

2.12

HOUSEHOLDS



The residential sector is made up of households with access to at least one housing unit. Although the concepts of household and housing unit are closely linked, distinctions must nonetheless be made.

According to the definition used by the Spanish National Institute of Statistics (INE - *Instituto Nacional de Estadística*), a household consists of "the person or persons who occupy a family housing unit, or part of one, and consume and/or share food and other goods on the same household budget". A household may comprise one individual (one-person household) or several (multi-person household), and the constituent individuals may or may not be related.

A family housing unit is defined by the same body as "any room or set of rooms and corresponding facilities occupying a building or a structurally separate part thereof, constructed or remodelled to serve as the habitation of one or several households." The housing unit is, therefore, the "roof" sheltering households, providing the infrastructure required for daily life. The INE provides figures about housing units in the Censuses of Population and Housing (*Censos de Población y Vivienda*) produced every ten years, while households are the subject of permanent study in the "Household Budget Continuous Survey" (*Encuesta Continua de Presupuestos Familiares*) and "Living Conditions Survey" (*Encuesta de Condiciones de Vida*).



INDICATOR	GOAL	TREND
Number of passenger cars per household	Foster urban and inter-urban mobility by promoting public transport	Continued rise in the number of passenger cars per household
Urban waste production per household	Minimise production of urban waste	Annual urban waste production per household is increasing, although so is separate waste collection
Energy consumption per household	Improve efficiency of energy consumption	Energy consumption per household rose by 5% in 2004 compared with 2003
Emissions of CO₂ by the residential sector	Reduce generation of CO ₂ by the sector	Over the period 1990-2005, CO ₂ generation rose by 51.6%
Water consumption per household	Minimise water consumption per household	There was an increase in water consumption per household in 2004 of 4 litres per person per day
Gross disposable household income	Make consumption more compatible with sustainable development	Increase in disposable household income with major differences across Autonomous Communities
Eco-efficiency in the domestic sector	Reduce resource consumption per household	Rising trend in the variables considered, some increasing at a rate above that of the number of households

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The household sector may be analysed from a number of perspectives (demographic, sociological, economic, etc.), but continues to be less well understood than other areas as it has attracted less attention. The household sector, and in particular the consumption habits of its constituent individuals, has a major impact on the environment, for example in terms of energy consumption and consequent GHG emissions, emissions of other pollutants, waste generation, water consumption, land cover, etc. Although as a sector it is difficult to analyse, being both a generator and receiver of pressures, it does have the advantage, in comparison with productive sectors, that its effects can be greatly conditioned and reduced by means of changes in consumption habits. In 2006, the European Environment Agency analysed the key principles affecting the sector in its report "Household Consumption and the Environment".

In this chapter we present a set of indicators covering the household sector from the environmental perspective, revealing the clearest trends in terms of energy, CO₂ emissions, waste generation, income, etc. In general, there is growing pressure from this sector on the environment, closely coupled to economic growth and consumption patterns which have gradually taken hold within society. The ideal solution would be to change these patterns through increased citizen awareness and appropriate policies, in particular in terms of consumption of resources such as water and energy.

Housing units...

The stock of family housing units grew from 17.2 million properties in 1991 to 20.9 million in 2001⁽¹⁾, a rise of 22% in ten years which did not match demographic growth over the same decade. Over the period 2001-2005, almost three million housing units were built in Spain (2,841,208), bringing the total stock to nearly 24 million (23,787,762). This process constitutes a property boom with major environmental consequences in terms of land and water use, increased traffic and impacts on the landscape, especially the coast. 82% of housing units are owner-occupied (2004 figure), as opposed to the trend in form of tenure elsewhere in the EU15 where, according to Eurostat, an average of 32.1% of housing units were rented in 2001.⁽²⁾

The rate of construction of new housing units contrasts the large number of empty ones. According to the 2001 Census, these amounted to some 2.5 million units, of which more than 80% were considered in good condition, the remaining 20% being in unsuitable condition. There is also a very high number of second homes: 2.9 million according to the 2001 Census. Since then, given the rate of construction over the last five years and the

(1) Not including collective establishments (11,446 in 2001).

(2) Figures from the INE Household Budget Continuous Survey 2004.

number of building permits issued⁽³⁾, it may be assumed that second homes have seen a considerable increase.

The analysis of consumption presented in this chapter is based on the number of households or, where applicable, individuals (*per capita* consumption), but never in relation to the number of housing units, in particular given the large number of empty housing units and second homes in Spain, as mentioned above. Otherwise, we would be faced with a paradox in which resource consumption and waste and emissions generation would fall as more housing units were built, a phenomenon that has repeatedly been shown to be unsustainable under the conditions and at the rates seen today.

...and households

The 2001 Census put the number of households in Spain at 14.2 million and the population at 40,847,371, the former matching the INE's figure for *main family housing units*, in other words, the place of habitual residence. Immigration and legalisation of immigrants has affected these figures: the Municipal Register as at 1 January 2005 placed the number of inhabitants at 44,108,530, an increase of almost 8%. The number of households has continued to increase in parallel, to more than 14.5 million, a rise of 2.4% compared with the 2001 census year.

No. of members	No. of households in 2001	No. of households in 2004	Change (%)
1	2,876,572	2,084,996	-27.5
2	3,582,177	4,008,399	11.9
3	3,004,375	3,437,025	14.4
4	3,048,274	3,567,803	17.0
5	1,099,963	1,058,031	-3.8
6 or more	575,808	372,006	-35.4
TOTAL	14,187,169	14,528,260	2.40

Source: INE. Census of Population and Housing, 2001. Household Budget Continuous Survey, 2004

In terms of the number of individuals belonging to households, all of the bands reveal considerable increases in 2004 compared with the 2001 census year, except for one-person households, which had risen over recent decades but dropped sharply, perhaps a result of immigrants being joined by their relatives and the high cost of housing, and a fall in the number of households of 5, 6 or more members, in accordance with the decline in the number of large families over recent decades.

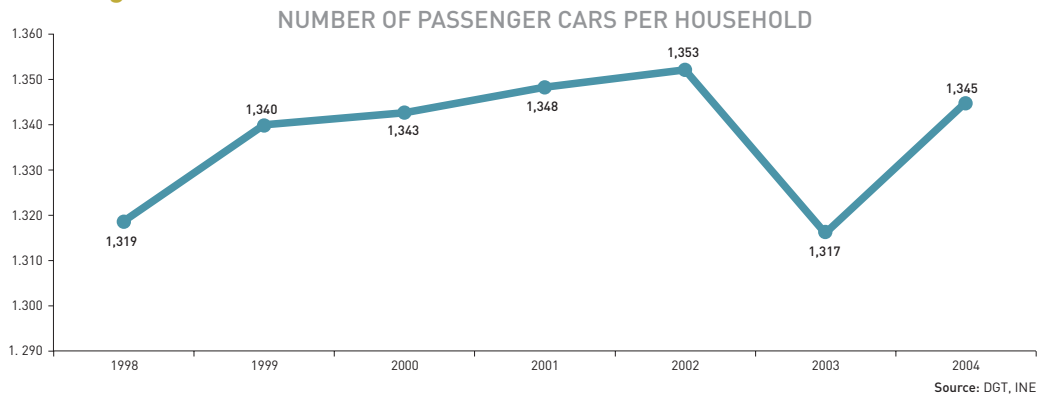
(3) Housing unit building permits (thousand): (2001: 547.88);(2002: 617.12);(2003: 681.17); (2004: 739.65); (2005: 803.24) according to the Council of the Colleges of Architects of Spain (*Consejo de Colegios de Arquitectos de España*) and the Bank of Spain (*Banco de España*).

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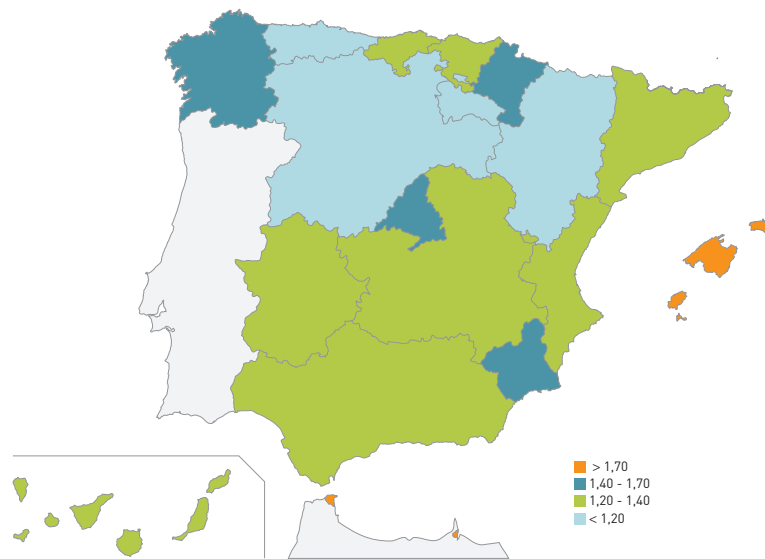
A considerable number of households have a second residence, giving rise to a new concept, that of multi-residence households, already applicable to a significant population of around 10 million people who divide their activities between two different locations, with major economic, social and environmental consequences.

Number of passenger cars per household

In 2004 there were an average of 1.345 cars per household, with five Autonomous Communities and the cities of Ceuta and Melilla above this figure



NUMBER OF PASSENGER CARS PER HOUSEHOLD, 2004



The passenger car fleet stood at a total of 19,541,918 vehicles in 2004, an increase of more than 7.5 million units since 1990. These figures give us a rate of growth of 63% over the period 1990-2004, representing an annual average of 4.49%. 1,653,798 new passenger cars were registered in 2004, 77% of all the 2,149,706 new vehicles registered during the year.

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As the number of households that year was 14.7 million, this gave an average of 1.345 passenger cars per household. Galicia, Navarre, Madrid and Murcia all have levels just above this figure (1.4 – 1.7), with the remaining Autonomous Communities having lower levels, except for the Balearic Islands and the Autonomous Cities of Ceuta and Melilla, which exceed it.

From an environmental point of view, vehicle fleet renewal is an important factor, since new vehicles are manufactured using technology to reduce consumption and pollution. In this context it should be pointed out that the number of vehicles withdrawn from circulation rose considerably over the period 1997-2001. In 1997, 608,581 vehicles were taken off the register, of which almost half a million (497,516) were passenger cars. In 2004, more than a million (1,039,344) vehicles of all kinds were withdrawn, including 830,959 passenger cars, or 4.25% of all those in circulation that year.

Another significant factor is the type of fuel used by passenger cars. In Spain, there is a general trend towards diesel engines: in 1997, 26.57% of the overall vehicle fleet ran on this fuel, compared with 44.08% in 2004, while the figures for passenger cars over the same period rose from 18.34% to 38.41%. One consequence of the increased use of diesel is a rise in atmospheric particulate emissions. There is also a trend towards more powerful cars, with the 1600-1999 cc band accounting for the largest number of new registrations in 2005, leading to an increase in fuel consumption despite technological advances in cars within this range.

Increased car use in towns and cities, which brings with it worsening air quality due to pollutant emissions, as well as noise, vibration, traffic congestion and road accidents (with and without personal injury), has become one of the most serious problems facing urban areas. The rise in the number of passenger cars per household can therefore be seen as a growing threat, especially as regards quality of life in towns and cities.

Social and economic development facilitates personal mobility for tourism, business and other reasons. This fact, along with the development of new residential areas far away from shopping centres, schools and work that force residents to make constant journeys, contribute to increasing the environmental impact made by households as they have a greater need for private vehicles.

NOTES

- The downturn seen in the graph in 2003 is the result of a reduction in passenger car fleet size, from 18,732,632 in 2002 to 18,688,320 in 2003 (0.23% less). Meanwhile, the number of households rose from 13,842,739 in 2002 to 14,187,443 in 2003, an increase of 2.51%. According to the Directorate General for Traffic (DGT - *Dirección General de Tráfico*), vehicles are withdrawn from circulation for the following reasons: export, the Plan Prever vehicle renewal scheme, EU movements, voluntary withdrawal and other causes. 871,595 passenger cars were withdrawn in 2003
- The Directorate General for Traffic defines "passenger car" as an 'automobile, other than a motorcycle, specifically designed and built for the transport of persons, accommodating up to nine persons, including the driver'. Rental fleets of passenger cars and commercial vehicles that meet this definition are also included in this indicator.
- In order to work with an extensive and continued series of data on "number of households", the information provided in the Household Budget Continuous Survey carried out annually by the INE has been used in the Environmental Profile of Spain 2006.
- The vehicle fleet in Spain as at 31/12/2004 stood at 26,432,641 units.

SOURCES

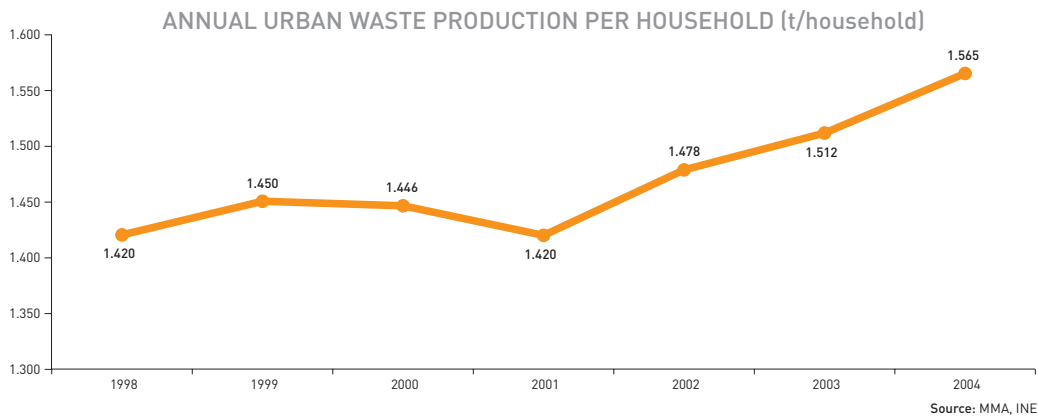
- Households: INE: Household Budget Continuous Survey. Base 1997. Households by type of household and members.
- Cars: Directorate General for Traffic. Spanish Ministry of the Interior (*Ministerio de Interior*).

FURTHER INFORMATION

- www.ine.es/inebase.
- www.dgt.es/estadisticas/estadisticas03.htm

Urban waste production per household

Domestic waste continued to increase in 2004, rising above 1.5 tonnes per household per year

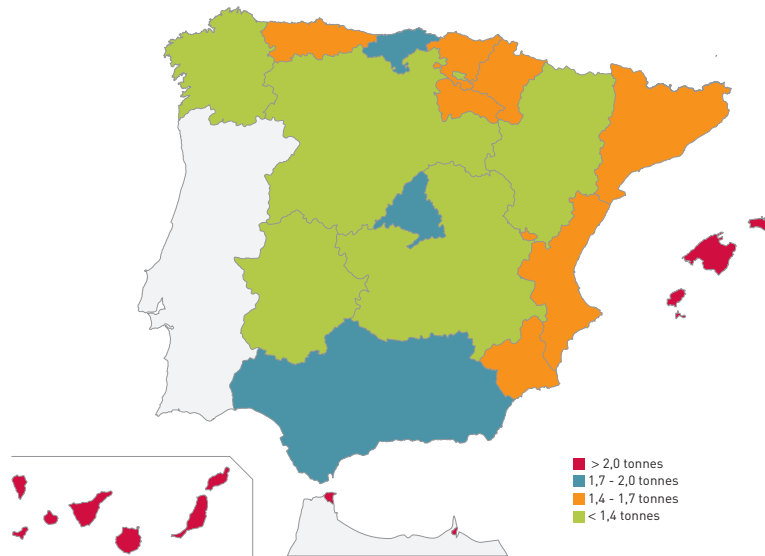


Urban waste generation rose significantly between 1998 and 2004, increasing by 30.52%. In 2004, Spain generated 524.5 kg per inhabitant per year, a rise of 6% on the previous year. This figure is lower than that for the EU15, which generated an average of 567 kg per inhabitant/year in 2004 (525 kg in the EU25.)

This indicator estimates the average annual amount of urban waste generated per household. In recent years, this indicator has shown a clear upward trend, rising from 1.420 t/household in 1998 to 1.565 t/household in 2004. The drop seen in 2001 is due more to the increase in the number of households as a result of updating the Census of Population and Housing than to any decrease in the amount of waste produced during the year (19,124,750 tonnes).

As regards the composition of urban waste (calculated as the weighted average of the national total), according to studies carried out by the Spanish Ministry of the Environment, organic matter accounts for almost half (49%), paper and cardboard for 18.5% and plastics for approximately 12%. The remaining materials (glass, ferrous and non-ferrous metals, wood, textiles and others) all account for lesser percentages. It is estimated that 26% of the total is packaging.

WASTE PRODUCTION PER HOUSEHOLD, 2004



By Autonomous Community, the Canary Islands, Ceuta and Melilla and the Balearic Islands generated more than 2 tonnes/year, while Madrid, Andalusia and Cantabria were also above the national average, producing more than 1.7 t/household. The remaining Communities lie at the other end of the scale.

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- This indicator estimates the average annual amount of urban waste generated per household. It is calculated by dividing the amount of total urban waste collected by the number of households.
- Urban waste is defined as waste generated by private households, shops, offices and service businesses, as well as all waste similar to that produced in the abovementioned places or activities and not classified as hazardous. The following are also considered urban waste: waste originating from the cleaning of public roads, green areas, recreational areas and beaches, and dead domestic animals, as well as abandoned furniture, household goods and vehicles and, finally, waste and debris from small-scale construction works and household repairs. Waste Act 10/1998 (*Ley 10/1998 de Residuos*).
- For calculation purposes, 'urban waste' is defined as any waste collected, managed and quantified by municipal systems, and may include, in addition to strictly domestic waste generated by households, proportions corresponding to urban commercial and business activities that do not have any other special system of collection.
- Eurostat gives a figure for Spain of 608 kg *per capita* per year in 2004.

SOURCES

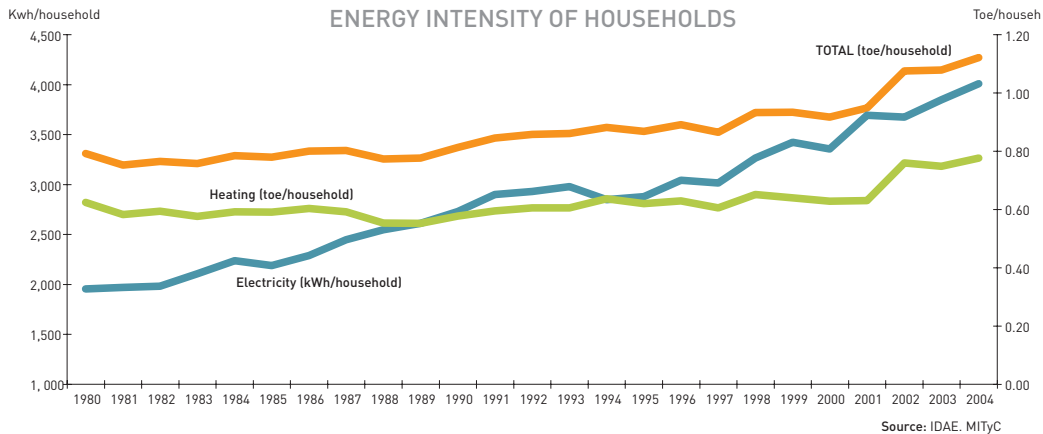
- Waste figures provided by the Waste Management Department (*Área de Gestión de Residuos*). Sub-Directorate General for Waste (*Subdirección General de Residuos*). Directorate General for Environmental Assessment and Quality (*Dirección General de Calidad y Evaluación Ambiental*). Spanish Ministry of the Environment (*Ministerio de Medio Ambiente*).
- Environment in Spain 2004 (*Medio Ambiente en España 2004*), Spanish Ministry of the Environment (2005).
- Households: Spanish National Institute of Statistics (INE): Household Budget Continuous Survey. Base 1997. Households by type of household and members.

FURTHER INFORMATION

- www.ine.es/inebase
- www.eea.europa.eu
- www.epp.eurostat.ec.europa.eu

Energy consumption per household

Energy consumption attributed to Spanish households rose by almost 5% in 2004 compared with 2003



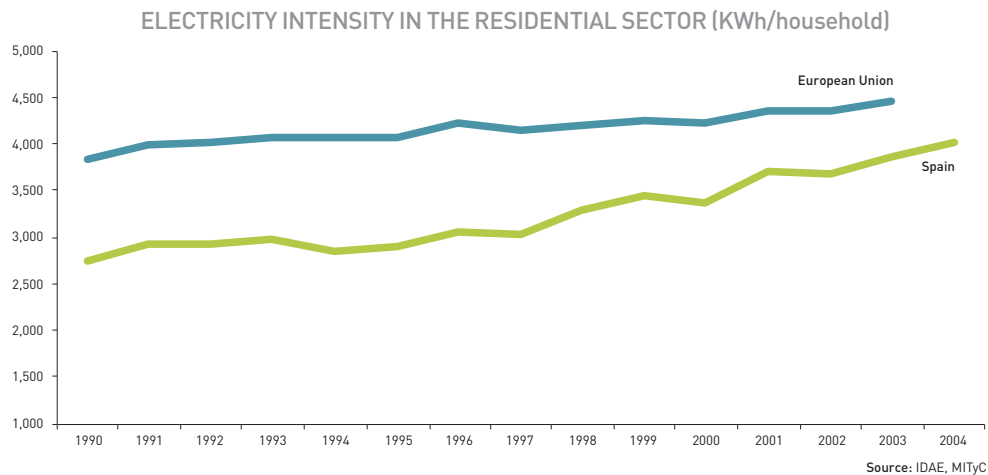
Spain, with its figure of around 1.1 toe/household (total energy consumption), has one of the lowest residential energy consumption rates in Europe, although it is rising fast. This situation may in part be the result of a more benign climate with mild average winter temperatures, leading to lower energy demand for heating. However, the upward trend is being fuelled by economic development, closely tied to household consumption, bringing about an increase in the use of household appliances without any great improvement in eco-efficiency. According to the INE, almost 100% of households have a telephone, refrigerator, automatic washing machine and television; more than 25% have a personal computer, electric cooker, freezer and dishwasher, while air conditioning is also making considerable inroads.

As shown in the graph, residential electricity consumption rose over the period 1980-2004 by as much as 105.1%, with energy consumption for heating and air conditioning increasing by 24.5%. Taking 1990 as our reference point, the increases are 46.8% (electricity) and 34.5% (heating and air conditioning).

According to the Spanish Institute for Energy Saving and Diversification (IDAE - *Instituto para la Diversificación y Ahorro de la Energía*), the annual rate of increase in household energy consumption since 2000 has been 5.2%, driven by increases in household income (of around 8%). Meanwhile, the number of households has risen by 2.9%, with these figures revealing a parallel increase in household income and energy consumption, far from the decoupling required to achieve greater sustainability.

According to the same source, the breakdown of household energy consumption in 2003 was as follows: heating (41.7%), household appliances (12%), hot water (26.2%), cooking (10.8%), lighting (9%) and air conditioning (0.4%). It is specifically air conditioning, both in households and in the tertiary sector, which is responsible for the surges in power demand seen during the summer.

Two key factors are revealed by a comparison with average consumption across Europe (EU15): the lower rate of energy consumption for heating in Spanish households (26.2% in 2003) and Spain's greater energy consumption for household appliances and lighting (6.8%), as well as for hot water (12.1%). It is also important to point out that, as may be seen in the graph, the rate of growth in the European residential sector is lower than that in Spain, with the figure for the EU15 being 6.5% since 1980.



In terms of total final energy consumption, the residential sector accounts for 15.6%, compared with 35.8% for industry, 36.4% for transport, 8.9% for the service sector and 3.26% for agriculture. The figure for 2000 was 13.3%, meaning that the residential sector has increased its share since the start of the century by 2.3%.

Some consumer organisations claim that Spanish households waste approximately 10% of the energy they consume, amounting to an economic cost of 700 million euros, not including environmental impacts. The measures intended to help reduce consumption, in addition to awareness-raising and discouragement of unnecessary consumption, include in particular the Spanish Building Code (*Código Técnico de la Edificación*), implementation of which will improve housing units' energy efficiency, the Heating and Air Conditioning Regulations (*Reglamento de Instalaciones Térmicas*) and the Building Energy Performance Certificate Scheme (*Certificación Energética de los Edificios*).

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- Final energy: this is energy as used at the point of consumption, for example electricity or natural gas used in the home, or the petrol or diesel with which we fill up our car's tank. Making such energy available for consumption involves successive transformation and transportation operations as it makes its journey from the natural deposits to the production plant and finally the end consumer, with losses occurring at each stage. The formula is as follows: $Primary\ energy = final\ energy + losses\ in\ transformation + losses\ in\ transportation$ (Source: Practical Energy Guide: Efficient and Responsible Consumption (*Guía práctica de la energía: consumo eficiente y responsable*). Madrid, Spanish Institute for Energy Saving and Diversification, 2003).
- According to the EEA, and based on data provided by Eurostat, final energy consumption in the EU25 increased by around 8% over the period 1990-2002, although in 2002 it did decrease by 1.4% on the previous year, probably due to the milder winter temperatures. In Spain, final energy consumption rose from 56,647 million toe in 1990 to almost 85,379 million toe in 2002, representing an increase of 50.7% (5.63% per year). The transport sector was responsible for the greatest increase in the EU25 over the decade (24.3%), whilst households were responsible for a rise of 10.2% over the aforementioned period (1.1% per year).
- Under the "miscellaneous uses" section, the Spanish Ministry of Trade, Industry and Tourism (MITyC - *Ministerio de Industria, Turismo y Comercio*) has traditionally included energy consumption by the following sectors: Domestic Use, Commerce, Public Services and Authorities, and Agriculture and Fishing. The report "Energy in Spain 2004" ("*La Energía en España 2004*") states on p. 102 that "it has been decided to undertake a more detailed sectorial analysis in line with the Spanish Energy Efficiency Strategy [E4 - *Estrategia Española de Eficiencia Energética*] and the 2005-2007 Action Plan of the Spanish Energy Saving and Efficiency Strategy (*Estrategia de Ahorro y Eficiencia Energética de España*). The new headings are entitled Building, Equipment (including Residential and Tertiary), Public Services (public lighting and water), and finally Agriculture and Fishing. The previous Residential and Services sections are thus included under the Building heading (consumption by buildings' permanent systems, for both residential and tertiary use).
- Within the EU25, final energy consumption by sector in 2003 was as follows: transport (30.4%), industry (28.0%), residential (26.6%), services (12.5%) and agriculture (2.5%). Average energy consumption per household has stood at around 1.7 toe/household since 1985, with a tendency to stabilise or even decline, albeit with a number of fluctuations.
- In 2004, the Spanish Ministry of Trade, Industry and Tourism attributed 36% of final energy consumption to the industrial sector, 36.2% to transport and the remainder (27.8%) to "miscellaneous uses". It did not provide a breakdown of the different components, among them the residential, commercial and agricultural sectors, while stating that "there has been a rapid acceleration in the growth of energy demand for transport and the residential and tertiary sectors, while rises in demand from industry have slowed to a level below the Industrial Production Index (IPI)." Greatest growth in demand has come from the residential and tertiary sectors, despite milder temperatures than those in 2003. The increase in the "miscellaneous uses" section overall is estimated at 5.9% compared with 2003.

SOURCES

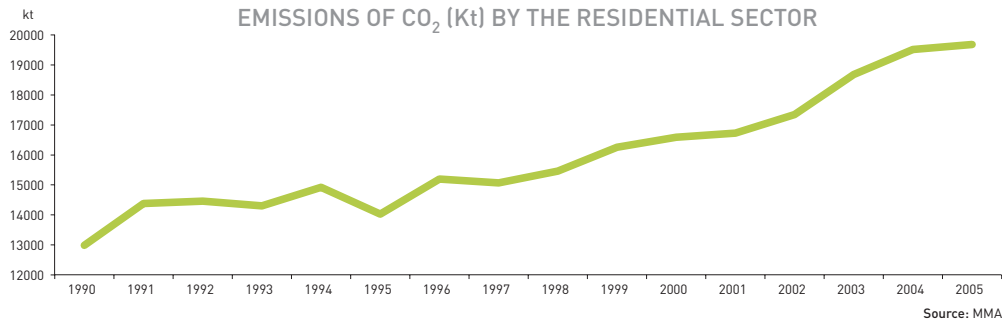
- Spanish Institute for Energy Saving and Diversification (IDAE): Practical Energy Guide: efficient and responsible consumption. Madrid, Ediciones Mundi-Prensa, 2003.
- Spanish Institute for Energy Saving and Diversification: Energy Efficiency and Renewable Energy (*Eficiencia energética y energías renovables*), Report Series. September, 2005.
- Spanish Sustainability Monitoring Centre (OSE - *Observatorio de la Sostenibilidad en España*): Sustainability in Spain, 2006 (*Sostenibilidad en España, 2006*). Alcalá de Henares (Madrid), 2006.
- Spanish Ministry of Trade, Industry and Tourism. Energy in Spain 2004 (pub. 2005).

FURTHER INFORMATION

- www.idae.es
- www.eea.europa.eu
- www.mityc.es

Emissions of CO₂ by the residential sector

Emissions of CO₂ by Spanish households are on the increase, rising by 0.8% in 2005 compared with 2004



The residential sector was responsible for 5.34% of all atmospheric CO₂ emissions in 2005, thereby contributing to Greenhouse Gas concentrations, and consequently worsening climate change. In absolute terms, in 2005 the residential sector emitted 19,675 kilotonnes of the estimated total of 368,282 kilotonnes emitted in Spain.

These figures mean that each household produced around 1.3 tonnes of CO₂ in 2004, an amount below the European average and one that is linked, on the one hand, to the milder winters seen in large areas of Spain and, on the other, to the particularly high percentage of households in the country's warmer regions that are not equipped with either collective or individual central heating (54.83% in 2002 according to the INE).

Over the period 1990-2005, these emissions rose by 51.6%, a yearly average of 3.4%. Since 2000, there has been an 18.7% increase, giving a slightly higher annual average rise of 3.7%. However, 2005 reveals an increase of less than 0.8% on 2004. In absolute terms, this translates as 162 kilotonnes more than the previous year.

Energy consumption forecasts for the European Union through to 2010 suggest figures of around 2-4% for the residential and service sectors. A change in habits, the use of energy-efficient domestic appliances and energy performance certification of housing units can reduce these emissions (which are principally attributed to the use of central heating), thereby helping to lower their concentration in the atmosphere and diminish the climatic crises they are believed to cause.

Reducing emissions will also require improved central heating systems and bioclimatic conditions in buildings, as well as the use of alternative energy sources. In this regard, for example, the total photovoltaic solar energy capacity installed in the residential sector

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made up some 50% of the overall figure for Spain in 2004 (far above that used in the service and industrial sectors), although the targets set for 2010 in the Renewable Energy Promotion Plan (*Plan de Fomento de las Energías Renovables*) are still far from being met.

In terms of installed solar surface area, the domestic sector also leads the way, with 68.4%, among sectors using this type of energy in 2004. The most common use for solar systems is to heat water, both in housing units and hotels, group households, hospitals, campsites, sports facilities, etc. The current state of technology in Spain allows a substantial fraction of the country's energy needs to be generated in this way.

EMISSIONS OF CO₂ IN EUROPE (%)

Electricity generation	30%
Transport	28%
Households	14%
Industry	16%
Tertiary (commerce, hotels, offices)	5%
Others	7%

Source: Spanish Institute for Energy Saving and Diversification. Practical Energy Guide: Efficient and Responsible Consumption. 2003

NOTES

- CO₂-generating activities are classified into nine groups (SNAP methodology): Combustion in energy and transformation industries, Non-industrial combustion plants, Combustion in manufacturing industry, Production processes without combustion, Extraction and distribution of fossil fuels. Solvent and other product use, Road transport, Other mobile sources and machinery, and Waste treatment and disposal. These categories may in turn be divided into subgroups.
- This indicator estimates CO₂ emissions from residential combustion plants, including emissions produced by: boilers, gas turbines, stationary engines and other appliances such as heaters, cookers, etc.
- CO₂ emissions from non-industrial combustion plants were responsible for 8.5% of overall atmospheric emissions in Spain in 2004, translating in absolute terms into a figure of 30,222 kilotonnes. Of this total, the three subgroups into which the sector is divided are responsible for the following percentages: Residential plants 64.32%, Commercial and institutional plants 28.87%, and Plants in agriculture, forestry and aquaculture 5.81%.
- "Non-industrial combustion plants" include a) residential plants, b) commercial and institutional plants, and c) plants in agriculture, forestry and aquaculture.
- No. of households (2004): 14,717,938 (INE. Household Budget Continuous Survey. 3rd quarter 2004).
- 54.83% of Spanish households do not have heating. By Autonomous Community, the Canary Islands, Ceuta and Melilla, Andalusia, Valencia, Murcia, the Balearic Islands and Extremadura are well above the average figure (INE. Household Budget Continuous Survey. 2002 results).

SOURCES

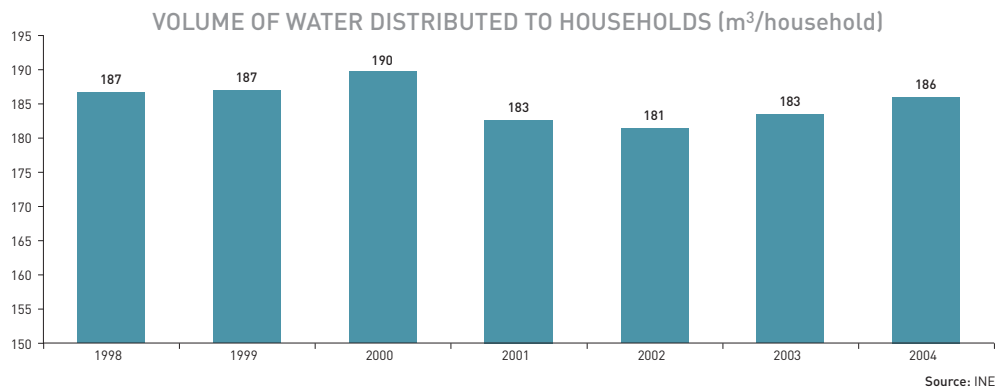
- Data on CO₂ emissions taken from the Spanish National Atmospheric Emissions Inventory (*Inventario Nacional de Emisiones a la Atmósfera*). Sub-Directorate General for Air Quality and Risk Prevention (*Subdirección General de Calidad del Aire y Prevención Riesgos*). Spanish Ministry of the Environment.
- INE. Household Budget Continuous Survey.

FURTHER INFORMATION

- www.mma.es
- www.ine.es

Water consumption per household

Water consumption by Spanish households in 2004 was below the 1998 level (-0.54%)



According to the Survey on Water Supply and Treatment (*Encuesta sobre el suministro y tratamiento del agua*) carried out by the INE, in 2004 4,923 hm³ of water (24 hm³ less than in 2003) were supplied for public urban consumption. Of this volume, 81.3% was consumed by households, businesses, institutions, municipal services, etc. The public distribution network lost 17.9% of available water through leakage, although the losses did fall by 0.8% on the figure for the previous year.

Water consumption by Spanish households (67% of water consumption, minus losses) rose to 2,701 hm³, exceeding the figure for 2003 by 98 hm³, or 3.76%. Based on population figures from the 2004 Municipal Register (43,197,684 inhabitants), consumption per inhabitant per day works out at 171 litres, 4 litres more than the previous year. As may be seen in the table below, average water consumption per inhabitant per day in absolute terms has risen since 1996 by 25 litres per day, representing a 17% increase over the 1996-2004 period, or slightly more than 2% per year on average.

Water supplied to households (litres)	1996	1997	1998	1999	2000	2001	2002	2003	2004
Average consumption per inhabitant per day	146	153	159	165	168	165	164	167	171

Source: INE

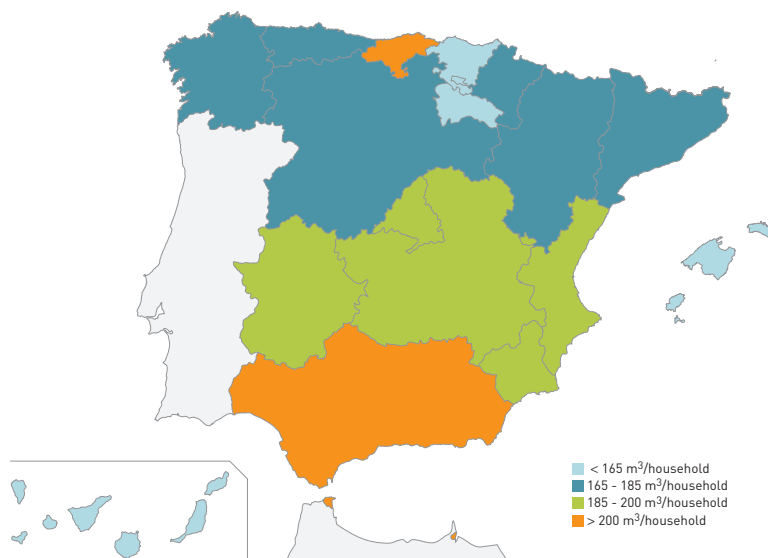
If these figures are compared with agricultural water consumption, we find that 3.6 hm³ are used in the agricultural sector for every 1 hm³ used for urban supply, with actual household consumption being 6.6 times lower than that of irrigation.

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Almost all of the Autonomous Communities have seen an increase in household water consumption, except for Navarre (-5.3%), Catalonia (-4.9%), Aragon (-4.1%) and Castile-La Mancha (-2.7%), where levels have fallen. The greatest increases, at rates of close to 10%, are seen in the Balearic Islands, Valencia, Extremadura, Galicia and Murcia.

The price of the service is an important factor related to household water consumption (demand management). According to the INE, the total unit cost of water⁽⁴⁾ rose by 11.6% in 2004 compared with 2003, to an average of 0.96 euros/m³ (0.66 euros for water supply, and 0.30 euros for wastewater treatment), as opposed to 0.86 euros/m³ the previous year. In general, this increase is in evidence across almost all of the Autonomous Communities (except for Asturias), although prices also fell in the Balearic Islands, Canary Islands, Catalonia and the Basque Country. Those Autonomous Communities with a cost per m³ of 1 € or more are: Madrid, Navarre, Valencia, the Balearic Islands, Murcia and the Canary Islands.

VOLUME OF WATER DISTRIBUTED TO HOUSEHOLDS, 2004 (m³/household)



In the EU15, residential consumption accounts for 10% of total water consumption, and the supply of water to most households is constant in terms of quality and quantity. Guaranteeing water supply is not an easy task in Mediterranean countries, where water availability is characterised by seasonal fluctuations and scarcity. Other aspects to be taken into consideration as regards growing urban water consumption are construction of large

(4) Unit cost of water: revenue from service provided divided by volume of water managed (INE: Press release, 17/08/2006).

numbers of housing units and an increase in recreational use of water for golf courses and swimming pools.

Demographic issues likewise play their part in terms of an increase in the resident foreign population and the number of tourists (more than 50 million) visiting Spain each year. Meanwhile, the recent period of severe drought (2005-2006) has highlighted the imbalance between available water (with considerable drops in reservoir water levels) and demand by the population.

NOTES

- Water consumption by households is calculated from the data provided in the Survey on Water Supply and Treatment carried out by the INE over the period 1996-2004. This survey provides the volume of water treated and distributed to households. Distributed water includes total water available in the distribution network plus any network losses. It is the sum amount of water collected by the supply company plus the net balance of water purchases and sales from and to other companies or local authorities. In the series of data provided by the INE "Water Indicators (*Indicadores sobre el agua*)" (Series 1996-2003), the indicators used are water supply and treatment, volume of water available and volume of water supplied (litres/inhabitant/day).

SOURCES

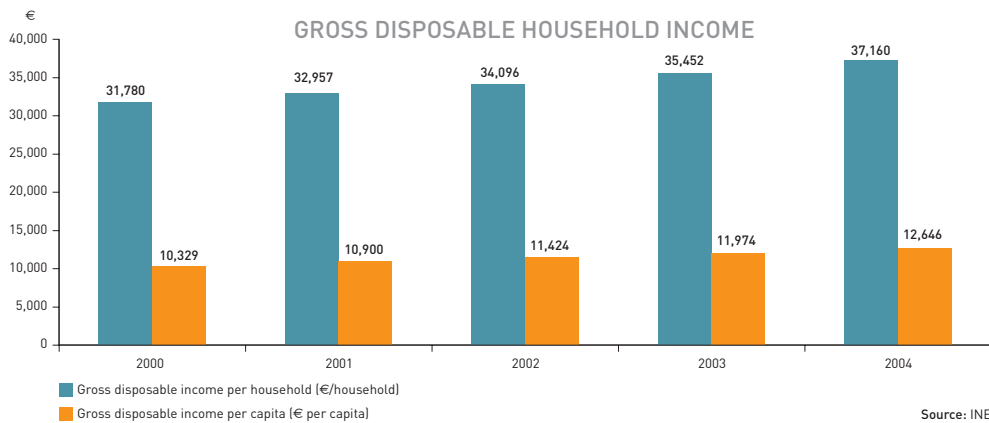
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- Unit cost of water: INE. Press release "Water Surveys 2004" ("*Encuestas del agua 2004*"). 17 August 2006
- Households: INE: Household Budget Continuous Survey. Base 1997. Households by type of household and members (*Hogares por tipo de hogar y personas*).

FURTHER INFORMATION

- www.ine.es/inebase

Gross disposable household income

Higher income levels are leading to increased household consumption, meaning environmental impacts can be expected to rise



This indicator presents the gross disposable income per household in Spain from 2000 to 2004, the last year for which the INE had published figures when this edition went to press. Over this period, the increase nationwide was 16.9%, bringing the average in Spain in 2004 to € 37,160.

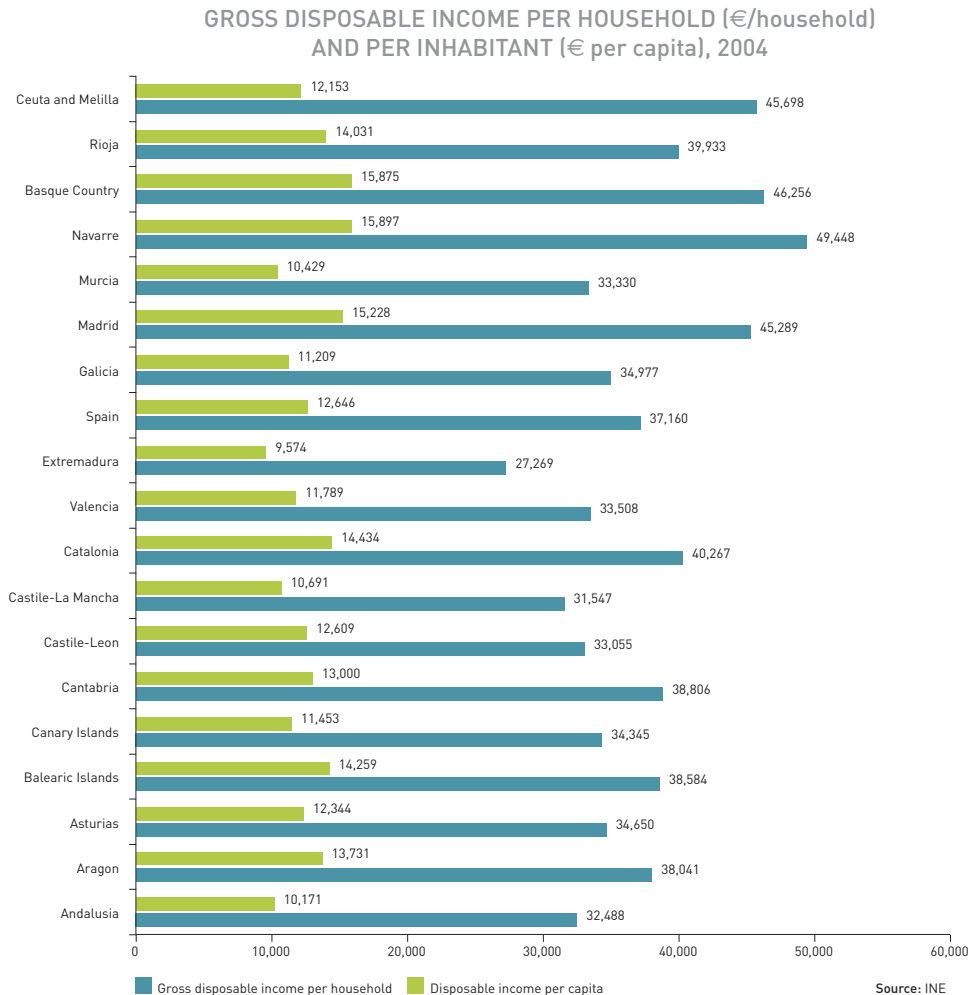
As may be seen in the graph showing the breakdown by Autonomous Community, households in Navarre, the Basque Country, Ceuta and Melilla and Madrid head the list. Nine Autonomous Communities are below the national average, with the final places being held by Castile-La Mancha, Andalusia and Extremadura.

Looking at figures per inhabitant, the list is headed by Navarre (€ 15,897 per person per year), followed by the Basque Country (€ 15,875) and Madrid (€ 15,228). The Basque Country is also home to the province with highest disposable income per inhabitant: Alava.

GROSS DISPOSABLE HOUSEHOLD INCOME PER INHABITANT. 2000-2004

2000	2001	2002	2003	2004
10,329	10,900	11,424	11,974	12,646

Source: INE. Spanish Regional Accounts, base 2000. Accounts for the Household Sector.



In terms of real average expenditure per household over the period examined, according to the Household Budget Continuous Survey this rose from € 15,642.50 in 2000 to € 17,978.40 in 2004, an increase of 15%, which is slightly lower than the figure mentioned above for gross disposable income. Over this period households comprised an average of three members.

The table shows the breakdown and changes in expenditure for the four groups accounting for more than 10%. The lowest areas of household expenditure in 2004 corresponded to health (2.89%) and education (1.38%), rates which have remained almost stable over the period, as might be expected given widespread public provision of healthcare and education.

2.12 HOUSEHOLDS

Household expenditure groups	2000	2004
Food (not including alcoholic beverages)	21.93%	21.77%
Housing, water, electricity and fuel	12.40%	12.41%
Transport	14.50%	13.58%
Restaurants and hotels	10.96%	11.23%

Source: INE. Household Budget Continuous Survey. Base 1997

NOTES

- The INE presents two sets of accounts for households:
 - Allocation of primary income account
 - Secondary distribution of income account.
- The former (primary income) is presented as the balance of income received by households from their direct involvement in the production process (salaries, operating profits and mixed income) plus income from assets (interest, dividends, etc.).
- The secondary distribution of income account shows how the balance of primary income is allocated through redistribution, in other words through taxation on income, assets, etc., Social Security contributions and provisions (excluding social transfers in kind) and other net current transfers (grants, fines, lottery and gaming prizes). The account balance gives the disposable income presented under this indicator.
- The INE's Household Budget Continuous Survey analyses 12 expenditure groups: 1. Food and non-alcoholic beverages 2. Alcoholic beverages, tobacco and narcotics 3. Clothing and footwear 4. Housing, water, electricity and other fuels 5. Furnishings, household equipment and routine maintenance of the house 6. Health 7. Transport 8. Communication 9. Recreation and culture 10. Education 11. Restaurants and hotels 12. Miscellaneous goods and services.

SOURCES

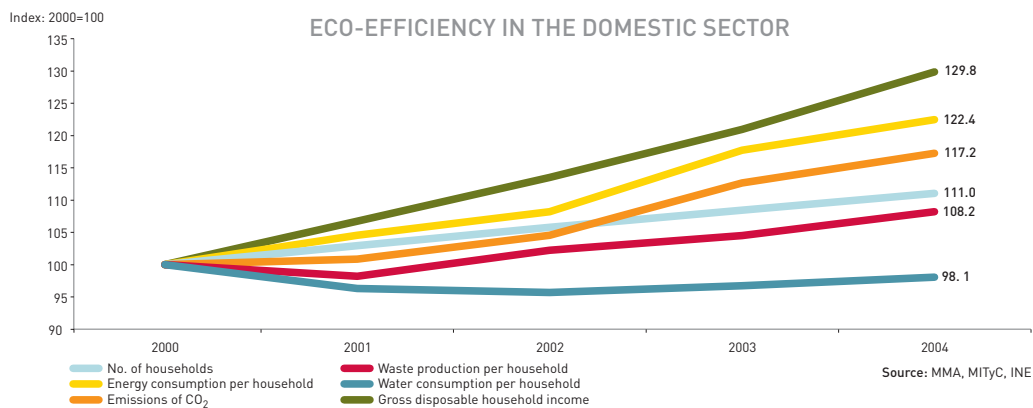
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FURTHER INFORMATION

- www.ine.es/inebase.

Eco-efficiency in the domestic sector

Spanish households display inefficient development across the environmental variables examined, the only exception being water consumption per household



In general, there is a rising trend in all of the variables used to assess eco-efficiency in the domestic sector, except for water consumption, which is more stable and even shows signs of decoupling. Spanish households are progressively consuming more energy, emitting more CO₂ into the atmosphere and producing more waste. Gross disposable household income is also increasing (by almost 30% over the period examined), and this could be connected with an increase in domestic consumption and its role in the growth of the economy. This situation is similar to that found throughout the European Union.

Economic growth in the sector, measured in terms of gross disposable income, has therefore been accompanied by an increase in environmental pressures in terms of energy consumption, CO₂ emissions and waste generation. The first two variables have risen faster than the number of households, while waste generation has done so at a slightly lower rate.

Water consumption per household has, unlike the other variables, scarcely risen in recent years, revealing a degree of decoupling from increasing gross disposable income per household and the number of households. This figure could in part be the result of awareness-raising campaigns to save water, and, above all, restrictions put in place during times of shortage.

2.12 HOUSEHOLDS

NOTES

- To calculate the 'eco-efficiency in the domestic sector' indicator, which shows trends observed in households' environmental impact, the annual variation rate for all of the indicators was used, taking 2000 as the baseline year and setting the indicator's values at 100.
- European households account for nearly 27% of energy consumption, mainly using it for heating and air conditioning. In Spain, this figure is lower, probably due to the country's milder climate, which does not require so much heating in winter. Domestic energy consumption, excluding transport, is generally increasing due to the growth in the number of households and expenditure by the same. This rate of growth could fall in the future, provided that housing units and household appliances make more efficient use of energy. This is the focus of the 2005-2007 Action Plan drawn up under the Spanish Energy Saving and Efficiency Strategy, which has set a savings target of approximately 500,000 toe for the Construction Subsector in 2007. In order to meet this target, a series of measures have been put in place, focusing, on the one hand, on the existing stock of buildings, and, on the other and more ambitiously, on new buildings.
- Despite a few annual variations, the changes in CO₂ emissions by the domestic sector, mainly generated by combustion plants < 50 MWt, show an increase in line with the other variables analysed. The increase for Spain in 2004 compared with the previous year was 4.1%. It is estimated that in Europe 14% of CO₂ emissions are produced by households.
- Practically all Spanish households have access to water, although its cost and the rationing imposed in times of drought prevent unlimited consumption. The basins of the rivers Segura, Júcar, Sur, and Guadiana, the inland basins in Catalonia and some areas of the Ebro basin suffer periods of drought, which were particularly acute in the 2004-2005 hydrological year. 17% of water consumption in Spain is used for urban supply, as opposed to the rest of the European Union, where levels do not exceed 10%. According to the same source, average consumption in 2004 was 171 litres per inhabitant per day, 2.4% more than in 2003.
- As regards waste, Spain produced 524.5 kilograms of domestic waste per inhabitant per year in 2004, an increase of 6% on the previous year, but still a figure somewhat lower than that of several comparable countries.

SOURCES

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FURTHER INFORMATION

- www.ine.es/inebase

