



DIÍSTAQUE

July 19, 2021

ENERGY CONSUMPTION IN HOUSEHOLDS
2020

PRELIMINARY RESULTS OF THE SURVEY ON ENERGY CONSUMPTION IN HOUSEHOLDS (2020)

The preliminary results of the Survey on Energy Consumption in Households carried out in 2020 (ICESD 2020) allowed an update of information and energy consumption habits in households compared to the last edition of the survey held in 2010.

Total energy consumption was 4,895,423 toe in 2020, with energy consumption in vehicles used for individual transport of households residents representing 45.6% of the total (50.6% in 2010). The global energy consumption by household was 1.146 toe, including consumption in vehicles (1.501 toe in 2010). The total expenditure on energy by household was EUR 1,925, including expenditure in vehicles (EUR 1,843 in 2010).

Electricity remains the main source of energy consumed on households (46.4%; 42.6% in 2010), followed by Biomass, which represented 18.4% (24.2% in 2010¹) of the total. Natural gas consumption accounted for 12.4% (9.0% in 2010).

The use of energy for Cooking continued to have the greatest weight (34.8%; 39.1% in 2010) compared to other final use in households.

In the last decade, the following changes in the energy consumption habits of the Portuguese stand out:

- The average energy consumption by household decreased, despite an increase in global average expenditure;
- The preponderance of electricity as the main source of energy consumed in households continues to increase, however less intensely than in the periods before 2010;
- The share of energy consumption in vehicles in households decreased compared to 2010;
- Biomass consumption continued to decrease and remained the second main energy source;
- Natural gas increased its importance, and in 2020 it was the third main source of energy in households in terms of consumption, surpassing LPG Cylinders;
- Solar thermal energy consumption almost tripled, despite its small weight in the total;
- The use of Solar Thermal Systems increased in Water heating;
- Diesel oil continued to be the main fuel used in vehicles, and Gasoline reduced its weight.

¹ The weight in 2010 considers only Firewood from all sources, whereas in 2020 Biomass (which includes Firewood, Pellets, Briquettes and Coal) only considers the purchased one.



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Introduction

In Portugal, the Survey on Energy Consumption in Households (ICESD), currently in the 4th edition, had previous editions in 1989, 1996 and 2010. Since the last edition there have been some changes in energy consumption habits in Portugal and became important the update of the information and indicators on this matter.

The ICESD 2020 had as main objective the updated knowledge of energy consumption in households in Portugal and resulted from the collaboration between Statistics Portugal (INE) and the Directorate General for Energy and Geology (DGEG), entity that financed the project.

This project also benefited from the collaboration of ADENE - Energy Agency, which allowed a simplification and a faster filling up of the ICESD.

ICESD 2020 collects data that allows an updated knowledge of energy consumption in the domestic sector in Portugal, responding to the Regulation (EU) No. 431/2014 of 24 April 2014, concerning to Annual Statistics on Energy Consumption in the Household Sector, with the provision of disaggregated statistical information on the sector.

The Regulation (EU) 2018/1999, of the European Parliament and of the Council, of 11 December (Regulation of Governance of the Energy Union and Climate Action), led to the formulation of the Integrated National Plan for Energy and Climate (PNEC 2030) which it is the main instrument of energy and climate policy for the period 2021-2030. In this context, ICESD 2020 updates the information and indicators on this matter that will allow monitoring the goals and objectives for this period.

The reference period for the survey corresponded to the months from October 2019 to September 2020, totalling one year, to take into account seasonal fluctuations in household energy consumption. Thus, since March 2020, this period coincided with the spread to Portugal of the COVID-19 pandemic. It is probable that the constraints that the pandemic imposed on the social and economic life have affected the behaviour of the families also with regard to household energy consumption. However, it is too early to assess the transitory or permanent nature of change of behaviours that have occurred. In any case, the results seem to be in line with the trends identified from other sources of information, namely the increase in the relative weights of Electricity and Natural Gas in household energy consumption and the existence of efficiency gains, partly associated with the type of equipment used.

Energy consumption in households (Energy Balance)

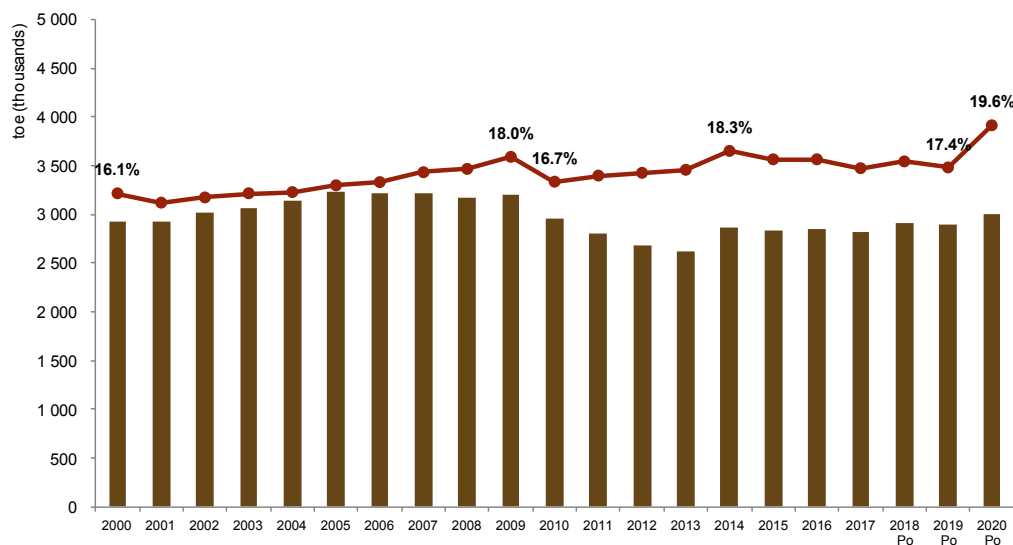
According to the Energy Balance sheet annually published by DGEG, energy consumption in households in the last two decades has fluctuated, reaching a maximum in 2005, with subsequent lower values during the period of the last financial crisis (between 2010 and 2013), with a slight recovery in the following years.



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The weight of the households in final energy consumption in the last decade was between 16.7% and 18.3%, and an increase is expected in 2020, according to information provided in the synthetic Energy Balance sheet 2020 (provisional data).

Figure 1. Consumption of energy in households (toe) and weight (%) of consumption in households in final energy consumption (2000-2020 Po)



Source: Directorate General for Energy and Geology (DGEG) – Energy Balances sheets

Survey on energy consumption in households (2020)

1. Main preliminary results by type of energy source

In 2020, the total energy consumption was 4,895,423 toe, with energy consumption in vehicles used for individual transport of residents in housing accounted for 45.6% of the total (50.6% in 2010).

The global energy consumption by household was 1.146 toe, including consumption in vehicles (1.501 toe in 2010). The total energy expenditure by household was EUR 1,925, including expenditures in vehicles (EUR 1,843 in 2010).

Regarding the energy consumption in households (excluding fuels used in vehicles), in 2020, Electricity remained the main energy source consumed in Portuguese households, representing 46.4% of the total energy consumption (42.6% in 2010).

Biomass appears as the second main source of energy consumed in Portuguese households in 2020, weighting 18.4% in total energy consumption in households (24.2% in 2010).



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About gas consumption in households, the expansion of the Natural Gas pipeline in Portugal was the main factor of change compared to the previous survey edition. Natural Gas was consumed in about 28% of Portuguese households (19.8% in 2010) and is the third main source of energy consumption in households (329,398 toe; 263,507 toe in 2010). LPG Cylinders, even though it was used in about 53% of the Portuguese households, dropped to the fourth position in energy consumption in households (12.2% of total energy consumed; 16.6% in 2010).

Piped LPG, Heating oil and Solar thermal showed a lower expression (4.4%, 4.1% and 2.1% of total energy consumption in households in 2020, respectively), despite Solar Thermal energy consumption having almost tripled in this decade.

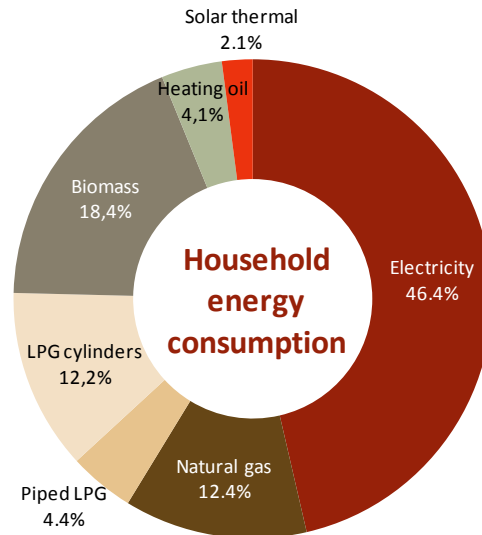
Figure 2. Energy consumption and expenditure in households by type of energy

Type of energy	Unit	Total Consumption	Total Consumption (toe)	Total Consumption (%)	Consumption by household (toe/household)	Total Expenditure (EUR)	Total Expenditure (%)	Expenditure by household (EUR/household)
Electricity	kWh	14 363 827 555	1 235 289	46,4	0,289	3 206 932 254	68,0	751
Natural Gas	kWh	3 830 212 017	329 398	12,4	0,277	351 610 213	7,5	296
Piped LPG	kg	107 284 792	117 874	4,4	0,220	206 645 016	4,4	386
LPG cylinders	t	296 457	325 718	12,2	0,145	543 528 794	11,5	242
Biomass	kg	1 838 143 248	490 768	18,4	0,408	267 325 596	5,7	207
<i>Of which:</i>								
Firewood	kg	1 701 595 652	425 399	-	0,477	221 632 076	-	248
Pellets	kg	110 575 478	49 759	-	0,438	31 928 894	-	281
Briquettes	kg	2 283 307 §	1 027 §	-	0,073 §	1 664 999 §	-	118 §
Coal	kg	19 033 306 §	13 418 §	-	0,050 §	11 407 426 §	-	43 §
Heating oil	l	128 303 503	109 661	4,1	0,723	139 837 265	3,0	922
Solar thermal	toe	55 075	55 075	2,1	0,161	//	-	//

Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

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Figure 3. Distribution of energy consumption in household by type of energy



Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

Related to the types of fuel consumed in the vehicles used in the individual transport of household residents, in 2020, Diesel oil comes as the main fuel consumed, with a weight above 70%, in line with the results obtained in 2010 (63.8% in 2010). In 2020, the consumption of Gasoline had a weight of 29.3%, decreasing compared to 2010 (36.0%), and the consumption of Mixture maintained a residual weight in 2020.

Figure 4. Energy consumption and expenditure in vehicles used in individual transport by households residents by type of fuel

Type of fuel	Unit	Total Consumption	Total Consumption (toe)	Total Consumption (%)	Consumption by household (toe/household)	Total Expenditure (EUR)	Total Expenditure (%)	Expenditure per household (EUR/household)
Diesel oil	l	1,812,814,068	1,570,896	70.4	0.852	2,309,525,122	65.9	1,253
Gasoline	l	833,941,642	653,786	29.3	0.424	1,179,360,271	33.6	765
Mixture	l	8,874,423	6,957	0.3	0.097	16,424,783	0.5	230

Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

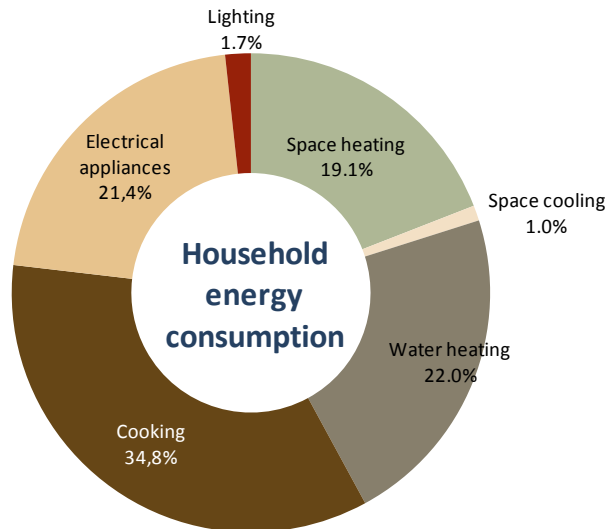
2. Main preliminary results by type of use

Taking into account the different uses of energy in households, energy used in Cooking concentrated the most of the global consumption (34.8%), followed by Water heating with 22.0% and Electrical appliances (21.4%). Energy consumption for Space heating corresponded to 19.1% of the total energy consumption.



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Figure 5. Distribution of energy consumption in household by final use



Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

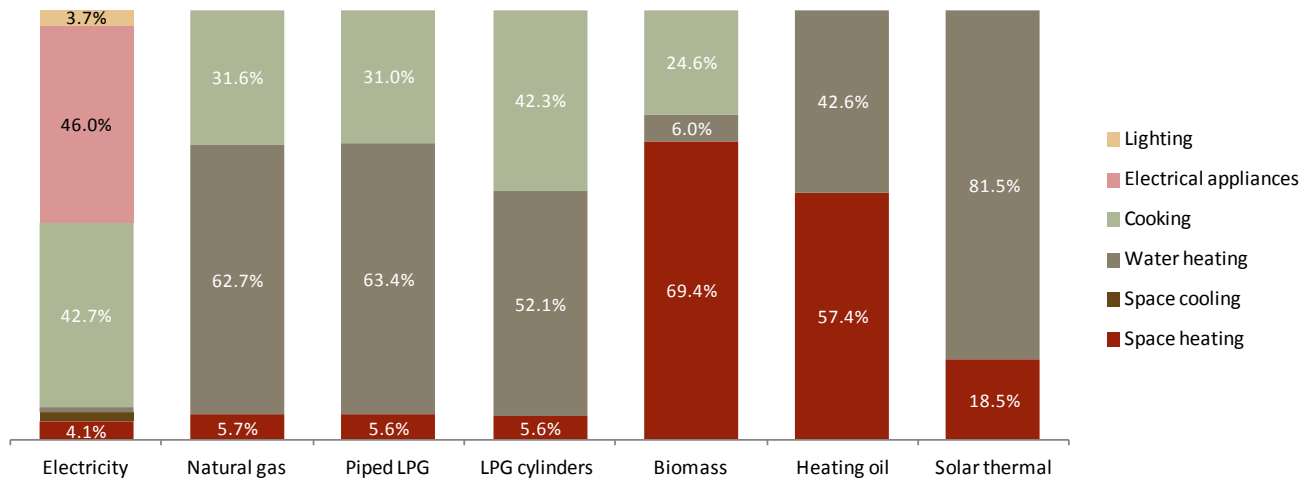
Electricity consumption has a very relevant role in the domestic sector, given that most of the appliances present in dwellings require this type of energy source, being clear the dependence on this energy source in today's society. Electricity consumption will be directly associated with the increase in thermal comfort and the growth in the number of electrical appliances available, but also with the availability of more efficient equipment in terms of consumption.

Considering the type of end use of Electricity, Cooking and Electrical appliances consumptions were the highest, accounting respectively for 42.7% and 46.0% of total Electricity consumption in 2020 (40.5% and 32.9%, respectively in 2010).



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Figure 6. Distribution of energy consumption in household by type of energy and by final use



Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

Analysing the distribution of energy sources by final use, Biomass was the main energy source used in Space heating (67.1%), although Heating oil already represents an important part of the energy consumption in this type of use (12.4%), as well as Electricity (10.0%).

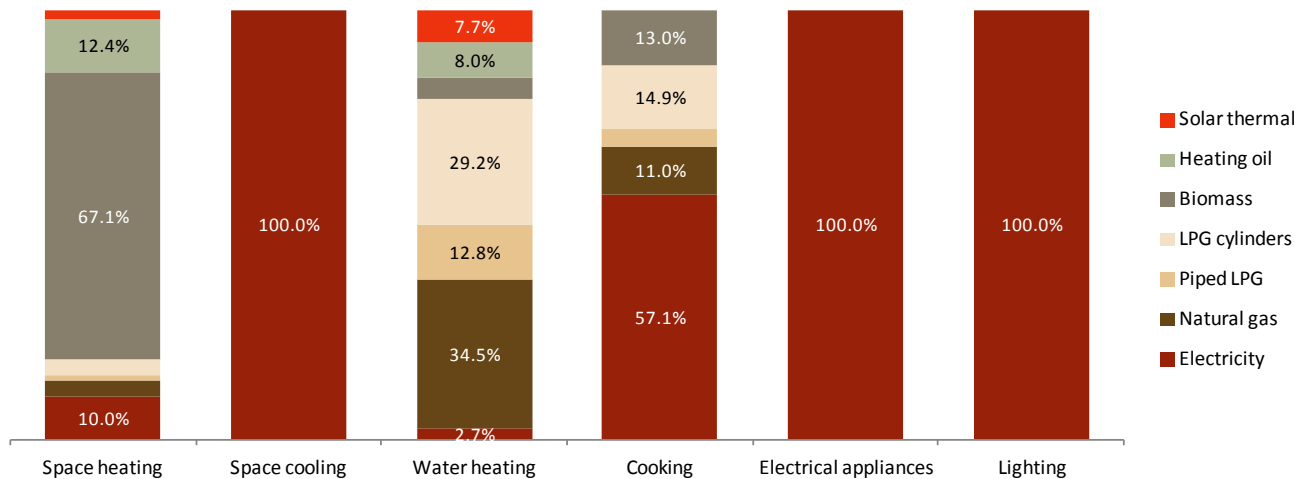
Water heating mainly used equipments whose energy source was LPG (29.2% through LPG Cylinder and 12.8% through Piped LPG). Equipment using Natural Gas came next (34.5%). It is noteworthy the growing weight of Solar thermal (7.7%; 3.0% in 2010) and the low expression of Electricity for this purpose (2.7%).

The energy consumption for Cooking (equipment used for cooking) gave preference to Electricity as the main energy source (57.1%), with LPG - Piped and Cylinders (18.9%), Biomass (13.0%) and Natural Gas (11.0%) also having a relevant weight.



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Figure 7. Distribution of energy consumption in household by final use and by type of energy



Source: INE/DGEG/ADENE - Survey on energy consumption in households (2020)

METHODOLOGICAL NOTES

1. Reference periods: information collected in the Survey on Energy Consumption in Household corresponded to the period from October 2019 to September 2020;
2. The sample defined for this survey is representative of the classic dwellings of usual residence on national territory and it was selected from a sampling base extracted from the National Housing Register (which is based on data from the 2011 Census). A sample of 11,350 dwellings was used to conduct this survey. A total of 5,201 interviews were succeeded (45.8%), of which 5,081 were considered valid (44.8%).
3. Electricity and Natural gas consumptions were based on 3 different sources (meter readings/consumptions based on the identification of the CPE/NIF and/or CUI/NIF, information contained in the respective invoices or the monthly expenditure). On the other hand, consumptions by type of use were based on the equipments that used these types of energy in the different domestic uses.
4. Piped LPG consumption was based on monthly expenditure (or the amount in m³ consumed monthly).
5. LPG Cylinders consumption was based on the number of cylinders consumed per year and their respective capacities.



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6. Biomass consumption (including Firewood, Pellets, Briquettes and Coal) was based on the quantities purchased (or expenditure) during the reference period.
7. Heating oil consumption was based on the quantities purchased (or expenditure) in the reference period.
8. Solar thermal energy consumption was based on m2 of installed panels.
9. Diesel oil, Gasoline and Mixture (vehicles) consumption were based on monthly expenditure or liters filled per month.

UNITS

%	Percentage
toe	Tonnes of oil equivalent
l	Litres
kg	Kilograms
kWh	Kilowatt-hour
t	Tonnes

CONVENTIONAL SIGNS

§	Deviation from quality standard/high coefficient of variation (>20%)
//	Not applicable

AVAILABILITY OF INFORMATION

The main statistical indicators with the preliminary results of the ICESD, in the "Industry and Energy" theme, are available on Statistics Portugal Portal on the date of this release.

Definitive results of this survey will be released in October 2021, with greater disaggregation of the information and additional data about equipment and comfort conditions in the households.