Mtoe (17.4 %)
123,2 Mtep	123.2 Mtoe
41,8 Mtep (26,3%)	41.8 Mtoe (26.3 %)
117,1 Mtep	117.1 Mtoe
40,2 (24,7%)	40.2 (24.7 %)
122,6 Mtep	122.6 Mtoe

Details of the forecast for primary energy consumption by source are shown in Table 3.1.1; the forecasts for final energy consumption by source and sector are shown in tables 3.1.2 and 3.1.3, respectively.

As indicated in the 2013 annual report and in the 2014-2020 National Energy Efficiency Action Plan, the final and primary energy consumption forecasts for 2020 presented in this

2017-2020 National Energy Efficiency Action Plan may be reviewed to adapt them to other macroeconomic scenarios which may be officially adopted by Spain in the next annual report which, according to Article 3 of Directive 2012/27/EU, is to be submitted before the end of April 2018, or if relevant, in the Integrated National Energy and Climate Plan (INECP).

Table 3.1.1. Indicative target for primary energy consumption (including non-energy final uses) (ktoe)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal	15 395	10 860	11 487	13 238	10 442	12 621	12 238	11 985	8 066
Oil	53 091	50 510	49 270	52 254	53 675	53 929	54 768	55 369	55 441
Natural gas	28 576	26 163	23 667	24 538	25 035	24 648	25 668	26 558	28 032
Nuclear	15 856	14 633	14 782	14 782	15 260	14 927	14 927	14 927	14 927
Renewables	16 135	17 744	17 768	16 619	17 212	17 149	17 520	17 955	20 891
Elec. balance (Imp. - Exp.)	-963	-581	-293	-11	659	473	344	172	0
TOTAL	128 090	119 329	116 681	121 418	122 284	123 746	125 465	126 965	127 357
Total excluding non-energy final uses	122 108	114 310	112 574	117 108	117 960	119 346	120 926	122 304	122 580

Source: Eurostat/MINETAD

Table 3.1.2. Indicative final energy consumption target (excluding non-energy uses) (ktoe)

Sector	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal	1 255	1 557	1 297	1 306	1 340	1 360	1 380	1 400	1 413
Petroleum products	40 074	39 337	38 797	40 465	41 266	42 537	43 312	43 814	43 777
Natural gas	14 909	15 046	14 519	13 449	13 446	13 567	13 692	13 817	13 900
Renewables	6 257	5 047	5 103	5 290	20 115	20 258	20 421	20 584	20 750
Electricity	20 658	19 784	19 510	19 952	5 384	5 790	6 175	6 561	7 395
TOTAL	83 152	80 771	79 225	80 461	81 550	83 512	84 980	86 176	87 236

Source: Eurostat/MINETAD

Table 3.1.3. Indicative target for final energy consumption, by sector (excluding non-energy uses) (ktoe)

Sector	2012	2013	2014	2015	2016	2017	2018	2019	2020
Industry	20 774	20 800	20 006	18 915	19 171	19 632	19 977	20 259	20 508
Transport	33 348	31 785	31 989	33 595	34 050	34 869	35 482	35 981	36 424
Mixed use	29 030	28 187	27 231	27 952	28 330	29 012	29 522	29 937	30 306
Residential	15 525	14 882	14 709	14 876	15 077	15 440	15 711	15 933	16 129
Services	10 046	9 615	8 845	10 037	10 173	10 418	10 601	10 750	10 882
Agriculture and fisheries	2 714	2 851	2 769	2 491	2 525	2 585	2 631	2 668	2 701
Other unspecified	746	839	907	548	555	569	579	587	594
TOTAL	83 152	80 771	79 225	80 461	81 550	83 512	84 980	86 176	87 236

Source: Eurostat/MINETAD

3.2. END-USE ENERGY SAVINGS TARGET FOR 2020 (ARTICLE 7(1))

3.2.1. Calculation of savings target for 2020.

Article 7(1) of Directive 2012/27/EU requires that each Member State achieve a cumulative end-use energy savings target by 31 December 2020 in addition to the indicative target set by the Member State in accordance with Article 3.

Meeting this target means achieving cumulative final energy savings over the seven-year period between 2014 and 2020 (inclusive) representing additional annual savings equivalent to 1.5 % of annual energy sales to final customers — averaged over the last three years — by all energy distributors and energy retailers.

The savings target for Spain (excluding its transport sector) is **21 305 ktoe**, calculated for each year between 2014 and 2020 by averaging the combined annual final energy consumption of the industry and other uses sectors for 2010, 2011 and 2012 and multiplying that figure by a coefficient that increases in 1.5 % increments, i.e. by 1.5 % in 2014, by 3.0 % (1.5 % + 1.5 %) in 2015 and so forth, until reaching a rate of 10.5 % in 2020.⁴

In accordance with the option provided in Article 7(2) and (3) of the Directive, the cumulative savings target has been lowered by the 25 % maximum,⁵ from 21 305 ktoe to **15 979 ktoe**, for the period between 1 January 2014 and 31 December 2020.

This savings target, which is equivalent to 571 ktoe/year, follows a linear distribution over the course of the obligation period (2014-2020) (see Figure 3.2.1.1.).

In the 'Report on the energy saving and efficiency policy measures in compliance with Article 7 of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency' submitted by Spain to the European Commission on 5 June 2014, a compliance scheme was presented based on a combination of alternative measures, as set out in Article 7(9) of the Directive, in addition to an energy savings obligation scheme for energy retailers and energy distributors in Spain.

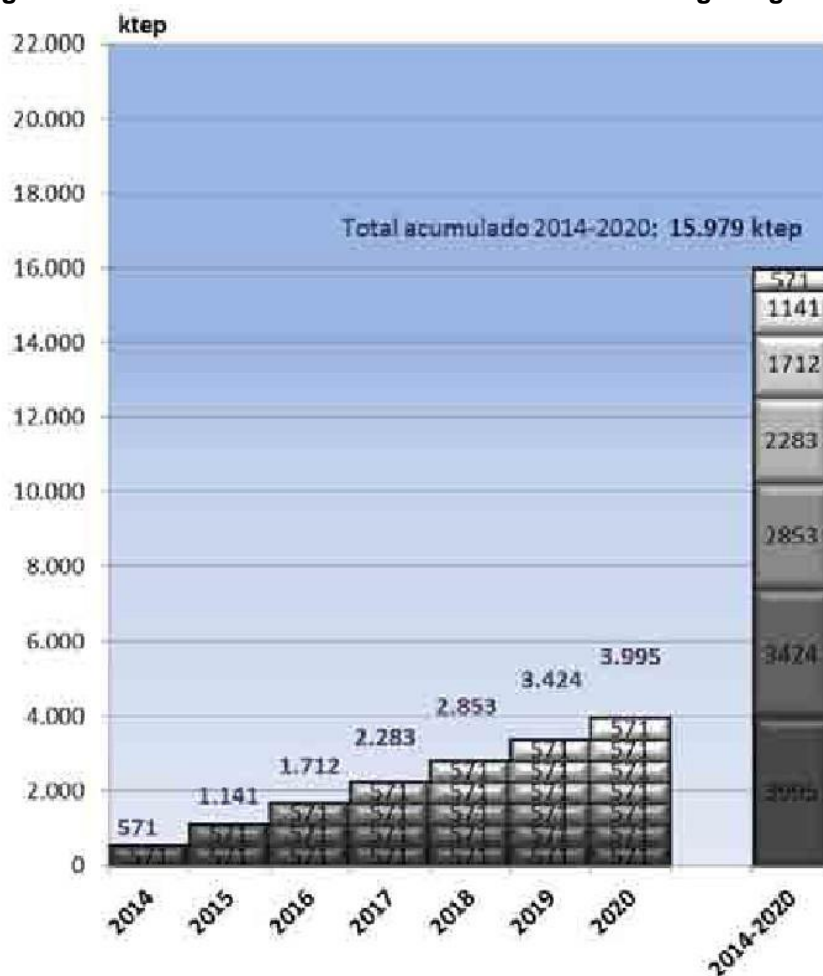
To that end, Royal Decree-Law 8/2014 of 4 July 2014 approving urgent measures for growth, competitiveness and efficiency, a revised version of which was later published as Law 18/2014 of 15 October 2014, introduced an energy savings obligation scheme and, in accordance with Article 20 of Directive 2012/27/EU, set up a National Energy Efficiency Fund administered by the Secretariat of State for Energy under what is currently the Ministry of Energy, Tourism and Digital Agenda (MINETAD).

Under Law 18/2014, the obligated parties (gas and electricity retailers, petroleum product wholesalers and liquefied petroleum gas wholesalers) are required to make an annual financial contribution to the Fund in order to fulfil the savings obligation imposed on them.

⁴ Notwithstanding total exclusion of final energy consumption by the transport sector when calculating the target, the providers of petroleum products for transport are obligated parties under the energy efficiency obligation scheme that was implemented in Spain in compliance with Article 7(1) of Directive 2012/27/EU (Article 7(4) of Directive 2012/27/EU).

⁵ Using the flexibility mechanism provided for in Article 7(2)(a) reduces the target by 20.8 %; using the flexibility mechanism provided for in Article 7(2)(b) in addition to the former reduces the overall target by as much as 25 %, the maximum envisaged.

Figure 3.2.1.1. Time distribution of final cumulative savings target



Source: MINETAD

ktep	ktee
22.000	22 000
20.000	20 000
18.000	18 000
16.000	16 000
14.000	14 000
12.000	12 000
10.000	10 000
8.000	8 000
6.000	6 000
4.000	4 000
2.000	2 000
1.141	1 141
1.712	1 712
2.283	2 283
2.853	2 853
3.424	3 424
3.995	3 995
Total acumulado 2014-2015: 15.979 ktep	2014-2015 cumulative total: 15 979 ktee

Alternatively, and under the terms laid down by government regulation, Law 18/2014 indicates that a mechanism based on the submission of Energy Saving Certificates may be established that allows the obligated parties to comply with the saving obligation imposed on them. However, it should be noted that, at present, the regulations that would allow for the introduction of such a mechanism have not yet been implemented. Therefore, the only way to comply with the saving obligations is to make a contribution to the fund based on the financial equivalence

set for each year.

In addition to the energy efficiency obligation scheme, and as stated in the aforementioned report of 5 June 2014, for the 2014-2020 period, Spain considered the possibility of accessing Community funding for the National Energy Efficiency Fund from the funds envisaged under Thematic Objective 4 ('Low-carbon economy'). The application of those funds to energy saving and efficiency projects and measures will contribute, in accordance with the initial compliance scheme submitted to the European Commission, towards achieving the energy savings target required by Article 7.

3.2.2. Policy measures

3.2.2.1. Other policy measures set out in Article 7(9) of Directive 2012/27/EU.

- **Law 15/2012 on fiscal measures for energy sustainability**

Law 15/2012 of 27 December 2012 on fiscal measures for energy sustainability, in force since 2013, introduced permanent fiscal measures designed to send final energy consumers an appropriate price signal, with a view to encouraging rational and efficient energy use in line with the basic principles governing European Union fiscal, energy and environmental policy and with the ultimate objective of stimulating improvements in energy efficiency levels.

This law introduced a tax reform designed to internalise environmental costs arising from electricity generation and spent nuclear fuel or radioactive waste storage and thus stimulate improvements in energy efficiency levels. It introduced a new tax on the value of electricity generation, a tax on the production of spent nuclear fuel and radioactive waste resulting from nuclear electricity generation, and a tax on spent nuclear fuel and radioactive waste storage at centralised facilities. It also introduced a charge for the use of inland waters for electricity generation, amended the tax rates for natural gas and coal and abolished the exemptions for energy products used in electricity generation and cogeneration of electricity and useful heat. The rates for each of these new taxable transactions are as follows:

- Tax on spent nuclear fuel (10 %).
- Charge on hydro-electric power generation (22 %).
- Tax on fossil fuels:
 - Natural gas (2.79 euro cents/m³).
 - Coal for electricity generation (14.97 €/t).
 - Fuel oil for electricity generation (12.00 €/t).
 - Diesel for electricity generation (29.15 €/1000 l).
- Tax on electricity generation, for all generation sources, subject to both the Ordinary Regime and the Special Regime (6 %).

Details of how the savings resulting from this fiscal measure were calculated were given in the 'Report on energy savings and efficiency policy measures under Article 7' of 5 June 2014, based on the report submitted on the use of price elasticities to calculate the effects of energy and environmental policy instruments in Spain. The savings calculated for this fiscal measure, after applying the price-demand elasticity coefficients, are shown in the following table in thousands of tonnes of oil equivalent (ktoe).

The table includes two outcomes, one resulting from the application of short-term elasticities and the other from the application of transition values between short- and long-term elasticity. Short-term elasticities measure the adjustment in the amount of energy used (electricity and gas) at the moment that the price impact induced by the fiscal policy instrument occurs. Transition values, however, estimate the savings achieved as a result of decisions to purchase or replace energy-consuming devices, made as a result of the impact on energy prices induced by the fiscal policy instrument. These additional savings are incremental to the first short-term outcome that directly affects the amount of energy used.⁶

Table 3.2.2.1. Calculation of savings deriving from adoption of Law 15/2012 of 27 December 2012 on fiscal measures

	Residential electricity	Service-sector electricity	Industrial electricity	Residential gas	Service-sector gas	Industrial gas	TOTAL annual savings (ktoe/year)	TOTAL cumulative savings by 2020 (ktoe)
Short-term elasticities	-0.186	-0.031	-0.052	-0.192	-0.184	-0.184		
YEAR	2014 savings calculated based on short-term elasticities in consumption values from the 2013 reference year							
2014	37.40	11.96	27.33	26.19	20.21	108.16	231.25	1 618.75
YEAR	2014-2020 additional savings							
2014	10.05	9.31	11.11	1.09	2.13	11.42	45.12	315.87
2015	10.26	10.86	11.11	2.18	2.13	11.42	47.97	287.81
2016	10.26	10.86	11.11	2.18	2.13	11.42	47.97	239.84
2017	10.05	10.86	11.11	3.27	2.13	11.42	48.86	195.44
2018	10.26	10.86	11.11	3.27	2.13	11.42	49.06	147.18
2019	10.05	10.86	11.11	5.46	2.13	11.42	51.04	102.08
2020	8.24	1.55	11.11	5.46	2.13	11.42	39.92	39.92
TOTAL								2 946.90

Source: MINETAD

The savings shown in this table, estimated at 2 947 ktoe, are annualised for inclusion in Table 3.2.3.1 *et seq.* That is to say, in 2014, a saving of 231.2 ktoe/year was calculated as a result of

⁶ The way these elasticities and savings were presented in the 'Report on energy saving and efficiency policy measures under Article 7' of 5 June 2014 could be interpreted as suggesting that the impact on consumption deriving from short-term elasticities corresponded to 2013 and not to 2014. However, all the savings have been calculated from 2014 onwards and, as can be seen, the incremental savings calculated annually for 2014, and for every year until 2020, should be added to the savings induced by the short-term impact of the fiscal policy instrument. For each year, the additional savings are calculated by applying the year-on-year elasticity increment to the 2014 price increase induced by the fiscal policy, which produces the decrease in demand or savings additional to the first impact calculated based on short-term elasticity.

annualising the cumulative effect of 1 619 ktoe derived from the impact of short-term elasticity (1 619 ktoe/7), in addition to 45.1 ktoe/year derived from the impact of long-term elasticity, producing a total of 276.4 ktoe/year. In 2015, only the long-term effects were recorded, in other words, 47.97 ktoe/year.

- **MOVELE Programme**

The 2014 MOVELE Programme forms part of Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014, which consists of a series of measures to provide strong incentives for the introduction of electric vehicles, such as encouraging demand for those vehicles, supporting electric vehicle technology mass-production and R&D, facilitating adaptation of the electricity infrastructure to provide the necessary charging facilities and manage demand, and to promote a series of cross-cutting programmes to provide information, raise awareness, provide training and standardise that technology.

The 2014 MOVELE Programme is an extension or continuation of the 2011, 2012 and 2013 aid programmes and has been assigned a further EUR 10 million budget to provide direct aid to purchase new electric vehicles, defined as vehicles all or part of whose propulsion power is provided by the electricity stored in their batteries, which are charged from the grid. Aid has also been provided for finance schemes such as financial leasing and operational leasing of such vehicles, provided that the contract is for a minimum term of two years. The 2014 MOVELE programme was extended to 2015 by the 2015 law on general state budgets, which included an allocation of EUR 7 million for the 2015 MOVELE programme, which was approved by Royal Decree on 17 April 2015.

Table 3.2.3.1 *et seq.* include the savings attributable to the 1 456 vehicles that benefited from the 2014 MOVELE Programme from 1 January onwards (passenger and commercial vehicles, motorcycles and, mainly, quadricycles), in addition to the 676 vehicles that benefited from the 2015 MOVELE Programme. In relation to the 2014 MOVELE Programme, the savings were allocated to both 2014 and 2015 so that, of the 1 456 vehicles, the savings attributed to 802 of them were allocated to 2014, and the savings corresponding to the remaining 654 vehicles to 2015.

- **PIVE efficient vehicle incentive programme**

The Efficient Vehicle Incentives Programmes (PIVE) are public aid programmes managed by the IDAE (*Instituto para la Diversificación y Ahorro de la Energía* [Institute for Energy Diversification and Saving]) designed to promote the scrapping of passenger vehicles (M1) and commercial vehicles of less than 3.5 t (N1) that are more than 10 and 7 years old, respectively. The incentives were tied to the purchase of new category M1 and N1 vehicles. For category M1, the vehicles had to be in energy classes A or B while, for category N1, they had to have CO₂ emissions of less than 160 g/km, in line with the European average commercial vehicle emissions targets for 2020. In addition to petrol- and diesel-engined vehicles, incentives were also provided for the acquisition of electric vehicles, plug-in hybrids, extended range electric vehicles and LPG (autogas) or natural gas-powered vehicles, provided their CO₂ emission levels did not exceed 160 g/km.

Since 2012, when the first PIVE was launched, a total budget of EUR 1.115 billion has been allocated over eight successive calls for applications. The last of these (PIVE 8) was approved in May 2015 and was allocated a budget of EUR 225 million.

Again, in this case, the savings attributed to this programme in Table 3.2.3.1 *et seq.* represent the savings deriving from new vehicle purchases from 1 January 2014 onwards. In section 4.5 of this Plan ('Energy Efficiency in Transport') and, more specifically, in point 4.5.2 ('Energy end-

use efficiency measures in transport'), more information is provided on the technology, number of vehicles purchased per autonomous community, engine type and size and energy efficiency class of the vehicles acquired under each PIVE Programme.

- **PAREER-CRECE (Programa de Ayudas para la Rehabilitación Energética de Edificios Existentes [Aid Programme to Improve the Energy Efficiency of Existing Buildings])**

To promote comprehensive measures to improve energy efficiency and the use of renewable energies in existing residential building stock and to comply with Article 4 of Directive 2012/27/EU on energy efficiency, the formerly named Ministry of Industry, Energy and Tourism — now MINETAD — via the IDAE, launched a specific aid and financing programme in September 2013 allocated a budget of EUR 125 million (PAREER Programme). This was extended in May 2015 with an additional budget of EUR 75 million and remained in force until May 2016.

The measures for which support was provided had to fall into one or more of the following categories:

- Improvement of the energy efficiency of the thermal envelope.
- Improvement of the energy efficiency of heating and lighting systems.
- Replacement of conventional energy with biomass in heating systems.
- Replacement of conventional energy with geothermal energy in heating systems.

The measures receiving support must improve the overall energy rating of the building by at least one letter on the carbon dioxide emissions scale ($\text{kg CO}_2/\text{m}^2$ per year) when compared with the building's initial energy rating. That improvement in its energy rating may be achieved by adopting one measure or a combination of several measures.

Following publication of the CRECE (*Plan de Medidas para el Crecimiento, la Competitividad y la Eficiencia* [Measures to Drive Growth, Competitiveness and Efficiency]), which included measures to improve the energy efficiency of existing building stock, and the inclusion in the 2015 General State Budget (Law 36/2014 of 26 December 2014) of a budgetary allocation of EUR 75 million, the name of the PAREER Programme was changed and its scope and budget were extended. The new PAREER-CRECE (*Programa de Ayudas para la Rehabilitación Energética de Edificios Existentes* [Aid Programme to Improve the Energy Efficiency of Existing Buildings]) provides for implementation of comprehensive measures in existing buildings of all kinds (residential, government, retail, healthcare, education, etc.) and includes the same categories of measures as the previous PAREER.

As with the measures described in the previous sections, the savings attributed to this measure in 2014 stem from projects approved since 1 January. Under the programme, 110 energy-efficiency improvement projects, affecting in 110 buildings, were approved and included in the 2014 calculation, while 223 were included in the 2015 calculation. In over 30 % of these projects, the improvement in energy efficiency has been sufficient to improve the building's energy rating by more than two letters, measured on the CO_2 emissions scale in accordance with Royal Decree 235/2013 of 5 April 2013 adopting the basic procedure for certifying building energy efficiency (*Boletín Oficial del Estado* [Official State Gazette], 13/04/2013).

In section 4.2.2 of this Plan ('Other energy efficiency measures in the buildings sector'), the

results of the PAREER-CRECE Programme are broken down by autonomous community and described regarding the type of measure (building envelope, heating and lighting systems, biomass and geothermal energy) and beneficiary (owner's associations, energy service companies, etc.).

- **JESSICA-FIDAE fund**

The FIDAE (*Fondo de Inversión en Diversificación y Ahorro de Energía* [Energy Diversification and Saving Investment Fund]) is a JESSICA (Joint European Support for Sustainable Investment in City Areas) holding fund with a budget of EUR 123 million, the purpose of which is to finance urban energy-efficiency and renewable-energy-use projects. It was set up following a financing agreement signed between the European Investment Bank (EIB) and the IDAE on 1 July 2011.

This holding fund channels finance for eligible projects through three Urban Development Funds managed by three financial institutions selected by the EIB, namely Ahorro Corporación Financiera, Banco Bilbao Vizcaya Argentaria (BBVA) and Banco de Santander.

The projects were developed by public bodies, energy service companies and other private enterprises and were located in the following autonomous communities/cities: Andalusia, Canary Islands, Castile-Leon, Castile-La Mancha, Valencia, Extremadura, Galicia, Murcia, Ceuta and Melilla.

The projects had to fall within one of the eligible sectors (construction, industry, transport and energy-related public service infrastructure) and had to come under one of the following priority areas:

- Energy efficiency and energy management projects.
- Solar thermal energy, off-grid photovoltaic and biomass projects.
- Projects related to clean transport that help to improve energy efficiency and encourage renewable energy use.

A full list of projects financed by the JESSICA-FIDAE Fund can be found on the IDAE website, the savings of which are listed in Table 3.2.3.1 *et seq.* by the year the projects were launched:

<http://www.idae.es/index.php/relcategoria.3957/id.833/relmenu.408/mod.pags/mem.detalle>

- **2014 Communication campaign: 'You control your energy'**

The comprehensive 2014 communication campaign used all forms of media to reach small consumers (the general public) and provide them with guidance on energy saving and efficiency in relation to domestic electrical appliances and inform them about the new billing system.

The campaign was constructed around three action areas:

- **Conventional media**, via television, radio, the printed press, billboards and the Internet.
- Creation of an information portal and apps for mobile devices with the domain name **www.controlastusenergia.gob.es**, comprising sections such as 'conoce tu factura' [understand your bill], a catalogue of rights and practical examples, useful links, a savings guide and a glossary of terms. It also included mobile phone apps enabling users to monitor prices and expenditure.
- **Special actions**, including creation of audiovisual content for free broadcast on Radio

Televisión Española (RTVE). An agreement was reached with the public broadcasting service to broadcast two information items on the public service programme '*Para nosotros la 2*' on RTVE channel La 2. These actions also included the printing and distribution of 13.5 million public information leaflets, which were distributed with electricity bills via the five main electricity utilities belonging to UNESA, as well as several special actions on relevant TV programmes, such as '*El Hormiguero*' on Antena 3TV, which has an audience of 2.2 million.

The campaign, which comprised a variety of actions, was conducted in the various media between July and December 2014 and has a permanent presence via the portal www.contralastuenergia.gob.es.

In order to measure the impact of the campaign, an independent body (Grupo Análisis e Investigación: www.analiseinvestigacion.com) carried out two surveys which produced results based on various criteria.

The first of these was a conventional survey of the campaign's impact. It comprised 1 200 respondents and had a sampling error of +2.89 % and a confidence level of 95.5 %. It assessed, *inter alia*, spontaneous recall, prompted recall and campaign awareness and visibility, etc. The second survey measured the impact in terms of energy savings as laid down in Annex V, Part 1 of the Directive ('surveyed savings'), in order to determine the savings achieved through changes in consumer behaviour in response to advice, information campaigns, labelling, certification systems and smart metering.

The impact of the communication campaign was determined in accordance with UNE-ISO 20252 and the ICC/ESOMAR International Code on Market and Social Research.

Annex III of the 2015 annual report submitted by Spain contains, as stipulated by Article 24(1) of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, a summary of the methodology used to measure the impact of the campaign and assess the results, the extent to which the suggested energy-saving measures were being applied by those who reported having seen the campaign, and the resulting energy savings. As a result of these surveys, a saving of 13 ktoe/year was attributed to the 2014 campaign.

The 2015 communication campaign, the savings of which were attributed to the energy efficiency obligation scheme since it was financed by the Energy Efficiency National Fund (EENF), is fully described in section 4.1.4 ('Consumer information programmes and training (Articles 12 and 17)') of Chapter 4, which focuses on horizontal measures. The report on the results is included in Annex I of this Plan, just as the report on the 2014 campaign was included in the 2015 Annual Report.

- **PIMA Aire plan**

The purpose of the Aire series of PIMAs (*Planes de Impulso al Medio Ambiente* [Environmental Stimulus Plans]) — PIMA Aire, PIMA Aire 2, PIMA Aire 3 and PIMA Aire 4 — was to improve air quality in Spain by renewing the commercial vehicle fleet and replacing it with other more efficient models with less environmental impact, and by stimulating acquisition of gas-powered vehicles and electric and hybrid motorcycles and mopeds and electrically assisted pedal cycles.

The PIMA Aire series, which form part of an overall strategy to reduce air pollutant and greenhouse gas emissions significantly and improve energy efficiency in the non-ETS sectors, were allocated a total budget of EUR 53.1 million.

At present, over 70 % of the delivery vehicles used in Spanish towns and cities are over seven

years old and those vehicles account for a significant proportion of air pollution in major cities.

The beneficiaries of these plans have received incentives which, in the case of commercial vehicles, amounted to EUR 1 000 per vehicle in categories M1 and N1 under 2 500 kg. For vehicles in category N1 weighing 2 500 kg and over, the incentive amounted to EUR 2 000 per vehicle. In both cases, the incentive depended on the point of sale giving a discount on the cost of the vehicle equivalent to the amount of the incentive. For approved LPG, CNG, LNG or dual-fuel petrol/gas vehicles, the aid ranged from EUR 2 500 for vehicles in categories M1 and N1 weighing less than 2 500 kg up to EUR 20 000 for vehicles in categories M2, M3, N2 and N3 weighing 18 000 kg or over.

The incentive for the acquisition of electric and hybrid motorcycles (categories L3e, L4e and L5e) was EUR 400, plus EUR 200 provided by the point of sale if the purchaser provided proof that another vehicle had been scrapped. Where no other vehicle had been scrapped, the incentive amounted to EUR 350, plus EUR 150 provided by the point of sale.

In the case of electric mopeds, the incentive amounted to EUR 250, plus EUR 100 provided by the point of sale, and the purchaser had to scrap another vehicle. Where no proof was provided that another vehicle had been scrapped, the incentive amounted to EUR 230, plus EUR 70 provided by the point of sale. In the case of electrically assisted pedal cycles, the incentive was EUR 200.

As evidenced in Table 3.2.3.1 *et seq.*, savings equalling 6.9 ktoe in 2014 and 2.7 ktoe in 2015 can be accredited to these plans.

- **PIMA Sol plan**

The PIMA Sol environmental stimulus plan is an initiative designed to reduce greenhouse gas (GHG) emissions and improve energy and resource use efficiency in the Spanish tourism sector. Specifically, its purpose is to promote the reduction of direct GHG emissions by hotel facilities by supporting energy efficiency improvements in those premises.

The former Ministry of Agriculture, Food and the Environment (MAGRAMA) purchased reductions in hotels' direct greenhouse gas emissions resulting from renovation projects. It was allocated a budget of EUR 5.21 million.

The measures available to achieve reductions in CO₂ emissions included measures applied to the building envelope (facade and roof) and windows, improved insulation, lighting and air-conditioning control systems, solar panel water-heating systems, passive air-conditioning systems based on better architectural design, more efficient heating and cooling equipment, use of geothermal energy and biomass for air-conditioning and efficient water-management systems.

As shown in Table 3.2.3.1 *et seq.*, in 2014, the estimated final energy savings as a result of these plans amounted to 0.8 ktoe.

- **PIMA Tierra plan**

The PIMA Tierra environmental stimulus plan has promoted scrapping old tractors and replacing them with newer models that offer greater energy efficiency and generate fewer pollutant emissions. These incentives have driven renewal of the national agricultural tractor fleet, 55 % of which was more than 16 years old. Using the European emissions standards as a reference, the average reduction in particulate matter per tractor replaced was 94 %, in addition to a 15-20 % reduction in CO₂ emissions per tractor.

The Plan's budget for the 2014 financial year was EUR 5 million, as established in the Decision of 30 April 2014 announcing the call for applications for aid for that financial year.

This aid was aimed at natural persons, private enterprises, agricultural cooperatives, community land cooperatives, work cooperatives whose main activity is agriculture and agricultural processing companies entered in the corresponding official registers. In all cases, the beneficiaries had to be working in agriculture.

As shown in Table 3.2.3.1 *et seq.*, in 2014, the estimated final energy savings as a result of this plan amounted to 0.7 ktoe.

- **PIMA Transporte plan**

In December 2014, the Council of Ministers approved the PIMA Transporte environmental stimulus plan, proposed by what was formerly the Ministry of Agriculture, Food and the Environment. This plan provided direct incentives amounting to EUR 4.7 million for the renewal of buses and heavy goods vehicles, given the ageing status of those two fleets.

The PIMA Transporte plan included incentives for scrapping buses and self-propelled heavy goods vehicles with a maximum authorised mass of over 3.5 tonnes and an age of more than 8 years.

The incentive amount varied based on the vehicle's mass, starting at EUR 1 500 for trucks over 3.5 tonnes, but not exceeding 7.5 tonnes, and up to EUR 3 000 for trucks over 16 tonnes. In the case of buses, the incentives always amounted to EUR 3 000.

With the launch of the PIMA Transporte plan, a significant reduction in CO₂ emissions and fuel consumption was achieved — around 15 % per scrapped vehicle — as a result either of switching to more efficient modes of transporting freight and passengers or of using more efficient industrial vehicles. Meanwhile, the reduction of air pollutants is estimated at around 90 % for NO_x emissions and 95 % for suspended particulates from vehicle emissions. As shown in Table 3.2.3.1 *et seq.*, in 2015, the estimated final energy savings as a result of these plans amounted to 4.5 ktoe.

- **CLIMA projects in the residential, non-ETS industry and transport sectors**

Law 2/2011 of 4 March 2011 on sustainable economy created a fund for buying carbon credits — administered by the Secretariat of State for Climate Change — the aim of which is to generate low-carbon economic activity and to contribute to meeting Spain's greenhouse gas emission reduction commitments. The creation of this fund has provided the Spanish government, as with other European Union countries, with a very useful tool to continue participating in carbon markets and thus take advantage of the opportunities they provide to reduce greenhouse gas emissions in a cost-effective way.

The CLIMA Projects financed by Spain's FES-CO₂ (*Fondo de Carbono para una Economía Sostenible* [Carbon Fund for a Sustainable Economy]) are implemented in Spain to reduce greenhouse gases (GHGs) and are intended to reorient the Spanish production system towards a low-carbon model.

These CLIMA Projects must be implemented in Spain in the non-ETS sectors (not subject to the European emissions trading scheme, e.g. the transport, agriculture, residential and waste sectors), excluding projects to absorb emissions by sinks.

Emissions reductions acquired through the FES-CO₂ must fulfil a series of requirements, among others, those laid down in Article 7 of Royal Decree 1494/2011 of 24 October 2011 regulating

the Carbon Fund for a Sustainable Economy:

- They must be additional to those derived from the sector-specific regulations established in applicable legislation.
- They must come from facilities and sectors not subject to the emissions trading scheme.
- They must be measurable and verifiable so they can be reflected in Spain's greenhouse gas inventory.
- They must be calculated in accordance with methods approved by the Fund's governing council.

The FES-CO₂ intends to foster implementation of initiatives that encompass various projects all within the same programme.

This approach broadens the scope of the project, allowing similar activities with low greenhouse gas reduction volumes located in different areas of Spain to be grouped together under a single programme.

Currently, more than ten types of projects exist spanning six sectors (crop and livestock farming, transport, residential, waste management, fluorinated gases, and industry and mining).

As shown in Table 3.2.3.1 *et seq.*, the estimated final energy savings as a result of these projects in the residential and transport sectors, including non-ETS industry, amounted to 40.5 ktoe and 80.2 ktoe in 2014 and 2015, respectively.

- **Industrial competitiveness incentive programme**

The aim of the industrial competitiveness incentive programme (Order IET/274/2015 of 13 February 2015 announcing the granting of financial aid for industrial investment as part of the public policy to promote industrial competitiveness in 2015, Official State Gazette 20/02/2015) was to stimulate business investment that would contribute significantly towards generating added value in the industrial sector.

With this objective, this programme has supported investment plans to improve industrial facilities in operation by making changes and modifications intended to have a significant impact on their competitiveness. More specifically, the purpose of the aid was to help beneficiary companies shift towards newer production models which were more advanced, efficient and environmentally friendly, and towards the manufacture of products and the provision of services with greater added value, enabling the companies to gain access to and increase their presence in international markets.

Enterprises operating in the categories below were eligible for the aid:

1. Manufacturing industry in general.
2. Manufacture of vehicles powered by alternative energies, their equipment and parts; and manufacture of products linked to their associated infrastructure.
3. Aerospace industry.

Support came in the form of reimbursable loans, with a 10-year repayment period, for industrial investment to improve and/or modify previously existing production lines. These improvements/modifications were defined as a piece or set of equipment intended to replace previously installed elements on the line or to supplement the line, with the aim of improving its

characteristics or modifying production characteristics. These modifications could comprise changes to the line's production capacity but could not constitute new production lines separate from the older ones. In all cases, companies eligible for support through this programme had to report on final energy savings for the projects for which support was provided.

As shown in Table 3.2.3.1 *et seq.*, in 2015, the estimated final energy savings as a result of these plans amounted to 47.5 ktoe.

- **Ecodriving (driving licence)**

The savings achieved in this area are the result of making ecodriving a compulsory part of training and evaluation of new drivers applying for a driver's licence, which came into effect on 1 January 2014.

Order INT/229/2013, published on 2 December 2013, amended Annexes I, V, VI and VII to the General Regulation on Driving approved by Royal Decree 818/2009 of 8 May 2009 and Order INT/2323/2011 of 29 July 2011 regulating training for progressive access to the class A driver's licence.

This order requires that, as of 1 January 2014, all new drivers must receive training and information on ecodriving. In practice, this means providing ecodriving courses to all new drivers, who will have to receive relevant theoretical and practical training, and demonstrate the corresponding knowledge in their driving tests, in order to obtain a driver's licence.

In the saving estimates made under Article 7 of Directive 2012/27/EU, Spain applied an average fuel saving per driver trained of 10 %, lower than estimated in various other European projects,⁷ upon considering that the average distance travelled per year — and, therefore, the average fuel consumption — will be lower for new drivers than the overall average distance travelled and fuel consumption of vehicles on the road in Spain. Accordingly, Spain revised downward the savings included as a projection, relative to 2014, in the 2014-2020 National Energy Efficiency Action Plan, which had risen to 76.9 ktoe, and, in the annual report submitted to the Commission in April 2015, reported annual savings of 40.7 ktoe, a result of applying a more conservative saving percentage to the average annual fuel consumption of new drivers trained in ecodriving techniques. Using the definitive data on new drivers in 2014 and 2015, the final energy savings calculated for this measure amounted to 42.7 ktoe/year and 47.9 ktoe/year, respectively.

- **Programmes carried out by regional governments**

In the 2015 Annual Report submitted by Spain to the European Commission in April of that year, Spain estimated savings for 2014 — shown below this section — based on the approved budget for the programmes in each of the country's autonomous communities, indicating that these figures (around 83.3 ktoe/year in 2014) would be adjusted once actual figures for the implementation of the projects were available.

Annex V of that report included a complete list of the various administrative provisions (energy saving and efficiency plans and programmes) taken by the regional governments and considered when estimating the savings. This list has been updated in the present Plan and is

⁷ See 'La Conducción Eficiente [Ecodriving]', the manual produced by the IDAE for the European Commission's TREATISE Project, adapted from the manual 'Ecodriving: Smart, efficient driving techniques', produced by SenterNovem (2005). Other estimates point to a reduction in fuel consumption of up to 20 % immediately following the training and 5 % over the long term: http://www.ecodrive.org/en/what_is_ecodriving-/benefits_of_ecodriving/

included as Annex III.

Since 2015, and with the aim of checking and adjusting these estimates, the MINETAD (formerly the Ministry of Industry, Energy and Tourism) has required that the regional governments and local authorities report savings resulting from energy saving and efficiency measures in their respective territories and within the scope of their powers.

In addition to this formal requirement, Royal Decree 1085/2015 of 4 December 2015 on the promotion of biofuels states in its fourth additional provision (*'Obligation of regional governments and local authorities to report on their energy saving and efficiency programmes'*) that: *'for the purpose of complying with the obligations under Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, since the entry into force of this Royal Decree, the local authorities and competent bodies responsible for energy efficiency in each autonomous community shall report annually — before 31 December of each year — to the Ministry of Industry, Energy and Tourism on the cumulative energy savings and carbon dioxide emissions avoided as a result of the energy saving and efficiency measures promoted by the local authority or regional government and carried out in its municipal area or territory, respectively, starting 1 January 2014. The form, content and breakdown of how this information must be submitted, as well as the methodology for calculating it, will be determined by order of the Ministry of Industry, Energy and Tourism.'*

The order referred to in this provision was published in the Official State Gazette on 14 February 2017: Order ETU/120/2017 on 1 February 2017 establishing how regional governments and local authorities should submit information on their energy saving and efficiency programmes.

This order established the procedure for information submission (delivered electronically via a web-based application available under the *'Electronic procedures and services'* section of the MINETAD's website) and the form, content and breakdown of the information to be submitted. The order specifically establishes that *'the methods used to calculate energy savings will be ex-ante (forecast savings) or ex-post (measured savings), and will allow the possibility of determining savings based on engineering estimates that may substitute real measurements (weighed savings), or may be based on surveys or price-elasticity studies, when savings are generated due to changes in consumer behaviour in light of certain communication, training and information or fiscal measures (observed savings). The calculation methods shall be used in accordance with Directive 2012/27/EU of 25 October 2012 on energy efficiency (Annex V).'*

The regional governments and local authorities have submitted information for the various measures they have implemented, making it possible to provide the savings values that appear in Table 3.2.3.1 *et seq.*, i.e. 77.8 ktoe in 2014 and 77.3 ktoe in 2015.

The savings come from measures implemented in proprietary buildings and from aid programmes that, occasionally, have followed the same model as the aid programmes under the 2008-2012 Energy Efficiency Action Plan, which included RENOVE plans for electrical appliances, boilers, windows, etc., and even included budgets allocated by the regional governments or local authorities themselves. Many initiatives have been taken by local councils to renovate municipal street lighting systems and to improve energy efficiency in municipal buildings and facilities, from sports centres to wastewater treatment plants (WWTPs). Initiatives have also been taken to promote electric vehicles. From 2015 onwards, the funds provided to these programmes could be co-financed with funds from the respective Regional Operational Programmes.

Some of the calls for applications for grants implemented by the regional governments have

been carried out within the 2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration, the savings achieved under which will be reported separately.

- **2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration. ICO loans for building refurbishment (ICO credit line for businesses and entrepreneurs)**

The **2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration**, adopted by the Spanish government in April 2013, was designed to achieve various objectives, foremost among which was to provide incentives for building refurbishment and urban regeneration and renewal through improvements to the quality of buildings and, in particular, to their energy efficiency.

To do this, the Plan contained a specific programme to promote building refurbishment aimed at financing building and maintenance work and improvements to fixed installations, individual equipment and communal parts of residential buildings. The maximum amount of aid depended on the type of measures carried out.

The savings associated with this 2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration have not yet been fully evaluated, which is why Table 3.2.3.1 *et seq.* indicate that the data are not available (n/a). The same is true for the **loans for building refurbishment provided by the ICO** (*Instituto de Crédito Oficial* [Official Credit Institute]) under its credit line for businesses and entrepreneurs; the only information available for which is on the total loan amounts to date, which leaves the savings impact yet to be determined. For the moment, a note has also been included in the table indicating that information on these savings is not available (n/a) and that the figure will be provided in follow-up reports.

More information on the 2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration can be found at:

https://www.fomento.gob.es/MFOM/LANG_CASTELLANO/DIRECCIONES_GENERALES/ARQ_VIVIENDA/APOYO_EMANCIPACION/PLAN_ESTATAL.htm

3.2.2.2. Energy efficiency obligation scheme

The national energy efficiency obligation scheme is implemented in Spain through the **Energy Efficiency National Fund**. Consequently, this section will describe the programmes approved and carried out in 2014 with financing available from the fund and for which savings could be accredited in 2015.

The EENF was set up by Royal Decree-Law 8/2014 of 4 July 2014 approving urgent measures for growth, competitiveness and efficiency pursuant to Article 20 of Directive 2012/27/EU.

The Fund is administered by the Secretariat of State for Energy at the Ministry of Energy, Tourism and Digital Agenda and its purpose is to finance economic and financial support mechanisms, technical support, training, information and other measures with a view to increasing energy efficiency in the various energy-consuming sectors to enable them to contribute towards achieving the national energy savings target set by the national energy efficiency obligation scheme provided for in Article 7 of Directive 2012/27/EU.

The fund is overseen by a Supervision and Monitoring Committee and managed by the IDAE.

Royal Decree-Law 8/2014 of 4 July 2014, a revised version of which was later published as Law

18/2014 of 15 October 2014, established the contributions that the obligated parties (gas and electricity retailers, petroleum product wholesalers and liquefied petroleum gas wholesalers) were required to make to the Fund in 2014. Those contributions, totalling EUR 103 million, had to be made before 15 October 2014. The contributions for successive years (2015 and 2016) were established by ministerial order, namely, Order IET/289/2015 of 20 February 2015 and Order IET/359/2016 of 17 March 2016, respectively.

At its first session on 26 January 2015, the Fund's Supervision and Monitoring Committee agreed on the launch of an aid programme, funded by the contributions for 2014, targeted at the industrial sector, with special emphasis on small and medium-sized enterprises, to enable them to implement energy saving and efficiency projects; a financing support programme targeted at municipal authorities for the renovation of street lighting and, lastly, an aid programme targeted at transport sector firms, focused on improving fleet management and ecodriving. The Supervision and Monitoring Committee also approved a new **communication campaign** for 2015, which followed on from the 2014 campaign and was intended to help raise awareness among potential users of the aid and financing support programmes approved by the Committee. This campaign and its results with respect to savings are presented in section 4.1.4 of this Plan: Consumer information programmes and training (Articles 12 and 17)

The purpose of the **aid programme for energy efficiency measures in SMEs (Small and Medium-sized Enterprises) and large industrial enterprises** was to incentivise and promote the implementation of projects involving energy saving and efficiency and CO₂ emission reduction via measures in the industrial sector. It was allocated an initial budget of EUR 49 016 421.

The aid provided under this programme took the form of monetary grants without consideration, awarded to projects fulfilling the following requirements:

- 1) Projects designed to improve the technology used in industrial equipment and processes (investment to replace equipment, plant and ancillary energy-consuming systems with equipment and plant using highly efficient technology or the best technology available in order to reduce energy consumption and CO₂ emissions).
- 2) Projects to install energy management systems, understood as all the measures necessary as regards the metering of energy consumption variables, the installation of devices to regulate and monitor process parameters and the installation of the IT systems needed to perform analysis, regulation and monitoring.

The effective investment in the actions to be funded must not exceed EUR 3 million.

The programme was subject to Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, which establishes a general maximum aid intensity of 30 % of eligible costs.

The purpose of the **aid programme for the renovation of municipal street lighting** was to provide incentives for and to promote energy saving and efficiency and CO₂ emission reduction projects via measures to renovate street lighting in Spanish municipalities. It was allocated a budget of EUR 36 million.

The aid provided under the programme took the form of interest-free reimbursable loans granted to projects fulfilling the following requirements:

- Actions in relation to street lighting owned by any local authority, association of local authorities or group of municipalities or public bodies holding concessions for the management of municipal public services.
- The actions had to reduce final energy consumption and carbon dioxide emissions compared with the initial baseline situation.
- The eligible investment for measures seeking financing had to be between EUR 300 000 and EUR 4 million.

The loans covered up to 100 % of the project's eligible investment, were provided at an interest rate of 0.0 %, had a maximum term of 10 years (including a 12-month grace period), and were exempt from application, assessment and cancellation fees and the need to provide security.

The purpose of the **aid programme for modal shift and more efficient use of transport modes** was to provide incentives for and to promote energy saving and efficiency and CO₂ emission reduction projects via measures to trigger a modal shift and more efficient use of transport modes.

The aid provided under the programme took the form of a monetary grant without economic consideration, granted to measures of the following types:

- 1) Plans for sustainable travel to the workplace.
- 2) Management of road transport vehicle fleets.
- 3) Ecodriving courses for drivers of industrial vehicles.

The eligible cost for measures qualifying for aid had to be in excess of EUR 30 000 per measure and, in the case of courses, had to be aimed at a minimum of 200 participants. The aid intensity was 20 % of the eligible costs (in the case of ecodriving courses, the aid was granted per professional driver trained, up to EUR 100 per driver). Both public and private natural and legal persons whose economic activity was related to the transport sector were eligible to benefit from the aid.

This aid programme was subject to the requirements and limits laid down in Commission Regulation (EU) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to *de minimis* aid.

As a result of these measures financed by the EENF (as part of the energy efficiency obligation scheme), a saving of 131 ktoe was reported in 2015 generated by the approved programmes funded by the 2014 allocations. These programmes were continued in 2015 and 2016 and were financed by the contributions made by the obligated parties. The savings achieved will be accredited in 2016 and 2017.

Section 4.1.1 includes a breakdown of how the funds available under the EENF will be applied in the years following 2015, in addition to a more detailed description of how Article 7 on the energy efficiency obligation scheme was transposed to Spanish law.

3.2.3. Savings calculations

The results for 2014 and 2015 are shown in the following tables (the first, on final energy savings; the second, on primary energy savings; and the third, on CO₂ emissions avoided).

Table 3.2.3.1. 2014-2020 final energy savings (annual and additional)

	Final energy savings (ktoe/year)		Cumulative final energy savings by 2020 (ktoe)
	2014	2015	
LAW 15/2012 ON FISCAL MEASURES FOR ENERGY SUSTAINABILITY	276.37	47.97	2 222.43
IDAE DIRECT IMPLEMENTATION PROGRAMMES	110.04	214.76	1 918.89
2014 MOVELE programme	0.51	0.41	6.01
2015 MOVELE programme		0.43	2.55
PIVE 3	2.80		19.60
PIVE 4	14.31		100.19
PIVE 5	42.00		293.99
PIVE 6	34.92	42.48	499.36
PIVE 7		7.96	47.74
PIVE 8		22.83	136.99
PAREER-CRECE plan	2.02	4.34	40.23
JESSICA-FIDAE fund	0.43	5.44	35.65
Voluntary sector-specific agreements on fleet management and driving	n/a	n/a	n/a
'You control your energy' communication campaign	13.05		26.10
EENF: Energy efficiency programme for municipal street lighting		5.59	33.52
EENF: Energy efficiency programme for SMEs and large industrial enterprises		75.95	455.72
EENF: Programme for modal shift and more efficient use of transport modes		30.64	183.85
EENF: Communication campaign		18.69	37.38
OTHER PROGRAMMES AND MEASURES	48.91	134.94	1 152.03
PIMA Aire	6.92	2.71	64.72
PIMA Sol	0.80		5.60
PIMA Tierra (tractors)	0.70		4.90
PIMA Transporte		4.50	27.00
CLIMA residential, non-ETS industry and transport sectors	40.49	80.21	764.72
Industrial competitiveness incentive programme		47.52	285.09
State Plan to promote building refurbishment (3R)	n/a	n/a	n/a
ICO loans for building refurbishment	n/a	n/a	n/a
ECODRIVING (DRIVING LICENCE)	42.67	47.93	181.20
PROGRAMMES CARRIED OUT BY REGIONAL GOVERNMENTS	77.75	77.27	1 046.54
TOTAL	555.75	522.87	6 482.40

Source: MINETAD.

Table 3.2.3.2. 2014-2020 primary energy savings (annual and additional)

	Primary energy savings (ktoe/year)		Cumulative primary energy savings by 2020 (ktoe)
	2014	2015	
LAW 15/2012 ON FISCAL MEASURES FOR ENERGY SUSTAINABILITY	438.33	89.82	3 607.2
IDAE DIRECT IMPLEMENTATION PROGRAMMES	125.62	277.65	2 390.70
2014 MOVELE programme	0.43	0.35	5.13
2015 MOVELE programme		0.36	2.18
PIVE 3	3.24		22.70
PIVE 4	16.57		115.99
PIVE 5	48.62		340.36
PIVE 6	40.43	49.19	578.13
PIVE 7		9.21	55.27
PIVE 8		26.43	158.60
PAREER-CRECE plan	2.10	5.13	45.54
JESSICA-FIDAE fund	0.62	8.52	55.47
Voluntary sector-specific agreements on fleet management and driving	n/a	n/a	n/a
'You control your energy' communication campaign	13.60		27.19
EENF: Energy efficiency programme for municipal street lighting		12.31	73.85
EENF: Energy efficiency programme for SMEs and large industrial enterprises		109.02	654.15
EENF: Programme for modal shift and more efficient use of transport modes		35.48	212.86
EENF: Communication campaign		21.64	43.28
OTHER PROGRAMMES AND MEASURES	55.50	164.20	1 373.68
PIMA Aire	8.18	3.21	76.50
PIMA Sol	0.83		5.83
PIMA Tierra (tractors)	0.83		5.79
PIMA Transporte		5.32	31.91
CLIMA residential, non-ETS industry and transport sectors	45.66	87.47	844.42
Industrial competitiveness incentive programme		68.20	409.22
State Plan to promote building refurbishment (3R)	n/a	n/a	n/a
ICO loans for building refurbishment	n/a	n/a	n/a
ECODRIVING (DRIVING LICENCE)	49.40	55.49	209.78
PROGRAMMES CARRIED OUT BY REGIONAL GOVERNMENTS	109.03	104.91	1 392.66
TOTAL	777.87	692.08	8 974.09

Source: MINETAD.

Table 3.2.3.3. 2014-2020 CO₂ emissions avoided (annual and additional)

	CO ₂ emissions avoided (kt CO ₂ /year)		Cumulative CO ₂ emissions avoided by 2020 (kt CO ₂ /year)
	2014	2015	
LAW 15/2012 ON FISCAL MEASURES FOR ENERGY SUSTAINABILITY	903.73	168.80	7 338.86
IDAE DIRECT IMPLEMENTATION PROGRAMMES	408.94	773.15	7 026.34
2014 MOVELE programme	1.46	1.19	17.35
2015 MOVELE programme		1.23	7.38
PIVE 3	10.81		75.68
PIVE 4	55.25		386.75
PIVE 5	162.12		1 134.85
PIVE 6	134.81	164.00	1 927.63
PIVE 7		30.71	184.27
PIVE 8		88.13	528.80
PAREER-CRECE plan	5.78	12.72	116.77
JESSICA-FIDAE fund	1.41	18.19	118.98
Voluntary sector-specific agreements on fleet management and	n/a	n/a	n/a
'You control your energy' communication campaign	37.31		74.61
EENF: Energy efficiency programme for municipal street lighting		21.26	127.58
EENF: Energy efficiency programme for SMEs and large industrial enterprises		245.27	1 471.64
EENF: Programme for modal shift and more efficient use of transport modes		118.29	709.71
EENF: Communication campaign		72.15	144.31
OTHER PROGRAMMES AND MEASURES	155.38	428.17	3 656.67
PIMA Aire	25.03	9.81	234.04
PIMA Sol	2.29		16.01
PIMA Tierra (tractors)	2.53		17.72
PIMA Transporte		16.27	97.64
CLIMA residential, non-ETS industry and transport sectors	125.53	248.65	2 370.62
Industrial competitiveness incentive programme		153.44	920.64
State Plan to promote building refurbishment (3R)	n/a	n/a	n/a
ICO loans for building refurbishment	n/a	n/a	n/a
ECODRIVING (DRIVING LICENCE)	164.70	185.03	699.47
PROGRAMMES CARRIED OUT BY REGIONAL GOVERNMENTS	251.29	248.21	3 248.28
TOTAL	1 884.04	1 803.36	21 969.61

Source:
MINETAD

Table 3.2.3.4. 2014-2020 public programmes

	2014-2015 PUBLIC BUDGETS (Art. 7, Directive 2012/27/EU)			
	EUR	Type of aid	Approval date	Legal provision adopting the measure
1. ALTERNATIVE MEASURES (Art. 7(9))				
LAW 15/2012 ON FISCAL MEASURES FOR ENERGY SUSTAINABILITY				
IDAE DIRECT IMPLEMENTATION PROGRAMMES				
2014 MOVELE programme	10 000 000	Grant	2014	Royal Decree 414/2014 of 6 June 2014 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2014 under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014 (2014 MOVELE Programme).
2015 MOVELE programme	7 000 000	Grant	2015	Royal Decree 287/2015 of 17 April 2015 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2015 (MOVELE 2015 Programme).
PIVE 3	70 000 000	Grant	2013	Royal Decree 575/2013 of 26 July 2013 regulating the direct granting of subsidies under the 'PIVE 3 Efficient Vehicle Incentive Programme'.
PIVE 4	70 000 000	Grant	2013	Royal Decree 830/2013 of 25 October 2013 regulating the direct granting of subsidies under the 'PIVE 4 Efficient Vehicle Incentive Programme'.
PIVE 5	175 000 000	Grant	2014	Royal Decree 35/2014 of 24 January 2014 regulating the direct granting of subsidies under the 'PIVE 5 Efficient Vehicle Incentive Programme'.
PIVE 6	317 000 000	Grant	2014	Royal Decree 525/2014 of 20 June 2014 regulating the direct granting of subsidies under the 'PIVE 6 Efficient Vehicle Incentive Programme'.
PIVE 7	33 000 000	Grant	2015	Royal Decree 124/2015 of 27 February 2015 regulating the direct granting of subsidies under the 'PIVE-7 Efficient Vehicle Incentive Programme'.
PIVE 8	225 000 000	Grant	2015	Royal Decree 1071/2015 of 27 November 2015 amending Royal Decree 380/2015 of 14 May 2015 regulating the direct granting of subsidies under the 'PIVE-8 Efficient Vehicle Incentive Programme'.
PAREER plan	125 000 000	Reimbursable loans/Grants	March 2013	Decision of 25/06/2013 of the IDAE Board of Directors establishing the regulatory bases and call for applications for the PAREER Programme.
JESSICA-FIDAE fund	123 000 000	Reimbursable loan	2013	Agreement of 14/05/2008 between the Directorate-General for Community Funds and IDAE which includes the appointment of the latter as intermediate body.
'You control your energy' communication campaign	4 840 000		2014	Agreement of the IDAE Board of Directors of 04/04/2014 approving the invitation to tender for the 2014 energy saving and electricity billing communication campaign.
OTHER PROGRAMMES AND MEASURES				

PIMA Aire	53 100 000	Grant	PIMA Aire: PIMA Aire 2: Feb. 2013; PIMA Aire 3: Oct. 2013; PIMA Aire 4: Mar. 2014; December 2014	Royal Decree 89/2013 of 8 February 2013 regulating the direct award of aid under the 'PIMA Aire' environmental stimulus plan for the acquisition of commercial vehicles.
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	2014-2015 PUBLIC BUDGETS (Art. 7, Directive 2012/27/EU)			
	EUR	Type of aid	Approval date	Legal provision adopting the measure
PIMA Sol	5 210 000	Acquisition of carbon credits	August 2013	Royal Decree 635/2013 implementing the PIMA Sol environmental stimulus plan.
PIMA Tierra (tractors)		Grant	March 2014	Royal Decree 147/2014 of 7 March 2014 regulating the direct award of aid under the PIMA Tierra environmental stimulus plan for the renewal of agricultural tractors.
PIMA Transporte	4 700 000	Grant	December 2014	Royal Decree 1081/2014 of 19 December 2014 regulating the direct granting of subsidies for the scrapping of self-propelled commercial passenger and goods transport vehicles under the PIMA Transporte plan.
CLIMA residential, non-ETS industry and transport sectors		Acquisition of carbon credits	October 2011	Royal Decree 1494/2011 of 24 October 2011 regulating the Carbon Fund for a Sustainable Economy.
Industrial competitiveness incentive programme	308 460 680	Reimbursable loan	2015 budget	Order IET/274/2015 of 13 February 2015 announcing the call for applications for financial support for industrial investment within the public policy framework for promoting industrial competitiveness in 2015.
ECODRIVING (DRIVING LICENCE)				
PROGRAMMES CARRIED OUT BY REGIONAL				
2. ENERGY EFFICIENCY OBLIGATION SCHEME. NATIONAL ENERGY EFFICIENCY FUND				
EENF: Energy efficiency programme for municipal street lighting	36 000 000	Reimbursable loan	March 2015	Decision of 24/03/2015 of the Board of Directors of the IDAE establishing the regulatory bases for the aid programme for the renovation of municipal street lighting and announcing the corresponding call for applications.
EENF: Energy efficiency programme for SMEs and large industrial enterprises	49 016 421	Grant	March 2015	Decision of 24/03/2015 of the IDAE Board of Directors establishing the regulatory bases and call for applications for the aid programme for energy efficiency measures in SMEs and large industrial enterprises.
EENF: Programme for modal shift and more efficient use of transport modes	8 000 000	Grant	March 2015	Decision of 24/03/2015 of the Board of Directors of the IDAE establishing the regulatory bases and call for applications for the aid programme for modal shift and more efficient use of transport modes.
EENF: Communication campaign	4 840 000		2015	Agreement of the IDAE Board of Directors of 11/02/2015 approving the invitation to tender for the 2015 energy saving and efficiency communication campaign.
3. 2014-2020 ERDF finance				
Multiregional tranche (IDAE): PAREER-CRECE plan	75 000 000	Reimbursable loans/Grants	May 2015	Decision of 24/03/2015 of the IDAE Board of Directors amending the former Decision of 25/06/2013 on the PAREER Programme.

3.3. FINAL ENERGY SAVINGS IN ACCORDANCE WITH DIRECTIVE 2006/32/EC

Article 4(1) of Directive 2006/32/EC of 5 April 2006 on energy end-use efficiency and energy services established a 9 % national indicative energy savings target for final energy for 2016.

The 2011-2020 Energy Efficiency Action Plan set the final energy saving for 2010 in accordance with the provisions of this Directive. It was concluded that such savings, calculated as a percentage of the final energy consumption of the five years immediately prior to application of the Directive, amounted to 9.2 %, exceeding the 9 % energy saving set as the national indicative target for 2016. It was therefore affirmed that Spain had met the 2016 target ahead of schedule, doing so in 2010.

This new 2017-2020 National Energy Efficiency Action Plan has calculated 2016 savings in accordance with Directive 2006/32/EC.

Firstly, a 9 % savings target was set by taking into account the final energy consumption from 2003-2007 and deducting energy consumption by air transport and consumption by companies included in the emissions trading scheme. This figure amounts to **6 407 ktoe**, the same figure that appeared in the 2014-2020 National Energy Efficiency Action Plan. Secondly, taking the difference in the energy intensity indicator between 2007 and 2016 and multiplying this difference by the 2016 activity variable (GDP) produces a result of **11 223 ktoe**. This exceeds the previous 9 % (6 407 ktoe) target and represents 15.8 % of average consumption in the five years directly prior to application of the Directive (71 187 ktoe).

In conclusion, **Spain can again affirm that in 2010 and 2016 it met and exceeded the savings target set in Directive 2006/32/EC (9 % of average final energy consumption) for the five years prior to the entry into force of the Directive (discounting the energy consumption of sectors not covered by the regulation).**

Table 3.3.1. Final energy savings in accordance with Directive 2006/32/EC

		2003	2004	2005	2006	2007	2016
FINAL ENERGY CONSUMPTION corrected without ETS industry or aviation	Industry	9 739	10 002	10 285	8 426	9 113	6 365
	Transport	32 319	33 807	34 951	35 951	37 037	29 794
	Residential, services and others	24 164	25 945	26 843	29 008	28 347	28 330
	Total energy uses (ktoe)	66 222	69 754	72 079	73 384	74 497	64 489
2003-2007 average annual consumption (Directive) (ktoe): 71 187							
9 % 2003-2007 average annual consumption (Directive) (ktoe): 6 407							
ENERGY INTENSITY	(ktoe/€M 2005)	0.0779	0.0795	0.0793	0.0775	0.0761	0.0648
FINAL ENERGY SAVINGS	2007 BASELINE (ktoe)						11 223
	% above average annual consumption 2003-						15.8 %
Directive 2006/32/EC target fulfilment							175 %

Source: MINETAD

**CHAPTER 4:
MEASURES FOR IMPLEMENTING THE ENERGY EFFICIENCY
DIRECTIVE**

4. MEASURES FOR IMPLEMENTING THE ENERGY EFFICIENCY DIRECTIVE

4.1. HORIZONTAL MEASURES

4.1.1. Energy efficiency obligation schemes and alternative policies and measures (Article 7).

A. Energy efficiency obligation scheme

Royal Decree-Law 8/2014 of 4 July 2014 adopting urgent measures for growth, competitiveness and efficiency (<http://www.boe.es/boe/dias/2014/07/05/pdfs/BOE-A-2014-7064.pdf>), a revised version of which was later published as Law 18/2014 of 15 October 2014 (<https://www.boe.es/boe/dias/2014/10/17/pdfs/BOE-A-2014-10517.pdf>), transposed Article 7 of Directive 2012/27/EU (Article 69(1)) into Spanish law and established, in accordance with Article 20 of that Directive, the National Energy Efficiency Fund (Article 72(1)) administered by the Secretariat of State for Energy (Article 73(1)) under the MINETAD (formerly the Ministry of Industry, Energy and Tourism).

The articles of the Law which create the energy efficiency obligation scheme and the National Energy Efficiency Fund are presented below. They detail how the fund is organised, managed and controlled via the Supervision and Monitoring Committee referred to in Article 73(3).

Article 69. Creation of a national obligation scheme.

- a) *A national energy efficiency obligation scheme is hereby established under which gas and electricity retailers, petroleum product wholesalers and liquefied petroleum gas wholesalers, hereinafter the obligated parties under the obligation scheme, shall be assigned an annual national energy savings quota, otherwise known as saving obligations.*

The sum of these saving obligations for the duration of the scheme shall be equivalent to the target assigned to Spain by Article 7 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, minus the savings from the alternative measures specified in Article 7(9) of that Directive.

[...]

Article 72. National Energy Efficiency Fund.

1. *A National Energy Efficiency Fund, without legal personality, is hereby created for the purpose of financing national energy efficiency initiatives in compliance with Article 20 of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012.*

[...]

Article 73. Organisation, management and control of the fund.

1. *The National Energy Efficiency Fund shall form part of the Secretariat of State for Energy under the Ministry of Industry, Energy and Tourism.*
2. *Management of the fund shall be assigned to the IDAE.*
3. *The fund shall be supervised and controlled by a Supervision and Monitoring Committee reporting to the Ministry of Industry, Energy and Tourism via the Secretariat of State for Energy. The committee, chaired by the head of the*

aforementioned secretariat, shall comprise the heads of the following bodies:

- *Directorate-General for Energy Policy and Mines.*
- *Board of Management of the IDAE.*
- *Prime Minister's Office of Economic Affairs.*
 - *A representative holding a position equivalent to Director-General from the following ministries:*
 1. *Ministry of Finance and Public Administration.*
 2. *Ministry of Public Works.*
 3. *Ministry of Agriculture, Food and the Environment.*
 4. *Ministry of Economy and Competitiveness.*

The secretary of the committee shall be appointed by the chair and shall be a public official employed by the Secretariat of State for Energy at the Ministry of Industry, Energy and Tourism holding a position equivalent to Deputy Director-General.

The government may modify the composition of the committee by means of royal decree.

[...]

The aforementioned fund is supervised and controlled by a Supervision and Monitoring Committee reporting to the MINETAD via the Secretariat of State for Energy (Article 73(3) of Law 18/2014), which was formed during its first meeting held on 26 January 2015. That meeting approved the lines of action, programmes and policy measures requiring financing from the contributions made to the fund in 2014 by the obligated parties in accordance with Articles 74 and 75 of Law 18/2014 (BOE No 252 of 17/10/2014) and deposited into a specific account opened by the IDAE (Article 74(2)).

Pursuant to Law 18/2014, the obligated parties (gas and electricity retailers, petroleum product wholesalers and liquefied petroleum gas wholesalers) are required to make an annual financial contribution to the Fund in order to fulfil the saving obligations imposed on them (Article 71.1). For 2014, those obligations are listed in Annex XII of the above Law. For the following years (2015 and 2016), the obligations were set by ministerial order, namely, Order IET/289/2015 of 20 February 2015 and Order IET/359/2016 of 17 March 2016, respectively.

Alternatively, and under the terms laid down by the government in the applicable regulations, a mechanism based on the submission of Energy Saving Certificates may be introduced (Article 71(2)). However, to date, the implementing regulations needed to set up such a mechanism have not been passed and the obligated parties must therefore fulfil the savings obligation set out in Article 71(1), i.e. by making an annual financial contribution to the National Energy Efficiency Fund. Article 71(1) also lays down that, by order of the Ministry of

Industry, Energy and Tourism (now the Ministry of Energy, Tourism and Digital Agenda), a financial equivalence mechanism will be established to determine the amount to deposit into the fund based on the saving obligations, stated in GWh, for each of the obligated parties.

Article 71. Fulfilment of obligations and Energy Saving Certificates.

1. *In order to fulfil their annual energy saving obligations, the obligated parties shall make an annual financial contribution to the National Energy Efficiency Fund referred to in the following Article of an amount calculated by multiplying their annual saving obligation by the specified financial equivalence and paid in three instalments no later than 28 February, 30 April and 30 June of each year.⁸*

By order of the Ministry of Industry, Energy and Tourism, financial equivalence shall be determined on the basis of the estimated average cost of implementing the investments in all the sectors in which policy measures are required to achieve the annual savings target.

2. *Alternatively, and under the terms laid down by government regulations, a mechanism may be established for accrediting the attainment of an energy saving amount equivalent to compliance with the obligations under the scheme. This mechanism shall be based on the award of negotiable Energy Saving Certificates (ESCs) for the implementation of energy efficiency initiatives that are defined in a catalogue and meet the requirements and conditions stated in the catalogue, which will be overseen by the IDAE.*

[...]

Financial equivalence, determined on the basis of the estimated average cost of implementing the investments in all the sectors in which policy measures are required to achieve the annual savings target, was set for 2014 in Law 18/2014 at 0.789728 €/M/ktoe saved. This financial equivalence figure was maintained for 2015 and 2016.

Therefore, based on the financial equivalence established and the aggregate savings target set for each year (131 ktoe in 2014 and 262 ktoe/year in 2015 and 2016), the fund was provided with EUR 103 million in 2014 and with EUR 207 million in each of the two subsequent financial years to finance economic and financial support mechanisms, technical assistance, training, information and other measures with which to achieve the savings targets set.

The Supervision and Monitoring Committee, in its first meeting held on 26 January 2015, agreed that the 2014 contributions would be allocated to the following lines of action:

1. Aid programme for the renovation of municipal street lighting, allocated a budget of EUR 36 000 000.

See: <http://www.boe.es/boe/dias/2015/05/05/pdfs/BOE-A-2015-4992.pdf>

2. Aid programme for energy efficiency measures in SMEs and large industrial enterprises, allocated a budget of EUR 49 016 421.

⁸ The calendar used for making contributions to the National Energy Efficiency Fund was amended by Law 8/2015 of 21 May 2015, amending Law 34/1998 of 7 October 1998 on the hydrocarbons sector and regulating certain tax and non-tax measures in relation to hydrocarbon exploration, research and exploitation. The obligated parties must therefore deposit their financial obligations quarterly in four equal parts before 31 March, 30 June, 30 September and 31 December of each year.

See: <http://www.boe.es/boe/dias/2015/05/05/pdfs/BOE-A-2015-4991.pdf>

3. Aid programme for modal shift and more efficient use of transport modes, allocated an initial budget of EUR 8 000 000.

See: <http://www.boe.es/boe/dias/2015/05/05/pdfs/BOE-A-2015-4990.pdf>

4. Communication campaign ('Energy Saving and Efficiency 2015'), approved at an initial cost of EUR 4 840 000 (including VAT) which, eventually, rose to EUR 4 782 788.

On 21 September 2015, the Supervision and Monitoring Committee held a second meeting, during which the application of the resources corresponding to the 2015 obligations was approved. Specifically, it was agreed that the **EUR 207 million** available due to the contributions made by the obligated parties would be used to increase the budgets of two existing lines of aid and to create three new aid programmes. The funds were allocated as follows:

Budget increase for the two existing lines of aid:

1. Aid programme for the renovation of municipal street lighting (increase): EUR 29 000 000

See:

[http://www.idae.es/uploads/documentos/documentos_2_Resolucion_COAD_ampl_pre_sup_Alumbrado_\(2\)_8c743491.pdf](http://www.idae.es/uploads/documentos/documentos_2_Resolucion_COAD_ampl_pre_sup_Alumbrado_(2)_8c743491.pdf)

2. Aid programme for energy efficiency measures in SMEs and large industrial enterprises (increase): EUR 66 200 000.

See:

http://www.idae.es/uploads/documentos/documentos_2_Resolucion_COAD_Ampliacion_presupuesto_Industria_v_6-20-15_014cf108.pdf

New lines of aid:

3. Aid programme to improve energy efficiency in railway systems: EUR 13 000 000.

See: <http://www.boe.es/boe/dias/2015/12/15/pdfs/BOE-A-2015-13633.pdf>

4. Aid programme to improve energy efficiency in desalination plants: EUR 12 000 000.

See: <http://www.boe.es/boe/dias/2015/12/28/pdfs/BOE-A-2015-14197.pdf>

5. Aid programme to improve the energy efficiency of existing buildings: EUR 82 000 000 (this call for applications for grants is pending publication in the Official State Gazette).

6. Communication campaign ('Energy Saving and Efficiency 2016'), approved a total budget of EUR 4 840 000 (including VAT).⁹

⁹ The call for tenders for the design of the first phase of the institutional communication and publicity campaign was opened in October 2015 but had to be cancelled in April 2016. A new invitation to tender was issued at the end of 2016 and has yet to close.

The above aid programmes are described in this Plan in the sections corresponding to each sector, or in Chapter 3 if savings were reported in 2014 and 2015. As the 2015 contributions were approved in September of that year and, therefore, the extensions to the existing programmes — and the new ones approved — were published after that date, the savings for 2015 contributions will be calculated in 2016.

All of the programmes listed above ended on 5 May 2016, except for the aid programme for improving energy efficiency in railway systems and the aid programme for improving energy efficiency in desalination plants, both of which will end on 31 December 2017 unless their allocated budget is depleted before that date.

In a meeting held on 14 June 2016, the Fund's Supervision and Monitoring Committee approved the lines of action, programmes and policy measures requiring financing from the contributions made to the fund in 2016, totalling EUR 207 million. The measures approved, and their maximum approved budgets, were as follows:

1. Aid programme for the renovation of municipal street lighting, allocated a budget of EUR 29 000 000.
2. Aid programme for energy efficiency measures in SMEs and large industrial enterprises, allocated a budget of EUR 66 200 000
3. Aid programme for modal shift and more efficient use of transport modes, allocated a budget of EUR 4 000 000.
4. Aid programme to improve energy efficiency in desalination plants, allocated a budget of EUR 12 000 000.
5. Aid programme to improve energy efficiency in railway systems, allocated a budget of EUR 9 000 000.
6. Aid programme to improve the energy efficiency of existing buildings, allocated a budget of EUR 82 000 000.
7. The 'Energy Saving and Efficiency 2017' communication campaign, allocated a maximum budget of EUR 4 800 000 (including VAT).

The aforementioned programmes and measures will be implemented during the 2017 financial year so that the aid programmes already approved and financed from the fund's 2014 and 2015 contributions can continue.

B. Other policy measures, set out in Article 7(9) of Directive 2012/27/EU

Member States may opt to take 'other policy measures' to achieve the savings target in combination with the energy efficiency obligation scheme, as recognised in Article 7(9). Article 2 of the Directive defines 'policy measure' as a regulatory, financial, fiscal, voluntary or information provision instrument formally established and implemented in a Member State to create a supportive framework, requirement or incentive for market actors to provide and purchase energy services and to undertake other energy efficiency improvement measures.

Spain has implemented new measures of this type, as announced in the 'Report on the energy saving and efficiency policy measures under Article 7' of 5 June 2014. Information is given on these measures in section 3.2.2.1 of this Plan, which details the savings achieved by these measures in 2014 and 2015. The measures were as follows: Law 15/2012 on fiscal measures for energy sustainability; the MOVELE programme (under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014); the PIVE efficient vehicle incentive programme; the

Aid Programme to Improve the Energy Efficiency of Existing Buildings (originally called PAREER and later expanded to PAREER-CRECE); the JESSICA-FIDAE Investment Fund; the PIMA environmental stimulus plans, which have promoted energy efficiency measures, among others; the CLIMA projects in the residential, non-ETS industry and transport sectors; the industrial competitiveness incentive programme and various initiatives to promote ecodriving, communication and information; the 2013-2015 State Plan to promote housing rental, building refurbishment and urban regeneration implemented by the Ministry of Public Works; and the ICO loans for building refurbishment. Additionally, the aid programmes implemented by various Spanish regional authorities have been compiled to report the savings made, as per Article 7(9) of Directive 2012/27/EU.

Therefore, Spain is making use of the two mechanisms provided to the Member States by Article 7 to fulfil the savings obligations it sets out; on the one hand, the energy efficiency obligation scheme and, on the other, the alternative measures as described in Chapter 3 of this Plan.

4.1.2. Energy audits and management systems (Article 8)

Article 8 of Directive 2012/27/EU on energy efficiency was transposed into Spanish law by adoption of Royal Decree 56/2016 of 12 February 2016 transposing the above Directive's provisions on energy audits, accreditation of energy service providers and energy auditors, and promotion of efficiency in energy supply.

In accordance with Article 2 of aforementioned Royal Decree 56/2016, the obligation to perform an audit is applicable to companies that employ a minimum of 250 people and to those that, although not fulfilling this requirement, have an annual turnover in excess of EUR 50 million and, at the same time, an annual balance sheet in excess of EUR 43 million. Similarly, an audit is applicable to corporate groups — defined according to Article 42 of Spain's Commercial Code — which, taking into account the aggregate size of the corporations that form the consolidated group, meet the large enterprise criteria.

These large enterprises or corporate groups must undergo an energy audit every four years, counted from the date of the previous energy audit, which covers at least 85 % of the total final energy consumption of the group of facilities located within national territory and which form part of the industrial, commercial and service activities that those enterprises and groups manage in conducting their business.

The implementation of an energy or environmental management system, which must be certified by an independent body according to the relevant European or international standards, will be considered equivalent to the above obligation, provided that the management system implemented includes an energy audit performed in accordance with the minimum energy audit criteria established.

The audits must be conducted by properly qualified energy auditors, as set out in Article 4 of aforementioned Royal Decree 56/2016.

The competent body for energy efficiency in the autonomous cities of Ceuta and Melilla will establish, implement and apply a system of independent energy audit inspections — for which it can carry out as many inspections as it deems necessary — in order to monitor compliance with the energy audit obligation by the companies to which this Royal Decree applies, as well as to ensure and verify quality of them.

The inspections will be performed annually on a randomly selected and, as a minimum requirement, statistically significant percentage of the energy audits conducted in each four-year period.

To facilitate the inspections conducted by the competent administration, an Energy Audit Register was created in the MINETAD. This register is freely and publicly available and shows the information reported by the large enterprises obligated to perform energy audits every four years, in addition to information voluntarily submitted by companies not subject to that obligation.

<https://sede.minetur.gob.es/es-ES/procedimientoselectronicos/Paginas/RAAE.aspx>

As of the current date, information has been received on 15 476 energy audits performed at 2 659 companies.

In addition to this, it should be noted that the IDAE has implemented an aid programme for energy efficiency measures in SMEs and large industrial enterprises, financed by the National Energy Efficiency Fund. This aid is available for energy-efficiency improvement measures and for implementation of energy management systems.¹⁰ The programme is described in various chapters of this Plan, among others Chapter 3, where details are provided on the savings resulting from the programmes implemented to meet the savings target set out in Article 7 of Directive 2012/27/EU on energy efficiency.

This aid programme will facilitate the implementation of the energy saving and efficiency measures detected by the industrial sector or proposed by energy audits to reduce energy consumption in industrial processes.

4.1.3. Metering and billing information (Articles 9, 10 and 11)

Spain continues to carry out its plan to replace electricity metering equipment in accordance with Article 9 of Directive 2012/27/EU on the need to provide final customers of electricity, natural gas, district heating, district cooling and domestic hot water with individual meters that accurately reflect the final customer's actual energy consumption and that provide information on actual time of use.

Order ITC/3860/2007 of 28 December 2007 states that all **electricity supply meters** with a contracted power of up to 15 kW shall be replaced by new devices which offer time and remote management settings (known as 'smart meters') by 31 December 2018, two years before the target set by Directive 2009/72/EC of 13 July 2009 concerning common rules for the internal market in electricity. This change was scheduled to take place according to a set of milestones that were subsequently amended by Order IET/290/2012 of 16 February 2012. The currently applicable schedule is as follows:

- a) By 31 December 2014, 35 % of each distributor's total stock of meters with a contracted power of up to 15 kW must be replaced.
- b) Between 1 January 2015 and 31 December 2016, 35 % of each distributor's total stock of meters with a contracted power of up to 15 kW must be replaced.
- c) Between 1 January 2017 and 31 December 2018, 30 % of each distributor's total stock of meters with a contracted power of up to 15 kW must be replaced.

¹⁰ The energy audits mandatory under Article 8 of Directive 2012/27/EU are not eligible for aid under this programme.

The technical requirements for metering equipment and remote management systems are set out in the unified regulation on electricity system metering points, adopted by Royal Decree 1110/2007 of 24 August 2007, and in Order ITC/3860/2007 of 10 October 2007.

With regard to **meters for domestic hot water, heating and cooling**, it should be noted that the obligations set out in Directive 2012/27/EU were included in a draft royal decree in 2015 that was submitted to the Council of Ministers for approval in June of that year. However, given these obligations' potential economic impact on consumers, particularly the most vulnerable ones, the proposal was rejected.

As conveyed to the European Commission, in the near future, and if necessary, the MINETAD will start preparing a new draft Royal Decree that includes the corresponding obligations.

Regarding Articles 10 and 11 on billing and metering, and in particular in relation to **natural gas** infrastructure, it should be pointed out that Royal Decree 1434/2002 of 27 December 2002 regulating natural gas transmission, distribution, marketing, supply and associated authorisation procedures includes provisions on billing, meter-reading and information available to consumers on the supply of natural gas.

Initially, this royal decree fulfilled most of the requirements set out in Articles 9, 10 and 11 of Directive 2012/27/EU on energy efficiency. However, in addition to this, via Royal Decree 1085/2015 of 4 December 2015 on the promotion of biofuels, the royal decree was supplemented and extended to improve the information (e.g. itemised billing) that natural gas distributors and retailers offer their customers and which enhances the information available to consumers and allows them to manage their energy consumption.

Billing for the supply of natural gas is carried out monthly for users who consume over 100 000 kWh/year and every two months for those who consume less. To ensure that billing is based on actual consumption, distributors are obligated to provide consumers with the necessary means to report their meter readings in the event that, due to reasons beyond the distributors' control, an actual reading cannot be taken. Thus, the number of estimated readings will be reduced. Billing should be based on the actual energy content of the gas supplied, to which end the bill includes the calorific value applied. Any customer can access this calorific value on the system manager's website.

With respect to billing content, Article 53 of Royal Decree 1434/2001 lays down the obligation to fulfil all the requirements set out in Annex VII of Directive 2012/27/EU: meter readings, tariffs charged, comparison with consumption in previous years and information on energy efficiency measures.

Likewise, among the amendments introduced by Royal Decree 1085/2015 of 4 December 2015, it established the obligation for all natural gas retailers to offer their customers a system for online billing and bill consultation on their website, as well as providing them free, electronic access to all of their bills for at least the two previous years. In addition, they must provide customers and duly authorised energy service companies with electronic access to the information corresponding to at least the three previous years, or for the period since the start of the supply contract if this is shorter.

Natural gas providers that supply to end-users must have a telephone number, postal address and email address that customers can use to ask for clear and understandable explanations of the terms of their bills, in addition to a support service for complaints and incidents related to the services contracted or offered and requests for information on matters relating to contracts, supply and customer communications.

In Spain, it is a mandatory minimum requirement to have in place remote meter-reading systems with the ability to read daily flow rates for consumers connected to pipelines exceeding a pressure of 60 bar and for consumers whose annual consumption exceeds 5 GWh.

With respect to the use of smart meters, Directive 2009/73/EC provides for their mandatory implementation based on the results of a cost–benefit analysis. To this end, the CNMC (*Comisión Nacional de los Mercados y la Competencia* [National Markets and Competition Commission]) approved the 'Report on the cost–benefit analysis of the implementation of natural gas smart meters in Spain' on 24 November 2011, the outcome of which was negative and which recommended a conservative strategy of 'wait and see' regarding their implementation.

4.1.4. Consumer information programmes and training (Articles 12 and 17)

This section provides information on the measures taken and envisaged to promote and facilitate efficient use of energy by SMEs and households, as established in Articles 12 and 17 of Directive 2012/27/EU on energy efficiency.

In accordance with Article 12, Member States shall take appropriate measures, which may form part of a national strategy, to promote and facilitate efficient use of energy by small customers, including domestic customers.

Meanwhile, Article 17 states that Member States shall ensure that information on available energy efficiency mechanisms and financial and legal frameworks is transparent and widely and actively disseminated to all relevant market participants; establish appropriate conditions for market operators to provide adequate and targeted information to energy consumers on energy efficiency; and promote suitable awareness-raising and training initiatives to inform the public of the benefits and practicalities of taking energy efficiency improvement measures.

This Plan includes the implementation of communication measures aimed at the general public and which will be carried out annually alongside the other measures it contains.

The initiatives shall be based on the expertise and experience of the IDAE and shall be implemented through communication campaigns and information and training programmes targeting consumers and all other participants in the energy efficiency market.

The IDAE website (www.idae.es) hosts an extensive collection of specialist publications, virtual classrooms and audiovisual content on energy efficiency. The awareness-raising campaigns carried out since 2004 have helped to track the way the Spanish consumer profile has evolved and so better direct actions aimed at achieving quantifiable energy saving results.

The measures carried out for the transposition of Articles 12 and 17 are grouped into six main parts, five of which pertain to communication and information and the sixth to training, as shown in the following outline:

A. Communication and information

- A.1** Institutional advertising and communication campaigns.
- A.2** Internet: IDAE website and other online communication channels.
- A.3** Regular communications: IDAE e-newsletter.
- A.4** Proprietary audiovisual content.
- A.5** Public information service on energy efficiency and renewable energies

(SICER).

B. Training

These initiatives are described in more detail below, indicating the resources employed, outcomes achieved and general actions carried out or planned.

A.1. Institutional advertising and communication campaigns

In regard to institutional public advertising and communication, public bodies act in accordance with Law 29/2005 of 29 December 2005 on institutional advertising and communication, which lays down the regulatory framework within which such campaigns are to be implemented. These campaigns must always be accompanied and backed by measures and programmes and energy saving and efficiency campaigns have always been included within National Energy Saving and Efficiency Action Plans (2005-2007 Action Plan, 2008-2012 Action Plan and 2011-2020 Action Plan).

Since 2004, the IDAE has carried out regular campaigns aimed at the general public and focused on energy efficiency in different everyday settings (environmentally responsible use of heating and air-conditioning, ecodriving, etc.).

As previously explained in section 3.2.2.1 'Alternative measures set out in Article 7(9) of Directive 2012/27/EU' under the heading that lists information on the savings accredited in 2014 and 2015, the institutional communication and publicity campaign on energy saving and efficiency entitled 'You control your energy' resulted in an energy saving of 13 ktoe/year in 2014.¹¹

In 2015, the new nationwide Institutional Communication, Information and Publicity Campaign was launched, this time called 'Energy Saving and Efficiency 2015' and which, due to the elections that took place that year, was publicised in a single run in the media throughout the month of July 2015. The aim of the campaign was to promote, publicise and encourage environmentally responsible energy consumption habits among the general public and other sectors through messages targeting specific measures: improving energy efficiency in buildings, energy labelling, ecodriving and exploiting the lines of aid available. The campaign was allocated a maximum budget of EUR 4 000 000, plus VAT, financed by the National Energy Efficiency Fund. Consequently, the savings resulting from the campaign (19 ktoe/year of final energy in 2015) are credited to the 'energy efficiency obligation scheme'.

This time, the campaign was endorsed by a well-known celebrity — the actor and President of the Spanish Academy of Motion Picture Arts and Sciences at that time — Antonio Resines.

¹¹ In Annex III of the 2015 Annual Report submitted by Spain to the European Commission on 30 April of that year, as required under Article 24(1) of Directive 2012/27/EU on energy efficiency, a summary was provided on the methodology used to measure the impact of the campaign and assess the results: the extent to which the suggested energy-saving measures were being applied by those who reported having seen the campaign, and the resulting energy savings.

Image 4.1.4.1. Example of 2015 campaign outdoor advertising



Source: IDAE

<p>Con la rehabilitación energética de edificios, “todo niquelao”</p> <p>Ahorra energía y gana en confort con la rehabilitación energética de viviendas</p> <p>www.controlastuenergia.gob.es</p> <p>AYUDAS 2015</p> <p>Infórmate</p>	<p>Get 'tip-top' performance with building energy-efficiency improvements</p> <p>Save energy and increase comfort with household energy-efficiency improvements</p> <p>www.controlastuenergia.gob.es</p> <p>2015 GRANTS</p> <p>Find out more</p>
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In order to measure the impact of the campaign, an independent body (Grupo Análisis e Investigación) carried out a field study immediately after it concluded. To that end, the IDAE designed a specific survey conducted using the CATI (computer assisted telephone interviewing) technique. The conclusions were as follows:

Regarding 'ecodriving':

- Virtually half of the population remembered the campaign (44.4 %), with recall being greatest among frequent drivers.
- The campaign had two major outcomes: giving advice that was previously unknown and reinforcing advice that was not being applied.
- 60.5 % of those who remembered the campaign recalled the advice to accelerate and brake gently whenever possible.
- 26 % of drivers who remembered the campaign were not accustomed to turning off the engine during long stops, but because of the campaign they plan to start doing so.

Regarding 'building energy-efficiency improvements':

- Three out of ten remembered the campaign.

- The campaign was effective, given that those who claimed to know about the state grants and energy certificates were mostly the people who had seen it.
- The campaign achieved a satisfactory level of persuasion.
- 37 % of the homeowners who saw the campaign sought further information about the aid options available to them.
- 26.8 % of those who remembered the campaign suggested applying for the grants to their residents' associations.

Regarding 'energy labelling':

- One in five people (22.1 %) remembered the campaign.
- Awareness of energy labelling for boilers and electrical appliances was noticeably higher among those who remembered seeing the campaign.

These results can be credited to the way the messages were delivered (clear, simple and direct) and to the popularity of the celebrity chosen to endorse the campaign — Antonio Resines. A notable milestone was reached on 29 July 2015, when the IDAE advert shown at 22:48:46 on TV channel A3TV achieved the 'Spot de Oro' for being the most watched commercial that day, attracting 2 256 000 viewers.

Quantitatively, and in terms of energy savings, as indicated in Annex V, section 1 ('surveyed savings') of the Directive, the savings recorded under the 2017-2020 National Energy Efficiency Action Plan as defined in Article 7 of Directive 2012/27/EU on energy efficiency were equivalent to 19 ktoe/year of final energy in 2015.

For the following year, the call for tenders for the design of the first phase of the institutional communication and publicity campaign 'Energy Saving and Efficiency 2016' had to be cancelled in April 2016. A new invitation to tender was issued at the end of 2016 and has yet to close. The 'Energy Saving and Efficiency 2016' campaign is expected to be broadcast in 2017.

As with the 2015 campaign, this new campaign (allocated a maximum budget of EUR 4 million) aims to promote, publicise and encourage environmentally responsible energy consumption habits among the general public and in relevant sectors, in addition to providing information about the aid programmes available to implement energy-saving measures.

Its main aim is to reduce consumption in the most energy-intensive uses, prioritising advice/messages that prompt behavioural changes in those uses that contribute most to national consumption — in particular, heating, domestic hot water, driving, lighting and use of electrical appliances.

Like previous campaigns, this one will appear in all major media (television, radio, newspapers, internet, billboards) to achieve the expected coverage and visibility. An outcomes survey will also be carried out that follows the guidelines set out in Directive 2012/27/EU on energy efficiency.

A.2. INTERNET: IDAE website and other online communication channels.

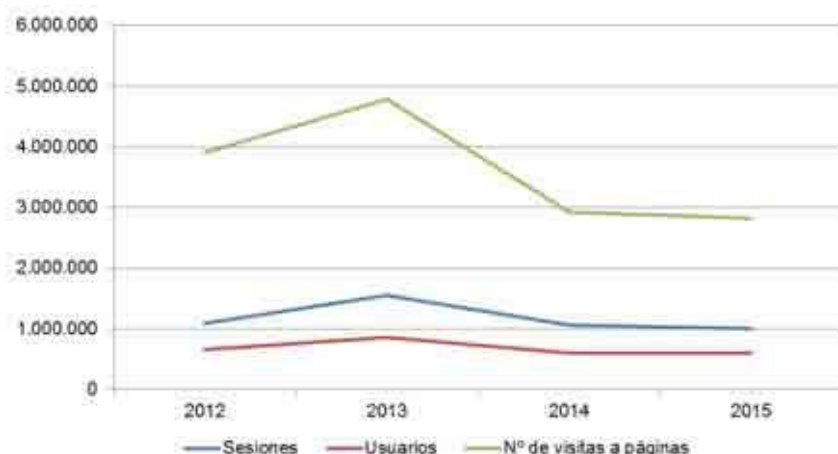
IDAE website:

Dedicated to the promotion of energy efficiency and renewable energies, www.idae.es has been

online since 1999 and provides information of public interest aimed at companies and the general public. Its content spans news, calls for applications, planning documents, studies, training platforms, tools for calculating energy system performance and carbon dioxide emissions, proprietary audiovisual advertising and information content, publications and benchmark databases on energy-efficient cars and household appliances, among many other topics.

The website registered almost 1 200 000 users from 2014 to 2015, over which period the number of visitors, page views and logged sessions remained stable.

Figure 4.1.4.1. IDAE website traffic



Source: Google Analytics

6.000.000	6 000 000
5.000.000	5 000 000
4.000.000	4 000 000
3.000.000	3 000 000
2.000.000	2 000 000
1.000.000	1 000 000
Sesiones	Sessions
Usuarios	Users
Nº de visitas a páginas	No of page views

The **IDAE web content** includes:

- The IDAE **catalogue of publications**: available on the site, this contains more than 200 technical publications. One of IDAE's more prominent and informative publications is its 'Practical energy guide'. Aimed at the general public, this guide contains numerous tips on how to save energy daily, both at home and in the car, and is written in plain, easily understood language. Parts of the catalogue have been digitised and are available for online consultation.
- **Statistical bulletins and reports**: Various statistical bulletins are available on the website covering energy consumption by source and sector (annual energy balances), energy intensity, regulated pricing and cogeneration, with publication frequency (monthly or annual) varying according to the bulletin. This information is available under '*Studies, reports and statistics*':

Image 4.1.4.2. IDAE website. Studies, reports and statistics



Source: IDAE

Estudios, informes y estadísticas	Studies, reports and statistics [Illegible text]
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- **Databases of energy service and renewable energy companies:** Two databases of energy service and renewable energy companies are managed and kept updated in accordance with Royal Decree 56/2016 transposing Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, concerning energy audits, accreditation of service providers and energy auditors and promotion of energy supply efficiency.
- **Passenger vehicle energy labelling database:** Since 2002, a database has been maintained containing every model of passenger and commercial vehicle available on the Spanish market, classified according to energy efficiency and CO₂ emissions. It has progressively incorporated vehicles not subject to labelling obligations such as commercial and electric vehicles and those powered by alternative fuels. It currently contains nearly 15 000 passenger vehicles and vans, sorted by petrol and diesel, as well as those powered by other technologies such as electricity, LPG, CNG and biofuels. The database has been used in various government-funded programmes to renew the national vehicle stock, among them the PIVE efficient vehicle incentive programmes, as well as being referenced in public procurement specifications for the purchase of vehicles by public administrations.

Image 4.1.4.3. IDAE website. Passenger vehicle energy labelling database



Source: IDAE

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Other online communication channels

Apart from its website, the IDAE manages other online communication channels which also help inform consumers about using energy efficiently:

Social media

Given the burgeoning influence of social media, the IDAE decided to implement a strategy to showcase the Institute's position and experience in everything related to energy saving and efficiency, thereby helping to publicise further its activities and, at the same time, position its website more strongly.

This strategy involves publishing articles and news about energy saving and efficiency via specific profiles on social media. The texts are clearly written and avoid institutional language to make them fully understandable to the general public. In addition, information is drawn up for local councils, managing agents, business associations (industry, transport, building, etc.) and professional associations (architects, engineers, site developers, builders, installers, energy service companies, etc.).

The media channels considered ideal and subsequently selected for these new lines of communication were Twitter and a specifically created blog called 'La Energía de Luzí@'. In order to bring things full circle, the information published always refers back to the IDAE website (www.idae.es).

Image 4.1.4.4. 'La Energía de Luzí@' blog



Source: IDAE

La energía de Luzí@	La energía de Luzí@
23 viernes	Friday 23 [illegible text]
Elige tu sistema de calefacción y refrigeración con criterio	Choose your heating and cooling system wisely
	[Illegible text]

Online platform for the MOVEA plan to promote alternative-fuel vehicles:

Upon approval of the MOVEA plan (*Plan de Impulso a la Movilidad con Vehículos de Energías Alternativas* [Plan to Promote Mobility using Alternative-Fuel Vehicles]), a website was created (www.moveaplan.gob.es) to bring together information on alternative mobility systems.

'Guía de la Energía' website:

The 'Guía de la Energía' energy guide, the Institute's flagship publication, is aimed at the general public with the objective of encouraging environmentally responsible energy use. The first edition of this guide was published in 1994 and it has been republished and updated numerous times. To date, more than seven million copies have been printed and it has been expressly requested by various stakeholders (schools, colleges, consumer associations, companies, etc.). It is also used as a reference in other Spanish-speaking countries such as Chile and Paraguay, which have adapted it to their local circumstances. It is still freely available both in print and electronic format (via the website). It also has its own website (guiaenergía.idae.es) which includes new features that make it easier to use and distribute in the digital environment.

Image 4.1.4.5. Home page of the 'Guía de la Energía' website



Source: IDAE

[Illegible text]

A.3. Regular communications: IDAE e-newsletter

In 2004, the IDAE began distributing a newsletter entitled '*Boletín Electrónico del IDAE*' which provides specialised information on IDAE activities regarding energy saving and efficiency and renewable energies. The newsletter currently has around 20 000 subscribers. Since 2016, it has been complemented with additional information posted on social media and aimed at the general public.

A.4. Proprietary audiovisual content

Since 2005, the IDAE has run a differentiated communication campaign focusing on energy saving and efficiency and renewable energies, producing audiovisual content targeting the general public in-house or in partnership with third parties. This content is designed to be broadcast over a variety of channels, including television, internet and even cinemas.

Some of the more prominent content includes the educational documentary 'Energía 3D', released in 2013 in 3D-equipped cinemas and shown on an ongoing basis across the country. The documentary has two fundamental aims: to emphasise energy's value and to raise awareness among schoolchildren of the importance of saving it. The film has been offered to every school in Spain via a dedicated call centre where operators explain the project to teachers. All of the information about the project can be found at: www.energia3d.es. In December 2015, the number of viewers throughout Spain who had seen the documentary reached 100 000.

In 2013, all of the IDAE's audiovisual content was made freely available to the public. This audiovisual archive is comprised of essentially informative recordings about energy saving and efficiency (videos on ecodriving, street lighting, micro-cogeneration, household energy saving, etc.), in addition to videos about the various workshops on funding mechanisms and

the aid administered by the IDAE for energy efficiency and renewable energy projects.

To make the most of the advantages offered by the YouTube and Vimeo online audiovisual platforms, the IDAE created two branded channels (www.youtube.com/c/TVidae and <https://vimeo.com/tvidae/videos>). The outcomes were conclusive and extremely positive — between 2014 and 2015, the IDAE channel on YouTube recorded 112 270 views (data provided by YouTube Analytics) while the IDAE channel on Vimeo had 4 182 views (Vimeo data).

Image 4.1.4.6. TVidae on YouTube



Source: YouTube

Image 4.1.4.7. TVidae on Vimeo



Source: Vimeo

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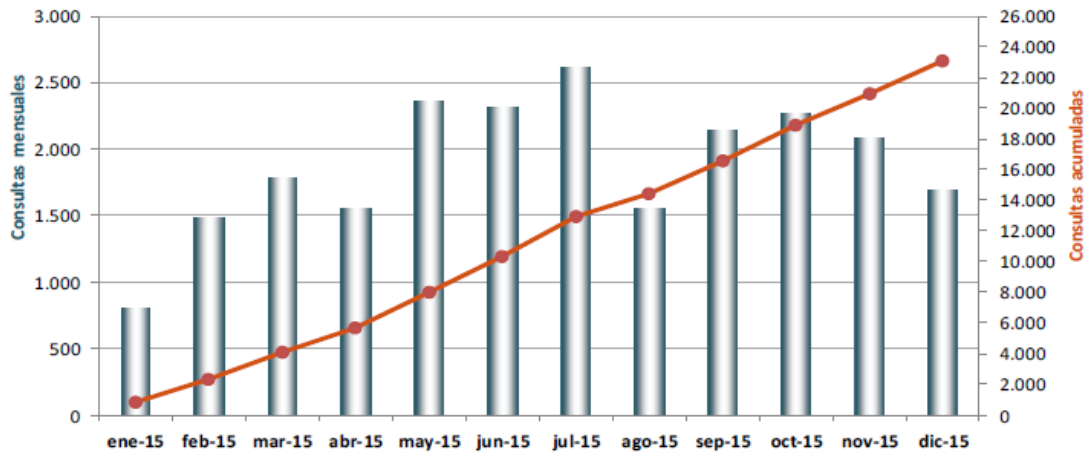
In previous years, and within the context of audiovisual communication, Spain's state-owned broadcaster Radiotelevisión Española (RTVE) produced and broadcast the series 'Emprendedores Innovadores' [Innovative Entrepreneurs], an informative 26-episode programme showing how different innovative Spanish entrepreneurs have created technology-based companies — some located in Spain and others abroad — related to energy saving and efficiency or renewable energy.

A.5. Public information service on energy efficiency and renewable energies

The IDAE runs a public information service on energy efficiency and renewable energy (*Servicio de Información al Ciudadano en Eficiencia Energética y Energías Renovables*, SICER) that has responded to over 210 000 queries since it was launched in late 2008 and is rated highly by users.

In 2015, the SICER handled over 23 000 queries. The monthly average stood at approximately 1 900 and peaked in the month of July at 2 600 queries. Figure 4.1.4.2 shows the figures for queries per month.

Figure 4.1.4.2. SICER queries in 2015



Source: IDAE

Consultas mensuales	Monthly queries
3.000	3 000
2.500	2 500
2.000	2 000
1.500	1 500
1.000	1 000
ene-15	Jan-15
feb-15	Feb-15
mar-15	Mar-15
abr-15	Apr-15
may-15	May-15
jun-15	Jun-15
jul-15	Jul-15
ago-15	Aug-15
sep-15	Sep-15
oct-15	Oct-15
nov-15	Nov-15
dic-15	Dec-15
Consultas acumuladas	Aggregate queries

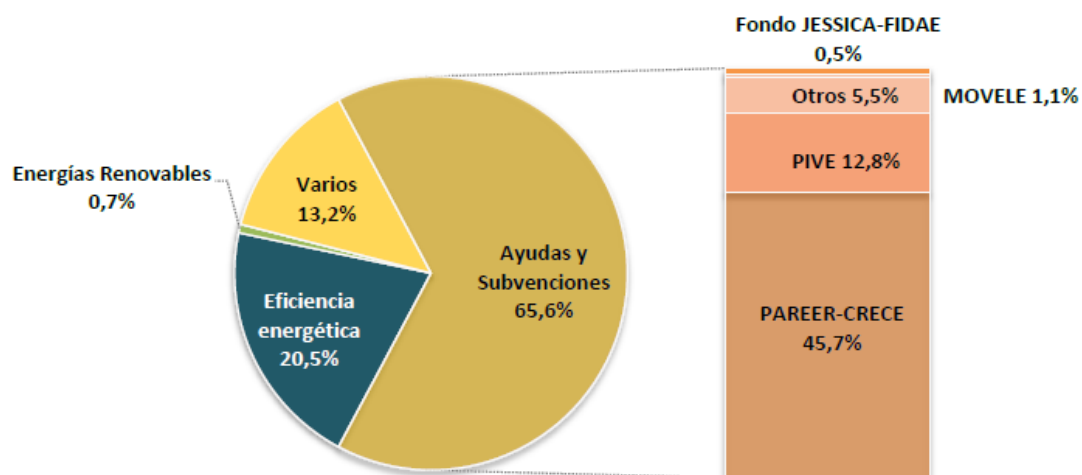
26.000	26 000
24.000	24 000
22.000	22 000
20.000	20 000
18.000	18 000
16.000	16 000
14.000	14 000
12.000	12 000
10.000	10 000
8.000	8 000
6.000	6 000
4.000	4 000
2.000	2 000

This peak, in July 2015, was due to the interest roused by the publication of a number of aid programmes: the amendment to the Aid Programme to Improve the Energy Efficiency of Existing Buildings (PAREER-CRECE), the entry into force on 5 May of the lines of public aid available under the EENF and the launch on 15 May of the eighth call for applications under the PIVE plans (PIVE 8).

Regarding the type of queries made, in 2015 (Figure 4.1.4.3), the most commonly made queries related to aid programmes run directly by the IDAE, such as PAREER-CRECE, PIVE and MOVELE, among others.

Queries relating to the area of energy efficiency were the second most common, particularly those regarding buildings and industry. Queries regarding the latter increased notably in 2015 as a result of the launch of an aid programme for energy efficiency measures in SMEs and large industrial enterprises.

Figure 4.1.4.3. Types of queries



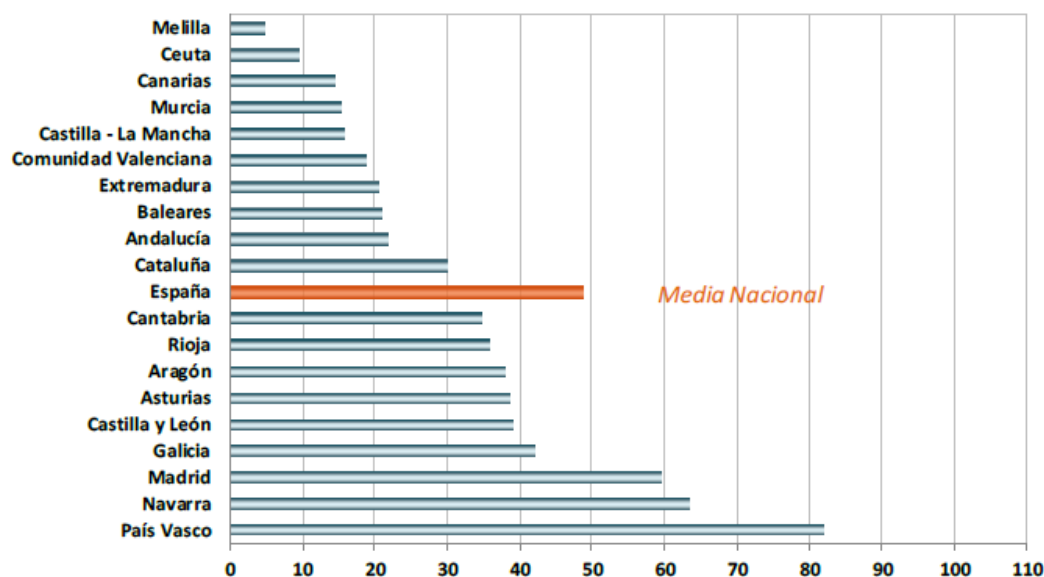
Source: IDAE

Varios 13,2%	Miscellaneous 13.2 %
Energías Renovables 0,7%	Renewable energies 0.7 %
Eficiencia energética 20,5%	Energy efficiency 20.5 %
Ayudas y subvenciones 65,6%	Aid and subsidies 65.6 %
Fondo JESSICA-FIDAE 0,5%	JESSICA-FIDAE fund 0.5 %
MOVELE 1,1%	MOVELE 1.1 %
Otros 5,5%	Others 5.5 %
PIVE 12,8%	PIVE 12.8 %
PAREER-CRECE 45,7%	PAREER-CRECE 45.7 %

In terms of the origin of queries in 2015, the Basque Country stands out with the largest

number of queries made, with over 80 per 100 000 inhabitants. It is followed by the autonomous communities of Navarre and Madrid, both above the national average with around 49 queries per 100 000 inhabitants.

Figure 4.1.4.4. SICER queries per 100 000 inhabitants, by autonomous community



Source: IDAE

Melilla	Melilla
Ceuta	Ceuta
Canarias	Canary Islands
Murcia	Murcia
Castilla – La Mancha	Castile-La Mancha
Comunidad Valenciana	Valencia
Extremadura	Extremadura
Baleares	Balearic Islands
Andalucía	Andalusia
Cataluña	Catalonia
España	Spain
Cantabria	Cantabria
Rioja	Rioja
Aragón	Aragon
Asturias	Asturias
Castilla y León	Castile-Leon
Galicia	Galicia
Madrid	Madrid
Navarra	Navarre
País Vasco	Basque Country
Media Nacional	National average

B. Training

The IDAE runs and takes part in a range of events, such as trade fairs, seminars, courses and industry conferences. In 2015, the IDAE attended over 100 events related to the energy sector.

Training content has been developed which aims to raise awareness and promote active public participation in reducing energy consumption.

In this regard, the IDAE has developed two e-learning platforms: one for the general public, and another for central government staff.

Energy efficiency training for the general public

This e-learning platform offers a series of courses, accessible online at www.aprendecomoahorrarenergia.es, intended for the general public.

Image 4.1.4.8. e-learning platform



Source: IDAE

APRENDE A AHORRAR ENERGÍA GRATIS	LEARN TO SAVE ENERGY FOR FREE
Usuario	User
Contraseña	Password
Entrar	Enter
¿Olvidó su clave?	Forgotten your password?

<p>Ahorra energía mientras trabajas</p> <p>Numerosos estudios muestran que es posible ahorrar energía en los edificios de oficinas mediante una serie de medidas que no requieren necesariamente una inversión económica, las cuales están directamente relacionadas con los hábitos de los usuarios.</p> <p>Es por esto que se han desarrollado una serie de contenidos que pretenden impulsar la concienciación y colaboración activa de todos los trabajadores para reducir el consumo energético y así convertir nuestra oficina en un lugar más limpio y eficiente desde el punto de vista energético y medioambiental.</p> <p>Tiempo estimado de duración: 2 horas.</p> <p>Inscríbete</p> <p>Aprende a ahorrar energía con alguno de estos breves cursos que ponemos a tu disposición. Elige el que más te interese:</p> <p>Ahorra energía mientras trabajas</p> <p>Ahorra energía con tus electrodomésticos</p> <p>Cómo conducir de manera eficiente</p> <p>Tu vivienda: Instalaciones individuales de calefacción y agua caliente sanitaria</p> <p>Comunidades de vecinos: Instalaciones centralizadas de calefacción y ACS</p> <p>Certificación de eficiencia energética para edificios existentes: Usuarios</p> <p>Certificación de eficiencia energética para edificios existentes: Agentes Inmobiliarios</p> <p>Medidas de ahorro energético en iluminación interior de edificios</p> <p>Medidas de ahorro energético en calefacción, acs y energía solar térmica</p> <p>www.aprendecomoahorrarenergia.es</p> <p>ACCESIBILIDAD</p> <p>Más información: aprendecomoahorrarenergia@idaes.es</p>	<p>Save energy while you work</p> <p>Many studies show that it is possible to save energy in office buildings with a series of measures that are directly connected to user habits and do not necessarily require major investment.</p> <p>For this reason, a variety of content has been developed to increase employee awareness of and active participation in reducing energy consumption and so make our offices cleaner, more energy-efficient and environmentally friendly places.</p> <p>Estimated duration: 2 hours.</p> <p>Sign up</p> <p>Learn how to save energy with some of our short courses. Choose the one that interests you most:</p> <p>Save energy while you work</p> <p>Save energy with your household appliances.</p> <p>How to drive efficiently.</p> <p>Your home: Individual domestic heating and hot water systems.</p> <p>Residents' associations: Central heating and DHW systems</p> <p>Energy efficiency certification for existing buildings: Users</p> <p>Energy efficiency certification for existing buildings: Estate agents</p> <p>Energy-saving measures for building interior lighting</p> <p>Energy-saving measures for heating, DHW and solar thermal energy systems</p> <p>www.aprendecomoahorrarenergia.es</p> <p>ACCESSIBILITY</p> <p>More information: aprendecomoahorrarenergia@idaes.es</p>
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These courses are free for all members of the public and have been developed using a wide range of multimedia content to create an interactive format and facilitate learning. Each course also includes downloadable guides and additional documentation.

The courses include advice on how to save energy in the home, at work and in transport and require between 1 and 6 hours' work, depending on the course.

Since the launch of the training platform in November 2011, **over 18 560 courses have been run** and the content is expected to be increased and updated over the next few years.

Courses on the following topics are currently available:

- Save energy while you work (2 hours): This is the most popular course available. Its purpose is to improve employee habits in the workplace, showing them the best practices for using common office equipment such as lighting, computers, printers, air-conditioning, etc.).
- Save energy with your household appliances (2 hours): This course has two main goals: to show, using energy labelling, the fundamental parameters for choosing the most energy-efficient domestic appliances, and to provide a series of guidelines for energy-efficient use of each type of appliance.
- How to drive efficiently (2 hours): This course provides learners with ecodriving tips. It helps drivers to minimise fuel consumption by learning and applying a series of habits when driving for both private and professional purposes.

Image 4.1.4.9. e-learning platform



Source: IDAE

<p>APRENDE CÓMO AHORRAR ENERGÍA CÓMO CONDUCIR DE MANERA EFICIENTE 3. Medidas a tomar antes de iniciar la marcha La conducción eficiente comienza antes de iniciar la marcha, mediante la puesta a punto del vehículo y el mantenimiento general y cotidiano. Se describen a continuación las tareas principales a realizar:</p> <p>Retroceder</p>	<p>LEARN HOW TO SAVE ENERGY HOW TO DRIVE EFFICIENTLY 3. Steps to take before starting the engine Ecodriving begins before starting the engine, by keeping the vehicle in good condition with general and daily maintenance. The main tasks to perform are as follows: [Illegible text]</p> <p>Back</p>
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- Your home: Individual domestic heating and hot water systems (2 hours): Intended for homeowners and tenants with individual boilers, and for heating engineers and technicians. This course presents a summary of the most cost-efficient individual systems available on the market. Learners are also provided with tools to reduce their energy consumption without compromising comfort.

- Residents' associations: Central domestic heating and hot water systems (4 hours): Mainly intended for property managers, chairs of residents' associations and heating system engineers. As well as offering information on improving energy efficiency in heating and domestic hot water systems, the course shows how to spread the cost of central heating and/or domestic hot water systems between the residents of the property.
- Energy efficiency certification for existing buildings (1-2 hours): Two courses are offered, the first for the general public and the second for professionals in the sector. The purpose of these courses is to provide information about the energy efficiency certificate for existing buildings, the related obligations and the certificate's benefits and use.
- Energy-saving measures for building interior lighting (6 hours): This course is intended to provide a broad introduction to the field of building interior lighting. It focuses on energy saving via the application of a range of technological and management solutions and appropriate use of lighting systems.
- Energy-saving measures in heating, domestic hot water and solar thermal energy systems (6 hours): This course aims to provide the necessary guidelines to identify energy-saving opportunities and measures in heating and domestic hot water systems, introducing the principles and functioning of solar thermal energy systems.

Energy efficiency training for central government staff

With regard to specific training in energy efficiency for central government staff, the e-learning platform developed by the IDAE is of particular note: <http://formacion.paee-age.es/>

Image 4.1.4.10. Central government e-learning platform



Source: IDAE

<p>Plataforma de Formación de la AGE</p> <p>Cursos online</p> <p>Calendario de cursos</p> <p>Recomendaciones sobre los cursos</p> <p>Acceso Alumnos</p> <p>Usuario</p> <p>Contraseña</p> <p>Entrar</p> <p>¿Olvidó su clave?</p> <p>Solicitar aquí</p> <p>Cursos online</p> <p>Medidas de ahorro energético en iluminación interior de edificios</p> <p>Medidas de ahorro energético en calefacción, acs y energía solar térmica</p> <p>Cómo ahorrar energía en el puesto de trabajo</p> <p>Ahorra energía con tus electrodomésticos</p> <p>Cómo conducir de manera eficiente</p> <p>Tu vivienda: Instalaciones individuales de calefacción y agua caliente sanitaria</p> <p>Comunidades de vecinos: Instalaciones centralizadas de calefacción y ACS</p> <p>Certificación de eficiencia energética para edificios existentes: Usuarios</p> <p>Certificación de eficiencia energética para edificios existentes: Agentes Inmobiliarios</p> <p>ACCESIBILIDAD</p>	<p>Central government training platform</p> <p>Online courses</p> <p>Course schedule</p> <p>Course recommendations</p> <p>Student access</p> <p>User</p> <p>Password</p> <p>Enter</p> <p>Forgotten your password?</p> <p>Apply here</p> <p>[Illegible text]</p> <p>Online courses</p> <p>Energy-saving measures for building interior lighting</p> <p>Energy-saving measures for heating, DHW and solar thermal energy systems</p> <p>How to save energy in the workplace</p> <p>Save energy with your household appliances.</p> <p>How to drive efficiently.</p> <p>Your home: Individual domestic heating and hot water systems.</p> <p>Residents' associations: Central heating and DHW systems</p> <p>Energy efficiency certification for existing buildings: Users</p> <p>Energy efficiency certification for existing buildings: Estate agents</p> <p>ACCESSIBILITY</p>
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This training platform has two clear objectives:

- To train those responsible for energy in buildings and energy managers at ministries in their role.
- To promote energy saving by providing information and raising awareness among government staff.

When completing some courses, learners can fill in a questionnaire to test what they have learned. Once they have passed a course, learners can download a course certificate.

The e-learning platform for central government staff offers the same courses as the general public platform described above. In addition, it includes the following specific courses for government staff (some of these courses are currently being updated):

- Introduction to the Plan for Energy Saving and Efficiency in Central Government Buildings (3 hours): The PAEE-AGE (*Plan de Ahorro y Eficiencia Energética en los Edificios de la Administración General del Estado* [Plan for Energy Saving and Efficiency in Central Government Buildings]) established a series of minimum energy savings targets for all government buildings. The course provides guidelines to achieving these savings and the profiles, roles and responsibilities of those involved in their implementation and monitoring.

Image 4.1.4.11. Central government e-learning platform



Source: IDAE

<p>Introducción al Plan de Ahorro y Eficiencia Energética en los edificios de la AGE 6.Conclusiones Edificios AGE Plan de ahorro y eficiencia energética Ahorro de energía mínimo global del 20% Medidas de ahorro y eficiencia energética</p>	<p>Introduction to the Plan for Energy Saving and Efficiency in Central Government Buildings 6. Conclusions Central government buildings Energy saving and efficiency plan Minimum overall energy saving of 20 % Energy-saving and efficiency measures</p>
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Relacionadas con la gestión energética Relacionadas con la inversión económica Responsables energéticos Plan de Actuación anual Conclusiones Índice PAEE-AGE Plan de Ahorro y Eficiencia Energética en los edificios de la Administración General del Estado Ahorra energía Documentación Progreso Ayuda	Relating to energy management Relating to economic investment Energy managers Annual action plan Conclusions Contents PAEE-AGE Plan for Energy Saving and Efficiency in Central Government Buildings Save energy Documentation Progress Help
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- Energy Accounting (2 hours): The main objective of this course is to teach building energy managers about the energy consumption data they need to report, how to identify that data on energy bills, how to present it on the forms and how it can be used in building energy management and in meeting proposed saving targets.
- Completion of preliminary energy evaluation questionnaires (12 hours): This course shows how to complete preliminary energy evaluation questionnaires for buildings. An analysis of the information provided is used to determine the building's potential energy savings and any possible improvements to be made to achieve those savings.
- Management of energy-consuming facilities in buildings (4 hours): This course describes a series of building energy-management actions intended to limit energy consumption to efficient and rational use while at the same time reducing energy-related expenses and maintaining appropriate levels of comfort.
- Hiring of energy service companies (ESCOs) (3 hours): This course shows how to achieve energy savings and efficiency by hiring energy service companies. Energy service agreements are often highly complex and require the use of specific procurement models, the procedure for which is explained during the course.
- Course for users of the online energy and asset management platform (PIGEP) (4 hours): Course for users of the PIGEP (*Plataforma Informática de Gestión Energética y Patrimonial* [Online Energy and Asset Management Platform]) for government buildings. This online platform facilitates the energy management tasks performed by the government staff responsible for each building and ministry. The information entered on this platform is used to monitor specific energy-saving policies and plans promoted by the Spanish Government under Directive 2012/27/EU on energy efficiency.

The table below shows a summary of the number of courses completed via the e-learning platform for central government staff:

Table 4.1.4.1. Courses completed by central government staff

Courses completed on the IDAE e-learning platform for central government staff		
1.	Introduction to the Plan for Energy Saving and Efficiency in Central Government Buildings	774
2.	Energy accounting	453
3.	Completion of preliminary energy evaluation questionnaires	332
4.	Management of energy-consuming facilities in buildings	269
5.	Energy-saving measures for building interior lighting	411
6.	Energy-saving measures for heating, DHW and solar thermal energy systems	216
7.	Hiring of energy service companies (ESCOs)	191
8.	How to save energy in the workplace	2 45 1
9.	Save energy with your household appliances.	541
10.	How to drive efficiently.	486
11.	Your home: Individual domestic heating and hot water systems.	281
12.	Residents' associations: Central heating and DHW systems	154
13.	Energy efficiency certification for existing buildings: Users	560
14.	Energy efficiency certification for existing buildings: Estate agents	201
15.	Course for users of the PIGEP online energy and asset management platform	544
Number of courses completed		7 86 4

Source: IDAE

From the launch of the e-learning platform for central government staff in April 2010, to December 2016, government staff completed a total of **7 864 courses**.

4.1.5. Availability of qualification, accreditation and certification schemes (Article 16)

As already described in section 4.1.3 above, adoption of Royal Decree 56/2016 on 12 February 2016 transposed into Spanish law the provisions of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, concerning energy audits, accreditation of service providers and energy auditors and promotion of energy supply efficiency.

The Royal Decree lays down the professional requirements for energy service providers and energy auditors.

In the former case, natural persons must hold a suitable technical qualification. Legal persons must have at least one member of staff with the necessary qualifications. In both cases, practitioners must take out professional indemnity insurance to cover activity-related risks and, in the case of installation or maintenance companies, these must be listed in the appropriate autonomous community register under the headings for the specialist areas in which the

company provides the energy service (heating/cooling systems, lighting, etc.).

For energy auditors, the Royal Decree also stipulates that practitioners must hold a suitable academic qualification.

It governs the creation of a register of energy service providers within the MINETAD. In accordance with Article 16(3) of Directive 2012/27/EU, the draft royal decree recognises the activity within Spanish territory of energy service providers legally established in any other Member State of the European Union. Likewise, energy auditors from other Member States may carry out their professional activity in Spain.

In relation to energy audits, it defines the area of application, the scope and the minimum criteria to be met, lays down an independent audit system and creates an energy audit register within the MINETAD. This register shall be used to record audits carried out in large enterprises with more than 250 employees and with an annual turnover in excess of EUR 50 million or with an annual balance sheet in excess of EUR 43 million. So far, around 15 476 audits have been listed for 2 659 companies.

4.1.6. Energy services (Article 18)

This section provides information on the measures adopted or planned to promote energy services.

A. Legislative measures to promote energy services

In Spain, the measures to stimulate the energy services market set out by Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 were aimed primarily at the public sector, which is also required to play an exemplary role in applying energy saving and efficiency measures and in promoting procurement of energy services. In this country, the private sector is considered too mature to adopt this business model, as over the last 20 years it has financed multiple projects to make savings in energy conversion processes, cogeneration and renewable energies.

Energy services companies are recognised under Spanish law by Royal Decree-Law 6/2010 of 9 April 2010 on measures to stimulate economic recovery and employment and are defined as follows: *'any natural or legal person with the capacity to provide energy services at a user's facilities or premises and that accepts a certain degree of financial risk in doing so. Payment for the services delivered is based (either wholly or in part) on the achievement of energy savings due to energy efficiency improvements and on the fulfilment of the other agreed performance criteria'*. This definition complies exactly with that given in Directive 2006/32/EC.

Alongside this legislation, the IDAE has sponsored working groups with various associations of energy service companies and air-conditioning, lighting and street lighting installers in order to analyse and discuss these services' entry in the market and mechanisms for facilitating it. At the same time, conferences and seminars have been held to promote energy service companies and a training plan, comprising courses offered by the EOI (*Escuela de Organización Industrial* [School of Industrial Organisation]), has been drawn up.

As previously mentioned, the measures to stimulate the energy services market have so far been aimed primarily at the public sector, as the private sector is considered too mature for their application. As a result of ongoing work since 2007, various agreement models have been drawn up that are compatible with the two types of procurement allowed for this activity under

the law on public procurement (*Ley de Contratos del Sector Público*), namely the combined supply and services agreement and the public-private partnership agreement.

The purpose of these models is to serve as a reference or starting point in negotiations between parties and to reflect the scope of the service and the commitments, rights and obligations assumed so that, from the moment they are created, these long-term agreements will cater for any unforeseen circumstances and contingencies.

In both cases, the agreement term is to be agreed for a specified period based on the time needed to amortise the investments made by the energy services company or the lines of financing provided, and the payment of services rendered is based (wholly or in part) on the energy savings obtained through the improvement in the building's energy efficiency.

These models differentiate between general consumption centres (primarily buildings) and municipal street lighting, the latter being a type of system that, when managed entirely through an energy services company, is easier to administer both in terms of renovation (as per the regulation on energy efficiency in street lighting, published in 2008) and of measuring results.

More recently, Law 8/2013 of 26 June 2013 on urban renovation, regeneration and renewal provides for participation by energy service companies in programmes to improve energy efficiency in buildings — enabling them to finance operations with savings amortised over time — and implementation of energy saving and efficiency measures.

The procurement models are available to the public on the IDAE website via the following links:

- Agreement model, experiences and building success stories.
<http://www.idae.es/index.php/id.662/re/menu.357/mod.pags/mem.detalle>
- Agreement model, experiences and street lighting success stories.
<http://www.idae.es/ixndex.php/id.644/re/menu.355/mod.pags/mem.detalle>

B. Economic measures to support the procurement of energy services

Since the approval of the 2008-2012 Energy Saving and Efficiency Action Plan, all lines of support for improvement of energy efficiency have included energy service companies as potential beneficiaries with the aim of encouraging this type of procurement. Examples include the following:

- BIOMCASA II, GEOTCASA, SOLCASA and GIT. These IDAE-managed programmes have a dual purpose: on one hand, to promote ESCOs and, on the other, to promote, by funding projects, efficient hot water, heating and cooling systems powered by biomass, solar power or geothermal energy. More information on the Fund is provided in section 4.2.2 of this Plan.
<http://www.idae.es/index.php/idpag.33/re/categoria.1024/re/menu.377/mod.pags/mem.detalle>
- The JESSICA Holding Fund and the FIDAE (*Fondo de Inversión en Diversificación y Ahorro de Energía* [Energy Saving and Diversification Investment Fund]), aimed at financing sustainable urban development projects that improve energy efficiency, use renewable energies and are implemented by energy service companies or other private enterprises. It was founded in 2011 through a financing agreement signed

between the European Investment Bank and the IDAE and was allocated a budget of EUR 123 million. Further information on the Fund is provided in section 3.2.3 of this Plan.

<http://www.idae.es/index.php/relicategoria.3957/id.833/reلمenu.408/mod.pags/mem.detalle>

- PAREER (*Programa de Ayudas para la Rehabilitación Energética de Edificios Existentes del sector Residencial* [Aid Programme to Improve the Energy Efficiency of Existing Residential Buildings:]) and PAREER-CRECE. The first was launched in late 2013 as a specific aid programme to improve the energy efficiency of existing buildings. The aim was to promote comprehensive measures to improve energy efficiency and use renewable energies in the stock of existing buildings. The second programme, launched in May 2015, widened the scope of the first and increased the total allocated budget for the two programmes to EUR 200 million. Both are reported on separately in this Plan, and both included energy service companies as possible beneficiaries.

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

C. Measures to promote energy services

As part of the measures taken to promote energy services, the IDAE has dedicated a section of its website to information on the following:

- Financial instruments, incentives, subsidies and loans to support projects undertaken by energy service companies:

<http://www.idae.es/index.php/idpag.33/relicategoria.1024/reلمenu.377/mod.pags/mem.detalle>

Links to the three national associations of energy service companies:

- AMI (*Asociación de Empresas de Mantenimiento Integral y Servicios Energéticos* [Association of Comprehensive Maintenance and Energy Service Companies]): <http://www.amiasociacion.es/>
- ANESE (*Asociación Nacional de Empresas de Servicios Energéticos* [National Association of Energy Service Companies]): <http://www.anese.es/>
- A3e (*Asociación de Empresas de Eficiencia Energética* [Association of Energy Efficiency Companies]): <http://www.asociacion3e.org/>
- Action plan for training energy service companies as part of the cooperation agreement between the IDAE and the EOI.

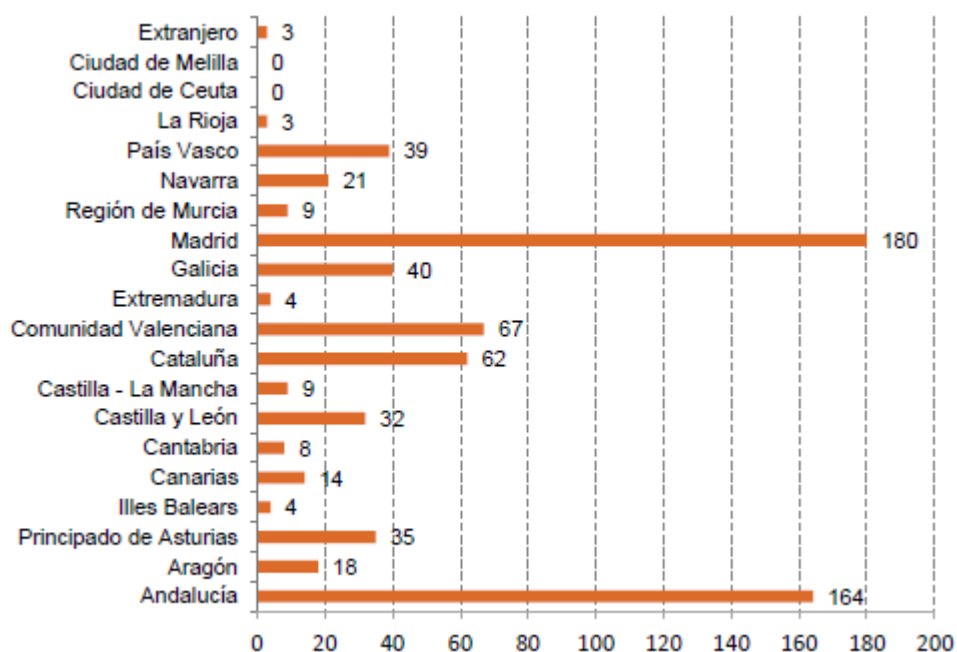
<http://www.eoi.es/portal/guest/inicio#5>

D. List of energy service suppliers

In order to increase awareness about energy service companies, the IDAE has created a

database of ESCOs based on the information they have submitted to their regional authorities. This information is sent to the MINETAD, in accordance with Royal Decree 56/2016 transposing into Spanish law Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, concerning energy audits, accreditation of service providers and energy auditors and promotion of energy supply efficiency.

Figure 4.1.6.1. No of energy service providers, by region



Source: IDAE

Extranjero	Overseas
Ciudad de Melilla	Melilla
Ciudad de Ceuta	Ceuta
La Rioja	Rioja
País Vasco	Basque Country
Navarra	Navarre
Región de Murcia	Murcia
Madrid	Madrid
Galicia	Galicia
Extremadura	Extremadura
Comunidad Valenciana	Valencia
Cataluña	Catalonia
Castilla – La Mancha	Castile-La Mancha
Castilla y León	Castile-Leon
Cantabria	Cantabria
Canarias	Canary Islands
Illes Balears	Balearic Islands
Principado de Asturias	Asturias
Aragón	Aragon
Andalucía	Andalusia

This list of energy service providers is available to the public via the following link:

<http://www.idae.es/index.php/relcategoria.3889/id.919/relmenu.366/mod.pags/mem.detalle>

Figure 4.1.6.1 shows a summary of the number of energy service providers by geographical region. Of the 712 suppliers included in the database, three are non-Spanish. Madrid and Andalucía account for almost half of the total number of companies.

4.1.7. Other energy efficiency measures of a horizontal nature (Articles 19 and 20)

This section on horizontal measures reviews other energy efficiency promotion measures referred to in Article 19 of Directive 2012/27/EU. Article 20, on the National Energy Efficiency Fund, has been covered in depth in other sections of this Plan, which describe the energy efficiency obligation scheme in Spain (Chapter 4.1.1, on horizontal measures for implementing Directive 2012/27/EU on energy efficiency).

Article 19 of the Directive states that Member States shall evaluate and, if necessary, take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency. It refers in particular to the potential barriers deriving from the legislation on property and leases in relation to the way incentives are split between the owner and the tenant of a building.

Owners of leased buildings are occasionally deterred from investing in energy efficiency improvements since the costs associated with the outlay must be assumed by the owner, who cannot transfer them to the tenant, even though it is the latter who will benefit from the energy savings deriving from the investments.

Although not directly related, but nevertheless with a view to eliminating the regulatory barriers that impede decisions to invest in energy saving and efficiency — in this case in time-share assets — Law 19/2009 of 23 November 2009 on measures to promote and expedite building rental and energy efficiency proceedings introduced several changes to the wording of Law 49/1960 of 21 July 1960 on co-ownership of buildings.

Article 17(3) of the Law states that the installation or removal of equipment or systems that improve the energy efficiency of a property shall require a vote in favour by three fifths of the owners who, in turn, must represent three fifths of the shares in the building. This new wording facilitates decision-making, as adoption of resolutions previously required a unanimous vote in favour.

This same article of the Directive also refers to legal and regulatory provisions and administrative practices regarding public procurement and annual budgeting and accounting, with a view to ensuring that public bodies are not deterred from making investments in improving energy efficiency or from using energy performance contracts and other third-party financing mechanisms on a long-term contractual basis.

As laid down in Article 19(2), with regard to the identification of such barriers and notification to the Commission, Spain has stressed its disagreement with the accounting treatment applicable to energy efficiency contracts entered into by the public sector.

The current accounting rules for energy performance contracts (EPCs) in the public sector make it obligatory to enter the entire investment in energy-efficiency improvements into the accounts as public expenditure, even where that investment is undertaken and financed, wholly or in part, by the private sector, except where the investment represents 50 % of the value of the asset after the action. This is currently acting as a significant brake on implementation of energy efficiency measures by the public sector and, therefore, it is impeding the development of the energy services market in countries which, like Spain, are subject to very strict fiscal controls.

The Eurostat Working Group is currently negotiating a working document that includes various alternatives that avoid these contracts being included in deficit and public debt. Under these alternatives, it would not be necessary to amend SEC2010 or the Eurostat Manual on the calculation of deficit and public debt, it being sufficient to revise the Interpretative Note

from Eurostat regarding the impact of EPCs on public accounts. However, the options examined thus far would not apply to certain projects (those involving action on non-removable assets) and, if they could be applied, they could result in significant changes in the management of these contracts, the outcomes of which are uncertain.

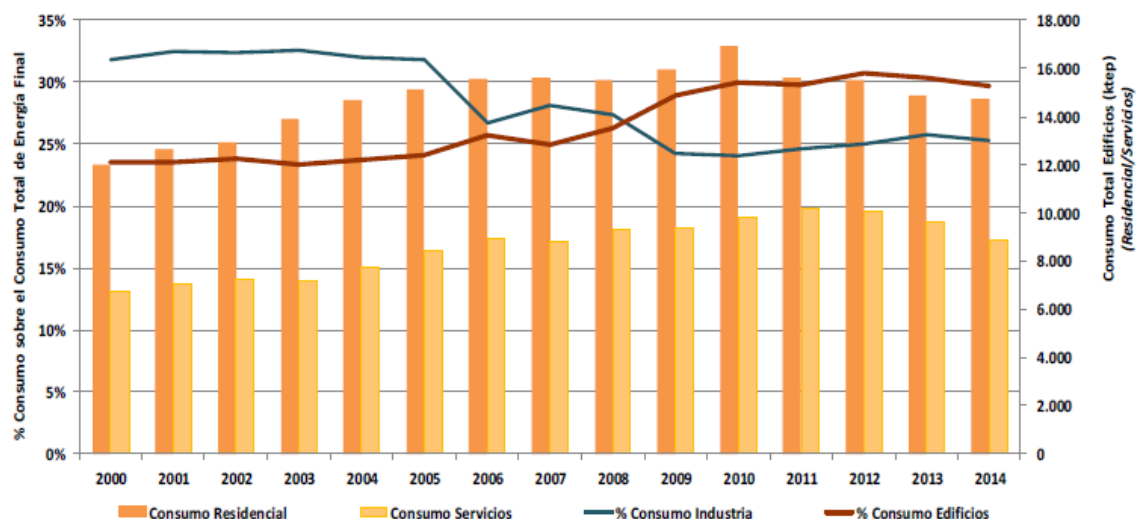
The most that Spain can aspire to under the new commitments set out by the European Commission in the proposed amendment to Directive 2012/27/EU on energy efficiency is directly conditioned by the degree of flexibility granted to Member States as regards compliance with those objectives. Spain has therefore requested an acceleration in the flexibilisation of European rules on national accounting applicable to the EPCs undertaken by the public sector, in the context of the Eurostat Working Group, and for representatives from the energy sector, both public and private, to be included to ensure that the proposed solutions are feasible in terms of the reality of these contracts.

The undertaking of new energy efficiency commitments is therefore subject to clarification of the accounting rules that will become applicable.

4.2. ENERGY EFFICIENCY IN BUILDINGS

The buildings sector in Spain accounts for a growing share of overall energy demand. Nevertheless, in recent years, buildings' energy consumption has gradually dropped, at a rate similar to neighbouring countries. In 2014, buildings' energy consumption represented 29.7 % of total final energy demand and 62.2 % of total electricity demand. These figures do not differ much from the EU average (38.5 % for total consumption and 58.8 % for electricity demand), although the figure for electricity consumption in Spain is higher.

Figure 4.2.1. Representativeness of the buildings sector in energy demand (2000-2014)



% Consumo sobre el Consumo Total de Energía Final	Consumption as a percentage of total final energy consumption
Consumo Residencial	Residential consumption
Consumo Servicios	Service sector consumption
% Consumo Industria	Consumption by industry (%)
% Consumo Edificios	Consumption by buildings (%)
Consumo Total Edificios (ktep) (Residencial/Servicios)	Total consumption by buildings (ktee) (Residential/Services)
18.000	18 000
16.000	16 000
14.000	14 000
12.000	12 000
10.000	10 000
8.000	8 000
6.000	6 000
4.000	4 000
2.000	2 000

Source: MINETAD/IDAE

Average per capita consumption by buildings in Spain stands at 0.50 toe/year, approximately 63 % of average EU Member State consumption. The difference can be explained in part by Spain's more favourable climate.

Below is a more detailed analysis of each of the subsectors making up the buildings sector.

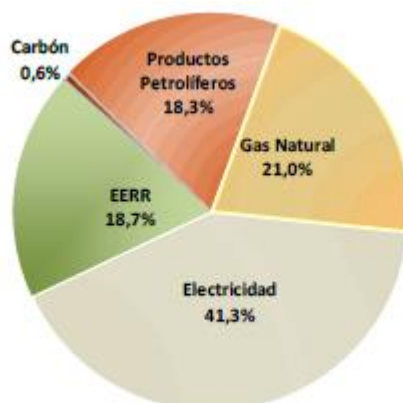
a) Residential sector

Demand in the residential sector in 2014 dropped by 1.2 %, to 14 709 ktoe, i.e. 18.5 % of the total final energy consumption. This decrease was driven by the contraction in demand for petroleum products (-2.5 %) and natural gas (-3.1 %), which cover 32.3 % of demand by Spanish households, and to a lesser extent by the drop in electricity consumption (-0.5 %), which represents 41.3 % of the sector's overall demand.

With regard to sources of energy, most energy demand in the residential sector (58.7 %) is met using both fossil fuels and renewable energy, although electricity has progressively gained ground to cover 41.3 % of demand. This increase has occurred at the expense of petroleum products.

The predominance of fuels reflects the significance that thermal uses, among them heating, have in this sector. This use represents over 40 % of total demand in Spanish households, primarily covered by fossil fuels and renewable energies and, marginally, by electricity, which meets less than 10 % of this demand.

Figure 4.2.2. Structure of household energy demand, by energy source (2014)



Source: MINETAD/IDAE

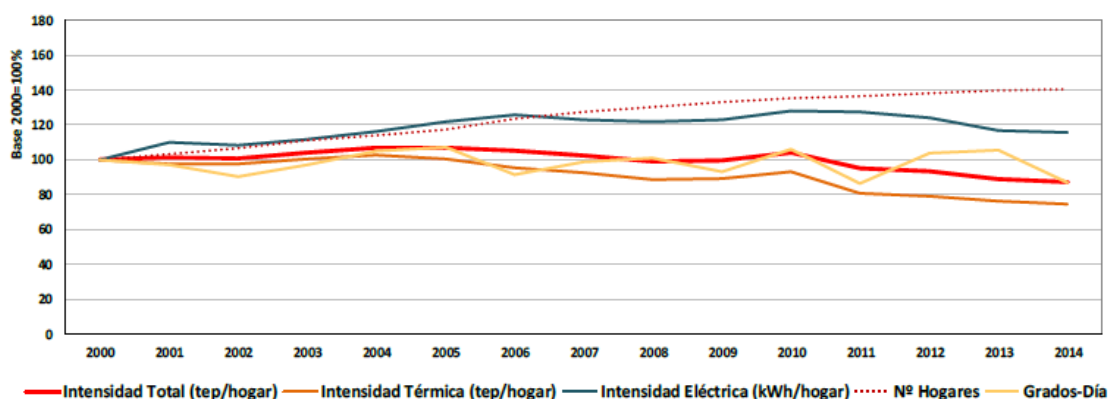
Carbón 0,6%	Coal 0.6 %
EERR 18,7%	Renewable energy 18.7 %
Electricidad 41,3%	Electricity 41.3 %
Gas Natural 21,0%	Natural gas 21.0 %
Productos Petrolíferos 18,3%	Petroleum products 18.3 %

With regard to the energy intensity indicator, in 2014 this fell by 1.9 %. Recent developments show an overlap of the effects of a certain degree of containment in household demand, caused by the current economic climate, and those connected to technological improvements in household appliances and heating systems.

This is compounded by the favourable impact of regulatory changes in the buildings sector entailing stricter energy efficiency requirements, as well as the stimulating effects of various measures and aid programmes intended to improve efficiency in the buildings sector.

Differentiating intensity by demand for electricity and thermal energy in households reveals a pronounced recent drop in the intensity of demand for electricity compared with that for thermal energy, with average annual decreases of 2.8 % and 1.4 %, respectively, since 2011.

Figure 4.2.3. Residential sector intensity indicators (2000-2014)

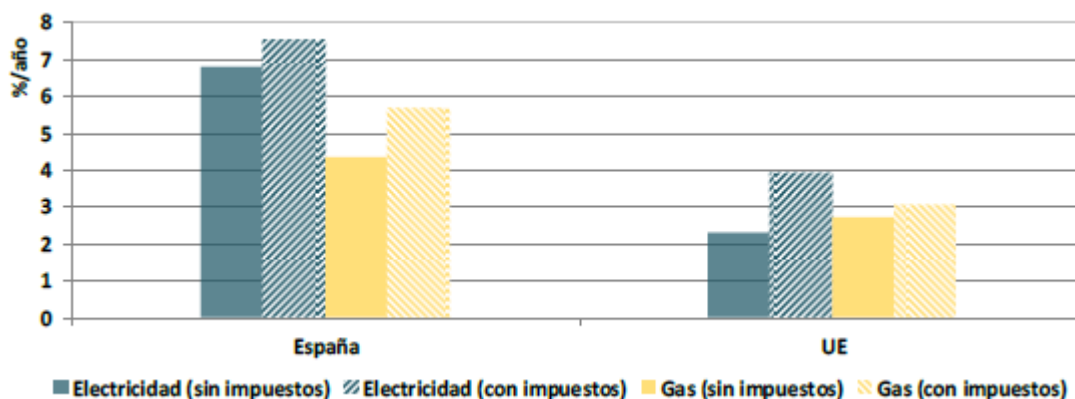


Source: INE/MINETAD/IDAE

Base 2000 = 100%	Baseline 2000 = 100 %
Intensidad Total (tep/hogar)	Total intensity (toe/household)
Intensidad Térmica (tep/hogar)	Thermal intensity (toe/household)
Intensidad Eléctrica (kWh/hogar)	Electricity intensity (kWh/household)
Nº Hogares	No households
Grados-Día	Degree-days

This difference is consistent with the growing improvements in consumption rates of new domestic appliances and primary use of fossil fuels to cover the demand for heating, as well as with the differential increase in the cost of electricity and gas for domestic customers. According to Eurostat, both energy prices have risen progressively since 2008, with electricity showing a particularly sharp increase, climbing at a rate of 7 % per year, above the EU average, resulting in moderation in the use of electrical goods.

Figure 4.2.4. Annual energy price variation in Spanish and EU households (2008-2014)



Note: Prices referring to the household average of 2 500-5 000 kWh/year (electricity) and 20-200 GJ/year (gas).

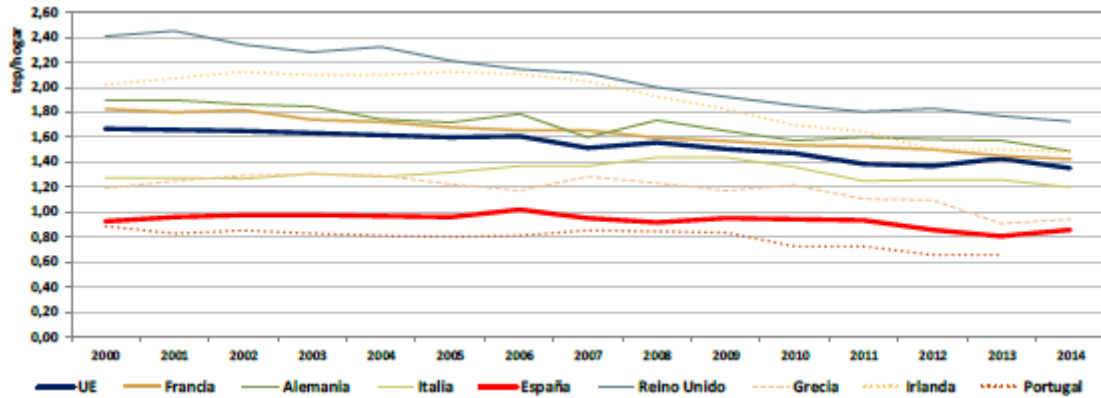
Source: Eurostat.

%/año	%/year
España	Spain
UE	EU
Electricidad (sin impuestos)	Electricity (without tax)
Electricidad (con impuestos)	Electricity (with tax)
Gas (sin impuestos)	Gas (without tax)
Gas (con impuestos)	Gas (with tax)

Finally, the figure below shows the changes in overall energy intensity in the residential sector in Spain and some EU countries. It includes a correction to take climate into account and to adjust

for the impact of variations between winters.

Figure 4.2.5. Residential sector energy intensity in Spain and the EU (2000-2014)



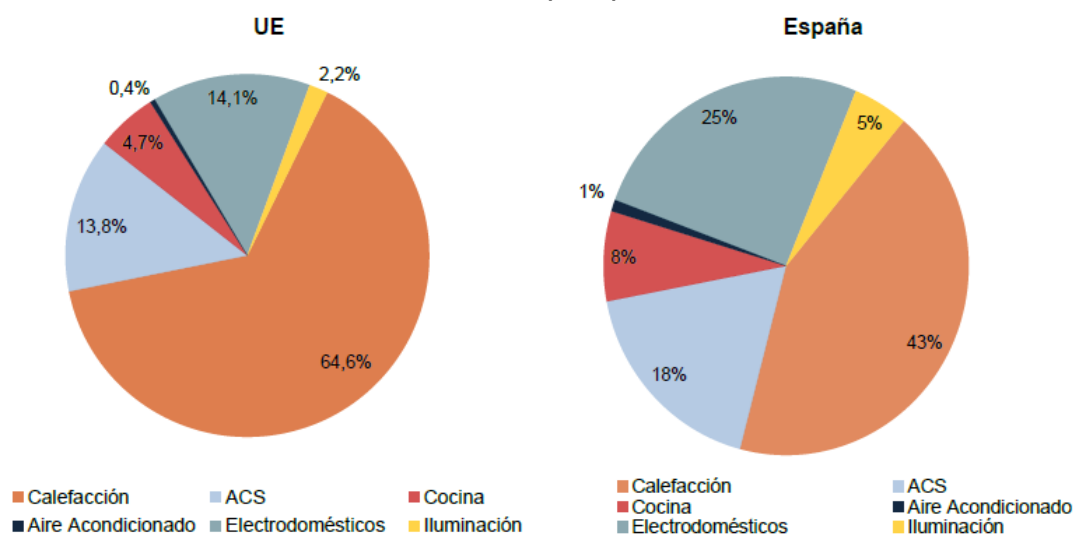
Note: Includes correction for climate.

Source: EC/IDAE/INE. Reference = EU-28

tep/hogar	toe/household
2,60	2.60
2,40	2.40
2,20	2.20
2,00	2.00
1,80	1.80
1,60	1.60
1,40	1.40
1,20	1.20
1,00	1.00
0,80	0.80
0,60	0.60
0,40	0.40
0,20	0.20
0,00	0.00
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Grecia	Greece
Irlanda	Ireland
Portugal	Portugal

Comparative analysis of this representative group of countries reveals a difference of around 40 % between the national indicator and the European average (EU-28). The trend in this indicator in southern European countries such as Italy, Greece and Portugal appears to confirm the influence of climate. The warmer climate of these countries explains the lower use of heating, demand for which varies from 43 % in Spain to 65 % for the EU overall. Consequently, the difference in heating's relative weight largely conditions residential sector energy intensity.

Figure 4.2.6. Structure of residential sector energy consumption, by use, in Spain and the EU (2014)



Note: Consumption by use has been modelled based on the SECH-SPAHOUSEC I study and on the manual for statistics on energy consumption in households (MESH).

Source: IDAE/EC

UE	EU
0,4%	0.4 %
4,7%	4.7 %
13,8%	13.8 %
64,6%	64.6 %
2,2%	2.2 %
14,1%	14.1 %
Calefacción	Heating
Aire Acondicionado	Air-conditioning
ACS	DHW
Electrodomésticos	Household appliances
Cocina	Cooking
Iluminación	Lighting
España	Spain
Calefacción	Heating
Cocina	Cooking
Electrodomésticos	Household appliances
ACS	DHW
Aire Acondicionado	Air-conditioning
Iluminación	Lighting

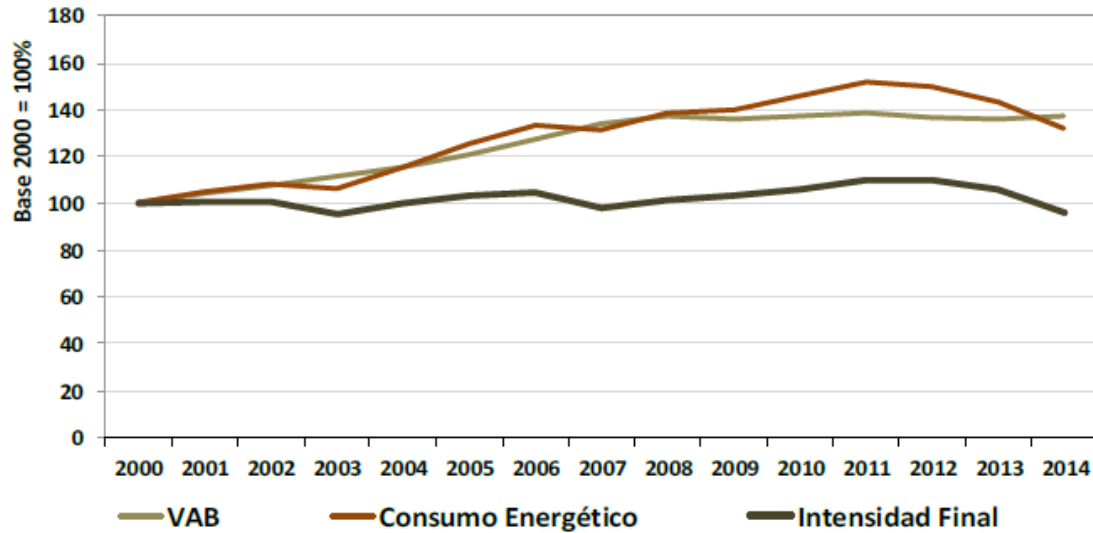
With regard to the rest of household uses, household electrical goods are significant, representing over one quarter of total consumption, the main appliance used being refrigerators. At 1 %, air-conditioning accounts for the lowest proportion of total consumption. As it is a seasonal service, demand is concentrated into a short period of time, which may result in peaks in demand.

It is likely that the combined effect of legislative measures applicable to the buildings sector and other initiatives aimed at both improving thermal-envelope energy efficiency in existing buildings and improving the efficiency of heating and lighting systems will consolidate the efficiency improvement in homes and residential buildings.

b) Service sector

The service sector, which covers among others offices, wholesale/retail, healthcare, education and accommodation/food, reduced its consumption in 2014 by 8 % to 8 845 ktoe. In contrast, the sector's gross value added (GVA) increased 1.4 %, mainly due to a slight recovery in the wholesale/retail and office sectors in 2014, where around 70 % of the sector's entire productivity is concentrated. The combined trend of these economic and energy parameters brought about an improvement in 2014 in the service sector's energy intensity, which fell by 9.3 %.

Figure 4.2.7. Service sector energy intensity indicators (2000-2014)



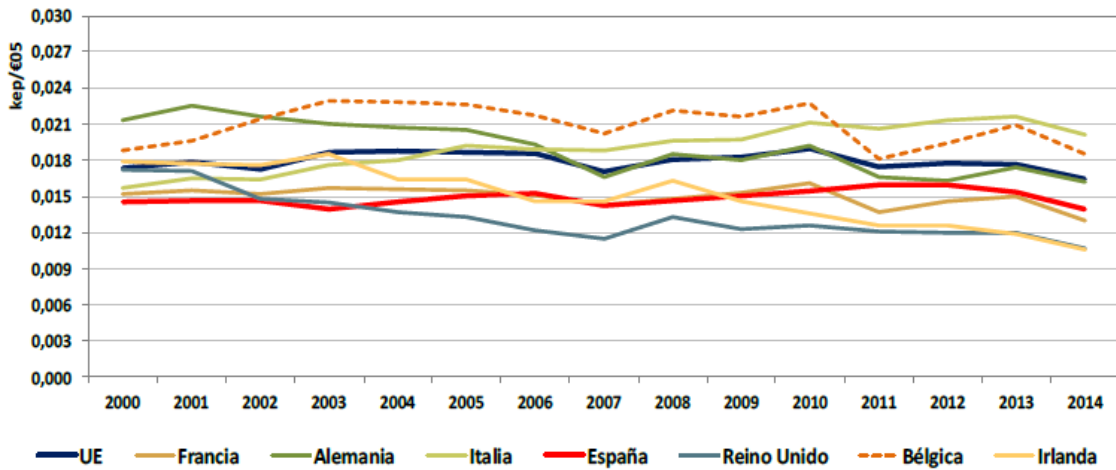
Note: Other services include those related to recreational activities and personal, social and community services

Source: INE/MINETAD/IDAE

Base 2000 = 100%	Baseline 2000 = 100 %
VAB	GVA
Consumo Energético	Energy consumption
Intensidad Final	Final intensity

Comparative analysis of energy intensity trends at EU level reveals that Spain's indicator is below that of the European average, although both follow a similar pattern. This indicator has shown a steady downward trend in Spain since 2011.

Figure 4.2.8. Service sector energy intensity in Spain and the EU (2000-2014)

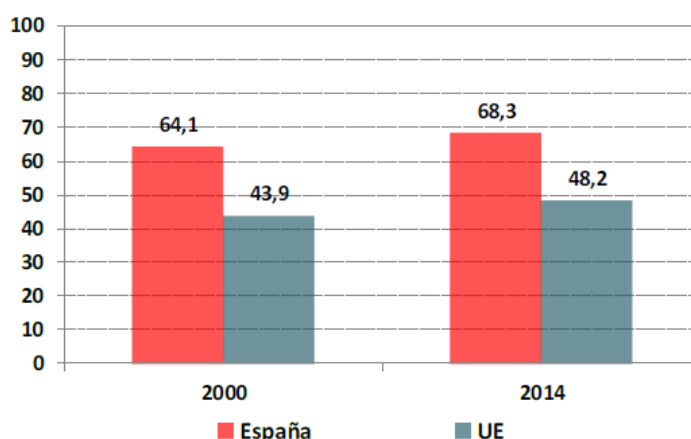


Source: EC/IDAE

kep/€05	kgoe/€05
0,030	0.030
0,027	0.027
0,024	0.024
0,021	0.021
0,018	0.018
0,015	0.015
0,012	0.012
0,009	0.009
0,006	0.006
0,003	0.003
0,00	0.00
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Bélgica	Belgium
Irlanda	Ireland

This trend in intensity is largely due to the structure of energy demand, in which electricity covers a high proportion of the sector's needs. Electricity accounts for over two thirds of total demand, about twenty percentage points above the European average.

Figure 4.2.9. Representativeness of service sector electricity consumption in Spain and the EU



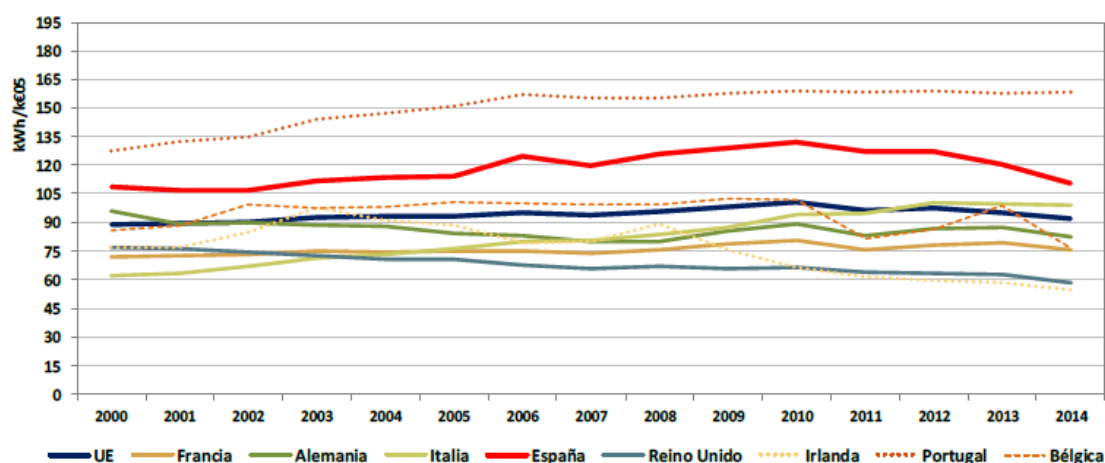
Source: EC/IDAE

64,1	64,1
43,9	43,9
68,3	68,3
48,2	48,2
España	Spain
UE	EU

The high level of electricity consumption is due to the type of energy uses and segments that make up the service sector. Specifically, the needs of the office and wholesale/retail segments with respect to lighting, heating and air-conditioning, office equipment, information and communication technologies, etc. largely explain the electricity demand associated with this sector. The lower energy consumption observed in central and northern European countries is largely due to greater use of cogeneration and district networks to cover their energy demands.

Comparative analysis of electricity intensity trends in the service sector in Spain and the EU shows a progressive increase starting in 2000 as a result of the significant growth in electricity demand. However, recent years have seen a change in this tendency, possibly associated with the rise in electricity prices. In 2014, electricity intensity improved by 8.2 % — below the figure for overall intensity — which is explained by the smaller drop in electricity consumption (-7 %) than in total consumption (-8 %).

Figure 4.2.10. Service sector electricity intensity in Spain and the EU (2000-2014)



Source: EC/IDAE

kWh/k€05	kWh/k€05
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UE Francia Alemania Italia España Reino Unido Irlanda Portugal Bélgica	EU France Germany Italy Spain United Kingdom Ireland Portugal Belgium
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Numerous measures have been launched to reduce energy intensity in this sector, many of which form part of the different energy saving and efficiency action plans. The latest 2014-2020 Action Plan, in accordance with Article 5 of Directive 2012/27/EU on energy efficiency, sets out various measures aimed at improving energy efficiency in Spain's public buildings (reported on in the corresponding chapter of the present Plan).

In addition, the adoption of Law 15/2014 of 16 September 2014 on the rationalisation of the public sector and other administrative reform measures represents an added stimulus for energy efficiency in the service sector, as it introduces a series of energy efficiency requirements applicable to procurement of goods, services and buildings by central government.

The hope is that this will all contribute towards moderating the trend in overall and electricity intensity in the service sector in the medium to long term.

4.2.1. Building renovation strategy (Article 4)

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: '*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.*' That strategy should contain the following:

- (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.'*

In 2014, Spain submitted the ERESEE 2014 (*Estrategia a largo plazo para la Rehabilitación Energética en el sector de la edificación en España, en desarrollo del artículo 4 de la Directiva 2012/27/UE* [Long-term strategy for improving energy efficiency in Spain's buildings sector, pursuant to Article 4 of Directive 2012/27/EU]).

The DG Energy of the European Commission asked the Joint Research Centre (JRC) for an

assessment of national strategies. This was published in 2016¹² and, according to the report, the ERESEE 2014 was not only one of the ten strategies deemed 'fully compliant' with Article 4 requirements, but it was also rated highest among the thirty-one national strategies submitted — scoring 20 out of a maximum of 25 points. Consequently, from a technical and methodological perspective, it does not seem necessary to revise the 2014 strategy at this time since it was evaluated as being completely in accordance with Directive requirements.

The ERESEE 2014 was drawn up from the segmentation of Spain's housing stock (based on data from the 2011 population and housing census) and from the segmentation of energy consumption in the residential sector (based partly on general information from IDAE's 2010 'Annual report on energy consumption: Final energy consumption: residential/housing sector' and partly on the SECH-SPAHOUSEC project published in 2011, but including 2010 data as well). Given that the population and housing census is carried out in Spain once every ten years (the next one is planned for 2021) and that no updated results are available on the SECH-SPAHOUSEC project, no new statistical information is available at the beginning of 2017 with which to update the segmentation of the housing stock or the segmentation of energy consumption in the residential sector.

Moreover, statistical data on national energy consumption trends in the residential sector indicate a significant reduction in use during the last period for which data are available. In light of this, it does not seem necessary to reconsider the objectives nor the strategical scenarios proposed by the ERESEE in 2014.

Considering the absence of new and relevant statistical information, a 2017 update of the ERESEE is mainly suggested to analyse the impact of the measures put into place to stimulate energy efficiency in Spain's buildings sector — not only those measures approved before 2014 which are still in effect, but also those implemented between 2014 and 2017 — and, particularly, to follow up on specific measures that the ERESEE considered necessary in 2014 to promote its strategic scenarios by examining their development and analysing the need for new measures, greater stimulus or realignment of current ones. Therefore, the update being considered at this time is not quantitative but qualitative, focusing on analysing public policies and instruments put in place in Spain to fulfil the main objectives of the strategy, which are none other than the promotion of energy efficiency in the current building stock and of investment in building renovation to improve building quality.

The updated ERESEE 2014 will be submitted separately as an annex to the present 2017-2020 National Energy Efficiency Action Plan.

However, once the new SPAHOUSEC project findings on consumption in the residential sector are available — expected by the end of 2017 — a quantitative update of the strategy will be considered to incorporate this data.

4.2.2. Other energy efficiency measures in the buildings sector

This section covers the legislative and economic measures that will contribute to fulfilment of the target set in Article 7 within the energy efficiency obligation scheme applicable to the buildings sector.

¹² 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>

Legislative measures

The measures aimed at improving the energy efficiency of buildings fall under the provisions of Directive 2010/31/EC of 19 May 2010 of the European Parliament and of the Council on the energy performance of buildings, which lays down the minimum energy efficiency requirements to be fulfilled by both new and existing buildings under development, the procedures for certifying their energy performance and conducting periodic energy efficiency audits, and the minimum requirements applicable to the construction of nearly zero-energy buildings. This Directive has been transposed into Spanish law by the following Royal Decrees:

- **Royal Decree 314/2006** of 17 March 2006 adopting the **CTE** (*Código Técnico de la Edificación* [Spanish Building Code]) is the regulatory framework that establishes the basic safety and habitability requirements that buildings must fulfil pursuant to Law 38/1999 of 5 November 1999. The CTE is comprised of a series of core documents that stipulate the basic limits and requirements on structural safety, fire safety, usage safety, health, noise protection and energy saving. Regarding the core document on energy saving (*Documento Básico de Ahorro de Energía*, DB-HE), **Order FOM/1635/2013** of 10 September 2013, which has been applicable to all planning applications made since March 2014, raised the level of the minimum energy-efficiency requirements for new builds and for extension and renovation of existing buildings.

The DB-HE in turn is comprised of six documents; the first four focus on energy efficiency and the last two on the incorporation of solar and other renewable energies in buildings. Those on energy efficiency are as follows:

- **Document DB HE0 — Limitation on energy consumption.** This document limits non-renewable primary energy consumption in new buildings or in existing buildings being extended for private residential use. In the case of other-use buildings, the limitation is based on the energy rating (using the primary energy consumption indicator), which must achieve an efficiency rating of Class B or higher.
- **Document DB HE1 — Limitation on energy demand.** This document tightens the previous CTE's insulation requirements for facades, roofs and voids and lays down criteria for work performed on existing buildings.
- **Document DB HE2 — Heating system output.** The basic HE 2 requirement is laid out in the RITE (*Reglamento de Instalaciones Térmicas de los Edificios* [Regulation on Building Heating Systems]) currently in force.
- **Document DB HE3 — Energy efficiency of lighting systems.** This document requires lighting systems to meet a certain energy-efficiency rating depending on their use. It also introduces obligations related to the regulation and control of lighting and, in particular, to the use of natural light in areas on the building's perimeter. The energy efficiency of a lighting system in a given area is determined using the system's energy efficiency value. Installed electrical power used for lighting is also limited.

This regulation can be found at the following link:

<http://www.idae.es/index.php/id.45/re/menu.348/mod.pags/mem.detalle>

Under Directive 2010/31/EU, Member States must ensure that by 31 December 2020 all new buildings meet the nearly zero-energy building criteria. Likewise, by the end of 2018 all new buildings that are occupied and are the property of public authorities must qualify as **nearly zero-energy buildings**. The update to the core energy saving

document, (DB-HE) and the requirements laid down in it constitute the first step towards the goal of achieving buildings of this type.

- **Royal Decree 1027/2007** of 20 July 2007 approving the **regulation on building heating systems** (amended by **Royal Decree 238/2013** of 5 April 2013 amending certain articles and technical instructions of the above regulation) regulates the minimum output requirements applicable to heating, cooling, ventilation and domestic hot water systems and periodic energy efficiency audits, as well as the design, size, assembly and maintenance of such systems. This can be found at the following link:

<http://www.minetur.gob.es/energia/desarrollo/EficienciaEnergetica/RITE/Paginas/InstalacionesTermicas.aspx>

- **Royal Decree 235/2013** of 5 April 2013 adopting the **basic procedure for building energy-efficiency certification** lays down the obligation to provide the buyers or users of buildings with an energy efficiency certificate that must include objective information on the energy efficiency of the building and reference values, such as minimum energy-efficiency requirements, so that the owners or tenants of the building, or a unit of it, can compare and evaluate its energy efficiency.

It also establishes the basic procedure to be followed in calculating the energy efficiency rating, taking into consideration those factors that have the most influence on energy consumption, as well as the technical and administrative conditions relating to building energy-efficiency certification.

The competent bodies of Spain's autonomous communities must create a statistical inventory of measures related to the certificates registered by them, which will serve as a crucial mechanism for planning measures to improve the energy efficiency of the existing stock of buildings and for monitoring compliance with the regulation.

In addition, software with which to calculate the energy rating of new and existing buildings has been made available to the public (HULC for new buildings, CE3 and CE3X for existing buildings).

This regulation can be found at the following link:

<http://www.minetad.gob.es/ENERGIA/DESARROLLO/EFICIENCIAENERGETICA/CERTIFICACIONENERGETICA/Paginas/certificacion.aspx>

- **Law 8/2013 of 26 June 2013 on urban renovation, regeneration and renewal**, subsequently amended by **Royal Legislative Decree 7/2015** of 30 October 2015 adopting the **consolidated text of the law on land use and urban renewal**, which includes the obligation for buildings to have an evaluation report consisting of three documents, one of which must be the building's energy certificate. This obligation applies to residential buildings which are near 50 years old and buildings whose owners intend to apply for public aid. Therefore, and as a result of this legislation, a significant portion of the existing building stock will be required to obtain energy certification between 2014 and 2020, which will require some of those buildings to implement the energy-efficiency improvement measures recommended in the energy certificate.

Economic support measures

In addition to the foregoing legislative measures, also of note are the **economic support**

measures implemented during the 2014-2017 period in the buildings sector (some of these measures were explained in more detail in section 3.2.3 above 'Results up to 2015'):

- **BIOMCASA II, GEOTCASA, SOLCASA and GIT.** These programmes, managed by the IDAE, have a dual purpose; on the one hand, to promote energy service companies and, on the other, to encourage — via project financing — efficient hot water, heating and cooling systems powered by biomass, solar or geothermal energy.
- The **JESSICA-FIDAE Fund**, allocated a budget of EUR 123 million and promoted by the IDAE, has financed urban energy-efficiency and renewable energy use projects, some of them in buildings. Further information on the Fund is provided in section 3.2.3 of this Plan.
- The **PIMA Sol plan**, allocated a budget of EUR 5.21 million and promoted by the Ministry of Agriculture and Fisheries, Food and the Environment, finances energy-efficiency improvements in hotels. More information on this plan is also provided in section 3.2.3.
- **State Plan to promote housing rental, building refurbishment and urban regeneration and renewal, 2013-2016 (Royal Decree 233/2013)**, drawn up by the Ministry of Public Works, aimed at improving the energy efficiency of residential buildings. It includes a programme to encourage renovation of residential buildings aimed at improving their energy efficiency. While the plan was in force, measures eligible for subsidy included improving buildings' thermal envelope to reduce energy demand for heating and cooling, installing heating, cooling, domestic hot water and ventilation systems and installing shared building facilities such as lifts and lighting. To qualify for subsidies, the building's total annual energy demand in terms of heating and cooling had to be reduced by at least 30 % compared to the levels before implementation of the measures, as demonstrated by the energy certificate. This plan has been extended to the 2017 financial year.
 - **Aid Programme to Improve the Energy Efficiency of Existing Buildings (PAREER-CRECE Programme).** As the PAREER, this programme was initially allocated a budget of EUR 125 million and aimed to encourage and promote the implementation of comprehensive measures favouring energy savings, energy-efficiency improvements and the use of renewable energies in existing residential buildings (houses and hotels). The former Ministry of Industry, Energy and Tourism (currently, the Ministry of Energy, Tourism and Digital Agenda) implemented this programme via the IDAE in September 2013.

After more than a year had passed, and based on the outcomes produced, it was deemed appropriate to expand the PAREER's scope to include the largest possible number of Spain's existing buildings, in accordance with the objectives of Directive 2012/27/EU, by extending its validity period and making certain changes that would facilitate its management and widen its reach.

Within this context, the CRECE (*Plan de Medidas para el Crecimiento, la Competitividad y la Eficiencia* [Plan of Measures to Drive Growth, Competitiveness and Efficiency]), approved by the Council of Ministers on 6 June 2014, included measures, among others, for energy reforms in the existing building stock. As part of this plan, Law 36/2014 of 26 December 2014 on the 2015 General State Budget included an allocation of EUR 75 million to consolidate and strengthen the measures set out in the PAREER and broaden its scope.

Consequently, the name of the programme was changed to PAREER-CRECE and the comprehensive measures favouring energy savings, energy-efficiency improvements, reductions in CO₂ emissions and use of renewable energies were extended to existing buildings of all kinds (residential, government, commercial, health, education, etc.), with the express exception of new builds. Aid awarded under

this programme could be co-financed by the European Regional Development Fund (ERDF) under the 2014-2020 Operational Programme for Sustainable Growth.

These measures fall into one or more of the following categories:

1. Improvement of the energy efficiency of the thermal envelope.
2. Improvement of the energy efficiency of heating and lighting systems.
3. Replacement of conventional energy with biomass in heating systems.
4. Replacement of conventional energy with geothermal energy in heating systems.

The measures receiving support, selected on the basis of compliance with the criteria, must improve the overall energy rating of the building by at least one letter, as measured on the carbon dioxide emissions scale (kg CO₂/m² per year), when compared with the building's initial energy rating. That improvement in the building's energy rating may be achieved by adopting a single measure or a combination of several measures.

The aid consisted of a monetary grant without consideration based on the eligible cost of the measure. This aid could be increased by additional aid, dependent on fulfilment of the three criteria below, up to the maximum permitted amount.

- a. Social criterion: Measures implemented in buildings designated by the competent body in the corresponding autonomous community as publicly developed or social housing under Spain's special scheme, or measures implemented in residential buildings located in urban regeneration and renewal areas in accordance with the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal.
- b. Energy efficiency: Measures that either raise the building's energy rating to energy class A or B on the CO₂ scale, or that achieve a two-letter increase in the building's initial energy rating.
- c. Integrated measures: Actions that simultaneously combine two or more types of measure.

As a supplement, a reimbursable loan could be requested for up to 90 % of the eligible cost of what was not covered by the direct aid.

The following types of beneficiaries were eligible for this aid:

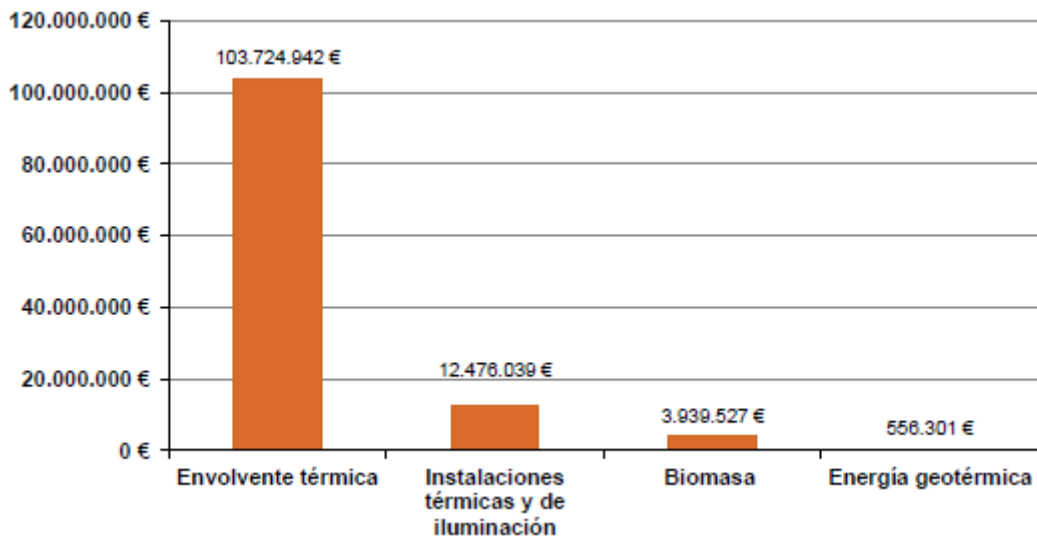
- a. Owners of existing buildings intended for any use, who are either natural persons or private or public legal persons.
- b. Owners' associations or groups of owners' associations of residential buildings held in co-ownership.
- c. Owners who, as a group, are building owners but do not hold the status of co-owners.
- d. Companies operating, renting or holding concessions on buildings.
- e. Energy service companies.

The programme ended on 5 May 2016 when aid applications exceeded the EUR 200 million budget allocated to it by 35 %. By 24 March 2017, the PAREER-CRECE had received 2 488 applications, representing EUR 269 million in requested aid and exceeding the projected budget by 35 %. To date, 1 010 applications have been approved, equivalent to EUR 120 696 809 in aid. As 241 applications have yet to be reviewed, as at 24 March 2017 the results of the programme, which is undergoing

evaluation, remain provisional.¹³ The 1 010 applications approved to date will improve energy efficiency in 32 798 homes, in 4 031 rooms in 28 hotels, and over a net floor area of 3 082 310 m².

Average investment per application submitted stands at EUR 200 000 and average aid per application at EUR 120 000. Regarding the type of aid awarded, 48 % corresponds to direct aid and the remaining 52 % to reimbursable loans. With respect to the types of measures implemented, of the four included in the programme, the measure to improve buildings' thermal envelopes has received the most economic assistance, accounting for 86 % of the aid. This is followed by the measure to improve heating and lighting systems (14 %), the measure to replace fossil fuels with biomass (3 %) and, lastly, the measure to replace conventional heating systems with geothermal energy (1 %). The following figure shows the amount of aid granted to each type of measure:

Figure 4.2.2.1. Aid granted per type of measure under PAREER-CRECE



Note: Provisional data

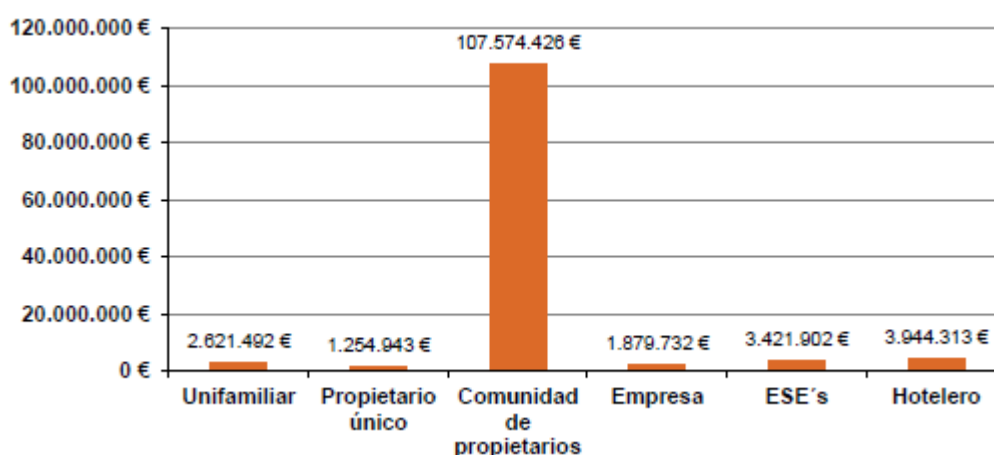
Source: IDAE

120.000.000 €	€120 000 000
100.000.000 €	€100 000 000
80.000.000 €	€80 000 000
60.000.000 €	€60 000 000
40.000.000 €	€40 000 000
20.000.000 €	€20 000 000
103.724.942€	€103 724 942
Envolverte térmica	Thermal envelope
12.476.039 €	€12 476 039
Instalaciones térmicas y de iluminación	Heating and lighting systems
3.939.527 €	€3 939 527
Biomasa	Biomass
556.301 €	€556 301
Energía geotérmica	Geothermal energy

Regarding the types of beneficiaries receiving aid, residents' associations received the most (89.1 % of the aid), followed by hotels (3.3 %) and energy service companies (2.8 %).

¹³Currently, 436 applications are under review and are pending an acceptance or rejection decision from the programme manager.

Figure 4.2.2.2. Aid granted per type of beneficiary under PAREER-CRECE



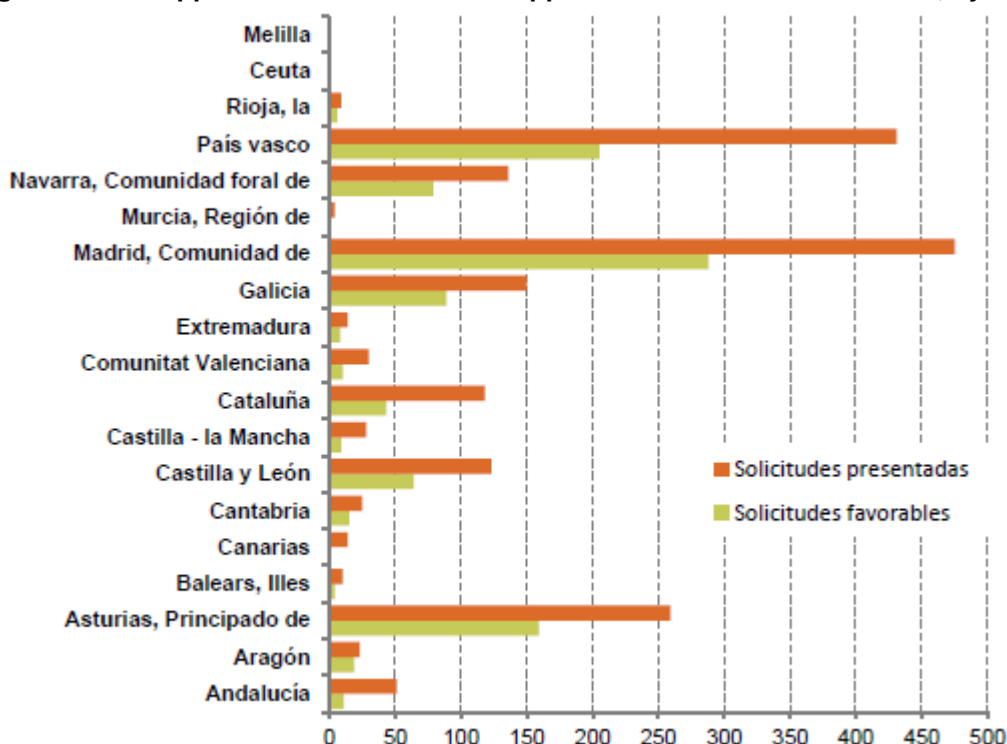
Note: Provisional data

Source: IDAE

120.000.000 €	€120 000 000
100.000.000 €	€100 000 000
80.000.000 €	€80 000 000
60.000.000 €	€60 000 000
40.000.000 €	€40 000 000
20.000.000 €	€20 000 000
2.621.492 €	€2 621 492
Unifamiliar	Single-family house
1.254.943 €	€1 254 943
Propietario único	Sole owner
107.574.426 €	€107 574 426
Comunidad de propietarios	Owners' association
1.879.732 €	€1 879 732
Empresa	Enterprise
3.421.902 €	€3 421 902
ESE's	ESCO
3.944.313 €	€3 944 313
Hotelero	Hotel

Regarding the ratio, by autonomous community, of applications submitted (not including the ones rejected) to applications approved, Madrid, the Basque Country and Asturias stand out. As these data are provisional, the number of applications approved is expected to increase per autonomous community (AC) by the end of the programme.

Figure 4.2.2.3. Applications submitted and approved under PAREER-CRECE, by AC



Note: Provisional data

Source: IDAE

Melilla	Melilla
Ceuta	Ceuta
Rioja, la	Rioja
País vasco	Basque Country
Navarra, Comunidad foral de	Navarre
Murcia, Región de	Murcia
Madrid, Comunidad de	Madrid
Galicia	Galicia
Extremadura	Extremadura
Comunitat Valenciana	Valencia
Cataluña	Catalonia
Castilla – La Mancha	Castile-La Mancha
Castilla y León	Castile-Leon
Cantabria	Cantabria
Canarias	Canary Islands
Balears, Illes	Balearic Islands
Asturias, Principado de	Asturias
Aragón	Aragon
Andalucía	Andalusia
Solicitudes presentadas	Applications submitted
Solicitudes favorables	Applications approved

To continue with the analysis of the 1 010 applications approved to date, the EUR 120 696 809 of aid assigned is distributed between basic aid (44 %), additional aid (4 %) and reimbursable loans (52 %). Of the additional aid given to approved applications, 52 % corresponds to the criterion for social measures, 43 % to comprehensive measures and the remaining 5 % to the energy efficiency measures which raised the energy efficiency class of renovated buildings by two letters, or to letters A or B. Lastly, the total approved aid to date amounts to more than EUR 200 million in eligible investments.

A new iteration of this programme — called PAREER-II — will be announced in the near future and will be allocated a budget of EUR 125 658 000, provided by the Energy Efficiency National Fund.

4.3. ENERGY EFFICIENCY IN PUBLIC BODIES

4.3.1. Central government buildings (Article 5)

Article 5(5) of Directive 2012/27/EU on energy efficiency (exemplary role of public bodies' buildings) lays down that by 31 December 2013 Member States shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 m² and, as of 9 July 2015, over 250 m², including in the inventory information on the floor area and energy performance of each building and other relevant energy data.

The inventory of Spain's central government buildings was drawn up and published within the stated deadlines and is available on the MINETAD website at the following link:

<http://www.minetad.gob.es/energia/desarrollo/EficienciaEnergetica/directiva2012/Paginas/actuaciones-transposicion.aspx>

Image 4.3.1.1. Inventory of central government buildings



Source: MINETAD

	[Illegible text]
Energía y desarrollo sostenible	Energy and sustainable development
Energía y Medioambiente	Energy and the environment
Energía e I+D+I	Energy and R&D and Innovation

Energías Renovables	Renewables
Eficiencia Energética	Energy efficiency
Certificación de eficiencia energética de los edificios	Energy efficiency certification for buildings
Reglamento Instalaciones Térmicas en los Edificios	Regulation on building heating systems
Directiva 2012/27/UE del Parlamento Europeo y del Consejo	Directive 2012/27/EU of the European Parliament and of the Council
Normativa	Legislation
Actuaciones de transposición	Measures for transposition
Compartir	Share
Eficiencia Energética	Energy efficiency
Directiva 2012/27/UE del Parlamento Europeo y del Consejo: Actuaciones de transposición	Directive 2012/27/EU of the European Parliament and of the Council: Measures for transposition
Inventario de Edificios de la Administración General del Estado	Inventory of central government buildings
Inventario energético de los edificios de la Administración General del Estado [PDF][451,51 KB]	Inventario energético de los edificios de la Administración General del Estado [PDF][451.51 KB]
Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente (MAPAMA)	Ministry of Agriculture and Fisheries, Food and the Environment (MAPAMA)
20161215_01-Inventario Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente [PDF][51,66KB]	20161215_01-Inventario Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente [PDF][51.66 KB]
Ministerio de Asuntos Exteriores y Cooperación (MAEC)	Ministry of Foreign Affairs and Cooperation (MAEC)
20161215_02_Inventario Ministerio de Asuntos Exteriores y Cooperación [PDF][40,24 KB]	20161215_02_Inventario Ministerio de Asuntos Exteriores y Cooperación [PDF][40.24 KB]
Ministerio de Economía, Industria y Competitividad (MINECO)	Ministry of Economy, Industry and Competitiveness (MINECO)
20161215_03_Inventario Ministerio de Economía, Industria y Competitividad [PDF][58,3 KB]	20161215_03_Inventario Ministerio de Economía, Industria y Competitividad [PDF][58.3 KB]
20161215_03_1_Inventario Consejo Superior de Investigaciones Científicas [PDF][60,21 KB]	20161215_03_1_Inventario Consejo Superior de Investigaciones Científicas [PDF][60.21 KB]

A. Criteria and scope of the inventory of buildings

The inventory has been drawn up in accordance with the following criteria:

- As per the definition given in Article 2(9) of the EED, 'central government' is considered to mean all public bodies indicated as forming part of the general state administration by Law 40/2015 of 1 October 2015 on the legal framework governing the public sector.
- The inventory solely covers heated and/or cooled buildings with a total useful floor area of over 250 m².

- The buildings included in this inventory are property of the central government and are occupied as at the date of compilation of the inventory.
- In accordance with the requirement of Article 5(2) of the EED, the inventory does not include buildings officially listed as protected under the planning rules of the relevant local authorities, of the competent bodies responsible for the autonomous community's architectural and historical heritage or of the central government. Notwithstanding the above, the protected buildings not included in this inventory have been included in an energy inventory compiled according to the same methodology and may be subject to specific energy-efficiency improvement measures based on their architectural characteristics.
- In accordance with Article 5(2) of the Directive, this inventory also excludes, 'buildings owned by the armed forces or central government and serving national defence purposes, apart from single living quarters or office buildings for the armed forces and other staff employed by national defence authorities'. Notwithstanding the above, the Ministry of Defence has developed a proprietary property and energy management system, called SINFRADEF, which contains information on the consumption and energy efficiency of all of its buildings. Thus, although information related to this ministry is not included in this inventory for security reasons, Ministry of Defence property is managed under a system with targets similar to those established in Article 5 of the Directive. For these purposes, Directorate-General for the Civil Guard buildings have been considered buildings serving national defence purposes and have not been included in the inventory. However, they have been included in an energy inventory compiled according to the same methodology and may be subject to specific energy efficiency improvement measures based on their architectural characteristics.
- Finally, the inventory does not include 'buildings used as places of worship and for religious activities', which are also excluded under Article 5(2) of the Directive (no buildings of this nature have been identified in the stock of public buildings).

B. Compilation of the inventory

Scheduling of the measures to compile the inventory and renovate the portfolio of buildings listed in it is coordinated jointly by the MINETAD and the Ministry of Finance and Public Administration, while implementation of the reforms necessary to achieve the target set by the Directive is the duty and responsibility of the ministries or bodies to which the affected buildings are assigned.

The inventory was compiled by the IDAE. To do this, it designed and developed an online platform, **SIGEE-AGE (Sistema Informático de Gestión Energética de Edificios de la Administración General del Estado [Energy Management System for Central Government Buildings])**, the main purpose of which is to centralise and process status and energy and asset data on buildings belonging to the central government and the public bodies reporting to it. This platform is available to registered users in charge of maintaining this inventory: <https://gestion.paee-age.es/>

Since 2013, all the ministries concerned have cooperated in the compilation of the inventory using the SIGEE-AGE software. The selection of buildings and the energy and asset data it contains were provided by the energy managers responsible for each ministry and building.

The SIGEE-AGE application allows the inventory to be constantly updated by registering or

deregistering buildings and their energy consumptions, which are provided by each building's energy manager.

The following image shows the building management module on the SIGEE-AGE platform:

Image 4.3.1.2. Online Energy Management System for Central Government Buildings (SIGEE-AGE). Management module.



Source: IDAE

<p>Sistema Informático de Gestión Energética e Edificios de la Administración General del Estado SIGEE AGE Bienvenido Oficina Técnica – 1 IDAE Edificios Organismos Mi Perfil Informes Buscador Gestión Formación Salir MASIG/Sede Provincial del Organismo Datos del Edificio Nombre: Sede Provincial del Organismo Dirección: Plaza Mayor 3 4 24003 LEÓN LEÓN Sup. Construida: 450,00 m² Compartido: SI Id. Interno: Responsable: Correo electrónico: Teléfono: Cargo: Miembro OT Calificación Energética Indicador Consumo B Indicador Emisiones A Código PAEE-AGE:</p>	<p>Energy Management System for Central Government Buildings SIGEE-AGE Welcome Technical office — 1 IDAE Buildings Bodies My profile Reports Search Management Training Logout MASIG/Provincial body headquarters Building Data Name: Provincial body headquarters Address: Plaza Mayor 34 24003 LEÓN LEÓN Gross floor area: 450.00 m² Shared: YES Internal ID: Person responsible: Email address: Telephone: Position: Technical office member Energy rating Consumption indicator B Emissions indicator A PAEE-AGE code:</p>
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Reparto de Superficies y Consumos del Edificio Nombre <i>Sede Provincial del Organismo</i> Oficinas centrales Ministerio/Organismo /AGE/MASIG /AGE/MINPRUEBAS/O_PRUEBAS_A Superficie Construida (m ²) 337,50 112,50 % de Reparto Superficie 75,00 25,00 % Consumo Electricidad 60,00 40,00 % Consumo Gasóleo 100,00 0,00 Menú de Gestión del Edificio Datos de Identificación Datos de Utilización Edificio Compartido Renovación del Edificio kWh Datos de Consumo Certificación de Eficiencia Energética Panel de Gestión	Breakdown of Floor Area and Building Energy Consumption Name <i>Provincial body headquarters</i> Central offices Ministry/Body /AGE/MASIG /AGE/MINPRUEBAS/O_PRUEBAS_A Gross floor area (m ²) 337.50 112.50 % floor area 75.00 25.00 % electricity consumption 60.00 40.00 % diesel consumption 100.00 0.00 Building Management Menu Identification Data User data Shared Building Building renovation kWh Consumption Data Energy Efficiency Certification Management Dashboard
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C. Description of the inventory

The inventory contains the list of buildings selected according to the scope indicated in the Directive and grouped by ministry in the following order:

- Ministry of Agriculture and Fisheries, Food and the Environment (MAPAMA)
- Ministry of Foreign Affairs and Cooperation (MAEC)
- Ministry of Economy, Industry and Competitiveness (MINECO)
- Ministry of Education, Culture and Sport (MECD)
- Ministry of Employment and Social Security (MEYSS)
- Ministry of Energy, Tourism and Digital Agenda (MINETAD)
- Ministry of Public Works (MFOM)
- Ministry of Finance and Public Administration (MINHAFP)
- Ministry of the Interior (MIR)
- Ministry of Justice (MJUSTICIA)
- Ministry of the Office of the Prime Minister and for Regional Government (MPR)
- Ministry of Health, Social Services and Equality (MSSSI)

Regarding the data which appear for each building, information is included on energy consumption, indicating electricity, natural gas, diesel, propane, and total energy consumption

in the previous year (expressed in kWh), in addition to data on the building's energy rating and non-renewable primary energy consumption (the building's energy rating is expressed as a letter indicating its energy efficiency. The rating scale goes from the letters 'A' to 'G' — 'A' for most efficient and 'G' for least).

The **2016 inventory** contains a list of **2 142 buildings**, with a total floor area exceeding 10 million m², distributed among twelve ministries (excluding the Ministry of Defence due to the reasons set out above).

Table 4.3.1.1. Energy inventory of central government buildings (2016)

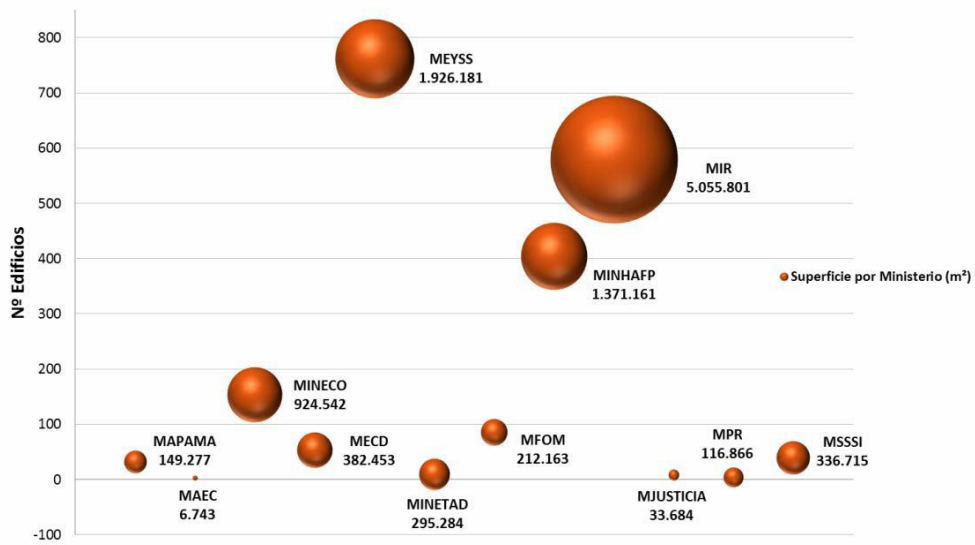
Ministry	No of buildings	Floor area (m ²)	Electricity (kWh), 2015	Natural gas (kWh), 2015	Diesel (kWh), 2015	Propane (kWh), 2015	Total consumption in 2015 (kWh)
MAPAMA	33	149 277	10 956 999	1 020 314	2 167 278	40 864	14 835 055
MAEC	3	6 743	238 278	36 303	180 859		455 440
MINECO	154	924 542	122 146 346	20 717 056	10 983 814	368 469	154 215 686
MECD	54	382 453	14 209 904	4 693 166	935 786		19 838 856
MEYSS	763	1 926 181	129 308 489	12 670 601	9 177 764	31 922	151 188 776
MINETAD	10	295 284	19 582 961	2 368 051	906 524		22 857 535
MFOM	86	212 163	6 929 231	271 931	1 725 966		8 927 127
MINHAFP	405	1 371 161	73 463 201	8 114 139	12 793 615	29 593	94 400 547
MIR	580	5 055 801	273 336 816	78 857 372	140 937 887	11 752 799	504 884 874
MJUSTICI	9	33 684	6 892 694	460 064	22 837		7 375 595
MPR	5	116 866	16 671 608	137 933	1 439 271		18 248 812
MSSSI	40	336 715	22 904 001	3 815 174	12 474 625	393 615	40 959 860
TOTAL	2 142	10 810 870	696 640 528	133 162 104	193 746 225	12 617 262	1 038 188 163

Note: Energy consumption corresponds to 2015.

Source: IDAE

The ministries with greatest floor area are the Ministry of the Interior with 5 million m² (47 %), followed by the Ministry of Employment and Social Security with 1.9 million m² (18 %) and the Ministry of Finance and Public Administration with 1.3 million m² (13 %). These three ministries account for more than 77 % of the central government's total floor area.

Figure 4.3.1.1. Floor area (m²) of central government buildings, by ministry (2015)

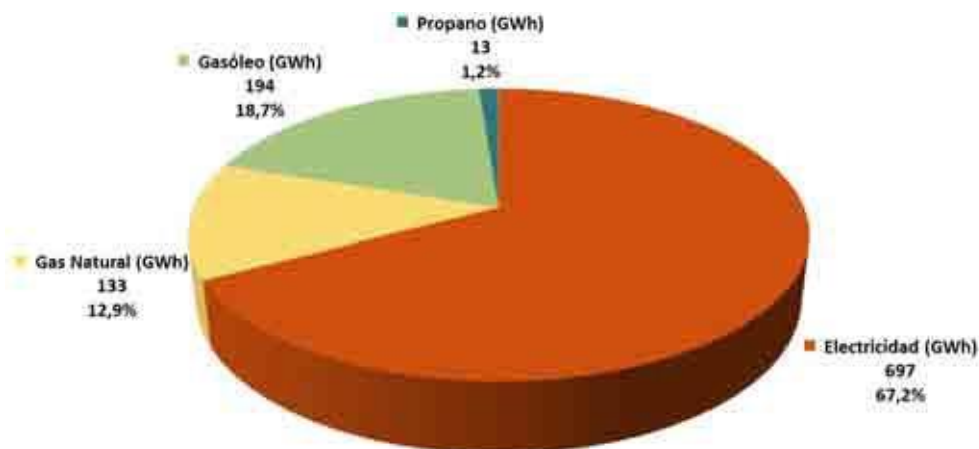


Source: IDAE

Nº Edificios	No of buildings
MEYSS 1.926.181	MEYSS 1 926 181
MIR 5.055.801	MIR 5 055 801
MINHAFP 1.371.161	MINHAFP 1 371 161
Superficie por Ministerio (m ²)	Floor area, by ministry (m ²)
MAPAMA 149.277	MAPAMA 149 277
MAEC 6.743	MAEC 6 743
MINECO 924.542	MINECO 924 542
MECD 382.453	MECD 382 453
MINETAD 295.284	MINETAD 295 284
MFOM 212.163	MFOM 212 163
MJUSTICIA 33.684	MJUSTICIA 33 684
MPR 116.866	MPR 116 866
MSSSI 336.715	MSSSI 336 715

Total energy consumption amounts to 1 038 GWh/year, consisting mostly of electricity at 697 GWh/year (67 %) and, to a lesser extent, heating oil at 194 GWh/year (19 %), natural gas at 133 GWh/year (13 %) and propane at 13.0 GWh/year (1 %). The average energy consumption ratio for the entire stock is 96 kWh/m² per year.

Figure 4.3.1.2. Central government building energy consumption, by source (2015).



Source: IDAE

Propano (GWh)	1,2%	Propane (GWh)	1.2 %
Gasóleo (GWh)	18,7%	Heating oil (GWh)	18.7 %
Gas Natural (GWh)	12,9%	Natural gas (GWh)	12.9 %
Electricidad (GWh)	67,2%	Electricity (GWh)	67.2 %

D. Renovation of 3 % of total floor area of central government buildings

Article 5 of Directive 2012/27/EU lays down that each Member State shall ensure that, based on this published inventory, 3 % of the total floor area of these buildings must be renovated each year to meet at least the minimum energy performance requirements that it has set in application of Article 4 of Directive 2010/31/EU

Article 5(4) of Directive 2012/27/EU likewise stipulates that Member States may count towards the annual renovation rate of central government buildings new buildings occupied and owned as replacements for specific central government buildings demolished in any of the two previous years, or buildings that have been sold, demolished or taken out of use in any of the two previous years due to more intensive use of other buildings.

The annual renovation target has been calculated each year by applying 3 % of the floor area of the buildings included in the energy inventory published the previous year then subtracting the floor area of those buildings with an energy rating of 'C' or above in the indicator of non-renewable primary energy consumption.

In order to monitor the renovation target, the IDAE has compiled and standardised data on the measures reported by the various ministerial departments. In doing this, it was assisted by the energy managers of the principal government bodies, from which it requested the following information:

- **New buildings** occupied by them as replacements for buildings demolished in either of the two previous years.
- Buildings **renovated or refurbished** and that comply with the core energy saving document of the Technical Building Code.

- Buildings that have been **sold, demolished or taken out of use** in either of the two previous years due to more intensive use of other buildings.

By way of example, the following image shows the form used to report comprehensive building refurbishment via the SIGEE-AGE platform.

Image 4.3.1.3. SIGEE-AGE online platform

The screenshot displays the SIGEE-AGE web interface. At the top, there are logos for the Spanish Government, the Ministry of Energy, Tourism and Digital Agenda, and IDAE. The main navigation bar includes tabs for 'Edificios', 'Organismos', 'Mi Perfil', 'Informes', 'Buscador', 'Gestión', 'Formación', and 'Salir'. The current page is titled 'MINPRUEBAS/O_PUREBAS_A / Edificio A 1' and 'Renovación del Edificio: Rehabilitación Integral'. The form contains several sections: 'Descripción de las Actuaciones' with a text area for details; 'Seleccionar los Sistemas sobre los que se Actúa' with checkboxes for various energy systems; 'Presupuesto Total (EUR) Sin Impuestos' and 'Superficie Construida Objeto de Actuación' with input fields; 'Fecha Prevista de Inicio' and 'Fecha Prevista de Finalización' with date pickers; 'Calificación Energética - Indicador de Consumo de Energía Primaria' with dropdown menus for 'Antes de las Obras' and 'Después de las Obras'; and a bottom section for 'Ministerio', 'Organismo de Nivel 1', 'Organismo de Nivel 2', 'Responsable', 'Correo Electrónico Responsable', and 'Fecha de Reporte'. Buttons for 'Volver' and 'Guardar' are at the bottom.

Source: IDAE

<p>Sistema Informático de Gestión Energética de Edificios de la Administración General del Estado SIGEE AGE Bienvenido Oficina Técnica – 1 IDAE Edificios Organismos Mi Perfil Informes Buscador Gestión Formación Salir MINPRUEBAS/O_PUREBAS_A/ Edificio A 1 Renovación del Edificio: Rehabilitación Integral Descripción de las Actuaciones * Cambio de ventanas de aluminio por ventanas con RPT, con doble acristalamiento con tratamiento tipo panihterm 6-20-6. Cambio de 600 luminarias fluorescentes por luminarias LED, instalación de detectores de presencia y reguladores crepusculares. Nueva instalación de climatizador, EERR = 6 COP = 6 Aislamiento exterior de fachada con sistema SATE en todo el edificio Seleccionar los Sistemas sobre los que se Actúa * Cambio de Ventanas Sistema de Iluminación</p>	<p>Energy Management System for Central Government Buildings SIGEE-AGE Welcome Technical office — 1 IDAE Buildings Bodies My profile Reports Search Management Training Logout MINPRUEBAS/O_PUREBAS_A/ Edificio A 1 Building Renovation: Comprehensive Refurbishment Description of measures * Replacement of aluminium windows with Planitherm-type treated double-glazed windows (6-20-6) with thermal break. Replacement of 600 fluorescent light fittings with LED fittings, installation of motion detectors and dusk-to-dawn sensors. Installation of new heating/air-conditioning system (RE = 6, COP = 6) Exterior insulation of facade with SATE system on the entire building Select the systems where measures were applied * Window replacement Lighting system</p>
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Solar Térmica	Solar thermal
Aislamiento de Fachadas	Insulation of facades
Sistema de Calefacción	Heating system
Biomasa	Biomass
Aislamiento de Cubiertas	Insulation of roofs
Sistema de Refrigeración	Cooling system
Otros	Other
Presupuesto Total (EUR) Sin Impuestos	Total budget (EUR) not including taxes
1.250.000,00	1 250 000.00
Superficie Construida Objeto de Actuación	Gross floor area subject to measure
2.500,00	2 500.00
Fecha Prevista de Inicio	Planned start date
08/03/2017	08/03/2017
Fecha Prevista de Finalización	Planned completion date
03/11/2017	03/11/2017
Calificación Energética – Indicador de Consumo de Energía Primaria:	Energy rating — Primary energy consumption indicator:
Antes de las Obras D	Before works D
Después de las Obras B	After works B
Ministerio	Ministry
Ministerio PRUEBAS	Ministry TEST
Organismo de Nivel 1	Level 1 Body
Dirección General PRUEBAS A	Directorate-General TEST A
Organismo de Nivel 2	Level 2 Body
Seleccione Organismo de Nivel 2	Select Level 2 Body
Responsable	Person responsible
Oficina Técnica – 1 IDAE	Technical office — 1 IDAE
Correo electrónico Responsable	Email address of unit responsible
Fecha de Reporte	Date reported
08/03/2017	08/03/2017
Volver	Go back
Guardar	Save

Between 2014 and 2016, a floor area of 937 826 m² was renovated, exceeding the renovation target set for this period by 4 %.

Table 4.3.1.2. Building renovations reported between 2014 and 2016

3 % renovation measures	2014 floor area (m ²)	2015 floor area (m ²)	2016 floor area (m ²)	Total floor area (m ²) 2014-2016
Annual renovation target	318 833	295 523	289 116	903 472
Total floor area renovated	306 550	382 581	248 695	937 826
Target fulfilment	96 %	129 %	86 %	104 %

Source: IDAE

Article 5(3) of the Directive lays down that if a Member State renovates more than 3 % of the total floor area of central government buildings in a given year, it may count the excess towards the annual renovation rate of any of the three previous or following years.

The total floor area renovated between 2014 and 2016 amounted to 104 % of the target, producing a **surplus renovated floor area equivalent to 34 353 m²**, which can be carried over to the renovation target for following years.

E. Alternative approach and Energy Saving and Efficiency Plan for central government buildings

Article 5(6) of the Directive provides for an alternative approach, provided that an improvement equivalent to the energy performance of the buildings under the first option is achieved. One of the possibilities is the metering of energy savings due to behavioural change of the occupants deriving from training and awareness-raising activities.

As indicated in the Secretariat of State for Energy's letter to the European Commission in May 2014, Spain has adopted the 'standard' approach, under which 3 % of the floor area of the inventoried buildings must be renovated each year to meet at least the minimum energy performance requirements set in application of Article 4 of Directive 2010/31/EU. The 'alternative' approach therefore does not apply.

F. Centralised electricity procurement

Centralisation of electricity procurement by the *Dirección General de Racionalización y Centralización de la Contratación* (DGRCC) [Directorate-General for Procurement Rationalisation and Centralisation] at the Ministry of Finance and Public Administration has helped significantly improve the information available on electricity consumption.

The DGRCC is now working with the IDAE to improve the information available on electricity consumption in the public buildings listed in the inventory maintained by that body. The DGRCC keeps an inventory of all the points of electricity supply within central government (around 16 000) in an IT application (ELECTRA) created to manage the framework agreement on electricity supply. A related system updates the electricity consumption data for those supply points.

The project consists of adding a function to the ELECTRA application to generate the annual building energy consumption reports that energy managers submit to the IDAE.

4.3.2. Regional and local government buildings (Article 5)

Article 5 of the Directive encourages the extension of the energy efficiency measures to be implemented in central government buildings to all other administrations, such as regional and local government, and places an emphasis on measures aimed at social housing.

This section provides information on measures (already adopted or envisaged in Spain) to encourage the adoption by public bodies and social housing bodies governed by public law of an energy efficiency plan which demonstrates the exemplary role of public bodies' buildings.

The information is structured into three parts: energy inventory of other public bodies, energy efficiency plans in regional governments' public buildings, and energy efficiency measures in social housing.

A. Energy inventory of other public bodies' buildings

In Spain, the transposition of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings includes the obligation for the competent body in each autonomous community to set up, as of 14 April 2013, a register of energy certificates issued within its territory, as well as an inventory of certificates registered since the entry into force of the previous royal decree (Royal Decree 47/2007 of 19 January 2007 adopting the basic procedure for the energy efficiency certification of new buildings).

Royal Decree 235/2013 of 5 April 2013 approving the basic procedure for the energy efficiency certification of buildings states, in its second transitional provision, that existing buildings or units of existing buildings occupied by a public authority and which are commonly frequented by the public must obtain an energy efficiency certificate and display their energy efficiency label if their total useful floor area exceeds 500 m² (by 1 June 2013).

In accordance with Article 5 of Directive 2012/27/EU on energy efficiency, public buildings larger than 500 m² are required to register their energy certificates, which include a compulsory document proposing measures for improving the energy efficiency of the building which, based on such information, would facilitate implementation of those measures.

While Article 5 of the EED only requires the compilation of an inventory of central government buildings, Spanish legislation goes a step further, extending the obligation to certify and register the buildings to regional and local governments.

Given its obligatory nature, the official registration of energy-certified buildings naturally requires the keeping an energy inventory of those buildings, an invaluable tool which facilitates energy audits and is used to implement energy efficiency plans in the national stock of public buildings.

B. Energy efficiency plans for regional governments' public buildings

Regional and local governments are pioneers in the hiring of energy service companies and in the use of energy performance contracts and public-private partnerships to finance energy-efficiency measures in line with Article 5(7) of Directive 2012/27/EU.

All of Spain's regional governments are implementing or planning to implement energy-efficiency plans in their public buildings. Firstly, the adoption of the energy efficiency plan — including energy audits — forms part of the exemplary role which all government bodies should fulfil. Secondly, Spain's regional governments are already using energy service companies and energy performance contracts to finance renovations and implement plans to maintain or improve energy efficiency in the long term.

At the time of going to press, information was received from the following autonomous communities/cities regarding the main measures currently under way:

- **Autonomous Community of Andalusia:**

In October 2015, Andalusia's Governing Council approved the **2020 Andalusian Energy Strategy**, a framework document which governs energy policy in the region. This strategy sets targets, aligned with those of the European Union, which include achieving a 25 % reduction in baseline primary energy consumption and using renewable energy to meet 25 % of gross final energy consumption, targets which will be supported by implementing measures to improve energy efficiency in public buildings.

The Andalusian Energy Strategy includes a programme of measures aimed at improving energy management in Andalusia's public administrations and is designed with two areas in mind: the Regional Government of Andalusia and the Andalusian local authorities.

Additionally, measures are being encouraged through the **REDEJA**, the Andalusian government's energy network, which have made it possible to prioritise investment. These measures include the centralisation of energy consumption in Andalusia's regional government buildings, the implementation of measures in public buildings (hospitals and other care centres, administrative centres, sports centres, historical heritage, etc.) administered by the regional government, and the promotion of audits in consumption centres. Also noteworthy are agreements made with the Andalusian Health Service, the Regional Ministry of Finance and Public Administration, and the Regional Ministry of Economy, Innovation, Science and Employment to invest in

energy saving and efficiency in their buildings. The Regional Government of Andalusia's plan for investment in energy measures from 2016 to 2020 — promoted and coordinated by the Andalusian Energy Agency as manager of the Andalusian Government Energy Network — also provides measures to improve energy efficiency and use of renewable energies in Andalusia's government buildings.

In turn, under the **Programme to Encourage Sustainable Building in Andalusia** (Decree-Law of 18 March 2014) a total of 200 energy-improvement measures in social housing have been supported.

- **Autonomous Community of Aragon:**

The 2013-2020 Aragon Energy Plan implements measures planned to achieve the targets set for that period. In particular, and within the context of energy saving, diversification and efficiency, it specifically establishes the implementation of an **Action Plan for Energy Efficiency in Public Buildings in the Autonomous Community of Aragon**, the main objective of which is to contribute to energy saving and efficiency in public buildings and to promote the use of renewable energies. The measures planned include the performance of energy audits, the promotion of energy service companies and the creation of a network of energy managers whose role it will be to monitor and verify the measures implemented, as well as to train public sector staff and raise awareness among them about energy and environmental issues.

Specific measures that have already been implemented include the creation and launch of the **energy manager network**, comprised of 27 people from various government departments; the **signing of a framework contract for electricity and gas supply to the autonomous community's government buildings** and its public bodies, provincial councils and main local councils; the **performance of energy audits on six buildings administered by the Government of Aragon**; the **conduct of an awareness-raising campaign for public sector staff on saving energy at work**; and the **promotion of energy certificates for public buildings**.

- **Autonomous Community of Asturias:**

In Asturias, the most notable measures being carried out to renovate the stock of public buildings to improve energy efficiency include the construction of a **new court building in Infesto-Piloña** fitted with LED lighting and heat recovery in the heating/air-conditioning system, and the **new court building in Luarca** which will be built as a nearly zero-energy building (NZEB).

Regarding the renovation of public buildings to improve their energy efficiency, the following have been refurbished: the **headquarters of the Regional Ministry of Education and Culture**, where LED lighting was installed, heating oil was replaced with natural gas, and all windows and glazing were replaced; the **multi-service administrative building**, where fluorescent and halogen light fittings were replaced with LED fittings; the **headquarters of the Regional Ministry of Employment, Industry and Tourism**, where a specific energy management tool has been implemented and is being operated by an energy services company; and lastly, the **headquarters of the Asturian Energy Foundation**, where an energy saving of 52 % has been achieved through a project that extracts geothermal energy from mine water.

- **Autonomous Community of the Balearic Islands:**

Measures implemented in public buildings to save energy and improve energy

efficiency include the following: a **computer-based energy management system** which achieves savings in energy consumption during non-working hours, and the signing of **energy service contracts under a shared savings scheme**, resulting in a total saving of around 30 % in three facilities. In addition, energy audits have been conducted on two buildings, a protocol has been established to conduct energy audits in government buildings, and photovoltaic systems have been installed for self-supply in public buildings (installed capacity of 300 kWp already in operation, 1 025 kWp due to go into operation in 2017 and 1 476 kWp inventoried and due to come online in 2018 and 2019).

Furthermore, the Directorate-General for Energy and Climate Change issued calls for applications for grants co-financed by the ERDF and **aimed at local governments**, under which **111 recharging points for electric vehicles** were installed.

In 2017, a tender for a **two-year framework contract to install 85 capacitor banks for energy supplies with greatest reactive energy consumption** is planned, and a plan has been created for the possible replacement of fluorescent and incandescent light fittings with LED fittings in buildings where it is deemed cost-effective.

- **Autonomous Community of the Canary Islands:**

The Regional Government of the Canary Islands' Ministry of Economy, Industry, Trade and Knowledge approved the Order of 1 March 2016 adopting the regulatory bases for the granting of subsidies to implement energy-saving measures and to conduct energy audits in local councils for the 2014-2020 period. This order includes the three points from Article 5(7) of Directive 2012/27/EU as prioritisation criteria. Subsidies totalling EUR 3.5 million are planned to be announced in 2017.

With respect to **energy service contracts**, a public-private partnership agreement is currently in force to improve energy efficiency and energy services in various Canary Islands government buildings. Furthermore, a project is being carried out to implement energy efficiency and renewable energy measures in school buildings belonging to the Government of the Canary Islands. Energy audits and implementation projects are also planned during the 2017 financial year.

- **Autonomous Community of Cantabria:**

Examples of renovation measures aimed at improving energy efficiency in public buildings administered by the Government of Cantabria include the works carried out on the **headquarters of the Regional Ministry of Innovation, Industry, Tourism and Trade**, which involve renovation of the lighting systems and the lighting management system, as well as the use of natural light and air-conditioning management systems to reduce consumption. Also, work has been carried out on the thermal envelope of the **headquarters of the Regional Ministry of Health**, where windows have been gradually replaced, and on its lighting systems, in which fluorescent tubes have been gradually replaced with LED tubes.

- **Autonomous Community of Castile-Leon:**

In the context of energy efficiency and renewable energy, **Castile-Leon's Regional Ministry of Economy and Finance has undertaken the challenge of designing an Energy Efficiency Strategy for 2016-2020 (EEE-CyL-2016/2020)** to meet the obligation of reducing energy consumption and CO₂ levels by 20 % by 2020 in industry, construction and transport, as well as in local authorities and the regional

government itself.

This strategy is more ambitious than the targets originally set by the EU, as it identifies 7 strategic areas, 33 lines of action and 79 measures to be applied by businesses, the general public and public administrations and provides indicators to monitor and evaluate the progress achieved, thereby allowing the measures in place to be changed or revised. By applying the measures set out in the EEE-CyL-2016/2020, a cumulative primary energy saving of 1 114 170 toe (from 2016 to 2020) will be achieved, together with a saving of 2 522 400 tonnes of CO₂ since 2007. In this context, measures are being implemented to improve energy efficiency in buildings owned by the regional government of Castile-Leon, measures which are included as projects financed by the ERDF.

- **Autonomous Community of Castile-La Mancha:**

The regional government is signing various **energy performance contracts to finance renovations and implement plans to improve long-term energy efficiency in public buildings**.

These include renovation of heating systems in various hospitals throughout the region, in addition to the tender to manage energy services within the school heating system. Various **energy audits and diagnoses** have also been conducted.

In addition, several regional ministries are creating plans to improve energy efficiency in public buildings, either by putting energy performance contracts out to tender or by implementing an energy management system which includes conducting energy audits to determine the measures and improvements to carry out on those buildings.

- **Autonomous Community of Catalonia:**

The Regional Government of Catalonia has drawn up an energy saving and efficiency plan for public buildings which sets out two priority actions: the **optimisation of energy procurement** and the improvement of energy efficiency through performance-based **energy service contracts** with guaranteed savings, thus driving the market for businesses in this sector.

These energy service contracts may include two differentiated services. The first consists of **energy efficiency services**, with guaranteed savings, comprised of two measures: the implementation of **energy conservation measures** and the technical management of systems, with measurement and verification of savings according to the International Performance Measurement & Verification Protocol (IPMVP), while the second may include **system maintenance and operation** services.

The energy service contracts have made it possible to carry out projects to **implement energy conservation measures** under a guaranteed saving scheme, and projects to **monitor and manage energy** under a shared saving scheme.

- **Autonomous Community of Valencia:**

The **plan for energy saving and efficiency, promotion of renewable energy and self-consumption in public-sector buildings, infrastructure and equipment administered by the Valencian regional government** was approved by an Agreement of 16 December 2016. This plan lays out quantifiable targets for energy saving and efficiency in the public buildings, infrastructure and equipment

administered by the Valencian regional government, setting these at total minimum energy savings of 12 % by 2020 and of 25 % by 2025 with respect to the 2014 baseline reference for total energy consumption by the public sector assets administered by the regional government. To achieve these targets, the series of measures drawn up include **creating a building energy management platform; promoting energy audits and energy certificates for public buildings; creating an Energy Management Plan for public buildings, infrastructure and equipment;** investing in energy saving and efficiency, as well as in renewable energy; promoting electricity production for self-consumption; **including energy efficiency criteria in the system of procurement and management procedures;** and creating mobility plans and implementing training, awareness-raising and information programmes for users and energy management officers in public buildings.

- **Autonomous Community of Extremadura:**

The Autonomous Community of Extremadura has developed its strategy to contribute to the target set by the European Union for energy saving and efficiency in public buildings under the **2014-2020 ERDF Operational Programme for Extremadura**. This strategy forms part of the fourth thematic objective ('Supporting the shift towards a low-carbon economy in all sectors') within specific objective 4.3.1 ('Improving energy efficiency and reducing CO₂ emissions in the buildings sector and in public infrastructure and services'), and is being implemented through a plan of measures to promote energy saving and efficiency in public administrations' infrastructure which will help them **achieve a high energy rating** or improve the existing one.

This plan is being implemented by **awarding grants** to carry out measures to save energy and improve energy efficiency in local government infrastructure, thus encouraging participation by **energy service companies**, and it is expected to be supplemented with measures carried out on regional government infrastructure.

Included among the measures carried out — which were previously identified in a **comprehensive energy audit of the building or facility** — are the renovation of existing **street lighting**, the improvement of **energy efficiency in heating systems** (heating and air-conditioning), the improvement of energy efficiency in **water supply and treatment** systems, and the refurbishment and improvement of the **thermal envelope of buildings**.

- **Autonomous Community of Galicia:**

On 13 November 2015, the Regional Government of Galicia approved the **Regional Public Sector Energy Saving and Efficiency Strategy for 2015-2020**, the objective of which is the comprehensive planning, management and evaluation of energy saving and efficiency measures.

The key features of this strategy are that it should be **Comprehensive** (a **single energy saving and efficiency strategy** for the entire public sector), **Efficient** (maximise both energy savings and economic savings), **Synergistic** (seek **energy synergies in the region's public sector**) and **Exemplary** (serve as an example and an impetus for all of Galician society).

Galicia's regional public sector strategy comprises **two main strands**. The first of these includes nearly 250 energy efficiency measures for **social, educational, health and administrative centres** to improve the energy performance of the buildings'

technical and architectural elements through the **refurbishment of their envelopes** or of the exterior carpentry to improve insulation, the renovation of **air-conditioning systems** by replacing existing heating and cooling equipment with **more efficient** units, the use of **local renewable energy sources** — like biomass, for example — which reduce greenhouse gas emissions and external energy dependency, the renovation of **lighting systems** — both exterior and interior — by using **more efficient light fittings**, and the incorporation of **regulating and control** devices which improve system efficiency.

The second strand of the energy saving and efficiency strategy stems from the creation of the **Regional Government of Galicia's Energy Network** (Redexga), which is made up of the infrastructure, resources and services needed to manage the energy used by the consumption centres in Galicia's general administration and public sector. Redexga's ultimate purpose is to **centralise procurement of the energy** required by Galicia's general administration and public sector. By the end of 2016, centralised purchases of electricity, natural gas and heating oil had all been made.

The Regional Public Sector Energy Saving and Efficiency Strategy for 2015-2020 required **investment of EUR 36 million** and provided an **energy saving of 206 GWh**, an **economic saving of EUR 91 million** and a **reduction in CO₂ emissions of 79 680 t**.

- **Autonomous Community of Madrid:**

The Autonomous Community of Madrid is currently drawing up a new **Energy Saving and Efficiency Plan for Public Buildings** which broadens the previous plan to renovate heating systems in public buildings aimed at replacing old heating oil boilers with new natural gas condensing boilers.

This new plan is a result of the commitment made by the regional government for 2017-2020 and forms part of the framework of measures on energy procurement and management, the transition to alternative fuels, renovation of heating systems and buildings' thermal envelopes and lighting systems, and use of renewable energy. Lastly, in 2014, 2015 and 2016, the regional government carried out plans to support energy-saving measures aimed at the general public.

- **Autonomous Community of Murcia:**

In March 2017, the president of the Autonomous Community of Murcia announced the release of the **2016-2020 Regional Energy Plan**, the strategic goals of which are structured around **ensuring security and quality of supply, promoting energy saving and efficiency** in all sectors, and promoting the use of **sustainable energy sources** that guarantee competitiveness.

The plan includes the **Energy Efficiency Plan for Regional Government Buildings**, which is led by the Directorate-General for Energy, Industry and Mining and sets the specific objectives of **complying with relevant European Directives, reducing energy consumption**, raising awareness, setting an example and **promoting nearly zero-energy buildings**. This plan is being implemented through two separate lines of work, one of which is aimed at preparing **energy certificates, diagnoses and audits** for regional government buildings, and another which is aimed at drawing up **contracts with energy service companies** for building energy management — without discarding the possibility of acting directly on them. These two lines of work are backed by the **energy inventory** of regional government buildings.

Furthermore, this plan is complemented by the participation of the Directorate-General for Energy, Industry and Mining in two **European projects**: Rehabilitate and CITYinvest.

The specific aim of the **Rehabilitate Project**, a Transnational Platform to Support Energy Renovation Financing (an Interreg Sudoe European programme), is to **improve energy efficiency policies in public buildings and housing** through the implementation of **networks and joint experimentation**. It focuses on energy efficiency renovation in existing buildings and on pilot projects and support measures. The project's participating partners in Spain are Agencia Extremeña de la Energía (Extremadura's energy agency), Navarra de Suelo y Vivienda S.A., and the Fundación Laboral de la Construcción (a construction industry foundation), while the project's partners in Portugal are Comunidade Intermunicipal do Tâmega e Sousa (the inter-municipal community of Tâmega and Sousa) and Lisboa E-Nova (Lisbon's energy and environmental agency), and in France Ecole D'Ingénieurs en Génie des Systèmes Industriels (an industrial systems engineering school), Pôle CREAHD (an organisation stimulating research and innovation in sustainable construction) and the Communauté d'Agglomération Grand Angoulême (an agglomeration community).

In addition, the **CITYinvest Project**, Increasing Capacities in Cities for Innovative Financing in Energy Efficiency (European Horizon 2020 programme), intends to **stimulate large-scale energy retrofits** of buildings and to develop **innovative financing models** to implement them. The project analyses successful models throughout Europe and facilitates their replication. Through the organisation of national and regional workshops, it aims to obtain political commitment from local authorities and to train project developers in three pilot regions and ten focus countries. The project provides expert technical support for the strategy to **improve energy efficiency in public buildings** in Murcia. This project is being carried out in partnership with INFO, the Development Institute of Murcia, and the following European companies and organisations: Climate Alliance (as coordinator), Groupement de Redéploiement Economique de Liège (GRE-Liège), Sofia Energy Centre, Energinvest, REScoop, and CEMR (the Council of European Municipalities and Regions).

- **Autonomous Community of Navarre:**

Navarre's regional government has implemented a **programme for energy management and the promotion of energy services in government**, which has been integrated into the draft for the 2030 Navarre Energy Plan.

One of its main objectives is to promote **energy services** in Navarre, with the dual purpose of achieving energy savings and consolidating a sector that could provide services both in Navarre and elsewhere. To that end, it intends to **encourage the hiring of energy service companies** in sectors with the greatest potential (both public and private), to develop **procurement procedures** and contract models and, lastly, to set up a **support framework for possible financing**.

The work proposed in implementing the programme includes energy **consumption metering**, the creation of a centralised inventory of consumption centres using the ICEGONA software, the **centralised procurement of energy supplies**, and the selection and **prioritisation of investments** in energy service procurement, with costs linked to savings, under various pilot projects for wider future implementation. In addition, **energy criteria applicable when acquiring new public buildings** and the promotion of training on energy services are being studied.

Moreover, various measures on the **renovation of public buildings** have recently been implemented, among which are the **replacement of conventional lighting fixtures with LED units**, the renovation of air-conditioning systems, the **improvement of thermal envelopes and windows** in various buildings, and the **installation of electricity metering systems with integrated remote reading** and subsequent technical assistance.

- **Autonomous Community of the Basque Country:**

The Action Plan for energy efficiency in government buildings in the Basque Country equally applies to public buildings and facilities administered by the Basque Government and local and provincial councils. Moreover, **Decree 178/2015 of 22 September 2015 on energy sustainability in the public sector of the Basque Country** also applies to the buildings and facilities administered by the Basque Government. The Basque Government is currently drawing up a **law on energy sustainability in the region's public sector**.

Regarding the **hiring of energy service companies**, the Decision of 4 April 2016 published the call for applications for grants aimed at promoting energy efficiency and the use of renewable energy in public buildings in the Basque Country through contracts with energy service companies.

- **Autonomous Community of Rioja:**

Throughout 2016, energy certification projects have been carried out in health centres, hospitals, secondary and primary schools, and offices, with a total of 66 evaluations being performed.

In addition, a **plan to improve energy efficiency in school buildings** has been drawn up, in which subsidies are provided to local councils to improve heating and climate control systems in primary schools. Also, an **Energy Efficiency Manual for Schools** has been drawn up as a measure to raise awareness among staff.

With respect to energy-efficiency improvements in public buildings, comprehensive renovations have been carried out with the aim of improving energy efficiency in their building envelopes and lighting and heating systems. In health centres, conventional light fittings have been replaced with LED units, oil-fired boilers have been replaced with natural gas condensing boilers, air-conditioning machinery has been replaced and control systems have been upgraded. A noteworthy example is the **San Pedro Hospital** — one of the main energy consumers in the public health system in Rioja — where comprehensive renovation that included implementation of hydrothermal and geothermal solutions was carried out.

- **Ceuta:**

After preliminary studies were conducted by energy officers in Ceuta, three lighting systems were chosen in which to implement energy efficiency measures. These systems were the Complejo Deportivo Guillermo Molina sports complex, the Centro Deportivo Díaz-Flor sports centre and the Avenida Virgen de África avenue, all of which were financed by the ERDF.

Also, acquisition of an official fleet of electric vehicles has begun with the aim of reducing CO₂ emissions and dependence on fossil fuels.

- **Melilla:**

Under the 2014-2020 ERDF operational programme, approved by European Commission Implementing Decision of 14 July 2015, Melilla has a multiannual programme running from 2014 to 2020. EUR 11 381 206 has been allocated to this programme, EUR 9 104 959 of which will be financed by the ERDF. These funds are being used to **increase energy efficiency in public facilities**, further to which **all street lighting is currently being replaced** with energy-efficient LED fittings. In addition, improvements in the energy efficiency of the municipal swimming pool are being studied, with the expectation to install **hot water systems that use solar panels** to generate heat.

All lighting in **public buildings** is being replaced by LED fittings and **heating and air-conditioning units in public facilities are being replaced** with ones with **lower energy consumption**.

4.3.3. Other measures implemented by public bodies

Integrated sustainable urban development strategies

With respect to public bodies, one of the measures worth noting are the **integrated sustainable urban development strategies** aimed at functional urban areas with a population of over 20 000. As indicated in point 3.2.3 'Results up to 2015', the lines of action for these integrated strategies are financed by the 2014-2020 Operational Programme for Sustainable Growth under its Urban Axis, which has been allocated EUR 1 012 754 015 in ERDF aid for the period. The breakdown of aid by autonomous community is shown in table 4.3.3.1.

Low-carbon economy measures must account for 25 % of these strategies, which could mean a budget of around EUR 250 million for energy efficiency and renewable energy measures to be implemented by local authorities.

On 17 November 2015, Order HAP/2427/2015 of 13 November 2015 was published in the BOE approving the regulatory bases and first call for applications for selection of integrated sustainable urban development strategies co-financed through the ERDF 2014-2020 Operational Programme for Sustainable Growth. This first call was allocated a budget of approximately 70 % of all the ERDF aid assigned to the Urban Axis under the operational programme. The second call for selection of integrated strategies, published on 7 October 2016 in the BOE (Order HAP/1610/2016), was allocated the remaining 30 %.

Table 4.3.3.1. Breakdown of aid approved, by autonomous community

Autonomous community (AC)	Total ERDF aid, by AC (in thousand €)
Extremadura	73 302
Subtotal: less developed	73 302
Andalusia	344 274
Castile-La Mancha	63 062
Murcia	39 070
Canary Islands	70 986
Subtotal: transition	517 392
Galicia	118 768
Valencia	118 616
Asturias	25 308
Castile-Leon	38 519
Cantabria	3 891
Balearic Islands	12 710
Rioja	1 962
Aragon	8 888
Catalonia	47 556
Navarre	2 663
Basque Country	9 289
Madrid	33 891
Subtotal: more developed	422 061
Total Spain*	1 012 755

Source: Ministry of Finance and Public Administration

Street lighting and public water supply systems

Within the context of energy, street lighting and public water supply systems are worth highlighting as they form part of a public service and, therefore, are managed by public bodies. Street lighting refers to functional, ambient and decorative lighting systems on roads and in public spaces; water supply refers to water purification and supply, wastewater treatment and desalination plants. As a whole, this represents 1 % of all final energy consumption, all in the form of electricity.

This public service sector has grown significantly in the last 15 years due to large-scale urban development in Spain's municipalities and to the resulting installation of new infrastructure associated with that development.

In this context, energy-saving and efficiency measures in this sector are implemented via initiatives in two main areas:

- Actions aimed at improving the efficiency of street lighting technologies.
- Actions aimed at improving the efficiency of water supply, treatment and desalination technologies.

A. Actions aimed at improving the efficiency of street lighting technologies

Street lighting on Spain's municipal roads consists of 8 849 839 lamps which, with an average power of 156 W/lamp, annually consume 5 296 GWh of electricity per year at a cost of EUR 794 million/year.

The ratios of lamps and energy consumption per capita for street lighting have been established based on documentation obtained from energy audits performed by the local councils which benefited from the aid for street lighting under Spain's 2004-2012 Energy Saving and Efficiency Strategy between 2008 and 2012, and from those which have benefited more recently from support approved under the Aid Programme for the Renovation of Municipal Street Lighting (financed by the Energy Efficiency National Fund). These ratios — projected for all Spain's municipalities and grouped by autonomous community — produce the following inventory:

Table 4.3.3.2. Ratios of lamps and energy consumption, by autonomous community

Autonomous Community	2016 POPULATION	No lamps	Energy consumption (MWh/year)
Andalusia	8 388 107	1 584 697	952 839
Aragon	1 308 563	275 558	157 696
Balearic Islands	1 107 220	204 086	125 136
Canary Islands	2 101 924	360 613	226 280
Cantabria	582 206	131 019	74 550
Castile-La Mancha	2 041 631	510 849	282 176
Castile-Leon	2 447 519	586 482	324 575
Catalonia	7 522 596	1 392 053	841 918
Ceuta	84 519	10 152	6 927
Valencia	4 959 968	941 478	568 598
Extremadura	1 087 778	280 869	152 983
Galicia	2 718 525	587 417	338 158
Madrid	6 466 996	910 409	597 674
Melilla	86 026	10 333	7 050
Murcia	1 464 847	236 556	150 463
Navarre	640 647	158 385	86 735
Basque Country	2 189 534	418 648	251 641
Asturias	1 042 608	181 701	112 412
Rioja	315 794	68 531	38 718
Catalonia	46 557 008	8 849 839	5 296 530

Source: MINETAD

Added to this street lighting consumption is that of existing traffic lights; Spain has more than 300 000 units, the electricity consumption of which has significantly decreased with the conversion to LED technology which was promoted by the IDAE in 2008 through an aid programme to replace units fitted with incandescent or halogen bulbs. A group of 600 local councils were supplied with a total of 462 300 LED optics, reducing their mean consumption per unit from 1 250 kWh/year to only 250 kWh/year. The application of this programme and its effect on the renovation of these types of systems by local councils means that Spain's traffic lights have now been converted to LED technology and represent a national consumption of 75 GWh/year.

Improvements in energy efficiency consist mainly of promoting technology upgrades by replacing bulbs with ones with greater light efficiency, by improving the reflective and directional features of the light fittings — reducing their light emissions towards spaces away from the target object (light pollution) — and by implementing systems to regulate lamps' luminous flux so they can be adjusted throughout the night as needed, in addition to power

on/off regulation. This will help adjust the excess lighting levels found in many Spanish streets to actual public service needs, achieving directly proportionate reductions in electricity consumption.

This set of measures is being implemented in Spain through the entry into force of Royal Decree 1890/2008 of 14 November 2008 adopting the regulation on energy efficiency in street lighting systems and its complementary technical instructions EA-01 to EA-07. They have also been implemented significantly through aid programmes promoted by the IDAE for the renovation of existing systems. This is leading the baseline energy consumption of these systems to a turning point; although they are growing in number due to increased demand in Spain's cities, the installed capacity (and thus, electricity consumption) has fallen considerably.

In May 2015, the regulatory bases and call for applications for the **aid programme to renovate municipal street lighting systems** were published (hereinafter, the municipal street lighting programme). It was allocated an initial budget of EUR 36 million, which due to the existing demand and interest in continuing the programme, was increased by Decision of the IDAE Board of Directors on 27 October 2015 to a total of EUR 65 million (financed by the Energy Efficiency National Fund).

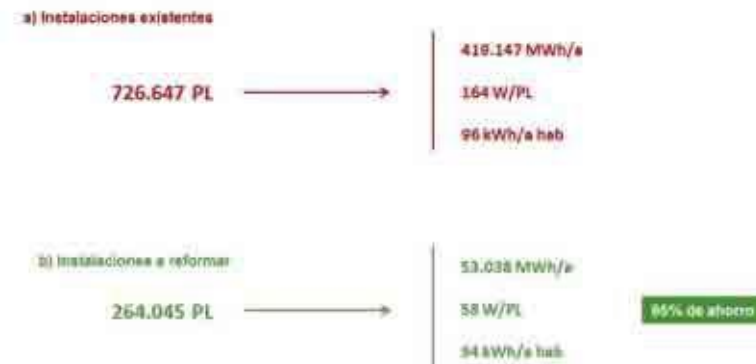
The aid allocated to finance projects to upgrade — based on energy efficiency criteria — the technology used in Spanish municipal street lighting was offered in the form of loans covering up to 100 % of the eligible investment for the project (set at a maximum of EUR 4 000 000 and a minimum of EUR 300 000), at an interest rate of 0.0 % and with a maximum term of 10 years (including a 12-month grace period), and exempt from application, assessment and cancellation fees and the need to provide security.

The programme's beneficiaries consisted of local councils, provincial councils or equivalent local authorities, local authority associations or groups of Spanish municipalities, and public bodies holding concessions to manage Spanish municipal public services which did not carry out an economic activity under which they offered goods or services to a particular market.

The municipalities which applied for this one-year programme (ending in May 2016) covered 4.37 million residents and 726 647 lamps, representing 9 % of both the population and the stock of municipal street lighting in Spain. Overall, 264 045 lamps were upgraded, of which more than 97 % were replaced with LED technology, and nearly the entirety included power on/off and/or hourly light flux regulation systems.

The main energy outcome can be summarised as an average annual electricity consumption saving of 65 % — with average new lamp power varying between 58 and 164 W/lamp — to which must be added the additional savings from the light regulation systems with which most of the systems were fitted.

Figure 4.3.3.1. Scope of renovation by the municipal street lighting programme

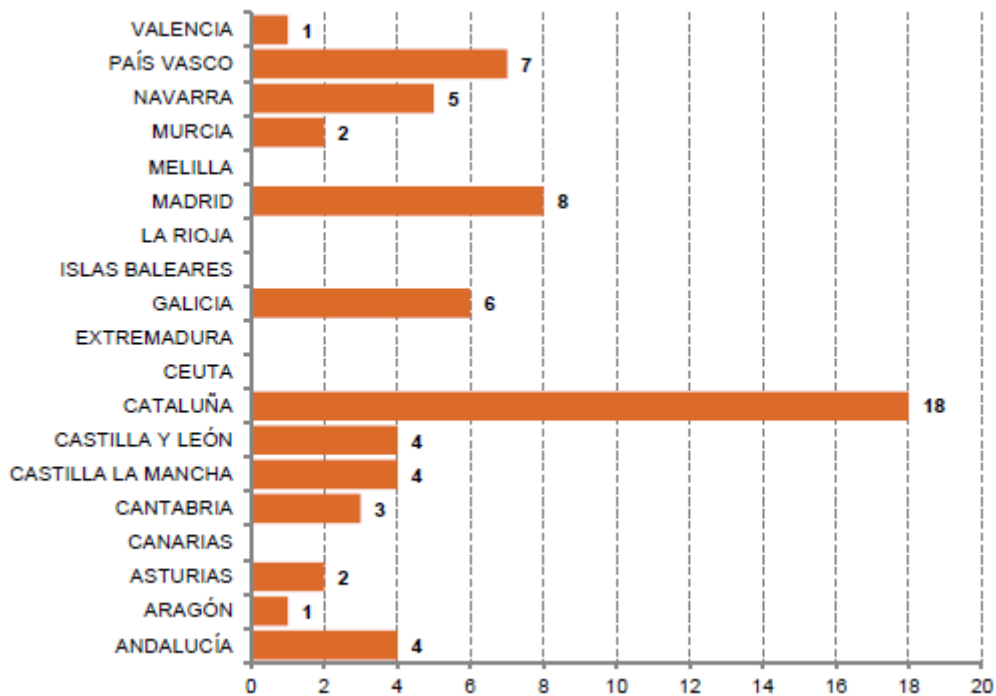


Source: IDAE

a) Instalaciones existentes	a) Existing systems
726.647 PL	726 647 lamps
419.147 MWh/	419 147 MWh/[illegible text]
164 W/PL	164 W/lamp
96 kWh/	96 kWh/[illegible text]
b) Instalaciones a reformar	b) Systems to upgrade
264.045 PL	264 045 lamps
53.038 MWh/	53 038 MWh/[illegible text]
58 W/PL	58 W/lamp
34 kWh/	34 kWh/[illegible text]
% de ahorro	[illegible text] % saving

Of the 124 applications submitted by local councils, 65 were approved, representing around EUR 65 million in aid. Catalonia, Madrid and the Basque Country were the autonomous communities where the largest numbers of local councils received aid.

Figure 4.3.3.2. Breakdown of applications approved for the municipal street lighting programme, by autonomous community



Note: Provisional data

Source: IDAE

VALENCIA	VALENCIA
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PAÍS VASCO	BASQUE COUNTRY
NAVARRA	NAVARRRE
MURCIA	MURCIA
MELILLA	MELILLA
MADRID	MADRID
LA RIOJA	RIOJA
ISLAS BALEARES	BALEARIC ISLANDS
GALICIA	GALICIA
EXTREMADURA	EXTREMADURA
CEUTA	CEUTA
CATALUÑA	CATALONIA
CASTILLA Y LEÓN	CASTILE-LEON
CASTILLA LA MANCHA	CASTILE-LA MANCHA
CANTABRIA	CANTABRIA
CANARIAS	CANARY ISLANDS
ASTURIAS	ASTURIAS
ARAGÓN	ARAGON
ANDALUCÍA	ANDALUSIA

Based on this broad sample and on the results the councils are obtaining with their reforms, it can be affirmed that combining LED lighting with timer systems offers potential energy savings of up to 80 %. This figure, which is quite uncommon for other types of reforms in energy-consuming facilities, has caused energy consumption in this sector — currently undergoing technological change — to fall rapidly towards levels that are still difficult to determine.

On 8 April 2017, the BOE published the Decision of 5 April 2017 of the IDAE announcing the regulatory bases for the **second call for applications for the aid programme to renovate municipal street lighting**, assigned a budget of nearly EUR 29 million. This second call for applications also offers aid in the form of interest-free reimbursable loans with a maximum term of 10 years (including a one-year grace period).

B. Actions aimed at improving the efficiency of water supply, treatment and desalination technologies

Demand for water for human consumption is estimated to range between 160 and 180 litres per person per day, with this water subsector having seen a rise in activity due not only to urban and population growth, but also to the stricter requirements concerning water quality and wastewater treatment contained in the National Water Drainage and Treatment Plan, which has led to the entry into service of numerous wastewater treatment plants throughout the country.

The energy consumption associated with water supply to municipalities and, in particular, with subsequent wastewater treatment, depends on the technology used, the size of the population served and the applicable waste quality and treatment limits.

B.1 Water supply and treatment

Spain has an estimated urban water flow of 3 730 hm³ per year and a treated wastewater volume of 4 450 hm³. The figures differ because although not all the water supplied ends up in drainage systems, treatment plants do also receive rainwater run-off and other potential effluents. It is estimated that at least 95 % of the Spanish population is connected to some form of treatment system.

Based on data from studies carried out by the IDAE, the following can be estimated:

- Electricity consumption associated with collection, supply and distribution of urban water (pumping) totals 447 GWh/year.

- Mean specific consumption by wastewater treatment plants stands at 0.5 kWh/m³, representing total electricity consumption for all plants of 2 225 GWh/year.

In terms of energy-saving measures, wastewater treatment plants are seeing improvements in efficiency due to technological innovation and to combining flows in systems shared by several local authorities. Small treatment plants, which tend to lack aeration control systems and are designed for mechanical robustness, are often oversized in terms of their electromechanical equipment, which means that their unit consumption is relatively high at around 50 kWh/inhab/year. Large treatment plants are optimised in terms of design, size and control systems, meaning that their energy consumption levels stand at around 20-30 kWh/inhab/year.

B.2 Water desalination

In Spain, reverse osmosis is the most commonly used desalination technology and is expected to grow in the future. As a result, the energy consumption of reverse osmosis plants is used as the benchmark. The most recent data on desalinated water production in Spain set a range of between 1.5 and 2 hm³/day (variation in demand is affected by annual rainfall) for the nearly 1 000 existing desalination plants. It is estimated that electricity consumption for desalination in a typical year amounts to 2 460 GWh/year.

With the aim of encouraging the implementation in desalination plants of measures that reduce carbon dioxide emissions through the implementation of energy-saving and energy efficiency projects that reduce final energy consumption, on 18 December 2015, the **aid programme for energy efficiency measures in desalination plants**, allocated a EUR 12 million budget from the EENF, was approved. The aid regulated via this framework takes the form of monetary grants without consideration, the maximum amounts of which can range from 30 % to 65 % of the eligible costs, depending on type of enterprise and geographical location; and of reimbursable loans, which can cover up to 100 % of the eligible investment (maximum of EUR 2 million and minimum of EUR 150 000) at 0 % interest for public projects and at 2 % interest for private projects. All applicants must opt for one of these two forms.

The measures for which support is provided must fall into one or more of the following categories:

- Policy measure 1: Improvement of desalination equipment and process technology. The eligible investment must be equal to or greater than EUR 75 000, and the maximum amount of eligible investment per application shall not exceed EUR 2 million.
- Policy measure 2: Implementation of energy management systems. The eligible investment must be equal to or greater than EUR 30 000, and the maximum amount of eligible investment per application shall not exceed EUR 2 million.

Programme beneficiaries may be entrepreneurs, entities or public or private natural or legal persons which own desalination plants; or entrepreneurs, entities or public or private natural or legal persons which hold concessions for or operate desalination plants. Energy service companies may also benefit from the aid.

The programme remains operational and will conclude on 31 December 2017, provided the available budget has not been exhausted before that date.

4.3.4. Purchasing by public bodies (Article 6)

Article 6 of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency was transposed into Spanish law by the thirteenth additional provision of **Law 15/2014 of 16 September 2014 on rationalisation of the public sector and other administrative reform measures**.

As regards the public administrations referred to in Article 3(2) of the consolidated text of the law on public procurement, adopted by Royal Legislative Decree 3/2011 of 14 November 2011, those which pertain to the state sector shall only purchase high-energy-performance goods, services and buildings, provided that these are cost-effective, economically viable, sustainable in the broadest sense, technically suitable and sufficiently competitive, as per the following criteria:

- a) where a product is covered by a delegated act adopted under Directive 2010/30/EU or by a related Commission implementing directive, purchase only the products that comply with the criterion of belonging to the highest energy efficiency class possible in the light of the need to ensure sufficient competition;
- b) where a product not covered under point (a) is covered by an implementing measure under Directive 2009/125/EC adopted after the entry into force of this Directive, purchase only products that comply with energy efficiency benchmarks specified in that implementing measure;
- c) purchase office equipment products covered by Council Decision 2006/1005/EC of 18 December 2006 concerning conclusion of the Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficiency labelling programmes for office equipment that comply with energy efficiency requirements not less demanding than those listed in Annex C to the Agreement attached to that Decision;
- d) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by Regulation (EC) No 1222/2009 of the European Parliament and of the Council of 25 November 2009 on the labelling of tyres with respect to fuel efficiency and other essential parameters. This requirement shall not prevent public administrations to which this provision refers from purchasing tyres with the highest wet grip class or external rolling noise class where justified by safety or public health reasons;
- e) require in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with the requirements referred to in points (a) to (d), when providing the services in question. This requirement shall apply only to new products purchased by service providers partially or wholly for the purpose of providing the service in question;
- f) purchase, or make new rental agreements for, only buildings that comply at least with the minimum energy performance requirements set by the internal legislation, in accordance with Articles 4 and 5 of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.

In the absence of an amendment to existing regulations, which include Spain's Building Code, approved by Royal Decree 314/2006 of 17 March 2006, and its subsequent amendments, the ratings required by buildings used by the administration referred to in this annex shall be as follows:

- Class C for the energy demand for heating indicator.

- Class C for the energy demand for cooling indicator.
- Class C for the non-renewable primary energy consumption indicator.

To these effects, the energy performance of a building shall be accredited by the energy efficiency certificates regulated by Royal Decree 235/2013 of 5 April 2013 adopting the basic procedure for the energy efficiency certification of buildings.

The provisions of the previous paragraphs shall not apply when purchase or rental is for any of the following purposes:

- Deep renovation or demolition of the building.
- Return of the building to legal use without it being occupied by the public administrations referred to in this annex.
- Preservation as a building that is officially protected as part of a designated environment, or because of its special architectural or historical merit.

The obligation established in the second paragraph shall apply to supply, service and works contracts which result in the construction of a building, provided that the estimated value of such contracts is equal to or exceeds the threshold that makes them subject to the harmonised regulations established in Articles 14, 15 and 16 of the consolidated text of the law on public procurement. It shall also apply to the purchase or rental of buildings.

The obligation referred to in the second paragraph shall apply to contracts entered into by the Armed Forces only to the extent that their application does not conflict with their nature or with the basic aims of their activities. The obligation shall not be applied to contracts for the supply of military equipment, understood as equipment specifically designed or adapted for military purposes and intended for use as arms, ammunition or war material, the procurement of which is governed by Law 24/2011 of 1 August 2011 on public procurement in the areas of defence and security.

The MINETAD shall promote measures to encourage the purchase of high energy-performance goods, services and buildings by the various entities that comprise the regional and local public sector.

Furthermore, the Ministry of Energy, Tourism and Digital Agenda and the Ministry of Finance and Public Administration shall take, in tenders for service contracts with a significant energy component, the necessary measures to help procurement bodies to evaluate the possibility of entering into long-term energy performance contracts in which the energy saving over the entire life of the contract can be calculated. In line with this, they shall provide procurement bodies (through publication on the public sector procurement platform) with the appropriate tools to perform evaluation, as well as with contract templates and the legal terms and conditions which must be included in the specifications governing bidding on these types of contracts.

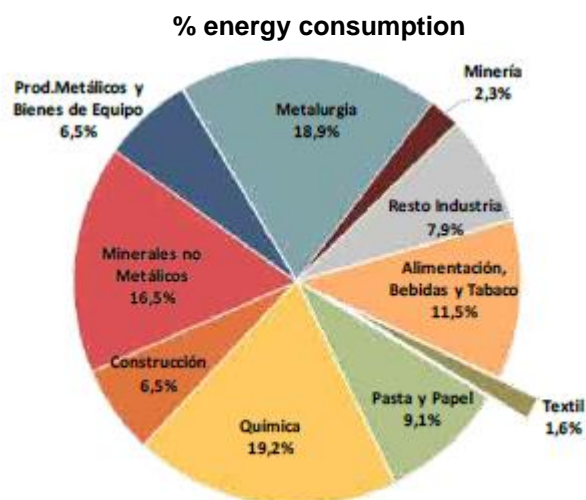
When purchasing a package of products which, as a whole, are subject to a delegated act adopted pursuant to Directive 2010/30/EU, the public administrations referred to in this provision may require that the aggregate energy efficiency of the products in that package be given primacy over the energy efficiency of the products considered individually, purchasing the package which meets the criterion of belonging to the highest energy efficiency class.

4.4. ENERGY EFFICIENCY IN INDUSTRY

4.4.1. Analysis and characterisation of the industrial sector

In 2014, the industrial sector reduced its energy consumption by 3.7 %, totalling 20 006 ktoe. In Spanish industry, the five segments with the greatest energy demands and energy intensity levels are non-metallic minerals; basic metals; chemicals; food, beverages and tobacco; and pulp and paper. Together, these areas accounted for 75.2 % of industry's energy demand in 2014, which contrasts strongly with the sector's limited 29.4 % contribution to GVA.

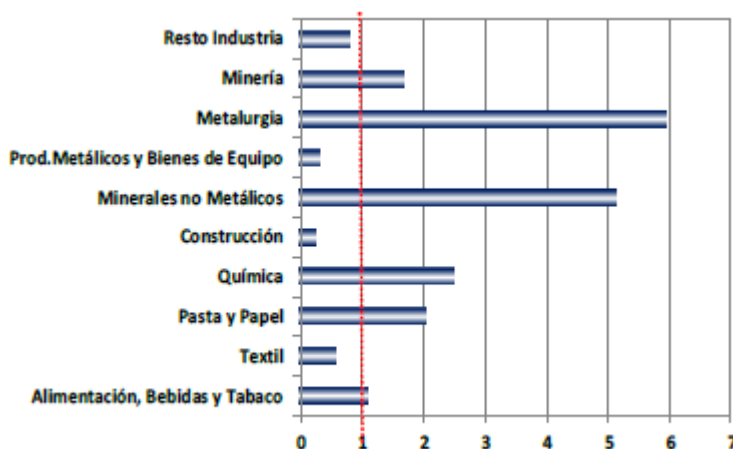
Figure 4.4.1.1. Consumption and GVA of Spain's main industrial segments (2014)



Note: Excluding non-energy uses.

Prod. Metálicos y Bienes de Equipo 6,5%	Fabricated metal products and capital goods 6.5 %
Minerales no Metálicos 16,5%	Non-metallic minerals 16.5 %
Construcción 6,5%	Construction 6.5 %
Química 19,2%	Chemicals 19.2 %
Pasta y Papel 9,1%	Pulp and paper 9.1 %
Textil 1,6%	Textiles 1.6 %
Alimentación, Bebidas y Tabaco 11,5%	Food, beverages and tobacco 11.5 %
Resto Industria 7,9%	Other industry 7.9 %
Minería 2,3%	Mining 2.3 %
Metalurgia 18,9%	Basic metals 18.9 %

Energy consumption/GVA ratio



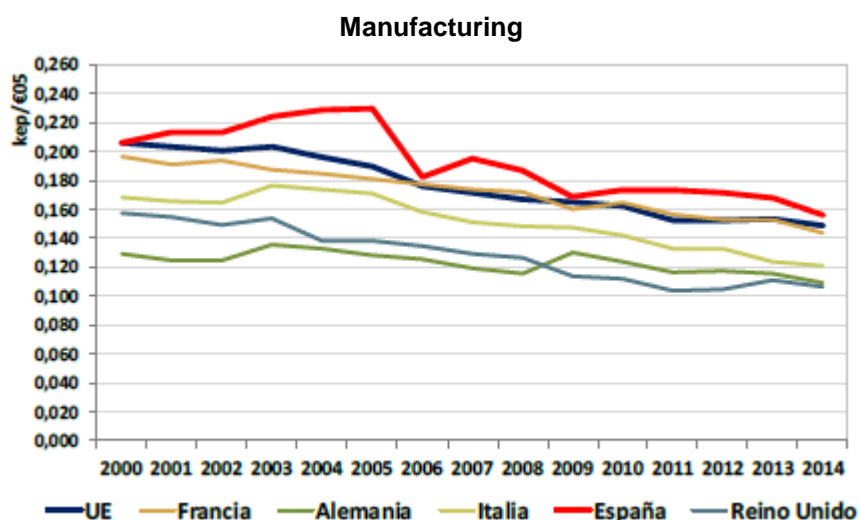
Source: MINETAD/IDAE

Resto Industria	Other industry
Minería	Mining
Metalurgia	Manufacture of basic metals

Prod. Metálicos y Bienes de Equipo	Fabricated metal products and capital goods
Minerales no Metálicos	Non-metallic minerals
Construcción	Construction
Química	Chemicals
Pasta y Papel	Pulp and paper
Textil	Textiles
Alimentación, Bebidas y Tabaco	Food, beverages and tobacco

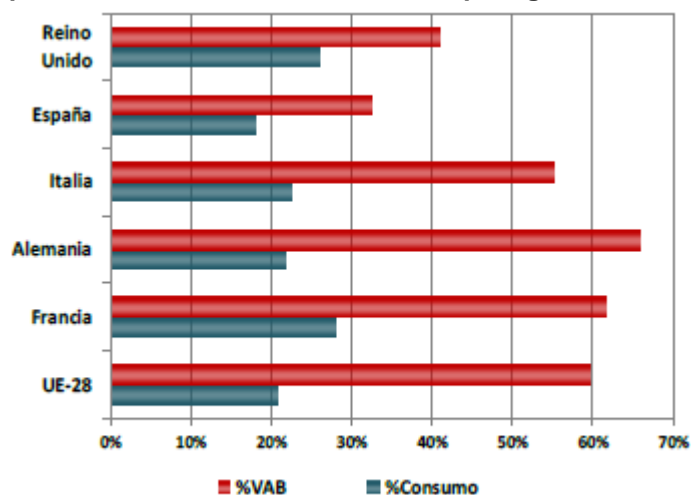
The characteristics inherent to Spain's biggest industrial subsectors are the reason its manufacturing sector's energy intensity exceeds that of the EU as a whole and, more specifically, that of traditionally industrial countries in its immediate environment such as France, Germany, the United Kingdom and Italy. This is explained by the increased share accounted for by less energy-intensive segments such as food and capital goods in the aforementioned countries, which means that the respective manufacturing segments make a greater contribution to GVA, consequently reducing the associated intensity.

Figure 4.4.1.2. Energy intensity of manufacturing industry in Spain and the EU (2000-2014)



kep/€05	kgoe/€05
0,260	0.260
0,240	0.240
0,220	0.220
0,180	0.180
0,160	0.160
0,140	0.140
0,120	0.120
0,100	0.100
0,080	0.080
0,060	0.060
0,040	0.040
0,020	0.020
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom

Representativeness of the food and capital goods industries



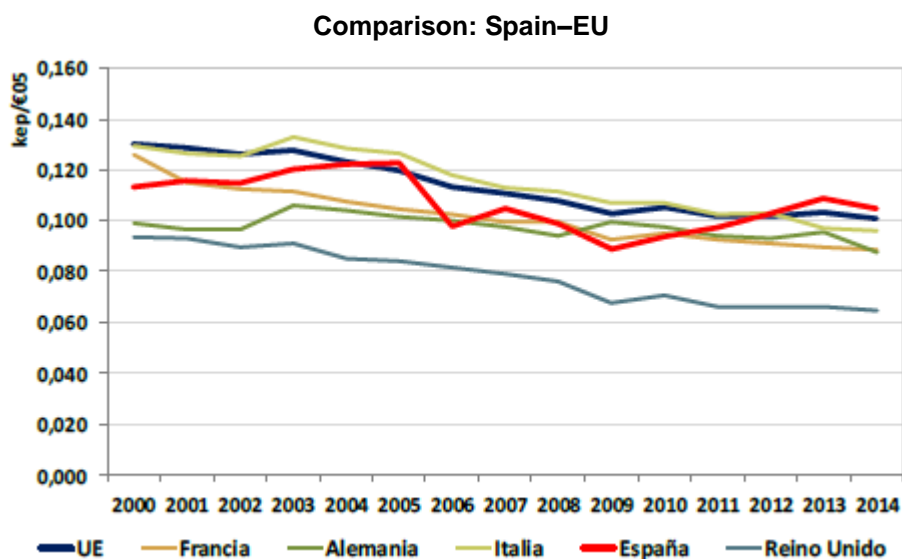
Source: ODYSSEE/IDAE/INE

Reino Unido	United Kingdom
España	Spain
Italia	Italy
Alemania	Germany
Francia	France
UE-28	EU-28
%VAB	% GVA
%Consumo	% consumption

In 2005, the national indicator for the manufacturing industry began a downward trend which, in general, continued after the beginning of the financial crisis in 2008, albeit with slight fluctuations. In 2014, the indicator dropped 6.9 % compared to the previous year as a result of modest recovery of economic activity in the manufacturing industry, shown by a 3.1 % rise in GVA and a 3.7 % drop in the corresponding energy demand.

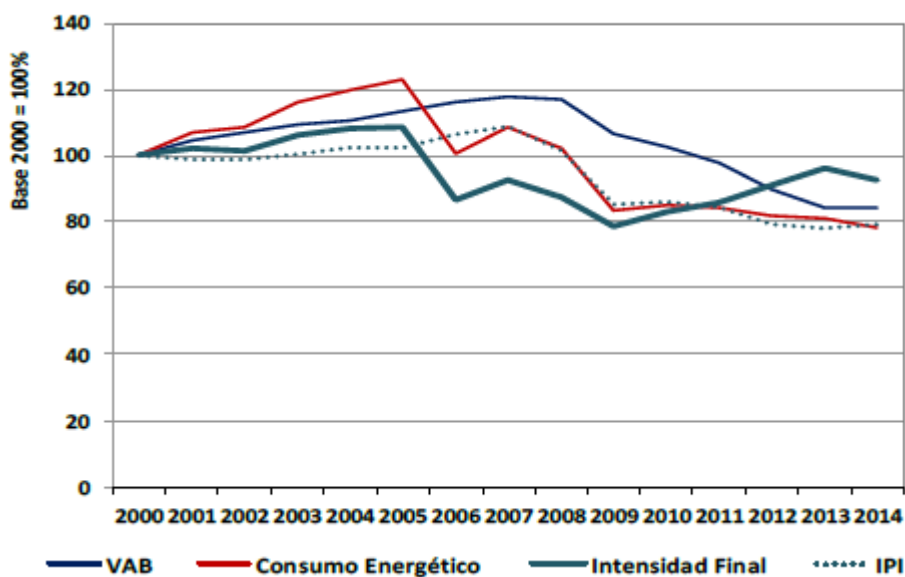
When compared at European level, and taking into consideration the industrial sector as a whole (including construction), the evaluation of energy intensity in Spain is more favourable, showing intensity below that of the EU average. However, from 2010 onwards, coinciding with the financial crisis, the indicator worsened.

Figure 4.4.1.3. Energy intensity of industry in Spain and the EU (2000-2014)



kep/€05	kgoe/€05
0,160	0.160
0,140	0.140
0,120	0.120
0,100	0.100
0,080	0.080
0,060	0.060
0,040	0.040
0,020	0.020
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom

Industrial intensity indicators in Spain



Source: INE/MINETAD/IDAE/EC

Base 2000 = 100%	Baseline 2000 = 100 %
VAB	GVA

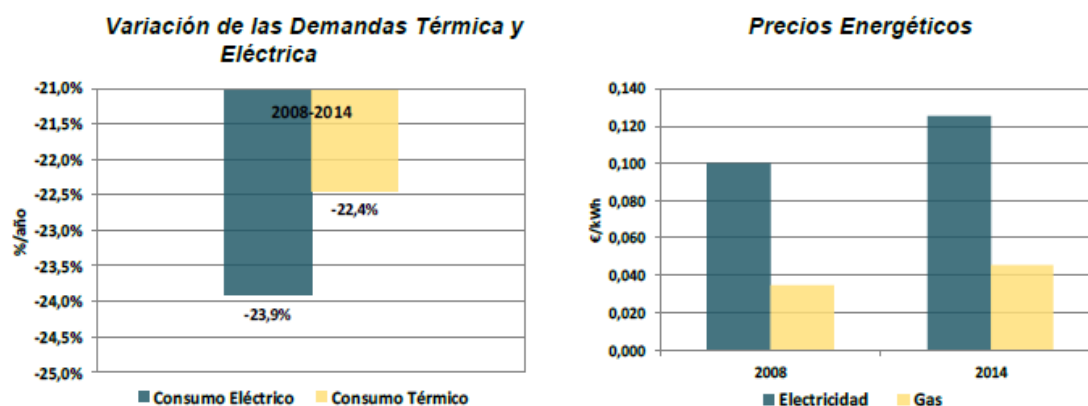
Consumo Energético	Energy consumption
Intensidad Final	Final intensity
IPI	IPI

The decrease in energy demand by the industrial sector as a whole in 2014 derives primarily from the drops in demand for gas (-3.1 %) and petroleum products (-4.9 %), which, together, represent 57.1 % of the sector's entire energy demand. In the case of natural gas, these demands are concentrated in the non-metallic minerals and chemicals industries, and in the case of petroleum products, in the non-metallic minerals industry. Electricity, which covers 31.1 % of the industrial sector's energy demand, experienced a slight increase of 1.2 % in 2014, which proved insufficient to offset the net reduction in demand.

The increase in demand for electricity throughout the last two decades, at a rate that exceeded that of fossil fuels and was particularly driven by economic activity in the metalworking, chemicals and food industries, should also be noted. In addition, in relative terms, electricity's share of consumption rose, reaching a high of 32 % in 2006. Thereafter, a change in trend occurred as regards thermal and electricity demands, possibly due in part to the energy efficiency measures taken under the 2004-2012 Energy Saving and Efficiency Strategy (E4). This change intensified during the recent financial crisis and the ensuing decline in economic activity in most industrial segments.

All of this was compounded by the increases in energy prices for industrial consumers from 2008 onwards, which, in the case of electricity, meant a slightly steeper decline in its demand during the first years of the financial crisis.

Figure 4.4.1.4. Industrial sector energy demands in Spain vs energy prices (2008-2014)



Note: Prices based on industrial company average: 2 000-20 000 MWh/year (electricity consumption); 10 000-100 000 GJ/year (gas consumption).

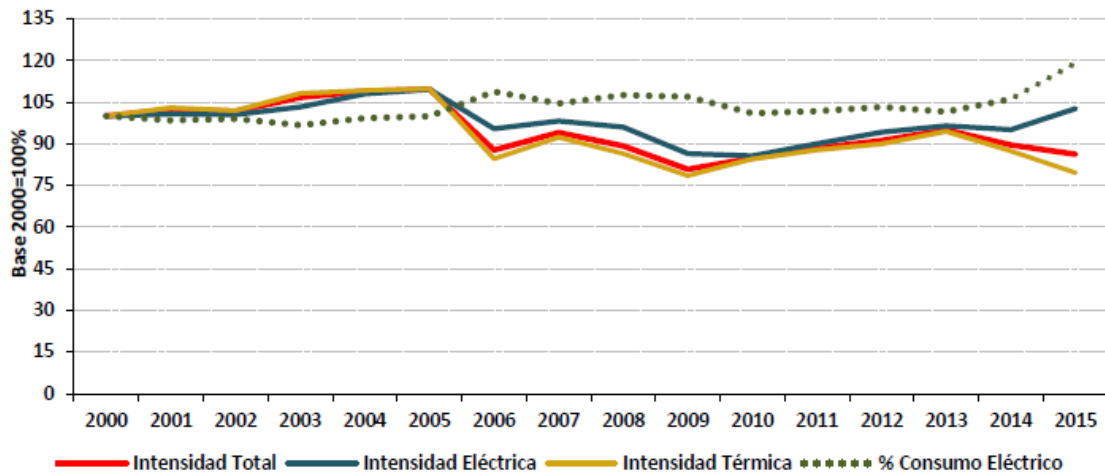
Source: IDAE/MINETAD/Eurostat

Variación de las Demandas Térmica y Eléctrica	Variation in thermal and electricity demand
%/año	%/year
-21,0%	-21.0 %
-21,5%	-21.5 %
-22,0%	-22.0 %
-22,5%	-22.5 %
-23,0%	-23.0 %
-23,5%	-23.5 %
-24,0%	-24.0 %
-24,5%	-24.5 %
-25,0%	-25.0 %
-23,9%	-23.9 %
-22,4%	-22.4 %

Consumo Eléctrico	Electricity consumption
Consumo Térmico	Thermal consumption
Precios Energéticos	Energy prices
€/kWh	€/kWh
0,140	0.140
0,120	0.120
0,100	0.100
0,080	0.080
0,060	0.060
0,040	0.040
0,020	0.020
0,000	0.000
Electricidad	Electricity
Gas	Gas

The above is shown in the following figure, reflected in the intensity trends associated with electricity and thermal demand, with both registering gradual increases up to 2005. Between 2005 and 2009, a drop in energy demand — which exceeded the decline experienced by GVA — occurred, essentially due to the adoption of energy-saving measures. Electricity intensity likewise decreased. However, a surge in overall energy intensity occurred between 2009 and 2013, followed by another decline in 2014 and 2015. Energy demand in the industrial sector continues to be covered primarily by fossil fuels. Consequently, this energy source has a significant impact on intensity (which is evolving in parallel with thermal intensity) in this sector.

Figure 4.4.1.5. Impact of electrification on energy intensity in Spain's industrial sector



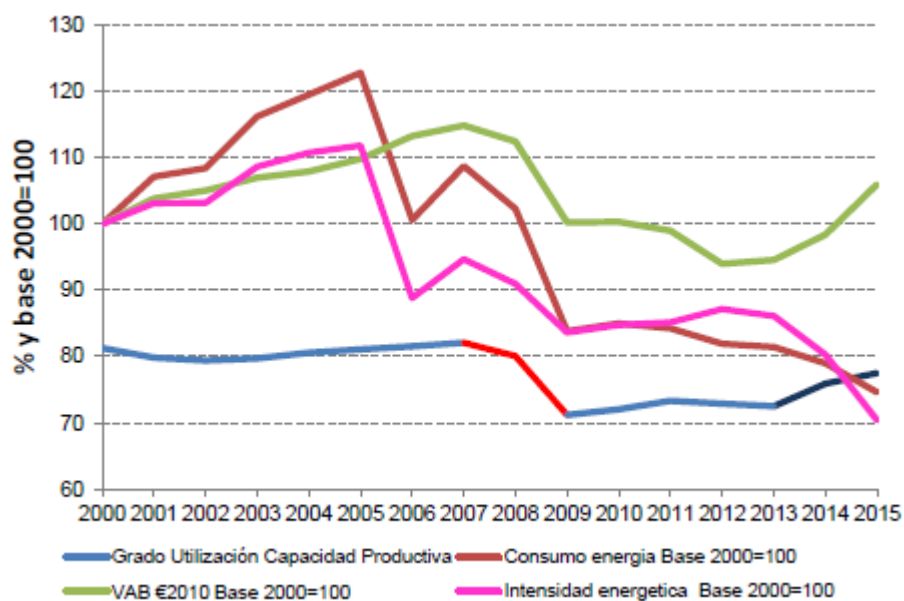
Source: IDAE/MINETAD

Base 2000 = 100%	Baseline 2000 = 100 %
Intensidad Total	Total intensity
Intensidad Eléctrica	Electricity intensity
Intensidad Térmica	Thermal intensity
% Consumo Eléctrico	% electricity consumption

Within this characterisation of the industrial sector, it is also necessary to analyse the relationship between the sector's energy consumption and capacity utilisation, which is closely linked to trends in the economic cycle. Looking back on the course charted by the industrial sector in Spain and most EU countries shows the close interdependence between these variables.

As illustrated in the following figure, energy consumption and GVA are directly related to capacity utilisation.

Figure 4.4.1.6. Impact of capacity utilisation by Spain's industrial sector



Source: IDAE

% y base 2000 = 100	% and baseline 2000 = 100
Grado Utilización Capacidad Productiva	Capacity utilisation
VAB €2010 Base 2000 = 100	GVA €2010 baseline 2000 = 100
Consumo energía Base 2000 = 100	Energy consumption baseline 2000 = 100
Intensidad energética Base 2000 = 100	Energy intensity baseline 2000 = 100

As shown, between 2000 and 2007, capacity utilisation rose from 81.25 % to 82.2 %. Lowest capacity utilisation was recorded in 2009 (71.75 %), remaining more or less at that level until 2013 (72.5 %), when the industrial sector began to recover, as evidenced by both GVA and capacity utilisation.

Between 2009 and 2013, although energy consumption decreased slightly (by just over two points), specific consumption increased as a consequence of both the inefficiency inherent in running equipment below its nominal capacity and the energy consumption associated with inert production process elements (cars, supports, refractory masses, etc.).

From 2013 onwards, both GVA and capacity utilisation increased. However, energy demand fell as a result of the adoption of energy-saving measures. By contrast, the industrial sector's economic environment led to an increase in energy demand stemming from the increased contribution of the industrial sector's GVA to national GVA. These energy-saving measures caused energy intensity to drop between 2013 and 2015.

A more detailed analysis of the industrial sector can be derived by breaking down changes in the sector's energy consumption into the main factors which contribute towards them, taking into consideration energy variables as well as technical and socioeconomic ones:

- Economic activity, which measures the effect of changes in the amount of value added.
- Structural changes, measured by changes in the structure of the value added per industry segment.

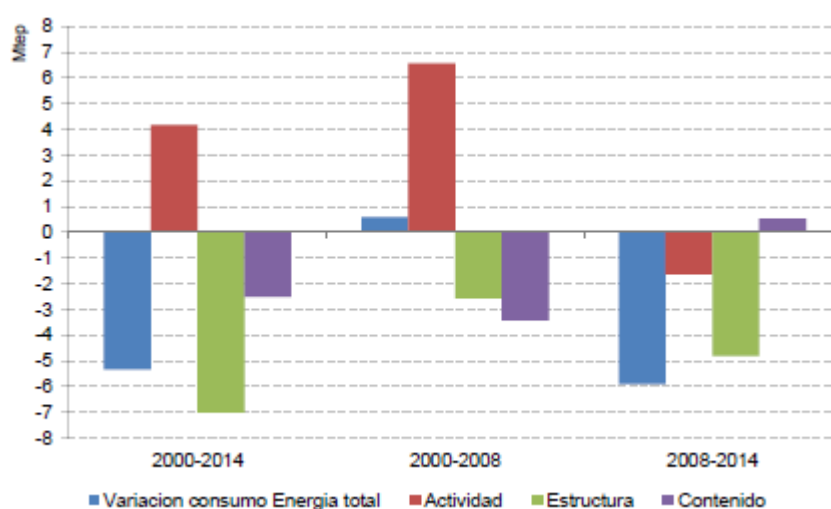
- Content, linked to energy savings and technological developments.

Between 2000 and 2014, energy consumption in Spain's industrial sector fell by 5.3 Mtoe. This was mainly underpinned by the combination of two factors — structural effects and energy savings associated with technological improvements — which, together, produced a 9.5-Mtoe decrease in consumption during that period. Conversely, economic activity resulted in a 4.1-Mtoe increase in consumption.

Distinguishing between the periods prior to and following the financial crisis, the various factors contributed to differing degrees, with effects related to structure, economic activity and content — the behaviour of which differed between the two periods — being particularly pronounced. Thus, between 2000 and 2008, the rise in economic activity contributed towards increased energy consumption; in contrast, the impact of structure and content (energy saving) greatly contributed to the drop in energy demand. However, during the period following the financial crisis, the impact of economic activity and structure helped lower energy demand, while content affected energy demand negatively, causing it to rise.

It should be noted that the content effect (energy savings) increased during this latter period due to low capacity utilisation during the financial crisis and to increased inefficiency in equipment performance in the adverse economic environment, as previously stated, reaching 1.5 Mtoe between 2008 and 2013. In 2014, economic recovery in the industrial sector led to greater optimisation in the use and performance of industrial equipment; consequently, these negative effects were mitigated between 2008 and 2014.

Figure 4.4.1.6. Breakdown of energy consumption in the industrial sector



Source: IDAE

Mtep	Mtoe
Varación consume Energía total	Variation in total energy consumption
Actividad	Activity
Estructura	Structure
Contenido	Content

4.4.2. Energy end-use efficiency measures in industry

The following direct actions were carried out with the aim of reducing final energy consumption in the industrial sector:

Industrial competitiveness incentive programme (Ministry of Economy, Industry and Competitiveness)

The aim of the industrial competitiveness incentive programme (Order IET/274/2015 of 13 February 2015 announcing the granting of financial aid for industrial investment as part of the public policy to promote industrial competitiveness in 2015, BOE 20/02/2015) was to stimulate business investment that would contribute significantly towards generating added value in the industrial sector.

With this objective, this programme has supported investment plans to improve industrial facilities in operation by making changes and modifications intended to have a significant impact on their competitiveness. More specifically, the purpose of the aid was to help beneficiary companies shift towards newer production models which were more advanced, efficient and environmentally friendly, and towards the manufacture of products and the provision of services with greater added value, enabling the companies to gain access to and increase their presence in international markets.

Enterprises operating in the categories below were eligible for the aid:

1. Manufacturing industry in general.
2. Manufacture of vehicles powered by alternative energies, their equipment and parts; and manufacture of products linked to their associated infrastructure.
3. Aerospace industry.

Support came in the form of reimbursable loans, with a 10-year repayment period, for industrial investment to improve and/or modify previously existing production lines. These improvements/modifications were defined as a piece or set of equipment intended to replace previously installed elements on the line or to supplement the line, with the aim of improving its characteristics or modifying production characteristics.

These modifications could comprise changes to the line's production capacity but could not constitute new production lines separate from the older ones. In all cases, companies eligible for support through this programme had to report on final energy savings for the projects for which support was provided.

Since 2015, the industrial competitiveness incentive programme has quantified the energy savings of approved projects. That year, 297 projects were approved, representing investment of EUR 548 million and an estimated saving of 47 515 toe/year.

Aid programme for energy efficiency measures in SMEs and large industrial enterprises financed by the EENF

The **aid programme for energy efficiency measures in SMEs and large industrial enterprises financed by the EENF** was approved on 28 April 2015 in order to provide incentives for and promote policies in the industrial sector which reduce carbon dioxide emissions by improving energy efficiency, with the aim of reducing final energy consumption.

The programme was initially allocated a budget of EUR 49 016 421, which was increased by EUR 66 200 000 by Decision of the IDAE Board of Directors of 27 December 2015, bringing the total budget — financed by the EENF — to EUR 115 216 421.

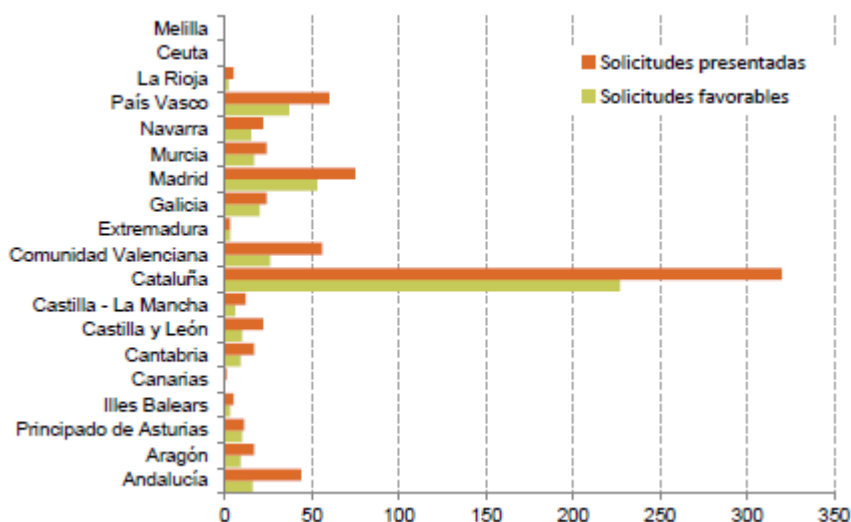
Aid will be provided in the form of monetary grants without consideration, the maximum amount being 30 % of the corresponding eligible investment up to a ceiling of EUR 4 million per

application. The measures for which support was provided fall into one or more of the following categories:

- Policy measure 1: Improvement of industrial equipment and process technology (minimum eligible investment of EUR 75 000).
- Policy measure 2: Implementation of energy management systems (minimum eligible investment of EUR 30 000).

The programme, which concluded on 5 May 2016, received a total of 718 applications corresponding to investment of EUR 587 million. To date, 464 applications have been approved (as 90 remain to be assessed, this figure is provisional). As regards the breakdown by autonomous community of the number of applications, Catalonia led the list with nearly 45 % of the total, followed by Madrid, the Basque Country and Valencia:

Figure 4.4.2.1.1. Applications submitted approved under the aid programme for SMEs and large enterprises, financed by the EENF



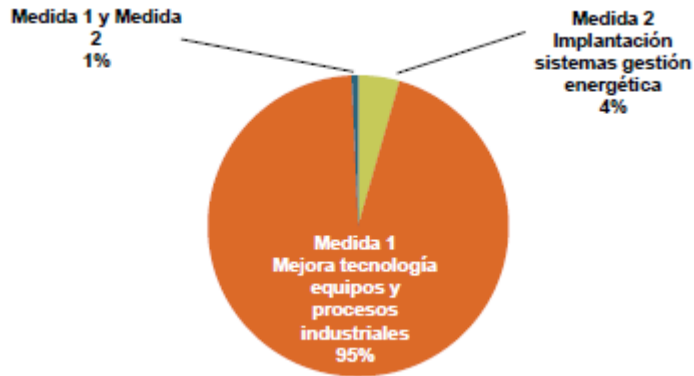
Note: Provisional data

Source: IDAE

Melilla	Melilla
Ceuta	Ceuta
La Rioja	Rioja
País Vasco	Basque Country
Navarra	Navarre
Murcia	Murcia
Madrid	Madrid
Galicia	Galicia
Extremadura	Extremadura
Comunidad Valenciana	Valencia
Cataluña	Catalonia
Castilla – La Mancha	Castile-La Mancha
Castilla y León	Castile-Leon
Cantabria	Cantabria
Canarias	Canary Islands
Illes Balears	Balearic Islands
Principado de Asturias	Asturias
Aragón	Aragon
Andalucía	Andalusia
Solicitudes presentadas	Applications submitted
Solicitudes favorables	Applications approved

As for the types of actions carried out, Measure 1 on 'Improvement of industrial equipment and process technology' was the most common, followed by Measure 2 on 'Implementation of energy management systems' and, lastly, the joint implementation of Measures 1 and 2.

Figure 4.4.2.1.2. Measures implemented under the aid programme for SMEs and large enterprises, financed by the EENF



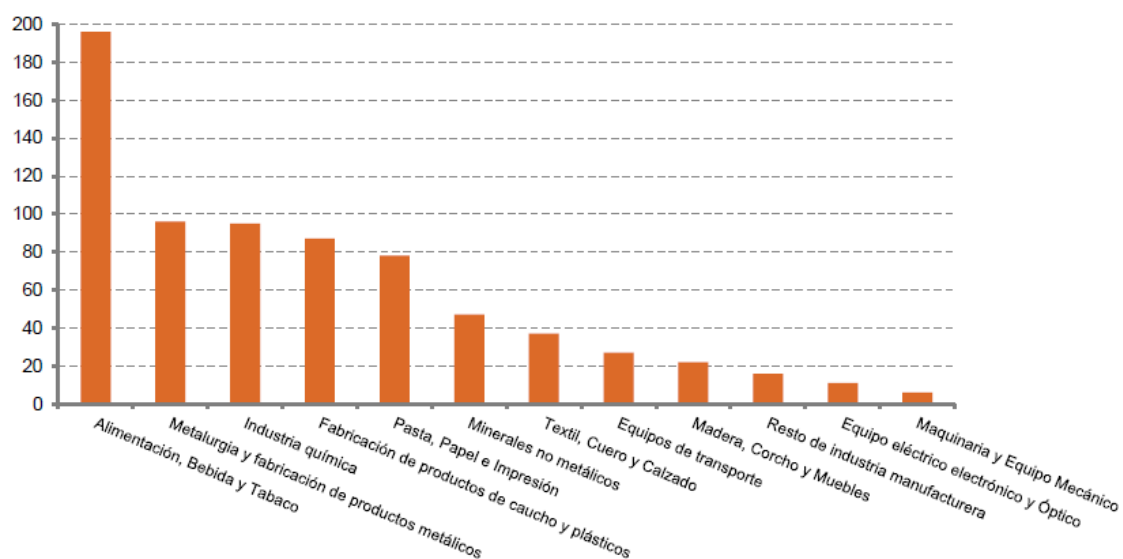
Note: Provisional data

Source: IDAE

Medida 1 y Medida 2	Measure 1 and Measure 2
Medida 1	Measure 1
Mejora tecnología equipos y procesos industriales	Improvement of industrial equipment and process technology
Medida 2	Measure 2
Implantación sistemas gestión energética	Implementation of energy management systems

In relation to the different segments that make up the industrial sector, the results were as follows:

Figure 4.4.2.1.3. Number of applications per segment under the aid programme for SMEs and large enterprises, financed by the EENF

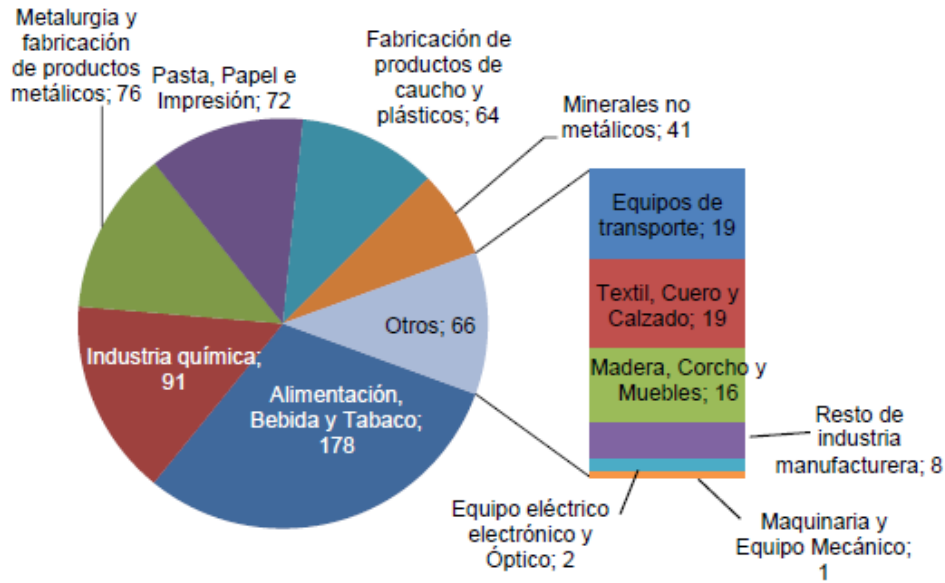


Source: IDAE

Alimentación, Bebida y Tabaco	Food, beverages and tobacco
Metalurgia y fabricación de productos metálicos	Basic metals and fabricated metal products
Industria química	Chemicals and chemical products
Fabricación de productos de caucho y plástico	Manufacture of rubber and plastic products
Pasta, Papel e Impresión	Pulp, paper and printing
Minerales no metálicos	Non-metallic minerals
Textil, Cuero y Calzado	Textiles, leather and footwear
Equipos de Transporte	Transport equipment
Madera, Corcho y Muebles	Wood, cork and furniture
Resto de industria manufacturera	Other manufacturing
Equipo eléctrico electrónico y Óptico	Electrical, electronic and optical equipment
Maquinaria y Equipo Mecánico	Machinery and equipment

In relation to the amount of investment associated with the applications submitted, as seen in the following figure, the Food, beverages and tobacco segment accounted for the highest figure (EUR 178 million), followed by Chemicals and chemical products, Basic metals and fabricated metal products, Pulp, paper and printing, Manufacture of rubber and plastic products and Non-metallic minerals. These segments accounted for 89 % of total solicited investment aid.

Figure 4.4.2.1.4. Investment per segment under the aid programme for SMEs and large enterprises, financed by the EENF (EUR million)



Note: Provisional data

Source: IDAE

Metalurgia y fabricación de productos metálicos	Basic metals and fabricated metal products
Industria química	Chemicals and chemical products
Alimentación, Bebida y Tabaco	Food, beverages and tobacco
Otros	Other
Minerales no metálicos	Non-metallic minerals
Fabricación de productos de caucho y plásticos	Manufacture of rubber and plastic products
Pasta, papel e Impresión	Pulp, paper and printing
Equipos de transporte	Transport equipment
Textil, Cuero y Calzado	Textiles, leather and footwear
Madera, Corcho y Muebles	Wood, cork and furniture
Resto de industria manufacturera	Other manufacturing
Equipo eléctrico electrónico y Óptico	Electrical, electronic and optical equipment
Maquinaria y Equipo Mecánico	Machinery and equipment

A second call for applications is scheduled to be published soon and will be allocated a budget of EUR 66.2 million financed by the EENF.

4.5. ENERGY EFFICIENCY IN TRANSPORT

4.5.1. Analysis and characterisation of the transport sector

Characterisation of the transport sector

The transport sector comprises the means, equipment and actions by which passengers and freight, primarily, are carried from one place to another. The means of transport can be divided by type into land (road and rail), air and sea/river transport. Modes of transport are combinations of networks, vehicles and operations. These include foot, bicycle, car, the road and rail networks, river and sea transport, air transport and even combinations of several of the three types of transport. The combination of different modes of transport is known as intermodal or multimodal transport.

Mobility is inherent to human beings and is closely linked to our development and economic growth. Energy efficiency measures to be implemented in the transport sector must guarantee long-term accessibility and mobility and satisfy increasingly demanding air-quality requirements.

To achieve this, it is essential to apply demand management, energy efficiency and fuel-mix diversification criteria which, in turn, will ensure greater security of supply and reduced dependency on petroleum products.

What most stood out in 2015 was the consolidation of growth in all areas of mobility; first noticed in 2014, it soon developed into a more definitive pattern. As the economy recovers, traffic levels which declined during the financial crisis are now on the upturn. This recent development contrasts with the downward trend seen between 2008 and 2013, when consumption fell at an average annual rate of 4.7 %, demonstrating that transport is a procyclical indicator of economic activity, falling below the GDP ratio during periods of recession and registering growth rates above those of the GDP ratio during periods of expansion.

According to data from the DGC (*Dirección General de Carreteras* [Directorate-General for Roads]), in 2015, **road passenger transport** rose 4.5 % compared to 2014 and road freight transport saw a 6.2 % increase in tonnes-km. Once again, this growth exceeded that of GDP.

Given the trend demonstrating consumption recovery in the transport sector, it is of vital importance that this growth be achieved as efficiently as possible, promoting modal shift to more efficient means of transport (public transport and rail freight); fleet renovation, applying energy efficiency criteria; and the implementation of, *inter alia*, fleet management systems and ecodriving practices as basic standards for road transport.

In addition, in 2015, **rail transport** maintained the upward trend seen in recent years. Transport demand in passenger-km grew 4.3 % compared to 2014. The increase in long-distance services stood out, with a 15 % rise in passenger-km in high-speed services. Other services also increased, although more moderately. Net rail tonnes-km also climbed 5.6 %. Nevertheless, rail use for freight transport in Spain only accounts for some 5 %, registering below its average use in countries in Spain's immediate environment, such as France (13 %) and Germany (19 %). From an energy perspective, rail is by far the most efficient mode of transport for carrying passengers and freight.

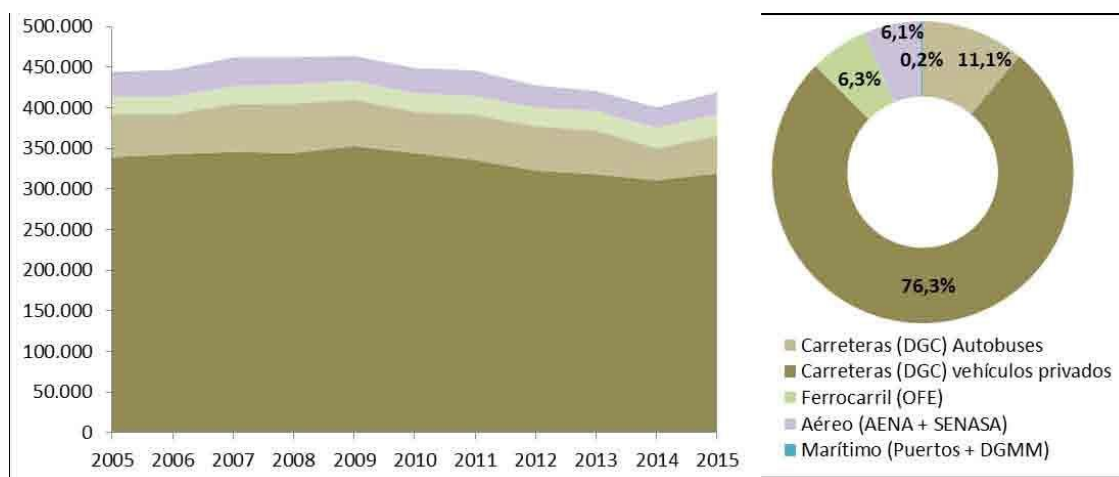
Therefore, it is essential to introduce measures designed to promote greater use of and increased energy efficiency in rail transport, as will be discussed in section 4.5.2 regarding measures in the transport sector.

Sea transport also obtained positive results in 2015, with state-owned ports seeing the volume of tonnes transported increase by 4 % and the number of passengers by 6 %. It was also a good year for **air transport**, as the total number of flights grew year-on-year by 2.9 %. The number of seats offered also increased.

It should be noted that **metropolitan transport** remained extremely significant as regards mobility in Spain, accounting for approximately 88 % of total passengers, according to the OTLE (*Observatorio del Transporte y la Logística en España* [Spanish Transport and Logistics Observatory]). According to data from the INE's Passenger Transport Statistics, in 2015, over 4.5 million passenger journeys were made on public transport, and more than 4 million of those trips took place within metropolitan areas.

Hence, it is vital to work on metropolitan transport via the promotion of plans for travel to the workplace and sustainable urban mobility plans, as will be explained in section 4.5.2 on energy efficiency measures in the transport sector.

Figure 4.5.1.1. Figures per mode of passenger transport in Spain (million passenger-km) (2005-2015)



Source: OTLE, 2015

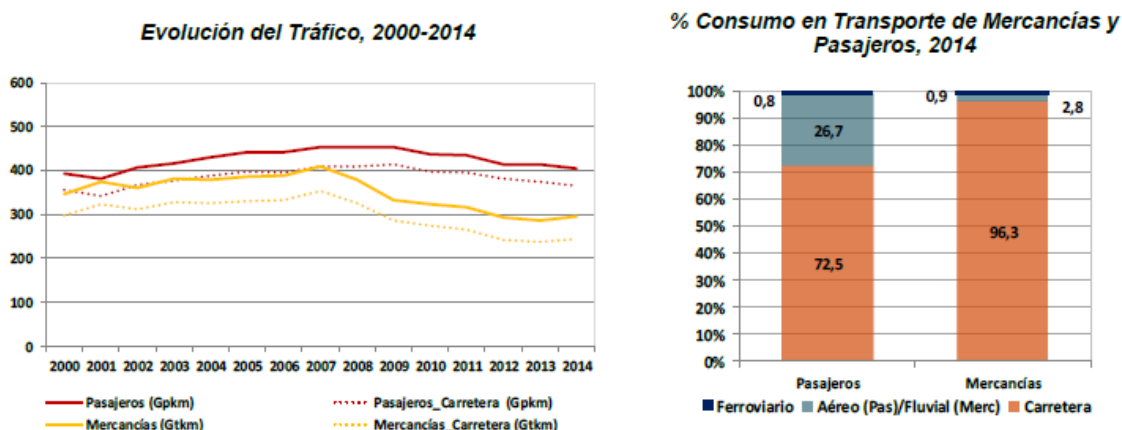
500.000	500 000
450.000	450 000
400.000	400 000
350.000	350 000
300.000	300 000
250.000	250 000
200.000	200 000
150.000	150 000
100.000	100 000
50.000	50 000
6,1%	6.1 %
6,3%	6.3 %
76,3%	76.3 %
11,1%	11.1 %
0,2%	0.2 %
Carreteras (DGC) Autobuses	Road (DGC) Bus
Carreteras (DGC) vehículos privados	Road (DGC) Private vehicles
Ferrocarril (OFE)	Rail (OFE)
Aéreo (AENA + SENASA)	Air (AENA + SENASA)
Marítimo (puertos + DGMM)	Sea (ports + DGMM)

Analysis of the transport sector's impact on energy consumption

The previously described surge in economic activity in the transport sector, which was mainly

linked to road freight transport, resulted in an increase in energy demand within the sector. Meanwhile, passenger transport, which accounts for almost 60 % of the sector's energy demand, is recovering more slowly than freight transport; hence, it had less of an impact on energy consumption in 2015.

Figure 4.5.1.2. Freight and passenger traffic

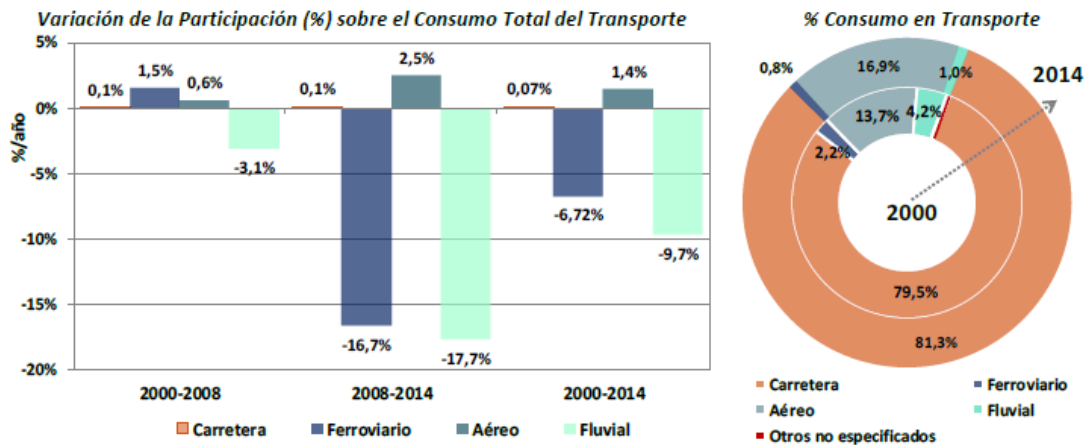


Source: MFOM/MINETAD/IDAE/DGT

Evolución del Tráfico	Changes in traffic
Pasajeros (Gpkm)	Passengers (Gpkm)
Mercancías (Gtkm)	Freight (Gtkm)
Pasajeros_Carretera (Gpkm)	Road passengers (Gpkm)
Mercancías_Carretera (Gtkm)	Road freight (Gtkm)
% Consumo en Transporte de Mercancías y Pasajeros	% consumption by freight and passenger transport
0,8	0.8
26,7	26.7
72,5	72.5
0,9	0.9
2,8	2.8
96,3	96.3
Pasajeros	Passenger
Mercancías	Freight
Ferrovioario	Rail
Aéreo (Pas)/Fluvial (merc)	Air (pass.)/River (freight)
Carretera	Road

Road and air transport consume the most energy, contributing substantially to the way demand develops in the energy sector. The upturn in demand seen in 2015 resulted in greater consumption of petroleum products, which met 95.6 % of energy demand in the transport sector as a whole and were concentrated in road (81 %) and air (17 %) transport.

Figure 4.5.1.3. Energy consumption in Spain, by mode of transport (2000-2014)



Source: MINETAD/IDAE

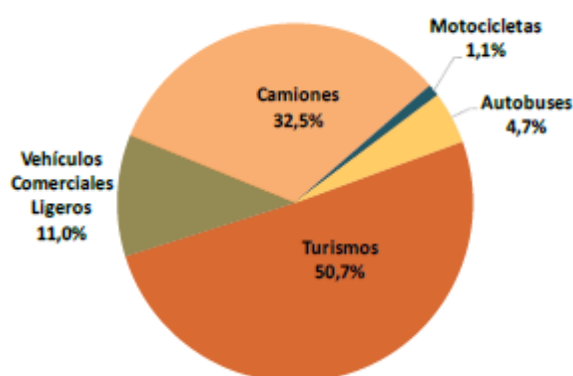
Variación de la Participación (%) sobre el Consumo Total del Transporte	Variation in share of demand as a percentage of total transport sector consumption
%/año	%/year
0,1%	0.1 %
1,5%	1.5 %
0,6%	0.6 %
-3,1%	-3.1 %
0,1%	0.1 %
-16,7%	-16.7 %
2,5%	2.5 %
-17,7%	-17.7 %
0,07%	0.07 %
-6,72%	-6.72 %
1,4%	1.4 %
-9,7%	-9.7 %
Carretera	Road
Ferrovioario	Rail
Aéreo	Air
Fluvial	River
% Consumo en Transporte	Share of transport sector consumption (%)
0,8%	0.8 %
16,9%	16.9 %
81,3%	81.3 %
1,0%	1.0 %
13,7%	13.7 %
2,2%	2.2 %
79,5%	79.5 %
4,2%	4.2 %
Carretera	Road
Aéreo	Air
Otros no especificados	Other unspecified
Ferrovioario	Rail
Fluvial	River

Biofuels have also had a positive impact on energy demand in road transport, accounting for 3.5 % of consumption in this mode in 2015. The mandatory annual targets for biofuel consumption up to the year 2020 are laid down in Royal Decree 1085/2015 of 4 December 2015 on the promotion of biofuels.

The contributions of alternative fuels and technologies are expected to increase as a result of technological developments in vehicles, policies adopted in accordance with existing Community guidelines on the decarbonisation of transport — listed in the 2010-2030 White Paper on Transport — and the need to meet demands to improve air quality in cities. Further details of the targets set for Spain in relation to alternative-fuel vehicles are found in section 4.5.2.

Underlying causes of the increased contribution to total energy demand by the transport sector — particularly by road — include various factors, such as expanded mobility related to the use of private vehicles (with low occupancy rates), rail's low share of freight and passenger transport, and Spain's ageing vehicle fleet. Specifically, passenger-vehicle consumption accounts for 50 % of road transport's final energy consumption, which is equivalent to 41 % of the transport sector's total energy consumption.

Figure 4.5.1.4. Road transport final energy consumption, by vehicle type (2014)



Source: IDAE/DGT

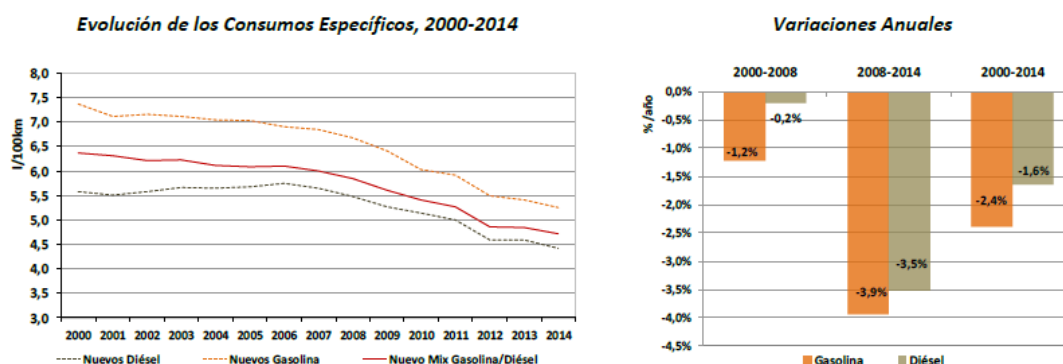
Camiones 32,5%	Trucks 32.5 %
Vehículos Comerciales Ligeros 11,0%	Light commercial vehicles 11.0 %
Turismos 50,7%	Passenger vehicles 50.7 %
Autobuses 4,7%	Buses 4.7 %
Motocicletas 1,1%	Motorcycles 1.1 %

The last two decades have seen a significant increase in the national fleet of privately owned vehicles, **a growing proportion of which are diesel-powered**. However, with the rise in demand for petrol-engined vehicles in 2015 y 2016, **this trend appears to be waning**. Possible causes include increased sales of petrol-engined hybrid vehicles — which bear ecolabel certification, awarded by Spain's DGT (*Dirección General de Tráfico* [Directorate-General for Traffic]) — and greater awareness of air-quality issues in cities.

It is important to mention the technology upgrades in Spain's vehicle fleet as a result of the entry into the market of new engine and design developments, which are driving gradual renewal as ageing vehicles are replaced by more efficient models. In absolute terms, diesel-engined vehicles showed greater momentum although, relatively speaking, petrol-engined vehicles experienced more marked progress, having started from a less favourable position.

Together with the ageing vehicle fleet, these technological advances justified the major plans to renew the fleet launched between 2012 and 2016, such as the eight iterations of the PIVE, further detailed in section 4.5.2 on measures in the transport sector.

Figure 4.5.1.5. Specific consumption by new cars in Spain

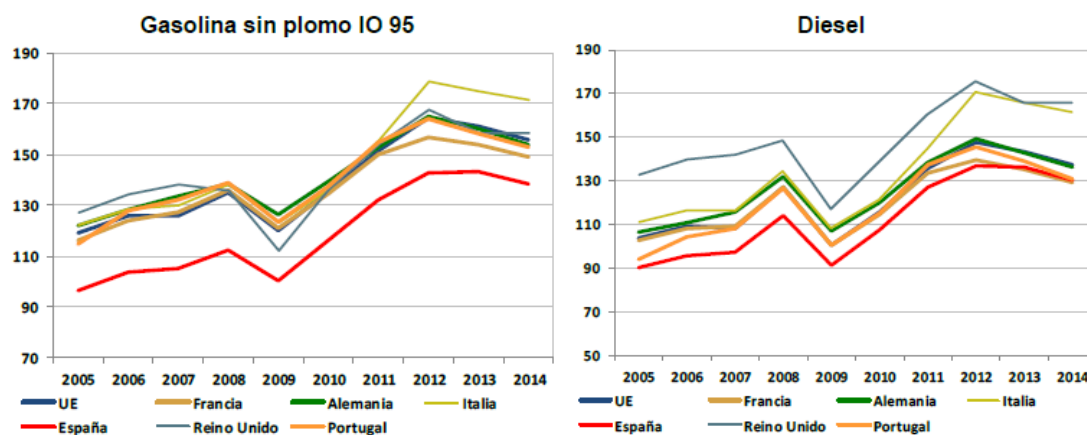


Source: IDAE/DGT/ACEA, JAMA, KAMA

Evolución de los Consumos Específicos, 2000-2014 l/100 km	Trend in specific consumption (2000-2014) l/100 km
8,0	8.0
7,5	7.5
7,0	7.0
6,5	6.5
6,0	6.0
5,5	5.5
5,0	5.0
4,5	4.5
4,0	4.0
3,5	3.5
3,0	3.0
Nuevo Diésel	New, diesel
Nuevos Gasolina	New, petrol
Nuevo Mix Gasolina/Diésel	New, mixed petrol/diesel
Variaciones Anuales	Annual variations
%/año	%/year
0,0%	0.0 %
-0,5%	-0.5 %
-1,0%	-1.0 %
-1,5%	-1.5 %
-2,0%	-2.0 %
-2,5%	-2.5 %
-3,0%	-3.0 %
-3,5%	-3.5 %
-4,0%	-4.0 %
-4,5%	-4.5 %
-1,2%	-1.2 %
-0,2%	-0.2 %
-3,9%	-3.9 %
-3,5%	-3.5 %
-2,4%	-2.4 %
-1,6%	-1.6 %
Gasolina	Petrol
Diésel	Diesel

In addition to the increased size and diesel use of Spain's fleet, in recent years, fuel prices in the country have fallen below those of neighbouring nations such as Portugal and France, encouraging drivers of long-haul freight trucks to fill up their fuel tanks in Spain.

Figure 4.5.1.6. Fuel prices (€/l) in Spain and the EU (2005-2014)



Note: Taxes included.

Source: MINETAD

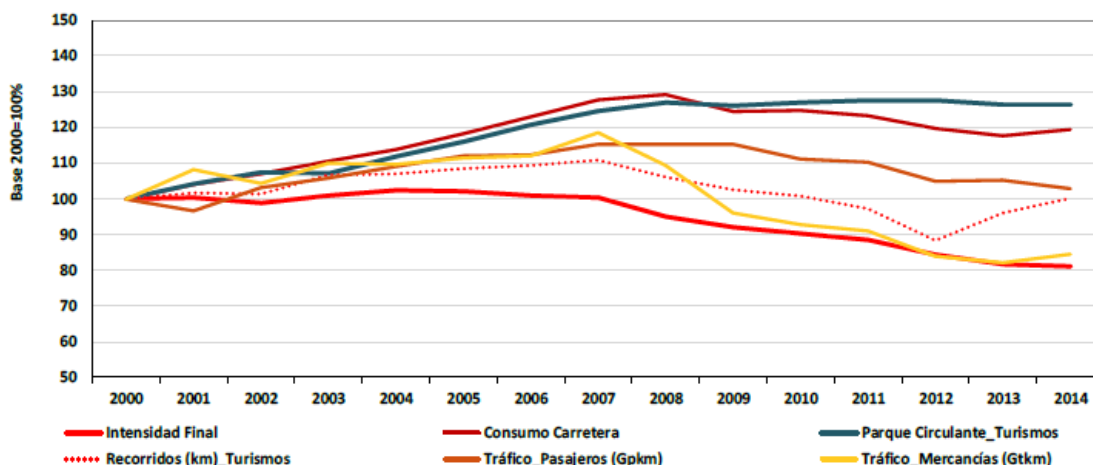
Gasolina sin plomo IO 95	Unleaded petrol (95 RON)
UE	EU
España	Spain
Francia	France
Reino Unido	United Kingdom
Alemania	Germany
Portugal	Portugal
Italia	Italy
Diésel	Diesel
UE	EU
España	Spain
Francia	France
Reino Unido	United Kingdom
Alemania	Germany
Portugal	Portugal
Italia	Italy

Furthermore, the price factor underscores the border trade phenomenon associated with sales to neighbouring states due to price differentials, whereby consumption takes place outside Spain yet is quantified within the country.

To differentiate between consumption produced within a particular country and that taking place beyond its borders, some nations factor in an adjustment that can be as high as 20 % of road-transport consumption. The application of a similar method of adjustment in Spain would lead to a drop in domestic consumption and, consequently, an improved intensity indicator for this transport mode. In line with the above, the IDAE conducted a study on energy consumption by the privately owned passenger-vehicle fleet which, *inter alia*, made it possible to calculate the extent of this effect in Spain; in the case of petrol, this figure amounted to over 6 % of consumption.

The factors cited explain the trends regarding consumption and intensity in Spain's transport sector, as well as why the country's intensity level registers at 15 % above the average for the EU as a whole.

Figure 4.5.1.7. Transport sector intensity indicators (2000-2014)

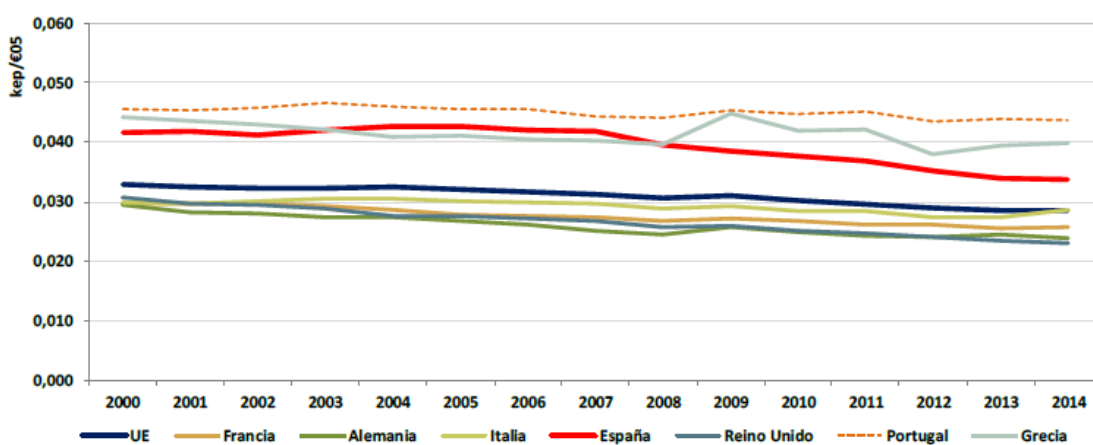


Source: DGT/MFOM/MINETAD/IDAE

Base 2000 = 100%	Baseline 2000 = 100 %
Intensidad Final	Final intensity
Recorridos (km)_Turismos	Passenger-vehicle distance travelled (km)
Consumo Carretera	Road transport consumption
Tráfico_Pasajeros (Gpkm)	Passenger traffic (Gpkm)
Parque Circulante_Turismos	Passenger vehicle fleet
Tráfico_Mercancías (Gtkm)	Freight traffic (Gtkm)

From 2004 onwards, a downward trend has been observed in Spain, narrowing the distance between the Spanish and European indicators. This development regarding intensity is due to efficiency improvements stemming from measures implemented under the energy saving and efficiency action plans — consolidated by structural effects and economic activity in various sectors of the economy brought about by the financial crisis — which have reduced mobility associated with freight and passenger transport in Spain and other EU countries. The slight stabilisation in the national indicator seen in 2014 corresponded to the recovery in freight traffic and mobility.

Figure 4.5.1.8. Transport sector energy intensity in Spain and the EU (2000-2014)



Source: EC/IDAE

kgpe/€05	kgoe/€05
0,060	0.060
0,050	0.050
0,040	0.040

0,030	0.030
0,020	0.020
0,010	0.010
0,000	0.000
UE	EU
Francia	France
Alemania	Germany
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Portugal	Portugal
Grecia	Greece

The various initiatives currently in place targeting the transport sector with the aim of improving its intensity levels are explained in detail in section 4.5.2.

4.5.2. Energy end-use efficiency measures in transport

The current section describes achievements in the transport sector during the period under review and presents additional measures to be carried out.

Energy saving and efficiency measures in Spain's transport sector shall be designed to save energy by encouraging use of the means of transport with lowest energy consumption per unit transported. This shall be accomplished by promoting more efficient technologies and uses in addition to encouraging fuel-mix diversification to ensure supply and reduce pollutant and greenhouse gas emissions.

In this context, measures to be implemented shall pertain to one of the following areas:

- **Actions aimed at promoting modal shift** in personal mobility and freight transport towards modes which consume less energy per passenger-km or tonne-km.
- **Actions aimed at improving national vehicle fleet efficiency** by renewing fleets and incorporating technological advancements.
- **Actions aimed at promoting efficient use** of means of transport.

As regards initiatives pertaining to these areas, those which have been implemented in recent years are described in more detail below, as are forecasts for 2020.

A. Actions aimed at promoting modal shift in personal mobility and freight transport towards more energy-efficient modes.

Spain has a markedly urban population. Law 2/2011 of 4 March 2011 on the sustainable economy creates a legal framework for promoting **sustainable mobility plans** under the **Spanish Sustainable Mobility Strategy** adopted by the Council of Ministers on 30 April 2009.

Under this law, in recent years urban mobility plans have been drawn up in practically every Spanish municipality with more than 50 000 inhabitants. These plans were financed under the 2008-2012 Energy Efficiency Action Plan, implemented in collaboration with the respective regional governments.

In order to promote continuity in the application of these types of plans in municipalities with more than 50 000 inhabitants (municipalities required to provide urban transport services under Law 7/1985 regulating local government), Law 22/2013 of 23 December 2013 on the general

state budget includes, for the first time, application of a mechanism by which to evaluate energy efficiency criteria when awarding state aid to public transport systems. Accordingly, as of 1 January 2014, under Law 22/2013 the award of all aid or subsidies to regional governments or local authorities for urban or metropolitan public transport is dependent (at 5 % of the amount assigned) on the beneficiary having a sustainable urban mobility plan in place.

Spain intends to continue working on urban mobility — promoting the implementation of sustainable urban mobility plans approved by individual municipalities to achieve significant changes in modal split and a greater share for means of transport which consume less energy per passenger-km, in detriment to the use of private, low-occupation vehicles — and to continue encouraging the use of non-motorised means of transport, such as walking and cycling.

The DGT is developing a national bicycle strategy while amending the General Regulation on Road Traffic, which shall include a specific chapter on bicycle use.

In 2016, through a partnership agreement between the IDAE and the ATUC (*Asociación de Operadores de Transporte Urbano Colectivo* [Association of Urban Public Transport Operators]), a study on habits and attitudes of non-habitual users of urban public transport was carried out. According to this study, in Spain, this group of 'non-habitual users' accounts for 77 % of the entire population over 15 years of age, and it was found that, of the total of 'non-users', 34 % could form part of the target population and become habitual users if certain improvements were made or incentives were offered in relation to public transport services.

Under the 2014-2020 operational programme for sustainable growth, Thematic Objective 4 (low-carbon economy) will be allocated a budget financed by the European Structural and Investment Funds (under the ERDF) for the implementation of measures included in sustainable urban mobility plans.

Furthermore, **plans for sustainable travel to the workplace** will continue to be fostered. In Spain, journeys to work account for 40 % of journeys made on working days, with private vehicles accounting for a high share of use (60 %) and significant concentrations occurring at certain times, as shown in the following figure. Both factors, in addition to the substantial number of journeys, have a major impact on mobility.

Figure 4.5.2.1. Hourly breakdown of journeys to work on working days in Madrid



Source: 2014 mobility survey (ESM14)

Distribución viajes trabajo	Breakdown of journeys to work
30,0%	30.0 %
25,0%	25.0 %
20,0%	20.0 %
15,0%	15.0 %
10,0%	10.0 %
5,0%	5.0 %
0,0%	0.0 %
0 a 6 h	24.00-06.00
6 a 7 h	06:00-07:00
7 a 8 h	07:00-08:00
8 a 9 h	08:00-09:00
9 a 10 h	09:00-10:00
10 a 11 h	10:00-11:00
11 a 12 h	11:00-12:00
12 a 13 h	12:00-13:00
13 a 14 h	13:00-14:00
14 a 15 h	14:00-15:00
15 a 16 h	15:00-16:00
16 a 17 h	16:00-17:00
17 a 18 h	17:00-18:00
18 a 19 h	18:00-19:00
19 a 20 h	19:00-20:00
20 a 21 h	20:00-21:00
21 a 22 h	21:00-22:00
22 a 23 h	22:00-23:00
23 a 24 h	23:00-24:00
Viajes entrada	Inbound journeys
Viajes salida	Outbound journeys

To this effect, on 5 May 2015, the BOE published the Decision of the IDAE of 28 April 2015 establishing the regulatory bases and call for applications for the **aid programme for modal shift and more efficient use of transport modes**. This programme includes three types of measures receiving support, one of which comprises the drafting and implementation of workplace transportation plans, supported by aid amounting to 20 % of the eligible cost and not exceeding EUR 200 000. To be eligible for the aid, the measure must generate a minimum saving of 10 % compared to the original situation and must require a minimum investment of EUR 30 000.

In addition, the IDAE participates in a working group on mobility to and from the workplace — coordinated by APTeMUS (*Asociación Profesional de Técnicos en Movilidad Urbana Sostenible* [Association of Sustainable Urban Mobility Professionals]) and created as part of CONAMA

2016 (*Congreso Nacional del Medio Ambiente* [National Conference on the Environment]) — which is drafting a guide for public administrations and businesses on the implementation of these types of plans.

Finally, it is necessary to **promote increased railway use in medium- and long-distance freight and passenger transport** since this mode — due to its energy consumption, capacity and safety — is a key element in improving efficiency in the transport sector, which, currently, is overly dependent on road transport and fossil fuels. Encouraging rail use contributes to the transport sector's electrification, which creates energy and environmental advantages for a country such as Spain in which renewables make up a high proportion of the electricity-generating mix.

According to the OTLE's 2015 annual report, Spain's medium- and long-distance rail network consists of over 15 300 km of track — 72 % of which is electrified — and each year the system transports nearly 620 million passengers and 27 million net tonnes of freight. As regards metropolitan services, Spain's metro network has a total length of over 550 km and, as a whole, carries more than 1.1 billion passengers per year. In addition, seven metropolitan areas in Spain have tram systems.

However, while passenger-km and tonne-km rose last year, rail's modal share of passenger transport only amounted to approximately 6 %. Furthermore, that of freight remained the lowest in Europe (barely 4 %), making Spain less competitive than countries in its immediate environment in which rail's modal share of freight transport is higher.

These figures demonstrate that rail transport must continue to be promoted, not only through investment in infrastructure, but also by adopting measures which help improve the conventional rail system's energy efficiency, making it more effective and competitive and enabling it to serve the needs of metropolitan, day-to-day and freight mobility better.

This potential for improving energy efficiency in rail facilities and operations is being promoted through the Energy Efficiency National Fund. In this context, the Decision of the IDAE of 30 November 2015 approved the regulatory bases and call for applications for the **aid programme for energy efficiency measures in the rail sector**. The aim of this aid is to implement measures in the rail sector that contribute towards obtaining energy consumption savings. It was allocated a budget of EUR 13 million and extended until 13 December 2017 by the Decision of the IDAE of 13 December 2016. The measures for which support is provided fall into one of the following four categories:

- Action 1. Improvement of energy efficiency via the installation of regenerative braking systems in trains.
- Action 2. Energy-saving strategies in rail traffic operations.
- Action 3. Improvement of the energy efficiency of existing railway buildings.
- Action 4. Improvement of the energy efficiency of street lighting and signalling systems.
- Action 5. Improvement of the energy efficiency of railway facilities.

Aid takes the form of monetary grants without consideration (30 % of the eligible investment) or of reimbursable loans (up to 100 % of the investment). Beneficiaries must choose one of the two aid options. Railway undertakings, rail infrastructure managers and energy service companies may benefit from this aid.

B. Actions aimed at improving national vehicle fleet efficiency by renewing fleets and incorporating technological advancements.

In regard to measures aimed at **promoting the renewal of the national vehicle fleet**, Spain has taken a significant step by approving a set of plans assigned an unprecedented budget: the **PIVE** efficient vehicle incentive plans and the **PIMA Aire** environmental stimulus plans. These plans are in response to and bring forward compliance by municipal strategies to improve air quality in accordance with Directive 2008/50/EC. Between September 2012 and July 2016, the Spanish government implemented eight PIVE efficient vehicle incentive programmes (PIVE, PIVE 2, PIVE 3, PIVE 4, PIVE 5, PIVE 6, PIVE 7 and PIVE 8), allocated EUR 1.115 billion, and four PIMA Aire plans, allocated EUR 54 million.

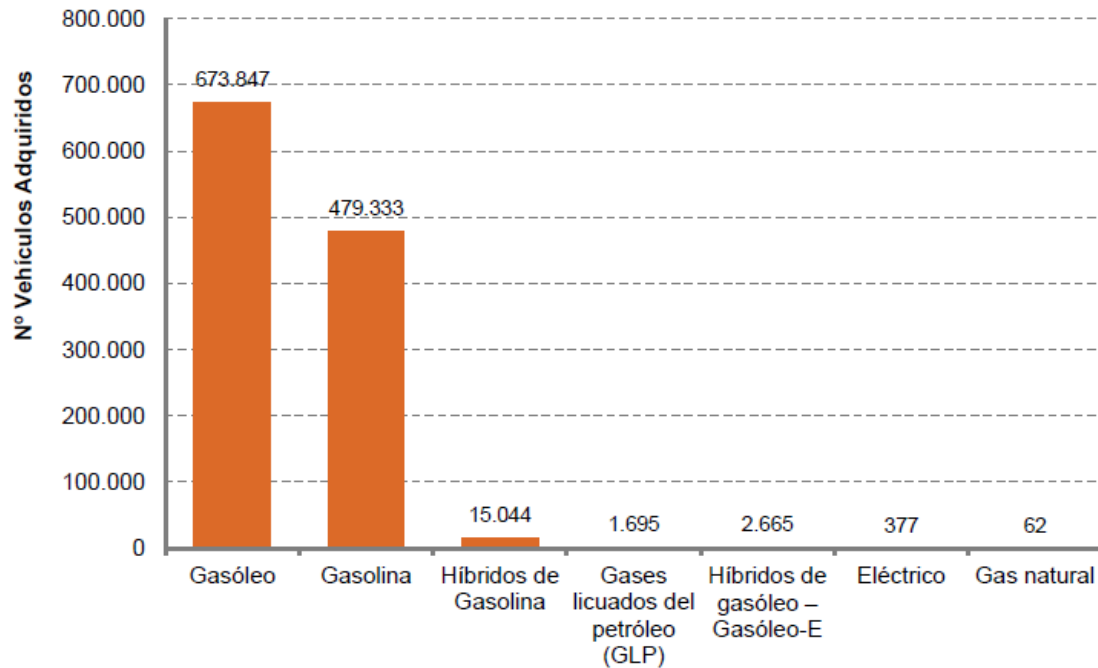
The eight PIVE programmes, managed by the IDAE, were designed to promote the scrapping of passenger vehicles (M1) and commercial vehicles weighing less than 3.5 t (N1) that were more than 10 and 7 years old, respectively. The incentive was tied to the purchase of new category M1 and N1 vehicles. For category M1, the vehicles had to be in energy classes A or B (extended to include energy labels A, B, C and D in the case of CO₂ emissions equal to or less than 120 g/km), while for category N1, they had to have CO₂ emissions of less than 160 g/km.

In addition to petrol- and diesel-engined vehicles, incentives were also provided for the acquisition of electric vehicles, plug-in hybrids, extended range electric vehicles and LPG- (autogas) or natural gas-powered vehicles, provided their CO₂ emission levels did not exceed 160 g/km.

The incentive to beneficiaries (private individuals, micro-enterprises and SMEs) under PIVE plans 1 to 7 amounted to at least EUR 2 000, applied as a final discount and provided jointly by the State and the vendor (the EUR 1 000 aid per vehicle purchased was conditional upon the dealership, manufacturer or point of sale applying an additional discount of at least EUR 1 000). Under the PIVE 8 plan, the aid and discount were reduced to EUR 750. The programme was implemented in October 2012 and, up to 31 July 2016 (closing date for PIVE 8 applications), incentives resulted in the replacement of 1 173 035 vehicles by other more energy-efficient models.

Of all the replacement vehicles, 57 % were diesel-engined, 41 % were petrol-engined and the remaining 2 % comprised hybrid, electric, LPG and natural gas-powered units.

Figure 4.5.2.2. No of vehicles purchased under PIVE programmes, by drivetrain technology



Drivetrain technologies

Source: IDAE

Nº Vehículos Adquiridos	No of vehicles purchased
800.000	800 000
700.000	700 000
600.000	600 000
500.000	500 000
400.000	400 000
300.000	300 000
200.000	200 000
100.000	100 000
673.847	673 847
Gasóleo	Diesel
479.333	479 333
Gasolina	Petrol
15.044	15 044
Híbridos de Gasolina	Petrol hybrids
1.695	1 695
Gases licuados del petróleo (GLP)	Liquefied petroleum gas (LPG)
2.665	2 665
Híbridos de gasóleo – Gasóleo-E	Diesel hybrids – E-diesel
Eléctrico	Electric
Gas Natural	Natural gas

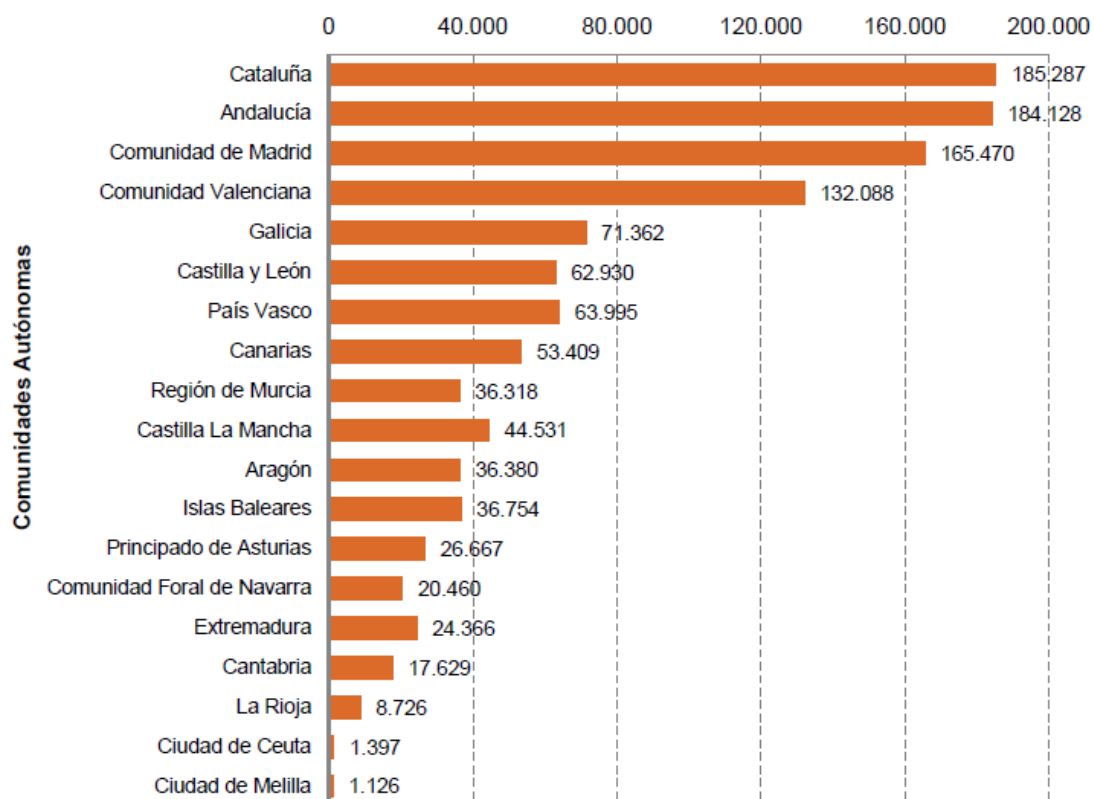
In order to verify the results of these programmes, a sample of vehicles was studied to compare the vehicle scrapped with the vehicle being promoted. The study's conclusions show that **the new vehicles purchased under the PIVE programmes reduce fuel consumption and CO₂ emissions by an average of 30 % compared to the scrapped vehicles**, dropping from 166 gCO₂/km to 116.3 gCO₂/km. This fact is particularly significant if we consider that the transport sector is responsible for 24 % of all greenhouse gases (especially CO₂).

Figure 4.5.2.3. shows the breakdown of the eight iterations of the PIVE plans by autonomous community.

It should be noted that energy labelling has proven to be a highly useful tool in the management of these types of energy-saving programmes and has made it possible to confirm the trend towards purchases of more efficient vehicles. Figure 4.5.2.4. illustrates the trend in the percentage of passenger vehicles purchased under the PIVE programmes.

This data substantiates the fact that the PIVE plans have promoted the sale of more energy-efficient vehicles. It also confirms the importance of updating the labelling annually so that it can be used as a tool in programmes of this type while ensuring that the public has access to this updated information.

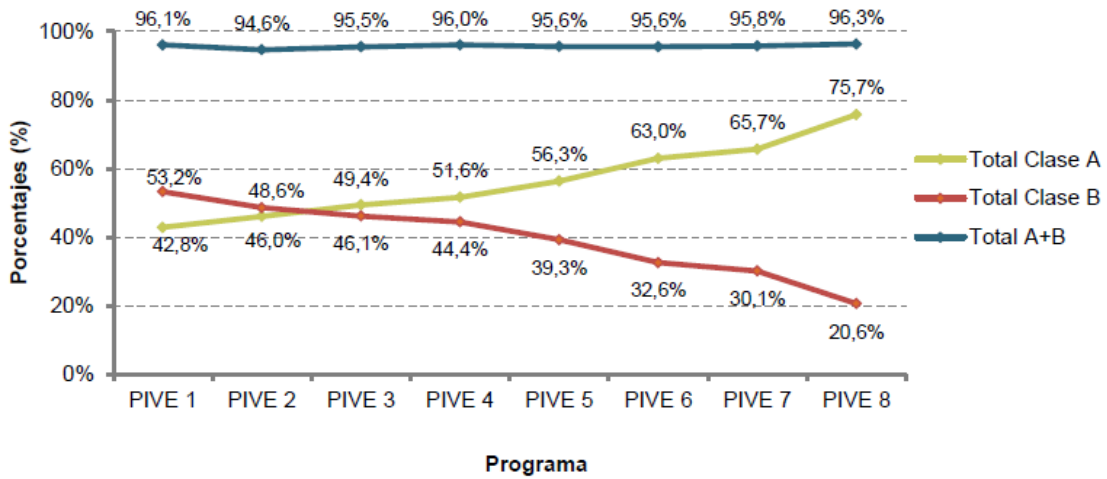
Figure 4.5.2.3. No of vehicles purchased under PIVE programmes, by autonomous community



40.000	40 000
80.000	80 000
120.000	120 000
160.000	160 000
200.000	200 000
Comunidades Autónomas	Autonomous Community
Cataluña	Catalonia
Andalucía	Andalusia
Comunidad de Madrid	Madrid
Comunidad Valenciana	Valencia
Galicia	Galicia
Castilla y León	Castile-Leon
País Vasco	Basque Country
Canarias	Canary Islands
Región de Murcia	Murcia
Castilla La Mancha	Castile-La Mancha
Aragón	Aragon
Islas Baleares	Balearic Islands
Principado de Asturias	Asturias
Comunidad Foral de Navarra	Navarre
Extremadura	Extremadura
Cantabria	Cantabria
La Rioja	Rioja
Ciudad de Ceuta	Ceuta
Ciudad de Melilla	Melilla

185.287	185 287
184.128	184 128
165.470	165 470
132.088	132 088
71.362	71 362
62.930	62 930
63.995	63 995
53.409	53 409
36.318	36 318
44.531	44 531
36.380	36 380
36.754	36 754
26.667	26 667
20.460	20 460
24.366	24 366
17.629	17 629
8.726	8 726
1.397	1 397
1.126	1 126

Figure 4.5.2.4. Percentage of class A and B vehicles purchased throughout the various PIVE iterations



Programa

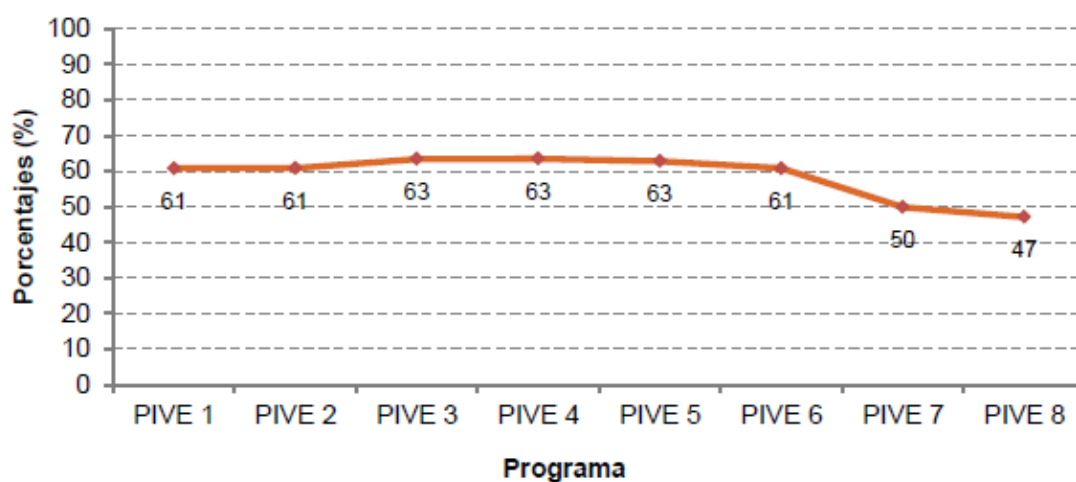
Source: IDAE

Porcentajes (%)	Percentages (%)
96,1%	96.1 %
94,6%	94.6 %
95,5%	95.5 %
96,0%	96.0 %
95,6%	95.6 %
95,6%	95.6 %
95,8%	95.8 %
96,3%	96.3 %
53,2%	53.2 %
48,6%	48.6 %
46,1%	46.1 %
44,4%	44.4 %
39,3%	39.3 %
32,6%	32.6 %
30,1%	30.1 %
20,6%	20.6 %
42,8%	42.8 %
46,0%	46.0 %
49,4%	49.4 %
51,6%	51.6 %
56,3%	56.3 %
63,0%	63.0 %
65,7%	65.7 %
75,7%	75.7 %
PIVE 1	PIVE 1

PIVE 2	PIVE 2
PIVE 3	PIVE 3
PIVE 4	PIVE 4
PIVE 5	PIVE 5
PIVE 6	PIVE 6
PIVE 7	PIVE 7
PIVE 8	PIVE 8
Total Clase A	Total class A
Total Clase B	Total class B
Total A+B	Total A+B
Programa	Programme

Furthermore, the last two iterations show a drop in the number of diesel-engined vehicles, which went from 61 % in PIVE 6 down to 47 % in PIVE 8.

Figure 4.5.2.5. Percentage of diesel-engined vehicles throughout the various PIVE iterations



Source: IDAE

Porcentajes (%)	Percentages (%)
PIVE 1	PIVE 1
PIVE 2	PIVE 2
PIVE 3	PIVE 3
PIVE 4	PIVE 4
PIVE 5	PIVE 5
PIVE 6	PIVE 6
PIVE 7	PIVE 7
PIVE 8	PIVE 8
Programa	Programme

Alongside the PIVE plans, the government implemented strategies to encourage the renovation of commercial vehicle fleets through the PIMA Aire programmes managed by the MAPAMA. The four iterations of this latter programme helped renew more than 50 000 commercial vehicles and encouraged the introduction of electric motorcycles.

In relation to the **promotion of vehicles powered by alternative fuels and technologies**, the transport sector has advanced significantly.

With the approval of the Comprehensive Electric Vehicle Stimulus Strategy, presented by the government in April 2010, Spain became one of the first countries with a comprehensive

strategy for promoting the development of these types of vehicles.

More recently, on 26 June 2015, the Council of Ministers approved the Spanish Strategy to Promote Alternative-Fuel Vehicles, which coincided with the approval of Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure. Alternative transport fuels span LPG, natural gas, electricity, hydrogen and biofuels.

On 9 December 2016, Royal Decree 639/2016 of 9 December 2016 transposing the Directive into Spanish law was approved by Agreement of the Council of Ministers, as was the Spanish National Policy Framework for alternative energy use in transport. This document includes a detailed analysis of the current situation with regard to the various alternative energies in each mode of transport and the expected scenario, taking into consideration market changes. Furthermore, to support the implementation of alternative energy use in transport, relevant areas which would be best suited for these renovations are identified. Measures are established for each area to help achieve targets,

Since 2006, various incentives to encourage the purchase of alternative-fuel vehicles have been provided. The most prominent being those granted under the Energy Saving and Efficiency Strategy and its corresponding Action Plans, as well as the IDAE's aid programme for strategic energy saving and efficiency projects.

In 2014 and 2015, the MOVELE plans offering incentives for purchasing electric vehicles were run. Allocated EUR 10 million and EUR 7 million, respectively, they promoted the purchase of 2 529 electric plug-in vehicles.

In 2016, incentives to purchase electric vehicles continued to be provided through the MOVEA Plan (*Plan de Impulso a la Movilidad con Vehículos de Energías Alternativas*) [Plan to Promote Mobility using Alternative-Fuel Vehicles], which consolidated the existing state aid for the purchase of alternative-fuel vehicles — MOVELE and PIMA Aire — into a single programme. Aid for the purchase of alternative-fuel vehicles is necessary as regards those fuel technologies for which the difference in price compared to conventional vehicles still must be offset.

Under the call for applications for MOVEA 2016, allocated EUR 16.6 million, 3 938 vehicles were purchased. Of those vehicles, 83 % were electric, 12 % were fuelled with liquefied petroleum gas (autogas or LPG) and 5 % were natural gas-powered. In addition, this aid helped to install 42 charging points — 17 fast charge and 25 semi-fast charge.

According to data from the DGT, at the end of 2016, Spain's plug-in **electric vehicle fleet** stood at approximately 20 000 units. As for public charging points, the NPF estimates that there are approximately 1 600 in Spain, some of which still have to be registered on the list of stations managed by charging network operators published by Spain's CNMC. It is notable that 6 168 units were registered in 2016, representing an 83 % year-on-year increase in sales.

As regards vehicles powered by **automotive LPG**, commercially known as **autogas**, at the end of 2016, Spain's fleet consisted of 55 000 vehicles (estimated based on autogas consumption). Principal uses include taxis, ambulances, driving school and distribution vehicles. Supply infrastructure at the end of 2016 comprised approximately 540 retail service stations.

October 2016 saw the launch of a Spanish Autogas Cluster which brings together 10 organisations with a shared interest in promoting this alternative fuel in the transport sector.

At the end of 2016, Spain's fleet of vehicles powered by **natural gas** stood at around 6 100 units (estimated based on vehicular natural gas consumption), primarily comprising intensive-

use heavy-duty vehicles (buses, waste collection trucks, lift trucks, minibuses, freight trucks and vans). In relation to supply infrastructure, approximately 45 stations supplying CNG and/or LNG are in service, with 17 scheduled to be opened.

The trend for the alternative-fuel vehicle fleet in recent years is shown below. It demonstrates that all fuel technologies have increased significantly, with the rise in vehicles powered by autogas being particularly pronounced due to the fact that, when first introduced, this technology was promoted through converted used vehicles, which meant implementation costs were low when compared with other alternative fuel technologies.

Figure 4.5.2.6. Percentage of alternative-fuel vehicles in Spain



Source: IDAE

Evolución parque VEAs en España	Trend for alternative-fuel vehicle fleet in Spain
Nº de vehículos	No of vehicles
60.000	60 000
50.000	50 000
40.000	40 000
30.000	30 000
20.000	20 000
10.000	10 000
Gas Natural	Natural gas
GLP	LPG
Eléctricos	Electric

As regards biofuel consumption, Royal Decree 1085/2015 of 4 December 2015 on the promotion of biofuels set progressive consumption targets for the period from 2016 to 2020 — from 4.3 % of petrol/diesel consumption in 2016 to 8.5 % by 2020 — which are being achieved annually.

At the regulatory level, to promote alternative fuel technologies, Royal Decree 647/2011 of 9 May 2011 regulating the role of charging network operators and introducing a new electricity rate linked to time-of-use offers to encourage night-time charging was adopted. Currently, Spain has 39 registered charging network operators authorised to sell electricity for recharging electric vehicles.

Also adopted was Royal Decree 1053/2014 of 12 December 2014 adopting new supplementary technical instruction 'BT 52: Special-purpose facilities. Electric vehicle recharging infrastructure' (*Instrucción Técnica Complementaria (ITC) BT 52: Instalaciones con fines especiales. Infraestructura para la recarga de vehículos eléctricos*) extending the Electrotechnical Regulation on Low-Voltage Systems adopted by Royal Decree 842/2002 of 2 August 2002. This instruction defines, *inter alia*, the minimum requirements for electric vehicle charging infrastructure installed in new buildings or parking lots and on public roads, the wiring diagrams for electric vehicle charging systems (single-family houses and collective car parks), estimates of loads for the various wiring systems, general system requirements and protective electrical safety elements for electric vehicles and systems themselves.

A reduction in the amount of payment in kind taxable as personal income — applicable to vehicles given by companies to employees for personal use — was adopted under the 2015 fiscal reform. The reduction consists of -15 % for Euro 6 vehicles emitting fewer than 120 gCO₂/km and up to -30 % in the case of electric vehicles.

As regards information available to the public, it is important to note the government's web page providing information on alternative vehicles and fuels, <http://www.moveaplan.gob.es/>, run by the IDAE.

Another measure which will contribute towards a greater proportion of more efficient, less polluting vehicles is the vehicle classification based on pollution potential implemented by the DGT. Instruction 15/V-110 of 7 April 2015 introduced the 'zero emissions' label applicable to vehicles categorised on their roadworthiness certificates as one of the following: battery electric vehicle (BEV), range-extended electric vehicle (REEV), plug-in hybrid electric vehicle (PHEV) with a 40-km minimum range in electric mode, fuel cell electric vehicle (FCEV) or hydrogen internal combustion engine vehicle (HICEV).

The Decision of 13 April 2016 of the DGT (BOE of 21 April 2016) adopted the energy labels 'cero' ['zero'], 'ECO', 'C' and 'B', which classify 50 % of the fleet by pollution potential in ascending order.



0 emisiones	0 emissions
DGT	DGT
Emissiones ECO	ECO
DGT	DGT
C	C
DGT	DGT
B	B
DGT	DGT

All authorities with competence in matters relating to taxation, mobility and the environment shall decide which incentives shall be offered to cleaner vehicles within their area of competence. For example, the DGT currently allows 'zero-emissions' vehicles to travel in HOV/bus lanes on the A-6 motorway, and Madrid City Council has extended the vehicle models authorised to provide taxi services to those which bear 'zero-emissions' or 'ECO' energy labels and which fulfil the requirements of the municipal by-law on taxis.

Spain shall continue to work on plans to renew its fleets and on promoting investment in alternative fuels infrastructure. A new line of incentives to purchase alternative-fuel vehicles — similar to the MOVEA plan launched in 2016 — is planned. Furthermore, possible legal and fiscal changes which would promote greater uptake of these types of vehicles are being developed.

C. Actions aimed at promoting efficient use of means of transport

Finally, in relation to the **package of measures to promote efficient use of means of transport**, significant advances have been made in fleet management (optimised route and cargo management) through audits, implementation of computer systems and ongoing training in ecodriving techniques for both the general public and professional drivers.

Within this framework, the former Ministry of Industry, Energy and Tourism (now the Ministry of Energy, Tourism and Digital Agenda), through the IDAE, cooperated with the DGT at the Ministry of the Interior, and on 1 January 2014, **ecodriving training** was made part of the Spanish driver-licensing system for passenger and industrial vehicles through Order INT/2229/2013 of 25 November 2013 amending Annexes I, V, VI and VII to the General Regulation on Driving adopted by Royal Decree 818/2009 of 8 May 2009.

This measure and its implementation as of January 2014 will generate significant savings given the number of new driver's licences applied for each year (around 450 000).

In regard to professional drivers, in recent years more than 85 000 professionals have been trained in ecodriving techniques aimed at drivers of industrial vehicles. This training was provided through two channels: agreements with the transport sector (30 000 professionals) and partnership agreements with regional governments, signed to implement the 2008-2012 Energy Saving and Efficiency Action Plan (around 55 000 professionals). The Ministry of Industry, Energy and Tourism, through the IDAE, together with the Ministry of Public Works, has signed partnership agreements with vehicle manufacturers and road haulage associations.

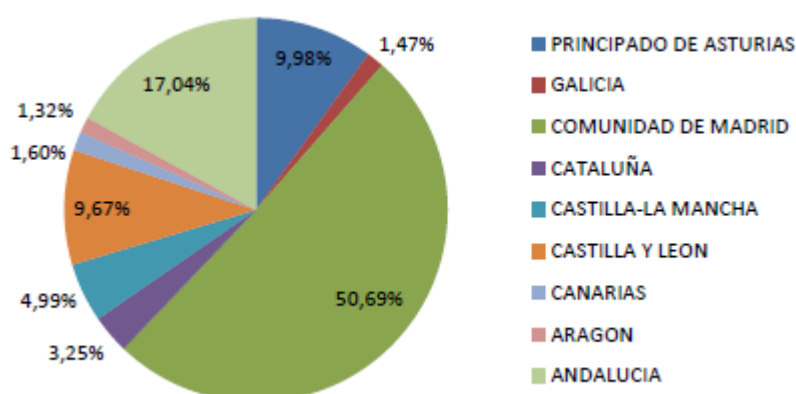
In 2015 and 2016, the **aid programme for modal shift and more efficient use of transport modes** continued to provide support for ecodriving courses for professional drivers as well as for implementing fleet management systems. As indicated previously in point A of this section, the programme is allocated EUR 8 million from the Energy Efficiency National Fund. Aid is provided in the form of monetary grants without consideration, and the eligible measures must fall under one of the three following categories:

- Policy measure 1: Sustainable workplace transportation plans (explained in detail above).
- Policy measure 2: Management of road transport vehicle fleets, for actions with a minimum investment of EUR 30 000, supported by aid amounting to 20 % of the eligible cost (up to a maximum of EUR 200 000). As an energy-efficiency prerequisite, the measure must generate a minimum saving of 5 % compared to the original situation.
- Policy measure 3: Ecodriving courses for drivers of industrial vehicles, for actions with a minimum of 200 learners, supported by aid amounting to EUR 100 per learner (up to a maximum of EUR 100 000).

This programme provided aid to train nearly 30 000 professional drivers and implement fleet management systems which had an effect on the operation of almost 800 industrial vehicles.

The following figure shows the breakdown, by autonomous community and as at 31 March 2017, of aid allocated under the aid programme for modal shift and more efficient use of transport modes. It should be noted that the high percentage of applications in the Autonomous Community of Madrid is due to the fact that the ecodriving training centres are headquartered in Madrid, although the courses for which aid is being requested are run throughout Spain.

Figure 4.5.2.7. Breakdown of applications for the aid programme for modal shift and more efficient use of transport modes, by autonomous community



Note: Provisional data

Source: IDAE

9,98%	9.98 %
17,04%	17.04 %
1,32%	1.32 %
1,60%	1.60 %
9,67%	9.67 %
4,99%	4.99 %
3,25%	3.25 %
50,69%	50.69 %
1,47%	1.47 %
PRINCIPADO DE ASTURIAS	ASTURIAS
GALICIA	GALICIA
COMUNIDAD DE MADRID	MADRID
CATALUÑA	CATALONIA
CASTILLA-LA MANCHA	CASTILE-LA MANCHA
CASTILLA Y LEÓN	CASTILE-LEON
CANARIAS	CANARY ISLANDS
ARAGÓN	ARAGON
ANDALUCÍA	ANDALUSIA

Recently, on 8 April 2017, the BOE published the regulatory bases for the second call for applications for this aid programme, issued through the Decision of the IDAE of 5 April 2017, allocated a budget of EUR 4 million financed by the Energy Efficiency National Fund. This second call for applications includes some changes to Measures 1 and 2: the amount of aid has been increased from 20 % to 30 % of the eligible cost (up to a maximum of EUR 200 000 aid per action); the minimum eligible cost required for the action to be considered eligible for aid has been reduced from EUR 30 000 to EUR 15 000, and a minimum energy saving of 5 % is required following the measure's implementation.

It is important to note that, in urban mobility, new privately operated transport systems based on a **pay-per-use** model have contributed to the shift in transport use. New businesses are being started with a focus on shared use of a single vehicle (car, motorbike or bicycle) by a previously registered group of people. Thus, the businesses make full use of advances in smartphone applications to facilitate new forms of mobility which, undoubtedly, improve urban

mobility, provide energy savings and improve urban air quality.

Various types of state aid are available for these start-ups, listed and defined in the 2013-2016 *Plan Estatal de Investigación Científica y Técnica y de Innovación* [State Plan for Scientific and Technical Research and Innovation]. This aid is primarily administered by the Ministry of Economy, Industry and Competitiveness or bodies reporting to it, such as the CDTI (*Centro para el Desarrollo Tecnológico Industrial* [Centre for the Development of Industrial Technology]), via competitive calls for applications.

In addition to existing measures to encourage energy efficiency in fleet management and driving practices, two **voluntary sectoral agreements** have been established; the agreement signed by the AEGFA (*Asociación Española de Gestores de Flotas de Automóviles* [Spanish Association of Automotive Fleet Managers]) aims to promote the implementation of energy efficiency measures in fleets, while the agreement signed by the CNAE (*Confederación Nacional de Autoescuelas* [National Confederation of Driving Schools]) centres on training instructors in ecodriving practices. Furthermore, a cooperation agreement with the AER (*Asociación Española del Renting de Vehículos* [Spanish Vehicle Leasing Association]) was established in 2012, under which data on leasing fleets' average consumption between 2012 and 2016 were made public annually, demonstrating the reduction in the average consumption of these vehicles compared to the rest of the fleet.

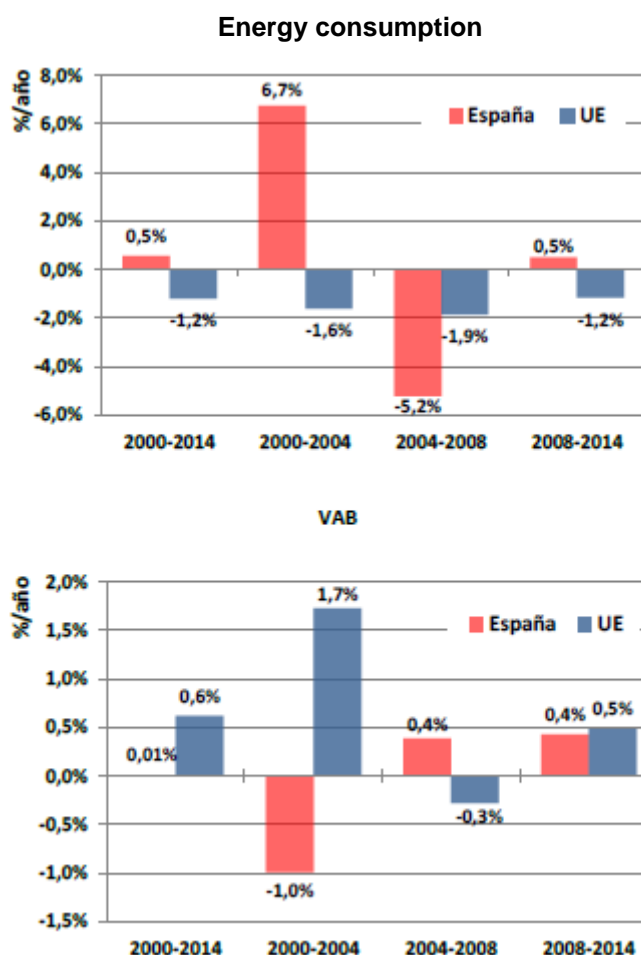
4.6. ENERGY EFFICIENCY IN AGRICULTURE AND FISHERIES

4.6.1. Analysis and characterisation of the agriculture and fisheries sector

In 2014, the agriculture and fisheries sector experienced a 3 % drop in energy demand, contributing 3.4 % to national demand as a whole and 3.1 % to GDP, figures which register slightly above those of the EU averages for total energy consumption (2.2 %) and GDP contribution (1.6 %). In spite of its minimal energy demand, it should be noted that Spain — alongside Italy and France — accounts for close to 50 % of the entire GVA generated by this sector's economic activity in the EU.

As for energy demand in this sector, Spain showed a marked improvement from 2004 onwards, registering above the EU average and demonstrating signs of recovery in the period following the financial crisis. This contrasts with the performance of the EU as a whole, which continued its downward trend, albeit at a slower pace from 2008 onwards.

Figure 4.6.1.1. Energy consumption and GVA of Spain's agriculture and fisheries sector (2000-2014)



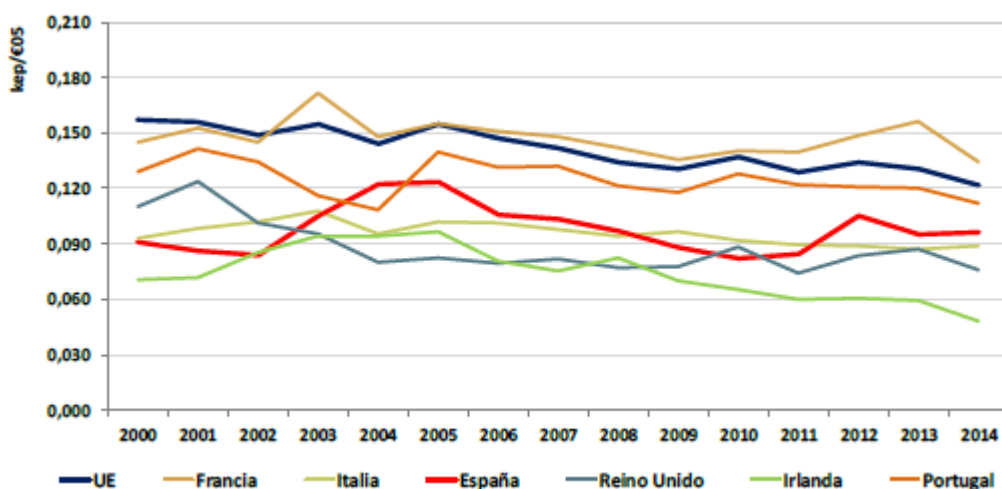
Source: EC/IDAE

%/año	%/year
8,0%	8.0 %
6,0%	6.0 %
4,0%	4.0 %
2,0%	2.0 %
0,0%	0.0 %
-2,0%	-2.0 %

-4,0%	-4.0 %
-6,0%	-6.0 %
0,5%	0.5 %
-1,2%	-1.2 %
6,7%	6.7 %
-1,6%	-1.6 %
-5,2%	-5.2 %
-1,9%	-1.9 %
0,5%	0.5 %
-1,2%	-1.2 %
España	Spain
UE	EU
VAB	GVA
%/año	%/year
2,0%	2.0 %
1,5%	1.5 %
1,0%	1.0 %
0,5%	0.5 %
0,0%	0.0 %
-0,5%	-0.5 %
-1,0%	-1.0 %
-1,5%	-1.5 %
0,01%	0.01 %
0,6%	0.6 %
-1,0%	-1.0 %
1,7%	1.7 %
0,4%	0.4 %
-0,3%	-0.3 %
0,4%	0.4 %
0,5%	0.5 %
España	Spain
UE	EU

Bearing the above in mind, and as seen in the following figure, this sector demonstrated significant improvement in energy intensity between 2004 and 2011, followed by a rather erratic phase which ended in 2014 with a 1.6 % rise, bringing Spain's energy intensity levels back to where they stood in 2008. The drop in energy consumption in Spain up to 2011 was driven by advances made in the crop and livestock subsectors, which proved to be less energy-intensive and, in addition, benefited from improvements in equipment and irrigation techniques. The energy intensity trend in Spain has become more aligned with the European indicator and the gap has narrowed, with Spain currently standing at 20 % below the European average.

Figure 4.6.1.3. Energy intensity of the agriculture and fisheries sector in Spain and the EU (2000-2014)



Source: EC/IDAE

kgoe/€05	kgoe/€05
0,210	0.210
0,180	0.180
0,150	0.150
0,120	0.120
0,090	0.090
0,060	0.060
0,030	0.030
0,000	0.000
UE	EU
Francia	France
Italia	Italy
España	Spain
Reino Unido	United Kingdom
Irlanda	Ireland
Portugal	Portugal

4.6.2. Energy end-use efficiency measures in agriculture and fisheries

Energy consumption associated with agriculture and fisheries represents around 3.5 % of final energy consumption in Spain.

Within this sector, the following lines of action exist for analysing and improving energy efficiency:

- **Machinery**, which covers energy consumed by tractors, harvesters and roto tillers on forestry, crop and livestock farms.
- **Irrigation**, covering energy used for the pump-based extraction and/or distribution of irrigation water.
- **Farms**, which covers the consumption of crop and livestock farms, as well as others such as greenhouses.
- **Fisheries**, which includes the consumption produced by the various types of fishing vessel and gear employed by the Spanish fleet: deep-sea, coastal and small-scale. In regard to aquaculture, there are no calculations until 2010 given that marine aquaculture is considered to be part of the fleet and continental aquaculture, for the moment, is considered to use only minimal energy.

A. Machinery:

Energy consumption generally derives from the use of tractors for land cultivation. Any variation in consumption will therefore be determined by the land area cultivated in Spain, the nature of the cultivation, the number of tractors in use and their energy efficiency.

Differentiation is made between agricultural, livestock and forestry machinery. Agricultural machinery consumption derives primarily from the use of tractors and is related to the area of land under cultivation (17 203 324 ha) and the different farming practices used. Average diesel consumption is estimated at 62.5 l/ha, representing consumption of 925 ktoe. The consumption of all other machinery (harvesters, roto tillers and others) totals 154 ktoe.

The livestock machinery consumption calculation is based on the correlation between consumption in litres of diesel and number of heads of livestock, distinguishing between ovine, bovine and porcine. This consumption totals 334 ktoe. It also largely derives from the use of tractor-driven tools which, in turn, can perform agricultural functions, the consumption of which is calculated in the previous section.

For forest machinery, the consumption calculation is based on the variation in repopulated surface area, the quantity of lumber extracted and the results verified in relation to biomass obtained. This consumption amounts to 308 ktoe.

In this scenario, the energy saving is achieved by intensifying the promotion of direct-seeding techniques with minimal tilling, as well as by improving the energy efficiency of tractors, which are replaced either as they wear out or when state incentives are provided.

Direct seeding drastically reduces the number of stages involved in conventional tillage (stubble ploughing, fallowing, fertilising and seeding), performing all of them in a single step using a machine designed to seed previously cultivated agricultural land without the need for prior tillage, performing furrow-opening, seeding, burying and soil-settling in a single pass.

From an energy perspective, numerous studies have shown the profitability and viability of direct seeding systems compared to conventional agriculture and have highlighted the energy savings achieved, which, in most crops and land located throughout the various regions of Spain, make it possible to obtain, on average, the results stated.

Regarding the tractor fleet, based on the results that tractor energy-labelling is producing in the sector in Spain, energy efficiency improvements are expected as farmers progressively renew the country's machinery fleet. This energy labelling and the corresponding classification are based on the results of tests carried out according to the OECD codes. The methodology developed in Spain under the IDAE initiative has allowed agricultural tractors sold in the country to be classified according to their energy efficiency, for which power and fuel consumption data are recorded.

Over the last decade, this classification has enabled the Ministry of Agriculture and Fisheries, Food and the Environment to grant incentives to farmers who take advantage of the RENOVE tractor plan, which was updated by Royal Decree 147/2014 of 7 March 2014 regulating the direct award of aid under the PIMA Tierra environmental stimulus plan and which, for trading in a tractor more than 15 years old when buying a new one, provides tiered aid based on the new tractor's energy rating (EUR 2 000 for category A and EUR 1 000 for category B).

B. Irrigation:

Based on the findings of the aid programme to encourage performance of IDAE energy audits on irrigation systems in irrigation communities, and based on data on irrigated area and irrigation technology used (gravity-fed, sprinkler, pivot, localised, etc.), the 3 407 953 ha of

irrigated land has a total energy consumption of 425 ktoe. Electricity is the main form of energy consumed (accounting for just over 80 %), with diesel water pumps making up the remainder (barely 20 % of the total).

Savings measures envisage a 30 % reduction in energy consumption, achieved by improving pump performance and adjusting pump power to load variations, as well as by migrating from sprinkler systems to localised irrigation systems. This high rate of saving will occur naturally due to the subsector's pricing structure under the current electricity tariffs.

C. Farms:

Spain has around 1 000 000 farms, 685 000 of which are livestock farms while the rest consist of various farming activities, including greenhouses.

Energy consumption in this segment comprises the use of heat and cold generators for pasteurisation and conservation processes, temperature control of livestock buildings and greenhouses, lighting of buildings and surroundings and use of motors for mechanical drives and other related farming uses. It does not include consumption related to rural dwellings or to self-propelled machinery, the latter of which is included in an earlier section.

Based on this, and on the ratios and consumptions accounted for in the sector, consumption is estimated to total 640 ktoe.

The savings measures to be applied on these farms involve the renovation of existing systems, including heat generators and air-conditioning, lighting and pumping systems, etc. which, as a whole, will reduce energy consumption by 20 %.

D. Fisheries:

Spain's fishing fleet consists of some 10 000 vessels spanning deep-sea fishing boats, longliners and trawlers (7 %) with an average power per vessel of 735 kW; coastal fishing boats with an average power of 175 kW (10 %); and small-scale fishing boats with an average power of 25 kW (83 %), which, combined, consume 484 ktoe of diesel and fuel oil.

The reduction in energy consumption in this subsector will come primarily from the conversion of the coastal fleet envisaged in the National Strategic Plan for Fisheries. A further improvement will come from a reduction in the energy consumption of the remaining fleet due to greater vessel energy efficiency deriving from engine upgrades, changes to propeller geometry and improvements to fishing gear, along with other measures currently under research and development.

4.7. PROMOTION OF HIGH-EFFICIENCY COGENERATION AND DISTRICT HEATING AND COOLING (Article 14)

As required under Article 14 of Directive 2012/27/EU, Member States shall carry out a comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling.

Royal Decree 56/2016 of 12 February 2016 transposing Directive 2012/27/EU dedicates Chapter IV and, specifically, Article 13, to promoting efficiency in the production of energy for use in heating and cooling. Annex III details the methodology used to perform comprehensive assessment of Spain's heating and cooling potentials, and Annex IV indicates the general and particular principles for performing the cost-benefit analysis which affected facilities must carry out in accordance with Article 13. As a Member State, Spain has evaluated its potential for efficiency in heating and cooling and has submitted a report to the European Commission.

This chapter illustrates the current situation with regard to high-efficiency cogeneration and heating and cooling networks in Spain, with particular mention of their installed capacity and of the issues associated with the development of cogeneration. It also describes the methodology applied to carry out comprehensive assessment of the national potential for efficiency in heating and cooling, in addition to the results obtained as regards the analysed solutions' technical and economic potential for application of cogeneration and/or efficient heating and cooling networks using cogeneration, waste heat and renewable energies and fuels.

4.7.1. Current situation regarding cogeneration

Since the publication of Directive 2004/8/EC, repealed by Directive 2012/27/EU of 25 October 2012 on energy efficiency, the implementation of legislation in regard to cogeneration in Spain has focused on ensuring that the source of the electricity produced by high-efficiency cogeneration can be identified according to objective, transparent and non-discriminatory criteria and that the support for cogeneration, for both existing and future units, is based on useful heat demand and primary energy saving, in line with the provisions of Directive 2004/8/EC.

Law 24/2013 of 26 December 2013 on the electricity sector regulates electricity production from renewable sources, cogeneration and waste, establishing a remuneration system intended to encourage these technologies' participation in the market and supplement their market revenues with regulated payments specific to each facility group.

Royal Decree-Law 9/2013 of 12 July 2013 adopting urgent measures to ensure the financial stability of the electricity system repealed Royal Decree 661/2007 of 25 May 2007, which, before the repeal, had regulated the production of electricity under the special regime. Currently in force is Royal Decree 413/2014 of 6 June 2014 regulating electricity production from renewable sources, cogeneration and waste.

In this royal decree, cogeneration plants are classified into the following groups and subgroups:

- Group a.1. Systems that include a cogeneration plant.
 - Subgroup a.1.1. Cogeneration plants in which either natural gas accounts for at least 95 % of the primary energy or in which it accounts for at least 65 %, provided biomass or biogas account for the remainder.

- Subgroup a.1.2. Cogeneration plants primarily fuelled by petroleum products or coal, provided they account for at least 95 % of the primary energy.
- Subgroup a.1.3. Other cogeneration plants which use natural gas, petroleum products or coal and do not meet the established consumption thresholds.
- Group a.2. Facilities which include a power plant that uses waste energy from any industrial facility, machine or process which is not designed to produce electricity.
- Group b.6. Electricity-generating or cogeneration plants primarily fuelled by biomass from energy crops, livestock farming or gardening and which accounts for at least 90 % of the primary energy.
- Group b.7. Electricity-generating or cogeneration plants primarily fuelled by bioliquids produced from biomass and which account for at least 90 % of the primary energy.
- Group b.8. Electricity-generating or cogeneration plants primarily fuelled by biomass from industrial-scale crop-farming or forestry facilities and which accounts for at least 90 % of the primary energy.

Royal Decree 413/2014 of 6 June 2014 establishes a framework based on the fundamental principle that the remuneration system must allow facilities of this type to cover the costs necessary to compete on a level playing field with all other technologies available on the market and generate a reasonable return. In addition to remuneration for the sale of electricity valued at the market price, the facilities will receive during their regulatory lifespans — 25 years in the case of cogeneration plants — a group-specific payment comprising two additional compensatory components:

- Investment subsidy: remuneration per unit of capacity to offset the cost of investment. This subsidy is reviewed at the halfway point of each regulatory period (3 years).
- Operating subsidy: remuneration per unit of energy which, together with estimated operating income, meets the estimated operating costs. This subsidy is reviewed every six months based on changes in fuel prices.

These remuneration parameters are specific to each facility type used to categorise groups of cogeneration plants which share technical characteristics and are employed to meet the aim of Royal Decree 413/2014 of 6 June 2014, which stipulates that cogeneration plants should generate a reasonable return over their 25-year regulatory lifespans.

According to MINETAD statistics, at the end of 2014, Spain's equivalent installed cogeneration capacity amounted to 5 929 MW in 696 plants, which generated 27 526.9 GWh of electricity and 138 205 TJ of thermal energy. This was 11 % below electricity production in 2013 and was possibly due to changes to cogeneration plant operational programmes, to the associated industrial process's unanticipated non-feasibility or stoppage due to other causes, or to the uncertainty surrounding the remuneration scheme until it was definitively published in June 2014, without any of these factors resulting in the definitive closure of any of the plants. These factors should be considered as specific to 2014.

In 2014, cogeneration had a strong presence in the following sectors, which accounted for nearly 70 % of installed capacity:

- Crops, food and tobacco (24 %)

- Chemicals and chemical products (19 %)
- Pulp and paper (17 %)
- Refineries (10 %)

Relatively speaking, the **internal combustion engine** remained the dominant technology, accounting for 44 % of installed capacity and 76 % of existing facilities. This was followed, in order of significance, by **combined-cycle** and **gas turbine** technologies, which, together, accounted for 52 % of installed capacity and 21 % of facilities.

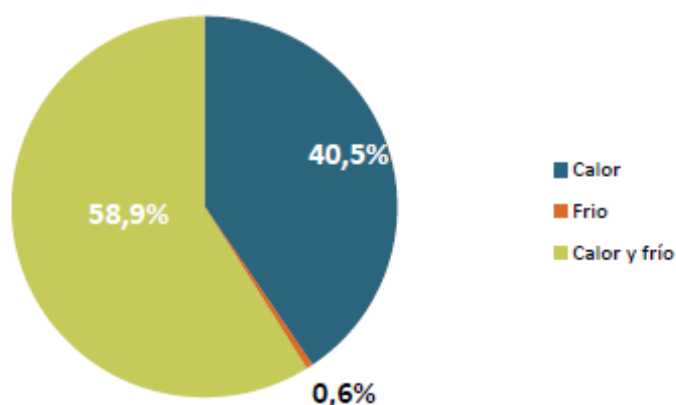
As regards fuels used by cogeneration plants, **natural gas** — accounting for 75 % of installed capacity — remained the most widely used, although power plants fuelled by **diesel**, **fuel oil** and **renewables** also made up a significant proportion. Less significant were the groups fuelled by coal and refined petroleum subproducts.

4.7.2. Current situation regarding efficient heating and cooling networks

In October 2011, through an agreement between the IDAE and the ADHAC (*Asociación de Empresas de Redes de Calor y Frío* [Association of Heating and Cooling Network Companies]), a survey was initiated to obtain an accurate picture of the situation regarding district heating and cooling networks in Spain (including micro-networks). As at 31 December 2015, the survey had identified 330 networks, of which data are available on 306. These networks, which have a total length of over 550 km, meet the energy demand of a floor area equivalent to that of more than 4 000 buildings.

The installed capacity totalled 1 219 MW, of which 494.3 MW supplied heating, 6.9 MW supplied cooling and 717.8 MW supplied a mix of the two. Figure 4.7.2.1 shows each type of network's share of total installed capacity.

Figure 4.7.2.1. Breakdown of total installed capacity, by network type (MW)



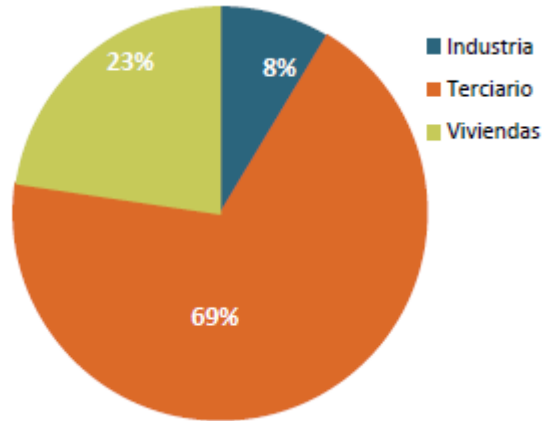
Source: ADHAC.

58,9%	58.9 %
0,6%	0.6 %
40,5%	40.5 %
Calor	Heating
Frío	Cooling
Calor y frío	Heating and cooling

The breakdown of number of networks by sector served shows that the majority serve the tertiary sector (69 %), followed at a significant distance by the residential sector (23 %) and

with industry accounting for only 8 %.

Figure 4.7.2.2. Breakdown of heating and cooling networks, by sector

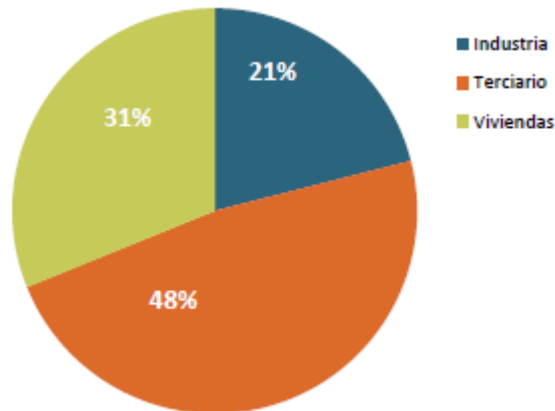


Source: ADHAC.

Industria	Industry
Terciario	Tertiary
Viviendas	Residential

However, if we consider the installed capacity serving each sector, the breakdown is as follows: tertiary (48 %), residential (31 %) and industry (21 %), as shown in Figure 4.7.2.3.

Figure 4.7.2.3. Breakdown of installed capacity in heating and cooling networks, by sector



Source: ADHAC.

Industria	Industry
Terciario	Tertiary
Viviendas	Residential

Regarding the ownership of those systems, it is virtually equally divided between the public and private sectors, which together account for 95 % of the systems. The remaining 5 % are owned by joint ventures. In terms of installed capacity, 21 % is publicly owned, 37 % is privately owned and the remaining 43 % is owned by joint enterprises.

4.7.3. Evaluation of the potential use of high-efficiency cogeneration and efficient district heating and cooling

In accordance with Article 14(1) of Directive 2012/27/EU on energy efficiency, Spain carried out and submitted to the Commission a comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling.

Due to the lack of statistics on heating and cooling in Spain, as part of the study it was necessary to characterise national heating demand in all end-use sectors. Once the demand was identified and characterised, it was depicted on a map of Spain along with available heat sources, waste heat from industry, power and waste recovery plants, renewable energy sources (solar, geothermal) and renewable fuels (biogas and biomass). This information was then used to calculate the technical potential of each alternative solution to meet heating and cooling needs more efficiently and cost-effectively than conventional solutions.

Finally, the cost-effective potential for Spain of each of the technical solutions analysed was calculated.

The main points of the study are described in more detail below:

A. Location of consumption centres

Spain's real estate cadastre was the principle information source used to locate the country's various sources of heating demand, making it possible to ascertain the energy uses of the buildings listed while locating the centres which consume the most energy, such as large industrial enterprises, hospitals, central government buildings, prisons, airports and shopping centres, which due to their substantial energy demand require different treatment.

B. Characterisation of heating and cooling demand

Due to the lack of official statistics on heating demand, various sources — including CO₂ emissions data from the PRTR (Pollutant Release and Transfer Register) and CITL (Community Independent Transaction Log); data on electricity production under the special regime; data from the National Catalogue of Hospitals; and energy monitoring by sector — were used to estimate the heating demand of the various consumption centres.

The consumption centres have been classified into two large groups:

- **High-demand consumption centres.** These are centres which have significant consumption and require individualised treatment. They include industrial plants which have heating demands essentially due to production processes. In the tertiary sector, they include buildings pertaining to the central government (including prisons) due to their public nature, in addition to hospitals, health centres, shopping centres and airports.
- **Non-ETS consumption centres.** These are centres in the tertiary and industrial sectors which are not included in the previous group, along with the entirety of the residential sector. They are characterised with a demand profile for each type of use, and which is not individualised.

Heating demand in the residential and tertiary sectors is largely dependent on climate. Consequently, the study has taken the Building Code's climate zones into account and the

results have been grouped into three climate zones: North Atlantic, Continental and Mediterranean. Within the industrial sector, there are significant variations in energy consumption based on the type of industry studied. Therefore, an individualised sectoral analysis has been conducted.

C. Heat map

An application has been created comprising two clearly distinct modules — a map showing a graphic representation of the information obtained in the previous point, and an information consultation and analysis tool.

The information represented on the map is as follows:

- **Areas of high building density.** Building density is considered to be high where building gross floor area exceeds 30 % of land area.
- **Heating demand.** Heating demand is categorised as indicated in the following table:

Table 4.7.3.1. Categorisation of heating demand

HEATING AND COOLING DEMAND	
Non-ETS demand	High demand
Residential	Health and social welfare
Administration	Prisons
Offices	Airports
Retail	Retail
Sports	Agriculture and fisheries
Leisure and accommodation/food	Food, beverages and tobacco
Health and social welfare	Coking and petroleum-refining plants
Prisons	Non-energy extractive
Other	Machinery manufacture
Industry	Wood and furniture
	Metals
	Non-metallic minerals
	Paper and printing
	Chemicals and
	Textiles

Source: IDAE

- **Heating supply. The following sources have been considered:**
 - Waste recovery plants
 - Thermal power plants
 - Wastewater treatment plants (biogas)

- Waste biomass
- Solar energy
- Geothermal energy

Image 4.7.3.1. Heat map



Source: IDAE

Mapa de Calor: España	Heat map: Spain [Illegible text]
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D. Tool to calculate technical potential

The tool identifies heating demand that could potentially be met with efficient district heating and cooling systems, the aim being to analyse the technical viability of their implementation. To that end, it incorporates areas with a high building density and an energy density which exceeds the threshold of 130 kWh/m² of land area; it forms systems which have a minimum total demand of 5 000 MWh/year; and lastly, it includes sources of high supply and demand found within a radius of less than 5 km — except in the case of biomass, for which the radius is extended up to 50 km. Figure 4.7.3.1 is a schematic diagram of how the tool works:

Figure 4.7.3.1. Diagram showing the functioning of the tool to calculate technical potential



Source: IDAE

Identificación área de demanda y entorno	Identification of demand area and surroundings
Formación de sistemas	System formation
Caracterización de demandas y ofertas térmicas del sistema	Characterisation of the system's heating supply and demand
Dimensionamiento térmico del sistema	Heating system dimensioning
Comparativa de resultados	Results comparison

The respective potentials were calculated for the following technical solutions:

- Use of waste heat.
- Heat recovery in electricity-generating thermal power plants.
- Use of waste fuels.
- Use of geothermal resources.
- Installation of a solar thermal plant.
- Installation of a cogeneration plant.

E. State-wide cost–benefit analysis

A comparative analysis was carried out between the current thermal power generation capacity (**baseline scenario**) and each of the solutions analysed (**alternative scenarios**). This analysis was carried out in several phases. First, the energy that each alternative solution can provide to the various analysed systems was calculated (**technical potential**). Next, the study was carried out from an overall perspective — including a financial and economic analysis — which considers the impact that implementing the previously calculated technical potential would have on the country, considering only the cases of positive NPV (**economic potential**). And lastly, the NPV/MWh values were compared for each technical solution within each system to identify the most advantageous alternative scenarios for those systems and, therefore, for the country (**cost-effective potential**).

F. Findings of the study

The first result is the data on heating demand by sector for the 2013 reference year, shown as follows:

Table 4.7.3.2. Heating demand by sector (GWh)

Sector	Residential	Tertiary	Industry, agriculture and fisheries	TOTAL
Heating and DHW	102 566	93 194	212 259	408 019
Cooling	2 230	28 409	21 179	51 818

Source: IDAE

It should be pointed out that, due to the absence of statistical data on which to base the study, a significant number of hypotheses were needed to achieve the above demand characterisation results. Consequently, those results are highly sensitive to any variation of said hypotheses and, therefore, should only be considered an initial approximation of the breakdown of the various sectors' heating and cooling demand at national level.

The next noteworthy results are the number of systems which, under the applicable criteria for building and energy density, are suitable for studying in relation to the different energy solutions proposed, and their calculated heating and cooling demand. Overall, 3 565 systems were identified, amounting to total heating demand of 135.7 TWh for heating and 24.6 TWh for cooling; 6 % of this energy demand corresponds to the residential sector, 38 % to the tertiary sector and 56 % to the industrial sector.

Lastly, the study calculated the technical, economic and cost-effective potential of the analysed technical solutions by sector.

The table below summarises the cost-effective potential values and the input each solution could contribute towards meeting the systems' demand.

Table 4.7.3.3. Cost-effective potential

Use	Demand of the systems analysed (GWh)	Baseline national demand (GWh)
Heating and DHW	135 728	408 019
Cooling	24 609	51 818

Solution	Use	Cost-effective potential (GWh)	Input of systems analysed
Waste heat from industry	Heating and DHW	3 966	2.9 %
	Cooling	91	0.4 %
Waste heat from thermal power plants	Heating and DHW	2 977	2.2 %
	Cooling	152	0.6 %
Waste heat: MSW recovery plants	Heating and DHW	1 490	1.1 %
	Cooling	150	0.6 %
Geothermal	Heating and DHW	1 064	0.8 %
	Cooling	320	1.3 %
Solar	Heating and DHW	5 739	4.2 %
	Cooling	-	-
Biogas	Heating and DHW	2 562	1.9 %
	Cooling	693	2.8 %
Biomass	Heating and DHW	29 780	21.9 %
	Cooling	5 087	20.7 %
Cogeneration	Heating and DHW	8 005	5.9 %
	Cooling	508	2.1 %

Source: IDAE

4.7.4. Procedure and methodology for conducting a cost–benefit analysis

Royal Decree 56/2016 of 12 February 2016 transposing Directive 2012/27/EU on energy efficiency sets out the methodology to evaluate the cost–benefit analysis when a facility subject to performance of that analysis is planned or upgraded.

Annex IV of Royal Decree 56/2016 of 12 February 2016 describes in detail the scope and methodology for performance of the cost–benefit analysis, both in cases of nationwide analysis and for specific projects.

Accordingly, the facility developer must carry out a cost–benefit analysis when:

- a) an industrial system with a total thermal input exceeding 20 MW generating waste heat at a useful temperature is planned or substantially refurbished, in order to assess the cost and benefits of utilising the waste heat to meet economically

justified demand, including through cogeneration, and of the connection of that system to a district heating and cooling network;

- b) construction of a new district heating and cooling network is planned or, in an existing district heating or cooling network, a new energy production plant with a total thermal input exceeding 20 MW is planned, or an existing system is to be substantially refurbished, in order to assess the cost and benefits of utilising the waste heat from nearby industrial systems.
- c) In accordance with the first final provision of Royal Decree 56/2016 of 12 February 2016 amending Royal Decree 1955/2000, electricity-generating facilities must, either prior to or at the time of applying for administrative authorisation, and as set out in part 2 of Annex IV of Royal Decree 56/2016, present a cost–benefit analysis of adapting operation of the facility to high-efficiency cogeneration in the following cases:
 - When a thermal electricity-generating plant with a total thermal capacity exceeding 20 MW is planned.
 - When a thermal electricity-generating plant with a total thermal capacity exceeding 20 MW is substantially refurbished.

4.7.5. Other measures to promote efficient heating and cooling

A large number of the measures implemented, and which aim to improve energy efficiency in heating and cooling systems, have been described in section 4.2.2 on 'Other energy efficiency measures in the buildings sector'. These measures can be summarised as follows:

- Building Code: The regulatory framework that establishes the basic safety and habitability requirements that buildings must fulfil. Regarding energy savings, the Code stipulates the output for heating systems in document DB HE2.
- Regulation on building heating systems: A legislative measure which regulates the minimum output requirements applicable to heating, cooling, ventilation and domestic hot water systems. It also regulates periodic energy efficiency audits and the design, size, assembly and maintenance of the above-mentioned systems.
- Aid Programme to Improve the Energy Efficiency of Existing Buildings (PAREER-CRECE Programme): Three of the four types of measures receiving support under the programme aim to promote the energy efficiency of heating systems in buildings. It deals with measure 2 on 'Improving energy efficiency in heating and lighting systems', measure 3 on the 'Replacement of conventional energy with biomass in heating systems' and measure 4 on the 'Replacement of conventional energy with geothermal energy in heating systems'.

In addition to these measures, the BIOMCASA II, GEOTCASA, SOLCASA and GIT programmes merit special mention. These IDAE-managed programmes have a dual aim: on the one hand, to promote energy service companies, and on the other, to encourage efficient hot water, heating and cooling systems powered by biomass, solar or geothermal energy. These programmes are financing schemes that have



La energía de tu casa	La energía de tu casa ('Energy use in your home')
Biomasa	Biomass
Geotcasa	GEOTCASA
Solcasa	SOLCASA

been implemented in Spain since 2009. The projects cover both public and private buildings (residential, commercial, service, governmental and agricultural) and include efficient heating and cooling solutions for both individual and district applications.

The main characteristics of these programmes — which remain in force to date — are described in more detail below:

BIOMCASA II PROGRAMME

The BIOMCASA II programme — which derives from the BIOMCASA programme — was published in the Official State Gazette on 14 January 2013 and is aimed at implementing thermal biomass projects in buildings via ESCOs that have previously been authorised by the IDAE. This programme was allocated a total of EUR 5 million to finance projects that fall into one of the categories below and are implemented in buildings classified as residential, commercial, service, governmental or agricultural:

T1: Systems providing hot water and/or heating up to 50 kW in a single building.

T2: Systems providing hot water and/or heating of more than 50 kW in a single building.

T3: Systems providing hot water and/or heating and cooling up to 50 kW in a single building.

T4: Systems providing hot water and/or heating and cooling of more than 50 kW in a single building.

T5: Systems providing hot water and/or heating of more than 50 kW in two or more buildings.

T6: Systems providing hot water and/or heating and cooling of more than 50 kW in two or more buildings.

GEOTCASA PROGRAMME

The GEOTCASA programme — the regulatory bases and call for applications of which were published in the Official State Gazette on 19 May 2010 and on 26 April 2011 — was allocated a total of EUR 3 million and is aimed at implementing geothermal energy projects via ESCOs in buildings used for any purpose, provided the energy is not used in industrial processes. This programme covers the following seven project types:

G1: Open-loop systems providing hot water and/or heating/cooling in a single building.

G2: Closed-loop systems, using horizontal ground heat exchangers, providing hot water and/or heating/cooling in a single building.

G3: Closed-loop systems, using vertical heat exchangers and boreholes, providing hot water and/or heating/cooling in a single building.

G4: Systems providing hot water and/or heating and cooling, with direct use of geothermal energy, in a single building.

GR1: District heating systems, with heat exchange and distribution to users.

GR2: District heating and cooling systems, with heat exchange and distribution to users.

GR3: District heating systems, with heat exchange, distribution to users and decentralised cooling.

SOLCASA PROGRAMME

The SOLCASA programme — the regulatory bases and call for applications of which were published in the Official State Gazette on 19 May 2010 and on 5 April 2011 — seeks to promote use of solar thermal energy systems to provide heating and/or cooling in buildings, provided the energy is not used in industrial processes. This programme was allocated EUR 5 million, and, as with the two previously described programmes, the ESCOs authorised by the IDAE were responsible for managing and implementing the projects. Projects must fall under one of the following categories:

S1: Solar systems providing hot water and/or heating/cooling for indoor swimming pools.

S2: Solar heating systems and, optionally, S1-type applications.

S3: Solar heating and cooling systems and, optionally, S1-type applications.

GIT Programme

The GIT programme, published in the Official State Gazette on 26 April 2011 and subsequently amended on 7 October 2013, is aimed at those projects which — due to their size and complexity — did not meet the criteria established in the calls for applications for the BIOMCASA II, SOLCASA or GEOTCASA programmes. The programme establishes a financing system for large-scale building heating systems that use renewable energies and are developed by IDAE-approved ESCOs. The programme was allocated EUR 17 million and comprises a total of 28 actions across the three renewables sectors — biomass, solar thermal and geothermal energy.

A) Biomass for large-scale facilities (BIOMCASA GIT)

E1: Systems providing hot water and/or heating in a single building.

E2: Systems providing hot water and/or heating and cooling in a single building.

R1: District heating systems, with heat exchange and distribution to users.

R2: District heating and cooling systems, with heat exchange and distribution to users.

R3: District heating systems, with heat exchange, distribution to users and decentralised cooling.

I1: Systems providing hot or superheated water for production processes or for production processes and buildings.

I2: Systems providing thermal oil for production processes or for production processes and buildings.

I3: Systems providing saturated steam using shell boilers for production processes or for production processes and buildings.

I4: Systems applying biomass in dryers.

I5: Systems applying biomass in ovens.

I6: Type I1, I2 or I3 systems providing cooling and heating.

B) Solar thermal energy for large-scale facilities (SOLCASA GIT)

S1: Solar systems providing hot water and/or heating/cooling for swimming pools.

S2: Solar heating systems and, optionally, S1-type applications.

S3: Solar heating and cooling systems and, optionally, S1-type applications.

SI1: Solar systems providing hot or superheated water for production processes and district heating systems with heat exchange and distribution to various users.

SI2: Solar systems providing steam for production processes and district heating systems with heat exchange and distribution to various users.

SI3: Solar systems providing heating and/or cooling for production processes and district heating systems with heat exchange and distribution to various users.

C) Geothermal energy for large-scale facilities (GEOCASA GIT)

G1: Open-loop systems providing hot water and/or heating/cooling in buildings using geothermal heat pumps.

G2: Closed-loop systems, using horizontal ground heat exchangers, providing hot water and/or heating/cooling in a single building.

G3: Closed-loop systems, using vertical heat exchangers and boreholes, providing hot water and/or heating/cooling in a single building.

G4: Systems providing hot water and/or heating/cooling, with direct use of geothermal energy, in a single building.

GR1: District heating systems, with heat exchange and distribution to users.

GR2: District heating and cooling systems, with heat exchange and distribution to users.

GR3: District heating systems, with heat exchange, distribution to users and decentralised cooling (decentralised cooling must be provided using renewable energy).

G11: Open-loop heating and/or cooling systems, using geothermal heat pumps, for production processes.

G12: Closed-loop heating and/or cooling systems, using horizontal ground heat exchangers, for production processes.

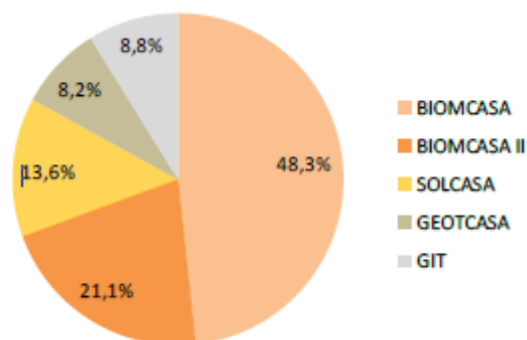
G13: Closed-loop heating and/or cooling systems, using vertical heat exchangers and boreholes, for production processes.

G14: Systems providing heating and/or cooling, with direct use of geothermal energy, for production processes.

The total funds allocated to these programmes amounted to EUR 38 million, covering 147

projects which accounted for approximately 68 % of available aid.

Figure 4.7.5.1. Breakdown of projects financed, by programme (2015)



Source: IDAE

8,8%	8,8 %
8,2%	8.2 %
13,6%	13.6 %
21,1%	21.1 %
48,3%	48.3 %
BIOMCASA	BIOMCASA
BIOMCASA II	BIOMCASA II
SOLCASA	SOLCASA
GEOTCASA	GEOTCASA
GIT	GIT

The progress report for these programmes at the end of 2015 is as follows:

Table 4.7.5.1. Funding allocated, associated investment and No of businesses approved per programme

	Funding allocated (€M)	Associated investment (€M)	No of businesses approved
BIOMCASA	8.0	9.8	64
BIOMCASA II	4.2	5.2	8
SOLCASA	2.6	2.2	38
GEOTCASA	1.8	1.9	23
GIT	9.1	11.6	20
TOTAL	25.7	30.6	153

Source: IDAE

4.8. ENERGY EFFICIENCY IN TRANSFORMATION, TRANSMISSION, DISTRIBUTION AND DEMAND RESPONSE (Article 15)

In recent years, Spain's electricity system has been completely overhauled with the aim of achieving economic sustainability and improving its economic and technical efficiency.

A significant reform package was therefore launched following the enactment of Law 24/2013 of 26 December 2013 on the electricity sector, and of Royal Decree 1047/2013 of 27 December 2013 establishing the methodology to calculate remuneration for the transmission of electricity, Royal Decree 1048/2013 of 27 December 2013 establishing the methodology to calculate remuneration for the distribution of electricity, Royal Decree 216/2014 of 28 March 2014 establishing the methodology to calculate discretionary prices for small electricity consumers and the legal provisions applicable to hiring these services, Royal Decree 900/2015 of 9 October 2015 regulating the administrative, technical and economic terms of electricity supply modes involving self-consumption and production with self-consumption, and Royal Decree 738/2015 of 31 July 2015 regulating electricity production and the clearance procedure in the electrical systems of Spain's non-peninsular territories. Several ministerial orders have also been approved, including Order IET/2013/2013 of 31 October 2013 regulating the competition mechanism by which the interruptibility demand management service is assigned, and Order IET/346/2014 of 7 March 2014 which amends the previous order. Additionally, various royal decrees and ministerial orders are still being processed and are at different stages of completion.

The aforementioned regulations contain measures aimed at stimulating the pursuit of several of the targets set by the Energy Efficiency Directive.

4.8.1. Energy efficiency criteria applicable to network tariffs and regulations (Article 15)

This section describes the measures adopted or envisaged by Spain in regard to transposing Article 15 of the EED, which states that Member States shall ensure the removal of those incentives in transmission and distribution tariffs that are detrimental to the overall efficiency (including energy efficiency) of the generation, transmission, distribution and supply of electricity or those that might hamper participation of demand response, in balancing markets and ancillary services procurement.

It also describes the measures to ensure that network operators are incentivised to improve efficiency in infrastructure design and operation. Finally, it covers measures to ensure that tariffs allow suppliers to improve consumer participation in system efficiency, including demand response.

In regard to network tariffs, the electricity sector regulations stipulate that the government shall be responsible for establishing network remuneration methods, while the National Markets and Competition Commission shall be responsible for establishing a methodology for allocating costs of access tolls, taking into account the cost of remunerating such activities.

The CNMC adopted this methodology by means of Circular 3/2014 of 2 July 2014 of the National Markets and Competition Commission establishing the methodology for calculating electricity transmission and distribution tolls. However, it has not yet been applied, as approval of a Royal Decree on service charge methodology is also required and as the Circular is expected to undergo revision due to amendment of one of the toll bands.

The approval of Royal Decree 900/2015 allows the gradual transition towards a distributed electricity-generation model, generally comprising small-scale systems. The aim is that

distributed generation will gradually and effectively be incorporated into the grid and contribute to system efficiency, production and management. Distributed generation principally benefits the system by reducing grid losses as it implies that generation facilities are close to consumption points and so reduce the flow of energy through the grid. It also minimises the impact that electricity-generating systems have on their surroundings.

4.8.2. Facilitation and promotion of demand response (Article 15)

In regard to measures adopted or envisaged to facilitate and promote demand response, firstly, it is found that Article 49, on demand management, of Law 24/2013 of 26 December 2013 on the electricity sector, lays down that 'electricity companies, consumers and the system operator, in coordination with other stakeholders, may draw up and apply measures that promote better management of electricity demand and help optimise the load curve and/or energy saving and efficiency'. The same article lays down the possibility for consumers, either directly or through sellers, to participate, where applicable, in the services included in the electricity production market in accordance with the applicable regulations.

Approval of aforementioned Royal Decree 216/2014 of 28 March 2014 represents a significant step forward in improving small consumers' contribution to system efficiency and demand response. This royal decree lays down that the cost of electricity production shall be based on the hourly price of the day-ahead market during the billing period in question, thereby helping make consumers more aware of wholesale market prices driven by the system's demand curve. This encourages consumption outside peak hours and, ultimately, leads to less aggregated demand. It is equally important to note that billing shall be based on actual readings rather than estimates and shall consider consumption profiles, with the exception of consumers provided with metering systems with remote reading and management capabilities, for which billing shall be based on hourly consumption values. This will stimulate development of smart networks and efficient consumption.

With respect to large electricity consumers, measures have also been taken following the adoption of an order in 2013 regulating the competition mechanism by which the interruptibility demand management service is assigned. This order was amended in 2014 and 2016.

4.8.3. Energy efficiency in network design and regulation (Article 15)

The section below describes advances made in evaluating the energy efficiency potential of the national gas and electricity infrastructure and the measures adopted or envisaged for making cost-effective energy efficiency improvements to the network infrastructure.

- **National electricity infrastructure**

In respect to energy efficiency, Article 50, on energy saving and efficiency plans, of the new law on the electricity sector lays down that governments, within their respective jurisdictions, may implement energy saving and efficiency plans that establish basic principles and rules for enhancing the actions taken in pursuit of the following goals:

- a) Optimise the output of the energy transformation processes inherent to production or consumption systems.

- b) Analyse and monitor the development of projects to create energy-intensive industrial plants, doing so according to national energy efficiency criteria.
- c) Improve the performance of or replace the type of fuel used by energy-intensive companies or sectors, doing so based on national interests.
- d) Improve the energy efficiency of medium-sized and large enterprises in all sectors.
- e) Improve the energy systems of the national stock of residential and commercial buildings to increase electricity savings and improve energy efficiency in heating, cooling, ventilation, lighting, elevator and other electrically powered systems.

In regard to networks, Royal Decree 1047/2013 of 27 December 2013 and Royal Decree 1048/2013 of 27 December 2013 implement a specific methodology which will remunerate each and every investment made by electricity transmission and distribution companies. These regulations provide network companies with the certainty that their actions will be compensated, which undoubtedly makes it easier for them to obtain the financing those actions require. Furthermore, the recently approved law on the electricity sector includes a clear commitment to technological innovation in networks, stating that 'assets which imply technological innovations, and provided their introduction will increase the technical and economic efficiency of the system, may be considered to have a differentiated and significantly inferior regulatory lifespan'. This will help stimulate investment in smart networks.

Meanwhile, the royal decree on the remuneration of distribution has introduced two incentives that will help to reduce network losses. The first is an incentive to reduce losses which results in either increased remuneration or the application of penalties. The incentive is set up in such a way that continuous improvement in the extent of losses is required in order to receive increased remuneration and to avoid penalty, thus fostering a process of ongoing improvement. Secondly, an incentive has been designed to reduce fraud, given that energy theft represents an economic cost — as well as a 'statistical cost' — to the system since stolen energy is accounted for as a loss, as it is energy that enters the electricity network but which is never read on consumer meters.

Finally, the law on the electricity sector lays down that system operator remuneration may incorporate incentives (which may be positive or negative) to reduce system operating costs deriving from balancing services and forecasting enhancements and to achieve other goals.

- **National gas infrastructure**

Article 85 of Law 34/1998 of 7 October 1998 on the hydrocarbons sector lays down that the central government and autonomous communities, within their respective territorial jurisdiction, may implement energy saving and efficiency plans which establish basic rules and principles for enhancing the actions taken to optimise the output of the energy transformation processes inherent to production or consumption systems.

With regard to gas infrastructure, in the Spanish system a mechanism has been introduced to detect system losses in transmission and distribution networks and regasification plants and to provide an incentive for facility owners to reduce such losses.

In the case of the transmission system, current regulations acknowledge that transmitters suffer 0.2 % losses, which are physically retained from the retailers at the points at which gas enters the transmission system. In practice, the real losses are within this range: 0.10 % in 2014 and 0.23 % in 2015.

In the distribution systems, in accordance with current regulations, if real losses exceed acknowledged losses, the distributor assumes the cost. If real losses are inferior, the revenue is divided between the distributor and the retailer. Therefore, an incentive exists for both parties to reduce losses.

The loss percentages applied by distribution facility operators are the following:

- Distribution losses at pressures below or equal to 4 bar: 1 %
- Distribution losses at pressures equal to or below 4 bar, for networks drawing from a satellite system: 2 %
- Distribution losses at pressures above 4 bar: 0.39 %
- No loss is acknowledged from pipeline distribution at a maximum design pressure above 16 bar, except where justified.

The real losses in distribution networks are lower — close to 0.3 % in 2014.

Regarding losses at regasification plants, the acknowledged losses, in accordance with the regulations in force at the time, were 0.01 % for the 2014 and 2015 calendar years (0.005 % for the 2014 and 2015 financial years). Furthermore, with respect to self-consumption at regasification plants, a large part of it is due to natural gas being used as fuel in the LNG tanks' boil-off compression units.

Law 18/2014 of 15 October 2014 approving urgent measures for growth, competitiveness and efficiency included the removal of remuneration for self-consumption gas in regasification plants as a measure to improve energy efficiency, establishing a transition period through to December 2017 during which self-consumption gas's eligibility for remuneration decreases annually.

ANNEXES

5. ANNEX I: REPORT ON THE RESULTS OF THE 'ENERGY SAVING AND EFFICIENCY 2015' COMMUNICATION CAMPAIGN



<p>Postest de campanya para fomentar el ahorro y la eficiencia energética</p> <p>Septiembre 2015</p> <p>ANÁLISIS E INVESTIGACIÓN</p>	<p>Campaign posters promoting energy saving and efficiency</p> <p>[Illegible text]</p> <p>September 2015</p> <p>ANÁLISIS E INVESTIGACIÓN</p>
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METODOLOGÍA

UNIVERSO

Personas mayores de 18 años residentes en España

MUESTRA Y ERROR MUESTRAL

1201 casos y un error muestral de $\pm 2,89\%$ para un nivel de confianza del 95,5%, $p=0,5$ y población infinita

DISTRIBUCIÓN DE LA MUESTRA

Se establecen cuotas proporcionales por:

- Comunidad autónoma
- Tamaño de hábitat: hasta 5.000 habitantes, de 5.001 a 20.000 habitantes, de 20.001 a 50.000 habitantes, de 50.001 a 500.000 habitantes y más de 500.000 habitantes.
- Edad: 18-29 años, 30-44 años, 45-64 años, más de 64 años.

TIPO DE ENCUESTACIÓN

CATI

CUESTIONARIO

Semiestructurado

FECHA DE REALIZACIÓN

Del 5 de agosto al 11 de agosto de 2015.

CONTROL DE CALIDAD

De acuerdo a la Norma ISO 20252, certificada por Aenor y el Código de conducta CCI/Esomar



<p>METODOLOGÍA</p> <p>UNIVERSO Personas mayores de 18 años residentes en España</p> <p>MUESTRA Y ERROR MUESTRAL 1.201 casos y un error muestral de $\pm 2,89\%$ para un nivel de confianza del 95,5%</p> <p>DISTRIBUCIÓN DE LA MUESTRA Se establecen cuotas proporcionales por:</p> <ul style="list-style-type: none"> • Comunidad autónoma • Tamaño de hábitat hasta 5.000 habitantes, de 5.000 a 20.000 habitantes, de 20.001 a 50.000 habitantes, de 50.001 a 500.000 habitantes y más de 500.000 • Edad: 18-29 años, 30-44 años, 45-64 años, más de 64 años <p>TIPO DE ENCUESTACIÓN</p> <p>CUESTIONARIO Semiestructurado</p> <p>FECHA DE REALIZACIÓN Del 5 de agosto al 11 de agosto de 2015</p> <p>CONTROL DE CALIDAD De acuerdo a la Norma ISO 20252, certificada por Aenor y el Código de conducta CCI/Esomar</p>	<p>METHODOLOGY</p> <p>UNIVERSE People aged over 18 resident in Spain.</p> <p>SAMPLE AND SAMPLING ERROR 1 201 cases and a sampling error of $\pm 2.89\%$ for a confidence level of 95.5% [illegible text] and an infinite population.</p> <p>BREAKDOWN OF THE SAMPLE Proportional quotas, broken down by:</p> <ul style="list-style-type: none"> • Autonomous community • Size of place of residence: up to 5 000 inhabitants, 5 000 to 20 000 inhabitants, 20 001 to 50 000 inhabitants, 50 001 to 500 000 inhabitants and over 500 000 inhabitants. • Age: 18-29, 30-44, 45-64, over 64. <p>SURVEY TYPE CATI.</p> <p>SURVEY Semi-structured.</p> <p>DATES CONDUCTED From 5 August to 11 August 2015.</p> <p>QUALITY CONTROL As per ISO 20252, certified by Aenor, and the ICC/ESOMAR code of conduct.</p>
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DESCRIPCIÓN DE LA MUESTRA Comunidad Autónoma, Sexo, Edad y composición del hogar

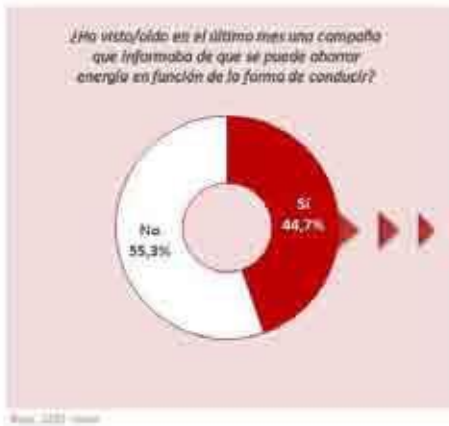


DESCRIPCIÓN DE LA MUESTRA Comunidad Autónoma, Sexo, Edad y composición del hogar	DESCRIPTION OF THE SAMPLE Autonomous community, sex, age and composition of household
Sexo	Sex
Mujeres	Female
Hombres	Male
Edad	Age
De 18 a 29 años	18 to 29
De 30 a 44 años	30 to 44
De 45 a 64 años	45 to 64
Más de 64 años	Over 64
Menores de 14 años en el hogar	Children under 14 in the household
Número de miembros en el hogar	Number of members in the household
1-2 personas	1-2 people
3-4 personas	3-4 people
Más de 4 personas	More than 4 people
CC.AA.	AC
Andalucía	Andalusia
Cataluña	Catalonia
Madrid	Madrid
C. Valenciana	Valencia
Galicia	Galicia
Castilla y León	Castile-Leon
País Vasco	Basque Country
Canarias (Islas)	Canary Islands
Castilla La Mancha	Castile-La Mancha
Murcia	Murcia
Aragón	Aragon
Asturias	Asturias
Extremadura	Extremadura
Baleares (Islas)	Balearic Islands
Cantabria	Cantabria
Navarra	Navarre
Rioja	Rioja



<p>CAMPAÑA DE CONDUCCIÓN EFICIENTE SITUACIÓN DE PARTIDA Descripción de la muestra Conduce aunque sea esporádicamente</p> <p>Carnet antes del año 2014</p> <p>Frecuencia conducción Todos o casi todos los días 3-4 veces por semana 1-2 veces por semana Con menos frecuencia</p> <p>Conductores frecuentes 80,4% Conductores poco frecuentes 19,7% Conductores según nivel de eficiencia Muy eficientes Bastante eficientes Algo eficientes No eficientes</p> <p>Muy eficientes Bastante eficientes Algo eficientes No eficientes</p> <p>Conductor frecuente Conductor poco frecuente</p>	<p>ECODRIVING CAMPAIGN BASELINE SITUATION Description of the sample Drives, even if only occasionally [Illegible text] Gained driving licence before 2014 [Illegible text] Driving frequency Every day or almost every day 3-4 times per week 1-2 times per week Less often [Illegible text] Frequent drivers: 80.4 % Infrequent drivers: 19.7 % Drivers, by driving efficiency Very efficient Moderately efficient Somewhat efficient Inefficient [Illegible text] Very efficient Moderately efficient Somewhat efficient Inefficient [Illegible text] Frequent driver Infrequent driver</p>
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CAMPAÑA CONDUCCIÓN EFICIENTE
RECUERDO DE LA CAMPAÑA
 Notoriedad espontánea

Promotor de la campaña (respuesta espontánea)



Q.1 ¿Ha visto/oído en el último mes una campaña que informaba de que se puede ahorrar energía en función de la forma de conducir las vehículos?
 Q.2 ¿Me podría decir quién era el promotor de esa campaña?

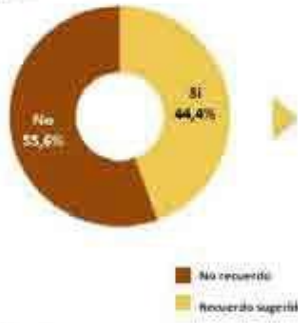


<p>CAMPAÑA CONDUCCIÓN EFICIENTE RECUERDO DE LA CAMPAÑA Notoriedad espontánea ¿Ha visto/oído en el último mes una campaña que informaba de que se puede ahorrar energía en función de la forma de conducir? No 55,3% Sí 44,7% Promotor de la campaña (respuesta espontánea) Ministerio de Industria, Energía y Turismo El Gobierno de España DGT Campaña energética/aseguradora/coches Antonio Resines Ponle freno / Antena 3 Gobierno autonómico/local IDAE Otros Ns/Nc</p>	<p>ECODRIVING CAMPAIGN RECALL OF THE CAMPAIGN Spontaneous recall In the last month, have you seen/heard a campaign explaining that changing driving style can save energy? No 55.3 % Yes 44.7 % Campaign sponsor (spontaneous recall) Ministry of Industry, Energy and Tourism Spanish government DGT Energy/insurance/car company Antonio Resines Ponle freno / Antena 3 Regional/local government IDAE Other Do not know/No answer Q.1 In the last month, have you seen/heard a campaign explaining that you can save energy by driving more efficiently? Q.2 Could you tell me who sponsored that campaign?</p>
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CAMPAÑA CONDUCCIÓN EFICIENTE
RECUERDO DE LA CAMPAÑA
 Notoriedad sugerida

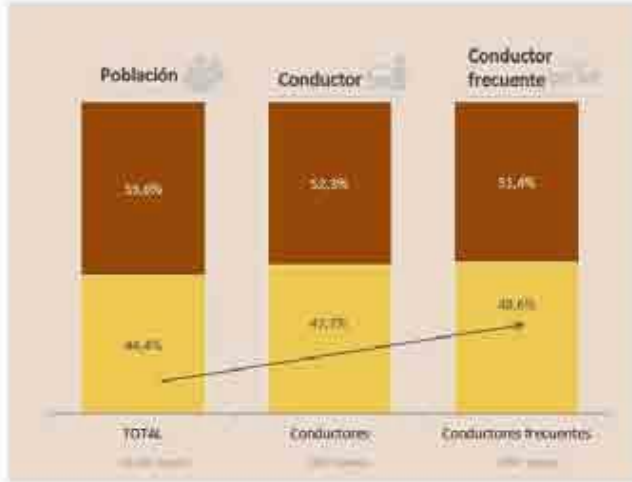


El Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña... aparece el actor Antonio Resines aconsejando sobre la forma de ahorrar energía y conducción eficiente de coches para ahorrar energía e informando del etiquetado energético de los vehículos... ¿Ha visto u oído esta campaña?



Base: 1.520 personas

En los últimos meses, el Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña en diferentes medios donde aparece el actor Antonio Resines aconsejando sobre la forma de ahorrar energía y conducción eficiente de coches para ahorrar energía e informando del etiquetado energético de los vehículos. Uno de los mensajes de esta campaña ha sido "Conducir bien es de todos, ¿has visto u oído esta campaña?"



<p>CAMPAÑA CONDUCCIÓN EFICIENTE RECUERDO DE LA CAMPAÑA Notoriedad sugerida El Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña... aparece el actor Antonio Resines aconsejando sobre la forma de ahorrar energía y conducción eficiente de coches para ahorrar energía e informando del etiquetado energético de los vehículos... ¿Ha visto u oído esta campaña? No 55,6% Sí 44,4% No recuerda Recuerdo sugerido Población TOTAL Conductor Conductores Conductor frecuente Conductores frecuentes</p>	<p>ECODRIVING CAMPAIGN RECALL OF THE CAMPAIGN Prompted recall The Ministry of Industry, Energy and Tourism has run a campaign — featuring the actor Antonio Resines — explaining how to save energy by driving fuel-efficiently and providing information about vehicle energy labelling. Have you seen or heard this campaign? No 55.6 % Yes 44.4 % No recall Prompted recall Population TOTAL Driver Drivers Frequent driver Frequent drivers [Illegible text]</p>
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CAMPAÑA CONDUCCIÓN EFICIENTE
MENSAJES TRANSMITIDOS



Barry Environmental/Innovaplan - M2 - 2011

P.4 ¿Recuerda haber escuchado en esta campaña los siguientes mensajes? P.5 ¿Conocía antes de la campaña los siguientes mensajes?



<p>CAMPAÑA CONDUCCIÓN EFICIENTE MENSAJES TRANSMITIDOS</p> <p>La forma de conducir también ahorra energía Evitar los acelerones y frenazos para ahorrar energía Los coches viejos gastan más energía Parar el motor si te detienes mucho tiempo para ahorrar energía Los vehículos también tienen etiquetado energético Usar marchas largas en el vehículo para ahorrar energía Si vas a comprar un coche nuevo, compara su etiqueta energética y elige el que menos consuma Lo ideal es utilizar transporte público, bicicleta o desplazarse a pie</p> <p>% que conocía previamente el mensaje P.4 ¿Recuerda haber escuchado en esta campaña los siguientes mensajes? P.5 ¿Conocía antes de la campaña los siguientes mensajes?</p>	<p>ECODRIVING CAMPAIGN TIPS RECALLED</p> <p>Driving style can save energy Accelerating and braking gently saves energy</p> <p>Old cars use more energy Turning off the engine during long stops saves energy Vehicles also have energy labelling Using higher gears saves energy If you're going to buy a new car, compare energy labels and choose the most fuel-efficient option Public transport, cycling or walking are the best option</p> <p>% previously aware of the tips Q.4 Do you remember hearing the following tips during this campaign? Q.5 Had you heard the following tips before this campaign?</p>
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<p>CAMPAÑA CONDUCCIÓN EFICIENTE MENSAJES TRANSMITIDOS Eficiencia de la información RECUERDO DEL HÁBITO DE CONDUCCIÓN EFICIENTE EN LA CAMPAÑA Sí No Reforzado No alcanzado Impactado No impactado CONOCIMIENTO DEL HÁBITO DE CONDUCCIÓN EFICIENTE</p> <p>P.4 ¿Recuerda haber escuchado en esta campaña los siguientes mensajes? P.5 ¿Conocía antes de la campaña alguno de los siguientes mensajes?</p>	<p>ECODRIVING CAMPAIGN TIPS RECALLED Information effectiveness RECALL OF THE ECODRIVING TECHNIQUES EXPLAINED IN THE CAMPAIGN Yes No Reinforced Not reached Influenced Not influenced AWARENESS OF ECODRIVING TECHNIQUES [Illegible text]</p> <p>Q.4 Do you remember hearing the following tips during this campaign? Q.5 Had you heard any of the following tips before this campaign?</p>
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CAMPAÑA CONDUCCIÓN EFICIENTE
MENSAJES TRANSMITIDOS
 Eficiencia de la información




■ Reforzado ■ Impactado ■ No alcanzado ■ No impactado
 % sobre los que recuerdan la campaña
 % sobre total de la muestra
Base: Población española, 241 años
 P.4 ¿Recuerda haber escuchado en esta campaña los siguientes mensajes?
 P.5 ¿Conocía antes de la campaña alguno de los siguientes mensajes?



CAMPAÑA DE CONDUCCIÓN EFICIENTE MENSAJES TRANSMITIDOS Eficiencia de la información La forma de conducir también ahorra energía Evitar los acelerones y frenazos para ahorrar energía Los coches viejos gastan más energía Parar el motor si te detienes mucho tiempo para ahorrar energía Los vehículos también tienen etiquetado energético Usar marchas largas en el vehículo para ahorrar energía Reforzado Impactado No alcanzado No impactado % sobre los que recuerdan la campaña % sobre total de la muestra P.4 ¿Recuerda haber escuchado en esta campaña los siguientes mensajes? P.5 ¿Conocía antes de la campaña alguno de los siguientes mensajes?	ECODRIVING CAMPAIGN TIPS RECALLED Information effectiveness [Illegible text] Driving style can save energy [Illegible text] Accelerating and braking gently saves energy [Illegible text] Old cars use more energy [Illegible text] Turning off the engine during long stops saves energy [Illegible text] Vehicles also have energy labelling [Illegible text] Using higher gears saves energy Reinforced Influenced Not reached Not influenced % of those who recall the campaign % of total sample Q.4 Do you remember hearing the following tips during this campaign? Q.5 Had you heard any of the following tips before this campaign?
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CAMPAÑA CONDUCCIÓN EFICIENTE
VALORACIÓN DE LA CAMPAÑA

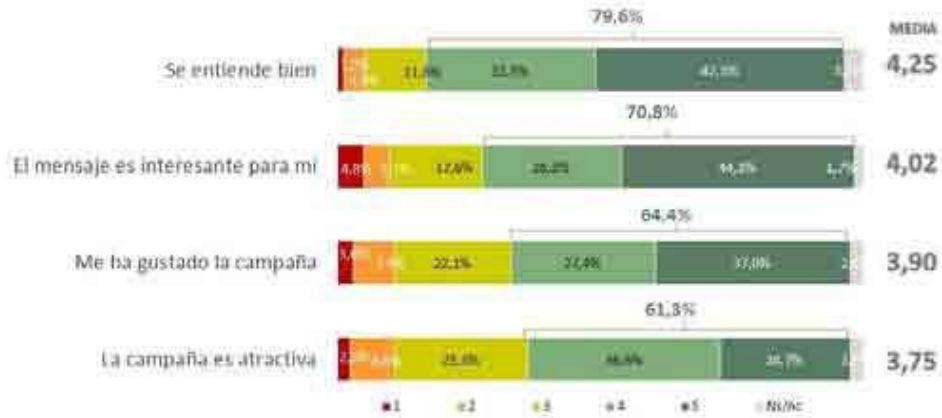
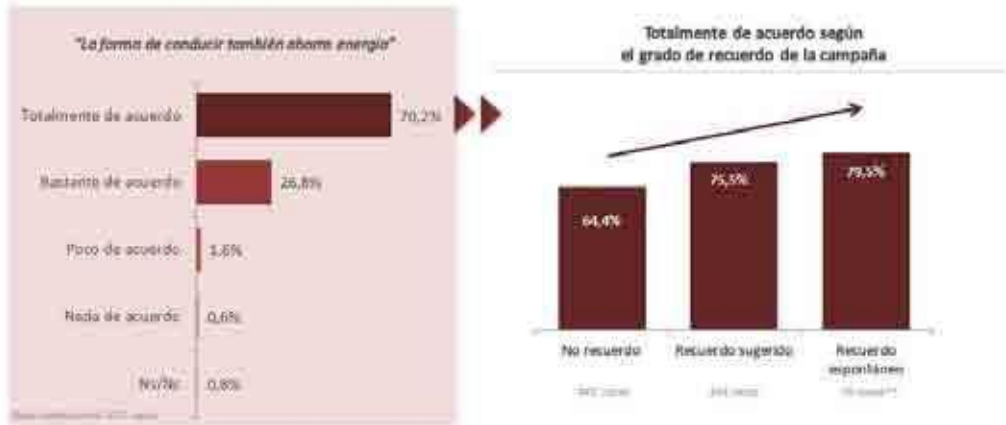


Gráfico 10

P.6 Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración.



CAMPAÑA CONDUCCIÓN EFICIENTE	ECODRIVING CAMPAIGN
VALORACIÓN DE LA CAMPAÑA	ASSESSMENT OF THE CAMPAIGN
Se entiende bien	The tips are easily understood
El mensaje es interesante para mí	The tips are useful to me
Me ha gustado la campaña	I liked the campaign
La campaña es atractiva	The campaign appealed to me
MEDIA	MEAN
79,6%	79.6 %
70,8%	70.8 %
64,4%	64.4 %
61,3%	61.3 %
4,25	4.25
4,02	4.02
3,90	3.90
3,75	3.75
Ns/Nc	Do not know/No answer
	[Illegible text]
P. 6 Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración.	Q.6 Rate the following aspects of the campaign on a scale of 1 to 5, with 1 being the lowest rating and 5 being the highest rating.


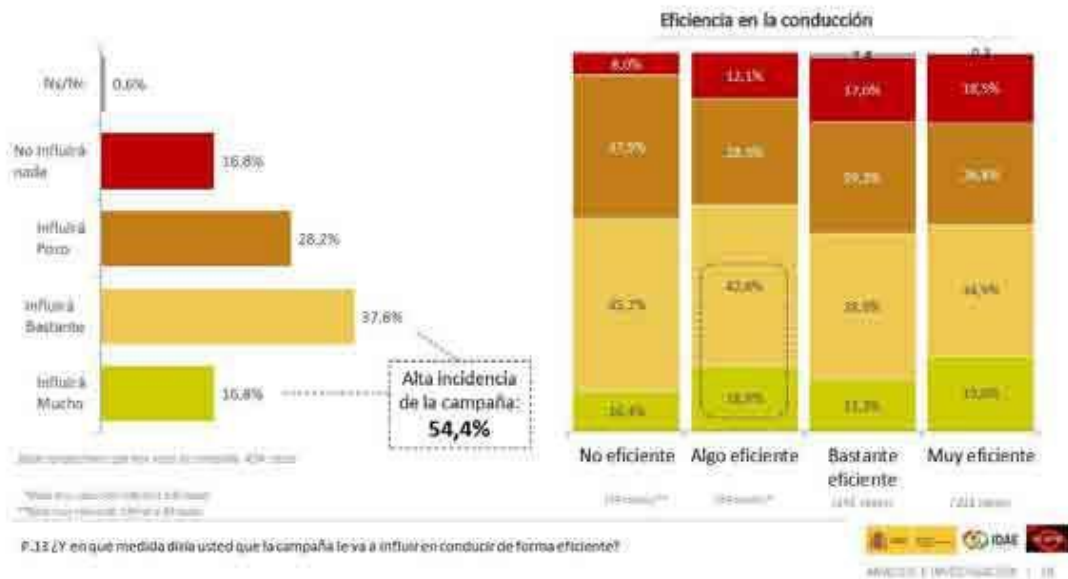


P.10. ¿En qué medida está usted de acuerdo con la siguiente afirmación: "la forma de conducir también ahorra energía"?



<p>CAMPAÑA CONDUCCIÓN EFICIENTE PERSUASIÓN Grado de acuerdo sobre mensaje principal La forma de conducir también ahorra energía Totalmente de acuerdo Bastante de acuerdo Poco de acuerdo Nada de acuerdo Ns/Nc Totalmente de acuerdo según el grado de recuerdo de la campaña No recuerdo Recuerdo sugerido Recuerdo espontáneo</p> <p>P. 10 ¿En qué medida está usted de acuerdo con la siguiente afirmación: "la forma de conducir también ahorra energía"?</p>	<p>ECODRIVING CAMPAIGN PERSUASIVENESS Degree of agreement with the central message Driving style can save energy Strongly agree Moderately agree Moderately disagree Strongly disagree Do not know/No answer Strongly agree according to degree of recall of the campaign No recall Prompted recall Spontaneous recall [Illegible text] Q.10 To what extent do you agree with the statement 'Driving style can save energy'?</p>
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CAMPAÑA CONDUCCIÓN EFICIENTE
PERSUASIÓN
 Incidencia de la campaña en términos de conducción eficiente

CAMPAÑA CONDUCCIÓN EFICIENTE PERSUASIÓN Incidencia de la campaña en términos de conducción eficiente Ns/Nc No influirá nada Influirá poco Influirá bastante Influirá mucho Alta incidencia de la campaña: 54,4% Eficiencia en la conducción No eficiente Algo eficiente Bastante eficiente Muy eficiente P. 13 ¿Y en qué medida diría usted que la campaña le va a influir en conducir de forma eficiente?	ECODRIVING CAMPAIGN PERSUASIVENESS Campaign impact in terms of ecodriving Do not know/No answer It won't have any influence It will have little influence It will have a moderate influence It will have a big influence High campaign impact: 54.4 % Driving efficiency Inefficient Somewhat efficient Moderately efficient Very efficient [Illegible text] Q.13 To what extent would you say that the campaign has persuaded you to drive efficiently?
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CAMPAÑA CONDUCCIÓN EFICIENTE
PERSUASIÓN
 Incidencia de la campaña en técnicas de conducción eficientes




CAMPAÑA CONDUCCIÓN EFICIENTE PERSUASIÓN Incidencia de la campaña en técnicas de conducción eficientes APLICARÁ CON MAYOR FRECUENCIA TÉCNICAS DE CONDUCCIÓN EFICIENTE Reforzado Impactado No alcanzado No impactado Sí No Muchas o bastantes veces Pocas veces o nunca APLICA YA TÉCNICAS DE CONDUCCIÓN EFICIENTE P. 11 ¿Con qué frecuencia diría usted que realiza las siguientes prácticas de conducción? P. 12 Y a raíz de la campaña, ¿aplica o piensa usted aplicar con mayor frecuencia...?	ECODRIVING CAMPAIGN PERSUASIVENESS Impact of the campaign on ecodriving techniques WILL USE ECODRIVING TECHNIQUES MORE FREQUENTLY Reinforced [Illegible text] Influenced [Illegible text] Not reached [Illegible text] Not influenced [Illegible text] Yes No Often or moderately frequently Infrequently or never ALREADY USES ECODRIVING TECHNIQUES Q.11 How often would you say you use the following driving techniques? Q.12 Following the campaign, have you started, or intend to start, using the following techniques more frequently?
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CAMPAÑA CONDUCCIÓN EFICIENTE
PERSUASIÓN
 Incidencia de la campaña en técnicas de conducción eficientes




■ Reforzado
 ■ Impactado
 ■ No alcanzado
 ■ No impactado

 % sobre conductores que recuerdan la campaña

 % sobre total de la muestra

P.11 ¿Con qué frecuencia diría usted que realiza las siguientes prácticas de conducción?
 P.12 Y a raíz de la campaña, ¿aplica o piensa usted aplicar con mayor frecuencia...?

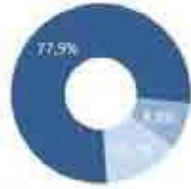
IDAE
 ANEXO I INVESTIGACIÓN 1.11

<p>CAMPAÑA CONDUCCIÓN EFICIENTE PERSUASIÓN Incidencia de la campaña en técnicas de conducción eficientes Conducir en marchas largas Apagar el coche en paradas prolongadas Evitar frenazos y acelerones Reforzado Impactado No alcanzado No impactado % sobre conductores que recuerdan la campaña % sobre total de la muestra</p> <p>P. 11 ¿Con qué frecuencia diría usted que realiza las siguientes prácticas de conducción? P. 12 Y a raíz de la campaña, ¿aplica o piensa usted aplicar con mayor frecuencia...?</p>	<p>ECODRIVING CAMPAIGN PERSUASIVENESS Impact of the campaign on ecodriving techniques</p> <p>Use higher gears Turn off the engine during long stops Accelerate and brake gently Reinforced Influenced Not reached Not influenced % of drivers who recall the campaign % of total sample [Illegible text]</p> <p>Q.11 How often would you say you use the following driving techniques? Q.12 Following the campaign, have you started, or intend to start, using the following techniques more frequently?</p>
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CAMPAÑA REHABILITACIÓN ENERGÉTICA
SITUACIÓN DE PARTIDA
Descripción de la muestra



Residencia



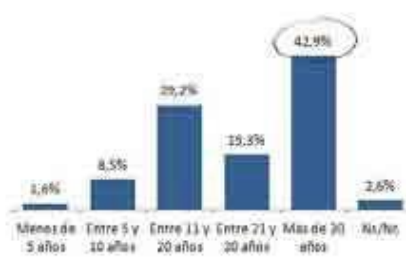
■ Vivienda en propiedad
■ Vivienda en alquiler
■ Vivienda de un familiar/amigo

Tipo vivienda



■ Una vivienda unifamiliar (chalet, adosado...)
■ Una vivienda colectiva (bloque de pisos)

Antigüedad de la vivienda



Base: 1.221 viviendas

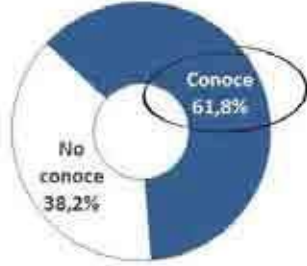
Propietarios de vivienda colectiva (piso) con más de 10 años de antigüedad: 41,8%



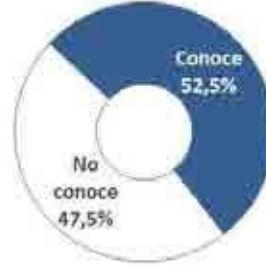
AVANCES E INICIATIVAS 1.34

CAMPAÑA REHABILITACIÓN ENERGÉTICA	ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN
SITUACIÓN DE PARTIDA	BASELINE SITUATION
Descripción de la muestra	Description of the sample
Residencia	Residence
Vivienda en propiedad	Own home
Vivienda en alquiler	Rented home
Vivienda de un familiar/amigo	Home of family member/friend
Tipo vivienda	Type of home
Una vivienda unifamiliar (chalet, adosado...)	Single-family home (detached, semi-detached, etc.)
Una vivienda colectiva (bloque de pisos)	Residential building (block of flats)
Antigüedad de la vivienda	Age of building
Menor de 5 años	Under 5 years old
Entre 5 y 10 años	5 to 10 years old
Entre 11 y 20 años	11 to 20 years old
Entre 21 y 20 años	21 to 20 years old
Más de 20 años	Over 20 years old
Ns/Nc	Do not know/No answer
Propietarios de vivienda colectiva (piso) con más de 10 años de antigüedad: 41,8%	Owners of flats in buildings over 10 years old: 41.8 %

Ayudas públicas para rehabilitación de edificios



Certificado energético de edificios



fuente: IDAE

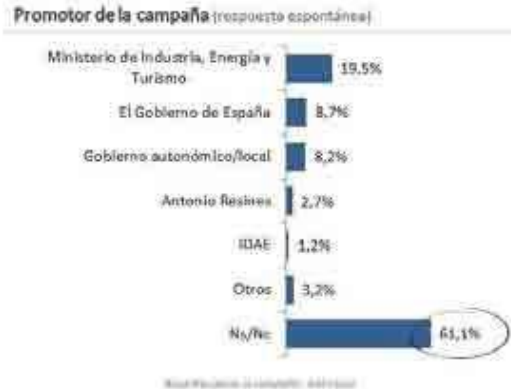
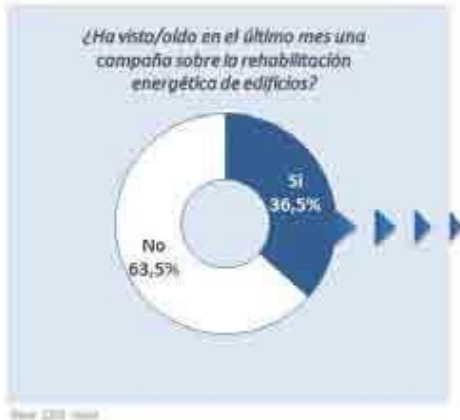
El IDAE elabora un estudio que evalúa el conocimiento de las ayudas públicas para rehabilitación energética de edificios y del certificado energético de edificios. El estudio se basa en un cuestionario que se envía a los edificios con consumo energético más eficiente, a través de los centros de gestión de energía de los edificios.

Fig. 7. Conocimiento de las ayudas públicas para rehabilitación energética y del certificado energético.



<p>CAMPAÑA REHABILITACIÓN ENERGÉTICA SITUACIÓN DE PARTIDA Conocimiento de ayudas de rehabilitación energética y del certificado energético Ayudas públicas para rehabilitación de edificios No conoce 38,2% Conoce 61,8% Certificado energético de edificios No conoce 47,5% Conoce 52,5%</p>	<p>ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN BASELINE SITUATION Awareness of aid for energy efficiency improvements and energy certification Public aid for building refurbishment Not aware 38.2 % Aware 61.8 % Building energy certification Not aware 47.5 % Aware 52.5 % [Illegible text]</p>
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CAMPAÑA REHABILITACIÓN ENERGÉTICA
RECUERDO DE LA CAMPAÑA
Notoriedad espontánea



P.13 ¿Ha visto/oido en el último mes una campaña sobre la rehabilitación energética de edificios?
 P.14 ¿Me podría decir quién es el promotor de esa campaña?

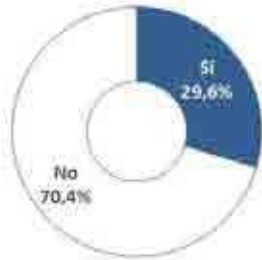


<p>CAMPAÑA REHABILITACIÓN ENERGÉTICA RECUERDO DE LA CAMPAÑA Notoriedad espontánea ¿Has visto/oido en el último mes una campaña sobre la rehabilitación energética de edificios?</p> <p>No 63,5% Sí 36,5%</p> <p>Promotor de la campaña (respuesta espontánea) Ministerio de Industria, Energía y Turismo El Gobierno de España Gobierno autonómico/local Antonio Resines IDAE Otros Ns/Nc</p>	<p>ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN RECALL OF THE CAMPAIGN Spontaneous recall In the last month, have you seen/heard a campaign promoting energy efficiency improvements in buildings? No 63.5 % Yes 36.5 %</p> <p>Campaign sponsor (spontaneous recall) Ministry of Industry, Energy and Tourism Spanish government Regional/local government Antonio Resines IDAE Other Do not know/No answer [Illegible text]</p>
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CAMPAÑA REHABILITACIÓN ENERGÉTICA
RECUERDO DE LA CAMPAÑA
Notoriedad sugerida

El Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña... aparece el actor Antonio Resines informando sobre la rehabilitación energética de edificios.

Esta campaña también informaba de que existe un certificado energético... ¿Ha visto u oído esta campaña?



No recuerdo
 Recuerdo sugerido

Fuente: I. S. T. 2011

El I. S. T. 2011 (Informe Estadístico de España) muestra que el 29,6% de los encuestados recuerda haber visto o oído la campaña de rehabilitación energética de edificios. El resto de los encuestados no recuerda haber visto o oído la campaña. El I. S. T. 2011 también muestra que el 69,3% de los propietarios de viviendas en propiedad, el 67,7% de los propietarios de viviendas colectivas (bloque de pisos) y el 68,3% de los propietarios de viviendas en propiedad en bloque de pisos de más de 10 años recuerda haber visto o oído la campaña.



<p>CAMPAÑA REHABILITACIÓN ENERGÉTICA RECUERDO DE LA CAMPAÑA Notoriedad sugerida El Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña... aparece el actor Antonio Resines informando sobre rehabilitación energética de edificios. Esta campaña también informaba de que existe un certificado energético... ¿Ha visto u oído esta campaña? No 70,4% Sí 29,6% No recuerda Recuerdo sugerido Propietarios Vivienda en propiedad Vivienda colectiva Vivienda en propiedad colectiva (bloque de pisos) Vivienda colectiva de más de 10 años Vivienda en propiedad en bloque de pisos de más de 10 años</p>	<p>ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN RECALL OF THE CAMPAIGN Prompted recall The Ministry of Industry, Energy and Tourism has run a campaign — featuring the actor Antonio Resines — explaining about energy efficiency improvements in buildings. The campaign also explained about energy certificates. Have you seen or heard this campaign? No 70.4 % Yes 29.6 % No recall Prompted recall Home ownership Own home Residential building Flat in co-owned residential building Residential building over 10 years old Own home in block of flats over 10 years old [Illegible text]</p>
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CAMPAÑA REHABILITACIÓN ENERGÉTICA
VALORACIÓN DE LA CAMPAÑA



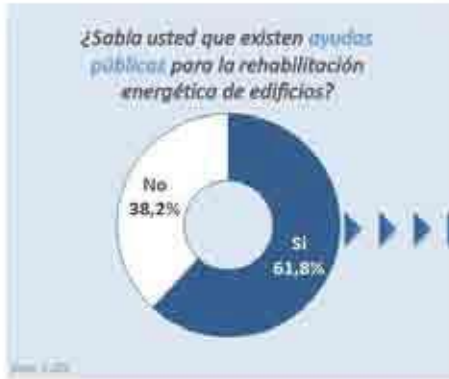
Gráfico elaborado a partir de los datos de la encuesta.

P.19. Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración.



AVANCE 1 (INICIACIÓN) 1 de 10

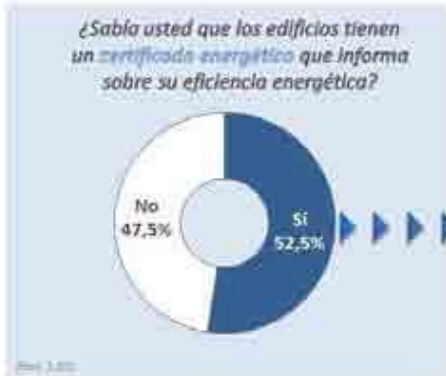
CAMPAÑA REHABILITACIÓN ENERGÉTICA	ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN
VALORACIÓN DE LA CAMPAÑA	ASSESSMENT OF THE CAMPAIGN
Se entiende bien	The tips are easily understood
El mensaje es interesante para mí	The tips are useful to me
Me ha gustado la campaña	I liked the campaign
La campaña es atractiva	The campaign appealed to me
MEDIA	MEAN
4,08	4.08
3,85	3.85
3,84	3.84
3,78	3.78
	[Illegible text]
P. 19 Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración	Q.19 Rate the following aspects of the campaign on a scale of 1 to 5, with 1 being the lowest rating and 5 being the highest



P.14. ¿Sabía usted que existen ayudas públicas para la rehabilitación energética de edificios?



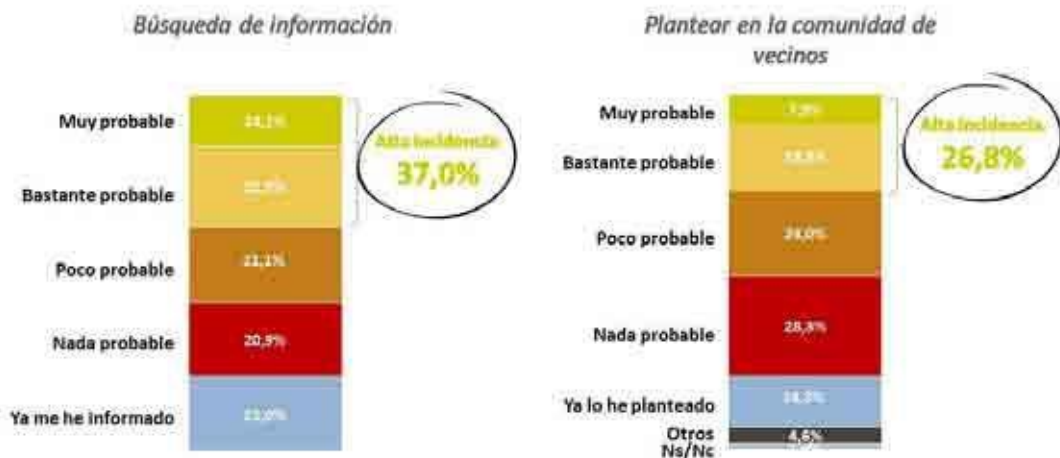
CAMPAÑA DE REHABILITACIÓN ENERGÉTICA PERSUASIÓN Grado de conocimiento del mensaje principal ¿Sabía usted que existen ayudas públicas para la rehabilitación energética de edificios? No 38,2% Sí 61,8% Conocimiento del mensaje principal según el grado de recuerdo de la campaña: No recuerdo Recuerdo sugerido Recuerdo espontáneo P. 14 ¿Sabía usted que existen ayudas públicas para la rehabilitación energética de edificios?	ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN PERSUASIVENESS Degree of awareness of the central message Did you know that public aid is available to improve energy efficiency in buildings? No 38.2 % Yes 61.8 % Awareness of the central message, by degree of recall of the campaign: No recall Prompted recall Spontaneous recall [Illegible text] Q.14 Did you know that public aid is available to improve energy efficiency buildings?
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P.17. ¿Sabía usted que los edificios tienen un certificado energético que informa sobre su eficiencia energética?



<p>CAMPAÑA DE REHABILITACIÓN ENERGÉTICA PERSUASIÓN Grado de conocimiento del mensaje principal ¿Sabía usted que los edificios tienen un certificado energético que informa sobre su eficiencia energética? No 47,5% Sí 52,5% Conocimiento del mensaje principal según el grado de recuerdo de la campaña: No recuerdo Recuerdo sugerido Recuerdo espontáneo</p> <p>P. 17. ¿Sabía usted que los edificios tienen un certificado energético que informa sobre su eficiencia energética?</p>	<p>ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN PERSUASIVENESS Degree of awareness of the central message Did you know that buildings have an energy certificate that states their energy efficiency? No 47.5 % Yes 52.5 % Awareness of the central message, by degree of recall of the campaign: No recall Prompted recall Spontaneous recall [Illegible text] Q.17 Did you know that buildings have an energy certificate that states their energy efficiency?</p>
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Nota: Se incluye la categoría 'ya me he informado' en porcentajes de 21,0%.

P.23: ¿Con qué probabilidad piensa informarse sobre las ayudas para la rehabilitación energética de edificios? P.24: ¿Con qué probabilidad piensa plantear en su comunidad de vecinos la posibilidad de solicitar las ayudas para la rehabilitación energética?



ANEXO I INVESTIGACIÓN 1. 38

CAMPAÑA REHABILITACIÓN ENERGÉTICA	ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN
PERSUASIÓN	PERSUASIVENESS
Incidencia de la campaña	Impact of the campaign
Búsqueda de información	Will seek information
Muy probable	Very likely
Bastante probable	Moderately likely
Poco probable	Unlikely
Nada probable	Not at all likely
Ya me he informado	I've already found out about it
Alta incidencia 37,0%	High impact: 37.0 %
Plantear en la comunidad de vecinos	Will suggest to residents' association
Muy probable	Very likely
Bastante probable	Moderately likely
Poco probable	Unlikely
Nada probable	Not at all likely
Ya lo he planteado	I've already suggested it
Otros	Other
Ns/Nc	Do not know/No answer
Alta incidencia 26,8%	High impact: 26.8 %
	[Illegible text]
P. 23. ¿Con qué probabilidad piensa informarse sobre las ayudas para la rehabilitación energética de edificios?	Q.23 How likely are you to seek information about the aid to improve energy efficiency in buildings?
P. 24. ¿Con qué probabilidad piensa plantear en su comunidad de vecinos la posibilidad de solicitar las ayudas para la rehabilitación energética?	Q.24 How likely are you to suggest the possibility of applying for aid to improve energy efficiency to your residents' association?

Consideración certificado energético para evaluar una compra/alquiler



Alta probabilidad de considerar el certificado para evaluar la venta/alquiler según el grado de recuerdo:



Barra 1 (2014-2015)

P.18. En las últimas semanas... ¿ha oído esta campaña?

P.25. Como se ha indicado anteriormente, los edificios tienen un certificado energético que informa sobre su nivel de eficiencia energética, ¿con qué probabilidad si tuviera que alquilar o comprar una vivienda en un edificio, consideraría la información del certificado energético para evaluar la compra/alquiler?

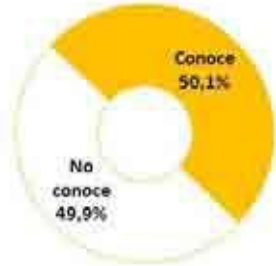


ANEXO I (INFORMACIÓN) 1 / 25

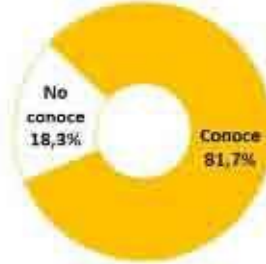
<p>CAMPAÑA DE REHABILITACIÓN ENERGÉTICA PERSUASIÓN Influencia del certificado energético en la venta/alquiler de viviendas Consideración certificado energético para evaluar una compra/alquiler Mucha probabilidad Bastante probabilidad Poca probabilidad Ninguna probabilidad TOTAL Alta probabilidad de considerar el certificado para evaluar la venta/alquiler según el grado de recuerdo: No recuerda Recuerdo sugerido Recuerdo espontáneo</p> <p>P. 18. En las últimas semanas... ¿ha oído esta campaña?</p> <p>P. 25. Como se ha indicado anteriormente, los edificios tienen un certificado energético que informa sobre su nivel de eficiencia energética, ¿con qué probabilidad si tuviera que alquilar o comprar una vivienda en un edificio, consideraría la información del certificado energético para evaluar la compra/alquiler?</p>	<p>ENERGY EFFICIENCY IMPROVEMENT CAMPAIGN PERSUASIVENESS Influence of the energy certificate when buying/renting a home Will consider the energy certificate when buying/renting Very likely Moderately likely Unlikely No likelihood TOTAL High likelihood of considering the energy certificate when buying/renting if degree of recall high: No recall Prompted recall Spontaneous recall [Illegible text] Q.18. Have you heard this campaign in the last few weeks? Q.25 As mentioned above, buildings have an energy certificate that states their energy efficiency. If you were going to rent or buy a flat, how likely would you be to consider the energy certificate when making that decision?</p>
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CAMPAÑA ETIQUETADO ENERGÉTICO
SITUACIÓN DE PARTIDA
Conocimiento de etiquetado de eficiencia energética

Las calderas cuentan con una etiqueta energética que informa sobre su eficiencia energética:



Los aparatos electrónicos y electrodomésticos cuentan con una etiqueta energética que informa sobre su eficiencia energética:



fuente: IDAE

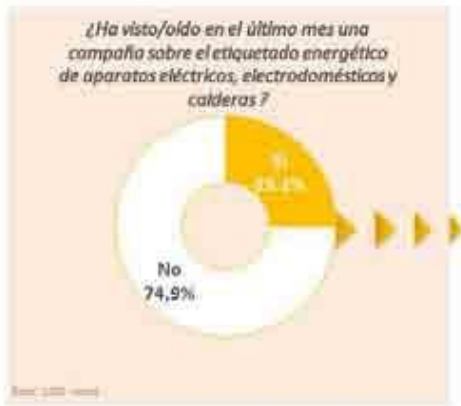
F20: ¿Sabe usted que las calderas tienen una etiqueta energética que informa sobre su eficiencia energética? F21: ¿Sabe usted que los aparatos electrónicos y electrodomésticos tienen una etiqueta energética que informa de su eficiencia energética?



ANEXO 1 INVESTIGACIÓN 1 38

<p>CAMPAÑA ETIQUETADO ENERGÉTICO SITUACIÓN DE PARTIDA Conocimiento de etiquetado de eficiencia energética Las calderas cuentan con una etiqueta energética que informa sobre su eficiencia energética: Conoce 50,1% No conoce 49,9% Los aparatos electrónicos y electrodomésticos cuentan con una etiqueta energética que informa sobre su eficiencia energética: No conoce 18,3% Conoce 81,7%</p>	<p>ENERGY LABELLING CAMPAIGN BASELINE SITUATION Awareness of energy-efficiency labelling Boilers have an energy label that states their energy efficiency: Aware 50.1 % Not aware 49.9 % Electrical appliances have an energy label that states their energy efficiency Not aware 18.3 % Aware 81.7 % [Illegible text]</p>
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CAMPAÑA ETIQUETADO ENERGÉTICO
RECUERDO DE LA CAMPAÑA
 Notoriedad espontánea

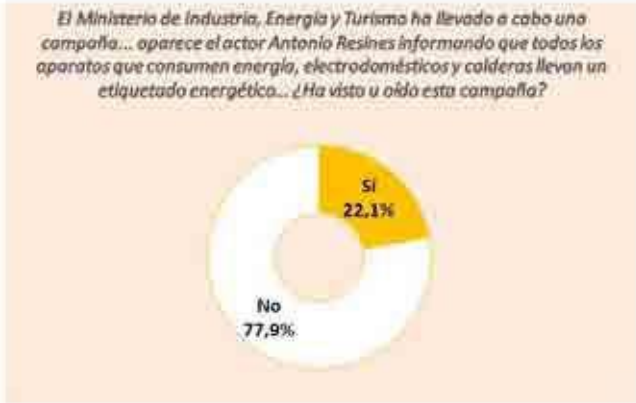


P.28 ¿Ha visto/oído en el último mes una campaña sobre el etiquetado energético de aparatos eléctricos, electrodomésticos y calderas?
 P.29 ¿Me podría decir quién es el promotor de esa campaña?



CAMPAÑA ETIQUETADO ENERGÉTICO RECUERDO DE LA CAMPAÑA Notoriedad espontánea ¿Ha visto/oído en el último mes una campaña sobre el etiquetado energético de aparatos eléctricos, electrodomésticos y calderas? Sí No Promotor de la campaña (respuesta espontánea) Ministerio de Industria, Energía y Turismo Marco relacionado con electrodomésticos Gobierno de España Gobierno autonómico/local Antonio Resines IDAE Otros Ns/Nc	ENERGY LABELLING CAMPAIGN RECALL OF THE CAMPAIGN Spontaneous recall In the last month, have you seen/heard a campaign providing information about energy labelling for boilers and electrical appliances? Yes No Campaign sponsor (spontaneous recall) Ministry of Industry, Energy and Tourism Household appliance brand Spanish government Regional/local government Antonio Resines IDAE Other Do not know/No answer Q.28 In the last month, have you seen/heard a campaign providing information about energy labelling for boilers and electrical appliances? P.29 Could you tell me who sponsored that campaign?
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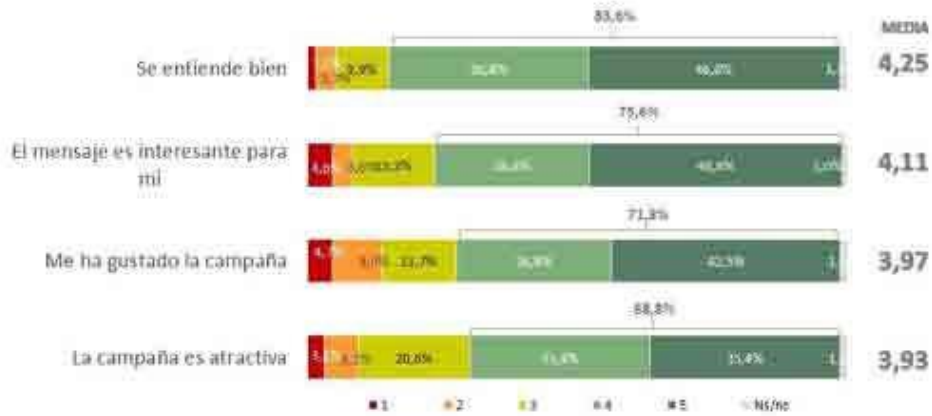
CAMPAÑA ETIQUETADO ENERGÉTICO
RECUERDO DE LA CAMPAÑA
 Notoriedad sugerida



Nota: I. 2011: 2011
* 2011: En el 2011, el Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña en el ámbito medioambiental sobre el etiquetado energético. En esta campaña se ha informado a los consumidores de que todos los aparatos que consumen energía, electrodomésticos y calderas llevan un etiquetado energético, y así saber y elegir productos ecológicos, prácticos y económicos. ¿Ha visto u oído esta campaña?
ANÁLISIS E INVESTIGACIÓN 1, 81

<p>CAMPAÑA ETIQUETADO ENERGÉTICO RECUERDO DE LA CAMPAÑA Notoriedad sugerida El Ministerio de Industria, Energía y Turismo ha llevado a cabo una campaña... aparece el actor Antonio Resines informando que todos los aparatos que consumen energía, electrodomésticos y calderas llevan un etiquetado energético... ¿Ha visto u oído esta campaña? Sí 22,1% No 77,9%</p>	<p>ENERGY LABELLING CAMPAIGN RECALL OF THE CAMPAIGN Prompted recall The Ministry of Industry, Energy and Tourism has run a campaign — featuring the actor Antonio Resines — explaining that every boiler or electrical appliance has an energy label. Have you seen or heard that campaign?. Yes 22.1 % No 77.9 % [Illegible text]</p>
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CAMPAÑA ETIQUETADO ENERGÉTICO
VALORACIÓN DE LA CAMPAÑA



04/04/2011

P.31. Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración.



CAMPAÑA ETIQUETADO ENERGÉTICO	ENERGY LABELLING CAMPAIGN
VALORACIÓN DE LA CAMPAÑA	ASSESSMENT OF THE CAMPAIGN
Se entiende bien	The tips are easily understood
El mensaje es interesante para mí	The tips are useful to me
Me ha gustado la campaña	I liked the campaign
La campaña es atractiva	The campaign appealed to me
MEDIA	MEAN
4,25	4.25
4,11	4.11
3,97	3.97
3,93	3.93
	[Illegible text]
P. 31. Valore a continuación los siguientes aspectos de la campaña utilizando una escala de 1 a 5, donde 1 es la mínima valoración y 5 la máxima valoración.	Q.31 Rate the following aspects of the campaign on a scale of 1 to 5, with 1 being the lowest rating and 5 being the highest

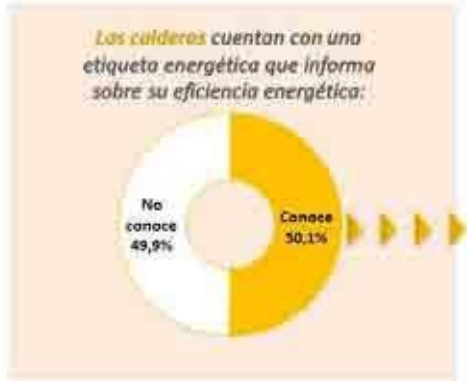


Tabla 4. Conocimiento del mensaje principal. Encuesta. Base: 1.827

Conocimiento del mensaje principal según el grado de recuerdo de la campaña:



P.26. ¿Sabía usted que las calderas tienen una etiqueta energética que informa de su eficiencia energética?



<p>CAMPAÑA DE ETIQUETADO ENERGÉTICO PERSUASIÓN Grado de conocimiento del mensaje principal Las calderas cuentan con una etiqueta energética que informa sobre su eficiencia energética: No conoce: 49,9% Conoce 50,1% Conocimiento del mensaje principal según el grado de recuerdo de la campaña: No recuerdo Recuerdo sugerido Recuerdo espontáneo</p> <p>P. 26. ¿Sabía usted que las calderas tienen una etiqueta energética que informa de su eficiencia energética?</p>	<p>ENERGY LABELLING CAMPAIGN PERSUASIVENESS Degree of awareness of the central message Boilers have an energy label that states their energy efficiency: Not aware 49.9 % Aware 50.1 % Awareness of the central message, by degree of recall of the campaign: No recall Prompted recall Spontaneous recall [Illegible text]</p> <p>Q.26 Did you know that boilers have an energy label that states their energy efficiency?</p>
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CAMPAÑA DE ETIQUETADO ENERGÉTICO
PERSUASIÓN
 Grado de conocimiento del mensaje principal

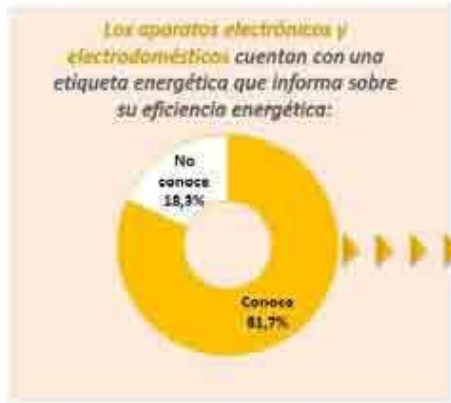


Gráfico 1.26
 *Fuente: encuesta de opinión de consumidores

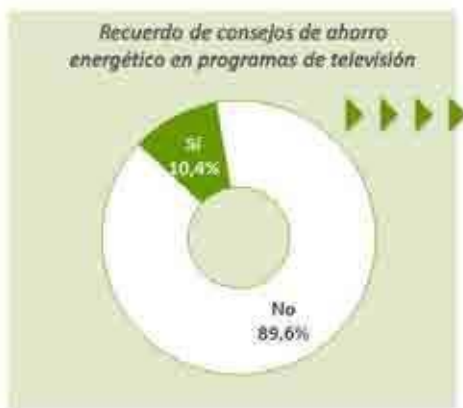
P.27. ¿Sabía usted que los aparatos electrónicos y electrodomésticos tienen una etiqueta energética que informa de su eficiencia energética?



<p>CAMPAÑA DE ETIQUETADO ENERGÉTICO PERSUASIÓN Grado de conocimiento del mensaje principal Los aparatos electrónicos y electrodomésticos cuentan con una etiqueta energética que informa sobre su eficiencia energética: No conoce Conoce Conocimiento del mensaje principal según el grado de recuerdo de la campaña No recuerdo Recuerdo sugerido Recuerdo espontáneo</p> <p>P. 27. ¿Sabía usted que los aparatos electrónicos y electrodomésticos tienen una etiqueta energética que informa de su eficiencia energética?</p>	<p>ENERGY LABELLING CAMPAIGN PERSUASIVENESS Degree of awareness of the central message Electrical appliances have an energy label that states their energy efficiency</p> <p>Not aware Aware Awareness of the central message, by degree of recall of the campaign No recall Prompted recall Spontaneous recall [Illegible text]</p> <p>Q.27 Did you know that electrical appliances have an energy label that states their energy efficiency?</p>
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CONSEJOS EN TELEVISIÓN

Recuerdo de consejos de ahorro energético en programas de televisión



Recuerdo del consejo sobre uso eficiente del aire acondicionado



Base: 1.200 personas

Base: 227 personas que comentaron en TV

P.32: Para ir finalizando, algunos consejos de los que hemos tratado en este cuestionario se han comentado en programas como el tiempo mañana, ¿recuerda haber visto algún presentador o colaborador de estos espacios hablar sobre alguna de estas campañas? P.33. Y en concreto, ¿recuerda que el presentador o colaborador aludiera al uso eficiente del aire acondicionado?

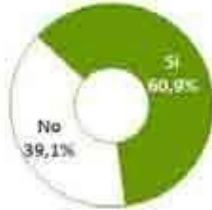


CONSEJOS EN TELEVISIÓN	TIPS ON TV
Recuerdo de consejos de ahorro energético en programas de televisión	Recall of energy-saving tips on TV programmes
Recuerdo de consejos de ahorro energético en programas de televisión	Recall of energy-saving tips on TV programmes
Sí 10,4%	Yes 10.4 %
No 89,6%	No 89.6 %
Recuerdo del consejo sobre uso eficiente del aire acondicionado	Recall of tips on efficient use of air-conditioning
Sí 41,5%	Yes 41.5 %
No 58,5%	No 58.5 %
P. 32. Para ir finalizando, algunos consejos de los que hemos tratado en este cuestionario se han comentado en programas como el tiempo mañana, ¿recuerda haber visto algún presentador o colaborador de estos espacios hablar sobre alguna de estas campañas? P. 33. Y en concreto, ¿Recuerda que el presentador o colaborador aludiera al uso eficiente del aire acondicionado?	[Illegible text] Q.32 To finish, some of the tips mentioned in this questionnaire were given on TV (weather or daytime shows). Do you recall seeing presenters or guests on those programmes talking about these campaigns? Q.33 And, in particular, do you recall the presenter or guest mentioning efficient use of air-conditioning?

IMPACTO GLOBAL DE LAS CAMPAÑAS

Ha sido impactado por...

- Campaña conducción eficiente
- Campaña rehabilitación energética edificios/certificado energético
- Campaña etiquetado energético
- Consejos presentador de espacios televisivos



%	Nº CAMPAÑAS					
	TOTAL	0	1	2	3	4
Campaña conducción eficiente	44,4	-	61,1	74,6	99,3	100
Campaña rehabilitación edificios	29,6	-	19,9	65,2	89,1	100
Campaña etiquetado energético	22,1	-	11,0	42,5	85,2	100
Consejos presentador	10,4	-	8,0	17,6	26,3	100
Distribución de la muestra según el nº de campañas recordadas		39,1	28,9	20,2	9,9	1,9

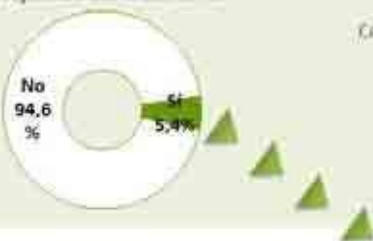


AVANCE E INNOVACIÓN 1 53

IMPACTO GLOBAL DE LAS CAMPAÑAS	OVERALL CAMPAIGN IMPACT
Ha sido impactado por...	Influenced by ...
<ul style="list-style-type: none"> • Campaña conducción eficiente • Campaña rehabilitación energética edificios/certificado energético • Campaña etiquetado energético • Consejos presentador de espacios televisivos 	<ul style="list-style-type: none"> • Ecodriving campaign • Building energy-efficiency improvement/energy certificate campaign • Energy labelling campaign • Tips from TV presenters
Sí 60,9%	Yes 60.9 %
No 39,1%	No 39.1 %
Nº CAMPAÑAS	No CAMPAIGNS
TOTAL	TOTAL
Campaña conducción eficiente	Ecodriving campaign
44,4	44.4
61,1	61.1
74,6	74.6
99,3	99.3
Campaña rehabilitación edificios	Building energy-efficiency improvement campaign
29,6	29.6
19,9	19.9
65,2	65.2
89,1	89.1
Campaña etiquetado energético	Energy labelling campaign
22,1	22.1
11,0	11.0
42,5	42.5
85,2	85.2
Consejos presentador	TV presenter tips
10,4	10.4
8,0	8.0
17,6	17.6
26,3	26.3
Distribución de la muestra según el nº de campañas recordadas	Breakdown of sample by number of campaigns recalled
39,1	39.1
28,9	28.9
20,2	20.2
9,9	9.9
1,9	1.9

INFORMACIÓN SOBRE MEDIDAS DE AHORRO Búsqueda de información complementaria

¿Tras escuchar/ver la campaña sobre ahorro energético ha buscado información para profundizar sobre este tema?



...según campaña recordada



Fuente de información utilizada



Anal. Anonimización campaña 712 meses

**Base de datos de información de usuarios

R.34. ¿Dónde (o dónde) ha buscado información para profundizar sobre este tema?

Suma?

R.35. ¿Y, dónde ha buscado esta información?

Logo de fuentes de información de energía

ANÁLISIS E INVESTIGACIÓN | 52

INFORMACIÓN SOBRE MEDIDAS DE AHORRO

Búsqueda de información complementaria

¿Tras escuchar/ver la campaña sobre ahorro energético ha buscado información para profundizar sobre este tema?

Sí 5,4%

No 94,6%

... según campaña recordada

Campaña sobre rehabilitación de edificios

Campaña de etiquetado energético

Campaña sobre conducción eficiente

Fuente de información utilizada

Página web del Ministerio

Página web de IDAE

En la web controlastuenergia.gob.es

Otras páginas o sitios web (Redes sociales)

Otros medios

Ns/Nc

INFORMATION ON ENERGY SAVING MEASURES

Search for additional information

After hearing/seeing the campaign on energy saving, have you sought further information?

Yes 5.4 %

No 94.6 %

... by campaign recalled

Building energy-efficiency improvement campaign

Energy labelling campaign

Ecodriving campaign

Information source

Ministry website

IDAE website

controlastuenergia.gob.es

Other websites (social media)

Other media

Do not know/No answer

[Illegible text]

CONCLUSIONES

CAMPAÑA DE CONDUCCIÓN EFICIENTE

- ▶ **Prácticamente la mitad de la población ha estado expuesta** a la campaña (44,4%), siendo mayor el recuerdo entre conductores frecuentes.
- ▶ La campaña ha tenido **dos grandes efectos: aportación de consejos no conocidos y refuerzo de consejos que no se aplicaban...**
 - ... el 60,5% de los que recuerdan la campaña han reforzado la idea de evitar acelerones y frenazos
 - ... el 26% de los conductores que recuerdan la campaña no solía apagar el motor en paradas largas → pero a raíz de la campaña tiene intención de aplicar la medida.

CAMPAÑA DE REHABILITACIÓN ENERGÉTICA DE EDIFICIOS

- ▶ **Tres de cada diez recuerdan** la campaña.
- ▶ **El conocimiento sobre ayudas públicas/certificado energético es mayor entre los que recuerdan la campaña**
- ▶ La campaña ha logrado un **satisfactorio nivel de persuasión:**
 - ◀ **Se informarán** el 37% de las personas que han visto la campaña y tienen una vivienda colectiva en propiedad.
 - ▶ **Plantearán en su comunidad** la posibilidad de solicitar las ayudas el 26,8% de los que recuerdan la campaña

CAMPAÑA DE ETIQUETADO ENERGÉTICO

- ▶ **1 de cada 5 (22,1%) recuerda** la campaña.
- ▶ El **conocimiento sobre la etiqueta energética de calderas y electrodomésticos es mayor entre los que recuerdan la campaña**



AVANZOS E INNOVACIONES 1/34

CONCLUSIONES

CAMPAÑA DE CONDUCCIÓN EFICIENTE

Prácticamente la mitad de la población ha estado expuesta a la campaña (44,4%), siendo mayor el recuerdo entre conductores frecuentes.

La campaña ha tenido dos grandes efectos: aportación de consejos no conocidos y refuerzo de consejos que no se aplicaban...

... el 60,5% de los que recuerdan la campaña ha reforzado la idea de evitar acelerones y frenazos

... el 26% de los conductores que recuerdan la campaña no solía apagar el motor en paradas largas, pero a raíz de la campaña tiene intención de aplicar la medida.

CAMPAÑA DE REHABILITACIÓN ENERGÉTICA DE EDIFICIOS

Tres de cada diez recuerdan la campaña.

El conocimiento sobre ayudas públicas/certificado energético es mayor entre los que recuerdan la campaña

La campaña ha logrado un satisfactorio nivel de persuasión

Se informarán el 37% de las personas que han visto la campaña y tienen una vivienda colectiva en propiedad

Plantearán en su comunidad la posibilidad de solicitar las ayudas el 26,8% de los que recuerdan la campaña

CAMPAÑA DE ETIQUETADO ENERGÉTICO

1 de cada 5 (22,1%) recuerda la campaña

El conocimiento sobre la etiqueta energética de calderas y electrodomésticos es mayor entre los que recuerdan la campaña

CONCLUSIONS

ECODRIVING CAMPAIGN

The campaign reached virtually half of the population (44.4 %), with recall being greatest among frequent drivers.

The campaign had two major outcomes: giving advice that was previously unknown and reinforcing advice that was not being applied.

... 60.5 % of those who remembered the campaign recalled the advice to accelerate and brake gently whenever possible.

... 26 % of drivers who remembered the campaign were not accustomed to turning off the engine during long stops, but because of the campaign they plan to start doing so.

BUILDING ENERGY-EFFICIENCY IMPROVEMENT CAMPAIGN

Three out of ten remembered the campaign.

Awareness of public aid/energy certification is higher among those who recall the campaign.

The campaign achieved a satisfactory level of persuasion.

37 % of the flat owners who saw the campaign plan to seek further information.

26.8 % of those who recall the campaign will suggest applying for the aid to their residents' association.

ENERGY LABELLING CAMPAIGN

1 in 5 people (22.1 %) remembered the campaign.

Awareness of energy labelling for boilers and electrical appliances was higher among those who remembered the campaign.

CONCLUSIONES

- 6 de cada 10 personas ha estado expuesto a alguna de las tres campañas o a una comunicación de un presentador de TV
- El 5,4% de los que recuerdan alguna campaña ha buscado información; en mayor medida los impactados por la campaña sobre la rehabilitación energética de edificios.

La iniciativa publicitaria, con Antonio Resides como protagonista, ha gustado mucho: las tres campañas reciben notables valoraciones (en cuanto a que gusta, se entiende, es atractiva y aporta un mensaje de interés).



AVANCE E INNOVACIÓN 1/14

CONCLUSIONES

6 de cada 10 personas han estado expuestas a alguna de las tres campañas o a una comunicación de un presentador de TV

El 5,4% de los que recuerdan alguna campaña ha buscado información, en mayor medida los impactados por la campaña sobre la rehabilitación energética de edificios

La iniciativa publicitaria, con Antonio Resines como protagonista, ha gustado mucho: las tres campañas reciben notables valoraciones (en cuanto a que gusta, se entiende, es atractiva y aporta un mensaje de interés).

CONCLUSIONS

6 out of 10 people heard/saw one of the three campaigns or advice given by a TV presenter.

5.4 % of those who remembered one of the campaigns sought further information. This response was highest among those influenced by the campaign on energy efficiency improvements in buildings.

The publicity campaign featuring Antonio Resines was very well received. All three campaigns were rated highly in terms of whether they were liked, understood, considered appealing and considered to deliver a useful message.

6. ANNEX II: ADMINISTRATIVE PROVISIONS SUPPORTING ENERGY EFFICIENCY IN CENTRAL GOVERNMENT

This second annex lists the administrative provisions adopting measures to support energy efficiency in central government.

BUILDINGS SECTOR

- Royal Legislative Decree 7/2015 of 30 October 2015 adopting the consolidated text of the law on land use and urban renewal. Official State Gazette, 31/10/2015.
- Decision of 28 April 2015 of the IDAE publishing the Decision of 24 March 2015 of the Board of Directors amending the regulatory bases and call for applications for the aid programme to improve the energy efficiency of existing residential buildings (homes and hotels). Official State Gazette, 05/05/2015.
- Order FOM/2252/2014 of 28 November 2014 determining the effectiveness of the lines of aid provided for by Royal Decree 233/2013 of 5 April 2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official State Gazette, 03/12/2014.
- Royal Decree 876/2014 of 10 October 2014 adopting the General Regulation on Coasts (improvement of energy efficiency through the energy rating of buildings on the publicly owned shoreline). Official State Gazette, 11/10/2014.
- PAREER: Decision of 25 September 2013 of the Secretariat of State for Energy publishing the Decision of 25 June 2013 of the Board of Directors of the IDAE establishing the regulatory bases for the aid programme to improve the energy efficiency of existing residential buildings (homes and hotels) and announcing the corresponding call for applications. Official State Gazette, 01/10/2013.
- Order FOM/1635/2013 of 10 September 2013 updating the core document on energy saving (DB-HE) of the Building Code, adopted by Royal Decree 314/2006 of 17 March 2006. Official State Gazette, 12/09/2013.
- PIMA Sol: Royal Decree 635/2013 of 2 August 2013 regulating, under the PIMA Sol environmental stimulus plan in the hotel sector designed to promote energy efficiency improvements in hotel facilities, the acquisition of future carbon credits by the Carbon Fund for a Sustainable Economy. Official State Gazette, 31/08/2013.
- Law 8/2013 of 26 June 2013 on urban renovation, regeneration and renewal. Official State Gazette, 26/06/2013.
- Royal Decree 235/2013 of 5 April 2013 adopting the basic procedure for building energy-efficiency certification. Official State Gazette, 13/04/2013.
- Royal Decree 238/2013 of 5 April 2013 amending certain technical instructions and articles of the Regulation on Building Heating Systems, adopted by Royal Decree 1027/2007 of 20 July 2007. Official State Gazette, 13/04/2013.
- Royal Decree 233/2013 of 5 April 2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official State Gazette, 10/04/2013.

TRANSPORT SECTOR

- Spanish National Policy Framework for Alternative Energy in Transport. Development of the market and implementation of the supply infrastructure. In compliance with Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 (approved in the Council of Ministers of 9 December 2016).
- Royal Decree 639/2016 of 9 December 2016 establishing measures for the implementation of an alternative-fuel infrastructure. Official State Gazette, 25/11/2016.
- Royal Decree 1078/2015 of 27 November 2015 regulating the direct award of aid for the acquisition of alternative-fuel vehicles and for the installation of electric-vehicle charging points in 2016 (MOVEA). Official State Gazette, 28/11/2015.
- Order IET/2388/2015 of 5 November 2015 authorising certain models of charging connectors for electric vehicles. Official State Gazette, 12/11/2015.
- Royal Decree 1053/2014 of 12 December 2014 adopting new supplementary technical instruction 'BT 52: Special-purpose facilities. Electric vehicle recharging infrastructure' extending the Electrotechnical Regulation on Low-Voltage Systems, adopted by Royal Decree 842/2002 of 2 August 2002, and amending other supplementary and technical instructions Official State Gazette, 31/12/2014.
- Order INT/229/2013 of 25 November 2013 amending Annexes I, V, VI and VII to the General Regulation on Driving adopted by Royal Decree 818/2009 of 8 May 2009 and Order INT/2323/2011 of 29 July 2011 regulating training for progressive access to the category A driver's licence.
- PIMA Aire 4: Royal Decree 989/2014 of 28 November 2014 regulating the direct award of aid under the 'PIMA Aire 4' environmental stimulus plan for the acquisition of commercial vehicles, gas-powered vehicles and electrically assisted pedal cycles. Official State Gazette, 29/11/2014.
- PIMA Aire 3: Royal Decree 831/2013 of 25 October 2013 amending Royal Decree 89/2013 of 8 February 2013 regulating the direct award of aid under the 'PIMA Aire' environmental stimulus plan for the acquisition of commercial vehicles. Official State Gazette, 26/10/2013.
- PIMA Aire 2: Royal Decree 631/2013 2 August 2013 amending Royal Decree 89/2013 of 8 February 2013 regulating the direct award of aid under the 'PIMA Aire' environmental stimulus plan for the acquisition of commercial vehicles. Official State Gazette, 03/08/2013.
- PIMA Aire 1: Royal Decree 89/2013 of 8 February 2013 regulating the direct award of aid under the 'PIMA Aire' environmental stimulus plan for the acquisition of commercial vehicles. Official State Gazette, 09/02/2013.
- PIVE 8: Royal Decree 380/2015 of 14 May 2015 regulating the direct granting of subsidies under the 'PIVE 8 Efficient Vehicle Incentive Programme'. Official State Gazette, 15/05/2015.
- PIVE 7: Royal Decree 124/2015 of 27 February 2015 regulating the direct granting of subsidies under the 'PIVE 7 Efficient Vehicle Incentive Programme'. Official State Gazette, 28/02/2015.
- PIVE 6: Royal Decree 525/2014 of 20 June 2014 regulating the direct granting of subsidies

under the 'PIVE 6 Efficient Vehicle Incentive Programme'. Official State Gazette, 26/06/2014.

- PIVE 5: Royal Decree 35/2014 of 24 January 2014 regulating the direct granting of subsidies under the 'PIVE 5 Efficient Vehicle Incentive Programme'. Funding for these subsidies was financed by the contributions received by the IDAE from the budget allocated to the Secretariat of State for Energy at the Ministry of Industry, Energy and Tourism (budget item 20.18.425A.746: For the IDAE for the PIVE 5 Efficient Vehicle Incentive Programme). In addition, these subsidies may be co-financed from Community funds under European Regional Development Fund Operational Programmes. Official State Gazette, 28/01/2014.
- PIVE 4: Royal Decree 830/2013 of 25 October 2013 regulating the direct granting of subsidies under the 'PIVE 4 Efficient Vehicle Incentive Programme'. Funding for these subsidies was financed by the contributions received by the IDAE from the budget allocated to the Secretariat of State for Energy at the Ministry of Industry, Energy and Tourism (budget item 20.18.425A.746: For the IDAE for the PIVE 4 Efficient Vehicle Incentive Programme). Official State Gazette, 29/10/2013.
- PIVE 3: Royal Decree 575/2013 of 26 July 2013 regulating the direct granting of subsidies under the 'PIVE 3 Efficient Vehicle Incentive Programme'. Funding for these subsidies was financed by the contributions received by the IDAE from the budget allocated to the Secretariat of State for Energy at the Ministry of Industry, Energy and Tourism (budget item 20.18.425A.747: For the IDAE for the PIVE 3 Efficient Vehicle Incentive Programme). Official State Gazette, 27/07/2013.
- PIVE 2: Decision of 31 January 2013 of the Secretariat of State for Energy publishing the Decision of 30 January 2013 of the Board of Directors of the IDAE establishing the regulatory bases for the second call for applications for aid under the PIVE 2 Efficient Vehicle Incentive Programme. Official State Gazette, 01/02/2013.
- PIVE 1: Decision of 28 September 2012 of the Secretariat of State for Energy publishing the Decision of 24 September 2012 of the Board of Directors of the IDAE establishing the regulatory bases for the call for applications for aid under the PIVE Efficient Vehicle Incentive Programme. Official State Gazette, 29/09/2012.
- MOVELE 2015: Royal Decree 287/2015 of 17 April 2015 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2015 (MOVELE 2015 Programme). Official State Gazette, 18/04/2015.
- MOVELE 2014: Royal Decree 414/2014 of 6 June 2014 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2014 under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014 (2014 MOVELE Programme). Official State Gazette, 11/06/2014.
- MOVELE 2013: Royal Decree 294/2013 of 26 April 2013 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2013 under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014. Official State Gazette, 27/04/2013.
- MOVELE 2012: Royal Decree 417/2012 of 24 February 2012 amending Royal Decree 648/2011 of 9 May 2011 on the direct granting of subsidies for the acquisition of electric vehicles within the framework of the 2010-2012 Action Plan under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014. These subsidies were funded from budget item 20.16.422B.785 of the expenditure budget of the Ministry of Industry, Energy and Tourism for 2012. Official State Gazette, 25/02/2012.

- MOVELE 2011: Royal Decree 648/2011 of 9 May 2011 regulating the direct granting of subsidies for the acquisition of electric vehicles in 2011 within the framework of the 2010-2012 Action Plan under Spain's Comprehensive Electric Vehicle Stimulus Strategy for 2010-2014. These subsidies were funded from budget item 20.16.422B.785 provided for by Law 39/2010 of 22 December 2010 on the general state budget for the 2011 financial year and, in particular, from the expenditure budget of the Ministry of Industry, Tourism and Trade for the 2011 financial year. Official State Gazette, 10/05/2011.

MISCELLANEOUS SECTORS

- Order ETU/120/2017 on 1 February 2017 establishing how regional governments and local authorities should submit information on their energy saving and efficiency programmes. Official State Gazette, 14/02/2017.
- Order IET/359/2016 of 17 March 2016 establishing the obligations regarding contribution to the Energy Efficiency National Fund in 2016. Official State Gazette, 19/03/2016.
- Royal Decree 56/2016 of 12 February 2016 transposing Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, concerning energy audits, accreditation of service providers and energy auditors and promotion of energy supply efficiency. Official State Gazette, 13/02/2016.
- Royal Decree 1085/2015 of 4 December 2015 on promotion of biofuels. Official State Gazette, 05/12/2015.
- Law 18/2014 of 15 October 2014 adopting urgent measures for growth, competitiveness and efficiency (Chapter IV – Energy efficiency measures, Section 1, National energy efficiency obligation scheme). Official State Gazette, 17/10/2014.
- Order IET/289/2015 of 20 February establishing the obligations regarding contributions to the Energy Efficiency National Fund in 2015. Official State Gazette, 24/02/2015.
- Law 15/2014 of 16 September 2014 on the rationalisation of the public sector and other administrative reform measures (thirteenth additional provision: energy efficiency in procurement by public authorities forming part of the state sector). Official State Gazette, 17/09/2014.
- Royal Decree-Law 8/2014 of 4 July 2014 adopting urgent measures for growth, competitiveness and efficiency (Chapter IV – Energy efficiency measures, Section 1, National energy efficiency obligation scheme). Official State Gazette, 05/07/2014.
- Royal Decree 413/2014 of 6 June 2014 regulating electricity production from renewable sources, cogeneration and waste. Official State Gazette, 10/06/2014.
- NATIONAL ENERGY EFFICIENCY FUND
- Decision of 5 April 2017 of the IDAE publishing the Decision of 6 March 2017 of the Board of Directors establishing the regulatory bases for the second call for applications for the aid programme for the renovation of municipal street lighting. Official State Gazette, 08/04/2017.
- Decision of 5 April 2017 of the IDAE publishing the Decision of 6 March 2017 of the Board of Directors establishing the regulatory bases for the second call for applications for the aid programme for modal shift and more efficient use of transport modes. Official State Gazette, 08/04/2017.

- Decision of 18 December 2015 of the IDAE publishing the Decision of 25 November 2015 of the Board of Directors approving the regulatory bases and call for applications for the aid programme for energy efficiency measures in desalination plants. Official State Gazette, 28/12/2015.
- Decision of 30 November 2015 of the IDAE publishing the Decision of 27 October 2015 of the Board of Directors approving the regulatory bases and call for applications for the aid programme for energy efficiency measures in the rail sector. Official State Gazette, 15/12/2015.
- Decision of 28 April 2015 of the IDAE publishing the Decision of 24 March 2015 of the Board of Directors establishing the regulatory bases for the aid programme for the renovation of municipal street lighting and announcing the corresponding call for applications. Official State Gazette, 05/05/2015.
- Decision of 28 April 2015 of the IDAE publishing the Decision of 24 March 2015 of the Board of Directors establishing the regulatory bases for the aid programme for energy efficiency measures in SMEs and large industrial enterprises and announcing the corresponding call for applications. Official State Gazette, 05/05/2015.
- Decision of 28 April 2015 of the IDAE publishing the Decision of 24 March 2015 of the Board of Directors establishing the regulatory bases for the aid programme for modal shift and more efficient use of transport modes and announcing the corresponding call for applications. Official State Gazette, 05/05/2015.

7. ANNEX III: ADMINISTRATIVE PROVISIONS SUPPORTING ENERGY EFFICIENCY IN SPAIN'S AUTONOMOUS COMMUNITIES

This third annex lists the administrative provisions adopting measures to support energy efficiency in Spain's autonomous communities.

Autonomous Community of Andalusia

- Order of 23 December 2016 adopting the regulatory bases for the granting of incentives for sustainable energy development in Andalusia in the period 2017-2020. Official Gazette of the Regional Government of Andalusia, 30/12/2016.
- Order of 25 July 2016 adopting the regulatory bases for the granting on competitive criteria of subsidies to promote building refurbishment in the Autonomous Community of Andalusia. Official Gazette of the Regional Government of Andalusia, 29/07/2016.
- Decree 303/2015 of 21 July 2015 establishing the regulatory framework for the aid granted by the Regional Government of Andalusia to enterprises to promote environmental protection and sustainable energy development. Official Gazette of the Regional Government of Andalusia, 29/07/2015.
- Order of 18 December 2014 amending the Order of 4 February 2009 establishing the regulatory bases for an incentive programme for sustainable energy development in Andalusia and announcing the corresponding 2015 call for applications. Official Gazette of the Regional Government of Andalusia, 24/12/2014.
- Decree-Law 1/2014 of 18 March 2014 regulating the programme to encourage sustainable building in Andalusia and announcing the corresponding 2014 and 2015 calls for applications. Official Gazette of the Regional Government of Andalusia, 26/03/2014.

Autonomous Community of Aragon

- ORDER EIE/1940/2016 of 16 November 2016 establishing the regulatory bases for subsidies for energy saving and diversification, for rational use of energy and utilisation of local and renewable resources and for energy infrastructure. Official Gazette of Aragon, 05/01/17.
- ORDER VMV/310/2016 of 16 March 2016 opening a call for applications for the 2016 financial year for aid to support the implementation of building evaluation reports under the regional plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period 2014-2016. Official Gazette of Aragon, 18/04/2016.
- Order of 22 September 2015 of the Regional Minister of Regional Integration, Mobility and Housing opening a new call for applications for the 2015 financial year for aid to support the implementation of building evaluation reports under the regional plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period 2014-2016. Official Gazette of Aragon, 24/09/2015.
- Order of 12 March 2015 of the Regional Minister of Industry and Innovation announcing the 2015 call for applications for aid for energy saving and diversification, for rational use of energy and utilisation of local and renewable resources and for electricity and gas infrastructure. Official Gazette of Aragon, 25/03/2015.
- Order of 24 April 2015 of the Regional Minister of Public Works, Urban Planning, Housing and Transport regulating the processing procedures for aid granted under the programme to

promote urban regeneration and renewal under the regional plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period 2014-2016. Official Gazette of Aragon, 30/04/2015.

- Order of 15 January 2015 of the Regional Minister of Agriculture, Livestock Farming and Environment approving the 2015 call for applications for subsidies for investment in the wine sector (EAGF claim year 2016). Official Gazette of Aragon, 21/01/2015.
- Order of 15 January 2015 of the Regional Minister of Agriculture, Livestock Farming and Environment approving the 2015 call for applications for subsidies to promote innovation in the wine sector (EAGF claim year 2016). Official Gazette of Aragon, 21/01/2015.
- Order of 29 December 2014 of the Regional Minister of Public Works, Urban Planning, Housing and Transport announcing the 2015 and 2016 calls for applications for aid to promote building refurbishment under the regional plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period 2014-2016. Official Gazette of Aragon, 16/01/2015.
- Order of 29 December 2014 of the Regional Minister of Public Works, Urban Planning, Housing and Transport announcing the 2015 call for applications for aid to support the implementation of building evaluation reports under the regional plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period 2014-2016. Official Gazette of Aragon, 16/01/2015.

Autonomous Community of Asturias

- Decision of 12 December 2016 of the Regional Ministry of Employment, Industry and Tourism approving the regulatory bases for the granting on competitive criteria of subsidies for the use of renewable energies and for energy saving and efficiency measures in private enterprises. Official Gazette of Asturias, 23/12/2016.
- Extract from the Decision of 2 June 2016 of the Regional Ministry of Employment, Industry and Tourism approving the call for applications for subsidies for the use of renewable energies and for energy saving and efficiency measures. Official Gazette of Asturias, 15/06/2016.
- Decision of 16 April 2015 of the Regional Ministry of Economy and Employment approving the 2015 call for applications for the granting on competitive criteria of subsidies for the use of renewable energies and for energy saving and efficiency measures in private enterprises. File No 15/MyE/09. Official Gazette of Asturias, 22/04/2015.
- Decision of 23 March 2015 of the Regional Ministry of Social Welfare and Housing approving the public call for applications for the granting on competitive criteria of state and regional aid for building refurbishment. Official Gazette of Asturias, 13/04/2015.
- Decision of 18 March 2015 of the Regional Ministry of Social Welfare and Housing approving the call for applications for state aid to finance implementation of building evaluation reports. Official Gazette of Asturias, 06/04/2015.
- Decision of 28 January 2015 of the Regional Ministry of Social Welfare and Housing approving the 2015 Strategic Subsidy Plan of the Regional Ministry of Social Welfare and Housing. Official Gazette of Asturias, 13/02/2015

- Decision of 17 July 2014 of the Regional Ministry of Economy and Employment approving the 2014 call for applications for the granting on competitive criteria of subsidies for the use of renewable energies and for energy saving and efficiency measures in private enterprises. Official Gazette of Asturias, 22/07/2014.
- Decision of 11 June 2014 of the Regional Ministry of Social Welfare and Housing approving the public call for applications for the granting on competitive criteria of state and regional aid for building refurbishment. Official Gazette of Asturias, 01/07/2014.
- Decision of 23 May 2014 of the Regional Ministry of Economy and Employment approving the regulatory bases for the granting on competitive criteria of subsidies for the use of renewable energies and for energy saving and efficiency measures in private enterprises. Official Gazette of Asturias, 31/05/2014.
- Decision of 12 May 2014 of the Regional Ministry of Social Welfare and Housing approving the regulatory bases for the public call for applications for state and regional aid for building refurbishment. Official Gazette of Asturias, 28/05/2014.

Autonomous Community of the Balearic Islands

- Decision of 22 June 2016 of the Regional Minister of Regional Planning, Energy and Mobility approving the public call for applications for subsidies, under the ERDF 2014-2020 Operational Programme, to improve energy efficiency in residential buildings in the Balearic Islands. Official Gazette of the Balearic Islands, 05/07/2016.
- Decision of the Regional Minister of Regional Planning, Energy and Mobility announcing the 2016 call for applications for aid to finance building evaluation reports under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal (national subsidy database code: 304164; reference: IAE/2016). Official Gazette of the Balearic Islands, 23/04/2016.
- Decision of 29 October 2015 of the Regional Minister of Regional Planning, Energy and Mobility approving an increase in the loan awarded under the Decision of 28 July 2015 approving the public call for applications for subsidies to establish new charging points for electric vehicles used by government and associated public bodies. Official Gazette of the Balearic Islands, 04/11/2015.
- Decision of 28 July 2015 of the Regional Minister of Regional Planning, Energy and Mobility approving the public call for applications for subsidies to establish new charging points for electric vehicles used by government and associated public bodies. Official Gazette of the Balearic Islands, 01/08/2015.
- Decision of the Regional Minister of Agriculture, Environment and Regional Planning announcing the call for applications for aid for building refurbishment under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of the Balearic Islands, 31/03/2015.
- Decision of the Regional Minister of Agriculture, Environment and Regional Planning announcing the call for applications for aid to finance building evaluation reports under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of the Balearic Islands, 31/03/2015.
- Decision of 24 June of the President of the *Fondo de Garantía Agraria y Pesquera de las Illes*

Balears (FOGAIBA) [Balearic Islands Agricultural and Fisheries Guarantee Fund] announcing the 2014 call for applications for subsidies to modernise farms. Official Gazette of the Balearic Islands, 01/07/2014.

Autonomous Community of the Canary Islands

- EXTRACT from the Order of 20 June 2016 announcing the 2016 call for applications for subsidies to modernise and diversify the industrial sector. Official Gazette of the Canary Islands, 29/06/2016.
- EXTRACT from the Order of 2 April 2016 announcing the 2016 call for applications for subsidies to implement energy-saving measures and to conduct energy audits in local councils. Official Gazette of the Canary Islands, 12/04/2016.
- ORDER of 1 March 2016 approving the regulatory bases for the granting of subsidies to implement energy-saving measures and to conduct energy audits in local councils. Official Gazette of the Canary Islands, 10/03/2016.
- Decision 2482 of 14 May 2015 of the *Instituto Canario de la Vivienda* [Canary Islands Institute of Housing] establishing the regulatory bases for the 2015 and 2016 calls for applications for subsidies under the programme to support implementation of building evaluation reports and announcing the 2015 call for applications. Official Gazette of the Canary Islands, 27/05/2015.
- Decision 963 of 5 February 2015 of the Director of the Canary Islands Institute of Housing approving the regulatory bases for the 2015, 2016 and 2017 calls for applications from residents' associations in co-owned buildings, groups of residents' associations in co-owned buildings and sole owners of buildings for subsidies to refurbish residential buildings. Official Gazette of the Canary Islands, 05/03/2015.
- ORDER 579 of 4 February 2015 approving the regulatory bases for subsidies to modernise and diversify the industrial sector. Official Gazette of the Canary Islands, 11/02/2015.
- ORDER 444 of 23 January 2015 announcing the 2015 call for applications for subsidies to implement energy-saving measures and to conduct energy audits in municipal facilities. Official Gazette of the Canary Islands, 03/02/2015.
- ORDER 445 of 23 January 2015 announcing the 2015 call for applications for subsidies to promote energy saving and efficiency in the land transport sector. Official Gazette of the Canary Islands, 03/02/2015.
- Order of 3 March 2014 announcing the 2014 call for applications for subsidies to promote energy saving and efficiency in the land transport sector. Official Gazette of the Canary Islands, 13/03/2014.
- ORDER 687 of 11 February 2014 announcing the 2014 call for applications for subsidies to implement energy-saving measures and to conduct energy audits in municipal facilities. Official Gazette of the Canary Islands, 20/02/2014.

Autonomous Community of Cantabria

- Order INN/39/2016 of 23 August 2016 approving the 2016 call for applications for subsidies for renewable energies and energy saving and efficiency measures in Cantabria. Official Gazette of Cantabria, 29/08/2016.

- Order INN/28/2016 of 11 July 2016 establishing the regulatory bases for subsidies for renewable energies and energy-saving and efficiency measures in Cantabria. Official Gazette of Cantabria, 19/07/2016.
- Order GAN/52/2014 of 11 August 2014 announcing the 2014 call for applications for aid to promote the implementation of new technology in agricultural equipment and machinery. Official Gazette of Cantabria, 25/08/2014.
- Order GAA/49/2014 of 15 July 2014 establishing the regulatory bases for aid, according to European Fisheries Fund criteria, for investment on board fishing vessels and selectivity and announcing the corresponding 2014 and 2015 calls for applications. Official Gazette of Cantabria, 30/07/2014.

Autonomous Community of Castile-Leon

- ORDER EYH/1143/2015 of 23 December 2015 announcing the call for applications for public subsidies to develop electric-vehicle charging infrastructure in Castile-Leon. Official Gazette of Castile-Leon, 07/01/2016.
- ORDER EYE/1135/2014 of 22 December 2014 announcing the call for applications for public subsidies to develop electric-vehicle charging infrastructure under the Castile-Leon Regional Electric Vehicle Strategy for 2011-2015. Official Gazette of Castile-Leon, 31/12/2014.

Autonomous Community of Castile-La Mancha

- Order of 30/08/2016 of the Regional Ministry of Public Works approving the regulatory bases for the granting of aid to draw up comprehensive urban regeneration measures in Castile-La Mancha. Official Gazette of Castile-La Mancha, 08/09/2016.
- Decision of 30/06/2016 of the Directorate-General for Industry, Energy and Mining announcing the 2016 and 2017 calls for applications for public aid to promote energy saving and efficiency in accordance with the Order of 18/05/2016 of the Regional Ministry of Economy, Enterprise and Employment establishing the regulatory bases for aid to replace windows, replace individual boilers and install heat meters and cost allocators. Extracts from national subsidy database, codes 311173, 311179 and 311186. Official Gazette of Castile-La Mancha, 07/07/2016.
- Order of 18/05/2016 of the Regional Ministry of Economy, Enterprise and Employment establishing the regulatory bases for aid to replace windows, replace individual boilers and install heat meters and heat allocators. Official Gazette of Castile-La Mancha, 01/06/2016.
- Order of 29/12/2015 of the Regional Ministry of Economy, Enterprise and Employment establishing the regulatory bases for aid, co-financed by the European Regional Development Fund, for energy saving and efficiency measures in the public and industrial sectors and announcing the corresponding 2016 call for applications. Official Gazette of Castile-La Mancha, 07/01/2016.
- Order of 29/12/2015 of the Regional Ministry of Economy, Enterprise and Employment establishing the regulatory bases for aid to acquire energy-efficient vehicles, install charging points and convert vehicles to LPG, LNG and CNG and announcing the corresponding 2016 call for applications. Official Gazette of Castile-La Mancha, 07/01/2016.
- Order of 29/12/2015 of the Regional Ministry of Public Works establishing the regulatory bases for aid under the Programme to Promote Urban Regeneration and Renewal and

announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 31/12/2015.

- Decision of 23/09/2015 of the Directorate-General for Industry, Energy and Mining publishing the increase in the loan awarded under the Order of 15/04/2015 of the Regional Ministry of Public Works establishing the regulatory bases for aid to replace windows, replace individual boilers, replace boiler rooms and install motion detectors and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 28/09/2015.
- Order of 15/04/2015 of the Regional Ministry of Public Works establishing the regulatory bases for aid to replace windows, replace individual boilers, replace boiler rooms and install motion detectors and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 20/04/2015.
- Order of 16/03/2015 of the Regional Ministry of Public Works establishing the regulatory bases for aid under the Castile-La Mancha Electrical Appliance Renewal Plan to encourage the purchase of high-energy-efficiency appliances and announcing the corresponding 2015 call for applications. Official Gazette of Castile-La Mancha, 25/03/2015.
- Order of 02/12/2014 of the Regional Ministry of Public Works establishing the regulatory bases for aid, co-financed by the European Regional Development Fund, for energy saving and efficiency measures in the public and industrial sectors and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 16/12/2014.
- Order of 14/07/2014 of the Regional Ministry of Public Works establishing the regulatory bases for the Castile-La Mancha Motion Detector Installation Plan to replace conventional light switches with more energy-efficient motion detectors and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 31/07/2014.
- Order of 27/06/2014 of the Regional Ministry of Public Works establishing the regulatory bases for aid under the Castile-La Mancha Boiler Room Renewal Plan to replace existing boilers with more energy-efficient units and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 07/07/2014.
- Order of 11/06/2014 of the Regional Ministry of Agriculture establishing the regulatory bases for aid to modernise farms, set up young farmers and implement irrigation measures and announcing the corresponding 2014 call for applications. Official Gazette of Castile-La Mancha, 16/06/2014.
- Order of 02/06/2014 of the Regional Ministry of Public Works establishing the regulatory bases for aid to improve energy efficiency in homes and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 06/06/2014.
- Order of 16/04/2014 of the Regional Ministry of Public Works establishing the regulatory bases for aid for energy saving and efficiency measures in the transport sector in Castile-La Mancha and announcing the corresponding call for applications. Official Gazette of Castile-La Mancha, 06/05/2014.
- Order of 19/03/2014 of the Regional Ministry of Public Works establishing the regulatory bases for aid under the Castile-La Mancha Electrical Appliance Renewal Plan to encourage the purchase of high-energy-efficiency appliances and announcing the corresponding 2014 call for applications. Official Gazette of Castile-La Mancha, 25/03/2014.

Autonomous Community of Catalonia

- DECISION EMO/1986/2015 of 2 September 2015 approving the regulatory bases for the granting of subsidies to improve energy saving and efficiency under the Catalan Energy and Climate Change Plan for 2012-2020 (PECAC 2020) and announcing the corresponding 2015 call for applications. Official Gazette of Catalonia, 09/09/2015.
- DECISION TES/110/2015 of 21 January 2015 announcing the 2015 call for applications for subsidies to promote the acquisition of low-emission vehicles intended for taxi services operating in special air-environment protection zones. Official Gazette of Catalonia, 04/02/2015.
- ORDER AAM/1/2015 of 7 January 2015 approving the regulatory bases for aid for investment in innovation and in improvement of production and/or marketing of wine products and announcing the corresponding 2015-2018 calls for applications. Official Gazette of Catalonia, 14/01/2015.
- Order EMO/277/2014 of 9 September 2014 approving the regulatory bases for the granting of aid to hotels to refurbish obsolete facilities in Catalonia and announcing the corresponding 2014 call for applications. Official Gazette of Catalonia, 15/09/2014.
- DECISION TES/1919/2014 of 1 August 2014 approving the regulatory bases for subsidies to refurbish residential buildings and announcing the corresponding 2014 call for applications. Official Gazette of Catalonia, 18/08/2014.
- DECISION TES/1764/2014 of 17 July 2014 approving the regulatory bases for subsidies to promote specific programmes to encourage refurbishment of empty housing for placement on the market under the social renting model and announcing the corresponding 2014 call for applications. Official Gazette of Catalonia, 28/07/2014.

Autonomous Community of Valencia

- ORDER 5/2016 of 19 May 2016 of the Regional Ministry of Housing, Public Works and Regional Integration approving the regulatory bases for aid under the programme to promote building refurbishment and announcing the corresponding 2016 call for applications. Official Gazette of Valencia, 25/05/2016.
- DECISION of 5 May 2016 of the Director-General of the *Instituto Valenciano de Competitividad Empresarial* (IVACE) [Valencian Institute for Business Competitiveness] increasing the budget allocated to the call for applications for aid under the 2016 Domestic Boiler Renewal Plan. Official Gazette of Valencia, 12/05/2016.
- DECISION of 8 March 2016 of the President of the IVACE announcing the 2016 call for applications for financial instruments to implement energy saving and efficiency measures in existing street lighting systems in municipalities in Valencia. Official Gazette of Valencia, 14/03/2016.
- DECISION of 24 November 2015 of the President of the IVACE announcing the call for applications for aid under the 2016 Domestic Boiler Renewal Plan to replace existing boilers with more energy-efficient units and to encourage installers to participate in the plan. Official Gazette of Valencia, 23/12/2015.
- DECISION of 24 November 2015 of the President of the IVACE announcing the call for applications for aid under the 2016 Window Renewal Plan to improve the thermal efficiency of

windows in homes in Valencia and to encourage retailers and installers to participate in the plan. Official Gazette of Valencia, 22/12/2015.

- DECISION of 20 May 2015 of the President of the IVACE announcing the 2015 call for applications for aid for energy saving and efficiency measures in industry and the buildings sector. Official Gazette of Valencia, 22/05/2015.
- ORDER 8/2015 of 24 March 2015 of the Regional Ministry of Infrastructure, Regional Planning and Environment approving the regulatory bases for aid under the 2013-2016 Building Refurbishment Programme and announcing the corresponding 2015 call for applications. Official Gazette of Valencia, 31/03/2015.
- ORDER 7/2015 of 24 March 2015 of the Regional Ministry of Infrastructure, Regional Planning and Environment approving the regulatory bases for aid under the 2013-2016 Programme to Support Implementation of Building Evaluation Reports and announcing the corresponding 2015 call for applications. Official Gazette of Valencia, 31/03/2015.
- ORDER 6/2015 of 24 March 2015 of the Regional Ministry of Infrastructure, Regional Planning and Environment approving the regulatory bases for aid under the 2013-2016 Programme to Promote Sustainable and Competitive Cities and announcing the corresponding 2015 call for applications. Official Gazette of Valencia, 31/03/2015.
- DECISION of 23 December 2014 of the President of the IVACE announcing the 2015 call for applications for aid for energy saving and efficiency measures in the transport sector. Official Gazette of Valencia, 31/12/2014.
- DECISION of 19 December 2014 of the President of the IVACE announcing the call for applications for aid under the 2015 Window Renewal Plan to improve the thermal efficiency of windows in homes in Valencia and to encourage retailers and installers to participate in the plan. Official Gazette of Valencia, 30/12/2014.
- DECISION of 19 December 2014 of the President of the IVACE announcing the call for applications for aid under the 2015 Domestic Boiler Renewal Plan to replace existing boilers with more energy-efficient units and to encourage installers to participate in the plan. Official Gazette of Valencia, 30/12/2014.
- DECISION of 26 November 2014 of the President of the IVACE announcing the 2014 call for applications for aid for energy diversification and energy saving and efficiency measures in industry and the buildings sector. Official Gazette of Valencia, 09/12/2014.
- DECISION of 23 September 2014 of the President of the IVACE announcing the 2014 call for applications for the granting of financial instruments for renewable energy and energy-saving and efficiency projects. Official Gazette of Valencia 30/09/2014.

Autonomous Community of Extremadura

- ORDER of 14 December 2016 approving the 2017 call for applications for the granting of aid for energy saving and efficiency measures. Official Gazette of Extremadura, 23/12/2016.
- DECREE 188/2016 of 29 November 2016 establishing the regulatory bases for the granting of subsidies for energy saving and efficiency measures in Extremadura. Official Gazette of Extremadura, 09/12/2016.

- ORDER of 30 June 2016 announcing the 2016 call for applications for aid to implement irrigation systems that promote the efficient use of water and energy on farms in the Autonomous Community of Extremadura. Official Gazette of Extremadura, 08/07/2016.
- DECREE 70/2016 of 31 May 2016 establishing the regulatory bases for aid to implement irrigation systems that promote the efficient use of water and energy on farms in the Autonomous Community of Extremadura. Official Gazette of Extremadura, 06/06/2016.
- ORDER of 30 March 2016 announcing the 2016 call for applications for the state subsidies provided for by Royal Decree 233/2013 of 5 April 2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal, as applied within the Autonomous Community of Extremadura. Official Gazette of Extremadura, 11/04/2016.
- DECREE 214/2014 of 16 September 2014 regulating the direct granting of a subsidy to the energy services company holding the concession to operate the street lighting service in the city of Mérida under the Energy Service Procurement Incentive Plan (Plan 2000ESE). Official Gazette of Extremadura, 19/09/2014.

Autonomous Community of Galicia

- ORDER of 23 December 2016 establishing the regulatory bases for the granting on competitive criteria of aid, co-financed by the European Regional Development Fund under the ERDF-Galicia 2014-2020 Operational Programme, to improve the energy efficiency of council-owned residential buildings in Galicia. Official Gazette of Galicia, 30/12/2016.
- ORDER of 13 September 2016 establishing the regulatory bases for the granting on competitive criteria of subsidies, co-financed by the European Maritime and Fisheries Fund, for investments that boost positive environmental outcomes and resource use efficiency and reduce use of water and chemicals. Official Gazette of Galicia, 29/09/2016.
- ORDER of 19 September 2016 approving the programme of qualified loans to refurbish buildings and homes and establishing the regulatory bases for the granting of aid under this programme. Official Gazette of Galicia, 23/09/2016.
- DECISION of 11 August 2016 establishing the regulatory bases for subsidies, co-financed by the European Regional Development Fund under the ERDF-Galicia 2014-2020 Operational Programme, for thermal-energy distribution networks using biomass-powered generation equipment and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 08/09/2016.
- DECISION of 10 August 2016 establishing the regulatory bases for subsidies, co-financed by the European Regional Development Fund under the ERDF-Galicia 2014-2020 Operational Programme, to conduct energy audits and implement management systems, alternative mobility and energy saving and efficiency projects in industrial and service enterprises and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 08/09/2016.
- DECISION of 1 September 2016 redistributing and increasing the budget appropriations by budget item and extending the deadline for implementation of measures and substantiation of investment under the Decision of 10 May 2016 establishing the regulatory bases for the granting on competitive criteria of subsidies, co-financed by the European Agricultural Fund for Rural Development under the EAFRD-Galicia 2014-2020 Operational Programme, to

implement energy saving and efficiency projects that create, improve and extend small-scale local government infrastructure and announcing the corresponding call for applications. Official Gazette of Galicia, 07/09/2016.

- ORDER of 14 June 2016 increasing the loan provided for by the Order of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of aid for full or partial renewal of existing lifts owned by residents' associations in co-owned buildings located in the Autonomous Community of Galicia and announcing the corresponding 2016 call for applications (procedure code: IN532A). Official Gazette of Galicia, 07/07/2016.
- ORDER of 15 June 2016 increasing the loan provided for by the Order of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies under the Window Renewal Plan and governing the selection of entities participating in its management and announcing the corresponding 2016 call for applications (procedure codes: N412A - IN412B). Official Gazette of Galicia, 28/06/2016.
- ORDER of 25 May 2016 establishing the regulatory bases for the granting of subsidies under the substandard housing programme of Galicia's 2015-2020 RehaVita Plan for refurbishment, rental and improved access to housing and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 14/06/2016.
- Decision of 10 May 2016 establishing the regulatory bases for the award on competitive criteria of subsidies, co-financed by the European Agricultural Fund for Rural Development under Galicia's 2014-2020 RDP, to implement energy saving and efficiency projects that create, improve and extend small-scale local government infrastructure and announcing the corresponding call for applications. Official Gazette of Galicia, 18/05/2016.
- EXTRACT from the Decision of 18 March 2016 announcing the 2016 call for applications for subsidies under the programme to support the implementation of building evaluation reports under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal in the period. Official Gazette of Galicia, 04/05/2016.
- ORDER of 18 January 2016 publishing the annexes to the Order of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies under the Window Renewal Plan and governing the selection of entities participating in its management and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 29/01/2016.
- ORDER of 14 January 2016 publishing annexes II and III to the Order of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies for full or partial renewal of existing lifts owned by residents' associations in co-owned buildings located in the Autonomous Community of Galicia (Lift Renewal Plan) and announcing the corresponding 2016 call for applications (procedure code: IN532A). Official Gazette of Galicia, 19/01/2016.
- ORDER of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish the facades of existing residential buildings with granite and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 31/12/2015.
- ORDER of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies for full or partial renewal of existing lifts owned by residents' associations in co-owned buildings located in the Autonomous Community of Galicia (Lift

Renewal Plan) and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 31/12/2015.

- ORDER of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish roofs with ceramic tiles and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 31/12/2015.
- ORDER of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish slate facades and roofs and announcing the corresponding 2016 call for applications. Official Gazette of Galicia, 31/12/2015.
- ORDER of 28 December 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies under the Window Renewal Plan and governing the selection of entities participating in its management and announcing the corresponding 2016 call for applications (procedure codes: IN412A - IN412B). Official Gazette of Galicia, 31/12/2015.
- DECISION of 16 December 2015 establishing the regulatory bases for subsidies, co-financed by the European Regional Development Fund under the ERDF-Galicia 2014-2020 Operational Programme, to conduct energy audits and implement management systems, alternative-fuel mobility and energy saving and efficiency projects in industrial and service enterprises and announcing the corresponding advance 2016 call for applications. Official Gazette of Galicia, 29/12/2015.
- ORDER of 10 July 2015 establishing the regulatory bases for subsidies under the building refurbishment programme of the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 21/07/2015.
- DECISION of 18 March 2015 establishing the regulatory bases for the award on competitive criteria of aid, co-financed by the European Regional Development Fund under the ERDF-Galicia 2007-2013 Operational Programme, for energy saving and efficiency projects related to renewal of existing council-owned street lighting in Galicia and announcing the corresponding call for applications. Official Gazette of Galicia, 30/03/2015.
- ORDER of 10 June 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies under the Window Renewal Plan and governing the selection of entities participating in its management and announcing the corresponding call for applications. Official Gazette of Galicia, 26/06/2015.
- ORDER of 10 June 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies under the High-Efficiency Boiler Renewal Plan and governing the selection of entities participating in its management and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 26/06/2015.
- ORDER of 9 March 2015 establishing the regulatory bases for subsidies under the programme to support implementation of building evaluation reports under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 06/04/2015.
- ORDER of 6 March 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish slate roofs and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 13/03/2015.

- ORDER of 6 March 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish the facades of existing residential buildings with granite and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 13/03/2015.
- ORDER of 19 February 2015 establishing the regulatory bases for the granting on non-competitive criteria of subsidies for full or partial renewal of existing lifts owned by residents' associations in co-owned buildings located in the Autonomous Community of Galicia (Lift Renewal Plan) and announcing the corresponding 2015 call for applications (procedure code: IN532A). Official Gazette of Galicia, 26/02/2015.
- ORDER of 31 December 2014 establishing the regulatory bases for the granting on competitive criteria of subsidies, co-financed by the European Regional Development Fund under the ERDF-Galicia 2007-2013 Operational Programme, to Galician councils to improve municipal markets and itinerant trade venues and announcing the corresponding 2015 call for applications (procedure code: IN223A). Official Gazette of Galicia, 23/01/2015.
- DECISION of 18 December 2014 establishing the regulatory bases for subsidies for energy saving and efficiency projects in industrial and service enterprises and announcing the corresponding 2015 call for applications. Official Gazette of Galicia, 12/01/2015.
- Order of 6 June 2014 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish slate roofs and announcing the corresponding 2014 call for applications. Official Gazette of Galicia, 27/06/2014.
- Order of 6 June 2014 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish the facades of existing residential buildings with granite and announcing the corresponding 2014 call for applications. Official Gazette of Galicia, 27/06/2014.
- Order of 6 June 2014 establishing the regulatory bases for the granting on non-competitive criteria of subsidies to refurbish roofs with ceramic tiles and announcing the corresponding 2014 call for applications. Official Gazette of Galicia, 27/06/2014.
- Decision of 20 June 2014 establishing the regulatory bases for subsidies, co-financed by the European Regional Development Fund under the ERDF-Galicia 2007-2013 Operational Programme, for energy saving and efficiency projects in industrial and service enterprises and announcing the corresponding 2014 call for applications. Official Gazette of Galicia, 20/06/2014.
- Order of 28 March 2014 establishing the regulatory bases for the award on competitive criteria of aid, co-financed 75 % by the European Fisheries Fund, for investment on board fishing vessels, selectivity and energy performance and announcing the corresponding 2014 call for applications. Official Gazette of Galicia, 04/06/2014.
- Decision of 23 December 2013 establishing the regulatory bases for the award on competitive criteria of aid, co-financed by the European Regional Development Fund under the ERDF-Galicia 2007-2013 Operational Programme, for energy saving and efficiency projects related to renewal of existing council-owned street lighting in Galicia and announcing the corresponding advance 2014 call for applications. Official Gazette of Galicia, 28/01/2014.
- Order of 20 December 2013 establishing the regulatory bases for aid, co-financed by the European Agricultural Fund for Rural Development under Galicia's 2007-2013 RDP, to

improve the competitiveness of Galician dairy farms by reducing production costs and announcing the 2014 call for applications. Official Gazette of Galicia, 07/01/2014.

Autonomous Community of Madrid

- Cooperation Agreement of 23/12/2016 between the Regional Ministry of Economy and Finance of Madrid and the *Fundación de la Energía* [Energy Foundation] of Madrid to implement the Madrid Window Renewal Plan.
- Cooperation Agreement of 10/10/2016 between the Regional Ministry of Economy, Employment and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Mineral Wool Renewal Plan.
- Cooperation Agreement of 09/09/2016 between the Regional Ministry of Economy, Employment and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Autogas Vehicle Renewal Plan.
- Cooperation Agreement of 07/09/2016 between the Regional Ministry of Economy, Employment and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Lift Lighting System Renewal Plan.
- Cooperation Agreement of 07/09/2016 between the Regional Ministry of Economy, Employment and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid CNG Vehicle Renewal Plan.
- EXTRACT from Order 1383/2016 of 18 July 2016 of the Regional Ministry of Environment, Local Government and Land Use Planning approving the 2016 call for applications for aid to acquire efficient vehicles for use as taxis. Official Gazette of Madrid, 01/08/2016.
- EXTRACT from Order 1384/2016 of 18 July 2016 of the Regional Ministry of Environment, Local Government and Land Use Planning approving the 2016 call for applications for aid to acquire efficient light auxiliary and service vehicles. Official Gazette of Madrid, 01/08/2016.
- ORDER of 23 June 2016 of the Regional Ministry of Transport, Housing and Infrastructure establishing the regulatory bases for the granting of aid to carry out works on buildings and housing under the Programme to Promote Urban Regeneration and Renewal (Article 26.1) in accordance with Royal Decree 233/2013 of 5 April 2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of Madrid, 24/06/2016.
- ORDER of 18 May 2016 of the Regional Ministry of Transport, Housing and Infrastructure establishing the regulatory bases for the granting of aid for building refurbishment in accordance with Royal Decree 233/2013 of 5 April 2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of Madrid, 19/05/2016.
- Cooperation Agreement of 08/06/2015 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Transformer Renewal Plan.
- ORDER 750/2015 of 7 May 2015 of the Regional Ministry of Environment and Land Use Planning approving the 2015 call for applications for aid to acquire efficient light auxiliary and service vehicles, the regulatory bases for which were approved by Order 3222/2014 of

22 December 2014 (Official Gazette of Madrid No 29 of 4 February). Official Gazette of Madrid, 21/05/2015.

- Cooperation Agreement of 13/05/2015 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Hydraulic Pump Renewal Plan.
- ORDER 327/2015 of 23 April 2015 of the Regional Ministry of Environment Government and Land Use Planning approving the 2015 call for applications for aid to acquire efficient vehicles for use as taxis. Official Gazette of Madrid, 12/05/2015.
- Cooperation Agreement of 22/04/2015 between the Regional Ministry of Economy and Finance of Madrid and the *Asociación Profesional de Empresarios de Instalaciones Eléctricas y Telecomunicaciones de Madrid* (APIEM) [Madrid Association of Electrical and Telecommunications Systems Installers] to implement the 2015 Madrid Motion Detector Installation Plan.
- Cooperation Agreement of 14/04/2015 between the Regional Ministry of Economy and Finance of Madrid and the APIEM to implement the Madrid Building Lighting Renewal Plan.
- Cooperation Agreement of 04/03/2015 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Lift Lighting System Renewal Plan.
- Cooperation Agreement of 26/02/2015 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid PVC Window Renewal Plan.
- Cooperation Agreement of 26/02/2015 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to implement the Madrid Mineral Wool Renewal Plan.
- Cooperation Agreement of 16/02/2015 between the Regional Ministry of Economy and Finance of Madrid and the *Asociación de Empresarios de Fontanería, Saneamiento, Gas, Calefacción, Climatización, Mantenimiento, Electricidad y Afines de Madrid* [Madrid Association of Plumbing, Sewerage, Gas, Heating, Air-Conditioning, Maintenance and Electricity Service Providers] (ASEFOSAM) to implement the 2015 Madrid Individual Boiler Renewal Plan.
- ORDER 3222/2014 of 22 December 2014 of the Regional Ministry of Environment and Land Use Planning establishing the regulatory bases for the granting of aid to acquire efficient light commercial, auxiliary and service vehicles. Official Gazette of Madrid, 04/02/2015.
- Cooperation Agreement of 29/07/2014 between the Regional Ministry of Economy and Finance of Madrid and the ASEFOSAM to implement the Individual Boiler Renewal Plan.
- Cooperation Agreement of 21/07/2014 between the Regional Ministry of Economy and Finance of Madrid and the Energy Foundation of Madrid to manage and publicise the Madrid PVC Window Renewal Plan.

Autonomous Community of Murcia

- Extract from the Order of the Regional Ministry of Economic Development, Tourism and

Employment announcing the 2016 call for applications for subsidies for promotion of energy efficiency by enterprises under the ERDF 2014-2020 Operational Programme for Murcia. Official Gazette of Murcia, 18/06/2016.

- Extract from the Order of 30 October 2014 of the Regional Ministry of Development, Public Works and Land Use Planning approving the regulatory bases for the call for applications for aid to finance building evaluation reports. Official Gazette of Murcia, 13/06/2016.
- Order of 28 December 2015 of the Regional Ministry of Economic Development, Tourism and Employment establishing the regulatory bases for the granting of subsidies for the promotion of energy efficiency and use of renewable energies by enterprises under the ERDF 2014-2020 Operational Programme for Murcia. Official Gazette of Murcia, 25/01/2016.
- Decree No 5/2015 of 30 January 2015 regulating the 2014-2016 Regional Refurbishment and Housing Plan. Official Gazette of Murcia, 03/02/2015.

Autonomous Community of Navarre

- DECISION 256E/2016 of 21 April 2016 of the Director-General for Industry, Energy and Innovation approving the call for applications for the 'subsidy to renovate district heating networks to energy efficiency criteria'. Official Gazette of Navarre, 11/05/2016.
- DECISION 263E/2015 of 16 June 2015 of the Director-General for Industry, Energy and Innovation approving the call for applications for grants to renovate district heating networks to energy efficiency criteria. Official Gazette of Navarre, 23/06/2015.

Autonomous Community of the Basque Country

- DECREE 114/2016 of 27 July 2016 establishing a programme of financial support for research, development and innovation, for investment in energy efficiency measures and clean energy and for investment in science and technology. Official Gazette of the Basque Country, 09/09/2016.
- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the 2016 call for applications for aid for investment to replace electrical appliances in applicants' habitual place of residence. Official Gazette of the Basque Country, 15/04/2016.
- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the 2016 call for applications for aid for investment in efficient transport and mobility. Official Gazette of the Basque Country, 15/04/2016.
- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the call for applications for aid for investment in energy efficiency in the industrial sector. Official Gazette of the Basque Country, 15/04/2016.
- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the 2016 call for applications for aid to promote investment in energy efficiency in local government. Official Gazette of the Basque Country, 15/04/2016.
- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the 2016 call for applications for aid to promote energy efficiency and use of renewable energy in public buildings in the Basque Country through contracts with energy service companies. Official Gazette of the Basque Country, 15/04/2016.

- DECISION of 4 April 2016 of the Director-General of the Basque Country Energy Agency publishing the 2016 call for applications for aid for investment in energy efficiency in the tertiary sector. Official Gazette of the Basque Country, 15/04/2016.
- DECISION of 7 August 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid for investment to replace windows in applicants' habitual place of residence. Official Gazette of the Basque Country, 07/09/2015.
- DECISION of 10 July 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid for investment to replace electrical appliances in applicants' habitual place of residence. Official Gazette of the Basque Country, 17/07/2015.
- DECISION of 13 May 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid for investment in efficient transport and mobility. Official Gazette of the Basque Country, 22/05/2015.
- DECISION of 13 May 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid to promote energy efficiency and use of renewable energy in public buildings in the Basque Country through contracts with energy service companies. Official Gazette of the Basque Country, 22/05/2015.
- DECISION of 13 May 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid for investment in energy efficiency and use of renewable energy in industry. Official Gazette of the Basque Country, 22/05/2015.
- DECISION of 13 May 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid to promote investment in the government sector. Official Gazette of the Basque Country, 22/05/2015.
- DECISION of 13 May 2015 of the Director-General of the Basque Country Energy Agency publishing the 2015 call for applications for aid for investment in energy efficiency and use of renewable energy in the tertiary sector. Official Gazette of the Basque Country, 22/05/2015.
- DECISION of 24 September 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment to replace windows in applicants' habitual place of residence. Official Gazette of the Basque Country, 01/10/2014.
- DECISION of 24 September 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment to replace electrical appliances in applicants' habitual place of residence. Official Gazette of the Basque Country, 01/10/2014.
- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment to replace individual heating and domestic hot water systems with individual condensing boilers in applicants' habitual place of residence. Official Gazette of the Basque Country, 22/07/2014.
- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid to promote investment in energy saving and efficiency. Official Gazette of the Basque Country, 22/07/2014.
- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment in efficient transport and

mobility. Official Gazette of the Basque Country, 22/07/2014.

- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid to promote energy efficiency and use of renewable energy in public buildings in the Basque Country through contracts with energy service companies. Official Gazette of the Basque Country, 22/07/2014.
- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment in energy efficiency and use of renewable energy by town and city councils. Official Gazette of the Basque Country, 22/07/2014.
- DECISION of 10 July 2014 of the Director-General of the Basque Country Energy Agency publishing the 2014 call for applications for aid for investment to renovate the electrical systems in applicants' habitual place of residence. Official Gazette of the Basque Country, 22/07/2014.

Autonomous Community of Rioja

- Order 1/2016 of 15 April 2016 of the Regional Ministry of Public Works and Regional Policy establishing the regulatory bases for the granting of aid to promote building refurbishment in Rioja. Official Gazette of Rioja, 22/04/2016.
- Extract from the Decision of 30 March 2016 of the Regional Ministry of Public Works and Regional Policy announcing the 2016 call for applications for the subsidy regulated by Order 5/2014 of 25 July 2014 establishing the regulatory bases for the granting of aid in Rioja under the programme to support building evaluation reports under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of Rioja, 08/04/2016.
- Decision of 9 March 2016 of the *Agencia de Desarrollo Económico de La Rioja* [Rioja Economic Development Agency] approving the first 2016 call for applications for direct subsidies under the programme to promote renewable energies, energy saving and efficiency and environmental protection. Official Gazette of Rioja, 18/03/2016.
- Decision 1523/2015 of 15 December 2015 of the Regional Ministry of Agriculture, Livestock Farming and Environment announcing the 2015 public call for applications for direct economic aid, in the form of subsidies, to improve irrigation infrastructure and announcing other subsidies for irrigation communities and communities of water users. Official Gazette of Rioja, 18/12/2015.
- Decision of 13 October 2015 of the Rioja Economic Development Agency approving the 2015 call for applications for direct subsidies to promote renewable energies, energy saving and efficiency and environmental protection. Official Gazette of Rioja, 16/10/2015.
- Order 14/2015 of 18 September 2015 of the Regional Ministry of Economic Development and Innovation approving the regulatory bases for the granting of direct subsidies by the Rioja Economic Development Agency to promote renewable energies, energy saving and efficiency and environmental protection. Official Gazette of Rioja, 28/09/2015.
- Order 21/2015 of 2 June 2015 of the Regional Ministry of Agriculture, Livestock Farming and Environment establishing the regulatory bases for the granting of economic aid, in the form of subsidies, to improve irrigation infrastructure and regulating other subsidies for irrigation

communities and communities of water users. Official Gazette of Rioja, 12/06/2015.

- Order 3/2015 of 10 April 2015 of the Regional Ministry of Public Works and Local and Regional Policy establishing the regulatory bases for the granting of subsidies to small municipalities and small local authorities and announcing the corresponding 2015 call for applications. Official Gazette of Rioja, 17/04/2015.
- Order 7/2014 of 25 July 2014 establishing the regulatory bases for the granting of aid in Rioja under the programme to promote building refurbishment under the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. Official Gazette of Rioja, 28/07/2014.
- Decree 31/2014 of 25 July 2014 approving the 2013-2016 Rioja Housing Plan. Official Gazette of Rioja, 28/07/2014.
- Decision No 427 of 21 March 2014 of the Regional Ministry of Agriculture, Livestock Farming and Environment approving the public call for applications for economic aid, in the form of subsidies, to improve irrigation infrastructure. Official Gazette of Rioja, 28/03/2014.
- Decision of 10 February 2014 of the President of the Rioja Economic Development Agency approving the opening of the 2014 call for applications for direct subsidies to promote renewable energies, energy saving and efficiency and environmental protection, the measures eligible for subsidy being numbers 1, 2, 3, 6, 7, 8, 9, 10 and 11, that is: Projects to remediate or minimise pollution or other negative effects on the environment; Aid for the transport sector; Investment in management of other enterprises' waste; Energy saving and efficiency projects; Investment in high-efficiency cogeneration; Projects to develop and expand renewable energy sources; Environmental studies directly linked to investment; Environmental consultancy for SMEs; and Contracting of environmental specialists by SMEs. Official Gazette of Rioja, 12/02/2014.

Ceuta

- IN PROGRESS: Regulatory bases for the granting of public subsidies under the 2016-2017 Taxi Modernisation Programme. Official Gazette of Ceuta, No 5626, 15/11/2016.
- Supply of electric vehicles for Ceuta's fleet of official vehicles, 25/10/2016.
- Design and implementation of minor energy efficiency measures in the Polideportivo Guillermo Molina and Polideportivo Díaz-Flor sports centres and in lighting on the Avenida Virgen de África avenue, 03/11/2015.

Melilla

- Order No 1798 of 13 September 2016 of the Regional Minister of Public Works referring to the call for applications for aid for urban regeneration and renewal in Melilla under Royal Decree 233/2013 regulating the 2013-2016 State Plan to promote housing rental, building refurbishment and urban regeneration and renewal. This call for applications awards special aid for measures to improve energy efficiency in buildings. Official Gazette of Melilla, 16/09/2016.