STUDIES AND RESEARCH

1999 EDITION

Energy consumption in households

European Union and Norway, 1995 survey
Central and eastern European countries, 1996 survey

Data 1995–1996

8

EUROPEAN COMMISSION

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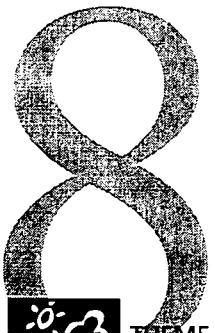

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eurostat STATISTICAL OFFICE OF THE EUROPEAN COMMUNITIES

L-2920 Luxembourg — Tél. (352) 4301-1 — Télex COMEUR LU 3423
rue de la Loi 200, B-1049 Bruxelles — Tél. (32-2) 299 11 11

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TABLE OF CONTENTS

SYMBOLS AND ABBREVIATIONS

TJ	Terajoule
MJ	Megajoule
km	kilometers
m^2	square meters
LPG	Liquefied Petroleum Gas
ECU	European Currency Unit
Mio	Million

MS	Member States

B	Belgium	DK	Denmark
D	Germany	GR	Greece
E	Spain	F	France
IRL	Ireland	I	Italy
L	Luxembourg	NL	Netherlands
A	Austria	P	Portugal
FIN	Finland	S	Sweden
UK	United Kingdom		
EU-15	European Union		
N	Norway		

C&EE	Central & Eastern European Countries

ALB	Albania	BGR	Bulgaria
CZE	Czech Republic	EST	Estonia
HUN	Hungary	LVA	Latvia
LTU	Lithuania	ROM	Romania
SVK	Slovak republic	SVN	Slovenia

SUMMARY

The present publication is a compilation of the results of the project "Energy consumption in households" covering the European Union and the Central and Eastern European Countries. The objective has been to obtain reliable data about the patterns of energy consumption in households by collecting the information from the demand side rather than the traditional method of collection from the supply side (producers or distributors).

Part I analyses the main results of the survey performed in the Member States of the European Union (excluding Italy) and Norway. DG XVII and Eurostat financed national surveys or studies and data refer to 1995. Following an analysis of the main results at the European Union level a comprehensive set of tables and graphs is enclosed showing national data together with an EU aggregate.

A similar project was undertaken in the MS in 1988 (reference year). A comparison of the results for the years 1988 and 1995 is also included for those Member States covered in the previous survey.

The methods used by the MS were different. In some cases, *ad hoc* surveys were performed whilst in others the results of existing surveys or studies were exploited for this purpose. An outline of the methods used at national level is also included in the report.

Part II shows the results obtained from surveys performed in the following Central and Eastern European Countries: Albania, Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia. The project was financed by DG IA under the PHARE programme and 1996 was taken as the reference year (1993 in the case of Poland).

Since it was the first time that an energy consumption in households survey was carried out, it was agreed to use a common questionnaire to obtain the information during the fieldwork, with local adaptations if required.

The organization and implementation of the project is described in detail before the assessment of the results.These are then evaluated, firstly by country and afterwards on a comparative basis not only with the other countries but also with other sources of information.

In both cases, Eurostat specified the common tables which countries should supply, thus assuring comparability of relevant statistics. The definitions used are outlined in the **Appendix**.

PART I

EUROPEAN UNION AND NORWAY

1995 SURVEY

LIST OF ORGANISATIONS WHICH PERFORMED THE SURVEYS/STUDIES ON HOUSEHOLD ENERGY CONSUMPTION

Belgium :	
Wallonne and Brussels	Institute Wallon de Developpement Economique et Social
Flanders	VITO (Vlaamse Instelling voor Technologisch Onderzoek)
Denmark	Danmarks Statistik
Germany	DIW (Deutsches Institut für Wirtschaftsforschung)
Greece	National Statistical Service of Greece
Spain	Instituto Nacional de Estadistica
France	CEREN (Centre d'Etudes et de Recherches Economiques sur l'Energie)
Ireland	Irish Energy Centre
Luxembourg	Agence de l'Energie
Netherlands	Central Bureau voor de Statistiek
Austria	Institut für Energiewirtschaft, Technische Universität Wien
Portugal	Direcção Geral de Energia
Finland	Statistics Finland
Sweden	Statistics Sweden
United Kingdom	Building Research Establishment
Norway	Statistics Norway

INTRODUCTION

Household energy consumption is one of the important items of household expenditure. In 1995, households in the European Union (excluding Italy) spent about ECU 111.6 billion on energy (not including transport fuels). In that year, around one quarter of the final energy consumption in the Union corresponded to households.

Traditionally, energy statistics have been collected and analysed from the supply point of view, as it is the most cost-effective way of obtaining reliable information about energy matters. Quantitative data for preparing the energy balances and price information on the main types of fuels are regularly collected by the European Commission services.

This regular collection of statistics provides important assistance in the development of a coherent energy policy. This policy consists of a series of objectives which comprise the following :

- to improve the security of supply, increase self-sufficiency in production and diversify sources of supply;

- to reduce costs and increase competitiveness through the liberalisation of the energy markets;

- to find adequate solutions to environmental problems created by energy use;

- to rationalise energy use;

Available statistics already adequately cover the need for information implicit in the objectives listed above. However, a direct survey of energy consumption in households, instead of surveying deliveries from energy suppliers, allows a considerable improvement in the quality of collected statistics.

For this reason, and following the conclusions of a working group composed of experts in the area of energy consumption brought together by Eurostat, a project was launched to cover the specific issue of household energy consumption from the demand point of view. With the participation of DG XVII, the relevant contracts were drawn up with Member States in 1988 and 1989. The reference year was 1988 and the method of obtaining the results required by Eurostat and DG XVII were left to each Member State: ad hoc surveys, addition of household energy-relevant questions to existing surveys, specialised studies,etc.

Some years later and taking 1995 as the reference year, the exercise was repeated with the objective of refining the collection methods and obtaining a reliable and comparable structure of statistical information about this subject. In addition, the project was extended to Austria, Finland and Sweden which became Member States in 1995, and to Norway. Unfortunately, at the time of issuing this publication the results for Italy are unavailable, although a contract has already been signed for performing the work.

Eurostat and DG XVII have financed the national studies/surveys and the method of obtaining the data has again been left to each Member State but with the requirement of completing a common set of harmonized tables. The quality and detail of the results obtained vary from Member State to Member State because of the different data collection methods employed. Member States which implemented ad hoc surveys obtained detailed and complete statistical information while others using the results of existing surveys and studies obtained fairly satisfactory statistics.

This Eurostat publication "Energy Consumption in Households" contains information on the following topics :

- structure of households and present state of dwellings with emphasis on parameters which influence energy consumption;

- structure of energy consuming equipment by type of use. The types of use considered were space heating, water-heating, cooking and other (i.e. electrical appliances);

- energy consumption by type of use and fuel type. An extensive number of fuels were considered;

- expenditure on energy consumed by households;

- information on private car transportation and associated fuel consumption and expenditure, although they were considered separately and not as part of household energy consumption.

The results are presented in comparative tables and figures, and in most of the cases data for EU-15 (excluding Italy) is also included. Also there is a section where, through tables and figures, the household energy consumption results for each Member States from both studies (1988 and 1995) are compared, although it has to be taken with care since climate differences in those years have not been considered.

1. ANALYSIS OF RESULTS

At the time of issuing this publication the results of the Italian survey for 1995 were not available. Consequently , the picture of energy consumption in EU households cannot be considered complete. However, the lack of statistics for Italy does not invalidate the general conclusions of the study.

1.1 Structural data

In 1995, there were about 125 million households in the EU. In Norway, the number of households was almost 2 million. The most frequent size of an EU household (31.2% of households) was two persons, followed by one person (28%), three persons (17%), four persons (15.5%) and five persons or more (8.3%). In northern MS and Norway about two-thirds of households comprised one or two members while in southern countries the average size was closer to three members. Ireland can be considered an exception since its most common household size was five persons or more. The EU average number of persons per household was 2.4.

The total number of dwellings was 134.3 million, most of them principal dwellings (93%). In some MS and Norway, the number of households reported was equal to the number of dwellings whilst in others the latter was greater due to the number of secondary dwellings (usually holiday homes used in summer or for entertainment). Conclusions for energy consumption patterns should be based on principal dwellings as these are the normal residences of households in which energy consumption is accounted.

As regards the type of tenure, owned dwellings represented the majority (about 56%), and rented dwellings 43.3%. In some MS like Spain, Ireland or Greece the percentage of owned dwellings was high (about 80%) while in others, such as Germany or the Netherlands, rented dwellings were more numerous.

As regards the physical structure of the dwelling, two-thirds of dwellings were single houses and the other third flats. However, in Spain, Sweden, Greece and Austria flats were the more common. Ireland, Luxembourg, the United Kingdom and Germany had a high percentage of single houses.

The age of a dwelling affects energy consumption since in older dwellings heat losses are greater. Although the project's work programme defined three periods to cover this subject, the data available in each country was not exactly adapted to these periods. However, it can be concluded that around 68% of EU dwellings were built after the period 1945-47, more than 28% after the period 1973-75 (first oil crisis). In Norway, 40% of dwellings were built after the period 1973-75.

Data on insulation was not available for every MS, but that data which was available indicated that Norway and the northern MS of the Union with a colder climate (Denmark, Finland, Sweden and the United Kingdom) generally had the best insulation. The types of insulation most widely available were double-glazing and loft/roof insulation.

Finally, the average household floor area in the EU was 89.8 m^2 (not a weighted average). The MS with households with the largest floor areas were Denmark (107.6 m^2) and the Netherlands (105 m^2, 1988 data) whilst the smallest floor areas were found in Germany and Finland (78 m^2). In Norway, it was 112 m^2.

1.2 Household energy consumption

Total energy consumption

Energy consumption in EU households in 1995 was 8 799 918 TJ. This represented 26.9% of total final EU energy consumption (excluding Italy) in that year. Germany's consumption was the highest in the Union (30.7% of total), followed by France (20%) and the United Kingdom (18.9%), corresponding to their relatively high number of households.

The average consumption per household was 70 536 MJ. However, southern MS (Greece, Portugal and Spain) had considerably lower average rates of consumption per household, reflecting their warmer climates . On the other hand Belgium, Austria, Finland, Sweden, Denmark and Norway had higher rates of consumption per household compared with the average EU figure. Data for Germany, France, Netherlands and the United Kingdom were close to the average. Rates of consumption per household in Ireland and Luxembourg were the highest. In the case of Ireland, this may be explained by the large size of households.

By type of fuel, natural gas was the most consumed commodity (35.6%), followed by fuel/gas oil (22.5%), electricity (21.3%), wood (8%), district heating (5.2%), solid fuels (3.9%) and LPG (3.3%). The Netherlands and the United Kingdom were the MS with the highest percentage of consumption of natural gas as a consequence of being the largest natural gas producers of the Union and having an extensive distribution network. In the case of fuel/gas oil, Greece, Belgium and Luxembourg were the MS with the highest rates of consumption, whilst for Finland, Sweden, Norway and Spain this was electricity.

Space heating

Total household energy consumption for space heating in 1995 was 6 033 162 TJ, representing 68.6% of household energy consumption. Average space heating consumption per household was 48 359 MJ. In all the MS except for Portugal and Spain, more than 50% of household energy consumption was for space heating.

About 2% of dwellings in the Union had no space heating system. These dwellings were mainly concentrated in Portugal and Spain. In around 23% of dwellings the heating system was non-central and 75% had central heating systems. In Norway, 90% of dwellings had non-central heating systems.

Portugal, Spain and Greece were the MS with the highest proportion of non-central heating while Sweden, Finland and Denmark had the biggest percentages of central heating (in the case of Sweden it was 100%). These three Scandinavian MS also made the greatest use of district heating. These trends may be explained by the fact that central heating is more appropriate for continuous use in colder places whilst in warmer places cheaper equipment is used for heating purposes.

By type of fuel, heating systems using natural gas were the most frequently used type for space heating, being used in around 38.7% of dwellings (4.6% in non-central systems and 34.1% in central heating systems). Again, the Netherlands and the United Kingdom were the MS where these systems were used the greatest in relative terms, but it was also the most used type for space heating in Germany and France. Fuel/gas oil systems were used in about 21% of dwellings (2% in non-central systems and 19% in central heating systems) and was the predominant type for space heating in Belgium, Greece, Ireland, Luxembourg and Austria, as

well as being quite important in Germany. Electricity heating systems were used in about 16.7% of dwellings (7.7% non-central and 8.9% central heating systems) and was the most widely-used type of heating in Portugal, Spain and Norway, and was also very significant in France.

Water-heating

Total household energy consumption for water-heating in 1995 was 1 324 631 TJ, representing 15.1% of household energy consumption. Average water-heating consumption per household was 10 618 MJ. It should be stressed that reported quantities did not comprise solar heat, which is especially important in Greece.

About 2% of dwellings had no water-heating equipment, using some form of cooking equipment or other means for providing hot water. In around 49% of dwellings, the water-heating equipment was not connected to a central heating system.

Greece, Portugal, Spain and France were the MS with the highest proportion of water-heating equipment not connected to central heating, but it was also the predominant method of producing hot water in Belgium, the Netherlands, Austria and Norway. Sweden, Finland and Denmark had the biggest percentages of hot water produced in connection with central heating (in the case of Sweden it was 100%), but it was also produced in the same way in the majority of dwellings in Ireland, the United Kingdom, Luxembourg and Germany. Again, in the three Scandinavian MS, district heating was used very extensively.

By type of fuel, natural gas systems were the most frequently used fuel for producing hot water across the Union. It was used in about 34.4% of dwellings (11.4% not connected and 23% connected to central heating). The Netherlands and the United Kingdom were the MS where the use of these systems was the highest in relative terms, but it was also the most used type for water-heating in Belgium and Luxembourg. Electrical systems were used in about 30.7% of dwellings (around 27.6% not connected and 3.1% connected to central heating). This system was the most important type in Germany, France, Greece, Austria and Norway. Fuel/gas oil systems were used in about 13% of dwellings (all of them connected to central heating) and was the most frequently used type for producing hot water in Ireland but its use was also quite widespread in Germany. LPG systems were utilised in around 9% of dwellings, and were the most important systems for hot water production in Spain and Portugal.

Cooking equipment

Total houseldold energy consumption for cooking in 1995 was 468 944 TJ, representing 5.3% of household energy consumption. Average energy consumption for cooking per household was 3 759 MJ.

By type of fuel, electricity was the most frequently used energy commodity for cooking. It was used in 49.2% of dwellings – Finland, Sweden and Norway being its main users in relative terms, but it was also the predominant type of energy commodity for cooking in Belgium, Germany, Greece, Ireland and Austria. Natural gas was consumed in about 22.6% of dwellings and was the most important type of fuel in the Netherlands and the United Kingdom. LPG was utilised in around 12.5% of dwellingsand was the most frequently used type of fuel for cooking in Spain and Portugal. Appliances combining gas and electricity were used in 13.2% of dwellings, and was the most frequently used method of cooking in France.

Electrical appliances

Total household energy consumption for electrical appliances in 1995 was 973 181 TJ representing 11.1% of household energy consumption. Average energy consumption for electrical appliances per household was 7 801 MJ. The percentages of energy consumption for electrical appliances ranged from 24.2% in Spain to 5% in Belgium.

As regards the availability of appliances, television sets (in 96.8% of dwellings), washing machines (85.7%) and refrigerators (79.1%) were the most frequently used electrical appliances while dishwashers (29.3%), tumble driers (26.2%) and combined refrigerators/freezers (24.6%) were less common across the Union.

1.3 Expenditure on household energy consumption

Total expenditure on household energy consumption in 1995 was 111 672 million ECU (not including expenses for transportation), corresponding to an average expenditure per household of 895 ECU. Households in Luxembourg spent more than 2 000 ECU on energy, more than any other MS. Portugal (570 ECU) and Spain (651 ECU) recorded the lowest expenditure per household in the Union. Denmark, Sweden, Finland, France and Norway spent more than 1 000 ECU while expenditure in the remaining MS ranged from 700 to 900 ECU per household.

By type of fuel, electricity represented 52% of household energy expenditure although only 21% in terms of consumption. This was due to the fact that electricity prices are much higher than prices for other types of fuel. Total expenditure on electricity was 59 085 million ECU with an average of 474 ECU per household. Natural gas represented 22% of energy expenditure or 24 659 million ECU (198 ECU per household). Expenditure on fuel/gas oil was 14 132 million ECU (13% of energy expenditure) with an average of 113 ECU per household.

As regards energy uses, expenditure was 54 684 million ECU on space heating (50% of total expenditure), 17 090 million ECU on water heating (15%), 8 272 million ECU on cooking (7%) and 31 625 million ECU on other/electrical appliances (28%). Average expenditure per household was : space heating, 438 ECU ; water heating, 137 ECU ; cooking, 66 ECU and other, 253 ECU.

1.4 Private car transportation

The total number of private cars in 1995 was 116.8 million. As for engine size, about 42.% of them were between 1 500 and 2 000 cc and 34% between 1 000 and 1 500 cc. Petrol was the fuel used in approximately 84% of cars while only in Belgium, France and Austria was diesel used in more than 20% of cars. LPG was also used in 0.4% of cars across the Union, although in the Netherlands the proportion reached a significant 6.7%.

As regards household car ownership, the average number of cars per household was 0.9, ranging from 0.6 in Greece to 1.4 in Luxembourg. In most of the MS this average was between 0.8 and 1.0. About 27.5% of households did not have a car while 53% had one car only. More than 19% of households had more than one car. France and the United Kingdom were the only MS with a percentage higher than this EU average figure.

Total consumption on motor fuels was 131 580 million litres representing a total expenditure of 100 436 million ECU. Petrol accounted for 79% of total consumption (71% of it unleaded), 20% was diesel and 1% was LPG (almost all in the Netherlands).

Average consumption per car was 1 127 litres – it was higher for diesel and LPG cars than for petrol ones. Sweden was the MS with the highest average consumption per car (1 493 litres) while the lowest consumption was in Portugal (933 litres per car).

Finally, the average expenditure per car reached 860 ECU. It was fairly similar for the three types of motor fuels but slightly lower for petrol

2. COMPARATIVE TABLES AND FIGURES

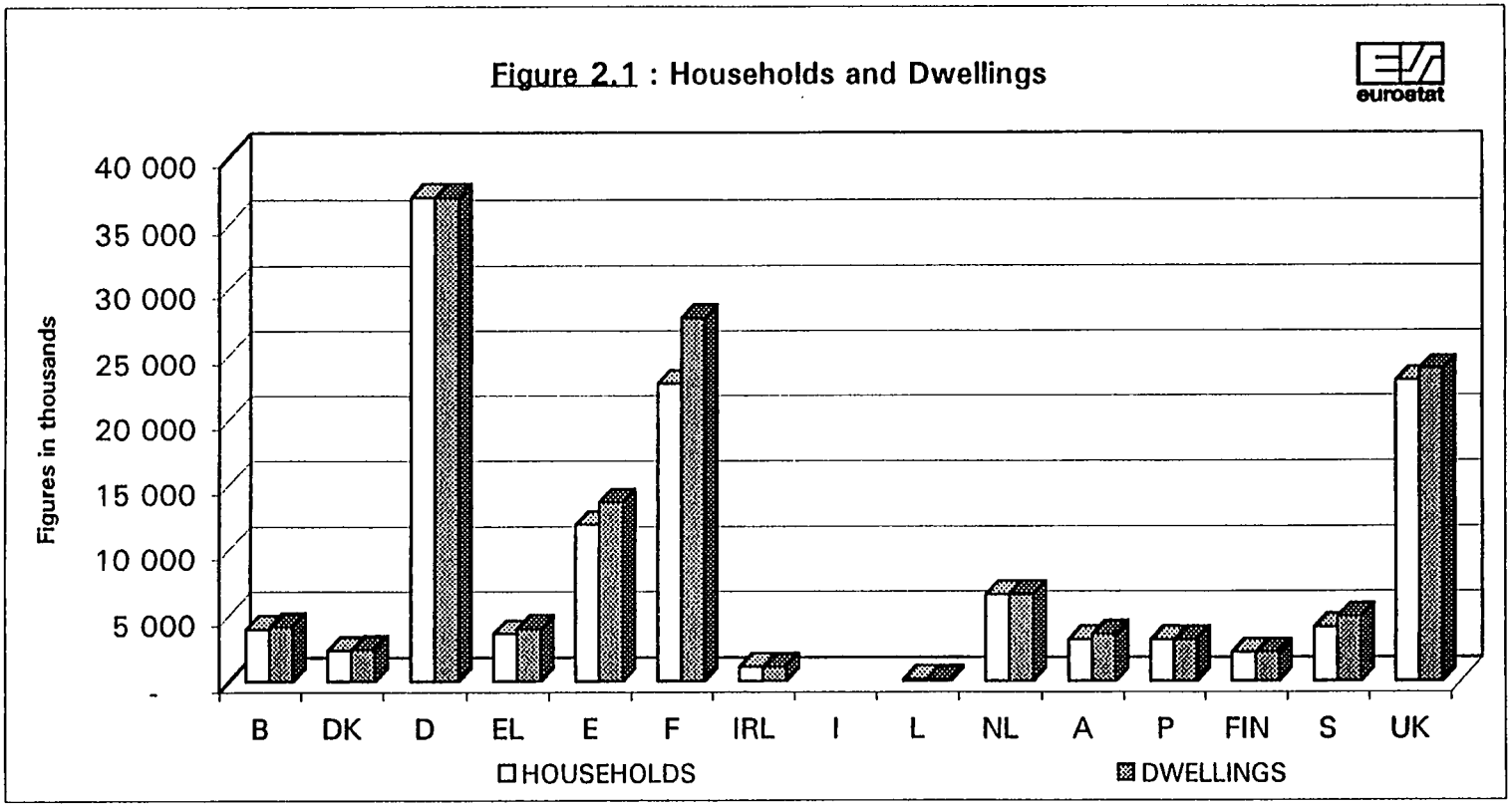
2.1. STRUCTURAL DATA

2.1.1 POPULATION, HOUSEHOLDS AND DWELLINGS

Population data: Census-Round 90-91

Figures in thousands

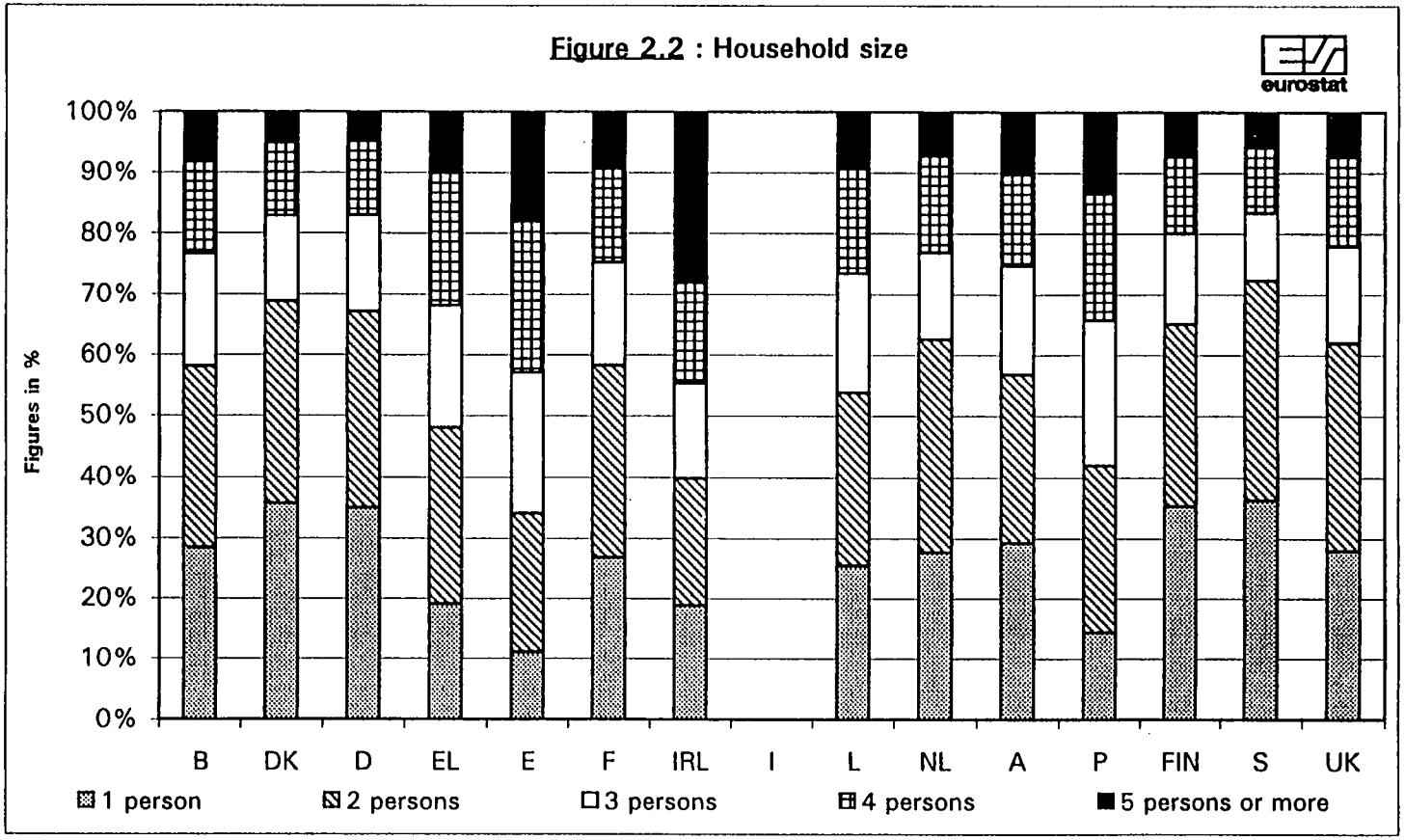
	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
POPULATION	9 979	5 146	79 753	10 260	38 872	56 652	3 526	56 778	385	15 070	7 796	9 863	4 998	8 587	56 467	364 132	4 248
HOUSEHOLDS	3 953	2 332	36 938	3 603	11 933	22 720	1 100		145	6 530	3 131	3 140	2 181	4 112	22 940	124 758	1 995
DWELLINGS	4 134	2 437	36 938	3 997	13 645	27 713	1 123		145	6 530	3 570	3 140	2 224	4 888	23 833	134 317	1 995



2.1.2 DISTRIBUTION OF HOUSEHOLDS BY SIZE

%

HOUSEHOLD SIZE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
1 person	28.4	35.6	34.9	19.0	11.0	26.8	18.8		25.5	27.7	29.1	14.4	35.2	36.2	28.0	28.0	39.6
2 persons	29.6	33.1	32.1	29.0	23.0	31.5	21.0		28.3	34.9	27.6	27.5	29.9	36.1	33.9	31.2	28.4
3 persons	18.6	14.0	15.8	20.0	23.0	17.0	15.4		19.7	14.3	18.0	23.7	14.9	11.0	16.0	17.0	13.3
4 persons	15.2	12.3	12.5	22.0	25.0	15.5	16.8		17.3	16.0	15.0	21.0	12.8	11.0	14.8	15.5	12.4
5 persons or more	8.2	5.0	4.7	10.0	18.0	9.3	28.0		9.3	7.2	10.2	13.4	7.3	5.7	7.3	8.3	6.3
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100



2.1.3 DISTRIBUTION OF DWELLINGS: PRINCIPAL OR SECONDARY

%

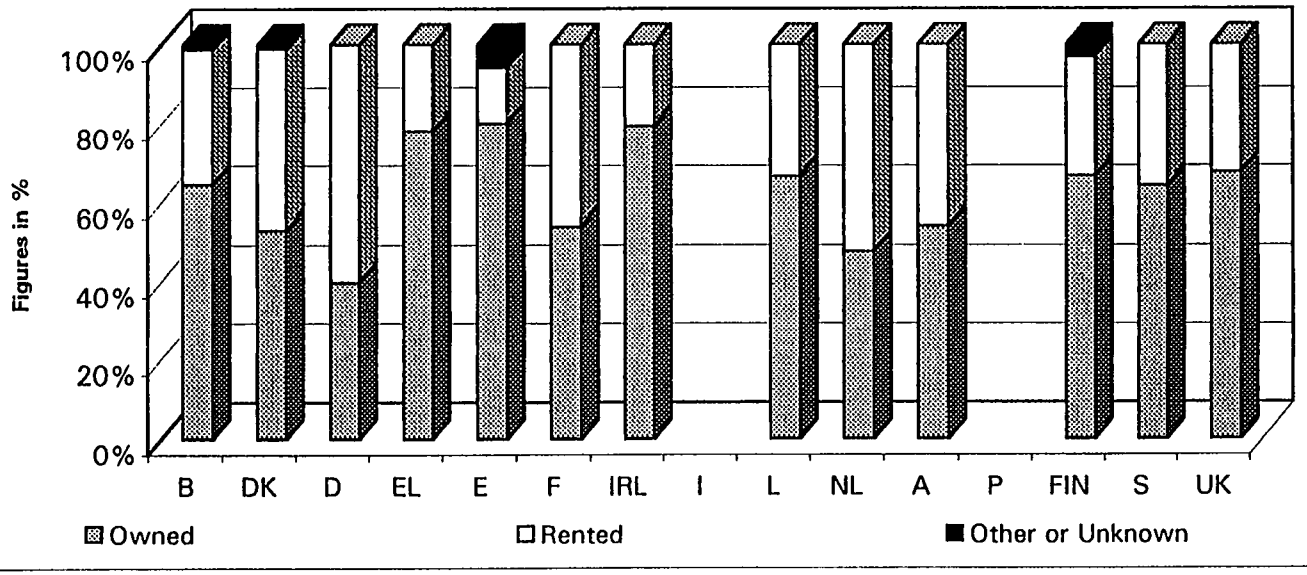
DWELLING TYPE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Principal	92.7	95.7	99.6	90.0	87.0	82.0	97.9		99.4	100.0	87.5	100.0	98.1	88.0	96.8	92.9	90.5
Secondary	7.0		0.4	10.0	13.0	11.0	2.1		0.6		12.5		1.9	12.0	3.2	5.6	9.5
Other		4.3				7.0										1.5	
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

2.1.4 DISTIBUTION OF DWELLINGS BY TENURE

%

TENURE TYPE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Owned	64.3	52.9	39.7	78.0	80.0	54.0	79.3		66.4	47.5	54.1		66.5	64.0	67.5	56.0	62.0
Rented	34.4	46.0	60.3	22.0	14.0	46.0	20.7		33.6	52.5	45.9		30.3	36.0	32.5	43.3	24.0
Other or Unknown	1.3	1.1			6.0								3.2			0.7	14.0
TOTAL	100	100	100	100	100	100	100		100	100	100		100	100	100	100	100

Figure 2.3 : Dwellings - Type of Tenure

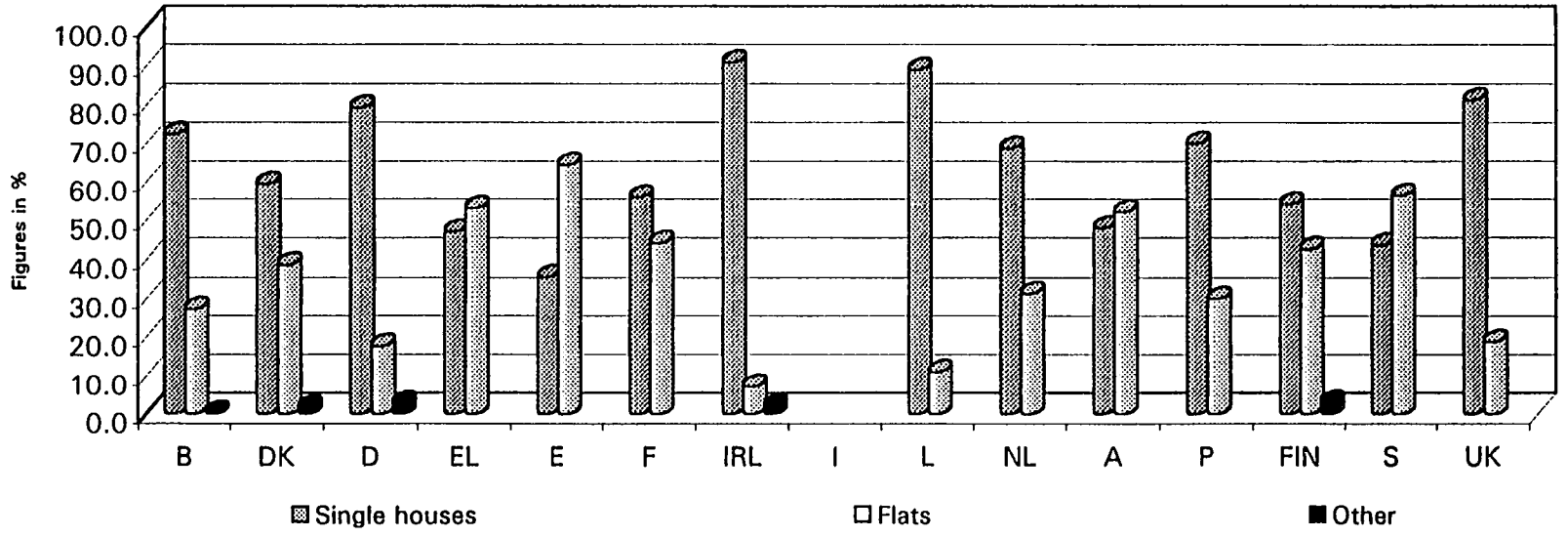


2.1.5 DISTIBUTION OF DWELLINGS BY HOUSING TYPE

%

HOUSING TYPE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Single houses	72.5	59.5	79.4	47.0	35.5	56.0	90.9		88.9	68.7	47.9	70.0	54.2	43.6	81.2	66.3	73.0
Flats	27.2	38.7	17.7	53.0	64.5	44.0	7.2		11.1	31.3	52.1	30.0	42.7	56.4	18.8	32.8	27.0
Other	0.3	1.8	2.9				2.0						3.1			0.9	
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

Figure 2.4 : Dwellings - Housing Type



2.1.6 DISTIBUTION OF DWELLINGS BY CONSTRUCTION PERIOD *(1)*

%

CONSTRUCTION PERIOD	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Before 1945-47	44.1	51.7	31.1	9.0	10.0	37.0	34.1		39.2	23.4	31.3	28.9	10.4	27.1	45.6	31.9	27.0
1945-47 to 1973-75	28.4	27.3	44.3	53.0	49.0	32.0	23.4		30.0	42.1	39.7	35.0	43.9	50.0	35.2	39.6	33.0
After 1973-75	27.5	21.1	24.6	38.0	41.0	31.0	42.5		30.9	34.5	29.0	34.9	44.8	22.9	19.2	28.4	40.0
Unknown												1.2	0.9			0.0	
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

(1) Periods according to the work program in order to give a homogeneous information.

2.1.7 DISTRIBUTION OF DWELLINGS BY AVAILABILITY OF INSULATION

%

INSULATION TYPE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
No insulation	21.0	1.0		77.0		21.0	13.0		55.0	14.0	39.0	22.7			14.9		3.0
Loft/roof insulation	43.0	75.5	42.0	16.0		71.0	72.0		35.0	53.0	37.0		100.0	100.0	90.2		77.0
Cavity wall insulation	42.0	64.5	24.0	12.0		68.0	42.0		2.0	47.0	26.0		100.0	100.0	24.7		85.0
Floor insulation	12.0	62.6	15.0	6.0		24.0	22.0		5.0	27.0	11.0		100.0	100.0	4.1		88.0
Double glazing	62.0	90.8	88.0	8.0		52.0	33.0		20.0	78.0	53.0	3.0	100.0	100.0	61.3		98.0

2.1.8 HOUSEHOLD AVERAGE FLOOR AREA

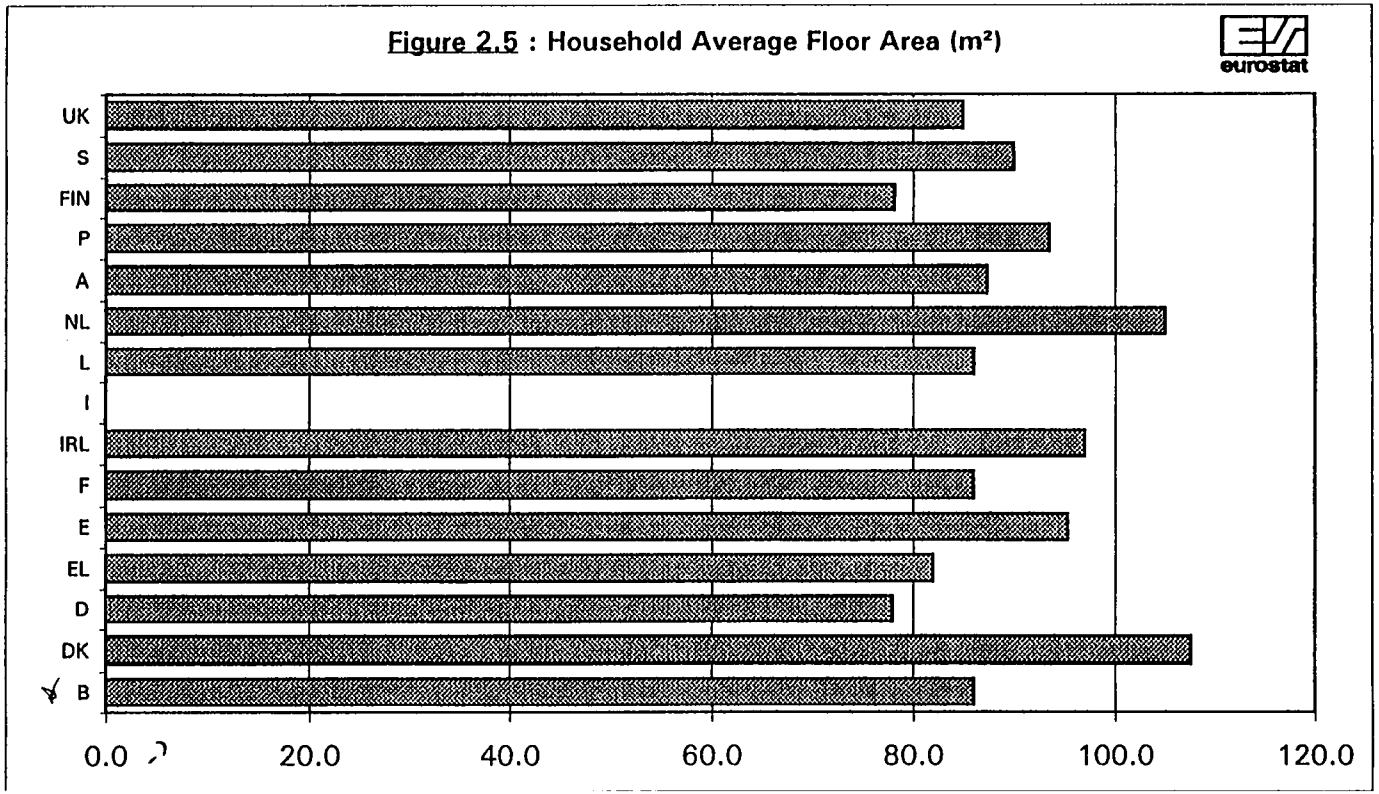
m²

	B	DK	D	EL	E	F	IRL	I	L	NL*(2)*	A	P	FIN	S	UK	EU-15*(3)*	N
FLOOR AREA	86.0	107.6	78.0	82.0	95.3	86.0	97.0		86.0	105.0	87.4	93.5	78.2	90.0	85.0	89.8	112.0

(2) 1988 figure

(3) Unweighted average

Figure 2.5 : Household Average Floor Area (m²)



2.2. SPACE HEATING

2.2.1 AVAILABILITY OF SPACE HEATING EQUIPMENT BY TYPE OF FUEL

eurostat

% of dwellings

	B	DK	D	EL(4)	E	F	IRL	I	L	NL	A	P(4)	FIN	S	UK(5)	EU-15	N
NO HEATING		0.0		0.8	10.4		1.8					27.4				1.7	
NON-CENTRAL HEATING	36.6	8.9	22.0	42.5	49.7	14.9	26.4		13.7	17.3	32.0	69.6	7.1		16.4	23.2	90.0
Fuel/gas oil	6.8	0.7	3.4	15.1	0.3	1.5	2.3		3.3	0.2	4.5				0.0	2.0	8.0
Natural Gas	14.1	0.2	4.2		0.1	0.5	1.0		3.1	16.5	6.7				10.9	4.6	
Electricity	6.2	6.2	5.9	10.1	29.4	5.3	1.6		2.2	0.1	9.0	39.1			2.5	7.8	55.0
Solid fuels	6.9	0.6	7.8	0.6	1.9	1.8	19.1		2.2	0.1	3.1	2.0			2.5	3.7	
Wood	1.2		0.7	16.6	6.2	5.5	1.3		2.2	0.3	8.2	34.1	7.0			3.5	22.0
LPG	1.1			4.0	11.2		1.1		0.6	0.1	0.2	6.8			0.5	1.5	
Other or mixed	0.3	1.2		0.0	0.6	0.3			0.1	0.0	0.3		0.1			0.1	5.0
CENTRAL HEATING	63.4	91.1	78.0	56.7	39.9	85.1	71.8		86.3	82.7	68.0	3.0	92.9	100.0	83.6	75.1	10.0
Fuel/gas oil	35.7	23.2	30.5	54.9	14.3	18.7	26.2		51.2	0.7	21.4	0.0	18.0	12.4	3.0	19.0	2.3
Natural Gas	24.1	11.5	33.2	0.1	12.1	31.8	14.7		28.1	78.1	18.2		0.4	0.4	65.5	34.1	
Electricity	2.7	0.7	0.5	0.6	6.0	24.8	2.3		4.8	0.4	1.1	0.7	21.2	19.4	9.8	8.9	0.9
Solid fuels	0.4	0.7	1.6	0.5	2.4	2.4	21.4		0.2		3.8		0.2		3.2	2.1	
Wood	0.0	0.3	0.5	0.5	1.8					0.1	10.1	2.0	4.7	2.2		0.8	0.3
LPG	0.4			0.1	3.3	2.0	1.1		1.2	0.2	0.8	0.3			0.8	0.9	
Other or mixed		0.2			0.0	0.7	6.1		0.8	0.1	1.5	0.0	0.3	24.6		1.1	5.7
District Heating	0.1	54.5	11.7			4.7				3.1	11.1		48.1	41.0	1.3	8.2	0.8
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100
ADDITIONAL HEATING EQUIPMENT	42.6	-	43.5	22.0	35.0	46.6	47.0		-	52.7	21.5	1.4	25.3	17.5	41.9	39.3	83.0

(4) Some dwellings use more than one type of fuel at the same time.

(5) Figures are based on the number of households

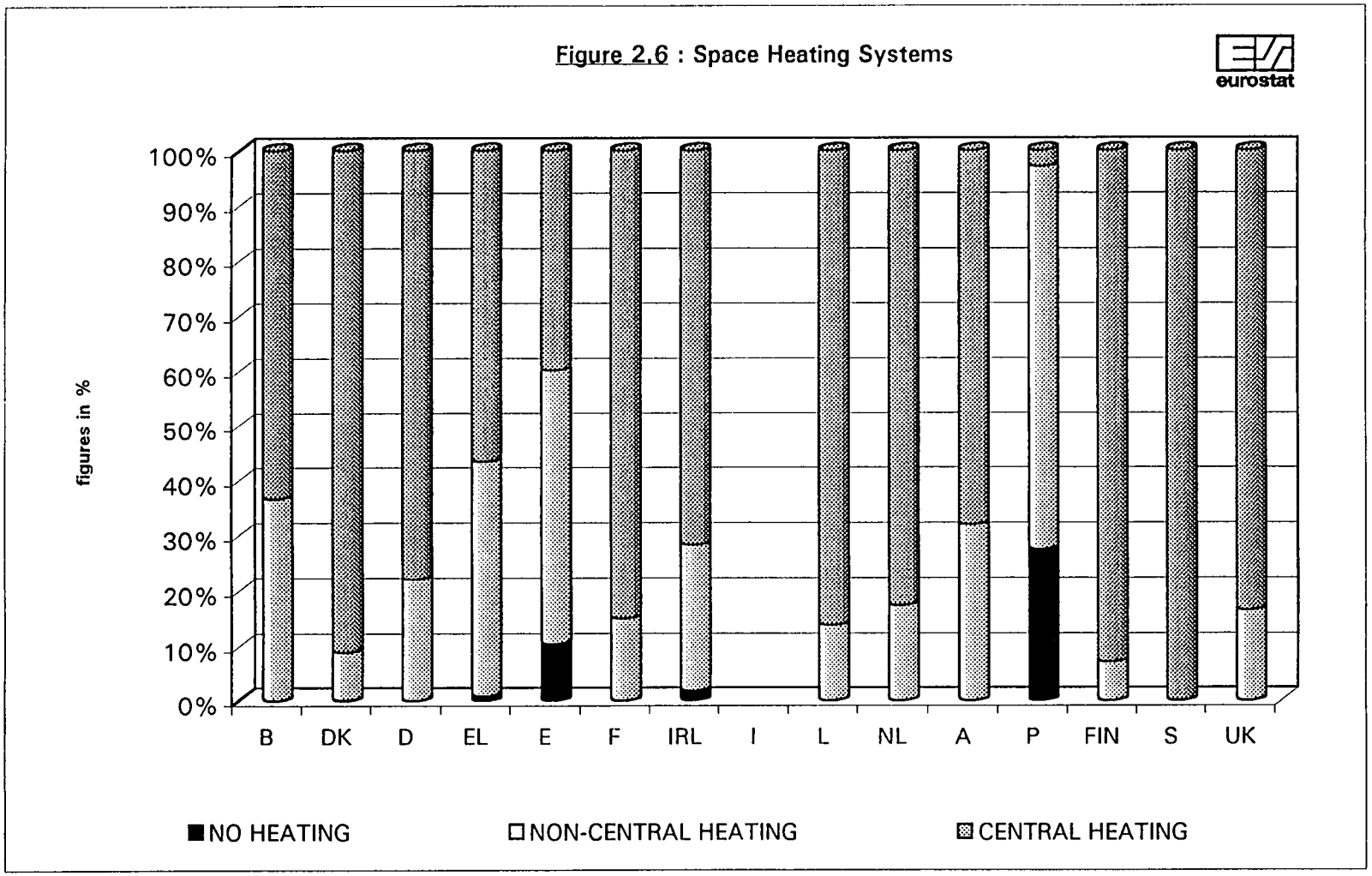


Figure 2.6 : Space Heating Systems
eurostat
figures in %
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK
NO HEATING
NON-CENTRAL HEATING
CENTRAL HEATING

2.3. WATER-HEATING (W.H.) EQUIPMENT

2.3.1 AVAILABILITY OF WATER-HEATING EQUIPMENT BY TYPE OF FUEL

eurostat

% of dwellings

	B	DK(6)	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK(7)	EU-15	N
NO WATER-HEATING EQUIP.	4.0	0.0	0.8	5.3	3.2	2.2	4.6		0.2		1.9	19.8			0.2	1.9	
W.H. NOT CONNECTED TO CENTRAL HEATING	59.0	8.9	46.8	83.3	74.9	63.0	23.5		25.2	54.2	55.6	79.2	7.0		28.9	49.3	90.0
Natural Gas	23.0	0.2	12.6	0.0	7.0	12.4	0.5		9.5	43.5	17.7	6.2			6.6	11.4	
Electricity	30.0	6.2	30.5	65.9	13.3	45.1	17.0		15.7	10.7	35.0	13.7	7.0		19.9	27.6	90.0
Wood											1.1					0.0	
LPG	6.0		0.5	0.4	53.5	5.5	0.1					55.5			0.1	8.2	
Other		2.5	3.2	17.0	1.1		6.0				1.8	3.8			2.1	2.1	
W.H. CONNECTED TO CENTRAL HEATING	37.1	91.1	52.4	11.3	22.0	34.8	71.9		74.6	45.8	42.6	1.0	93.0	100.0	70.9	48.8	10.0
Fuel/gas oil	22.0	23.2	24.0	10.9	7.8	10.3	27.1		35.6	0.1	12.4	0.0	18.0	11.0	2.9	12.8	2.3
Natural Gas	14.0	11.5	12.9	0.0	11.3	18.8	15.2		33.3	43.0	11.7		0.4	0.4	63.2	23.0	
Electricity		0.7	7.3		0.0				5.7				21.0	21.0		3.1	0.9
Solid fuels	0.1	0.7	1.2	0.2	0.5	1.0	22.1				1.4		0.2		3.0	1.4	
Wood		0.3		0.1							9.3	0.8	5.0	2.0		0.4	0.3
LPG	0.1			0.1	2.3	1.1	1.2				0.8	0.2			0.7	0.6	
Other or mixed	0.9	0.2			0.0	0.0	6.3			0.2	1.0		0.3	25.0		1.0	5.7
District Heating		54.5	7.0			3.5				2.6	5.8		48.0	41.0	1.2	6.4	0.8
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

(6) Same values as in space heating

(7) Figures are based on the number of households

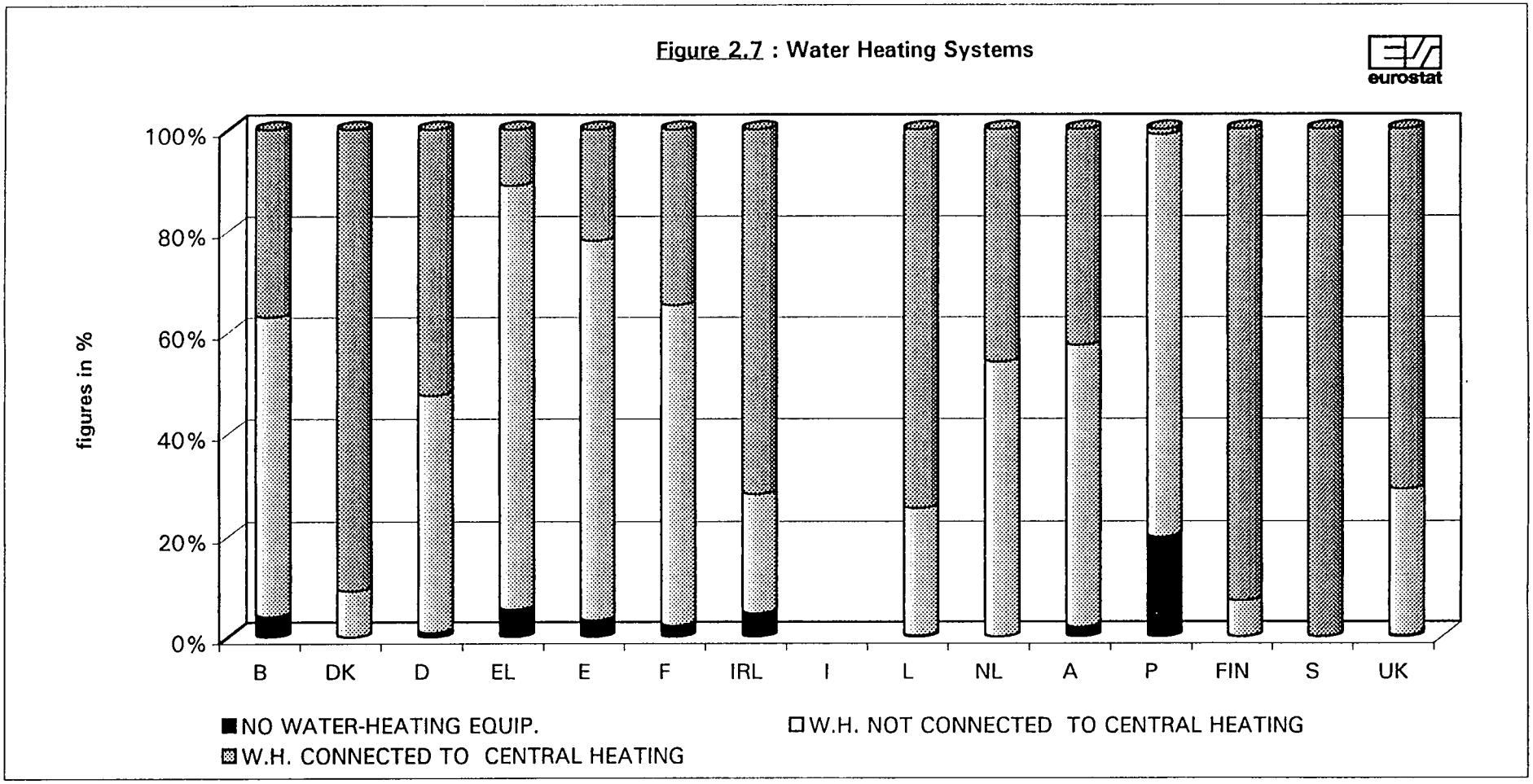


Figure 2.7 : Water Heating Systems
eurostat
figures in %
100%
80%
60%
40%
20%
0%
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK
NO WATER-HEATING EQUIP.
W.H. NOT CONNECTED TO CENTRAL HEATING
W.H. CONNECTED TO CENTRAL HEATING

2.4 COOKING EQUIPMENT

2.4.1 COOKING EQUIPMENT BY TYPE OF FUEL

eurostat

% of dwellings

	B	DK(8)	D	EL	E	F	IRL	I	L(8)	NL	A	P(8)	FIN	S	UK	EU-15	N
NO COOKING EQUIPMENT				1.0	0.1	1.0	3.3		0.2			0.6			0.5	0.4	
COOKING EQUIPMENT	100.0		100.0	99.0	99.9	99.0	96.7		99.8	100.0	100.0	99.4	100.0	100.0	99.5	99.6	100.0
Natural Gas	29.9		15.0	0.0	17.5	15.5	10.7			59.0	21.0		1.8	0.0	46.9	22.6	
Electricity	52.6		83.0	74.4	16.0	17.0	50.8			26.0	71.0		98.0	96.5	38.6	49.2	100.0
LPG	13.6		4.0	20.2	63.7	17.6	20.5				1.0				1.5	12.5	
Wood + Solid fuels			5.0	4.5			10.8				3.0		0.2		0.4	1.8	
Gas + Electicity	3.9					48.9	0.8			15.0	4.0			3.5	12.1	13.2	
Other					2.7		3.1									0.3	
TOTAL	100		100	100	100	100	100		100	100	100	100	100	100	100	100	100

(8) Figures not available

2.5. ELECTRICAL APPLIANCES

2.5.1 AVAILABILITY OF ELECTRICAL APPLIANCES

eurostat

% of households

ELECTRICAL APPLIANCES	B(9)	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Refrigerator (R)	67.0	41.4	82.0	74.0	99.0	98.8	50.9		97.0	63.1	98.0	83.8	97.0	95.6	44.0	79.1	67.0
Deep freeze (D)	67.0	44.0	56.1	7.0	25.0	49.1	22.5		68.0	31.7	66.0	46.6	83.0	61.6	39.0	46.3	79.0
Combined R+D	40.0	38.0	27.0	29.0			49.4		68.0	45.6	38.0	9.9			59.0	24.6	41.0
Washing Machine	92.0	69.3	90.5	78.0	97.0	89.4	85.6		91.0	97.3	83.0	75.2	83.0	48.7	91.0	88.4	93.0
Tumble drier	55.0	27.0	25.7	4.0		20.5	26.3			47.9	12.0	5.7	9.0	15.4	50.0	26.2	39.0
Dishwasher	36.0	32.7	36.4	22.0	20.0	35.4	18.7			19.0	40.0	12.6	41.0	30.6	19.0	29.3	46.0
Television	126.0	90.5	97.0	96.0	99.0	95.0	97.9		95.0	98.2	99.0	94.1	96.0	92.7	98.0	96.8	97.0

(9) Number of televisions is higher than 100% because it has been reported including households owning 2 or more TV sets.

2.6. PRIVATE CAR STOCK. CONSUMPTION AND EXPENDITURE ON MOTOR FUELS

2.6.1 PRIVATE STOCK (Cars and Motorcycles)

eurostat

In thousands

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
TOTAL CARS	3 912	1 758	35 975	2 230	9 850	24 674	887		199	5 633	3 038	2 222	1 888	3 126	21 394	116 786	1 669
TOTAL MOTORCYCLES	212	82	2 268	294	1 919	2 388	23		8.4	308	498	515	65	117	594	9 292	43

2.6.2 PRIVATE CAR STOCK DISTRIBUTION

eurostat

% of cars

	B	DK	D	EL	E*(10)*	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BY TYPE OF FUEL																	
Using Petrol	66.3	91.3	88.2	97.7	84.6	73.0	86.2		84.5	82.4	77.0	80.2	92.4	97.6	91.1	84.3	95.2
Using Diesel	32.7	8.3	11.8	1.2	15.4	27.0	13.7		15.4	10.9	23.0	19.7	7.6	2.4	8.8	15.3	4.8
Using LPG	0.9	0.0	0.0	0.0	0.0	0.0	0.1		0.1	6.7	0.0	0.1	0.0	0.0	0.0	0.4	0.0
Using Petrol/Diesel	0.0	0.4	0.0	1.1	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BY ENGINE SIZE																	
Less than 1000cc	3.3	1.6	7.9	7.9	25.2	22.6	19.8		5.0	9.7	4.5	4.8	4.7	1.1	8.8	12.2	0.0
1000cc to 1500cc	38.0	32.3	27.1	64.9	38.7	32.4	43.6		29.1	47.0	33.3	68.4	40.2	11.9	37.0	34.0	0.0
1500cc to 2000cc	48.5	36.8	53.6	25.1	29.1	30.2	34.4		48.6	36.4	50.6	17.8	46.7	40.8	46.3	42.1	0.0
More than 2000cc	10.1	8.8	11.5	2.1	7.0	14.8	2.2		17.4	6.9	11.6	8.5	8.4	46.3	7.8	11.4	0.0
Unknown	0.0	20.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0

(10) Distribution by engine size applied: Less than 1200cc, 1200cc to 1600cc, 1600cc to 2000cc and more than 2000cc

2.6.3 AVERAGE KILOMETRES IN A YEAR PER CAR

eurostat

km

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15*(11)*	N
AVERAGE KM	18 000	18 236	11 800	12 018	14 300	13 900	11 358			16 560	13 470	11 339	18 300	11 700	15 498	14 345	13 930

(11) Unweighted Average

2.6.4 CAR OWNERSHIP

% of households

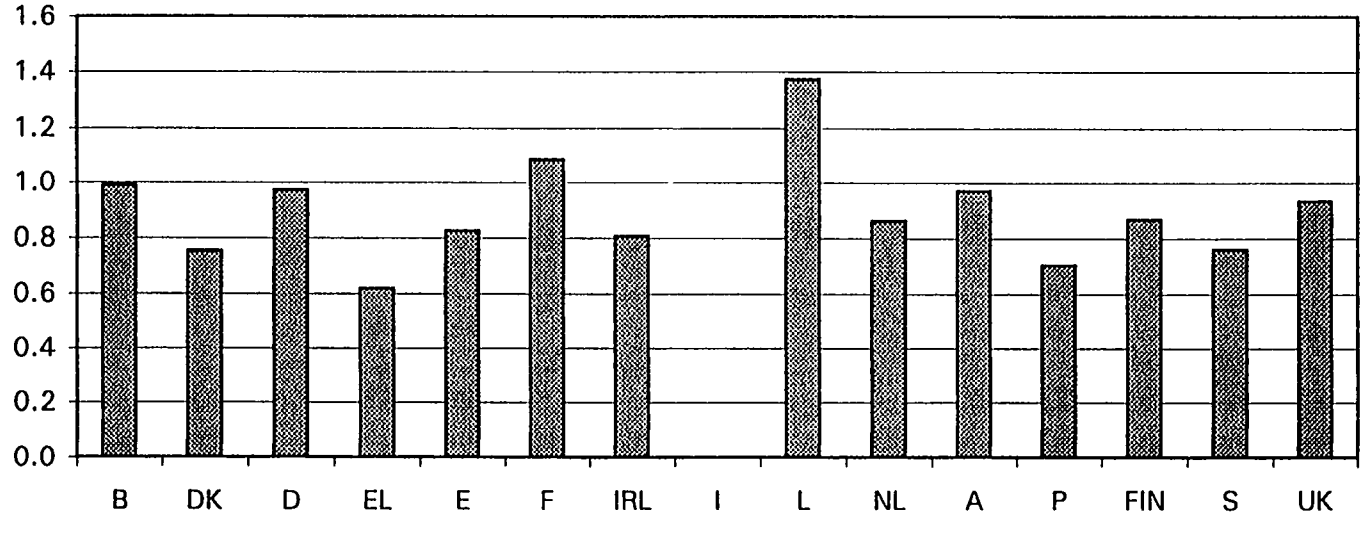
CAR OWNERSHIP	B	DK	D	EL	E	F	IRL	I	L(12)	NL	A	P	FIN	S	UK	EU-15	N
No car	26.0	22.0	26.4	45.0	29.5	20.0	35.0		24.0	25.0	31.1	44.1	34.0	27.0	31.0	27.5	25.0
One Car	57.0	65.0	56.6	48.0	58.0	51.0	51.0		76.0	60.0	51.8	43.2	51.0	55.0	45.0	53.1	57.0
More than one car	17.0	13.0	17.0	7.0	12.5	29.0	14.0			15.0	17.1	12.7	15.0	18.0	24.0	19.4	18.0
TOTAL	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

(12) In Luxembourg there is only a breakdown between households with or without car.

2.6.5 AVERAGE NUMBER OF CARS PER HOUSEHOLD

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
AVERAGE	1.0	0.8	1.0	0.6	0.8	1.1	0.8		1.4	0.9	1.0	0.7	0.9	0.8	0.9	0.9	0.8

Figure 2.8 : Average Number of Car per Household



2.6.6 TOTAL CONSUMPTION OF MOTOR FUELS

Mio. Liters

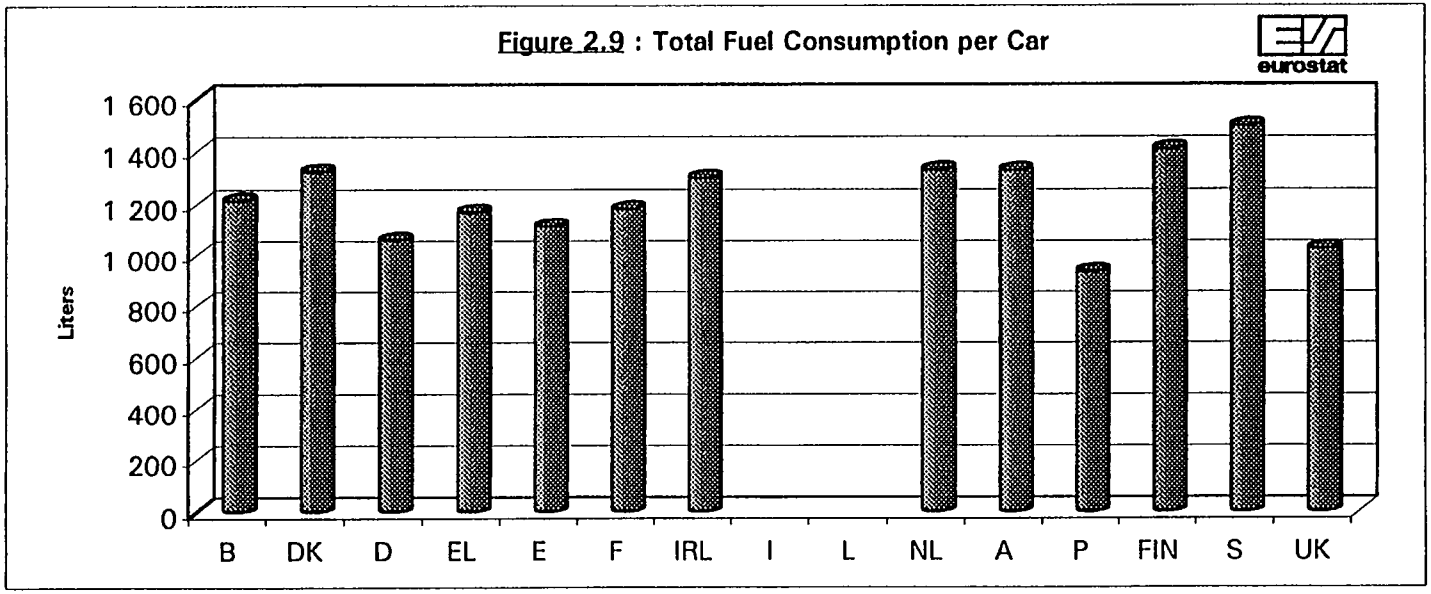
TYPE OF FUEL	B *(13)*	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Petrol	2 772	2 167	32 870	2 517	8 820	18 723	942			4 883	2 889	1 528	2 424	4 488	19 273	104 297	1 754
Of which unleaded	1 386	2 167	31 062	832	2 560	9 402	531			4 086	2 889	410	2 424	4 437	12 311	74 497	1 631
Diesel	1 907	156	5 243	50	2 046	10 332	203			1 280	1 139	543	229	180	2 589	25 897	79
LPG	58						6			1 320		3				1 387	
TOTAL	4 737	2 323	38 113	2 567	10 866	29 055	1 151			7 483	4 028	2 074	2 653	4 668	21 862	131 580	1 833

(13) Figure of unleaded petrol corresponds to 50% of the petrol consumption. The same percentage as in France has been applied in order to fill the lack of information.

2.6.7 FUEL CONSUMPTION PER CAR

Liters

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Petrol	1 068	1 354	1 037	1 155	1 058	1 039	1 232			1 053	1 235	858	1 389	1 471	988	1 060	1 104
Diesel	1 490	1 040	1 219	1 667	1 349	1 554	1 661			2 085	1 629	1 240	1 601	2 400	1 369	1 447	988
LPG	1 580						6 765			3 474		1 090				3 270	
TOTAL	1 211	1 321	1 059	1 167	1 111	1 178	1 297			1 328	1 326	933	1 405	1 493	1 022	1 127	1 098



2.6.8 TOTAL EXPENDITURE ON MOTOR FUELS

Mio.ECU

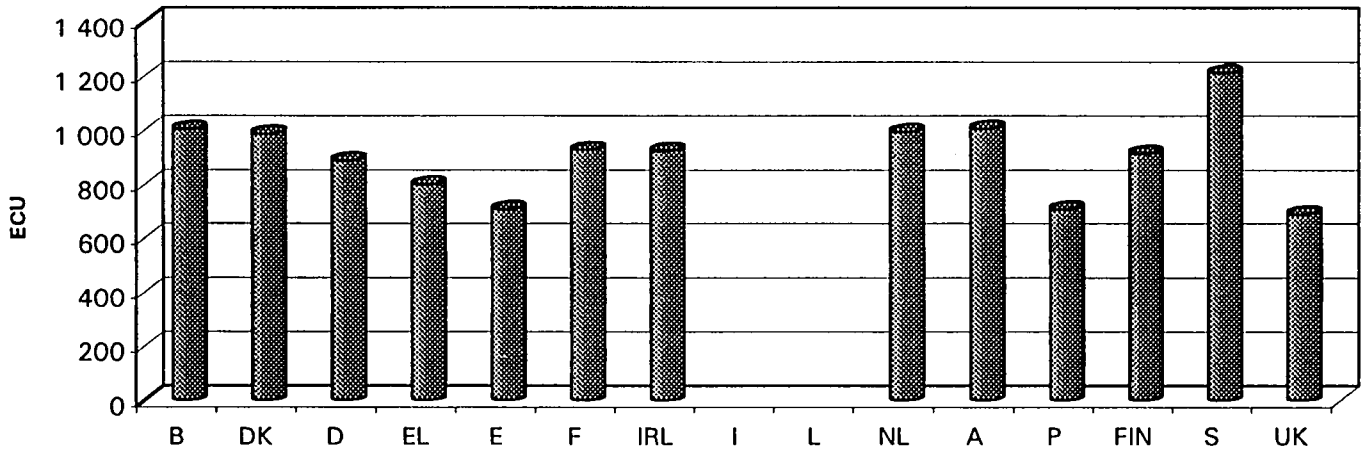
TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Petrol	2 584	1 638	28 398	1 731	5 947	16 757	683			4 442	2 334	1 264	1 611	3 664	13 053	84 106	2 064
Of which unleaded	1 286	1 638	26 836	535	1 658	8 098	376			3 664	2 334	335	1 611	3 616	8 038	60 026	1 920
Diesel	1 303	95	3 527	27	1 021	6 096	133			802	721	309	114	122	1 694	15 965	20
LPG	17						2			345		1				365	
TOTAL	3 904	1 733	31 925	1 758	6 968	22 853	819			5 590	3 055	1 573	1 725	3 786	14 747	100 436	2 084

2.6.9 FUEL EXPENDITURE PER CAR

ECU

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Petrol	994	1 024	896	794	717	930	893			957	998	710	923	1 201	610	854	1 299
Diesel	1 002	631	820	899	673	917	1 092			1 307	1 031	705	798	1 632	79	892	247
LPG	567						3 016			909		204				862	
TOTAL	1 001	986	887	799	707	926	923			992	1 005	708	914	1 211	689	860	1 249

Figure 2.10 : Total Fuel Expenditure per Car



2.7. HOUSEHOLD ENERGY CONSUMPTION: USE AND EXPENDITURE

2.7.1 TOTAL ENERGY CONSUMPTION BY TYPE OF FUEL

eurostat

TJ

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Fuel/gas oil	155 827	46 067	955 515	119 796	45 387	332 795	21 489		10 372	3 330	66 904	93	38 720	74 326	105 048	1 975 669	12 704
Natural Gas	121 009	25 999	931 984	157	41 033	516 960	10 519		7 208	360 820	59 107		730	2 484	1 056 518	3 134 528	
Electricty	54 185	38 071	460 151	43 221	130 802	403 200	16 718		5 420	70 920	45 814	31 104	58 524	152 265	366 027	1 876 422	124 657
Solid fuels	23 780	278	102 582	3 105	14 445	29 238	40 577		586	300	16 404	551	550		109 067	341 463	158
Wood		9 191	43 964	30 323	83 196	326 314	3 054		645	13 580	60 153	48 057	38 800	40 193	7 290	704 760	24 153
LPG + Manuf. Gas	7 660	1 388	41 033	3 945	91 988	68 579	19 208		15	1 000	3 167	34 450	253	1 344	14 328	288 358	138
Other or mixed		7 991							29		6 830		484	205	1 805	17 344	
District Heating	339	60 720	167 061			78 326			15	7 530	14 209		51 480	81 695		461 375	1 045
All fuels	362 800	189 705	2 702 290	200 547	406 851	1 755 412	111 565		24 290	457 480	272 588	114 255	189 541	352 512	1 660 082	8 799 918	162 855

2.7.2 ENERGY CONSUMPTION PER HOUSEHOLD BY TYPE OF FUEL

eurostat

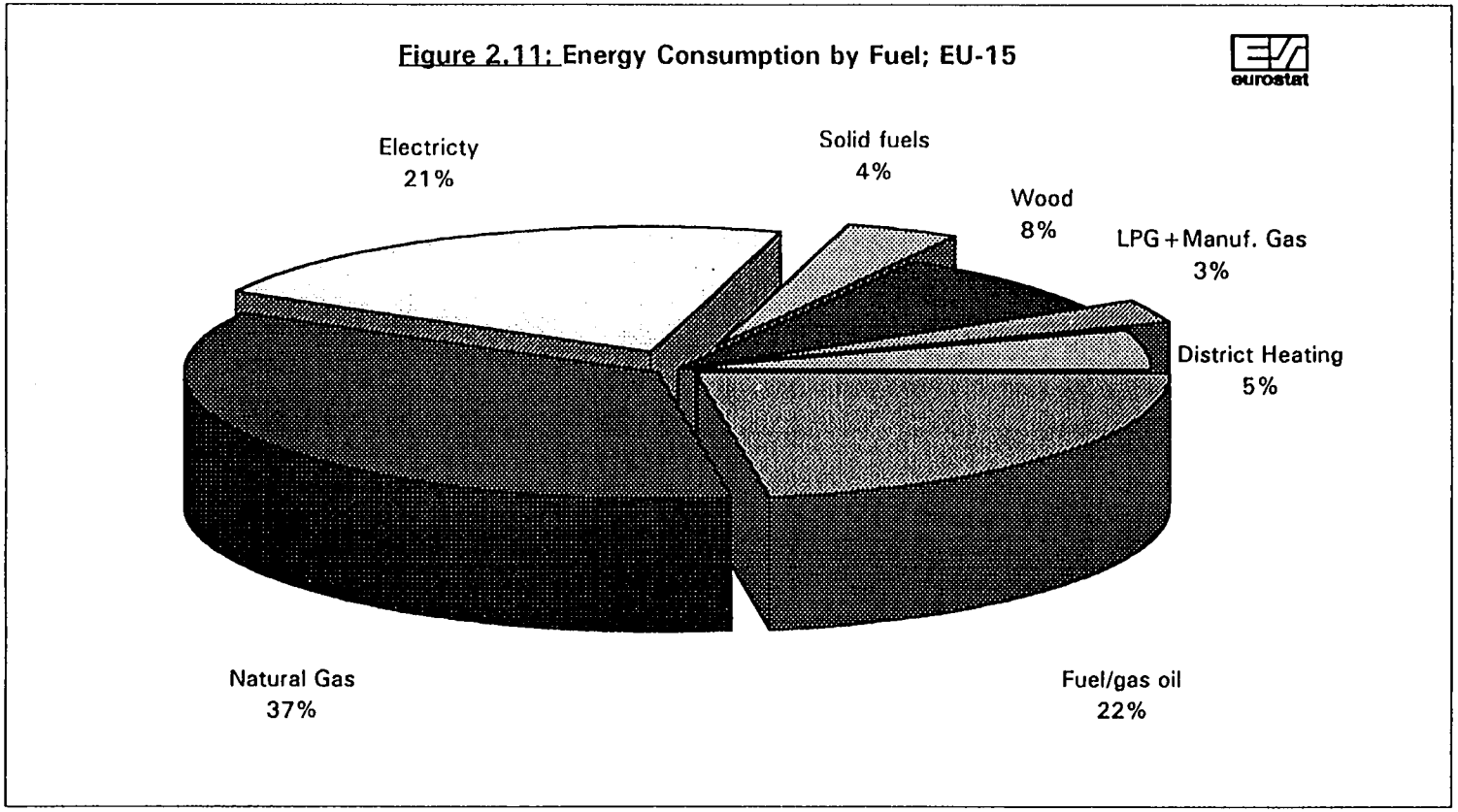
MJ

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Fuel/gas oil	39 420	19 759	25 868	33 249	3 804	14 648	19 541		71 690	510	21 368	30	17 754	18 075	4 579	15 836	6 368
Natural Gas	30 612	11 151	25 231	44	3 439	22 754	9 565		49 810	55 256	18 878		335	604	46 056	25 125	
Electricty	13 707	16 329	12 457	11 996	10 961	17 746	15 202		37 460	10 861	14 632	9 905	26 835	37 018	15 956	15 040	62 485
Solid fuels	6 016	119	2 777	862	1 211	1 287	36 897		4 050	46	5 239	175	252		4 754	2 737	79
Wood		3 942	1 190	8 416	6 972	14 362	2 777		4 450	2 080	19 212	15 303	17 791	9 775	318	5 649	12 107
LPG + Manuf. Gas	1 938	595	1 111	1 095	7 709	3 018	17 466		100	153	1 011	10 970	116	327	625	2 311	69
Other or mixed		3 427							200		2 181		222	50	79	139	
District Heating	86	26 043	4 523			3 447			100	1 153	4 538		23 605	19 867		3 698	524
All fuels	91 778	81 366	73 157	55 662	34 095	77 263	101 448		167 860	70 058	87 061	36 383	86 910	85 717	72 366	70 536	81 632

2.7.3 ENERGY CONSUMPTION BY TYPE OF FUEL

%

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Fuel/gas oil	43.0	24.3	35.4	59.7	11.2	19.0	19.3		42.7	0.7	24.5	0.1	20.4	21.1	6.3	22.5	7.8
Natural Gas	33.4	13.7	34.5	0.1	10.1	28.0	9.4		29.7	78.9	21.7		0.4	0.7	63.6	35.6	
Electricty	14.9	20.1	17.0	21.6	32.1	24.0	15.0		22.3	15.5	16.8	27.2	30.9	43.2	22.0	21.3	76.5
Solid fuels	6.6	0.1	3.8	1.5	3.6	2.0	36.4		2.4	0.1	6.0	0.5	0.3		6.6	3.9	
Wood		4.8	1.6	15.1	20.4	18.0	2.7		2.7	3.0	22.1	42.1	20.5	11.4	0.4	8.0	14.8
LPG + Manuf. Gas	2.1	0.7	1.5	2.0	22.6	4.0	17.2		0.1	0.2	1.2	30.1	0.1	0.4	0.9	3.3	0.1
Other or mixed		4.2							0.1		2.5		0.3	0.1	0.1	0.2	
District Heating	0.1	32.0	6.2			5.0			0.1	1.6	5.2		27.2	23.2		5.2	0.7
All fuels	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100



2.7.4 TOTAL ENERGY CONSUMPTION BY TYPE OF USE

eurostat

TJ

TYPE OF USE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Space Heating	285 012	129 028	2 075 077	158 202	182 344	1 311 714	67 143		17 756	297 630	212 109	30 506	128 075	221 601	916 965	6 033 162	89 055
Water-Heating	41 918	30 988	331 359	5 128	81 102	179 234	10 521		1 758	89 460	29 702	16 910	27 253	70 710	408 588	1 324 631	30 170
Cooking	16 581	12 560	51 542	9 556	44 927	107 216	24 382		498	15 000	7 047	41 474	3 924	8 225	126 012	468 944	4 986
Other	19 289	17 129	244 311	27 662	98 478	157 248	9 519		4 278	55 390	23 730	25 365	30 289	51 976	208 517	973 181	38 644
All uses	362 800	189 705	2 702 290	200 547	406 851	1 755 412	111 565		24 290	457 480	272 588	114 255	189 541	352 512	1 660 082	8 799 918	162 855

2.7.5 ENERGY CONSUMPTION PER HOUSEHOLD BY TYPE OF USE

eurostat

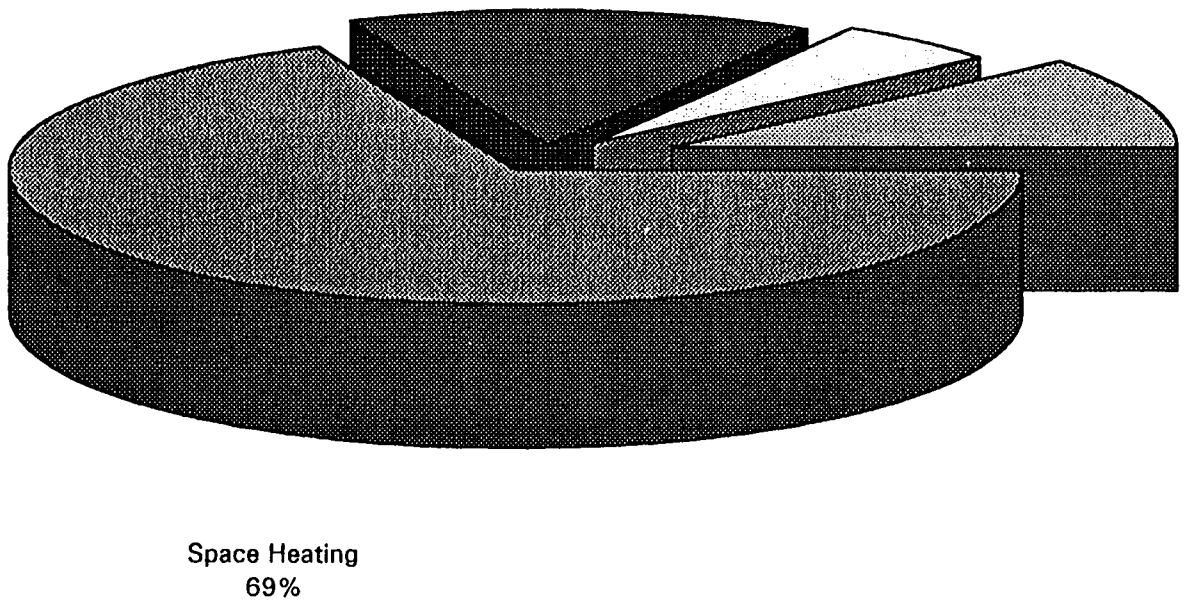
MJ

TYPE OF USE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Space Heating	72 100	55 341	56 177	43 909	15 281	57 734	61 054		122 710	45 579	67 745	9 714	58 726	53 891	39 972	48 359	44 639
Water-Heating	10 604	13 291	8 971	1 423	6 797	7 889	9 567		12 150	13 700	9 486	5 385	12 496	17 185	17 811	10 618	15 123
Cooking	4 195	5 387	1 395	2 652	3 765	4 719	22 171		3 440	2 297	2 251	13 207	1 799	2 000	5 493	3 759	2 499
Other	4 880	7 347	6 614	7 677	8 253	6 921	8 656		29 560	8 482	7 579	8 077	13 888	12 640	9 090	7 801	19 370
All uses	91 778	81 366	73 157	55 662	34 095	77 263	101 448		167 860	70 058	87 061	36 383	86 910	85 717	72 366	70 536	81 632

2.7.6 ENERGY CONSUMPTION BY TYPE OF USE

TYPE OF USE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Space Heating	79.0	68.0	76.8	78.9	44.8	75.0	60.2		73.1	65.1	77.8	26.7	67.6	62.9	55.2	68.6	54.7
Water-Heating	12.0	16.3	12.3	2.6	19.9	10.0	9.4		7.2	19.6	10.9	14.8	14.4	20.1	24.6	15.1	18.5
Cooking	4.0	6.6	1.9	4.8	11.0	6.0	21.9		2.1	3.3	2.6	36.3	2.1	2.3	7.6	5.3	3.1
Other	5.0	9.0	9.0	13.8	24.2	9.0	8.5		17.6	12.1	8.7	22.2	16.0	14.7	12.6	11.1	23.7
All uses	100	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100

Figure 2.12: Use of Energy in EU-15 Households



2.7.7 TOTAL EXPENDITURE ON ENERGY BY TYPE OF FUEL

Mio. ECU

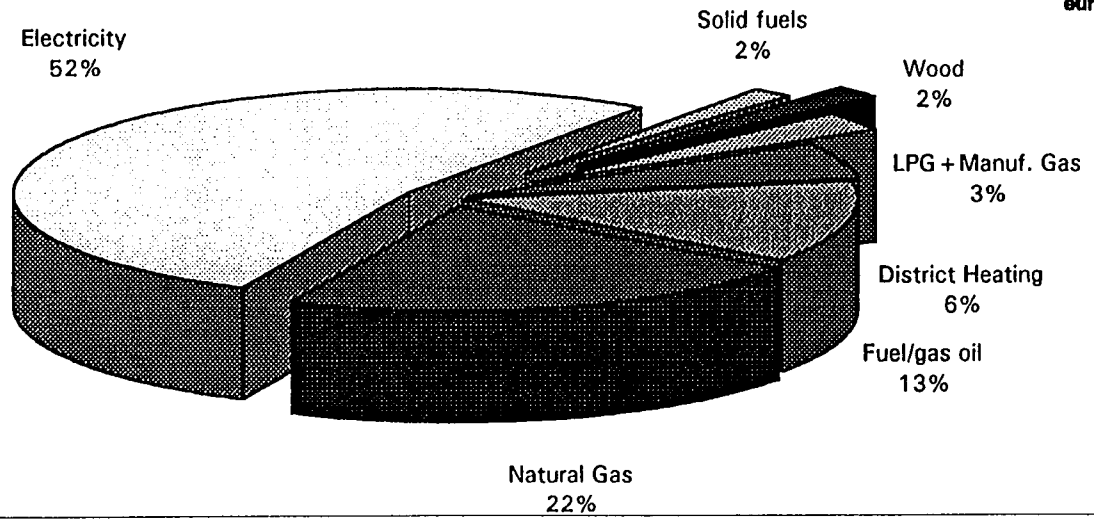
TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Fuel/gas oil	842	717	6 297	981	302	2 594	146		67	25	522	1	270	784	584	14 132	153
Natural Gas	1 137	328	7 060	2	453	4 633	95		47	2 954	685		6	30	7 227	24 659	
Electricty	1 005	1 640	16 145	1 402	5 553	13 968	427		169	2 157	1 622	1 057	1 145	3 262	9 533	59 085	1 980
Solid fuels	137	8	455	11	90	273	221		8	2	149	6	2		621	1 984	2
Wood		19	186	202	399	816			6	56	203	233	44			2 163	70
LPG + Manuf. Gas	49	42	235	62	987	1 332	55		0	8	47	494	7	5	81	3 405	
Other or mixed									0		36					36	
District Heating	3	1 612	1 917			713			0	114	243		458	1 147		6 207	8
All fuels	3 174	4 366	32 295	2 661	7 783	24 330	944		299	5 317	3 506	1 791	1 933	5 228	18 047	111 672	2 213

2.7.8 TOTAL EXPENDITURE ON ENERGY PER HOUSEHOLD BY TYPE OF FUEL

ECU

TYPE OF FUEL	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Fuel/gas oil	213	312	171	273	25	113	132		466	4	168	0	123	191	25	113	77
Natural Gas	288	143	191	1	38	201	87		328	454	221		3	7	314	198	
Electricty	254	713	438	389	465	607	388		1 171	332	523	337	520	796	414	474	990
Solid fuels	35	4	12	3	7	12	201		57	0	48	2	1		28	16	1
Wood		8	5	56	33	35			41	9	65	74	20			17	35
LPG + Manuf. Gas	12	18	6	17	82	58	50		0	1	15	157	3	1	4	27	
Other or mixed									2		12						
District Heating	1	701	52			31			1	18	78		208	280		50	4
All fuels	803	1 898	875	739	651	1 058	858		2 068	818	1 131	570	878	1 275	786	895	1 107

Figure 2.13 : Expenditure on Fuels in EU-15 Households



2.7.9 TOTAL EXPENDITURE ON ENERGY BY TYPE OF USE

Mio. ECU

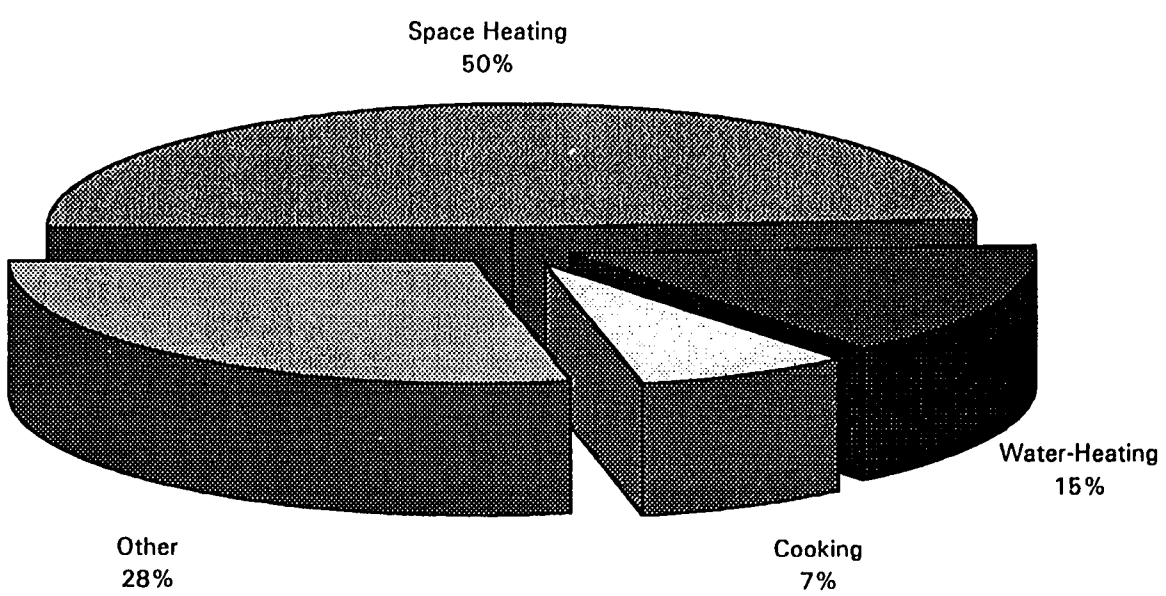
TYPE OF USE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Space Heating	2 040	2 496	17 547	1 401	1 818	12 898	451		132	2 531	2 032	206	980	2 919	7 235	54 684	1 043
Water-Heating	396	619	4 840	125	1 219	3 180	101		22	884	438	288	291	1 035	3 654	17 090	477
Cooking	185	513	1 336	238	567	2 409	150		14	217	196	439	68	165	1 775	8 272	79
Other	553	738	8 571	897	4 179	5 843	243		131	1 685	840	858	593	1 109	5 384	31 625	614
All uses	3 174	4 366	32 295	2 661	7 783	24 330	944		299	5 317	3 506	1 791	1 933	5 228	18 047	111 672	2 213

2.7.10 TOTAL EXPENDITURE ON ENERGY PER HOUSEHOLD BY TYPE OF USE

ECU

TYPE OF USE	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
Space Heating	516	1 085	476	389	152	561	410		912	389	655	66	445	712	315	438	521
Water-Heating	100	269	131	35	102	138	91		151	136	141	92	132	252	159	137	239
Cooking	47	223	36	66	47	105	136		97	33	63	140	31	40	78	66	40
Other	140	321	232	249	350	254	221		909	259	271	272	270	271	234	253	307
All uses	803	1 898	875	739	651	1 058	858		2 068	818	1 131	570	878	1 275	786	895	1 107

Figure 2.14 : Expenditure on Energy Uses in EU-15 Households



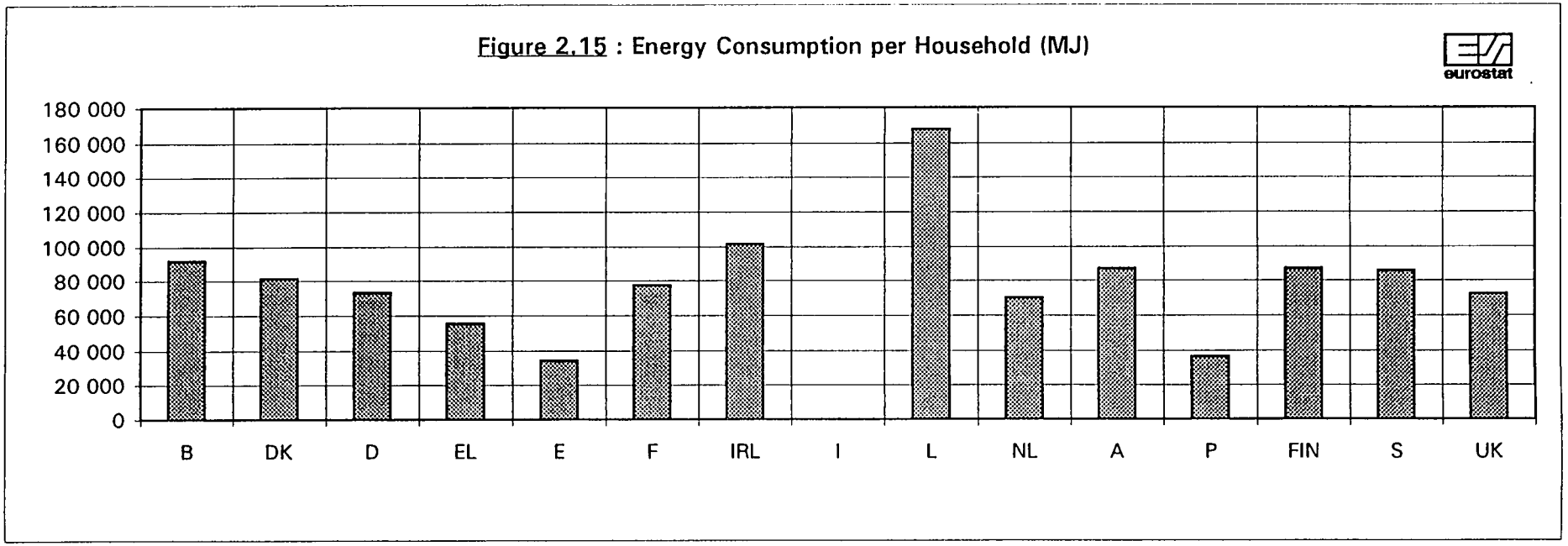


Figure 2.15 : Energy Consumption per Household (MJ)
eurostat
180 000
160 000
140 000
120 000
100 000
80 000
60 000
40 000
20 000
0
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK

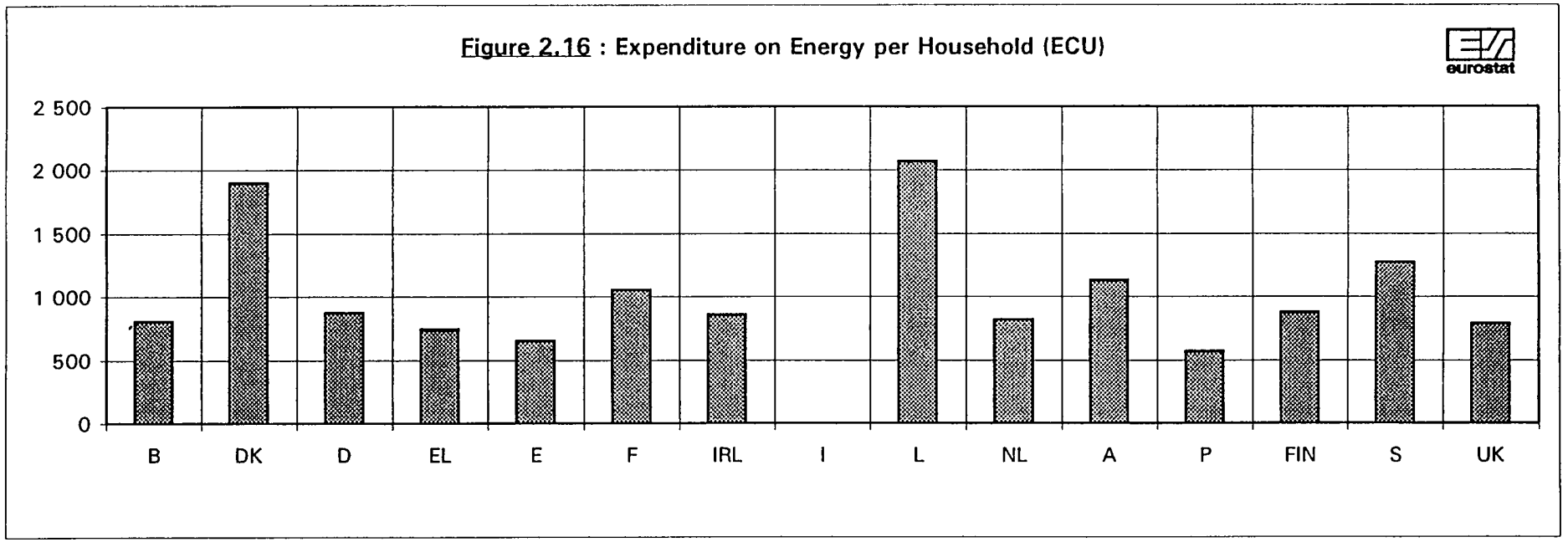


Figure 2.16 : Expenditure on Energy per Household (ECU)
eurostat
2 500
2 000
1 500
1 000
500
0
B
DK
D
EL
E
F
IRL
I
L
NL
A
P
FIN
S
UK

%

INDICATOR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	N
A	25.4	30.1	29.1	30.3	15.2	29.6	34.4		18.4	23.0	30.8	20.7	20.6	25.0	28.1	26.9	23.6
B	4.1	2.2	30.7	2.3	4.6	20.0	1.3		0.3	5.2	3.1	1.3	2.2	4.0	18.9	100.0	-
C	4.5	5.8	3.6	2.8	2.7	3.0	4.3		6.3	3.0	4.6	3.0	4.4	5.1	3.7	-	-

A: Household Energy Consumption as percentage of Total Final Energy Consumption
B: Distribution of Household Energy Consumption in EU per Member State.
C: Household Expenditure in energy as percentage of Total Household Expenditure.

Figure 2.17: Household Energy Consumption as percentage of Total Final Energy Consumption

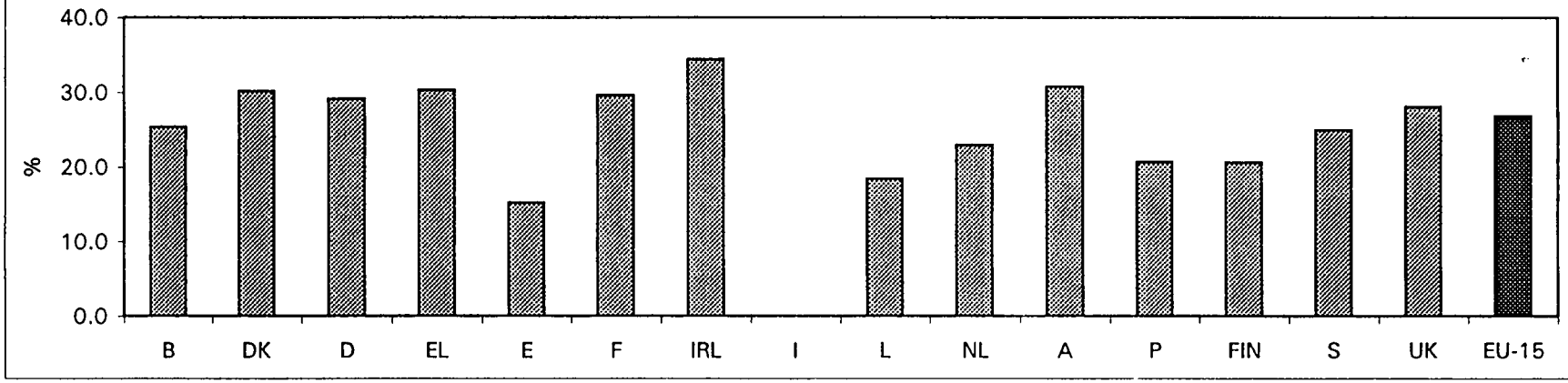


Figure 2.18: Distribution of Households Energy Consumption EU

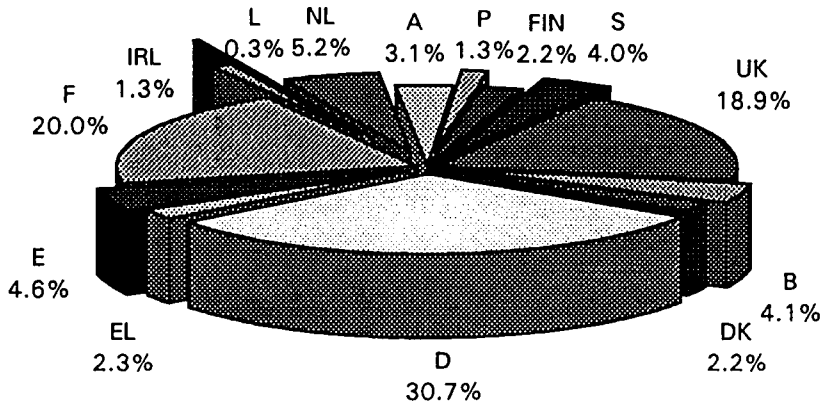
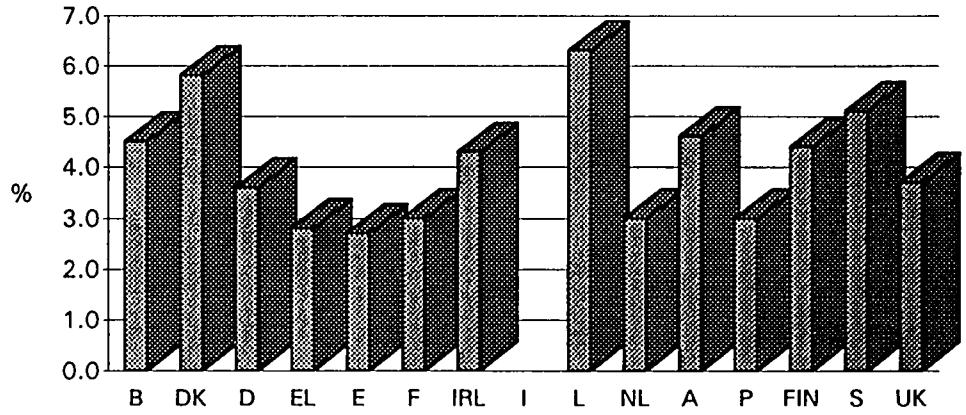


Figure 2.19: Share of Energy Expenditure in Total Household Expenditure



3. COMPARISON OF THE 1988-1995 SURVEY RESULTS BY MEMBER STATE

3.1 BELGIUM

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	139 469	144 400	12 142	11 427					151 611	155 827
Natural gas	78 548	96 236	16 120	18 038	6 029	6 735			100 697	121 009
Electricity	11 054	18 000	7 872	9 737	5 778	7 159	27 885	19 289	52 589	54 185
Solid fuels + Wood	28 388	22 571		590		619			28 388	23 780
LPG + Manuf. gas	3 517	3 466	1 759	2 126	1 759	2 068			7 034	7 660
District Heating	1 089	339							1 089	339
Other fuels										
All fuels	262 064	285 012	37 892	41 918	13 566	16 581	27 885	19 289	341 408	362 800

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	38 395	36 529	3 350	2 891					41 744	39 420
Natural gas	21 647	24 345	4 438	4 563	1 675	1 704			27 760	30 612
Electricity	3 057	4 554	2 177	2 463	1 591	1 811	7 662	4 880	14 487	13 707
Solid fuels + Wood	7 830	5 710		149		157			7 830	6 016
LPG + Manuf. gas	963	877	502	538	502	523			1 968	1 938
District Heating	300	86							300	86
Other fuels										
All fuels	72 191	72 100	10 468	10 604	3 768	4 195	7 662	4 880	94 089	91 778

Figure 3.1.1 : Energy Consumption in Belgium by Type of Use

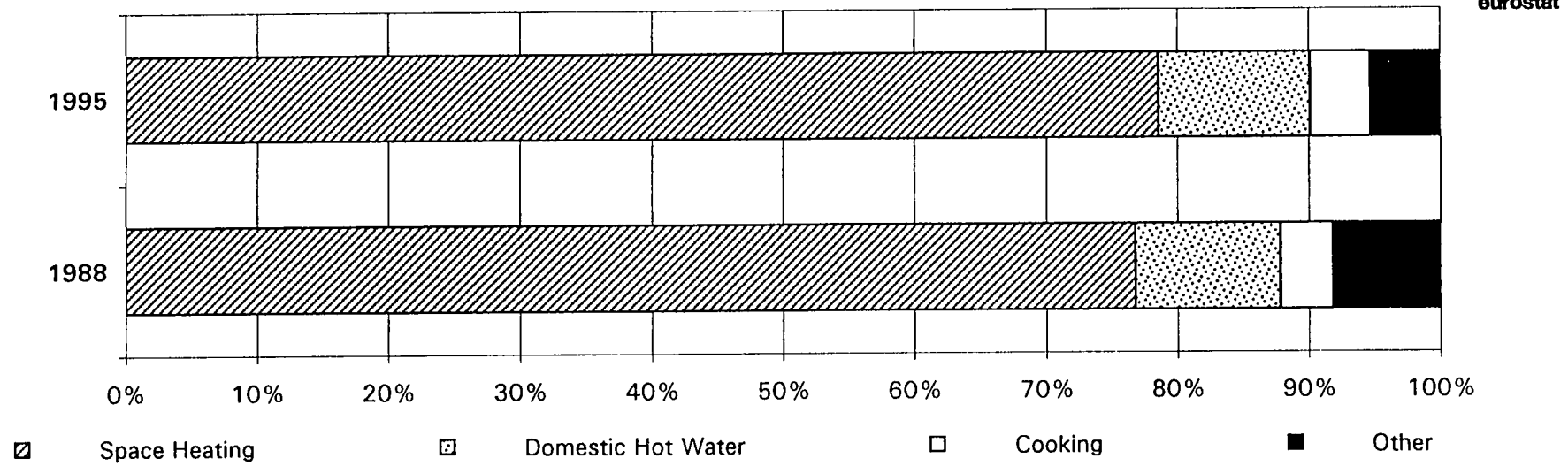
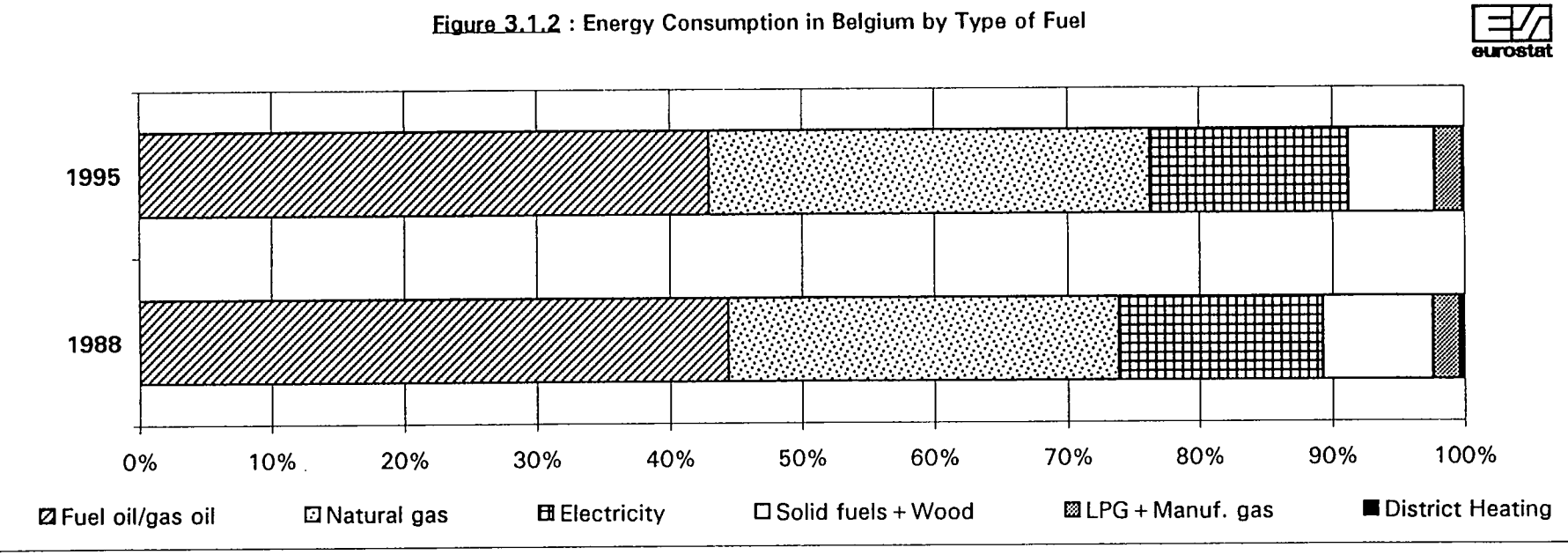


Figure 3.1.2 : Energy Consumption in Belgium by Type of Fuel



ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		37 314		8 753					72 644	46 067
Natural gas		18 199		7 020		780			18 255	25 999
Electricity		7 570		1 952		11 420		17 129	32 156	38 071
Solid fuels		278							4 941	278
Wood		9 191								9 191
LPG + Manuf. gas		820		208		360			1 340	1 388
District Heating		49 183		11 537					52 882	60 720
Other fuels		6 473		1 518						7 991
All fuels	120 251	129 028	29 142	30 988	5 485	12 560	27 341	17 129	182 218	189 705

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		16 004		3 754					32 910	19 759
Natural gas		7 806		3 011		335			8 290	11 151
Electricity		3 247		837		4 898		7 347	14 571	16 329
Solid fuels		119							2 219	119
Wood		3 942								3 942
LPG + Manuf. gas		352		89		154			586	595
District Heating		21 095		4 948					23 950	26 043
Other fuels		2 776		651						3 427
All fuels	54 473	55 341	13 189	13 291	2 512	5 387	12 352	7 347	82 526	81 366

Figure 3.2.1 : Energy Consumption in Denmark by Type of Use

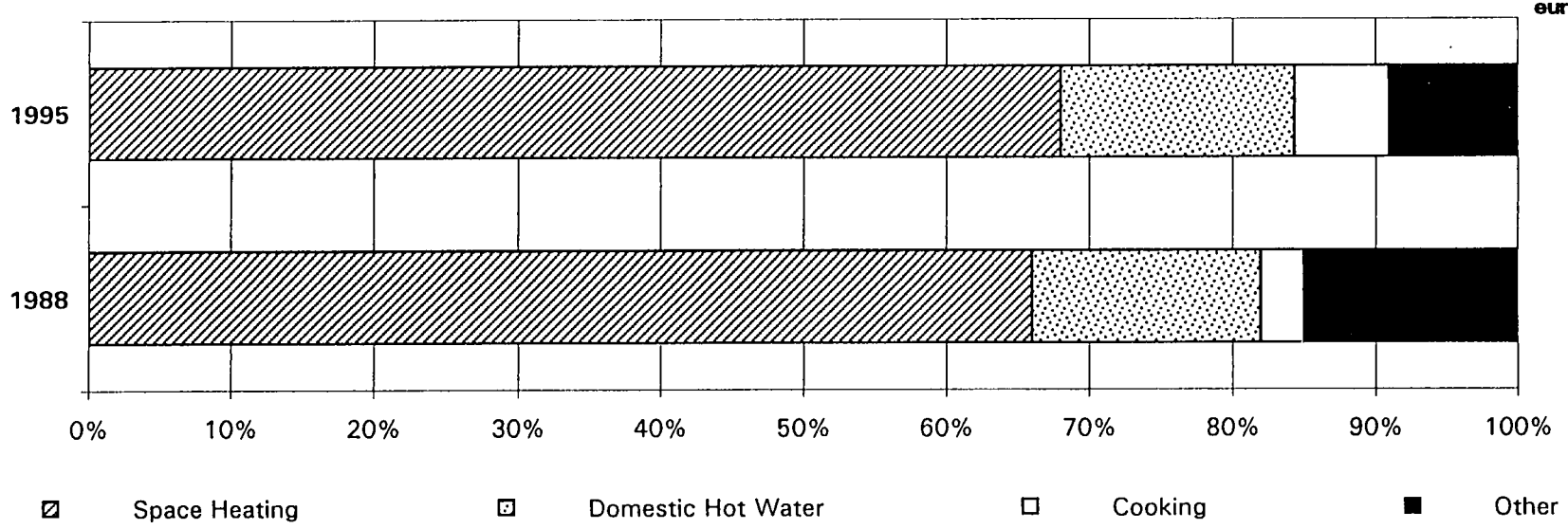
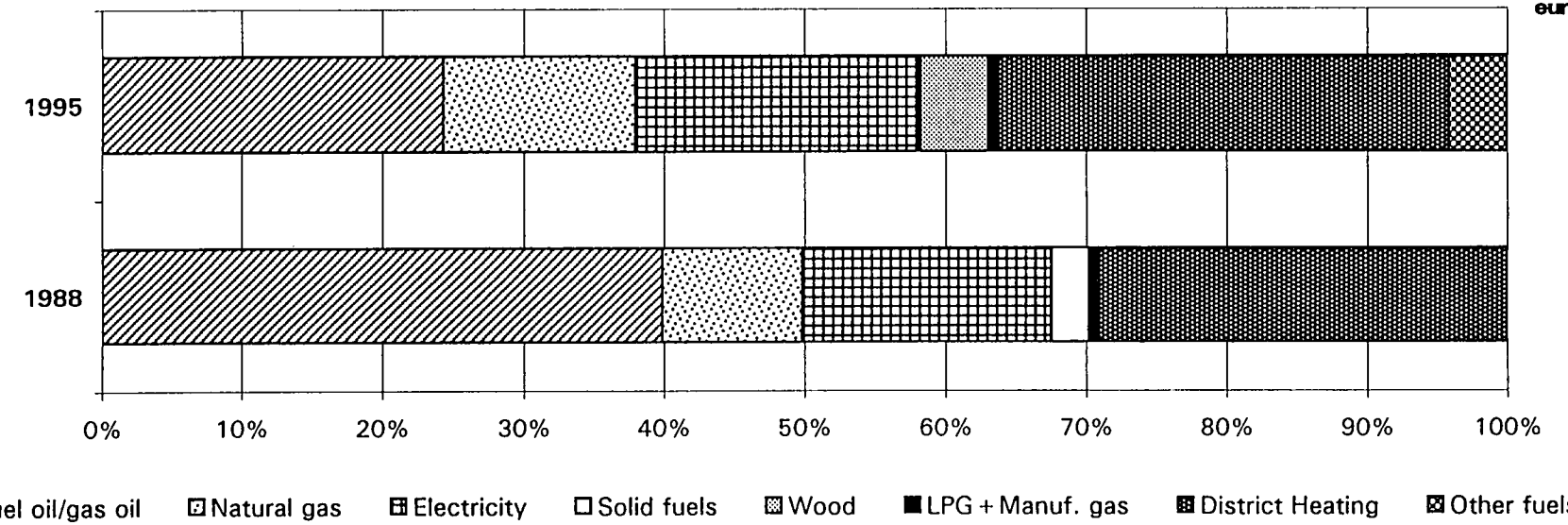


Figure 3.2.2 : Energy Consumption in Denmark by Type of Fuel



ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	824 253	866 123	54 180	89 392	754				879 186	955 515
Natural gas	453 703	802 313	72 622	116 022	11 807	13 650			536 438	931 984
Electricity	78 129	95 003	46 685	86 085	43 126	34 752	183 809	244 311	351 750	460 151
Solid fuels	103 796	98 562	4 354	4 020	1 089				109 239	102 582
Wood	4 857	37 683	837	3 140		3 140			5 694	43 964
LPG + Manuf. gas	29 309	31 361	2 596	9 672	335				32 240	41 033
District Heating	65 317	144 033	13 189	23 029					78 506	167 061
Other fuels										
All fuels	1 559 364	2 075 077	194 463	331 359	57 111	51 542	183 809	244 311	1 993 054	2 702 290

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	30 984	23 448	2 052	2 420	42				33 035	25 868
Natural gas	17 041	21 721	2 680	3 141	461	370			20 181	25 231
Electricity	2 931	2 572	1 759	2 331	1 633	941	6 909	6 614	13 231	12 457
Solid fuels	3 894	2 668	167	109	42				4 103	2 777
Wood	167	1 020	42	85		85			209	1 190
LPG + Manuf. gas	1 089	849	84	262					1 214	1 111
District Heating	2 470	3 899	502	623					2 931	4 523
Other fuels										
All fuels	58 576	56 177	7 285	8 971	2 177	1 395	6 909	6 614	74 905	73 157

Figure 3.3.1 : Energy Consumption in Germany by Type of Use

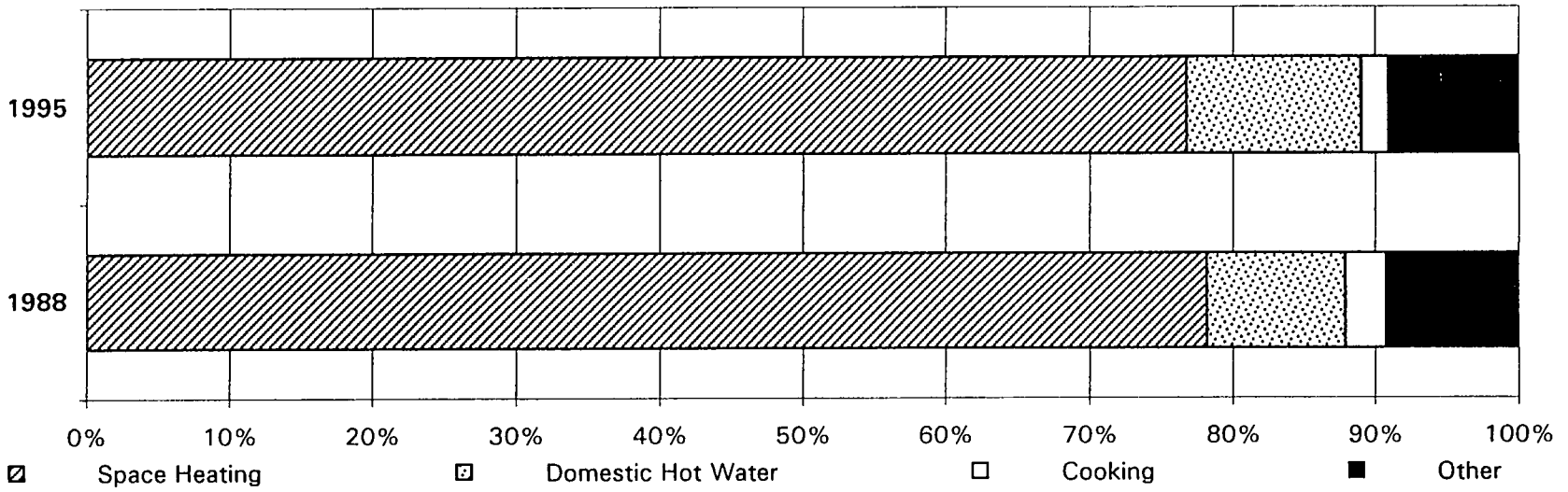
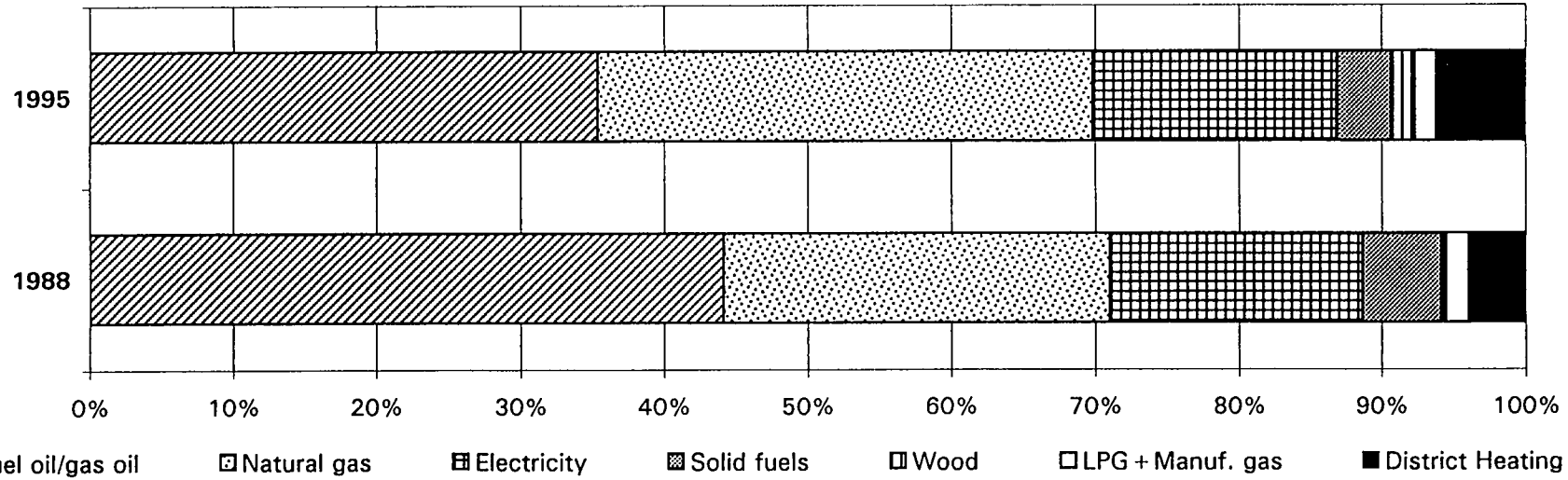


Figure 3.3.2 : Energy Consumption in Germany by Type of Fuel



3.4 GREECE

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	72 142	119 539	1 507	253	754	4			74 403	119 796
Natural gas		135		11		11				157
Electricity	5 401	6 915	3 182	3 457	7 788	5 187	18 967	27 662	35 338	43 221
Solid fuels	1 549	2 994		29		83			1 549	3 105
Wood	44 927	27 463	3 224	1 310	5 359	1 551			53 510	30 323
LPG + Manuf. gas	586	1 157		68	4 773	2 720			5 359	3 945
District Heating										
Other fuels										
All fuels	124 605	158 202	7 913	5 128	18 674	9 556	18 967	27 662	170 160	200 547

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	22 024	33 178	461	70	209	1			22 694	33 249
Natural gas		37		3		3				44
Electricity	1 633	1 919	963	960	2 387	1 440	5 778	7 677	10 761	11 996
Solid fuels	461	831		8		23			461	862
Wood	13 733	7 622	963	363	1 633	430			16 329	8 416
LPG + Manuf. gas	167	321		19	1 465	755			1 633	1 095
District Heating										
Other fuels										
All fuels	38 018	43 909	2 387	1 423	5 694	2 652	5 778	7 677	51 877	55 662

Figure 3.4.1 : Energy Consumption in Greece by Type of Use

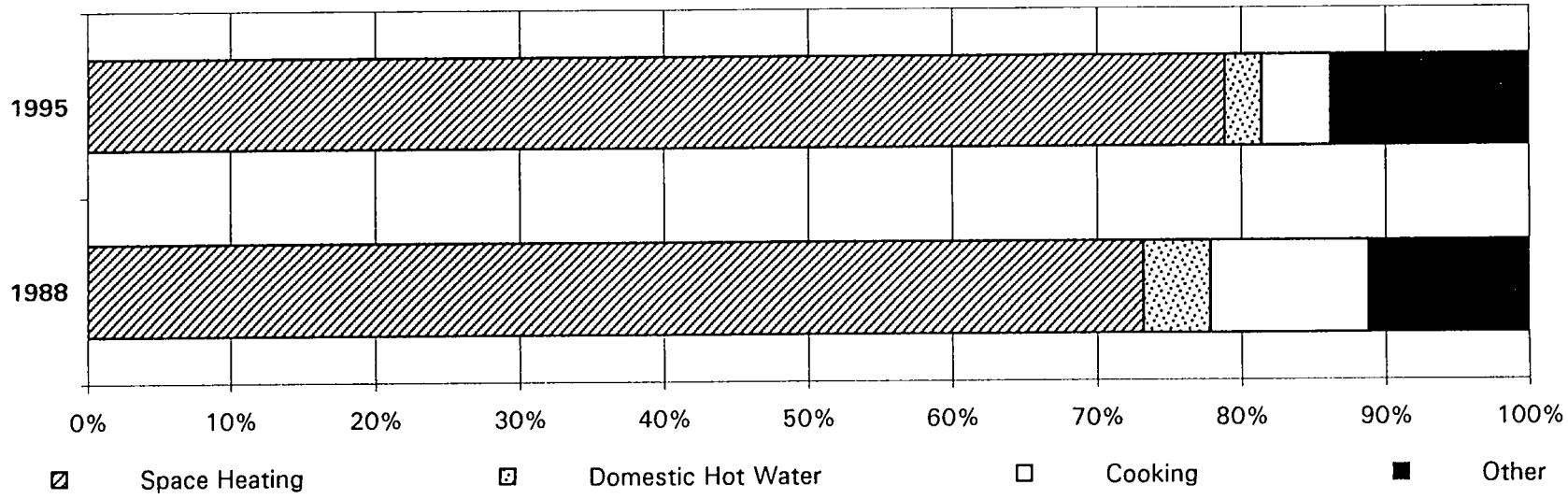
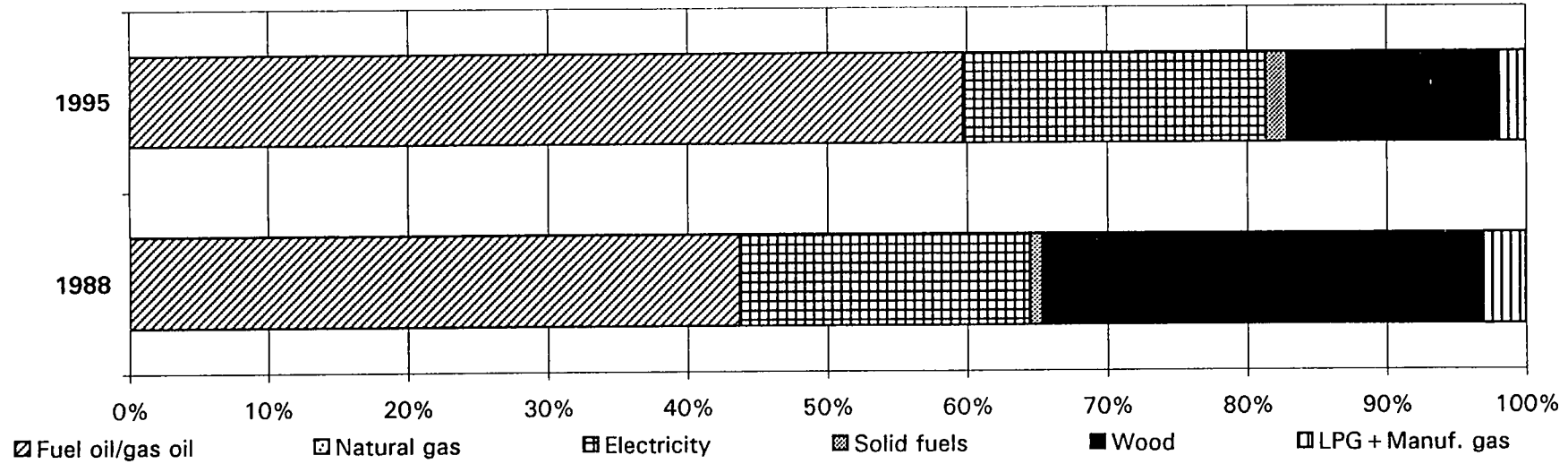


Figure 3.4.2 : Energy Consumption in Greece by Type of Fuel



3.5 SPAIN *(1)*

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		37 976		7 411					12 310	45 387
Natural gas		10 174		22 107		8 751			20 642	41 033
Electricity		17 753		11 849		2 722		98 478	64 982	130 802
Solid fuels		12 603		879		963			120 167	14 445
Wood		83 196								83 196
LPG + Manuf. gas		20 642		38 855		32 491			108 904	91 988
District Heating										
Other fuels										
All fuels	241 967	182 344	32 700	81 102	26 169	44 927	26 169	98 478	327 005	406 851

(1) Data for 1988 and 1995 were obtained from different statistical sources. Comparative analysis is not appropriate

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		3 182		621					1 256	3 804
Natural gas		853		1 853		733			2 135	3 439
Electricity		1 488		993		228		8 253	6 699	10 961
Solid fuels		1 056		74		81			12 394	1 211
Wood		6 972								6 972
LPG + Manuf. gas		1 730		3 256		2 723			11 221	7 709
District Heating										
Other fuels										
All fuels	24 955	15 281	3 391	6 797	2 680	3 765	2 680	8 253	33 705	34 095

Figure 3.5.1 : Energy Consumption in Spain by Type of Use

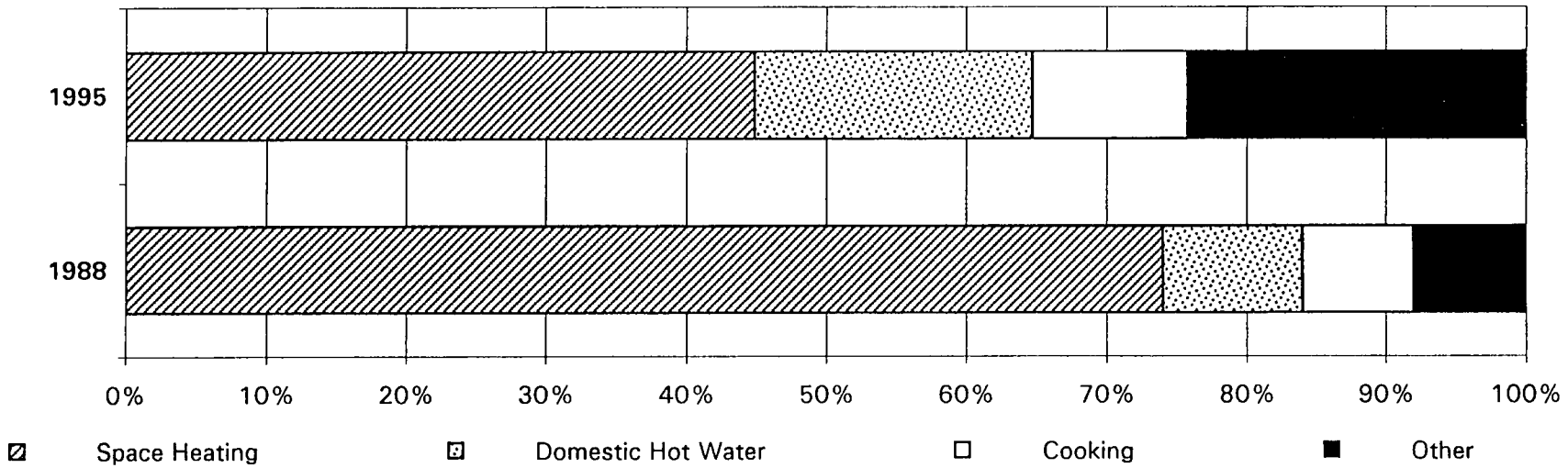
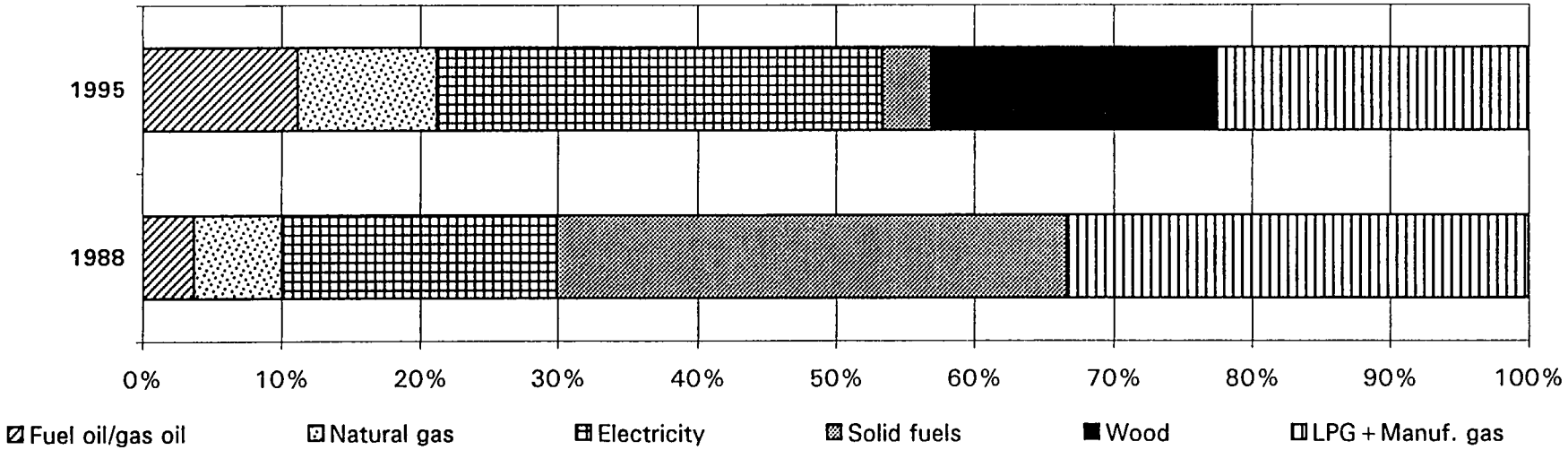


Figure 3.5.2 : Energy Consumption in Spain by Type of Fuel



ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	374 778	296 188	42 498	36 607					417 276	332 795
Natural gas	314 653	418 738	37 097	56 866	33 831	41 357			385 581	516 960
Electricity	131 053	149 184	43 210	64 512	19 805	32 256	133 188	157 248	327 256	403 200
Solid fuels	55 101	28 361	1 089	877					56 190	29 238
Wood	274 332	326 314	19 344		41 619				335 295	326 314
LPG+Manuf. gas	20 265	24 003	11 975	10 973	30 063	33 604			62 303	68 579
District Heating	62 721	68 927	8 332	9 399					71 053	78 326
Other fuels										
All fuels	1 232 904	1 311 714	163 644	179 234	125 317	107 216	133 188	157 248	1 654 954	1 755 412

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	18 088	13 036	2 052	1 611					20 139	14 648
Natural gas	15 199	18 430	1 800	2 503	1 633	1 820			18 632	22 754
Electricity	6 322	6 566	2 094	2 839	963	1 420	6 448	6 921	15 827	17 746
Solid fuels	2 680	1 248	42	39					2 722	1 287
Wood	13 273	14 362	921		2 010				16 204	14 362
LPG+Manuf. gas	963	1 056	586	483	1 465	1 479			3 015	3 018
District Heating	3 015	3 034	419	414					3 433	3 447
Other fuels										
All fuels	59 539	57 734	7 913	7 889	6 071	4 719	6 448	6 921	79 972	77 263

Figure 3.6.1 : Energy Consumption in France by Type of Use

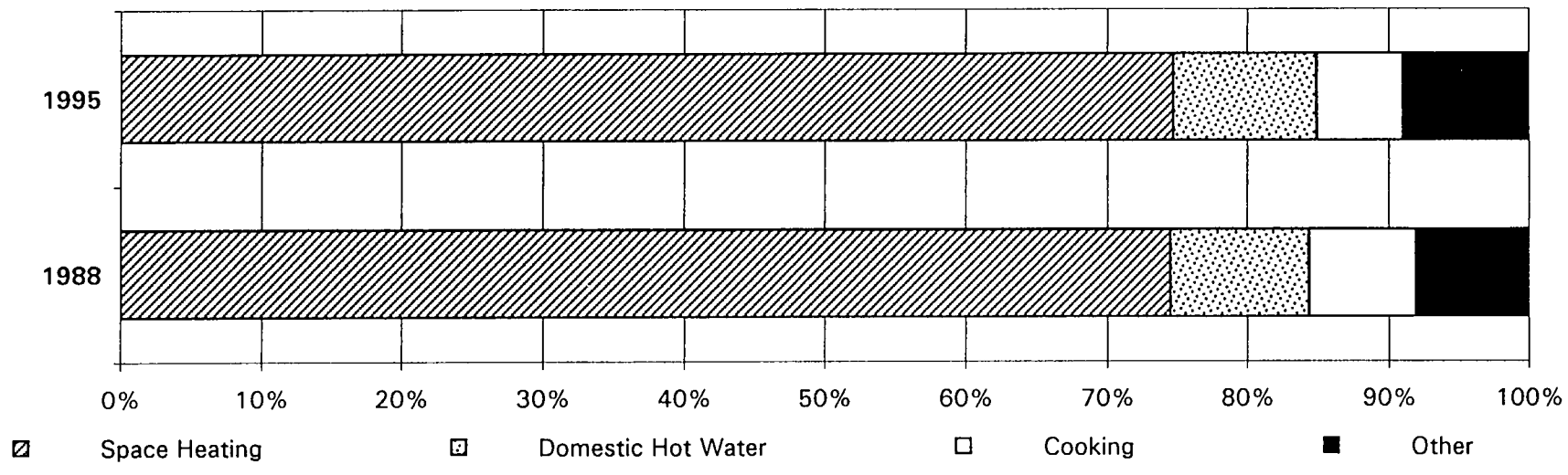
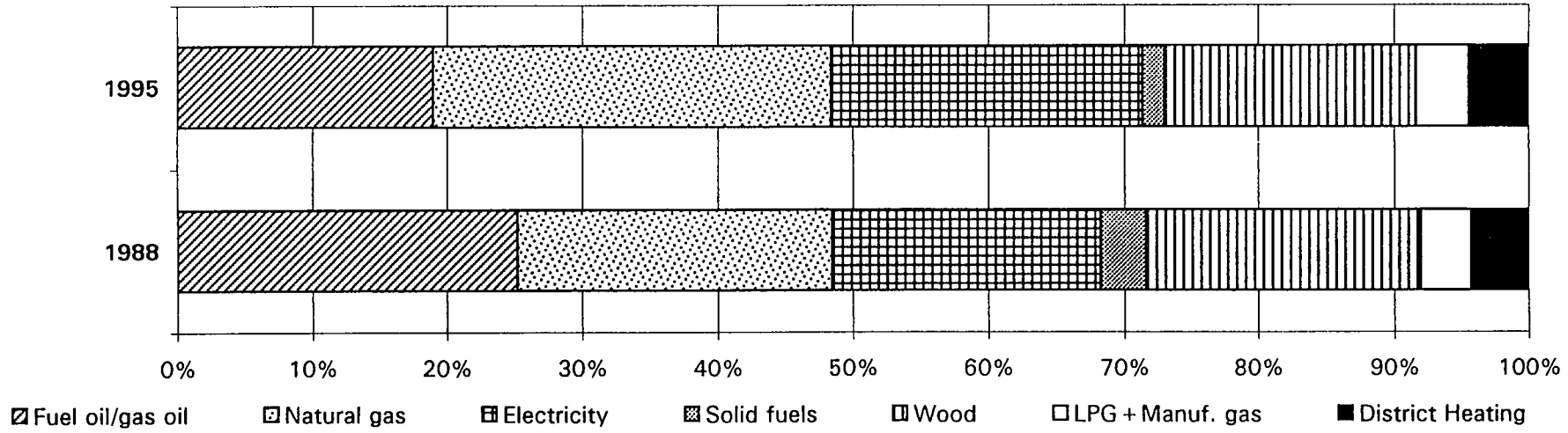


Figure 3.6.2 : Energy Consumption in France by Type of Fuel



ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	6 364	17 711	1 759	3 368	42	410			8 165	21 489
Natural gas	1 884	8 451	628	1 156	879	912			3 391	10 519
Electricity	1 256	1 949	2 638	1 782	2 261	3 468	5 946	9 519	12 100	16 718
Solid fuels	58 660	35 598	7 830	3 872	377	1 107			66 866	40 577
Wood		2 679		291		83				3 054
LPG + Manuf. gas	1 633	755	377	52	1 130	18 401			3 140	19 208
District Heating										
Other fuels										
All fuels	69 797	67 143	13 231	10 521	4 689	24 382	5 946	9 519	93 663	111 565

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	6 532	16 105	1 800	3 063	42	373			8 374	19 541
Natural gas	1 926	7 684	670	1 051	879	829			3 475	9 565
Electricity	1 298	1 772	2 722	1 620	2 303	3 154	6 113	8 656	12 435	15 202
Solid fuels	60 083	32 370	7 997	3 521	377	1 007			68 457	36 897
Wood		2 436		265		76				2 777
LPG + Manuf. gas	1 633	686	377	47	1 130	16 733			3 140	17 466
District Heating										
Other fuels										
All fuels	71 472	61 054	13 566	9 567	4 731	22 171	6 113	8 656	95 882	101 448

Figure 3.7.1 : Energy Consumption in Ireland by Type of Use

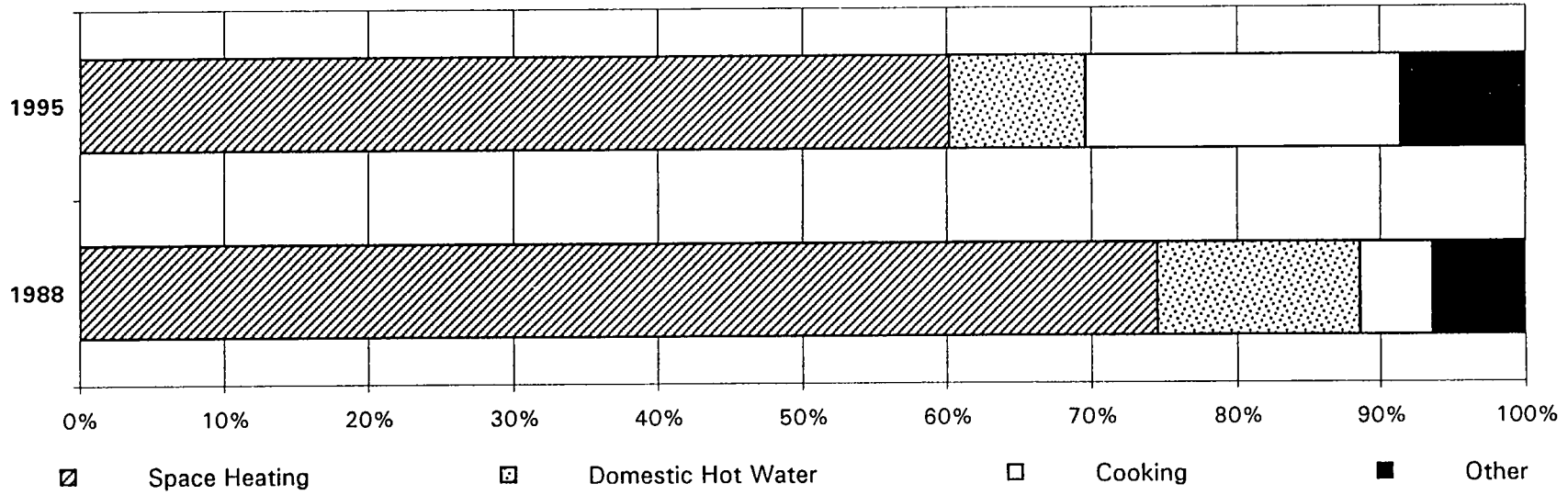
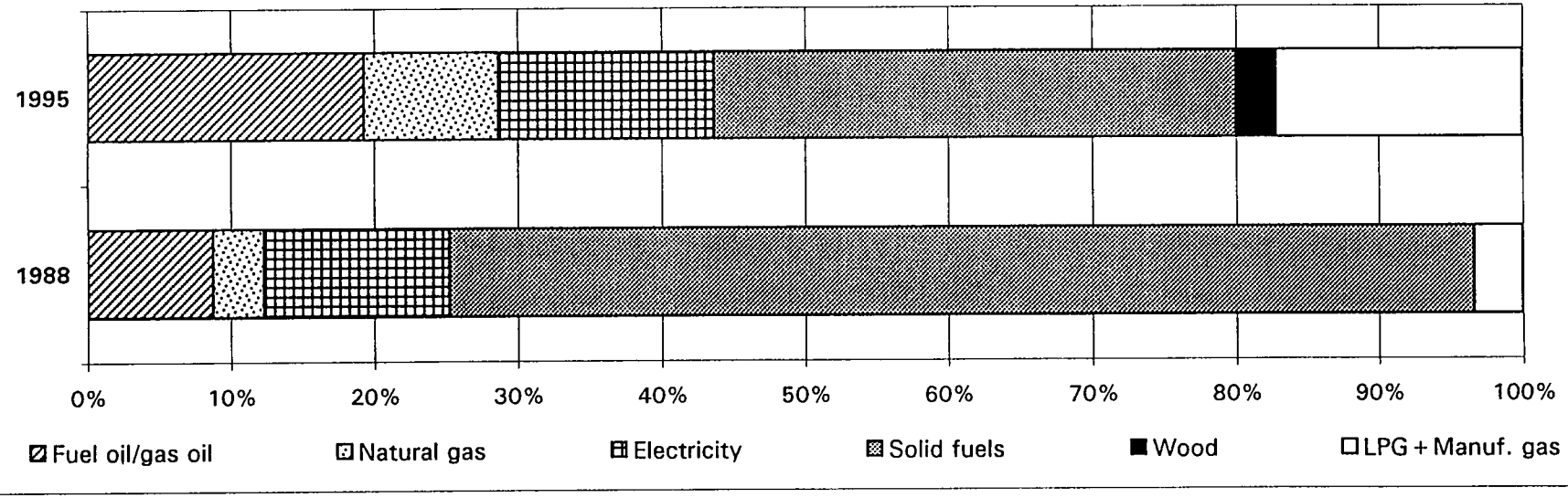


Figure 3.7.2 : Energy Consumption in Ireland by Type of Fuel



3.8 ITALY

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	216 887				16 664				233 551	
Natural gas	369 126		76 748		40 195				486 069	
Electricity	4 354		69 923		4 354		104 884		183 516	
Solid fuels	6 615				754				7 369	
Wood	185 610				20 642				206 252	
LPG + Manuf. gas	49 197		10 216		5 359				64 773	
District Heating										
Other fuels										
All fuels	831 789		156 887		87 969		104 884		1 181 530	

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	11 556				879				12 435	
Natural gas	19 637		4 061		2 135				25 834	
Electricity	251		3 726		251		5 527		9 756	
Solid fuels	335				142				477	
Wood	9 881				1 089				10 970	
LPG + Manuf. gas	2 596		544		293				3 433	
District Heating										
Other fuels										
All fuels	44 257		8 332		4 789		5 527		62 905	

Figure 3.8.1 : Energy Consumption in Italy by Type of Use

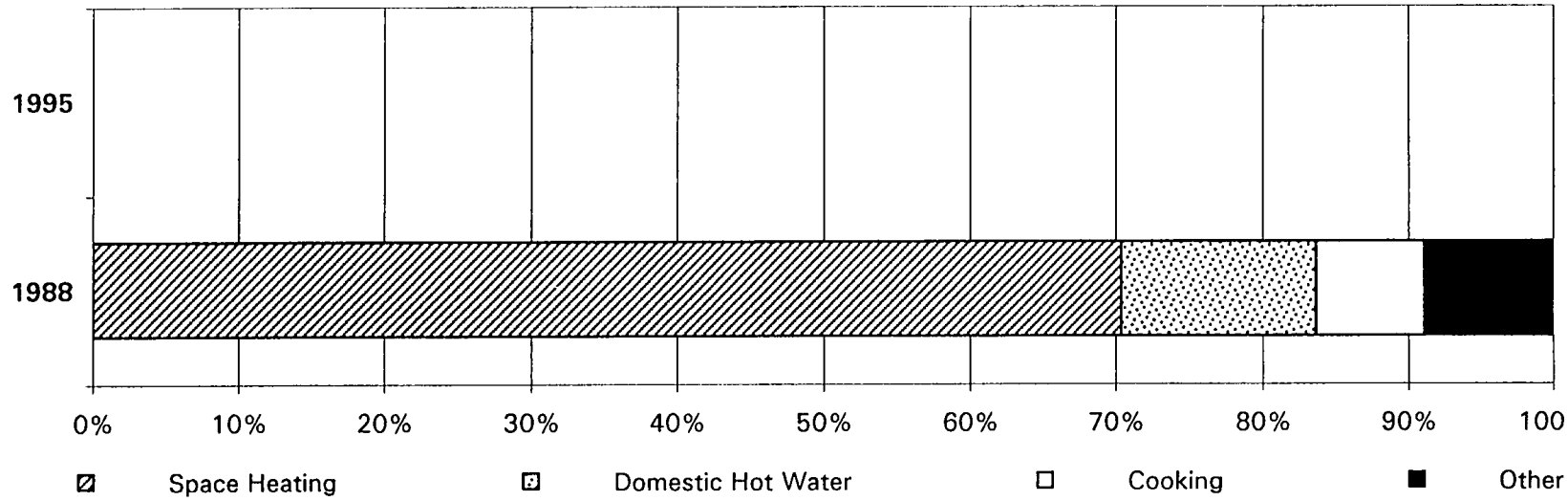
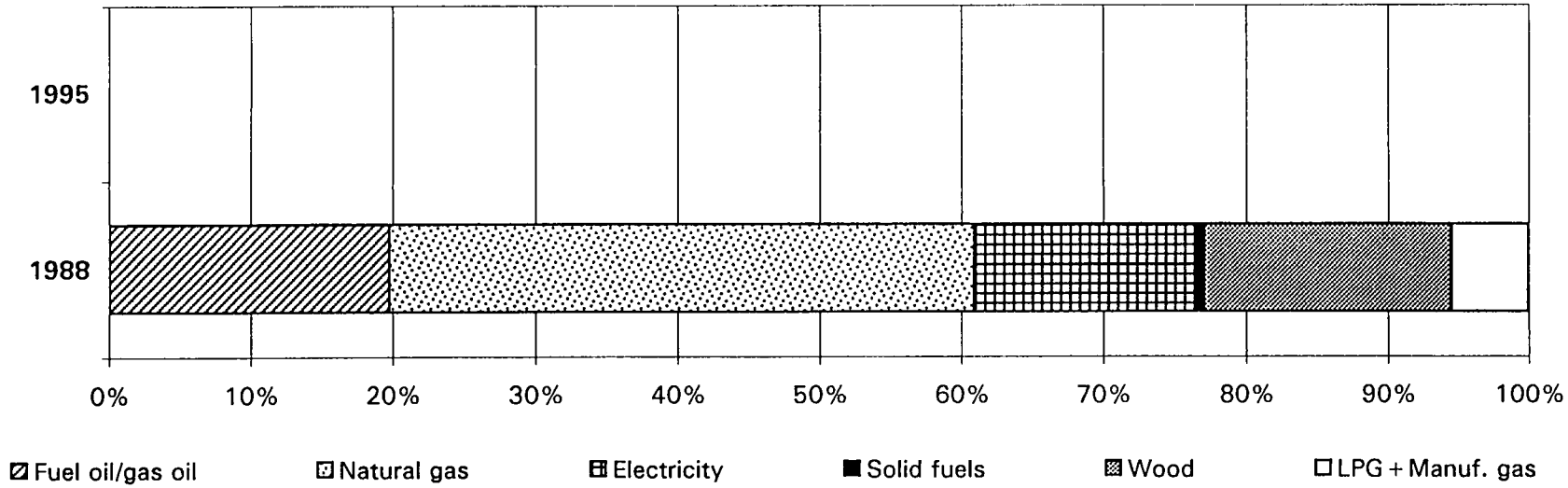


Figure 3.8.2 : Energy Consumption in Italy by Type of Fuel



3.9 LUXEMBOURG

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	9 588	-	580	-		-	204	-	10 372
Natural gas	-	5 900	-	826	-	125	-	358	-	7 208
Electricity	-	1 243	-	352	-	364	-	3 462	-	5 420
Solid fuels	-	444	-		-		-	142	-	586
Wood	-	533	-		-		-	112	-	645
LPG + Manuf. gas	-	5	-		-	10	-		-	15
District Heating	-	15	-		-		-		-	15
Other fuels	-	29	-		-		-		-	29
All fuels	-	17 756	-	1 758	-	498	-	4 278	-	24 290

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	66 270	-	4 010	-		-	1 410	-	71 690
Natural gas	-	40 770	-	5 710	-	860	-	2 470	-	49 810
Electricity	-	8 590	-	2 430	-	2 510	-	23 930	-	37 460
Solid fuels	-	3 070	-		-		-	980	-	4 050
Wood	-	3 680	-		-		-	770	-	4 450
LPG + Manuf. gas	-	30	-		-	70	-		-	100
District Heating	-	100	-		-		-		-	100
Other fuels	-	200	-		-		-		-	200
All fuels	-	122 710	-	12 150	-	3 440	-	29 560	-	167 860

Figure 3.9.1 : Energy Consumption in Luxembourg by Type of Use

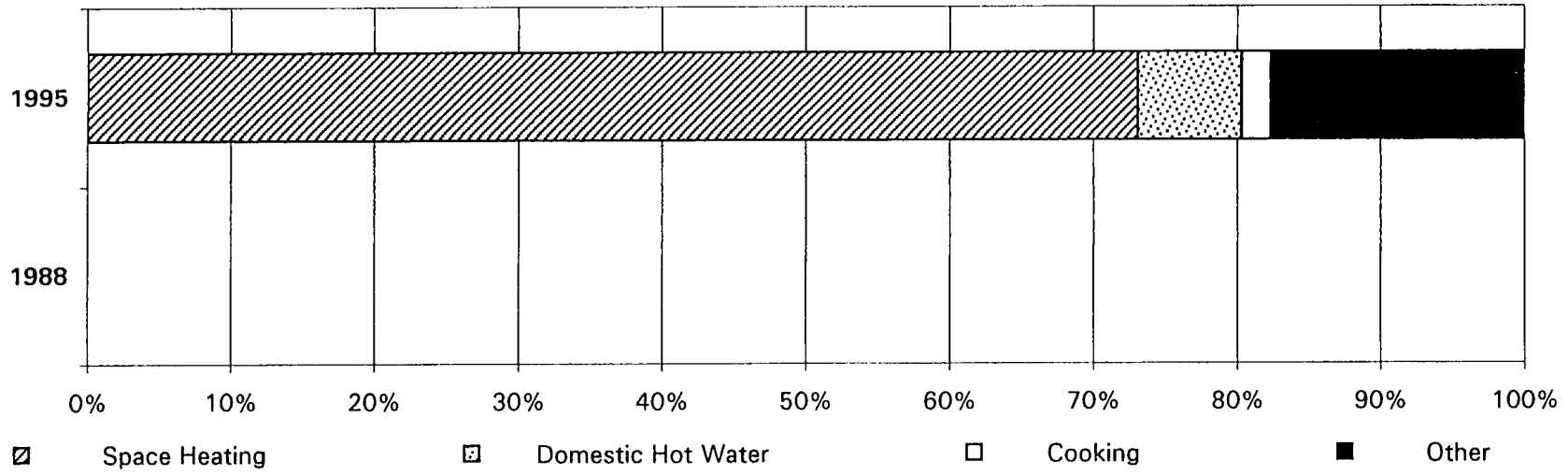
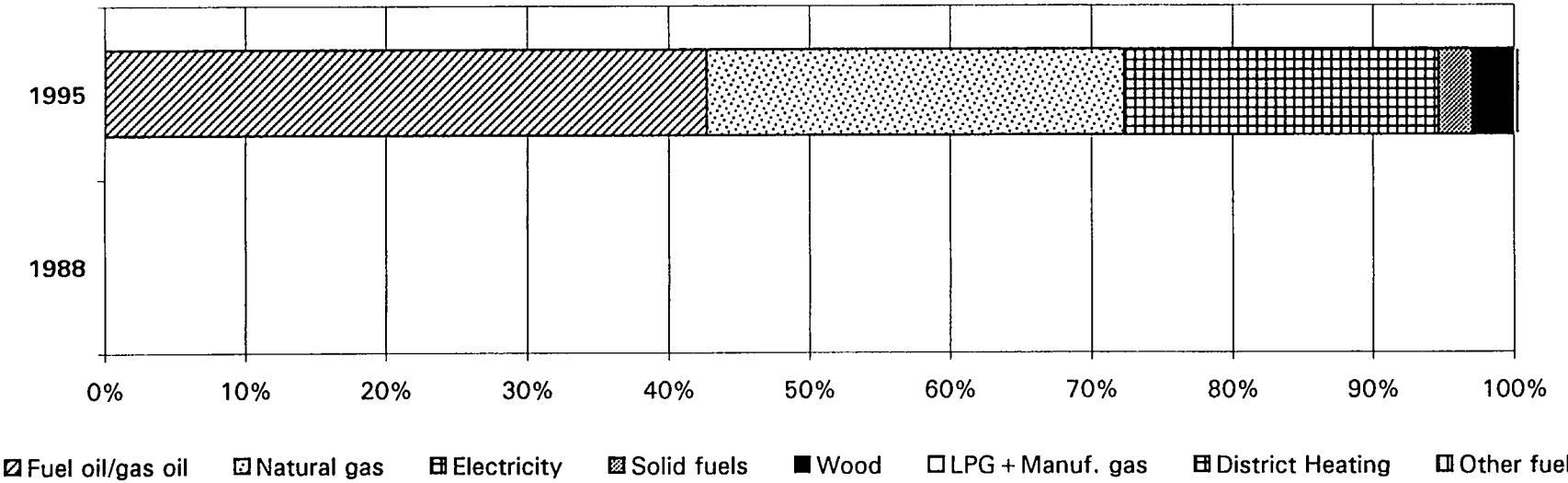


Figure 3.9.2 : Energy Consumption in Luxembourg by Type of Fuel



3.10 NETHERLANDS

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	9 295	2 490		740		100			9 295	3 330
Natural gas	262 985	269 600	57 320	80 620	10 384	10 600			330 689	360 820
Electricity	84	4 890	4 103	6 380	2 135	4 260	50 621	55 390	56 943	70 920
Solid fuels	1 089	220		70		10			1 089	300
Wood	15 073	13 580							15 073	13 580
LPG + Manuf. gas	1 884	750		220		30			1 884	1 000
District Heating	4 187	6 100		1 430					4 187	7 530
Other fuels										
All fuels	294 597	297 630	61 423	89 460	12 519	15 000	50 621	55 390	419 160	457 480

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	1 591	381		113		15			1 591	510
Natural gas	44 885	41 286	9 798	12 346	1 759	1 623			56 441	55 256
Electricity		749	712	977	377	652	8 625	8 482	9 714	10 861
Solid fuels	167	34		11		2			167	46
Wood	2 554	2 080							2 554	2 080
LPG + Manuf. gas	335	115		34		5			335	153
District Heating	712	934		219					712	1 153
Other fuels										
All fuels	50 244	45 579	10 509	13 700	2 135	2 297	8 625	8 482	71 514	70 058

Figure 3.10.1 : Energy Consumption in Netherlands by Type of Use

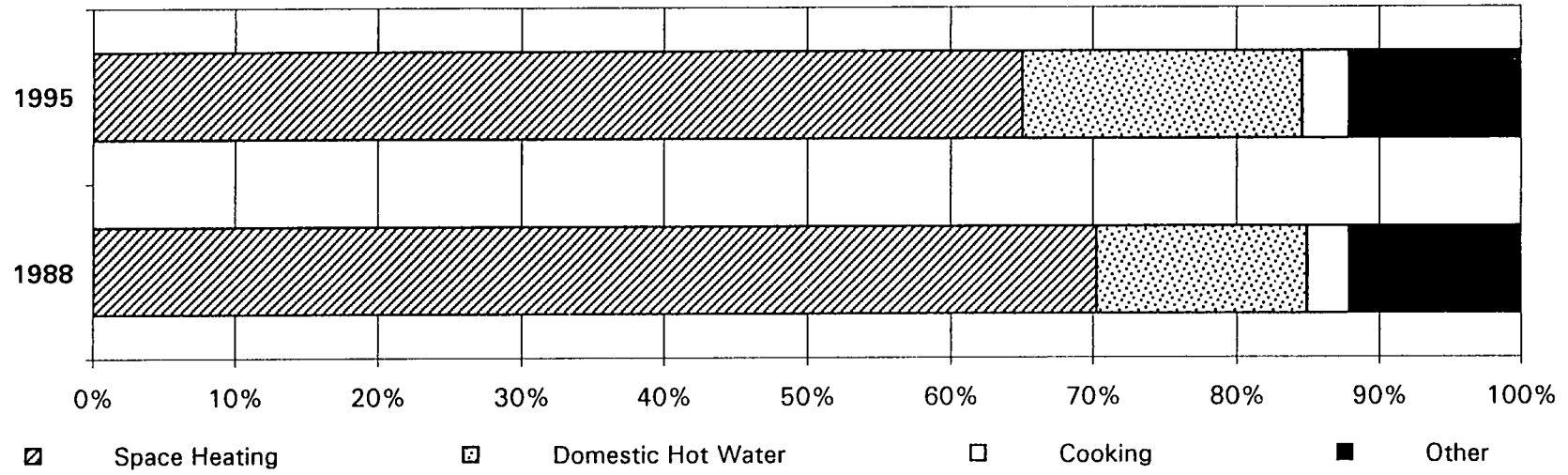
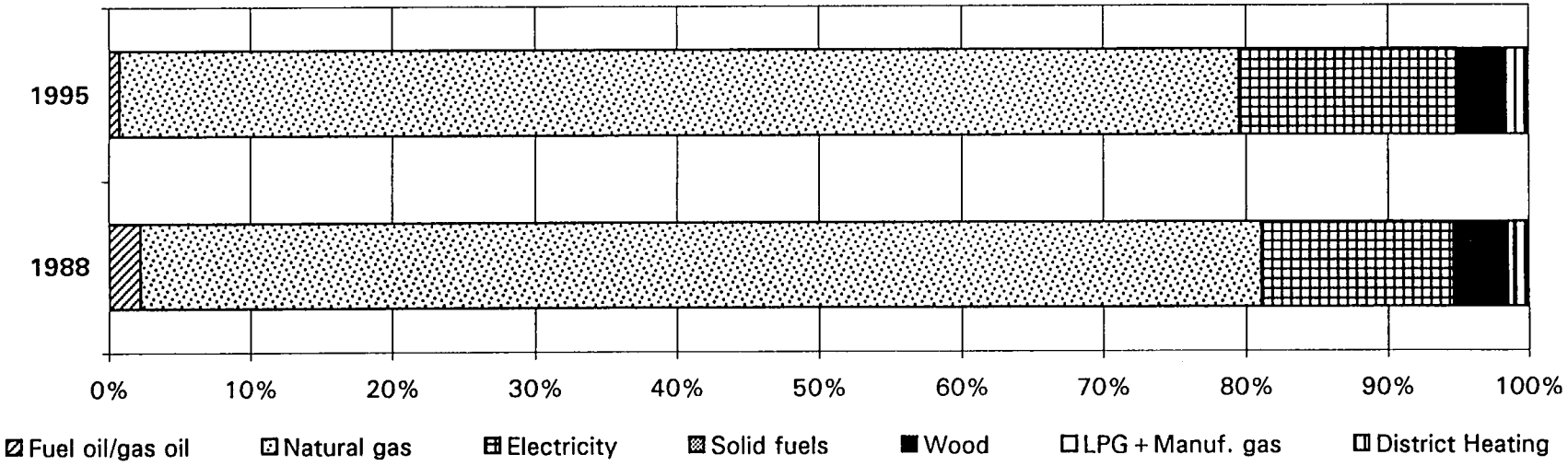


Figure 3.10.2 : Energy Consumption in Netherlands by Type of Fuel



3.11 AUSTRIA

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	61 920	-	4 984	-		-		-	66 904
Natural gas	-	48 072	-	8 931	-	2 104	-		-	59 107
Electricity	-	10 339	-	6 909	-	4 836	-	23 730	-	45 814
Solid fuels	-	15 782	-	622	-		-		-	16 404
Wood	-	55 282	-	4 764	-	107	-		-	60 153
LPG + Manuf. gas	-	2 838	-	329	-		-		-	3 167
District Heating	-	12 935	-	1 274	-		-		-	14 209
Other fuels	-	4 941	-	1 889	-		-		-	6 830
All fuels	-	212 109	-	29 702	-	7 047	-	23 730	-	272 588

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	19 776	-	1 592	-		-		-	21 368
Natural gas	-	16 354	-	2 852	-	672	-		-	18 878
Electricity	-	3 302	-	2 207	-	1 545	-	7 579	-	14 632
Solid fuels	-	5 041	-	199	-		-		-	5 239
Wood	-	17 656	-	1 522	-	34	-		-	19 212
LPG + Manuf. gas	-	906	-	105	-		-		-	1 011
District Heating	-	4 131	-	407	-		-		-	4 538
Other fuels	-	1 578	-	603	-		-		-	2 181
All fuels	-	67 745	-	9 486	-	2 251	-	7 579	-	87 061

Figure 3.11.1 : Energy Consumption in Austria by Type of Use

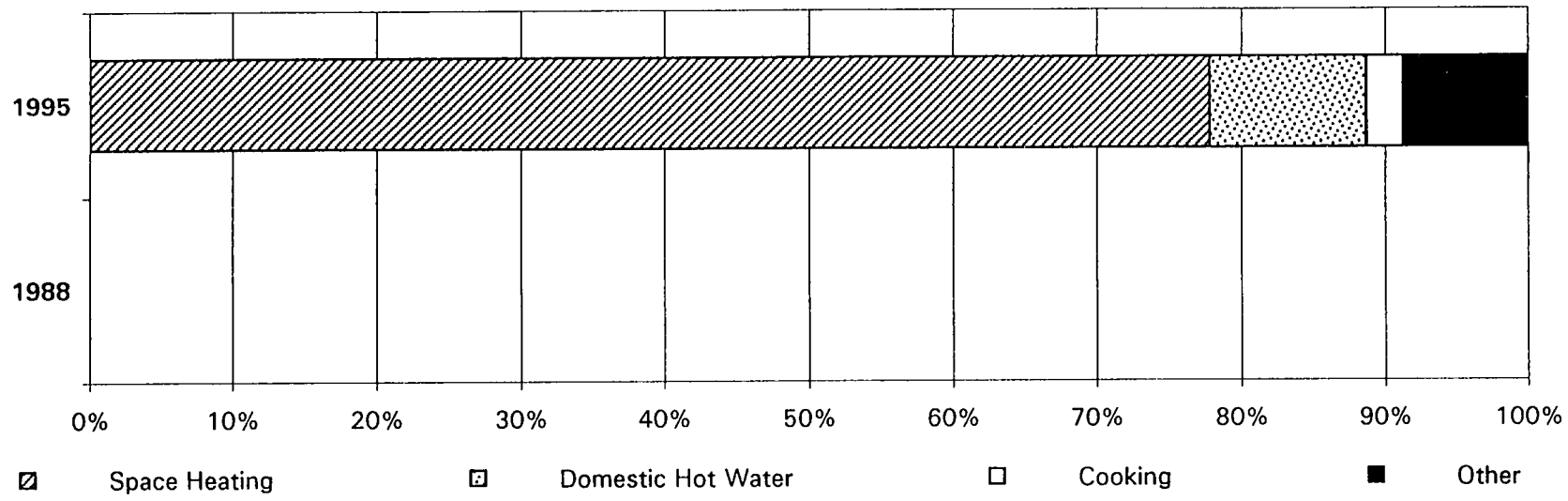
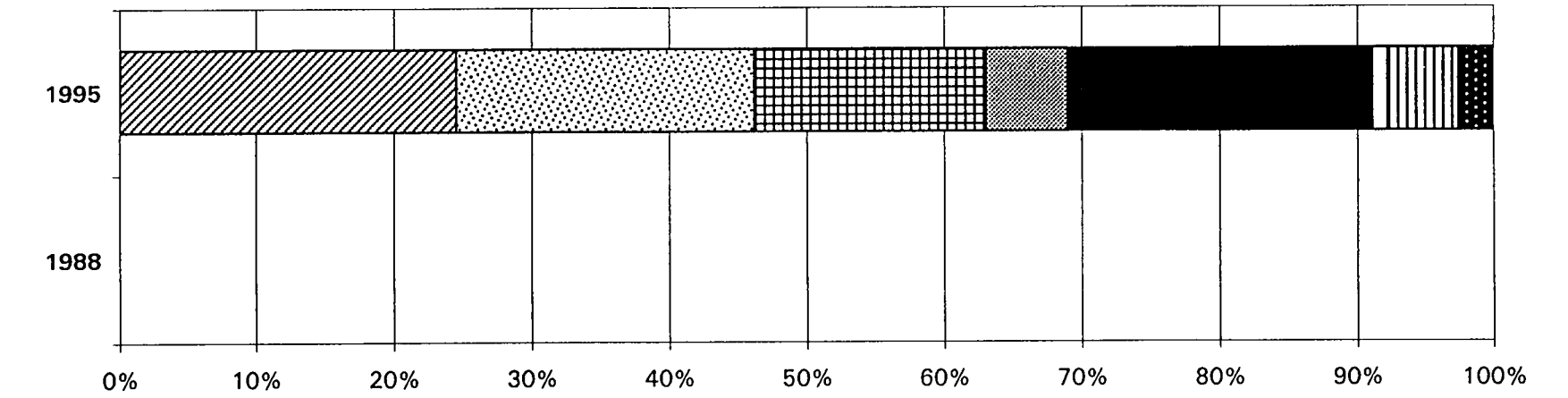


Figure 3.11.2 : Energy Consumption in Austria by Type of Fuel



3.12 PORTUGAL

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	42			47	167				209	93
Natural gas										
Electricity	1 005		2 428	3 050	1 549		11 137		16 120	31 104
Solid fuels	461				167				628	551
Wood	8 500		544	1 661	52				61 340	48 057
LPG + Manuf. gas	209		23 363*(2)*	11 912					23 572	34 450
District Heating										
Other fuels										
All fuels	10 216	30 506	26 336	16 910	54 180	41 474	11 137	25 365	101 870	114 255

(1) Including consumption for space heating

(2) Including consumption for cooking

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil					42				42	30
Natural gas										
Electricity	335		837		544		3 768		5 485	9 905
Solid fuels	167				42				209	175
Wood	2 889		167		17				20 852	15 303
LPG + Manuf. gas	84		7 955*(2)*						8 039	10 970
District Heating										
Other fuels										
All fuels	3 475	9 714	8 960	5 385	18 423	13 207	3 768	8 077	34 627	36 383

Figure 3.12.1 : Energy Consumption in Portugal by Type of Use

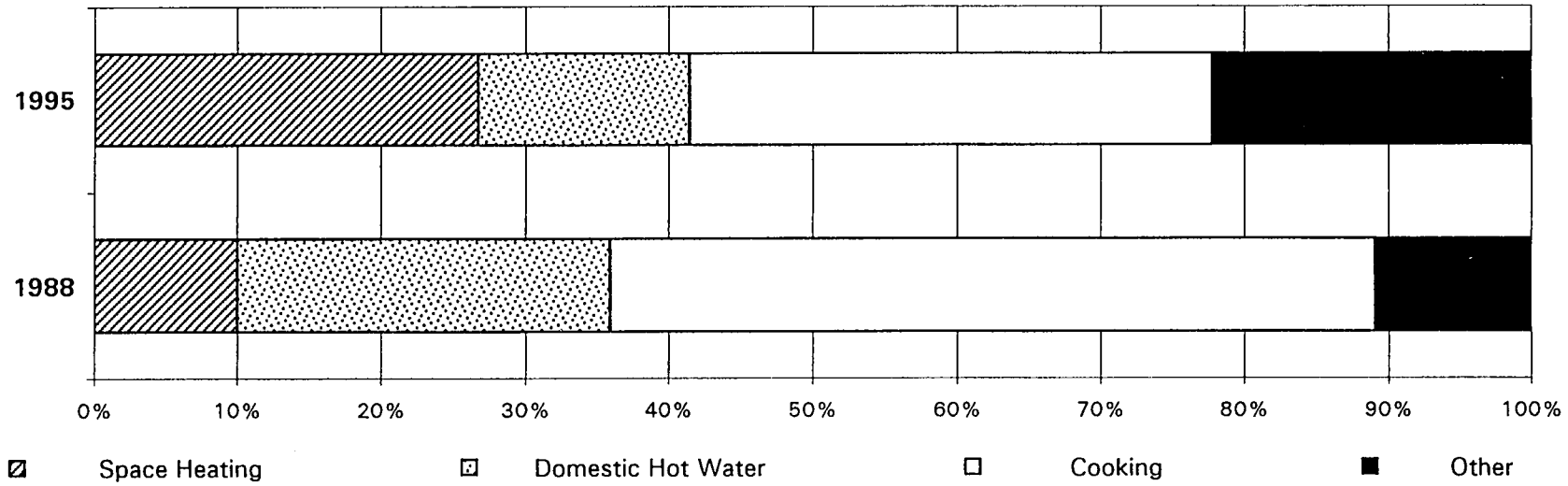
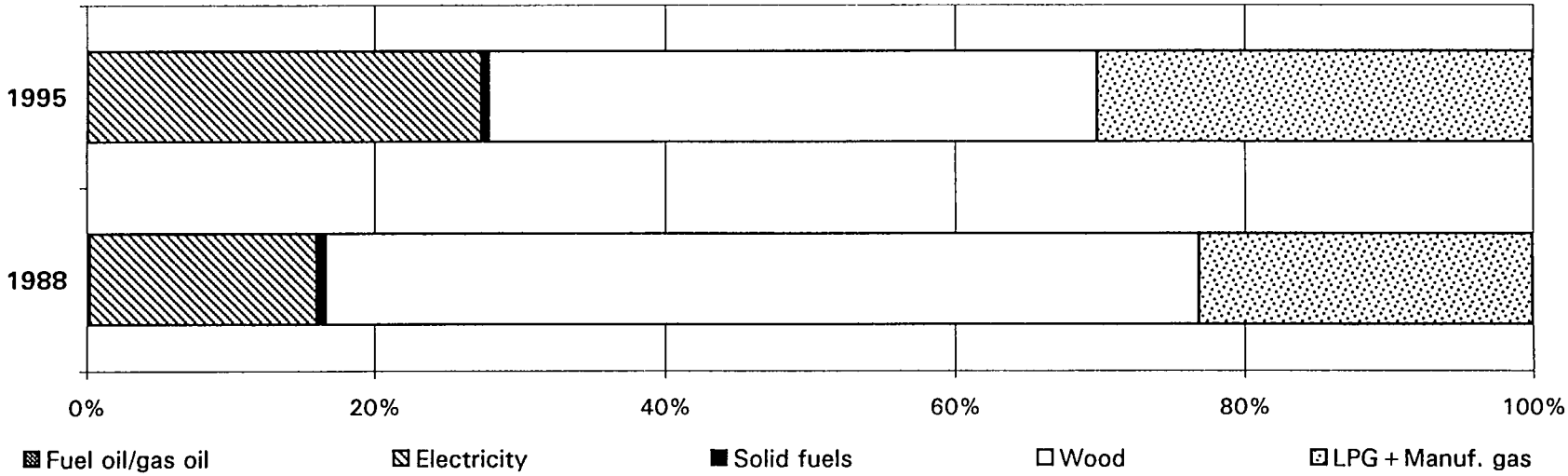


Figure 3.12.2 : Energy Consumption in Portugal by Type of Fuel



3.13 FINLAND

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	32 451	-	6 269	-		-		-	38 720
Natural gas	-	555	-	139	-	36	-		-	730
Electricity	-	17 395	-	7 625	-	3 344	-	30 160	-	58 524
Solid fuels	-	475	-	75	-		-		-	550
Wood	-	35 834	-	2 500	-	466	-		-	38 800
LPG + Manuf. gas	-	50	-		-	78	-	125	-	253
District Heating	-	40 931	-	10 549	-		-		-	51 480
Other fuels	-	384	-	96	-		-	4	-	484
All fuels	-	128 075	-	27 253	-	3 924	-	30 289	-	189 541

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PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	14 880	-	2 875	-		-		-	17 754
Natural gas	-	254	-	64	-	17	-		-	335
Electricity	-	7 976	-	3 496	-	1 533	-	13 829	-	26 835
Solid fuels	-	218	-	34	-		-		-	252
Wood	-	16 431	-	1 146	-	214	-		-	17 791
LPG + Manuf. gas	-	23	-		-	36	-	57	-	116
District Heating	-	18 768	-	4 837	-		-		-	23 605
Other fuels	-	176	-	44	-		-	2	-	222
All fuels	-	58 726	-	12 496	-	1 799	-	13 888	-	86 910

Figure 3.13.1 : Energy Consumption in Finland by Type of Use

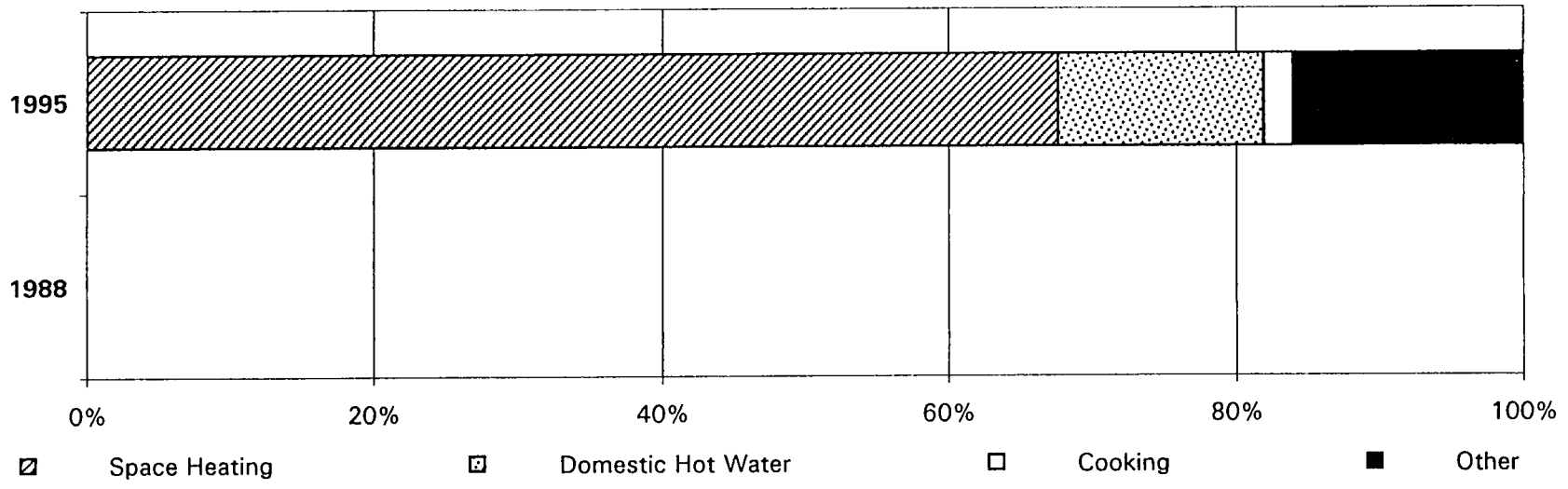
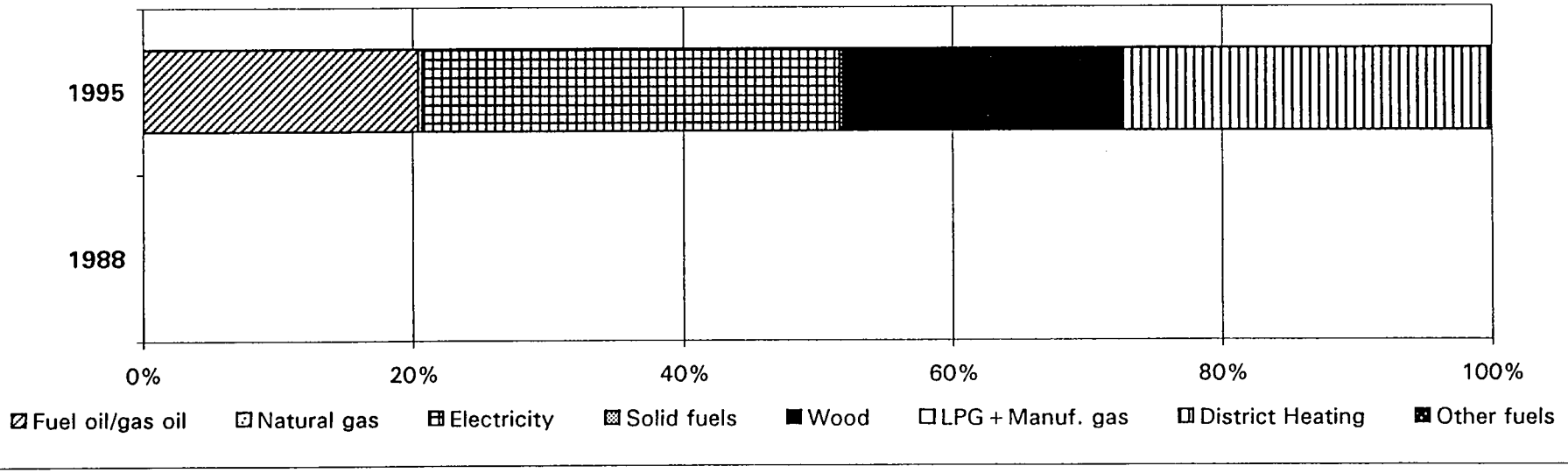


Figure 3.13.2 : Energy Consumption in Finland by Type of Fuel



3.14 SWEDEN

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	54 129	-	20 197	-		-		-	74 326
Natural gas	-	2 484	-		-		-		-	2 484
Electricity	-	73 087	-	19 749	-	7 613	-	51 771	-	152 265
Solid fuels	-		-		-		-		-	
Wood	-	38 183	-	2 010	-		-		-	40 193
LPG + Manuf. gas	-	235	-	497	-	612	-		-	1 344
District Heating	-	53 483	-	28 212	-		-		-	81 695
Other fuels	-		-		-		-	205	-	205
All fuels	-	221 601	-	70 710	-	8 225	-	51 976	-	352 512

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	-	13 164	-	4 912	-		-		-	18 075
Natural gas	-	604	-		-		-		-	604
Electricity	-	17 774	-	4 803	-	1 851	-	12 590	-	37 018
Solid fuels	-		-		-		-		-	
Wood	-	9 286	-	489	-		-		-	9 775
LPG + Manuf. gas	-	57	-	121	-	149	-		-	327
District Heating	-	13 007	-	6 861	-		-		-	19 867
Other fuels	-		-		-		-	50	-	50
All fuels	-	53 891	-	17 185	-	2 000	-	12 640	-	85 717

Figure 3.14.1 : Energy Consumption in Sweden by Type of Use

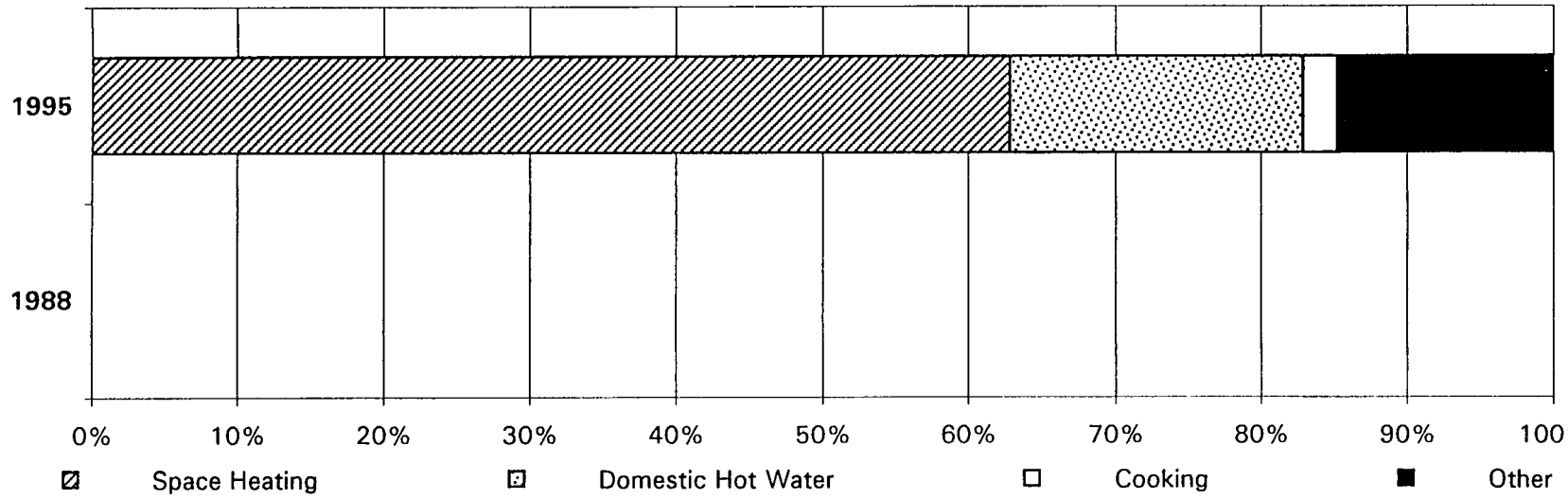
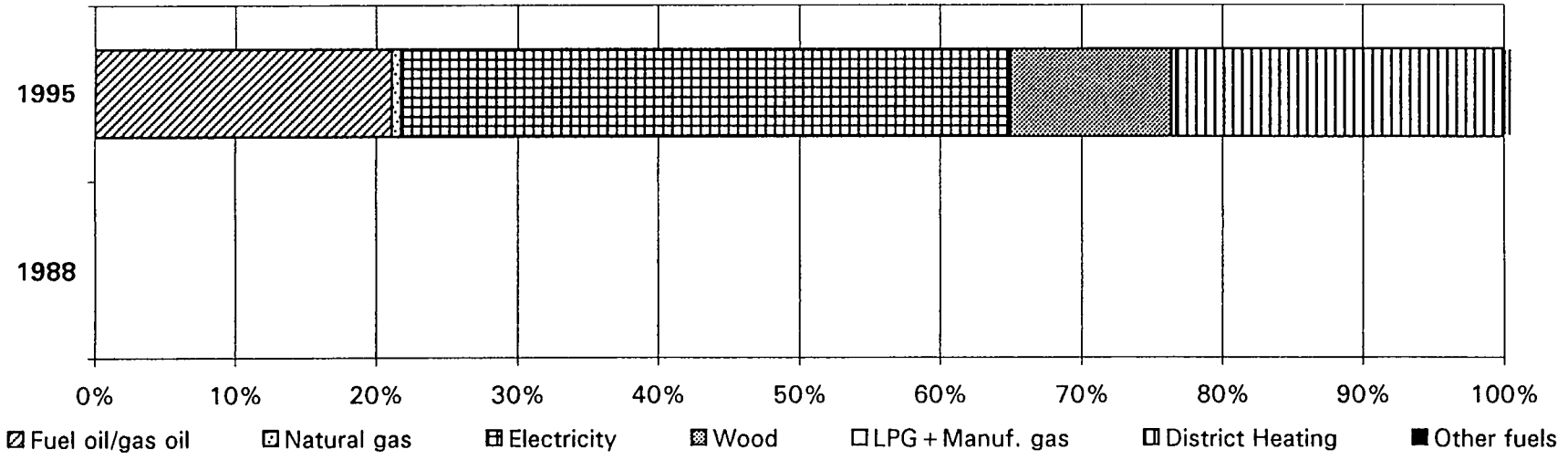


Figure 3.14.2 : Energy Consumption in Sweden by Type of Fuel



ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	71 765	72 046	22 987	30 100	921	2 902			95 673	105 048
Natural gas	717 317	685 445	204 284	297 721	75 617	73 352			997 218	1 056 518
Electricity	61 005	62 424	56 985	49 047	33 998	47 845	184 019	206 712	336 007	366 027
Solid fuels	173 844	82 258	82 651	25 951	2 847	858			259 343	109 067
Wood	11 179	5 498		1 733		59			11 179	7 290
LPG + Manuf. gas		9 295		4 036		997				14 328
District Heating										
Other fuels								1 805		1 805
All fuels	1 035 110	916 965	366 907	408 588	113 384	126 012	184 019	208 517	1 699 419	1 660 082

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil	3 433	3 141	1 089	1 312	42	126			4 564	4 579
Natural gas	34 417	29 880	9 798	12 978	3 643	3 198			47 857	46 056
Electricity	2 931	2 721	2 722	2 138	1 633	2 086	8 835	9 011	16 120	15 956
Solid fuels	8 332	3 586	3 978	1 131	126	37			12 435	4 754
Wood	544	240		76		3			544	318
LPG + Manuf. gas		405		176		43				625
District Heating										
Other fuels								79		79
All fuels	49 658	39 972	17 585	17 811	5 443	5 493	8 835	9 090	81 521	72 366

Figure 3.15.1 : Energy consumption in UK by Type of Use

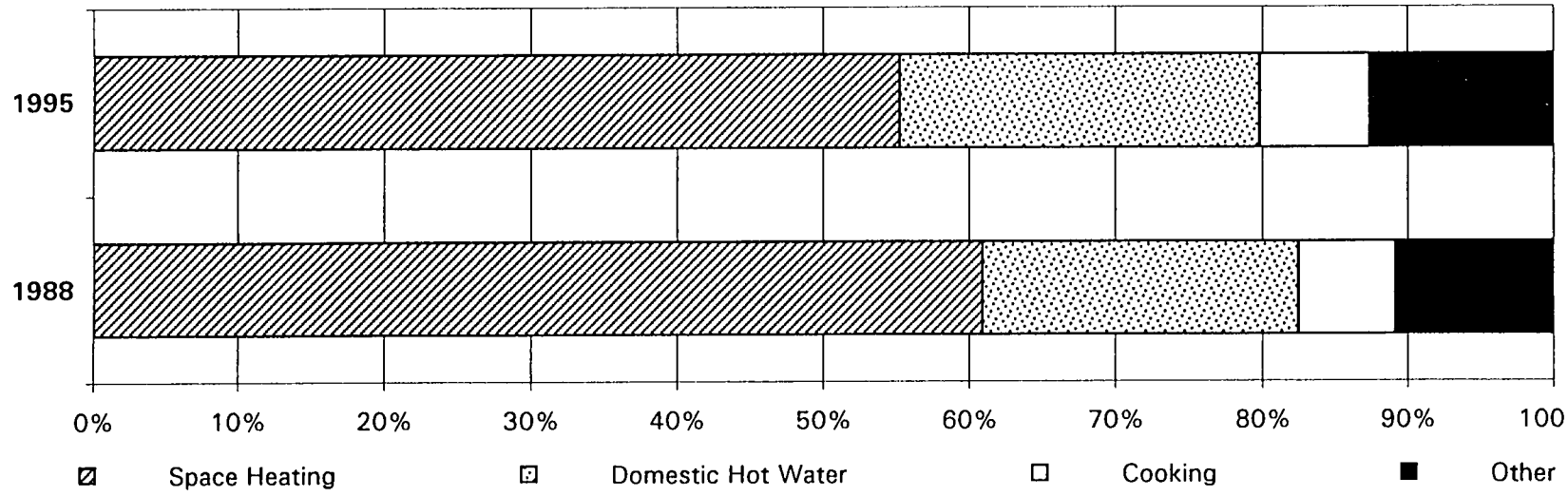
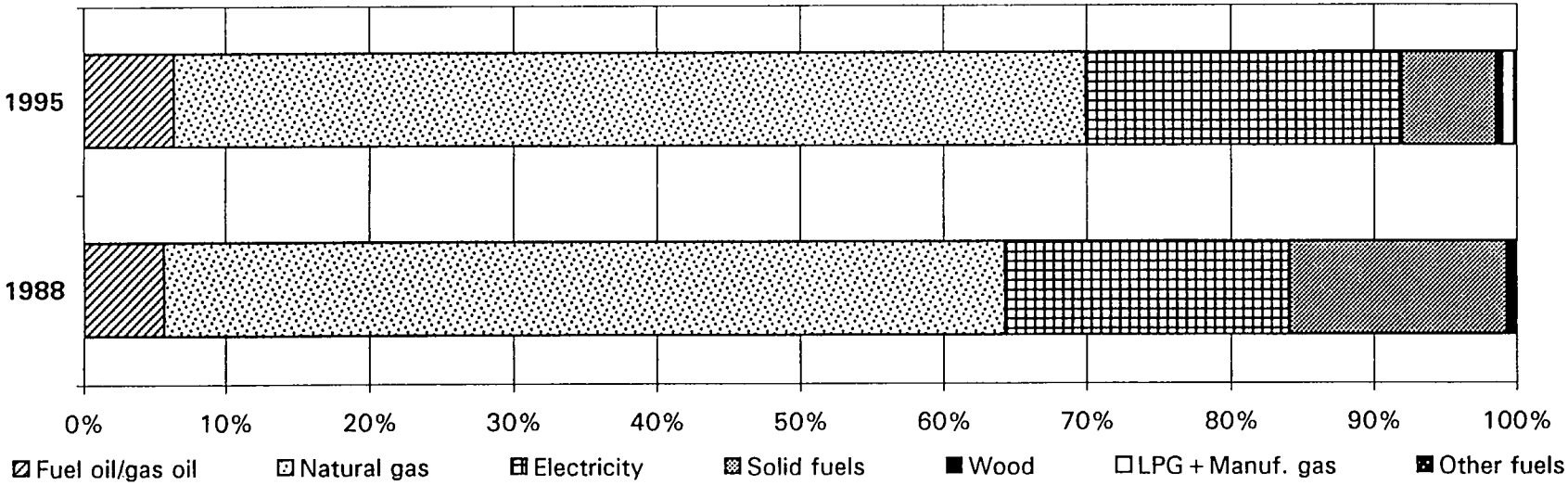


Figure 3.15.2 : Energy Consumption in UK by Type of Fuels



3.16 NORWAY

ENERGY CONSUMPTION IN HOUSEHOLDS

eurostat

TOTAL

TJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		12 704								12 704
Natural gas										
Electricity		51 109		29 918		4 986		38 644		124 657
Solid fuels		158								158
Wood		24 153								24 153
LPG + Manuf. gas		138								138
District Heating		793		252						1 045
Other fuels										
All fuels		89 055		30 170		4 986		38 644		162 855

eurostat

PER HOUSEHOLD

MJ

Type of fuel	Space Heating		Domestic Hot Water		Cooking		Other		All uses	
YEAR	1988	1995	1988	1995	1988	1995	1988	1995	1988	1995
Fuel oil/gas oil		6 368								6 368
Natural gas										
Electricity		26 619		14 996		2 499		19 370		62 485
Solid fuels		79								79
Wood		12 107								12 107
LPG + Manuf. gas		69								69
District Heating		397		126						524
Other fuels										
All fuels		44 639		15 123		2 499		19 370		81 632

Figure 3.16.1 : Energy Consumption in Norway by Type of Use

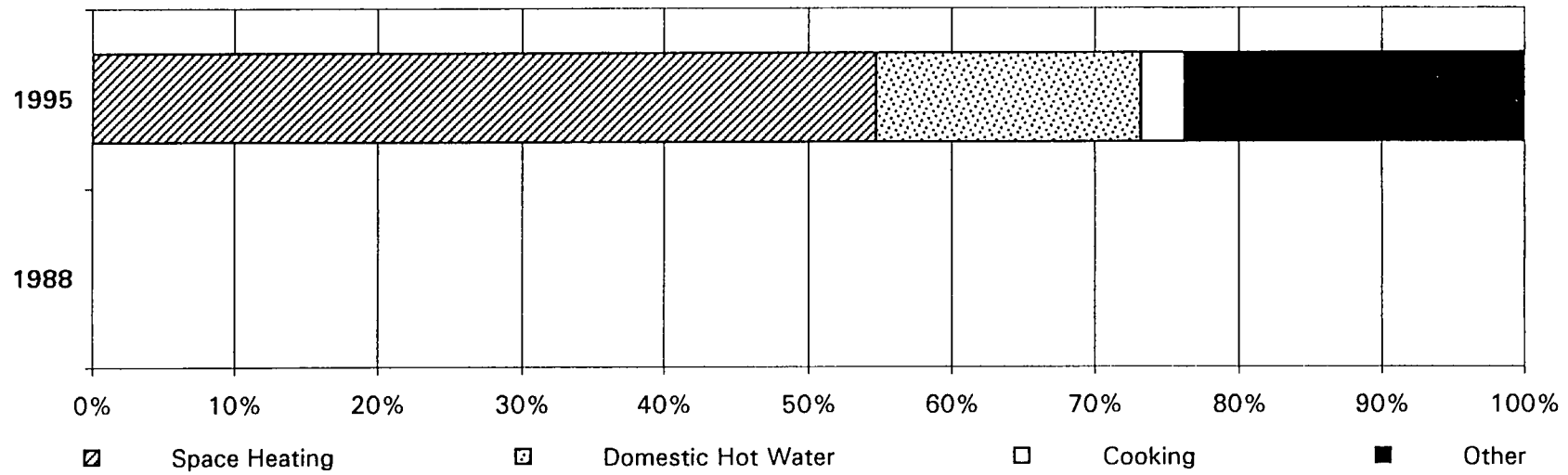
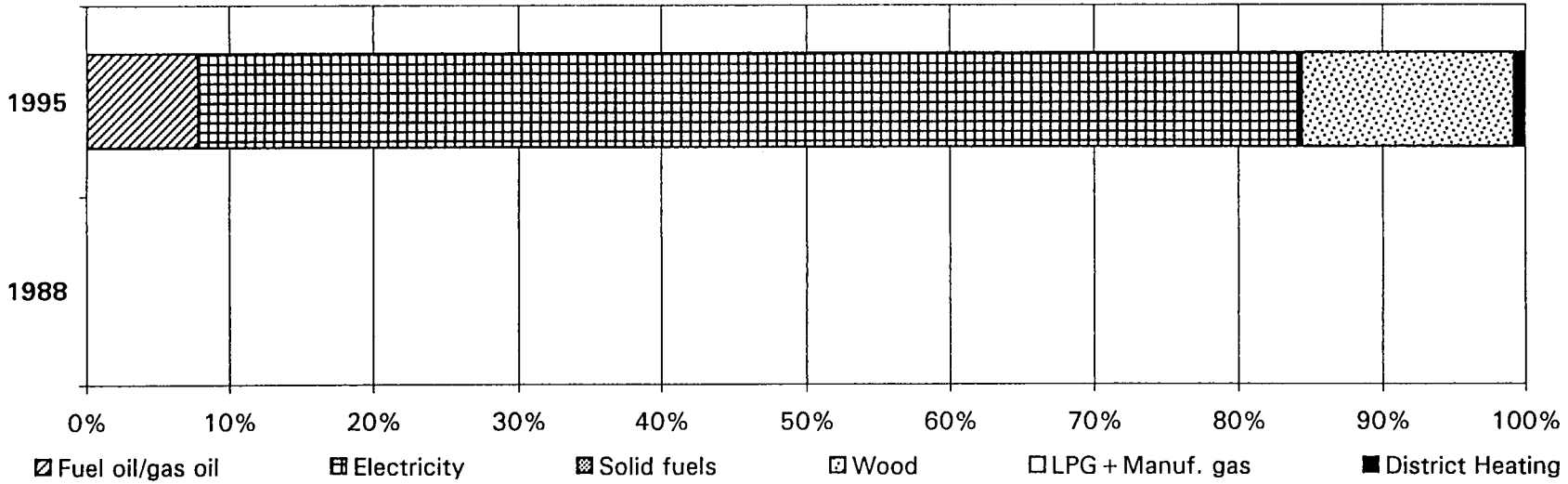


Figure 3.16.2 : Energy Consumption in Norway by Type of Fuel



4. DATA COLLECTION METHODOLOGIES

Belgium

The Belgian study on household energy consumption was based on two different reports prepared by VITO (Vlaamse Instelling voor Technologisch Onderzoek) for the Flanders Region and the Walloon Institute of Economic and Social Development for Wallonia and Brussels Capital.

The figures for the Flanders were based on:

- The National Institute for Statistics (Census 1991 and yearly statistics on dwellings).
- The Committee for Electricity and Gas (CEG). The CEG performed 5 000 inquiries among households in 1997.
- VITO inquiries among households (500 households were interviewed on the insulation levels of their dwellings) and the energy balance 1995 (households).
- DIV (Dienst inschrijvingen voertuigen): number of cars by fuel type and engine size.

The Walloon Institute collected data for Brussels and Wallonia. Figures were based on the studies of:

- The National Institute for Statistics
- The Committee for Electricity and Gas (CEG)
- The Walloon Institute (energy balances)
- Vehicle Register
- The Union of German Companies of Electricity Distribution

Both institutes made some estimates for the evolution 1991-1995.

Denmark

Statistics Denmark compiled the data and carried out the Danish survey on household energy consumption. Register-based information from the national Central Register of Buildings and Dwellings (BBR), supplemented by calculations of energy consumption in dwellings were used. Information from interview-based surveys was also used concerning the state of insulation materials used in dwellings and private transport needs in households.

Data were based on:

- The Register of Dwelling Statistics at Statistics Denmark (January 1996).
- Energy Statistics 1995, Danish Energy Agency and Ministry of the Environment and Energy.
- Data material from DEFU (Institute for Research and Development) within the area of electricity supply.
- Statistics Denmark's Traffic Survey.

Germany

The German study was drawn up by the German Institute for Economic Research (DIW) for the base year 1995. In this study the definitions and delimitation have been carried over from previous work. Apart from estimates made by DIW, data are based on:

- The statistical yearbook of the Statistisches Bundesamt.
- Energy Consumption in Households, Eurostat (1993).
- Energy Consumption in Households, Statistisches Bundesamt (1988).
- Energy data, Ministry of Economy (1996)
- Federal Ministry for Motor Vehicles

Several surveys of the Statistisches Bundesamt for 1996 and data from the working party on energy balances and statistics from the coal sector, the petroleum association (MWV), the Federal Association of the German Gas and Water Industry (BGV) and the Association of German Power Stations (VDEW) were used as well.

Greece

The National Statistical Service of Greece carried out the survey on households' energy consumption in Greece. The sampling method chosen was a two-stratified sampling system. The sample was stratified according to the population of regions. Catalogues from the census of population 1991 were used as a sampling frame but they were updated by the interviewers before the survey.

A working group was created to design the questionnaire. In this group, delegates from the Ministry of Development, the Greek Electricity Company and Eurostat participated.

The method used for data collection was the personal interview. The response rate in the survey was 100%. Once the collection was completed the questionnaires were checked for consistency, clarity and completion. Data produced were compared with other results such as data of households consumption produced by the Public Company of Electricity and the Energy Balances of the Ministry of Development.

Spain

The Spanish study on households energy consumption was conducted by the INE (National Institute of Statistics). Several sources of information were used:

- Family budgets. Years 1985, 1990-1991, 1997.
- Data from the IDAE (Institute for Energy save and diversification)
- Data about energy consumption from the MINER (Ministry of Industry and Energy)
- PHOGUE (Data panel of the European Union households), 1994.
- Data about private car stock form the DGT (General Direction of Traffic)
- Census of dwellings and population, 1991.

Estimates were done when data could not be obtained directly from the sources mentioned above but the results were always contrasted in order to improve the quality.

France

The study on energy consumption in households in France was carried out by CEREN (Centre of Economics Studies and Research on Energy). Several sources of information have been used to collect the figures :

- "Household consumption" (1994, 1995,1996), INSEE results.
- "Family budget" (1995), INSEE results.
- "Households domestic equipment" (1988, 1991, 1993), INSEE results.
  "Energy equipment in principal dwellings". Survey on "Dwellings 1992-93" carried out by INSEE.
- "Urban heating, an approach of the users cost".
  "Collective heating in dwellings". The results of this survey were taken from CEREN panels and INSEE data.
- "Transport Accounts" (1993,1994), INSEE results.
- "Households car stock and usage in1992 and 1994", INSEE results.
- "Types and energy consumption results 1995" - CEREN.
- "Average energy prices for households" (1995).

Ireland

The Irish Energy Centre conducted the study on households energy consumption in Ireland. The starting point for the project was the gathering of all available information for energy use in the domestic sector for 1995. The two main tasks were:

- Market survey work to gather overall data on the equipment, structure, fuel type and general habits of domestic energy consumption in Ireland.
- A desktop process of deduction and interpolation of the above data so as to break down more fully the patterns of energy consumption by fuel and by use.

The breakdown on energy consumption by use necessitated a degree of interpolation and estimation, since such information cannot be gathered directly.

The main sources of information for this study were:

- Household Budget Survey 1995, Central Statistical Office.
- Electricity Supply Board, energy survey results.
- Board Gas Eireann, energy survey results.
- The Revenue Commissioners Statistical Report for 1995.
- Irish Bulletin of Vehicle and Driver Statistics 1995, Department of Environment.
  Domestic Energy Survey, Landsdowne Market Research for the Irish Energy Centre (1996).

Luxembourg

The Energy Agency carried out the survey on households' energy consumption. The sources of information used as support of the data were:

- Census of population, 1991.
- STATEC (Central Service of Statistics and Economic Studies).
- Ministry of Energy.

Netherlands

The Central Office of Statistics compiled the study on energy consumption in households. To gather the information concerning 1995, several surveys and data were used, such as Dutch labour force statistics (1994), Annual household statistics (1994), Survey on housing demand (1994), Private car stock (1994-95), Statistics of motorised vehicles (1994-95) and Statistics of passenger traffic (1994-95). Some external information was used as well: Basic survey on electricity users small quantities (1994, EnergyNed), Survey on fireplaces and woodburning stoves (1993, Communicatie-en Adviesbureau over energy en milieu) in the Netherlands, contribution to the energy supply and environmental consequences (1992, Energieonderzoek Centrum Nederland).

Austria

To provide the variables required from Eurostat about the energy consumption in households in Austria, a mix of the following approaches was used:

- Use of surveys conducted by OSTAT (Statistical Central Office) in 1995.
  Use of very detailed surveys conducted by OSTAT in 1991 and 1993 and extrapolating the numbers to 1995 using results of a cross-sectional analysis to crosscheck the results.
- Using a database of 500 Austrian households collected over a period of about five years.

The structural parameters documented in this report are mainly derived from comprehensive surveys undertaken by OSTAT over the period 1991 till 1996. Every year a microcensus based on a sample of 30 000 households is conducted by OSTAT and the information contained in the microcensus from 1991 to 1995 has been used to fill most of the structural data. Information about households' energy consumption by type end uses was provided by the database of 500 Austrian households. This collection was started already in 1993 and completed to a sample of 500 in 1996.

Portugal

The survey on energy consumption in households in Portugal was carried out by the General Direction of Energy (DGE). The data are based on a sample of 3 750 dwellings distributed in five regions (North, Centre, Lisboa and Vale do Tejo, Alentejo and Algarve) according to the number of dwellings in each area. Information from the population census of 1991 was used to constitute the sample. An econometric approach was used to estimate the figures.

Finland

The Finnish study about energy consumption in households was carried out by two divisions of Statistics Finland: the Social Statistics/Interview Studies division and the Business Structures, Environment and Energy division.

Statistics Finland opted to use as method of data collection existing research, information available from different organisations as well as experts' evaluations.

The primary source for structural data was the Building Register (maintained by the Population Register Centre) and its structural data on buildings, dwellings and residents. The Household Expenditure Survey 1995 and the 1995 Survey on Financial Statements of

Housing Corporations were used as sources of information to estimate some structural data (figures on heating systems, for example).

Data obtained from the Finnish Electricity Association, the Finnish District Heating Association and the Finnish Natural Gas Association were used as base to calculate the figures relating to the energy consumption. A survey carried out by the Finnish Forestry Research Institute covering the period 1992/1993 was useful to determine the wood consumption. Data on the stock of private cars were obtained from the register maintained by the Vehicle Administration Centre, the Household Expenditure Survey 1995, the Technical Research Centre of Finland and the Finnish National Road Administration.

Sweden

Statistics Sweden (Department of Environment and Agriculture Energy Statistics) compiled the study of energy consumption in households in Sweden. The information presented in the study was obtained from surveys and other available sources.

The main part of the data presented was based on the results from surveys of one and two dwelling houses and of multi-dwelling buildings: one and two-dwelling houses were split up on two surveys concerning houses on agriculture real estates with reference year 1996 and other real estates with reference year 1995. A stratified random sample of about 7 500 houses was used. The surveys were carried out as mail surveys and the non-response was followed up with telephone interviews. The survey of multi-dwellings was based on a stratified random sample of about 7 400 real estates and was carried out as a mail survey.

Important sources of information were: Assessment of Real Estates 1995 (FTR) comprising all real estates and containing structural information about them, Survey of Housing and Results based on a national sample of rented dwellings and co-operative building society dwellings, Vehicle Register, National Accounts, Population and Housing Census from 1990, Surveys on Living Condition carried out by Statistics Sweden annually and Energy Use in Sweden (a study from NUTEK concerning 1994).

United Kingdom

The British study on energy consumption in households was prepared by the Building Research Establishment. The energy consumption figures refer to the United Kingdom. All other figures refer to Great Britain. This is because the key surveys do not cover Northern Ireland. The difference between Great Britain and the United kingdom is small, so the survey finding for Great Britain can be taken to be representative of the United Kingdom.

Most of the structural information about dwellings was based on the number of households. This information was taken from the Home Heating Report 1996 (Gfk Marketing Services Ltd. Home Audit.), Housing and Construction Statistics - Great Britain (1996), Domestic Energy Fact File 1993 updated (BRE Report 1993), Home Insulation Report 1995 (Gfk Marketing Services Ltd. Home Audit.), English House Condition Survey 1991 (Department of Environment), Family Expenditure Survey1994/95, Vehicle Licensing Statistics 1995 and National Travel Survey 1993/95.

Information about energy consumption was taken from the Digest of United Kingdom Energy Statistics 1996, Domestic Equipment and Carbon Dioxide Emissions (DECADE, Environmental Change Unit, University of OXFORD-Second Year Report 1995) and BREHOMES model (1995 reconciliation).

Norway

The study on energy consumption in households in Norway was carried out by Statistics Norway (Division for External Trade, Energy and Industrial Production Statistics). The main source of information about structural data was the Survey of Housing Conditions for 1995. The net sample in this survey was 4 455 households. In order to determine the energy consumption in households two main sources of information were used: the Energy balance for Norway 1995 and the National Accounts for Norway 1995.

Two surveys about energy consumption in households, 1990 and 1995, were used to determine statistics on insulation, additional heating equipment, water heating equipment, availability of electrical equipment, private car stock and energy consumption.

The Directorate of Public Roads in Norway and the Energy Accounts (1995) were used as sources of information as well.

PART II

CENTRAL & EASTERN EUROPEAN COUNTRIES

1996 SURVEY

LIST OF CONTRACTORS

Country	Contractor
Albania	INSTAT
Bulgaria	National Statistical Institute
Czech Republic	Czech Statistical Office
Estonia	Statistical Office of Estonia
Hungary	Central Statistical Office
Latvia	Statistical Bureau of Latvia
Lithuania	Department of Statistics
Poland	Central Statistical Office
Romania	National Commission for Statistics
Slovak Republic	Slovak Statistical Office
Slovenia	Statistical Office of Slovenia

INTRODUCTION

The Central and Eastern European Countries (C&EE) are currently adapting their energy statistics to respond to the challenge of market economies, and to make them compatible with the statistical reporting requirements and obligations of the European Union. In order to assist the C&EE countries in this adaptation, DG IA and EUROSTAT have agreed a programme of review and action. The programme will also permit C&EE countries to familiarise themselves with European Union structures, procedures and the *acquis communautaire*.

The first phase of this programme reviewed the energy data collection systems and the quality of energy statistics in the C&EE countries. This review resulted in a number of recommendations for specific projects to provide new and better data in certain areas, and stimulus for improvement of the underlying reporting systems.

One of the issues identified during the first phase of the programme was the lack of reliable data for final energy consumption in households and small farms. DG1A, Eurostat and the PHARE multi-country energy programme management unit in Bucharest decided that a project comprising surveys of household energy consumption would make a good start to the harmonisation programme by bringing help to an area with particularly weak statistics and providing energy statisticians with direct experience of household surveys and a means of checking their present estimations.

In 1994, Poland conducted a survey of household energy consumption using 1993 as the reference year, and has since produced many detailed results. The GUS (Central Statistical Office) has participated in the present household energy consumption survey programme by using and extending the results of their survey to derive indicators which are of value to investigations in energy efficiency and environmental emissions. These are of benefit both for the country and for demonstrating how the survey results can be used to improve the understanding of household energy use, its influencing factors and its effects.

1. DESIGN AND IMPLEMENTATION OF THE SURVEY

1.1 Aims of the Survey Project

The primary aim of the project is to improve household energy data quality in the short and long terms. Results from the project provide valuable information on household energy consumption, space heating, water heating and cooking conditions, as well as an indication of the ownership of electrical appliances in 1996. Information has also been obtained on car use by households. Consumption of energy by households who farm or undertake other economic activities may be divided between the household itself, and the farm or the other economic activities.

It will be equally important however, to use the results to improve the regular annual compilation of energy statistics. Figures for household energy consumption are obtained almost entirely from suppliers or distributors of energy commodities. Consumption can be estimated reasonably well where supplies are metered at dwelling level. Electricity meters almost always exist in dwellings, but in several countries gas meters are still being installed and the metering of heat supplied to dwellings is almost non-existent. For those fuels that can be stocked, and for the supply of non-metered heat and gas however, distributors usually infer household and small economic sector consumption by the difference between the total supply and the supplies to other main consuming sectors. Any inaccuracies in the figures for consumption in the main economic sectors and any uncertainty in the split between households and small sectors are therefore carried into the figures for households. Equally, consumption of fuelwood is often under-estimated in statistics as a significant part of this supply is self-collected rather than purchased. In short then, areas of weakness in the regular collection of data can be detected through reconciliation of the results obtained from the survey with the data collected for household consumption from the usual sources. Steps can then be taken to improve the data from the usual sources or to make corrections to them.

To achieve the aims of the project, certain requirements and limitations were set so that the returns from the survey both in experience to the countries and also in the data obtained were as valuable as possible. Financial resources and the absence of experience of household energy surveys in C&EE countries favoured the use of a relatively simple and direct questionnaire design. Funding arrangements for the survey required it to be conducted rapidly in 1997, before the summer months. Therefore, it was inevitable that householders could not be warned in advance to ensure that all energy consumption or purchase information was kept for survey purposes. In these conditions it would have been inappropriate to have designed a questionnaire which presumed the active and extended co-operation of householders over a lengthy period of time or which probed their pattern of energy use (cooking, heating, lighting, etc.) and living conditions.

Despite the decision to keep the questionnaire relatively simple, two aspects of it were thought likely to cause problems. The first was the desire to obtain some estimate of the energy consumption related to small farms worked by households and not registered as enterprises. The second was to obtain estimates of the consumption of district and collective heat by households, as measurement of heat in private dwellings is a well-known problem because such dwellings are rarely fitted with heat meters. Nevertheless, as the importance of district heat in the cold and urban parts of the region is considerable, it was agreed that any survey would be

deficient without an attempt to estimate the contribution of such heat to household space heating.

In many of the countries this survey was the first time that energy statisticians had used a survey tool based on interview techniques. The project has therefore provided valuable learning experience in the organisation, implementation and use of surveys.

The survey will provide a valuable insight into household and dwelling conditions at a time when the economies are adapting to the introduction of market conditions. The study of the results can reveal household concerns and the patterns of living which are of interest to government departments and those concerned with social conditions.

1.2 Project Management

The project was funded by DG1A under the PHARE Energy Programme. CESD Communautaire acted as consultant contractor for DG1A with technical support from Eurostat. Project co-ordination was provided by CESD through the appointment of experts from the Member States and the C&EE countries. CESD contracted the National Statistical Offices in the beneficiary countries to implement the survey, and allowed them to sub-contract all or part of the task subject to CESD and Eurostat approval of the choice of sub-contractor.

A Project Co-ordination Group (PCG) was established and regular contacts took place between the PCG members from each country, the project co-ordination team and Eurostat. PCG meetings gave countries the opportunity to review and comment on the progress of the project and also to discuss collectively the main elements of the project and an efficient means of finalising them. It also allowed consideration of problems which were common to several countries.

The PCG met on three occasions during the project, although the final meeting took the form of a seminar in which National Statistical Offices (NSO's) were able to present their work and findings. The first meeting took place in Warsaw hosted by the GUS. The papers and discussions covered the overall framework of the project, the funding arrangements, the draft questionnaire design and guidance notes, and the availability of data processing resources for the project.

The Hungarian Central Statistical Office hosted the second meeting in Budapest. At this meeting the Chairman provided a report on the progress of the survey. The meeting also approved final designs for table formats and considered the structure and content of the final reports to be prepared by countries.

The last meeting was held in Prague and was hosted by the Czech Statistical Office.

1.3 Survey Organisation and Design

National Statistical Offices provided the overall project direction in their own countries, regardless of whether or not sub-contractors were employed for all or part of the work. All NSO's used a Steering Group for management of the project, which was usually drawn from NSO staff. However, many of the countries also created or

used existing advisory groups of energy specialists and involved users of energy statistics. These groups had a valuable input in the early stages by providing detailed comments on the questionnaire formats.

Every country except Hungary conducted a specific survey without attachment to or incorporation in an existing household survey. The most frequently cited reason for this was that the NSO did not wish to burden existing respondents with additional questions and thereby put at risk their future co-operation. In Hungary, the survey was attached to the questionnaire for the Annual Income Inquiry which constitutes the second phase of the regular annual Household Budget Survey. Although no other country linked the survey directly to an existing survey most used the sampling design employed for household budget surveys as the starting point for the household energy survey.

In seven countries, the NSO's took the entire responsibility for the survey. Only in Albania, the Czech Republic and the Slovak Republic were subcontractors chosen to conduct parts of the project. The extent of the subcontractor's duties was greatest in Albania and least in the Czech Republic.

Many of the larger countries have a regional statistical office structure that was employed actively in the survey process. Not only were the local staff active in the interview process, but the regional offices were brought into the planning and procedural design stages to good effect.

The use of regional offices reflects the data collection practices of the previous centrally planned operations. In the past, the heavy demand for production statistics and purchases information was satisfied through a system of regional and sub-regional statistical offices which drew data from their local enterprises and fed it back to the central office. The advantage of this structure is that it accumulates considerable local knowledge of data collection conditions in enterprises and households, and develops identification with local concerns. All NSO's with a regional office structure have therefore exploited this wealth of practical experience for the household survey, as this type of survey depends greatly on the initiative and imagination of the interviewer. Using regional offices also has the practical advantages of limiting travel time and costs and avoiding lengthy communication channels.

The NSO's with regional statistical offices usually left the choice of interviewers to the regional offices. However, the NSO's organised the management of the survey in close co-operation with the directors of the regional offices and, by means of training sessions, ensured that they were fully acquainted with the content of the survey questionnaire, energy measurement units, retail sales of energy commodities and especially the measurement and billing aspects of energy consumption. Most of the NSO's conducting the survey through regional offices maintained a central advice or help point during the early stages of the data collection.

Smaller countries without a regional office structure relied on sample survey interviewers attached to the NSO, who usually carry out surveys for other purposes. All countries arranged training for the survey controllers and/or the interviewers.

1.4 Sample Sizes and Questionnaire Design

Data collected from the survey was kept simple in nature and reflected the desire to give priority to the improvement of household energy consumption statistics rather than the collection of many of the additional contingent data. This was consistent with the novelty of the project for those countries where many of their resources were absorbed in setting up the organisation, collection and verification arrangements for the first time.

Sample Sizes

Sample sizes were decided by Eurostat within the limits of the budget available for the survey. The resulting survey size (52 000 households) was allocated amongst countries using a formula which comprised a fixed element and an element reflecting national populations. The results were as follows:

Country	Population (Millions)	Sample Size (Households)
Albania	3.2	5 000
Bulgaria	8.7	5 000
Czech Republic	10.3	6 000
Estonia	1.5	4 000
Hungary	10.3	6 000
Latvia	2.6	4 000
Lithuania	3.7	5 000
Romania	23.2	8 000
Slovak Republic	5.3	5 000
Slovenia	2.0	4 000
TOTAL	**70.8**	**52 000**

Surveying Energy Consumption

Estimates of the energy consumption of private dwellings (largely equivalent to households), either for living purposes or for any economic activities carried out at the dwelling, are not simple to make. Measurement of dwelling consumption is complicated by the absence of meters for some commodities, uncertain documentation for consumption and for payments for supplies, the delay between purchase and consumption of stocked fuels, and the variable heating quality of fuels. Where a household undertakes any economic activity it is virtually certain that no separate measurement of the energy used for that activity can or will be made. All that is generally possible are estimates based on floor area, duration of the activity and/or installed energy consuming plant.

Measurement of metered supplies (electricity and, in most cases, natural gas) is usually most reliable when the householder has invoices for supplies provided in the past. In this case the only problem is one of timing, because the dates of meter readings rarely coincide with the start and end of the survey period. Some proportional adjustment of the billed consumption is then necessary. Additional complications may be created by the use of several tariff levels for consumption during different parts of the day and for which only cost information is provided on the bill.

In the cases where bills are not available, or are available for only part of the electricity or gas consumption, then either bills from previous periods must be used, or better still, the permission of the householder is sought for the interviewer to obtain the data from the suppliers' accounting records.

In a few countries, supplies of natural gas are not metered in every private dwelling, particularly where the dwelling is part of a large building. Payment is then on a per head or per square metre basis and consumption is estimated from it. Where the supply to the building is metered, a slightly better estimate of the dwelling consumption is possible by calculating the consumption per square metre and applying this value to the dwelling.

For stocked fuels that are purchased in their entirety by the householder (e.g. coal or oil), measurement of the consumption is dependent on bills for previous purchases of the fuels, and an estimate of the rate of use over the survey period. The interval between purchase and use can sometimes be long, so care is needed in identifying the bills and quantities that relate to consumption during the survey period. An additional concern for the survey co-ordinator is the selection of the appropriate calorific (heating) value for solid fuels. Suppliers of these fuels may be expected to have an estimate of calorific values for the fuels they provide. Calorific values for liquid fuels vary little from supplier to supplier so national figures can be used with some confidence.

The problems of measurement are considerably greater for fuelwood, since only part may have been bought and the rest collected by the household. Equally, the calorific value of the wood is uncertain because of its humidity content when burned. In well-established rural families that rely heavily on fuelwood, those who manage the home have reasonably good estimates of the frequency and size of the wood gathering activity. Interviewers then need guidance on how to express this in cubic metres (steres). Estimating amounts can be more difficult where fuelwood is less central to the energy supply for the household.

At present, the most intractable part of household energy surveys in Central and Eastern Europe is estimating the use and energy content of remote heat supplies. Heating supplies, which may or may not include domestic hot water supplies, are provided either from a boiler in the building or a nearby building, or alternatively from a district heating network serving a wide area. During the central planning period, district heat supplies were very cheap and no metering was provided in dwellings. Payment for heat is usually calculated on a square metre basis, and for hot water on a per head basis. These payments are used to estimate the heat consumption. Where the building is fitted with a heat meter or some means of estimating the heat supplied, an estimate for the dwelling can be made using the energy per square metre calculated for the building. Because of the very indirect and unreliable estimation procedures for heat supply in dwellings, consideration was given to excluding heat supplies from the survey, but the importance of heat to households is so great that even a poor estimate made at the dwelling level was considered better than omitting the commodity entirely.

Approach to Questionnaire Style

During the first meeting of the PCG the draft proposals for the questionnaire were discussed. The questionnaire was given a modular format based upon energy commodities used by households. The questionnaire was offered to NSO's and provided basic questions for dwelling and household characteristics, and the

consumption and costs of consumption of each of the energy commodities used by the household. The questionnaire also asked which of the listed electrical appliances were used and what were the ages of the more powerful items. Modules covering the consumption and costs of energy commodities also required the householder to state which types of appliance used the energy provided.

In the dwelling/household module, respondents were also asked two separate questions: whether they had a private farm and/or whether the dwelling was used for any non-farming economic activity. Each of the energy modules then sought figures for total consumption and for consumption associated with non-economic activities. It was recognised from the beginning that small-scale consumption for economic activities would be difficult to isolate, and interviewers were asked to estimate, together with the respondent, the likely increase in consumption due to the economic activity.

A final module sought basic information on car use and car fuel type and engine size. The car use data were collected for only the first two cars used, as very little use of three or more cars was anticipated.

1.5 Implementation

The quality of the sample selection relies on the adequacy of the underlying registers used to define the population to be sampled. Where household registers do not exist, they were selected using the register of population. Their coverage and currency vary between countries, but all were updated using other information related to the registration of individuals.

A two-stage approach to selection of the sample was adopted, and was sometimes applied differently in rural and urban parts of the country:

1. - Stratification of the statistical population was done on the basis of settlement size, region (or administrative constituency) and, for Slovenia, altitude.

2. - The precise method used to select households depended upon the availability of a household register. In countries or parts of countries where only a population register exists, household units were determined from a selection of adults. The bias towards larger households that this naturally causes was corrected in the treatment of the results. Most countries selected more households than foreseen in the planned sample in order to have a pool of households available to meet cases of non-response.

During its first meeting in Warsaw the Project Co-ordination Group discussed the preparation of households for the survey at some length. Because of the imminence of the survey it was widely recognised that this should be done as quickly as possible in order to reduce non-response and to improve data quality. Preparation took two forms; both were used by several countries, but at least one form was used by all countries. In the first stage, the public was notified by press and/or radio publicity of the survey, its EU funding, its purpose and the likely period in which it would take place. When the sample had been selected, households were sent a letter, again giving the background to and reasons for the survey, asking for their co-operation, and assuring them of the confidentiality of the results. The letter also stated the likely dates during which the interview would take place and respondents were asked to prepare themselves by collecting together bills or payment documents indicating

previous consumption and costs. The letter provided a contact point which the householder could contact if he/she had any questions about the survey.

Most countries conducted the surveys in May-June 1997. In some cases small pilot surveys were also undertaken in a formal or informal manner. These proved to be very useful because they revealed unclear or difficult questions and the nature of the difficulties and thereby allowed the questionnaire to be improved.

The two difficulties encountered most frequently during the interviewing were:

1. - non-response due either to absence of householders or to their fear that the information they provided might somehow be used against them.

2. - absence or inadequacy of consumption records for some commodities.

Generally speaking, the response and data quality were higher in the rural communities where there were fewer one-person households and more large family units containing older generations. The improved data quality showed particularly in questions on fuelwood consumption where the more elderly householders appeared more certain of the quantity of wood used during the year.

The time taken for interviews varied widely from one country to another. The estimates given ranged from 15 minutes in cases where the householder had all bills and papers ready for the interview to approximately one hour where the interviewer had to provide assistance to the householder. The time accorded to an individual response could be up to two hours in cases where the interviewer was obliged to obtain the gas or electricity consumption/cost figures from the suppliers.

1.6 Data Processing and Reporting

Data capture and consolidation was performed by regional and district offices, where they existed in the countries, and the files were then forwarded to the NSO headquarters or to the sub-contractors as appropriate. Checks on data quality were performed centrally, normally before the data entered the main database. Once in the database, data were checked in more detail for self-consistency and for consistency with data from household surveys and known ranges for energy prices.

Imputation of missing data was usually done when the data had entered the main database. There are no simple rules for this process and countries used their own approaches based upon the survey results from households similar to those for which data were missing, other sources of information within the survey (e.g. supplementary reports of building heat consumption), data from energy suppliers or market prices.

The final reports prepared by the countries provided an opportunity to review the survey management and organisation, to assess implementation of the survey and to present and comment on the results. At the same time, countries were asked to provide an opinion of the value of the survey and indicate whether it has stimulated changes to data collection procedures for future years. Consequently, these reports were major elements in the evaluation of the surveys and their contribution to better statistics.

The structure proposed for the final report covered the main topics of the project and also allowed countries the opportunity to include such tables and analyses as would increase its value nationally and internationally. The agreed structure was as follows:

- **Summary**

- **Survey**

  Organisation
  Final questionnaire and sample selection
  Collection of data
  Processing
  Assessment of survey management, organisation and implementation

- **Assessment of Results**

  Background
  Characteristics of the dwellings and households
  Estimates of national household energy consumption for 1996
  Estimates of household car use
  Comparisons with other national sources and comment

- **Conclusions and Proposals for Change**

The detailed national reports on the survey are available at Eurostat.

1.7 Table Formats

The contracts specifying the work to be performed during the project contained guidance on the presentation of the results in tabular form based on the table designs used by Member States in their surveys of household energy consumption.

The tables for the survey results were designed to meet this contract requirement and thereby exploit as fully as possible the information contained in the draft questionnaire. Additional information collected by countries for local requirements was also included in the final report tables where appropriate.

There are six main groups of tables covering the energy consumption results obtained from the survey, and a group of tables that summarises the dwelling and household data. In all seven groups of tables the figures shown for the national population are derived from the sample by inflating or "grossing up" the sample results where this is appropriate. Where intrinsic characteristics of the sample are calculated they are assumed to be estimates of the population values.

The above tables are presented in Annex I under the heading "1996 Survey Results", and are as follows:

1. - Structural Data

These are simple tables showing the numbers and percentages of households or dwellings which fall within the classes of the study variables. The characteristics

recorded are household size, building age, heated area, dwelling location (urban or rural), dwelling tenure, and whether the household conducts any economic activities from the dwelling.

2. - Household Energy Consumption and Costs

Household consumption of the energy commodities listed in the questionnaire is estimated for the entire population on the basis of the sample results. The figures are expressed in energy units (TJ). Two indicators of energy intensity are calculated: consumption per square metre and consumption per person occupying the dwelling in which the energy commodity is used. Consumption excluding economic activities was used for calculating these indicators.

A similar table shows consumption costs using local currencies converted to ECU at the 1996 average exchange rate.

3. - Cars

There are two parts to this group of tables:

a) tables showing national totals and averages for the main variables: number of cars, distance travelled, fuel consumption and fuel cost. The number of cars is cross-tabulated by engine size and fuel type. Other variables are calculated as averages per car and per car-using household;

b) a table showing car ownership among households on the basis of no car, one car and two or more cars. It also shows the average number of cars per household and per car-using household.

The questionnaire does not request the cost of the transport fuels consumed by the household. This information was calculated from the estimated consumption using the average fuel price for 1996.

4. - Space Heating

This table sets out the number of dwellings having particular types of space heating equipment; these are classified by type of fuel. The main division separates those dwellings having some form of space heating from those with none. Within the former group those with central heating are separated from those with other means of heating, although both can exist within the same dwelling.

The total number of dwellings with central heating is subdivided according to the method of heating:

- Individual heat production by burning fuel in a central device within the dwelling
- Collective heat production either within or close to the building containing the dwelling
- Supply from a remotely located district heating plant

The number of dwellings with room heaters as well as central heating is classified according to the type of fuel used by these heaters, and is shown under "Supplementary Heating".

The number of dwellings heated by separate equipment in one or more rooms is shown according to the equipment used, i.e. cooking equipment (including kitchen ovens), stoves or even open fires; the use of several types of equipment in the same dwelling is also possible. It is difficult to identify with certainty those households where cooking equipment contributes significantly to the heating of the dwelling and some rough rule is therefore required. Countries were asked to devise a method of identifying this situation when analysing the results. In the absence of a better proposal, it was suggested that cooking equipment be assumed to contribute significantly to the heating of the dwelling if the quantity of the particular fuel used by the cooking equipment and for "Other Uses" amounts to more than 20 per cent of the total household energy consumption.

5. - Water Heating and Cooking Equipment

The two tables comprising this group provide an analysis of the distribution among dwellings of water heating and cooking equipment according to the type of fuel used. Dwellings in which hot water is provided independently of the central heating system (or where there is no central heating system) are divided between those with a water heater (usually but not invariably electric) and those with other means of hot water provision, usually by means of an external supply from collective or district heating plants. Again, several types of fuel can be used for the same purpose within the same dwelling.

6. - Electrical Appliance Ownership and Age

These tables present the results from the questions relating to ownership and age of electrical appliances. The second table shows the arithmetic average as the indicator of appliance age but the median age could also be used.

7. - Energy End Use

The tables required for surveys in Member States, are specified in the contracts for this project, and include a table of energy consumption and energy costs classified according to end use within the household. The way in which the consumption of each type of energy commodity is divided between the various uses in the home can be measured only by means of special studies, so there is no direct way of producing this table from the surveys. However, it was suggested that countries might like to consult studies conducted by other research groups to see if the consumption levels observed in the survey could be subdivided amongst the categories of final use listed in the table, i.e. Space Heating, Domestic Hot Water, Cooking and Other Uses.

2. ASSESSMENT OF RESULTS

This chapter looks at the main findings of the surveys in each country and makes comparisons between them. The main data from each country are presented in Annex I under the heading "1996 Survey Results", and although Poland was not included in this project, equivalent Polish data for 1993 were available in some cases and have been included in the tables.

A summary of the definitions is presented in APPENDIX: DEFINITIONS.

Albania

In Albania there are 797 thousand households and these occupy a total of about 694 thousand dwellings. Households containing more than five persons account for 40.7% of the total, and in 81.2% of the households there are four or more persons. Of all the countries analysed, Albanian households are the most populated. 38.4% of the households engage in economic activities, most of which are farming.

The proportion of dwellings which are owned is very high at 98.3%, with the remainder being rented. 46.6% of the dwellings are located in towns and 53.4% in rural areas. Albania has the highest proportion of rural dwellings. 53.3% of the dwellings were constructed after 1973, and 34.9% were constructed since 1980. The heated area is less than 20 square metres in 83.8% of the dwellings.

Household energy consumption in 1996 was 31 189 TJ. The principal sources of energy were fuelwood (77.1%), electricity (20.3%) and kerosene (2.4%). This corresponds to a total expenditure of 109.6 million ECU, of which 59.6 million were spent on electricity, 44.6 million on fuelwood, and 4.3 million on kerosene.

Energy usage by households is distributed between space heating (51.8%), cooking (27.1%), domestic hot water (14.9%), and other electrical uses (6.2%). Albania has the highest proportion of energy usage for cooking.

Space heating accounted for 16 175 TJ, and was provided mainly by burning fuelwood in cooking equipment, but also by electric stoves and stoves burning fuelwood, kerosene and LPG. 4 651 TJ were used for the production of domestic hot water. Independent water heaters using electricity are the most common type of equipment and are found in 26.8% of households. The total amount of energy used for cooking purposes was 8 448 TJ. Electricity is used for cooking in 53.9% of households, fuelwood in 26.2%, and kerosene in 19.1%.

The total number of cars is 67 248, and these are distributed across 9.3% of dwellings. 74.8% of cars have diesel engines, 14.3% use unleaded petrol, and the remainder use leaded petrol. Total consumption of fuel in 1996 amounted to 104.7 million litres, of which 85.1 million were diesel. The average fuel consumption was 1 557 litres per car. The total expenditure on fuel was 39.3 million ECU, giving an average of 584 ECU per car.

Bulgaria

In Bulgaria there are 2.96 million households and these occupy a total of 2.8 million dwellings. Households containing two persons account for 27.5% of the total, and

22.3% of the households there are four persons. 10.7% of the households engage in economic activities, most of which are farming.

The proportion of dwellings which are owned is 90.8%, with the remainder being rented. Two-thirds of the dwellings are located in towns and one third in rural areas. 51.9% of the dwellings were constructed between 1947 and 1973. The heated area is less than 50 square metres in 75.3% of the dwellings.

Household energy consumption in 1996 was 128 713 TJ. The principal sources of energy were solid fuels (27.6%), fuelwood (26.9%), electricity (23.2%) and district heat (21.1%). This corresponds to a total expenditure of 288 million ECU, of which almost half (143 million) was spent on electricity, with 48.6 million being spent on fuelwood, 45.8 million on district heat, and 41.4 million on solid fuels.

Energy usage by households is distributed between space heating (49.5%), domestic hot water (24.8%), cooking (14%), and other electrical uses (11.7%). Bulgaria has the lowest proportion of energy usage for space heating, and the highest proportion of energy usage for domestic hot water.

Space heating accounted for 63 724 TJ, and is provided by central heating in 19.3% of the dwellings. District heating systems provide space heating for 17% of dwellings. Widespread use is also made of fuelwood and solid fuels in cooking equipment, stoves and open fires. 31 877 TJ were used for the production of domestic hot water. Independent water heaters using electricity are found in 55.6% of dwellings. Independent heaters using fuelwood, solid fuels, LPG and fuel oil are also found, but far less extensively. Central heating systems provide domestic hot water in 0.3% of dwellings. 16.1% of dwellings have another supply of hot water, whose heating equipment is located outside the building. The total amount of energy used for cooking purposes was 17 991 TJ. Electricity is used for cooking in 61.1% of dwellings, solid fuels in 19.6%, fuelwood in 13.9%, and LPG in 8.6%.

The total number of cars is 782 054, and these are distributed across 25.4% of households. 90.3% of cars use leaded petrol. Total consumption of fuel in 1996 amounted to 606.5 million litres, of which 525.4 million were leaded petrol, 31.5 million were LPG, 26.1 million were diesel, and 23.5 million were unleaded petrol. The average fuel consumption was 776 litres per car. The total expenditure on fuel was 185.6 million ECU, giving an average of 237 ECU per car.

Czech Republic

In the Czech Republic there are almost 4 million households and these occupy a total of 3.68 million dwellings. Households containing between two and four persons account for 76.8% of the total, and two-person households are the most common. 3.3% of the households engage in economic activities.

The proportion of dwellings which are owned is 47.4%, with 52.6% being rented. 72.3% of the dwellings are located in towns and 27.7% in rural areas. The Czech Republic has the highest proportion of urban dwellings. Approximately one third of the dwellings were constructed before 1947, one third between 1947 and 1973, and one third from 1974 onwards. The heated area is between 50 and 100 square metres in 61.9% of the dwellings.

Household energy consumption in 1996 was 348 588 TJ. The principal sources of energy were natural gas (28.5%), district heat (23.3%), solid fuels (16.6%), and

electricity (15.9%). This corresponds to a total expenditure of about 1 415 million ECU, of which 462.4 million were spent on electricity, 444.6 million on district heat, 264.8 million on natural gas, and 131.2 million on solid fuels.

Energy usage by households is distributed between space heating (77.6%), domestic hot water (12.1%), other electrical uses (5.3%), and cooking (5%).

Space heating accounted for 270 553 TJ, and was provided mainly by natural gas (30.4%), district heating (23.9%), and solid fuels (20.7%). Space heating provided by central heating systems is available to almost all (97.2%) dwellings. This is provided from individual (56.5%), district (27.2%) or collective (13.5%) supplies, and gives the Czech Republic the highest proportion of central heating. Electric stoves and stoves burning natural gas, fuelwood and solid fuels are used for space heating where central heating is not available. 42 114 TJ were used for the production of domestic hot water. Independent water heaters are common, and those using electricity are found in 38.8% of dwellings, those using natural gas in 16.5%, and district heating provides domestic hot water in 37.4%. Central heating systems provide domestic hot water in 19% of dwellings. The total amount of energy used for cooking purposes was 17 504 TJ. Natural gas is used for cooking in 56% of dwellings, electricity in 53.2%, and LPG in 15.1%.

The total number of cars is 2 175 657, and these are distributed across 54.4% of dwellings. Two thirds of cars use leaded petrol and about one quarter use unleaded petrol. Total consumption of fuel in 1996 amounted to 1 897.2 million litres, of which 1 087.2 million were leaded petrol, 558.8 million were unleaded petrol, 212.8 million were diesel, and 38.3 million were LPG. The average fuel consumption was 872 litres per car. The total expenditure on fuel was 1 095.4 million ECU, giving an average of 503 ECU per car.

Estonia

In Estonia there are 619 thousand households and these occupy a total of about 607 thousand dwellings. Households containing just one person account for one third of the total, and in 28.9% of the households there are two persons. Of all the countries analysed, Estonia has the highest proportion of one-person households. 3.2% of the households engage in economic activities.

The proportion of dwellings which are owned is 81.6%, with 18.4% being rented. 70.2% of the dwellings are located in towns and 29.8% in rural areas. About 60% of the dwellings were constructed before 1974. The heated area is between 20 and 100 square metres in 93.6% of the dwellings. About half of these areas are less than 50 square metres.

Household energy consumption in 1996 was 54 899 TJ. The principal sources of energy were fuelwood (45.7%), district heat (38.1%) and electricity (7.4%). This corresponds to a total expenditure of 173.2 million ECU, of which 109.1 million were spent on district heat, 32.4 million on electricity, and 15 million on fuelwood.

Energy usage by households is distributed between space heating (71.5%), cooking (15.5%), domestic hot water (9.8%), and other electrical uses (3.2%).

Space heating accounted for 39 258 TJ, and was provided mainly by district heating (53.3%), and fuelwood (36.2%). Space heating provided by central heating systems is available to 65.5% of dwellings. This is provided mainly from district heating

systems, but also from individual and collective systems which use most types of fuels. Widespread use is also made of fuelwood in stoves and open fires where central heating is not available. 5 401 TJ were used for the production of domestic hot water. Water heaters linked to district heating systems are found in 40.9% of dwellings, independent ones using electricity in 11.3%, those using natural gas in 5.5%, and those using fuelwood in 4%. Central heating systems provide domestic hot water in 5% of dwellings. The total amount of energy used for cooking purposes was 8 510 TJ. Electricity is used for cooking in 51.1% of dwellings, fuelwood in 35.5%, natural gas in 24.9% and LPG in 22.6%.

The total number of cars is 224 814, and these are distributed across 32.6% of households. 57.4% of cars use leaded petrol, and 34.3% use unleaded petrol. Total consumption of fuel in 1996 amounted to 304 million litres, of which 158.9 million were leaded petrol, 116.1 million were unleaded petrol, 28.4 million were diesel, and 0.5 million were LPG. The average fuel consumption was 1 352 litres per car. The total expenditure on fuel was 91.6 million ECU, giving an average of 408 ECU per car.

Hungary

For methodological reasons, the numbers of households and dwellings in Hungary have been considered to be equivalent, and both have been estimated at 3.82 million. Households containing two persons account for 27.7% of the total, but one-person (23.6%), three-person (20.4%) and four-person (20%) households are also common. 10.6% of the households engage in economic activities, most of which are farming.

The proportion of dwellings which are owned is 92.8%, with 7.2% being rented. 63.6% of the dwellings are located in towns and 36.4% in rural areas. 65.4% of the dwellings were constructed before 1974. The heated area is more than 50 square metres in 83.7% of the dwellings. Hungary has the highest proportion of dwellings with this amount of heated area.

Household energy consumption in 1996 was 302 630 TJ. The principal sources of energy were natural gas (38.9%), district heat (18.3%), fuelwood (17%), electricity (10.5%), and solid fuels (10.1%). This corresponds to a total expenditure of 1 423 million ECU, of which 433 million were spent on electricity, 376 million on natural gas, 230 million on district heat, 142 million on fuelwood, and 116 million on solid fuels.

Energy usage by households is distributed between space heating (70.5%), cooking (14.9%), domestic hot water (11%), and other electrical uses (3.6%).

Space heating accounted for 213 213 TJ, and was provided mainly by central heating. Space heating provided by central heating systems is available to 55.6% of households. This is provided from natural gas (32.6%), district heating (29.9%), fuelwood (14.4%), and solid fuels (11.4%). Use is also made of stoves burning natural gas, fuelwood and solid fuels where central heating is not available. 33 323 TJ were used for the production of domestic hot water. Independent water heaters are common, and those using electricity are found in 47% of households, those using natural gas in 20.9%, and those linked to district heating systems in 19.2%. Central heating systems provide domestic hot water in 2.9% of households. The total amount of energy used for cooking purposes was 45 078 TJ. Natural gas is

used for cooking in 56.2% of households, LPG in 42.4%, fuelwood in 11.1%, electricity in 9.7% and solid fuels in 4%.

The total number of cars is 1 412 520, and these are distributed across 35.9% of households. 57.4% of cars use leaded petrol, 36.1% use unleaded petrol, and 5.9% use diesel. Total consumption of fuel in 1996 amounted to 891.3 million litres, of which 439.6 million were leaded petrol, 364.5 million were unleaded petrol, 66.4 million were diesel, and 20.7 million were LPG. The average fuel consumption was 631 litres per car. The total expenditure on fuel was 558.5 million ECU, giving an average of 395 ECU per car.

Latvia

In Latvia there are 1 008 thousand households and these occupy a total of about 993.5 thousand dwellings. Households containing one person account for 31.8% of the total, followed by two-person (27.7%), three-person (19.4%) and four-person (14.1%) households. 10% of the households engage in economic activities, most of which are farming.

The proportion of dwellings which are owned is 32.1%, with 67.9% being rented. Latvia has the highest proportion of rented dwellings. 70.9% of the dwellings are located in towns and 29.1% in rural areas. 63.7% of the dwellings were constructed before 1974. The heated area is between 20 and 100 square metres in 94.7% of the dwellings.

Household energy consumption in 1996 was 75 835 TJ. The principal sources of energy were fuelwood (48.2%) and district heat (37.3%), although electricity, natural gas, LPG and hard coal were also used. This corresponds to a total expenditure of 269.4 million ECU, of which 161.6 million were spent on district heating, 46.6 million on electricity, 22.4 million on fuelwood, 17.1 million on natural gas, and 16.9 million on LPG.

Energy usage by households is distributed between space heating (77.9%), domestic hot water (9.3%), cooking (8.8%), and other electrical uses (4.1%). Latvia has the highest proportion of energy usage for space heating.

Space heating accounted for 59 053 TJ, and was provided mainly by fuelwood (56.1%) and district heating (38.3%). Space heating provided by central heating systems is available to 70% of dwellings, with 49.4% of dwellings being supplied from district heating systems. 7 041 TJ were used for the production of domestic hot water. Water heaters linked to district heating systems are found in 48.6% of dwellings. Independent heaters using electricity, fuelwood, natural gas and hard coal are also found, but far less extensively. Central heating systems provide domestic hot water in 2.3% of dwellings. The total amount of energy used for cooking purposes was 6 662 TJ. Natural gas is used for cooking in 49.9% of dwellings, LPG in 40.7, fuelwood in 32.4% and electricity in 8.8%.

The total number of cars is 225 825, and these are distributed across 21.7% of households. 70% of cars use unleaded petrol. Total consumption of fuel in 1996 amounted to 251.3 million litres, of which 173.4 million were unleaded petrol, 63.3 million were leaded petrol, 14.2 million were diesel, and 0.5 million were LPG. The average fuel consumption was 1 113 litres per car. The total expenditure on fuel was 79.7 million ECU, giving an average of 353 ECU per car.

Lithuania

In Lithuania there are 1.41 million households and these occupy a total of 1.28 million dwellings. Household sizes are fairly evenly distributed: 24.4% are one-person households, 27.2% are two-person, 21.7% are three-person and 19.5% are four-person. 27.3% of the households engage in economic activities, with 26% engaging only in farming.

The proportion of dwellings which are owned is 90.7%, with 9.3% being rented. 70.2% of the dwellings are located in towns and 29.8% in rural areas. 46.6% of the dwellings were constructed since 1973. The heated area is between 20 and 100 square metres in 92.5% of the dwellings. About half of these areas are less than 50 square metres.

Household energy consumption in 1996 was 75 163 TJ. The principal sources of energy were district heat (39.7%), fuelwood (29.2%), hard coal (10.3%), natural gas (7.7%), and electricity (6.5%). This corresponds to a total expenditure of 266.3 million ECU, of which 145.8 million were spent on district heat, 46.5 million on electricity, 21.3 million on natural gas, and the remainder on a combination of LPG, hard coal and fuelwood.

Energy usage by households is distributed between space heating (74.8%), cooking (12.0%), domestic hot water (7.9%), and other electrical uses (5.3%).

Space heating accounted for 56 227 TJ, and was provided mainly by district heating (47.8%) and fuelwood (33.6%). Space heating provided by central heating systems is available to 91.7% of dwellings. This is provided from district heating systems or central systems burning fuelwood and hard coal mainly. Lithuania has the highest proportion of central heating provided from district heating systems. Use is frequently made of stoves burning fuelwood where central heating is not available. 5 899 TJ were used for the production of domestic hot water. Independent water heaters linked to district heating systems are found in 57.5% of dwellings. Central heating systems using fuelwood provide domestic hot water in 9.1% of dwellings. The total amount of energy used for cooking purposes was 9 058 TJ. LPG is used for cooking in 45.8% of dwellings, natural gas in 42.3%, fuelwood in 25.2%, and electricity in 10.9%

The total number of cars is 548 860, and these are distributed across 37.5% of households. 61.7% of cars use unleaded petrol. Total consumption of fuel in 1996 amounted to 653.1 million litres, of which 418.3 million were unleaded petrol, 159 million were leaded petrol, 49.5 million were diesel, and 26.2 million were LPG. The average fuel consumption was 1 190 litres per car. The total expenditure on fuel was 187.1 million ECU, giving an average of 341 ECU per car.

Romania

In Romania there are 7.9 million households and these occupy a total of 7.78 million dwellings. Households containing two persons account for 24.4% of the total, although household sizes are distributed reasonably evenly between one and four persons. 45.4% of the households engage in economic activities, with 43.7% engaging only in farming. Of all the countries analysed, Romania has the highest proportion of households engaging in economic activities.

The proportion of dwellings which are owned is 95.2%, with only 4.8% being rented. 53.3% of the dwellings are located in towns and 46.7% in rural areas. 46.2% of the dwellings were constructed between 1947 and 1973, and 38.9% were constructed subsequently. The heated area is between 20 and 49 square metres in 56.3% of the dwellings, with 28.5% having less than 20 square metres of heated area.

Household energy consumption in 1996 was 446 503 TJ. The principal sources of energy were fuelwood (43.1%), district heat (29%), natural gas (14.5%), electricity (6%), and LPG (4.3%). This corresponds to a total expenditure of 689.5 million ECU, of which 292.8 million were spent on fuelwood, 131.3 million on district heat, 114 million on electricity, 101 million on LPG, and 25.2 million on natural gas.

Space heating provided by central heating systems is available to 40% of dwellings. This is provided mainly from district heating systems. In the majority (53.2%) of dwellings, space heating is most frequently provided by stoves burning fuelwood, although natural gas, LPG and solid fuels are also used. Water heaters linked to district heating systems are found in 36.9% of households. Central heating systems provide domestic hot water in 1.1% of households. Cooking equipment using fuelwood is available in 42.6% of dwellings, equipment using LPG in 42.3%, and equipment using natural gas in 32.1%.

The total number of cars is 1 281 512, and these are distributed across 15.6% of households. 90.8% of cars use leaded petrol. Total consumption of fuel in 1996 amounted to 1 407.6 million litres, of which 1 214.4 million were leaded petrol, 121.2 million were diesel, 69.3 million were unleaded petrol, and the remainder were LPG. The average fuel consumption was 1 098 litres per car. The total expenditure on fuel was 303.6 million ECU, giving an average of 237 ECU per car.

Slovak Republic

In the Slovak Republic there are 1.86 million households and these occupy a total of 1.76 million dwellings. Households containing two persons account for 27.1% of the total, followed by four-person (22.7%) and three-person (19.5%) households. 1.7% of the households engage in economic activities, and this is the lowest proportion of all the countries analysed.

The proportion of dwellings which are owned is 64.7%, with 35.3% being rented. 60.5% of the dwellings are located in towns and 39.5% in rural areas. 52.4% of the dwellings were constructed between 1947 and 1973, and 30.5% were constructed subsequently. The heated area is between 50 and 100 square metres in 63.5% of the dwellings, with 15% having more than 100 square metres of heated area.

Household energy consumption in 1996 was 170 770 TJ. The principal sources of energy were natural gas (41%), district heat (18.9%), fuelwood (13%), electricity (11.9%), and other solid fuels (8.5%). This corresponds to a total expenditure of 463.4 million ECU, of which 138.6 million were spent on electricity, 117.8 million on district heat, 113.5 million on natural gas, and 41.5 million on other solid fuels.

Space heating provided by central heating systems is available to 91.5% of dwellings. This is provided from individual heating systems (50.8%), district heating systems (25.3%), and collective heating systems (23.9%). Most of the collective systems and about half of the individual systems use natural gas. Use is also made of stoves and cookers burning mainly natural gas and fuelwood where central heating is not available. Water heaters linked to district heating systems are found in

42.6% of dwellings, those using electricity in 30%, and those using natural gas in 14.3%. Central heating systems provide domestic hot water in 8.3% of dwellings. Cooking equipment using natural gas is available in 69.3% of dwellings, equipment using electricity in 43.3%, equipment using fuelwood in 15.6%, and equipment using LPG in 14.5%.

The total number of cars is 696 397, and these are distributed across 37.6% of dwellings. 48.9% of cars use leaded petrol, and 43% use unleaded petrol. Total consumption of fuel in 1996 amounted to 600.4 million litres, of which 271 million were unleaded petrol, 263.8 million were leaded petrol, and 65.7 million were diesel. LPG is not used as a fuel for cars. The average fuel consumption was 862 litres per car. The total expenditure on fuel was 334.4 million ECU, giving an average of 480 ECU per car.

Slovenia

In Slovenia there are 636.3 thousand households and these occupy a total of 611.8 thousand dwellings. Household sizes are distributed between four-person (26.3%), two-person (22.4%) and three-person (20.5%) households. 20.9% of the households engage in economic activities, and although this refers mainly to farming, Slovenia has the highest proportion (3.8%) of households engaging in non-farming economic activities only.

The proportion of dwellings which are owned is 92.2%, with 6.9% being rented. 51% of the dwellings are located in towns and 49% in rural areas. 33.4% of the dwellings were constructed between 1947 and 1973, and 38.6% were constructed subsequently. The heated area is between 20 and 100 square metres in 79.2% of the dwellings.

Household energy consumption in 1996 was 56 415 TJ. The principal sources of energy were fuel oil (35.8%), fuelwood (26.9%), electricity (15.8%), and district heat (10.4%). This corresponds to a total expenditure of 503.4 million ECU, of which 200.5 million were spent on electricity, 118.3 million on fuel oil, 101.3 million on fuelwood, and the bulk of the remainder on district heat and LPG.

Energy usage reported by households includes that associated with economic activities and is distributed between space heating (71.7%), domestic hot water (13.8%), cooking (7.4%), and other electrical uses (7.1%).

Space heating provided by central heating systems is available to 86.4% of dwellings. This is provided mainly from individual heating systems. Most of these use fuel oil, but fuelwood and natural gas are also used. Use is also made of stoves using fuelwood and electricity where central heating is not available. 7 880 TJ were used for the production of domestic hot water. Independent water heaters using electricity are found in 47.3% of dwellings. Central heating systems provide domestic hot water in 50.9% of dwellings. Fuel oil and fuelwood are the fuels used most frequently by such systems. The total amount of energy used for cooking purposes was 4 244 TJ. Electricity is used for cooking in 86.7% of dwellings, LPG in 72.3%, fuelwood in 27.1% and natural gas in 8%.

The total number of cars is 609 222, and these are distributed across 74.4% of households, giving Slovenia the highest proportion of households owning at least one car. 50.3% of cars use leaded petrol and 40.3% use unleaded petrol. Total consumption of fuel in 1996 amounted to 738 million litres, of which 332.3 million

were leaded petrol, 319.4 million were unleaded petrol, 85.6 million were diesel, and 0.7 million were LPG. The average fuel consumption was 1 211 litres per car. The total expenditure on fuel was 335.1 million ECU, giving an average of 550 ECU per car.

Poland (using available data for 1993)

In Poland there are 12.17 million households and these occupy a total of 11.37 million dwellings. Two-person and four-person household sizes each account for approximately 22% of the total, followed by three-person (20.3%) and one-person (18.3%) households. Data relating to households engaging in economic activities were not collected in the Polish survey.

The proportion of dwellings which are owned is 55%, with 45% being rented. 66.5% of the dwellings are located in towns and 33.5% in rural areas. 30% of the dwellings were constructed between 1945 and 1970, 25% between 1971 and 1980, and 20% were constructed subsequently. Data relating to the heated area in households were not collected in the Polish survey.

Household energy consumption in 1993 was 1 130 000 TJ. The principal sources of energy were coal (41.8%), district heat (24.8%), gas (13.1%), and fuelwood (11.2%). Data relating to expenditure on energy consumption in households were not collected in the Polish survey

Energy usage by households is distributed between space heating (77.1%), domestic hot water (10.8%), cooking (8.3%), and other electrical uses (3.8%).

Space heating provided by central heating systems is available to 67% of dwellings. This is divided almost exactly between district heating systems (50.7%) and individual heating systems (49.3%). 59.1% of the individual systems use coal and 21.2% use natural gas. Fuelwood and coke are also used in such systems. Independent water heaters are found in 80% of dwellings. Of these, natural gas (37.5%), electricity (18.8%) and coal (14.1%) are the fuels used most frequently. Central heating systems are not used to provide domestic hot water. Gas (all types) is used for cooking in 55% of dwellings, coal in 22.5%, fuelwood in 6% and electricity in 5%.

The total number of cars is 6 239 000, and these are distributed across 49% of households. 95% of cars use either leaded or unleaded petrol, and 5% use diesel. Total consumption of fuel in 1993 amounted to 4992.0 million litres, of which 4742.0 million were petrol and 250.0 million were diesel. The average fuel consumption was 800 litres per car. Data relating to expenditure on fuel for cars were not collected in the Polish survey

3. COMPARATIVE RESULTS

The major determinant of household energy consumption and its costs is the amount of energy required for space heating. This is affected by many factors of which heated floor area, dwelling density, building construction, climate and disposable income are key influences.

In the discussion below, most of the statistics used relate to dwellings rather than to households. Dwellings and their energy consuming equipment are the natural units for the presentation of the results, as much of the consumption is determined by their characteristics. Few of the dwellings in the survey contain more than one household, and therefore many of the statements can be applied equally to households.

It is important to recall that survey results cover private households and/or dwellings. Institutional buildings which provide permanent or long-term shelter for individuals are not included, e.g. residences for old persons, orphanages and detention centres. It is therefore to be expected that the survey results for consumption of energy commodities in households will be smaller than the official figures, as these usually include state provided accommodation and communal facilities for families and individuals.

Less obvious and less quantifiable effects on the survey arise from the selection of the sample. The causal linkages between energy consumption, the dwelling (rather than household) and its location make the design of the sample selection more complicated than those used for social or demographic surveys. In practice however, the lack of appropriate statistical registers and sampling frames for building types and dwelling characteristics required most countries to use sample designs based upon population censuses and household surveys of more homogenous characteristics.

The analysis outlined below is based on the figures included in Annex II.

Structural data

The national household energy consumption is directly linked to the size of the population, but when standardised against population many of the differences in fuel use between countries may be explained by the location of the dwelling and the building within which it is situated. Figure 1 shows a comparison of the population, households and dwellings in the countries analysed.

As mentioned above, the proportion of dwellings occupied by several households is very low. In terms of population the number of households varies between 30% and 40% of the total population in all countries, except in Albania where this percentage is less than 25%. This is due to the high density of Albanian households (81% of the households have four or more members), which is much greater than in the other countries, where the household size ranges mainly from one to four members. The three Baltic countries can be highlighted as having the highest percentages of one-person households (see Figure 2).

Figure 3 shows that the majority of households do not undertake economic activities, although farming activities are performed in an important proportion of the households in Romania, Albania and Lithuania.

The age of the dwellings also affects the energy consumption as it is linked to the building materials used and the level of insulation. In each of the countries surveyed, the majority of dwellings were constructed during the period from 1947 to 1973, but it should also be noted that at least one third of all dwellings were constructed within the last 25 years (see Figure 4).

The majority of dwellings throughout the region have heated areas of between 20 and 100 m^2 (see Figure 5). Dwellings in the Czech and Slovak Republics and in Hungary seem to be favoured by generally larger heated areas than elsewhere. Bulgaria, Romania and especially Albania have a larger number of dwellings with a small heated area. This may be partly explained by the more widespread use of cooking equipment and stoves as sources of heating in dwellings (particularly rural dwellings) where the cooking area or the room heated by the stove is used by the family for living during winter months, with the remainder of the dwelling remaining unheated.

The rural/urban split is reflected in the use of stocked fuels rather than networked commodities (particularly natural gas) as well as the GJ/m^2 required for heating purposes. As shown in Figure 6, Albania, Romania and Slovenia have about 50% of their dwellings situated in rural locations. On the other hand, the Czech Republic and the Baltic countries have the highest (more than 70%) percentage of urban dwellings.

As far as the type of tenure is concerned, only in Latvia and the Czech Republic is the proportion of rented dwellings bigger than the proportion of owned dwellings. In the other countries ownership is clearly the most common form of dwelling tenure, with Poland being the country having the most balanced proportions: 55% owned and 45% rented (see Figure 7).

Energy Consumption and Costs

Figures 8 and 9 show the consumption of and expenditure on the energy commodities associated with total household energy consumption in each country.

Fuel oil figures cover both light and heavy fuel oil use. Other solid fuels comprise brown coal, brown coal briquettes and peat. Fuelwood estimates are for purchased and self-collected quantities. Heat includes hot water supplies from collective or district heating systems.

The structure of the energy consumption does not follow the same pattern in all countries. In the Baltic countries the structure is basically similar, especially in Estonia and Latvia, with heat and fuelwood being the most common commodities. This is the same for Romania, although natural gas is also important there. It is also possible to find similarities between the proportional usage of natural gas, heat, electricity, fuelwood and other solid fuels in Hungary and the Czech and Slovak Republics. In Bulgaria, electricity, heat, fuelwood and other solid fuels are consumed in approximately the same proportions. Slovenia can be highlighted as having the highest consumption of fuel oil, followed by fuelwood, electricity and heat. Fuelwood is the main Albanian source for household energy consumption, with electricity and kerosene making a smaller contribution. Finally, the use of hard coal and coke in Poland should be noted since, unlike the other countries, these are obtained from their own mineral resources.

In terms of expenditure based on commodity prices, the relative weights of electricity, LPG, and in some cases heat, tend generally to increase against those of fuelwood,

natural gas and other solid fuels. Despite the inclusion of questions in the survey seeking cost data however, not all commodities are costed consistently on this basis as households did not always have the appropriate information available. The prices used for costing are usually those quoted for the households sector and for quantities which normally cover the majority of sales. The costing of fuelwood, where a substantial part may be self-collected, presented special difficulties and was often done by applying the traded price to the total quantity.

Figure 10 shows a comparison of the consumption in GJ per m^2 and per capita, and also of the expenditure in ECU per m^2 and per capita. The figures related to m^2 are based on the heated area. This explains the high values for Albania since the heated area in this country was quite low compared with that of other countries.

Personal Transport

When examining the detailed data resulting from this survey of car use it must be remembered that some combinations of engine size and fuel type are rare, consequently the underlying sample size may be only a few cars. For example, diesel cars with engines under 1000 cc are very rare, as are LPG fuelled cars of all engine sizes, and the results for these samples must therefore be treated with particular caution.

Figure 11 shows car availability within households. Slovenia is clearly the country with the highest car availability since about 75% of the households have at least one, and 21% have two or more. Apart from Slovenia, only in the Czech Republic do more than half of the households have at least one car, although in Poland this percentage is 49%. In the remaining countries car availability is less than 40% of households.

Figure 12 summarises the overall main statistics for each country and shows annual average values of distance travelled, consumption and expenditure. These values are shown both per car and per car-using household.

Space heating

Dwellings with heating are divided into those with central heating and those without. Central heating includes both internal central appliances distributing heat through hot water radiators or hot air conduits, and external supplies of heat from local or area heat suppliers. The pattern of heating by central heating varies markedly across the countries, with high levels of penetration in the Czech and Slovak Republics, Lithuania and Slovenia, and low levels in Romania and Bulgaria, and especially in Albania where it is almost non-existent (see Figure 13).

Dwellings with other forms of heating rely on individual heating appliances and/or heat provided by cooking stoves. In Figure 14 these appliances are classified under cooking equipment, stoves and open fires. Dwellings may use more than one such appliance for heating, and in such cases the dwelling is included more than once depending on the number of appliances used. The categories are therefore not mutually exclusive. The use of stoves for heating purposes is very widespread in Hungary, Romania, Bulgaria and Albania. These last two countries together with Slovenia and Slovakia make greater use of cooking equipment for heat production than the other countries.

Water Heating and Cooking Equipment

Supplies of domestic hot water are grouped into three categories of which the first and second are not mutually exclusive (see Figure 15). The number of dwellings which obtain domestic hot water from their own internal central heating systems is relatively small in all countries except Slovenia. The majority of dwellings obtain it either from their district heating supply or from independent boilers using a variety of fuels. This category includes households which normally take domestic hot water from their own central heating boilers, but have an independent means of providing it in case of failure of the main supply. Dwellings without a continuous supply of domestic hot water obtain it, as and when required, using stoves or cooking equipment.

Figure 16 illustrates the importance of the main cooking fuels in each country. Again, a dwelling can use more than one type of fuel. LPG is clearly an important cooking fuel despite its price. Its continued use in countries where natural gas supplies exist shows that the natural gas distribution network is still far from complete. Electricity is widely used for cooking in countries such as Bulgaria, Slovenia, Estonia and the Czech and Slovak Republics where many dwellings do not have a cheaper alternative readily available.

Appliance ownership

Table 6 gives details of the percentage ownership and average ages of electrical appliances available within the dwellings. In the cases of the most commonly used appliances such as fridges or TV sets, the ownership percentages are very high, as would normally be expected. Nevertheless, other appliances which imply higher household income are not so common. In the case of computers for example, it is only in Slovenia (19.7%) and in the Czech Republic (12.4%) that they are present in more than 10% of the dwellings.

Energy end use

How the consumption of each type of energy commodity is divided between the various uses (cooking, space heating, water heating and other) in the home can be determined only by means of special studies, and there is no simple way of producing this information from the surveys. Nevertheless, estimates were provided by all countries apart from Romania and Slovakia. This was achieved either by consulting specialists working on energy conservation in households or on household living conditions, or alternatively, by carefully analysing the survey results and exploiting those features of the sample which permitted some of the final uses to be isolated. Figure 17 summarises the total energy consumption by type of use, forthe countries that provided this information.

In general, space heating is the main component of the energy consumed by households, and fluctuates between 50% in Bulgaria and 78% in Latvia. The geographical situation seems to affect energy usage. Albania and Bulgaria which are placed in the most southern latitudes and have milder winters, show clearly the smallest percentages of space heating use. The amount of energy used in cooking and the production of domestic hot water varies from country to country without any obvious geographical pattern. The smallest component of domestic energy usage is

that associated with electrical appliances, with the notable exception of the Czech Republic where it slightly exceeds that used for cooking.

Figure 18 gives further details of energy usage in each country, according to the type of fuel used. Energy associated with other uses is related to electrical appliances and is not included. The consumption associated with each activity is shown as a percentage of the total household energy consumption. Although each country has its own specific structure for each type of use, a general view of this figure shows that district heating and fuelwood are the commodities used most commonly for space heating, district heating, fuelwood and electricity for domestic hot water, and fuelwood and natural gas for cooking.

4. COMPARISONS WITH OTHER SOURCES OF INFORMATION

An essential part of this project is the comparison of the survey results with similar data used for the annual energy balance. These comparisons and the attempts to explain any differences observed can serve as a basis for proposals to improve the methodology used for the annual estimation of energy consumption in households.

The following tables give the energy consumption derived from the survey results, and the energy consumption contained within the provisional 1996 energy balance for each country.

Consumption by Energy Commodity (Survey Results)

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN
TOTAL	31 189	128 713	348 588	54 899	302 630	75 835	75 163	446 503	170 770	56 415
Electricity	6 319	29 898	55 277	4 089	31 913	3 719	4 918	26 884	20 267	8 893
Natural Gas	-		99 426	1 548	117 607	3 627	5 779	64 575	69 964	1 462
LPG	70	794	2 355	284	8 676	1 239	3 352	19 272	1 067	1 960
Kerosene	758	-	-	-	-	1	-	703	1	-
Fuel Oil	-	819	6	331	872	39	575	1 958	-	20 191
Heat	-	27 112	81 337	20 932	55 500	28 308	29 847	129 466	32 247	5 857
Hard Coal	-	-	10 732	1 075	4 954	2 016	7 774	-	8 986	-
Coke	-	-	8 286	-	1 157	-	-	-	1 653	-
Fuelwood	24 041	34 596	33 273	25 074	51 370	36 539	21 938	192 351	22 155	15 177
Other Solid Fuels	1	35 494	57 896	1 566	30 581	347	980	11 294	14 430	2 875

Consumption by Energy Commodity (Energy Balance 1996)

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN
TOTAL	na	116 547	264 394	42 030	273 724	na	55 852	296 792	na	59 901
Electricity	-	41 350	57 640	4 442	36 191	3 935	5 790	29 329	19 624	9 464
Natural Gas	-	-	88 256	1 540	132 260	3 802	7 620	71 690	51 764	1 734
LPG	-	2 964	1 651	288	11 990	1 239	2 726	7 050	1 150	2 208
Kerosene	-	-	-	-	-	-	-	767	1	-
Fuel Oil	-	7 198	6	325	20 914	-	285	4 200	-	29 000
Heat	-	27 827	49 250	20 916	34 146	na	29 123	134 070	15 589	4 999
Hard Coal	-	-	10 000	1 094	7 800	3 282	2 106	-	98	-
Coke	-	-	3 861	-	1 112	-	-	-	567	-
Fuelwood	-	7 181	8 000	12 336	10 215	4 660	7 595	43 384	na	10 240
Other Solid Fuels	-	30 027	45 730	1 089	19 096	8	607	6 302	11 684	2 256

na: not available

Some countries have not been able to provide 1996 energy balance figures for every cell in the above tables. Nevertheless, the main conclusion to be drawn from the available data is clear: the energy balance data underestimate the total household energy consumption in all countries except Slovenia and, for the reasons given below, this may even be the position in Slovenia also. This underestimation arises very largely from the considerable differences between the estimates for fuelwood consumption shown in the energy balances and the estimates determined by the survey. Although the energy balance figures for total household consumption in Slovenia exceed those from the survey, this is largely due to the estimated fuel oil

consumption, which in turn is based on total deliveries of fuel oil less deliveries to manufacturing, mining and energy supply. If the survey figure is the more accurate of the two, then the total consumption given by the survey will exceed that used in the balances.

It is reasonable to question the magnitude of the fuelwood consumption indicated in the surveys because measurement of the quantities consumed is difficult to obtain when much of the wood is self-collected. Figures for Bulgaria, Hungary and Romania are nearly five times those of the energy balance estimates, whilst those in Estonia and Lithuania are between two and three times as large. Survey results for fuelwood consumption in Latvia is nearly eight times the figure shown in the energy balance and exceeds the Ministry of Agriculture estimate for fuelwood production. The figure for fuelwood consumption in the Czech energy balance covers only part of the sales of fuelwood, but the Czech final report nevertheless considers the fuelwood consumption observed in the survey to be at least 23 000 TJ too large.

Households might be expected to overestimate their fuelwood consumption because of the difficulty in recalling the frequency of fuelwood gathering and in estimating the volume of each collection. However, when fuelwood is an essential part of the household fuel requirement and regular efforts are made to obtain supplies, it seems unlikely that any exaggeration would be more than fifty per cent of the true quantity for a given household. Furthermore, such a large bias would apply only to the self-collected part of the fuelwood consumption. Several countries commented that the rural households containing older generations were confident and quite precise about their fuelwood use, thereby suggesting that any systematic upward bias would be small. Although these qualitative arguments cannot be regarded as firm evidence, they do suggest that the survey results for fuelwood consumption are closer to the truth than are the estimates in the present energy balances, and as such they represent an important change in the picture of household energy consumption.

Figures for heat consumption are more complicated to assess because the means of estimation varied between the countries. Indeed, the relative similarity of the figures from the survey and the energy balances for some countries suggests that a common underlying approach to estimation was employed. For three countries, the Czech and Slovak Republics and Hungary, the differences between the survey figures and the energy balance figures are much greater. The Czech Republic attributes the difference to the small sample size involved (2 441 dwellings). The Slovak Republic points to the loss of heating plants from its regular survey following the fragmentation of larger enterprises after privatisation; the new, smaller private heating plants then fall below the "Number of Employees" threshold for inclusion in the regular survey and its coverage thereby diminishes. Hungary considers that the heat consumption in households where central heating comes from outside the dwelling is overestimated, because the receipts contain a theoretical heat value in GJ which can be up to 25% higher than the effective measured value of consumed heat.

Other solid fuels are consumed in significant quantities by five countries, and in these cases the survey results exceed the figures obtained from suppliers and used in the energy balances. These fuels are commercially traded and, unlike fuelwood, no self-collection takes place. Supply to small consumers usually happens through merchants or wholesalers who are the downstream end point in the statistical chain. Such merchants or wholesalers rarely make statistical reports and so information on quantities delivered to households is not available.

In the Czech and Slovak Republics and in Hungary, the survey results for natural gas consumption are significantly larger than the figures shown in the energy balance

figures. As in the case of heat, the Czech Statistical Office attributes the overestimate to an insufficiently large sample. Czech statistics for natural gas consumption in 1995 contain a quantity of unallocated gas which, had it been consumed by households, would do much to fill the gap. The Slovak Statistical Office suggests however that its sample selection favoured dwellings connected to the natural gas system and thereby led to an overestimate. The energy balance figures for household consumption in Hungary may be misleading as it seems likely that they include the fuel used at district heating plants. This would explain the relatively low figure which the survey obtained for natural gas consumption, as gas is widely used for district heat generation.

Agreement between the two sets of figures for electricity consumption is much closer. This is partly due to the use of electricity suppliers' data for some consumers whose billing information is not available, but it also reflects the widespread penetration of electricity and almost universal metering. The only remarkable difference emerges for Bulgaria where electricity plays a large role in households but the figure from the survey is about 70% of the estimate shown in the energy balance. The Bulgarian Statistical Office attributes this to the inclusion in the balance figure of electricity supplies to institutional dwellings and communal cooking facilities.

5. CONCLUSIONS

Countries conducted their surveys in a very short period of time. Detailed discussion of the proposal, the draft questionnaire and the timetable started in February 1997. Since September 1997 the results have been checked, analysed and summarised, final tables have been prepared and reviewed, and final reports have been written.

The results obtained are both interesting and instructive, and National Statistical Offices have found the survey to be a positive step towards the improvement of their data. Energy statisticians in the countries now have an insight into the patterns of household energy consumption and also the living and purchasing habits that influence them. This is the first time that such information has been obtained through feedback from interviewers. The statisticians have been able to see the magnitude of the differences which can exist between the suppliers' (or more generally, the supply side) view and the survey view of household energy consumption. Some of these differences (most notably for fuelwood and other solid fuels) far exceed the likely margins of error attributable to the survey results and cast doubt on the estimation of household consumption used for annual energy balance statistics. Similar conclusions may also be valid for some of the smaller differences observed in gas and electricity consumption where closer correspondence with suppliers' figures might be expected.

In general, the preparation and data collection stages of the surveys were well conducted. The selection of the sample on the basis of the sample designs taken from microcensuses or from household surveys for more homogeneous household characteristics is not ideal, but is difficult to avoid when only basic statistical registers are available and a strict timetable is in force. The effects of inappropriate samples may be present in the survey results from the Czech and Slovak Republics. In the first, it would seem that rural and larger dwellings were over-represented and led to a general overestimate of the heated area per dwelling and the total energy consumption. In Slovakia, the selected sample led to over-representation of dwellings connected to the developing natural gas network, and as gas is a relatively inexpensive fuel in Slovakia and therefore heavily used by connected households, both gas consumption and national energy consumption are probably overestimated.

All countries took steps to prepare their households for the survey. Some were more active in this respect than others, but it is difficult to generalise on the best approach as local factors can have a great influence.

Training interviewers for the particular aspects of an energy survey was handled well and enthusiastically. The use of regional/district offices to implement the survey in each region has much to commend it. It exploits local knowledge at almost every level and provides a natural division between the execution of the survey itself and its overall control at the centre. It was necessary to maintain a help desk at the Central Office where knowledge of energy statistics and technical advice on matters relating to energy supply could be provided.

The success of the analysis, data capture and data processing stages can be judged partly from the internal consistency of the final tables submitted to the project.

The quality of final reports varies considerably. Some countries follow closely the guidance on content which was given at the second PCG meeting and provide full and interesting reports. Other reports are adequate and cover the main aspects but do not follow up the finer points of detail. All reports describe the organisation and

implementation of the survey well, and many give full details of the sample selection. The comparative parts of the reports compare the survey findings with the statistics of household energy consumption as published in the annual energy balances. The reports state that countries found the survey instructive and interesting and for many of them certain of the survey results, particularly for fuelwood, were a revelation. The national reports are available at Eurostat as well as at the NSO's.

The comparisons of survey results with energy balance statistics for household consumption indicate considerable differences for fuels that can be stocked, such as oil, solid fuels and wood. The nature of the survey, the difficulties of measurement associated with stocked fuels, and the sampling error argue for caution against taking the figures literally. Nevertheless, for the more important of these fuels in each country, this report indicates that the differences are large enough to show that action should be taken to improve the estimation of household consumers in the production of the annual energy statistics. In addition, several reports indicate that the former estimation methods are becoming even less satisfactory because of the privatisation of fuel suppliers and the consequent loss of data input to official surveys.

ANNEX I

1996 SURVEY RESULTS

(for Poland, the reference year is 1993)

TABLE 1. STRUCTURAL DATA

1,1 POPULATION, NUMBER OF HOUSEHOLDS AND DWELLINGS

eurostat

In thousands

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
POPULATION	3 230	8 767	10 362	1 572	10 375	2 673	3 708	23 211	5 288	1 996	38 038
HOUSEHOLDS	797	2 958	3 998	619	3 822	1 008	1 408	7 903	1 860	636	12 170
DWELLINGS	694	2 804	3 683	607	3 822	994	1 283	7 782	1 757	612	11 366

Population data: 1990 Census

1,2 DISTRIBUTION OF HOUSEHOLDS BY SIZE

eurostat

%

HOUSEHOLD SIZE	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
1 person	0.8	17.2	16.5	33.6	23.6	31.8	24.4	21.8	16.4	16.0	18.3
2 persons	4.7	27.5	32.2	28.9	27.7	27.7	27.2	24.4	27.1	22.4	22.3
3 persons	13.3	19.6	23.6	17.6	20.4	19.4	21.7	19.5	19.5	20.4	20.3
4 persons	20.6	22.3	21.0	13.3	20.0	14.1	19.5	18.8	22.7	26.3	22.0
5 persons	19.9	7.6	5.4	4.5	5.9	4.7	7.2	8.1	8.9	9.3	17.1
More than 5 persons	40.7	5.8	1.4	2.1	2.4	2.3	*(1)*	7.4	5.5	5.6	*(1)*
Total	100	100	100	100	100	100	100	100	100	100	100

(1) 5 persons and more than 5 persons were reported together

1,3 DISTRIBUTION OF HOUSEHOLDS BY ECONOMIC ACTIVITIY

eurostat

%

ACTIVITY	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
No economic activity	61.6	89.3	96.7	96.8	89.4	90.0	72.7	54.6	98.3	79.1	
Farm only	35.4	9.5	1.2	2.2	9.1	9.7	26.0	43.7	0.7	16.1	
Other only	2.7	1.2	1.8	0.9	1.2	0.2	0.8	0.3	0.7	3.8	
Both (Farm and Other)	0.3	-	0.3	0.1	0.3	0.1	0.5	1.4	0.3	1.0	
Total	100	100	100	100	100	100	100	100	100	100	NA

1,4 DISTRIBUTION OF DWELLINGS BY AGE

eurostat

%

CONTRUCTION YEAR	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(2)*
Before 1947	10.4	12.2	32.4	21.6	27.4	26.7	13.6	14.9	17.1	23.1	25.0
From 1947 to 1973	36.3	51.9	33.8	38.6	38.0	37.0	39.8	46.2	52.4	33.4	30.0
From 1974 to 1980	18.4	13.1	16.0	16.8	17.1	16.3	19.9	20.2	18.2	18.7	25.0
After 1980	34.9	22.8	17.8	22.6	17.5	20.0	26.7	18.7	12.3	19.9	20.0
Not known	-	-	-	0.4	-	-	-	-	-	4.9	-
Total	100	100	100	100	100	100	100	100	100	100	100

(2) For Poland the intervals are: before 1945; from 1945 to 1970; from 1971 to 1980; after 1980.

1,5 DISTRIBUTION OF DWELLINGS BY SIZE OF HEATED AREA

eurostat

%

HEATED AREA SIZE	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
Less than 20 sq. m.	83.7	26.3	0.4	2.8	0.1	2.6	3.8	28.5	0.7	6.1	
20 to 49 sq. m.	16.0	49.0	20.3	46.4	16.2	56.2	45.8	56.4	20.8	28.5	
50 to 99 sq. m.	0.2	22.3	61.9	47.2	74.6	38.5	46.7	14.7	63.5	50.7	
100 to 150 sq. m.	0.1	2.3	13.7	3.0	8.5	2.3	3.2	0.3	12.5	11.0	
More than 150 sq. m.	-	0.1	3.7	0.6	0.6	0.4	0.5	0.1	2.4	3.7	
Total	100	100	100	100	100	100	100	100	100	100	NA

1,6 DISTRIBUTION OF DWELLINGS BY TENURE TYPE

eurostat

%

TENURE TYPE	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN *(3)*	POL
Owned	98.3	90.8	47.4	81.6	92.8	32.1	90.7	95.2	64.7	92.2	55.0
Rented	1.7	9.2	52.6	18.4	7.2	67.9	9.3	4.8	35.3	6.9	45.0
Total	100	100	100	100	100	100	100	100	100	99.1	100

(3) In Slovenia the type of tenure is unknown for 0,9% of dwellings

1,7 DISTRIBUTION OF DWELLINGS BY LOCATION

eurostat

%

LOCATION	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
Urban	46.6	66.4	72.3	70.2	63.6	70.9	70.2	53.3	60.5	51.0	66.5
Rural	53.4	33.6	27.7	29.8	36.4	29.1	29.8	46.7	39.5	49.0	33.5
Total	100	100	100	100	100	100	100	100	100	100	100

1,8 DISTRIBUTION OF DWELLINGS BY NUMBER OF DWELLINGS IN BUILDING

eurostat

%

DWELLINGS IN BUILDING	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN *(4)*	POL *(5)*
One	60.6	52.8	35.3	21.8	55.4	18.2	29.5	54.0	46.1	55.1	
Two	5.9	5.5	8.1	5.0	4.6	3.9	5.2	2.8	3.5	12	
Three or four	3.2	0.8	4.0	6.3	3.5	4.6	3.2	3.3	1.5	1.7	
More than four	30.3	40.9	52.6	66.9	36.5	73.3	62.1	39.9	48.9	28.5	
Total	100	100	100	100	100	100	100	100	100	97.3	100

(4) In Slovenia the number of dwellings in building is unknown for 2.7% of dwellings

(5) In Poland, dwellings are distributed between single-family houses (35%) and multi-family houses (65%)

TABLE 2. HOUSEHOLD ENERGY CONSUMPTION & COSTS

2,1 CONSUMPTION

2,1,1 TOTAL CONSUMPTION

eurostat

TJ

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	31 189	128 713	348 588	54 899	302 630	75 835	75 163	446 503	170 770	56 415	1130 000
Electricity	6 319	29 898	55 277	4 089	31 913	3 719	4 918	26 884	20 267	8 893	66 000
Natural Gas	-		99 426	1 548	117 607	3 627	5 779	64 575	69 964	1 462	148 000 *(1)*
LPG	70	794	2 355	284	8 676	1 239	3 352	19 272	1 067	1 960	6 000
Kerosene	758	-	-	-	-	1	-	703	1	-	-
Light Oil	-	-	6	-	-	-	-	1 935	-	-	-
Heavy Oil	-	819	-	331	872	39	575	23	-	20 191	-
Heat	-	27 112	81 337	20 932	55 500	28 308	29 847	129 466	32 247	5 857	280 000
Hard Coal	-	-	10 732	1 075	4 954	2 016	7 774	-	8 986	-	472 500
Coke	-	-	8 286	-	1 157	-	-	-	1 653	-	31 500
Fuelwood	24 041	34 596	33 273	25 074	51 370	36 539	21 938	192 351	22 155	15 177	126 000
Other Solid Fuels	1	35 494	57 896	1 566	30 581	347	980	11 294	14 430	2 875	-

(1) All kinds of piped gases

2,1,2 CONSUMPTION PER SQUARE METER OF HEATED AREA

eurostat

GJ/m²

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	2.57	0.67	1.20	1.64	1.40	1.56	1.06	1.68	1.37	1.24	NA
Electricity	2.57	0.16	0.19	0.12	0.15	0.08	0.07	0.10	0.16	0.20	
Natural Gas	-	-	0.59	0.21	0.82	0.16	0.20	0.72	0.78	0.41	
LPG	0.2	0.04	0.04	0.03	0.09	0.06	0.10	0.16	0.05	0.06	
Kerosene	1.32	-	-	-	-	0.00	-	0.12	0.10	-	
Light Oil	-	-	0.11	-	-	-	-	0.48	-	-	
Heavy Oil	-	0.20	-	1.40	0.22	0.41	0.71	0.82	-	0.96	
Heat	-	0.60	0.90	1.21	1.28	1.01	0.76	1.05	0.71	0.72	
Hard Coal	-	-	0.92	0.76	0.96	1.12	0.72	-	1.58	-	
Coke	-	-	1.15	-	0.66	-	-	-	0.96	-	
Fuelwood	2.75	0.30	0.40	1.65	0.73	1.74	0.76	1.29	0.76	0.74	
Other Solid Fuels	0.14	0.44	0.83	0.41	0.75	0.54	0.60	0.63	0.86	0.62	

2,1,3 CONSUMPTION PER PERSON

eurostat

GJ/Capita

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	8.88	15.39	31.70	36.89	29.86	31.13	20.44	19.77	30.91	28.57	NA
Electricity	9.53	3.58	5.03	2.75	3.15	1.53	1.34	1.22	3.67	4.51	
Natural Gas	-	-	15.03	4.59	18.62	3.01	3.78	8.45	17.78	9.46	
LPG	0.83	0.90	1.13	0.82	1.90	1.22	1.93	1.95	1.18	1.29	
Kerosene	4.86	-	-	-	-	0.00	-	1.18	2.78	-	
Light Oil	-	-	3.50	-	-	-	-	5.63	-	-	
Heavy Oil	-	4.97	-	38.85	4.25	11.91	22.56	17.73	-	25.57	
Heat	-	17.75	19.60	26.05	26.69	19.61	13.95	14.44	13.88	14.76	
Hard Coal	-	-	27.02	22.76	20.57	28.2	15.86	-	36.67	-	
Coke	-	-	32.06	-	14.08	-	-	-	26.52	-	
Fuelwood	9.22	6.94	11.91	39.06	14.33	35.95	15.30	15.30	17.32	16.34	
Other Solid Fuels	0.4	10.02	24.69	9.73	15.09	14.13	12.88	6.67	19.77	13.69	

2,2 COSTS

2,2,1 TOTAL COSTS

eurostat

Million ECU

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	109.6	288.2	1415.3	173.2	1 423.0	269.4	266.3	689.5	463.4	503.4	NA
Electricity	59.6	142.9	462.4	32.4	433.0	46.6	46.5	114.0	138.6	200.5	
Natural Gas	-	-	264.8	6.9	376.0	17.1	21.3	25.2	113.5	8.7	
LPG	1.1	4.8	25.9	2.4	86.0	16.9	17.1	101.0	9.9	23.8	
Kerosene	4.3	-	-	-	-	0.0	-	2.1	0.0	-	
Light Oil	-	-	-	-	-	-	-	5.3	-	-	
Heavy Oil	-	4.8	0.1	1.0	15.0	0.2	2.3	0.1	-	118.3	
Heat	-	45.8	444.6	109.1	230.0	161.6	145.8	131.3	117.8	33.6	
Hard Coal	-	-	23.7	2.2	19.0	4.1	17.8	-	15.9	-	
Coke	-	-	25.6		6.0	-	-	-	4.3	-	
Fuelwood	44.6	48.6	37.0	15.0	142.0	22.4	13.8	292.8	21.9	101.3	
Other Solid Fuels	0.0	41.4	131.2	4.2	116.0	0.7	1.7	17.9	41.5	17.2	

ECU converted using average exchange rate for 1996

2,2,2 COSTS PER SQUARE METER OF HEATED AREA

eurostat

ECU/m²

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	9.05	1.51	4.87	5.17	6.58	5.56	3.76	2.60	3.71	11.08	NA
Electricity	24.20	0.75	1.59	0.97	2.00	0.96	0.66	0.44	1.11	4.42	
Natural Gas	-	-	1.56	0.95	2.63	0.73	0.73	0.28	1.26	2.42	
LPG	3.29	0.25	0.49	0.29	0.91	0.80	0.5	0.85	0.48	0.68	
Kerosene	7.42	-	-	-	-	0.30	-	0.35	1.30	-	
Light Oil	-	-	1.22	-	-	-	-	1.32	-	-	
Heavy Oil	-	1.18	-	4.25	3.76	1.57	2.84	2.32	-	5.63	
Heat	-	1.01	4.91	6.29	5.29	5.76	3.7	1.06	2.59	4.16	
Hard Coal	-	-	2.03	1.57	3.68	2.25	1.63	-	2.80	-	
Coke	-	-	3.57	-	3.44	-	-	-	2.52	-	
Fuelwood	5.11	0.42	0.45	0.99	2.01	1.07	0.47	1.96	0.75	4.92	
Other Solid Fuels	1.86	0.51	1.87	1.10	2.86	1.10	1.05	1.00	2.47	3.71	

ECU converted using average exchange rate for 1996

2,2,3 COSTS PER PERSON

eurostat

ECU/Capita

	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
TOTAL	31.2	34.5	128.7	116.4	140.3	110.6	72.4	30.5	83.9	255.0	NA
Electricity	89.8	17.1	42.0	21.8	42.7	19.2	12.7	5.2	25.1	101.8	
Natural Gas	-	-	40.0	20.6	59.5	14.2	14.0	3.3	28.9	56.4	
LPG	13.4	5.7	14.3	6.8	18.8	16.5	9.9	10.2	10.9	15.7	
Kerosene	27.4	-	-	-	-	12.0	-	3.5	36.5	-	
Light Oil	-	-	38.7	-	-	-	-	15.4	-	-	
Heavy Oil	-	28.9	-	118.1	71.5	43.7	89.7	50.2	-	149.8	
Heat	-	30.0	107.1	135.8	110.5	111.9	68.1	14.6	50.7	84.7	
Hard Coal	-	-	59.7	46.6	78.5	56.8	36.2	-	64.7	-	
Coke	-	-	99.2	-	73.5	-	-	-	69.7	-	
Fuelwood	17.1	9.7	13.3	23.3	39.6	22.0	9.6	23.3	17.1	109.1	
Other Solid Fuels	5.3	11.7	55.9	26.2	57.3	29.3	22.6	10.6	56.9	81.8	

ECU converted using average exchange rate for 1996

TABLE 3. CARS

3,1 TOTAL NUMBER OF CARS

3,1,1 CARS BY CUBIC CAPACITY

eurostat

Thousands

CUBIC CAPACITY	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
Less than 1001 cc	0.6	41.9	243.7	6.7	384.1	12.4	2.4	56.0	67.0	75.1	NA
1001 - 1500 cc	14.9	596.1	1 583.9	106.3	853.1	87.2	185.6	1 084.3	538.6	366.5	NA
1501 - 2000 cc	25.8	128.6	310.0	91.9	163.3	105.7	310.3	90.6	79.0	155.2	NA
More than 2000 cc	26.0	15.4	38.1	19.9	12.0	20.5	50.6	50.6	11.8	12.4	NA
TOTAL	67.3	782.0	2 175.7	224.8	1 412.5	225.8	548.9	1 281.5	696.4	609.2	6 239.0

3,1,2 CARS BY TYPE OF FUEL

eurostat

Thousands

TYPE OF FUEL	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(1)*
Leaded Petrol	7.4	706.2	1 472.1	129.0	810.3	56.5	162.5	1 163.6	340.4	306.6	5 927.0
Unleaded Petrol	9.6	27.0	532.9	77.1	510.1	157.9	338.4	49.5	299.5	245.4	
Diesel	50.3	23.9	152.9	18.1	83.5	11.2	34.0	67.2	56.5	56.2	312.0
LPG	-	24.9	17.8	0.6	8.6	0.2	14.0	1.2	-	1.0	-
TOTAL	67.3	782.0	2 175.7	224.8	1 412.5	225.8	548.9	1 281.5	696.4	609.2	6 239.0

(1) Gasoline engines, leaded and unleaded, together

3,2 DISTANCE TRAVELLED

eurostat

Thousand km

DISTANCE TRAVELLED:	ALB *(2)*	BGR	CZE *(2)*	EST	HUN	LVA	LTU	ROM	SVK *(2)*	SVN	POL
Per car	17.3	8.0	11.2	14.9	7.7	12.2	13.3	13.1	11.1	15.2	10.0
Per car-using household	17.9	8.3	12.1	16.6	7.9	12.6	13.8	13.6	11.7	19.5	NA

(2) Data supplied for car-using household were reported based on the number of dwellings rather than households.

3,3 FUEL CONSUMPTION

3,3,1 TOTAL FUEL CONSUMPTION

eurostat

Million litres

TYPE OF FUEL	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(3)*
Leaded Petrol	6.7	525.4	1 087.2	158.9	439.6	63.3	159.0	1 214.4	263.8	332.3	4 742.0
Unleaded Petrol	12.8	23.5	558.8	116.1	364.5	173.4	418.3	69.3	271.0	319.4	
Diesel	85.1	26.1	212.8	28.4	66.4	14.2	49.5	121.2	65.7	85.6	250.0
LPG	-	31.5	38.3	0.5	20.7	0.5	26.2	2.6	-	0.7	-
TOTAL	104.7	606.5	1 897.2	304.0	891.3	251.3	653.1	1 407.6	600.4	738.0	4 992.0

(3) All gasoline, leaded and unleaded, together

3,3,2 FUEL CONSUMPTION PER CAR AND PER CAR-USING HOUSEHOLD

eurostat

Litres

FUEL CONSUMPTION:	ALB *(4)*	BGR	CZE *(4)*	EST	HUN	LVA	LTU	ROM	SVK *(4)*	SVN	POL
Per car	1 557.0	776.0	872.0	1 352.0	631.0	1 113.0	1 190.0	1 098.0	862.0	1 211.0	800.0
Per car-using household	1 621.0	805.0	947.0	1 504.0	650.0	1 150.0	1 238.0	1 143.0	908.0	1 558.0	837.0

(4) Data supplied for car-using household and car availability were reported based on the number of dwellings rather than households.

3,4 FUEL COST

3,4,1 TOTAL FUEL COST

eurostat

Million ECU

TYPE OF FUEL	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
Leaded Petrol	4.6	165.7	647.5	48.6	278.3	22.9	44.4	269.7	150.4	159.7	
Unleaded Petrol	5.8	8.8	331.2	35.5	232.9	52.8	126.7	15.4	151.0	140.3	
Diesel	28.9	6.4	102.8	7.3	36.9	3.9	12.4	18.3	33.0	34.9	
LPG	-	4.7	14.0	0.2	10.3	0.1	3.6	0.2	-	0.1	
TOTAL	39.3	185.6	1 095.4	91.6	558.5	79.7	187.1	303.6	334.4	335.1	NA

ECU converted using average exchange rate for 1996

3,4,2 FUEL COST PER CAR AND PER CAR-USING HOUSEHOLD

eurostat

ECU

FUEL COST:	ALB *(4)*	BGR	CZE *(4)*	EST	HUN	LVA	LTU	ROM	SVK *(4)*	SVN	POL
Per car	584	237	503	408	395	353	341	237	480	550	NA
Per car-using household	608	246	547	454	407	365	354	247	506	707	NA

ECU converted using average exchange rate for 1996

3,5 HOUSEHOLD CAR AVAILABILITY

3,5,1 DISTRIBUTION OF CAR AVAILABILITY

eurostat

%

CAR AVAILABILITY	ALB *(4)*	BGR	CZE *(4)*	EST	HUN	LVA	LTU	ROM	SVK *(4)*	SVN	POL
No car	90.7	74.6	45.6	67.4	64.1	78.3	62.5	84.4	62.4	25.6	51.0
One car	8.9	24.5	49.6	29.0	34.8	21.0	36.1	15.0	35.6	53.1	47.0
Two or more cars	0.4	0.9	4.8	3.6	1.1	0.7	1.4	0.6	2.0	21.3	2.0
TOTAL	100	100	100	100	100	100	100	100	100	100	100

3,5,2 AVERAGE CAR AVAILABILITY

eurostat

AVERAGE CARS NUMBER	ALB *(4)*	BGR	CZE *(4)*	EST	HUN	LVA	LTU	ROM	SVK *(4)*	SVN	POL
Average over car-using households	1.04	1.04	1.10	1.12	1.03	1.03	1.04	1.04	1.05	1.29	1.05
Average over all households	0.08	0.26	0.54	0.37	0.37	0.22	0.39	0.16	0.37	0.96	0.51

(4) Data supplied for car-using household and car availability were reported based on the number of dwellings rather than households.

TABLE 4. SPACE HEATING

DWELLINGS BY TYPE OF SPACE HEATING EQUIPMENT AND FUEL (1/2)

eurostat

% of Dwellings

	ALB *(1)*	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(2)*
CENTRAL HEATING	0.1	19.3	97.2	65.5	55.6	70.0	91.7	40.0	91.5	86.4	67.0
Individual	0.1	1.9	56.5	8.7	35.2	9.7	32.1	1.9	46.4	63.4	33.0
Electricity		0.4		2.5	0.6				4.0	0.3	
Natural Gas			20.5	0.4	18.1	1.5	3.2	0.8	23.4	3.3	7.0
LPG			0.1	0.0	0.2			0.0		0.8	
Fuel Oil				0.3	0.3	0.1	0.6	0.2		33.4	
Hard Coal			2.4	2.0	1.2	2.5	9.1		2.5		19.5
Coke			1.6		0.5				0.9		1.3
Fuelwood	0.1		16.5	4.9	8.0	5.1	17.9	0.8	8.1	19.2	5.2
Other Solid Fuels		1.5	15.4	1.3	6.3	0.5	1.3	0.1	7.5	6.4	
Collective	0.0	0.4	13.5	12.1	3.8	10.9	5.3	0.7	21.9	10.3	-
Natural Gas				4.7		1.6		0.3	18.7	2.6	
LPG				1.7						0.2	
Fuel Oil		0.3		2.6		3.7		0.1	0.6	6.8	
Heat					3.8						
Hard Coal				1.3		1.5			2.0		
Fuelwood				1.1		4.1					
Other Solid Fuels		0.1		0.7				0.3	0.6	0.7	
District	0.0	17.0	27.2	44.7	16.6	49.4	54.3	37.4	23.2	12.7	34.0
SUPPLEMENTARY HEATING	0.0	5.1	14.6	21.5	8.3	18.8	6.2	1.2	10.4	23.0	NA
Electricity		4.9	11.4	17.4	0.2	14.3	5.8	0.2	10.3	7.5	
Natural Gas			0.6	0.8	4.5	1.6	0.4	0.3	0.0	0.0	
LPG		0.1	0.1	0.1	0.5				0.1	0.4	
Fuel oil					0.5						
Hard Coal			0.1	0.1		0.1					
Fuelwood		0.1	1.8	6.5	2.1	2.8		0.6		14.1	
Other Solid Fuels		0.0	0.6	1.7	0.5	0.0		0.1		1.0	

DWELLINGS BY TYPE OF SPACE HEATING EQUIPMENT AND FUEL (2/2)

eurostat

% of Dwellings

	ALB *(1)*	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(2)*
NO CENTRAL HEATING	100.0	94.7	27.1	36.1	70.6	33.6	21.6	70.6	46.5	56.5	33.3
Cooking Equipment	37.6	43.0	0.2	0.2	1.4	3.3	5.3	1.0	25.1	27.7	-
Electricity								0.1	2.7	9.8	
Natural Gas						0.5	0.1	0.3	9.5	0.1	
LPG		0.3		0.1	0.3	0.3	2.6	0.4	0.1	0.9	
Kerosene	0.5										
Hard Coal									1.4		
Coke									0.1		
Fuelwood	37.1	28.9	0.1	0.1	1.1	2.5	2.6	0.2	7.7	15.1	
Other Solid Fuels	0.0	17.0	0.1			0.0	0.0		3.6	1.8	
Stoves	52.0	51.1	26.6	32.8	69.2	30.3	16.1	69.6	21.1	28.8	33.3
Electricity	35.9	28.9	9.1	8.0	5.6	0.5				9.9	
Natural Gas			8.1	0.1	24.2			4.8	8.0	0.2	
LPG	2.4	1.0	0.0	0.1	3.0			3.9	0.1	0.4	
Kerosene	4.1							0.1			
Fuel Oil		1.4			1.4			0.3		2.7	
Hard Coal			0.7	0.1	0.9	0.1	2.0	1.1	1.5		24.8
Coke			0.0		0.4				0.0		1.6
Fuelwood	9.6	19.0	4.6	31.5	21.6	29.4	13.8	53.2	7.5	13.2	6.6
Other Solid Fuels		16.8	4.1	5.2	12.1	0.3	0.3	6.2	4.0	2.4	
Open fires	22.0	0.6	0.3	3.1	0.0	0.0	0.2	0.0	0.3	0.0	-
NO HEATING	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

NOTE: Same dwelling may have different kinds of heating system: central, supplementary and non central.

(1) In Albania the data have been supplied in terms of households rather than dwellings

(2) In Poland the solid fuels consumption is split on the basis of coal (75%), coke (5%) and fuelwood (20%).

TABLE 5. WATER HEATING AND COOKING EQUIPMENT

5,1 DWELLINGS BY WATER HEATING EQUIPMENT AND FUEL TYPE

eurostat

% of Dwellings

	ALB *(1)*	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(2)*
HOT WATER WITH CENTRAL HEATING	0.0	0.3	19.0	5.0	2.9	2.3	16.4	1.1	8.3	50.9	0.0
Electricity		0.1		0.3						0.1	
Natural Gas			6.5	0.4	2.1	0.4	1.5	0.3	5.1	1.9	
LPG			0.0	0.0	0.0		0.0	0.1		0.6	
Fuel Oil				0.2	0.0	0.0	0.5	0.1		28.3	
Hard Coal			0.9	1.4	0.0	0.5	4.5		0.4		
Coke			0.8		0.0				0.3		
Fuelwood			5.7	3.6	0.2	1.3	9.1	0.6	1.3	15.6	
Other Solid Fuels		0.2	5.1	1.0	0.6	0.1	0.8	0.0	1.2	4.4	
INDEPENDENT WATER HEATING	27.5	79.6	95.6	61.7	90.8	56.2	66.8	40.8	94.4	59.7	80.0
Water Heater	27.5	63.5	58.2	20.8	71.6	7.6	9.3	3.9	51.8	51.4	60.0
Electricity	26.8	55.6	38.8	11.3	47.1	3.1	2.1	0.3	30.0	47.3	15.0
Natural Gas			16.5	5.5	20.9	1.7	2.1	0.9	14.3	1.0	30.0
LPG		0.3	0.2	0.4	1.1		0.0	0.1	0.1	0.3	
Kerosene	0.7										
Fuel Oil		0.1		0.0	0.0		0.1	0.1			
Hard Coal			0.2	0.3	0.1	0.4	1.9		0.9		11.3
Coke			0.1		0.0				0.2		0.7
Fuelwood		8.8	1.3	4.0	1.8	2.4	2.9	2.3	4.0	2.8	3.0
Other Solid Fuels		3.2	1.1	0.8	0.6		0.2	0.2	2.3	0.0	
Other (Heat)	0.0	16.1	37.4	40.9	19.2	48.6	57.5	36.9	42.6	8.3	20.0
NO WATER HEATING EQUIPMENT	72.5	21.0	0.0	48.4	13.5	43.6	25.6	58.6	8.2	7.6	20.0

NOTE : Same dwelling may have hot water with central heating and independent central heating

(1) In Albania the data have been supplied in terms of households rather than dwellings

(2) In Poland the solid fuels consumption is split on the basis of coal (75%), coke (5%) and fuelwood (20%).

5,2 DWELLINGS BY COOKING EQUIPMENT AND FUEL TYPE

eurostat

% of Dwellings

	ALB *(1)*	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(2)*
COOKING EQUIPMENT	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
Electricity	53.9	61.1	53.2	51.1	9.7	8.8	10.9	2.7	43.3	86.7	5.0
Natural Gas			56.0	24.9	56.2	49.9	42.3	32.1	69.3	8.0	55.0 *(3)*
LPG	2.9	8.6	15.1	22.6	42.4	40.7	45.8	42.3	14.5	72.3	10.0
Kerosene	19.1							0.9	0.0		
Hard Coal			0.6	0.2	0.3	0.2	5.0		2.1		22.5
Coke			0.1		0.0				0.2		1.5
Fuelwood	26.2	13.9	5.5	35.5	11.1	32.4	25.2	42.6	15.6	27.1	6.0
Other Solid Fuels		19.6	4.2	9.2	4.1	0.1	0.6	1.7	6.4	3.3	
NO COOKING EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

NOTE : Same dwelling may have cooking equipment of several types of fuel

(1) In Albania the data have been supplied in terms of households rather than dwellings

(2) In Poland the solid fuels consumption is split on the basis of coal (75%), coke (5%) and fuelwood (20%).

(3) All kinds of piped gases

TABLE 6. ELECTRICAL APPLIANCE OWNERSHIP AND AGE

6,1 PERCENTAGE OF DWELLINGS WITH ELECTRICAL APPLIANCES

eurostat

% of Dwellings

ELECTRICAL APPLIANCE	ALB *(1)*	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(1)*
Lamps	100.0	99.9	100.0	99.4	99.9	99.4	100.0	90.6	98.9	99.7	100.0
Kettle	1.0	35.1	46.8	NA	99.9	7.6	16.7	9.6	6.1	NA	NA
Space heaters	53.5	83.4	20.5	25.4	9.3	93.6	6.5	11.9	14.4	17.4	NA
Iron	94.2	97.6	98.3	95.5	99.9	17.4	96.6	81.6	98.1	96.8	NA
Auto Washer	35.4	40.6	74.7	22.6	43.9	8.6	11.6	7.2	57.0	96.4	50.0
Non Auto Washer	6.5	36.2	35.7	52.1	59.6	61.3	63.2	43.6	45.7	*(2)*	*80.0*
Clothes Dryer	0.0	0.3	3.3	NA	0.4	NA	NA	NA	1.2	7.2	NA
Fridge	78.9	88.5	98.1	89.7	99.9	86.6	93.7	68.9	97.4	95.2	100.0
Freezer	0.1	17.3	65.2	11.7	52.4	2.2	6.2	13.0	55.7	85.8	30.0
Dish Washer	0.7	0.9	3.3	0.7	0.6	0.1	2.0	NA	1.3	20.2	NA
Colour TV	70.2	66.0	93.3	77.7	80.0	69.9	75.8	42.1	82.5	93.6	100.0
B/W TV	28.9	27.3	14.3	24.6	28.4	27.7	37.9	44.7	22.4	*(3)*	*(3)*
Computer	0.5	1.3	12.4	3.2	7.2	1.6	2.3	1.2	7.7	19.7	10.0
Cooker	64.4	86.4	16.3	47.8	9.7	6.1	11.0	2.7	30.1	86.0	NA
Microwave Oven	0.5	4.4	30.1	11.0	25.8	2.8	5.4	NA	18.1	6.9	NA
HW Boiler	30.8	61.1	38.8	11.3	47.1	3.1	2.1	0.3	30.0	47.3	NA
Air Conditioning	0.2	0.4	0.4	NA	0.4	NA	NA	NA	0.2	0.7	NA

(1) As percentages of total number of households rather than dwellings
(2) Includes Auto Washer and Non Auto Washer together
(3) Includes Colour and B/W TV together

6,2 ELECTRICAL APPLIANCES AVERAGE AGE

eurostat

Years

ELECTRICAL APPLIANCE	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL
Auto Washer	5.4	8.0	8.6	2.9	7.0	4.8	4.7	6.7	9.7	9.2	NA
Non Auto Washer	12.5	21.0	14.9	13.2	15.0	14.3	12.7	13.5	14.8	*(1)*	NA
Clothes Dryer	2.7	4.0	3.9	NA	6.0	NA	NA	NA	9.1	3.2	NA
Fridge	6.8	16.0	11.3	12.6	14.0	15.1	13.2	12.7	13.3	11.6	NA
Freezer	3.4	4.0	6.9	4.7	8.0	6.7	4.3	6.6	7.0	10.2	NA
Dish Washer	3.5	6.0	2.6	3.3	4.0	4.3	2.9	NA	6.5	5.9	NA
Colour TV	4.1	7.0	6.8	5.6	7.0	8.4	7.7	4.5	7.7	7.8	NA
B/W TV	8.3	17.0	14.2	15.0	16.0	16.1	12.7	13.4	15.7	*(2)*	NA
Computer	1.7	4.0	3.0	2.2	4.0	3.5	2.7	3.7	3.6	3.0	NA
Cooker	3.9	16.0	12.3	8.9	14.0	10.7	8.6	10.9	14.1	10.7	NA
Microwave Oven	1.8	5.0	3.1	2.2	3.0	3.5	3.3	NA	3.4	5.2	NA
HW Boiler	3.4	13.0	10.4	2.8	13.0	2.5	5.2	10.1	14.1	8.9	NA
Air Conditioning	1.7	3.0	5.5	NA	5.0	NA	NA	NA	6.0	1.4	NA

(1) Includes Auto Washer and Non Auto Washer together

(2) Includes Colour and B/W TV together

TABLE 7. HOUSEHOLD ENERGY CONSUMPTION BY END USE IN PERCENTAGES

eurostat

%

END USE	ALB	BGR	CZE	EST	HUN	LVA	LTU	ROM	SVK	SVN	POL *(1)*
Space heating	51.8	49.5	77.6	71.5	70.5	77.9	74.8	NA	NA	71.7	77.1
Electricity	4.6	4.0	4.7	2.4	1.5	0.3	0.1			3.6	0.4
Natural Gas			23.6	0.8	29.4	1.0	3.7			1.5	5.9
LPG	0.2		0.3	0.1	0.2		0.0			0.4	
Kerosene	0.8										
Fuel oil		0.6	0.0	0.6	0.3	0.0	0.6			32.1	
District heating		15.0	18.8	38.1	14.9	29.9	35.8			8.7	22.1
Hard Coal			3.0	1.9	1.6	2.6	8.3				36.5
Coke			2.3		0.4						2.4
Fuelwood	46.2	11.3	8.9	25.9	13.2	43.7	25.1			20.9	9.8
Other solid fuels	0.0	18.6	16.0	1.7	9.0	0.4	1.2			4.5	
Domestic hot water	14.9	24.8	12.1	9.8	11.0	9.3	7.9	NA	NA	13.8	10.8
Electricity	3.0	4.9	3.9	0.8	4.6	0.2	0.2			3.9	1.3
Natural Gas			2.6	0.0	2.6	0.3	0.8			0.4	3.7
LPG		0.1	0.0	0.0	0.0					0.1	
Kerosene	0.9										
Fuel oil		0.0		0.0	0.0	0.0	0.2			3.6	
District heating		6.1	4.5		3.4	7.5	4.0			1.5	2.7
Hard Coal			0.1	0.0		0.1	1.5				2.3
Coke			0.1								0.2
Fuelwood	11.0	8.3	0.5	8.5	0.3	1.1	1.0			3.8	0.6
Other solid fuels		5.4	0.4	0.5	0.1	0.1	0.2			0.5	
Cooking	27.1	14.0	5.0	15.5	14.9	8.8	12.0	NA	NA	7.4	8.3
Electricity	6.5	2.6	2.0	1.1	0.9	0.3	0.9			1.2	0.3
Natural Gas			2.3	2.0	6.9	3.5	3.2			0.6	3.5
LPG		0.5	0.4	0.5	2.6	1.6	4.4			3.0	0.5
Kerosene	0.7										
Hard Coal			0.0		0.0	0.0	0.5				3.0
Coke			0.0								0.2
Fuelwood	19.9	7.3	0.2	11.2	3.5	3.4	3.0			2.5	0.8
Other solid fuels		3.6	0.1	0.7	1.0	0.0				0.1	
Other (Electricity)	6.2	11.7	5.3	3.2	3.6	4.0	5.3	NA	NA	7.1	3.8
ALL USES	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NA	NA	100.0	100.0

(1) In Poland the solid fuels consumption is split on the basis of coal (75%), coke (5%) and fuelwood (20%).

ANNEX II

FIGURES

FIGURE 1 **POPULATION, HOUSEHOLDS AND DWELLINGS**

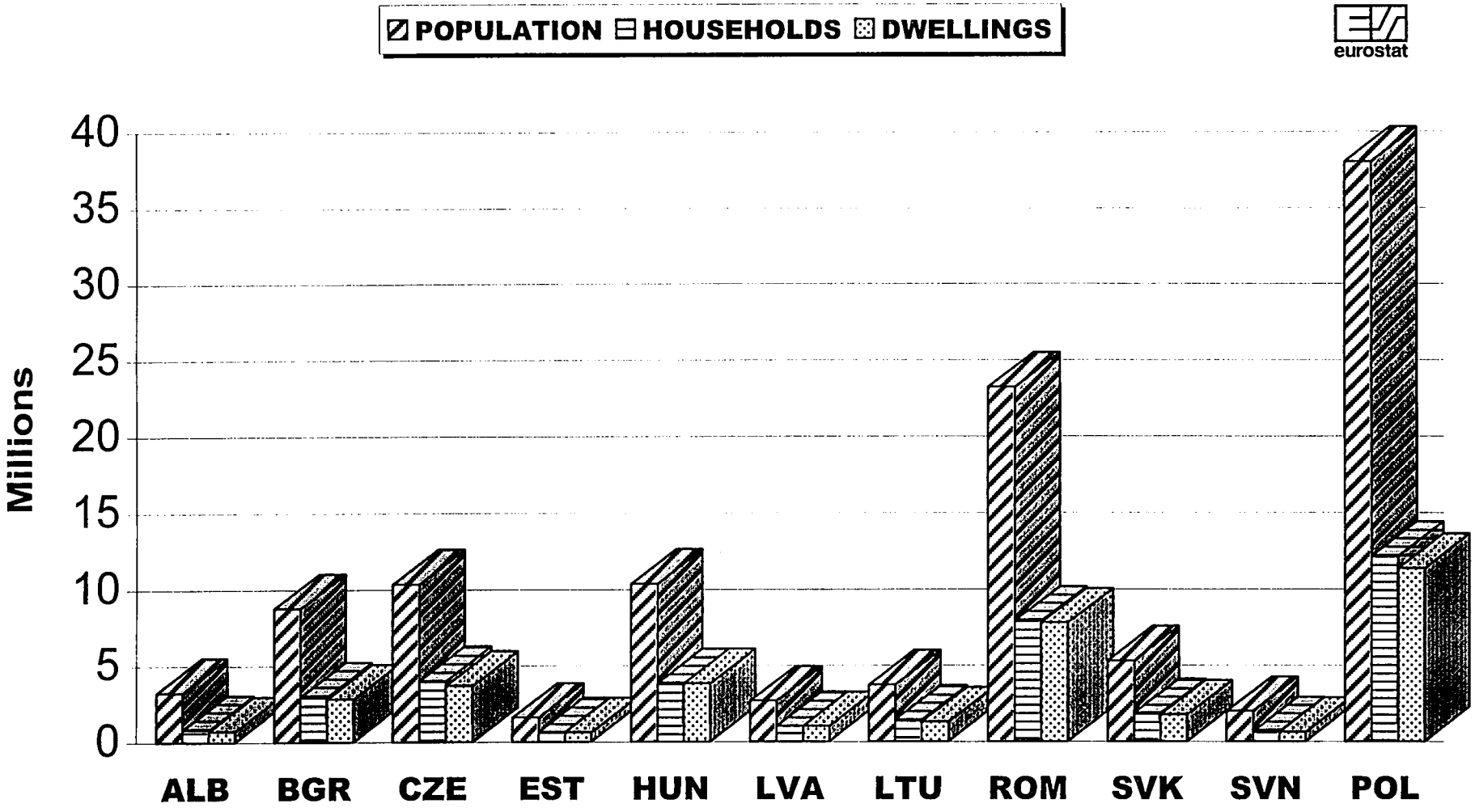


FIGURE 2 HOUSEHOLD SIZE

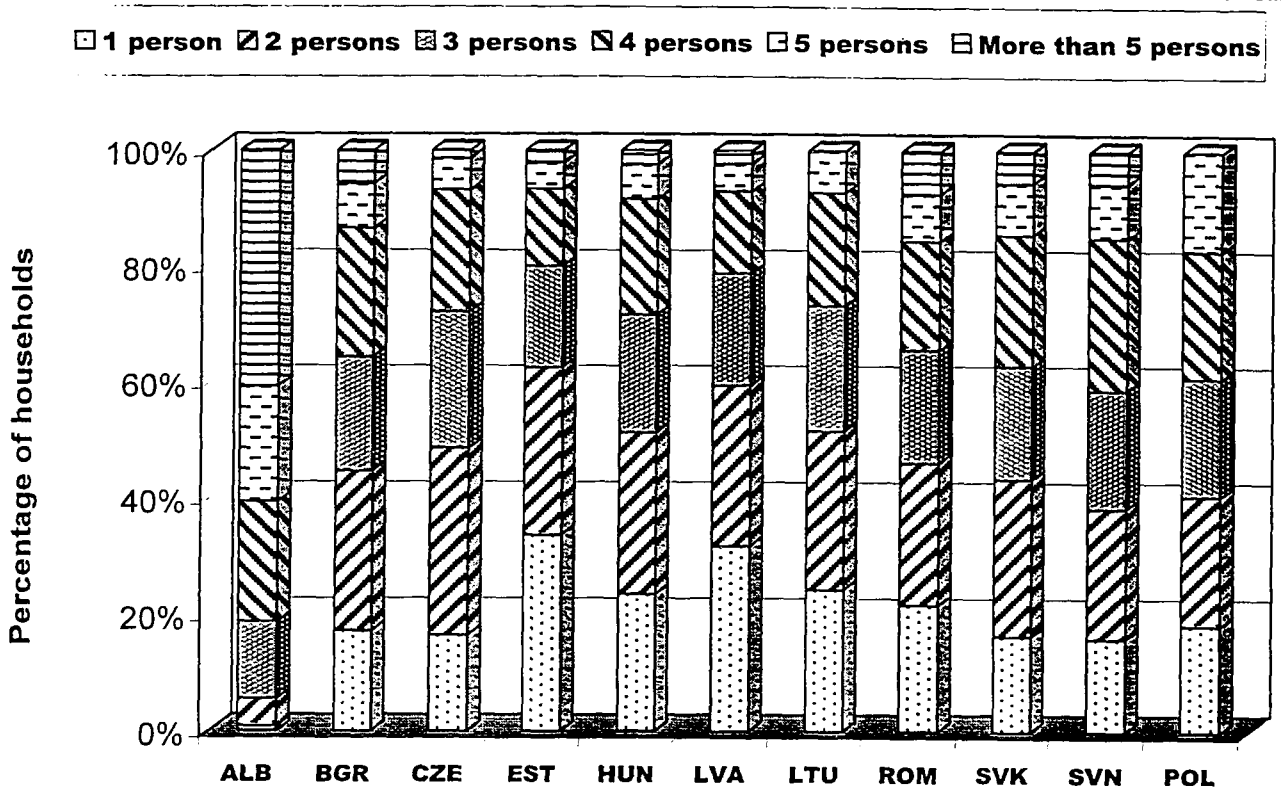


FIGURE 3 HOUSEHOLDS UNDERTAKING ECONOMIC ACTIVITIES

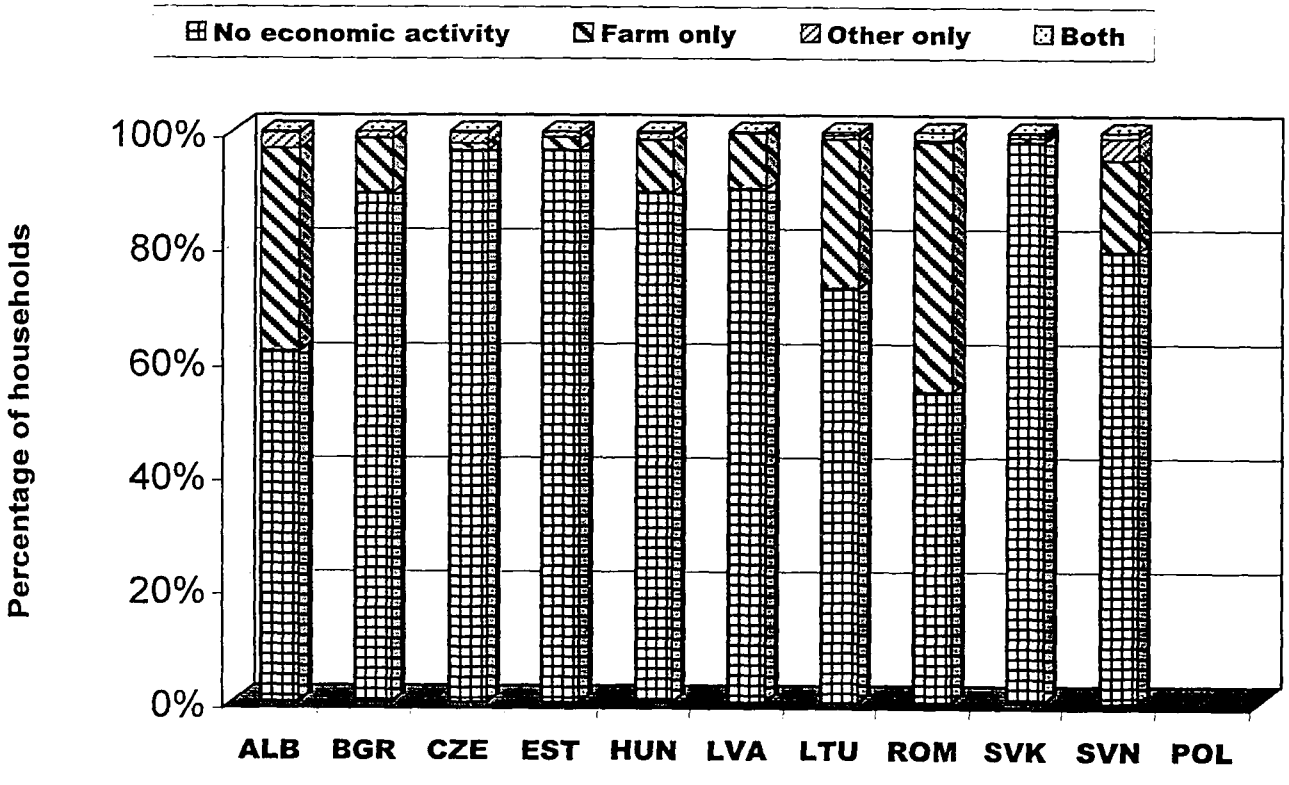


FIGURE 4 DWELLINGS AGE

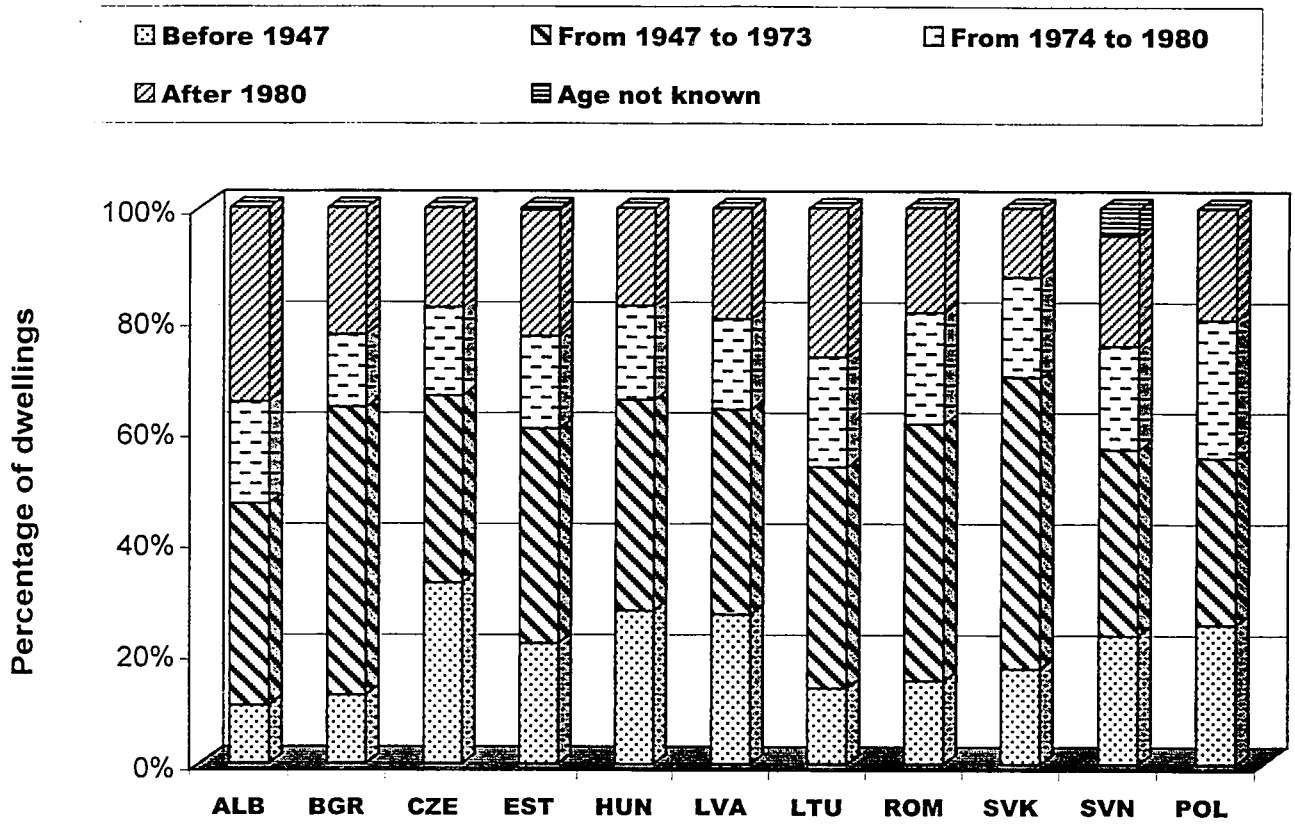


FIGURE 5 DWELLINGS: HEATED AREA

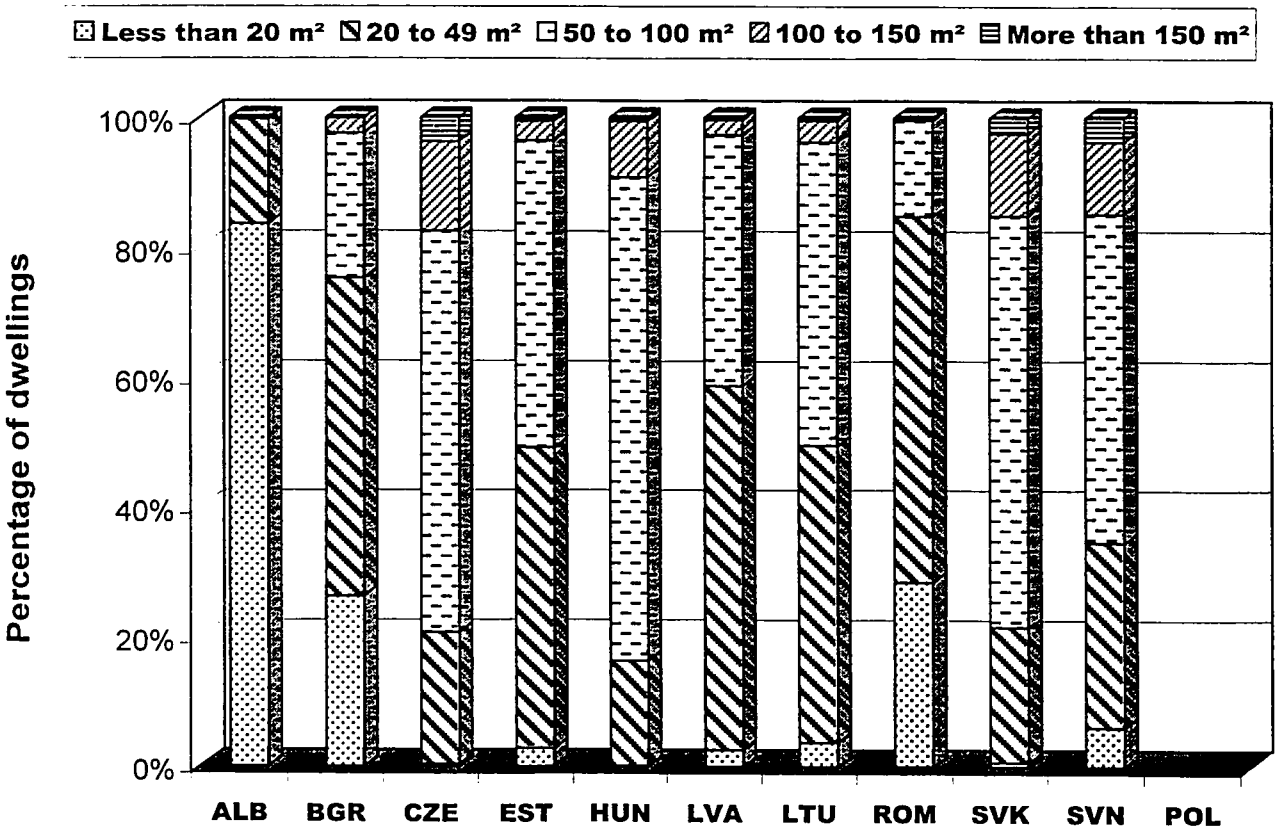


FIGURE 6 **DWELLINGS: LOCATION**

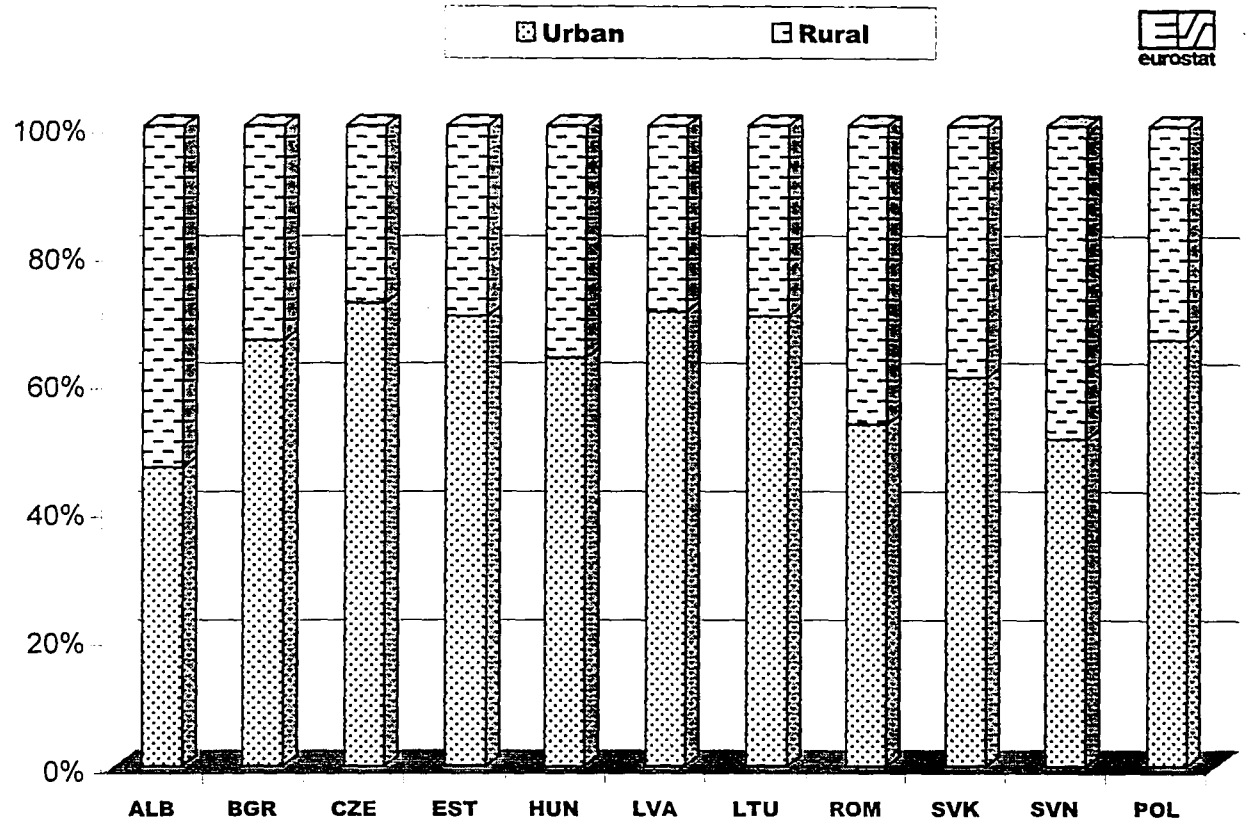


FIGURE 7 **DWELLINGS: TYPE OF TENURE**

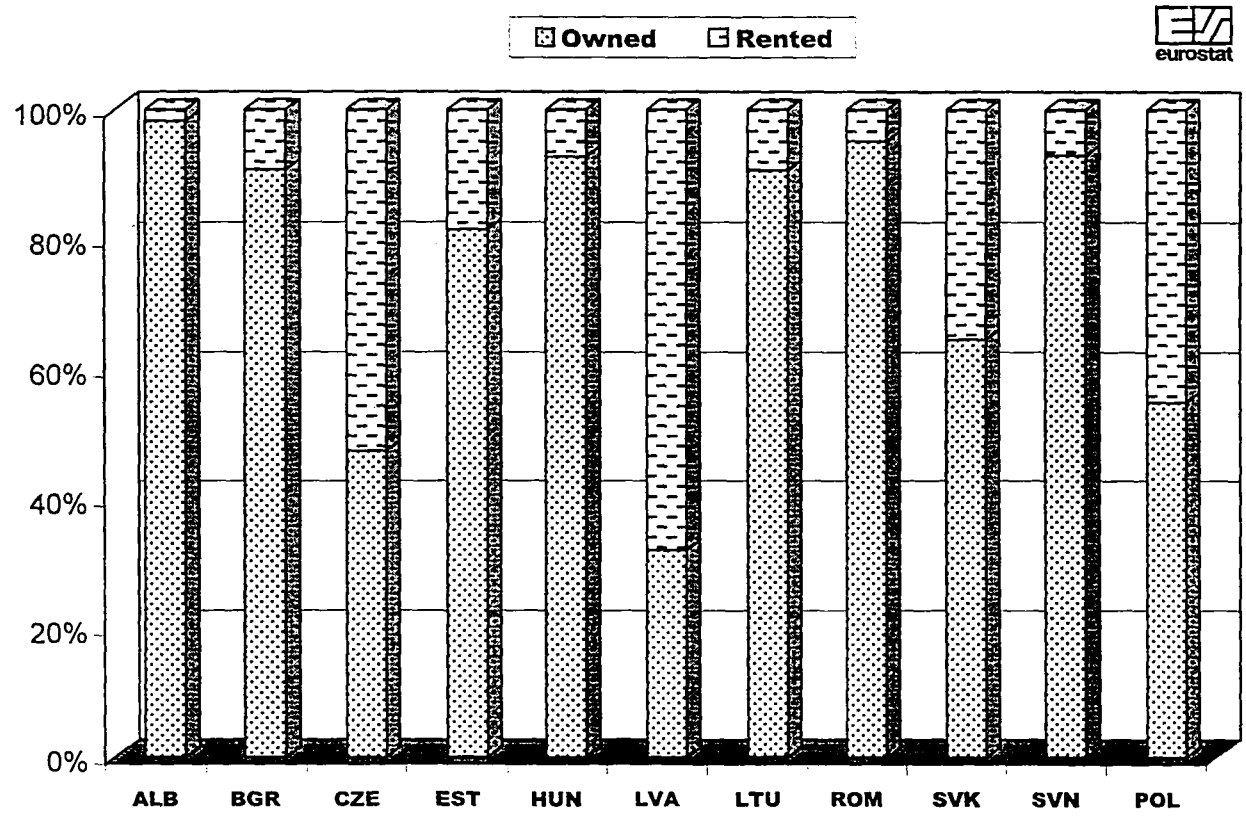


FIGURE 8 **CONSUMPTION BY TYPE OF FUEL**

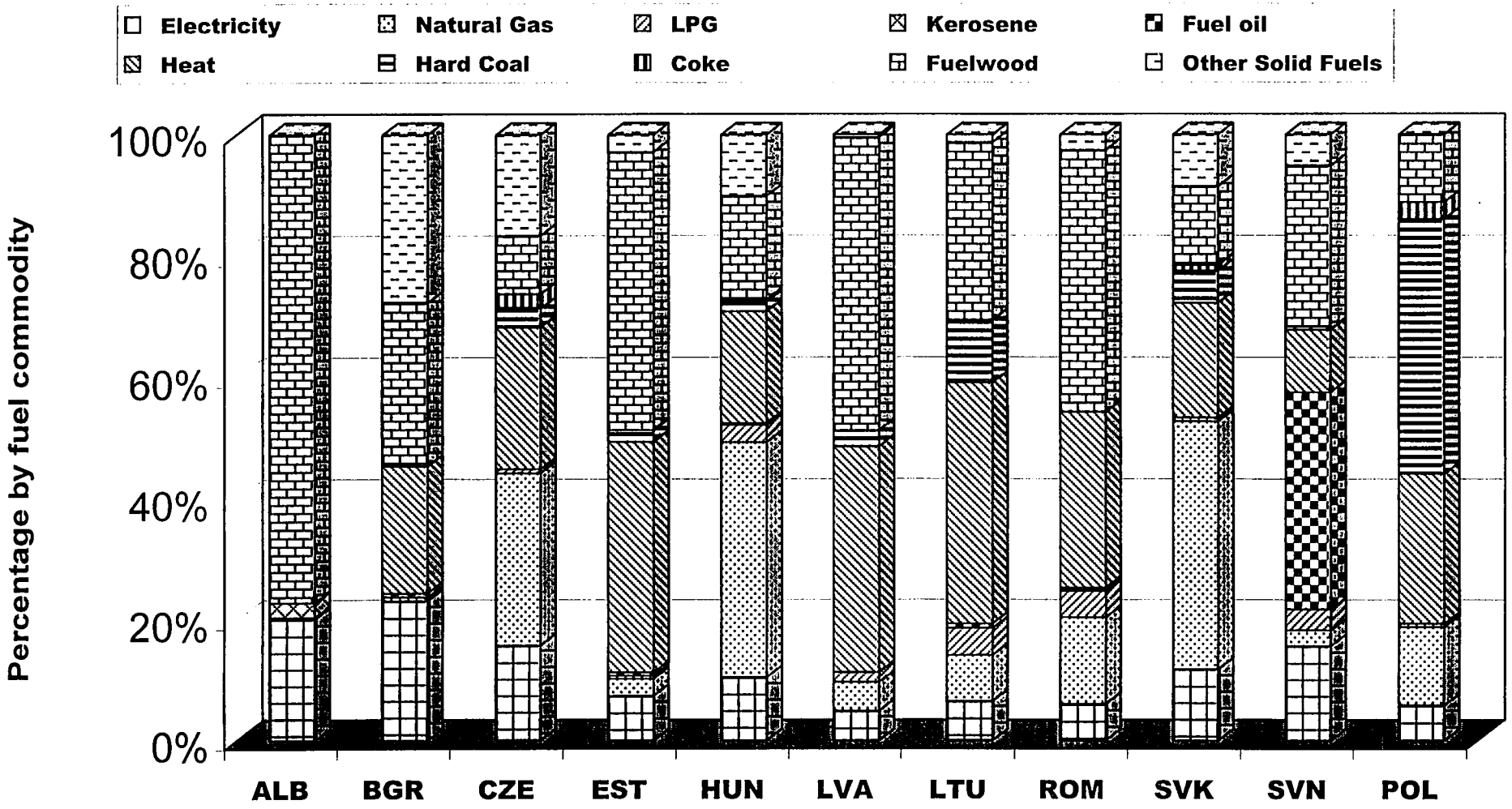


FIGURE 9 **EXPENDITURE BY TYPE OF FUEL**

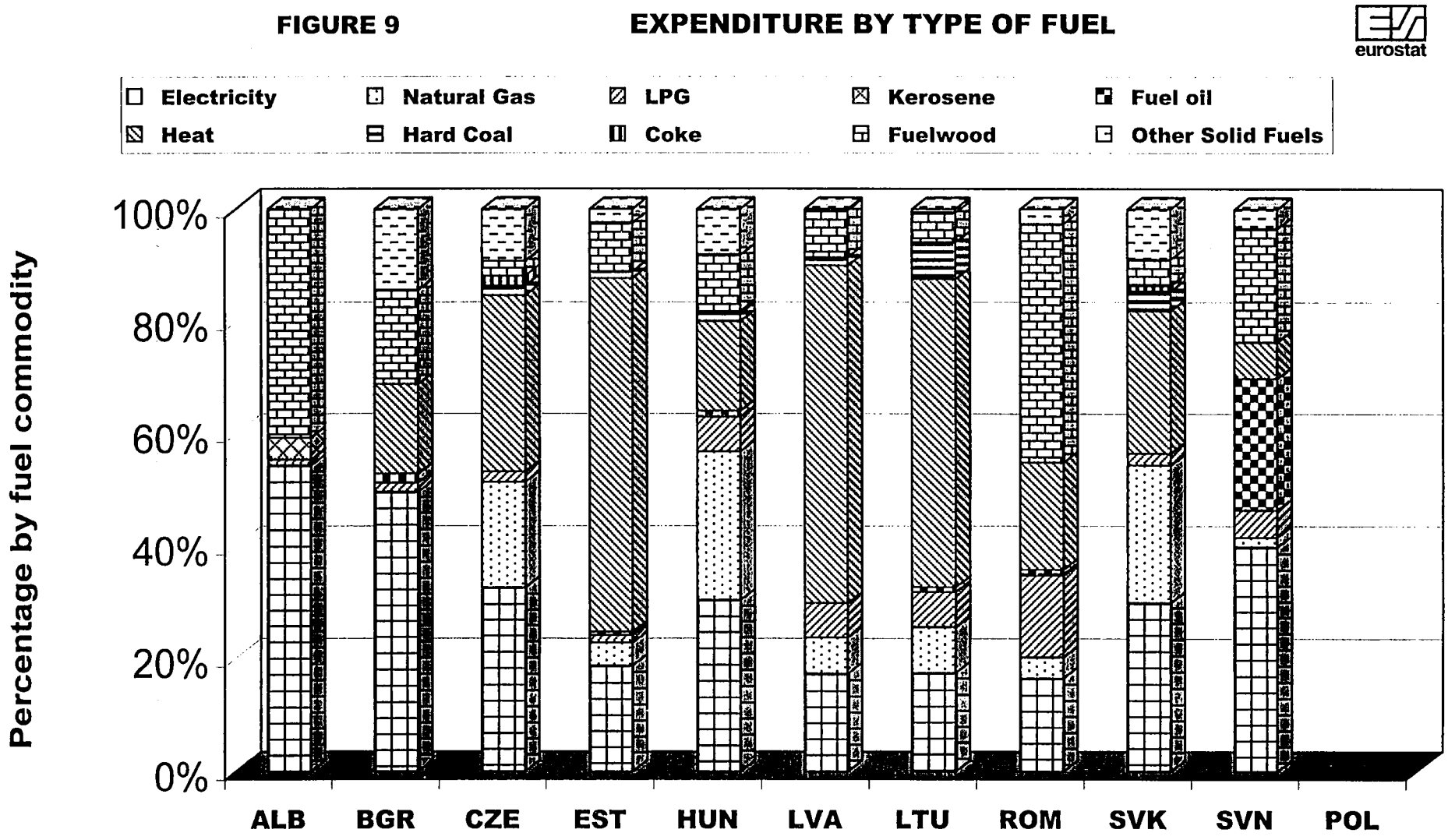
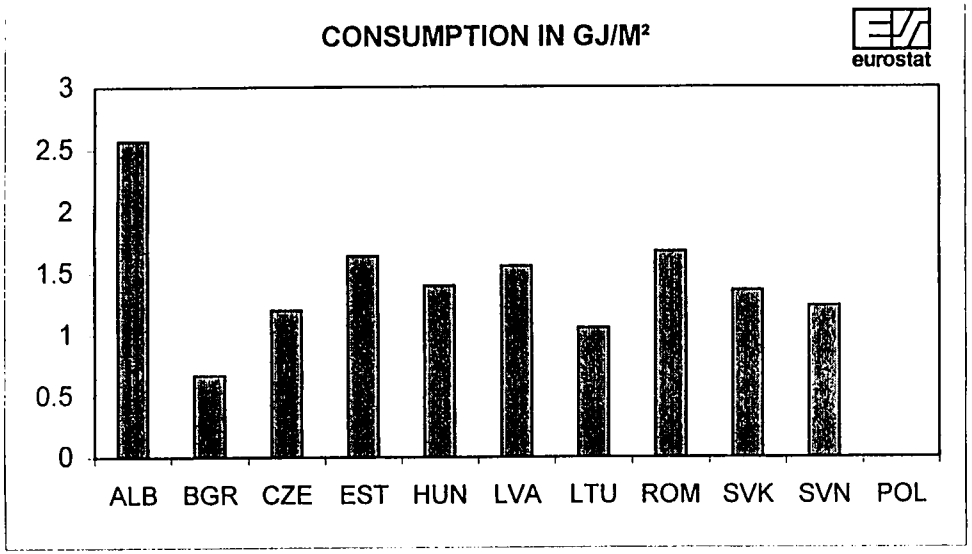


FIGURE 10


CONSUMPTION IN GJ/M²
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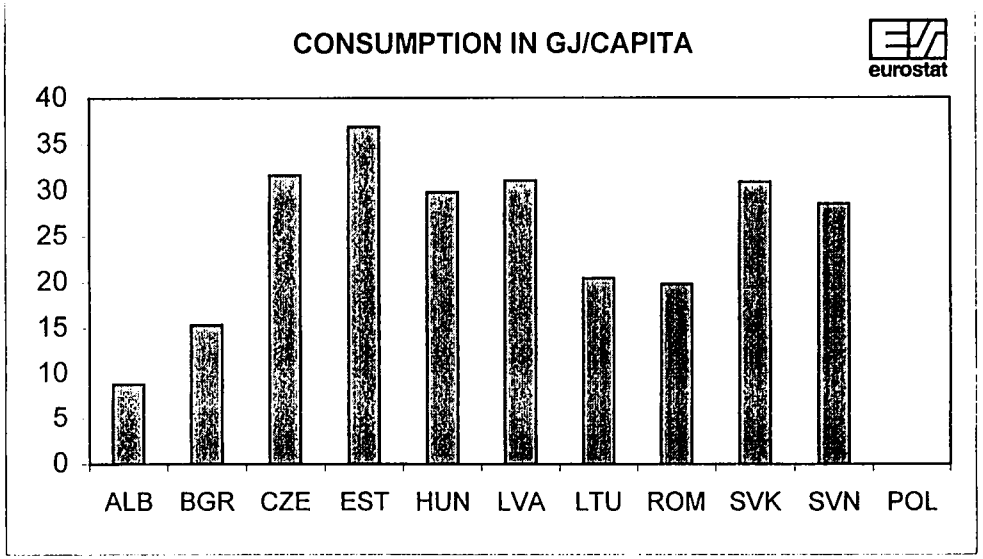
2.5
2
1.5
1
0.5
0
ALB BGR CZE EST HUN LVA LTU ROM SVK SVN POL


CONSUMPTION IN GJ/CAPITA
eurostat
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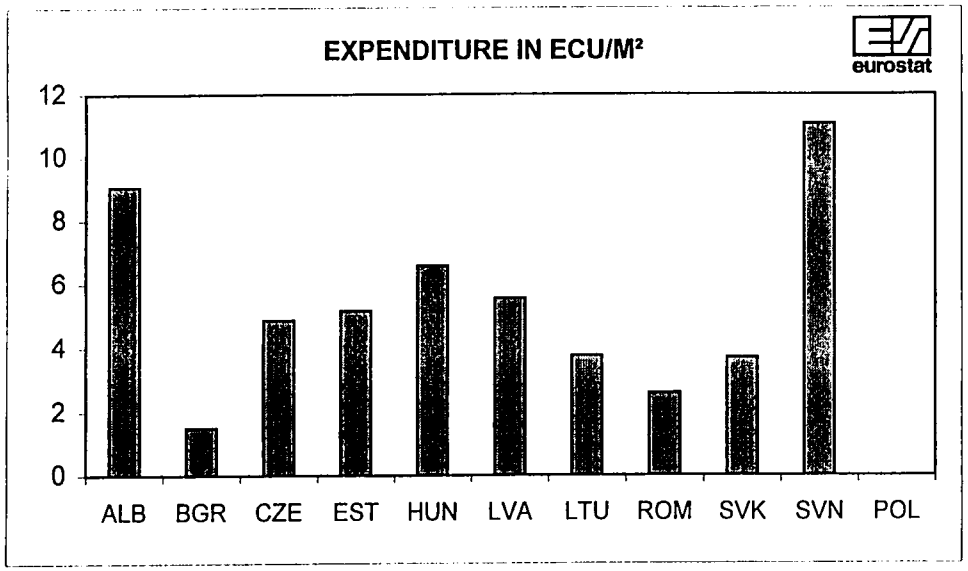
35
30
25
20
15
10
5
0
ALB BGR CZE EST HUN LVA LTU ROM SVK SVN POL


EXPENDITURE IN ECU/M²
eurostat
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10
8
6
4
2
0
ALB BGR CZE EST HUN LVA LTU ROM SVK SVN POL

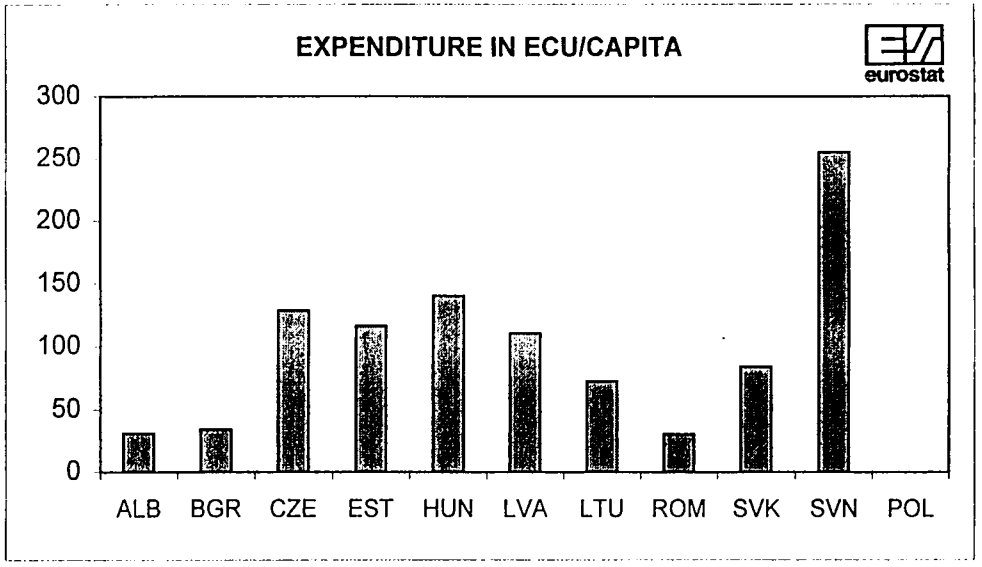

EXPENDITURE IN ECU/CAPITA
eurostat
300
250
200
150
100
50
0
ALB BGR CZE EST HUN LVA LTU ROM SVK SVN POL

FIGURE 11 HOUSEHOLD CAR AVAILABILITY

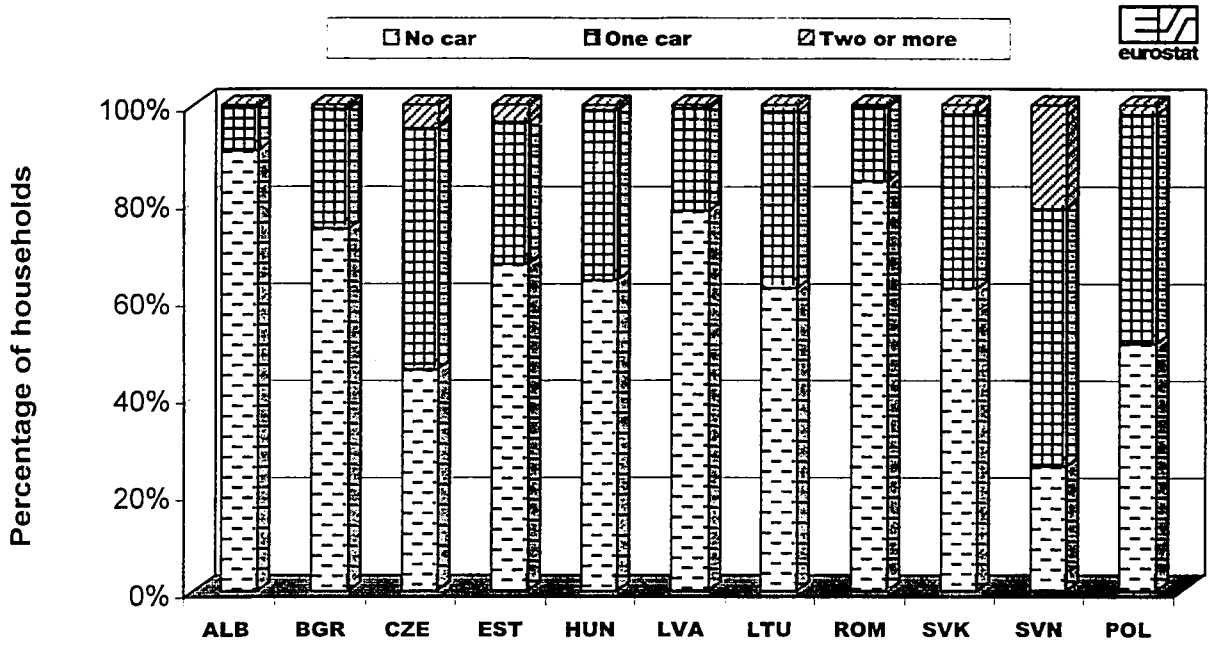


FIGURE 12

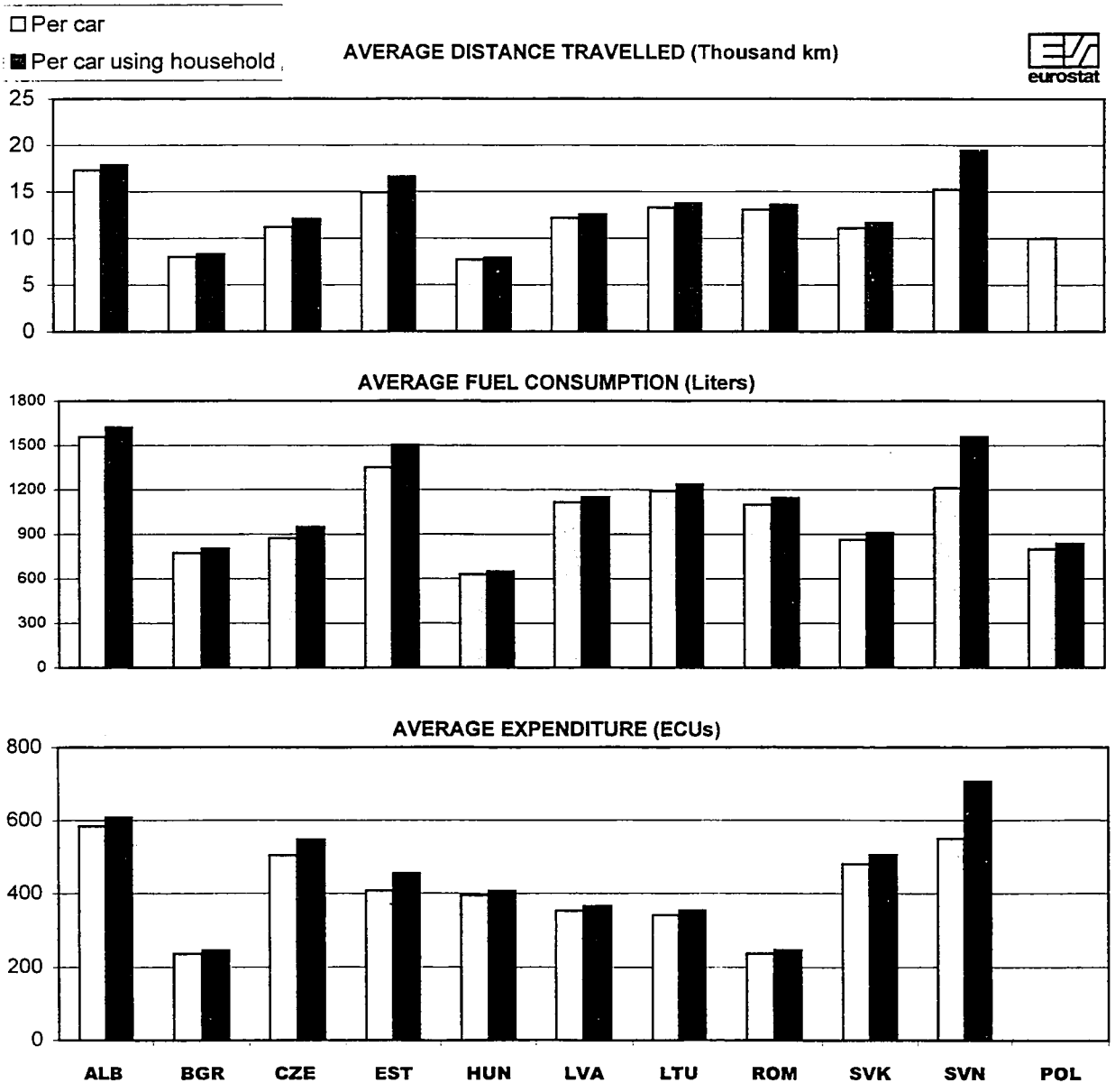


FIGURE 13 CENTRAL HEATING USE

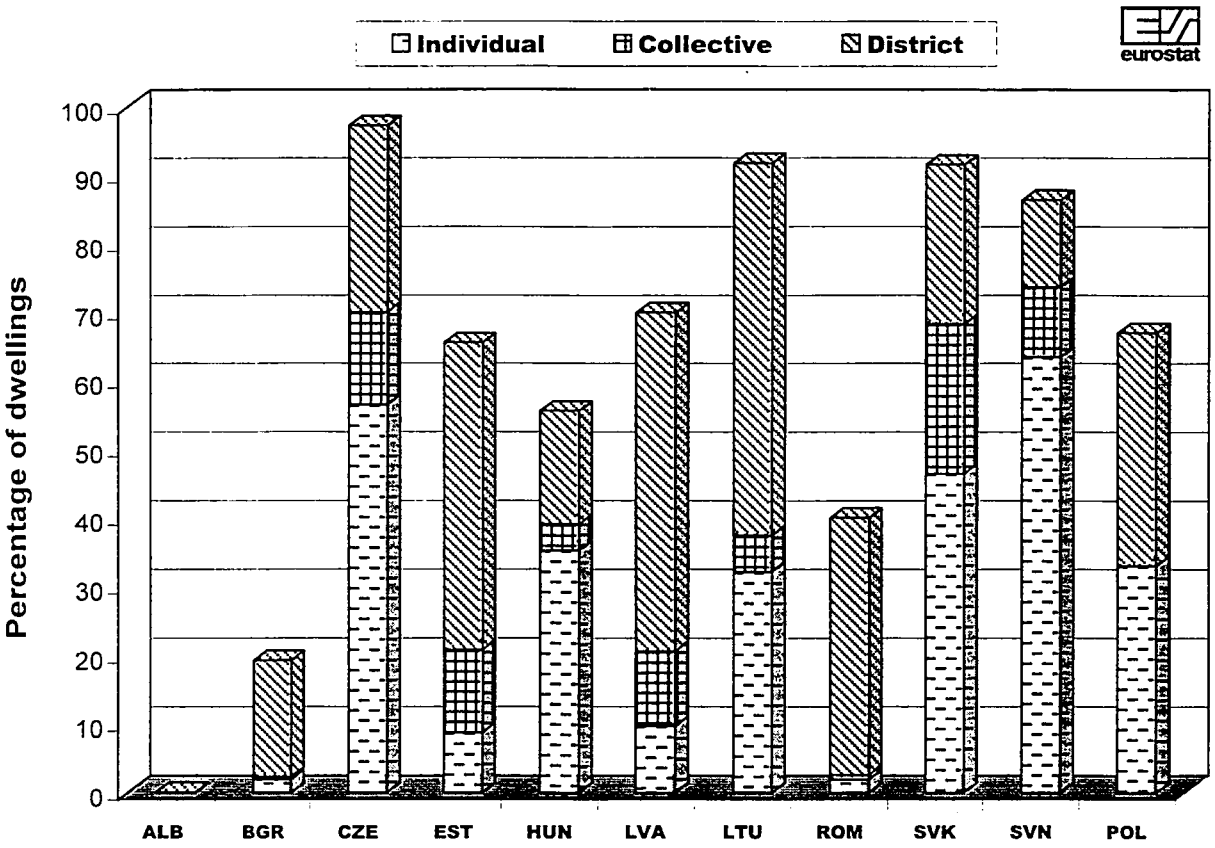


FIGURE 14 NO CENTRAL HEATING

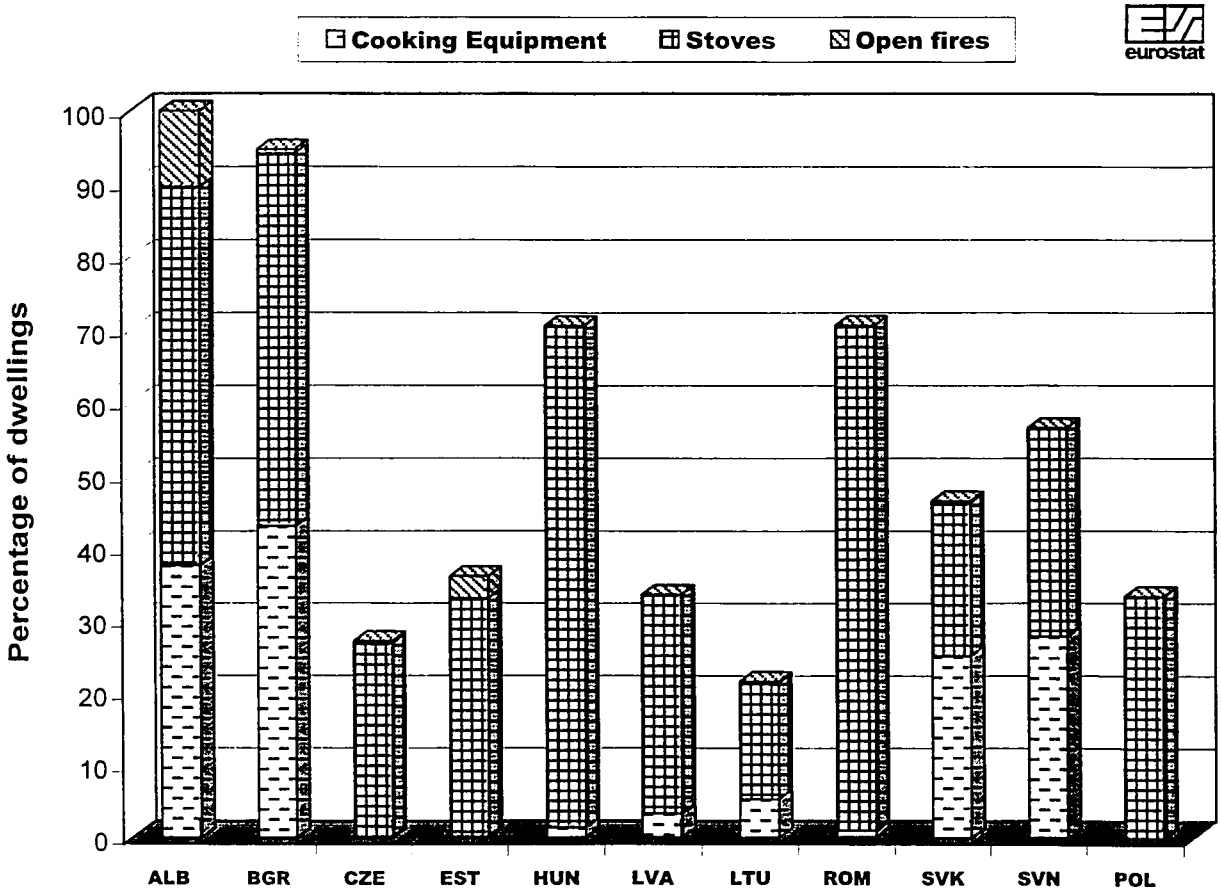


FIGURE 15 WATER HEATING EQUIPMENT

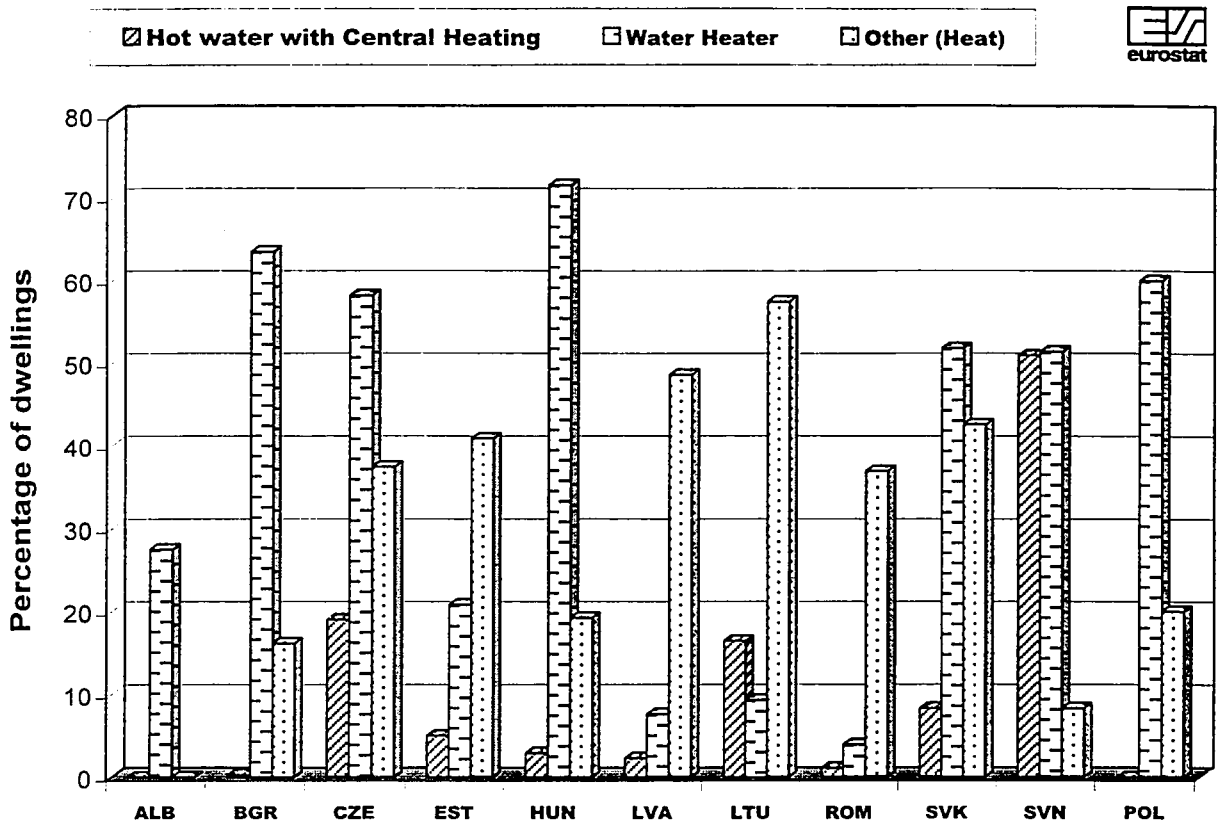


FIGURE 16 COOKING EQUIPMENT BY TYPE OF FUEL

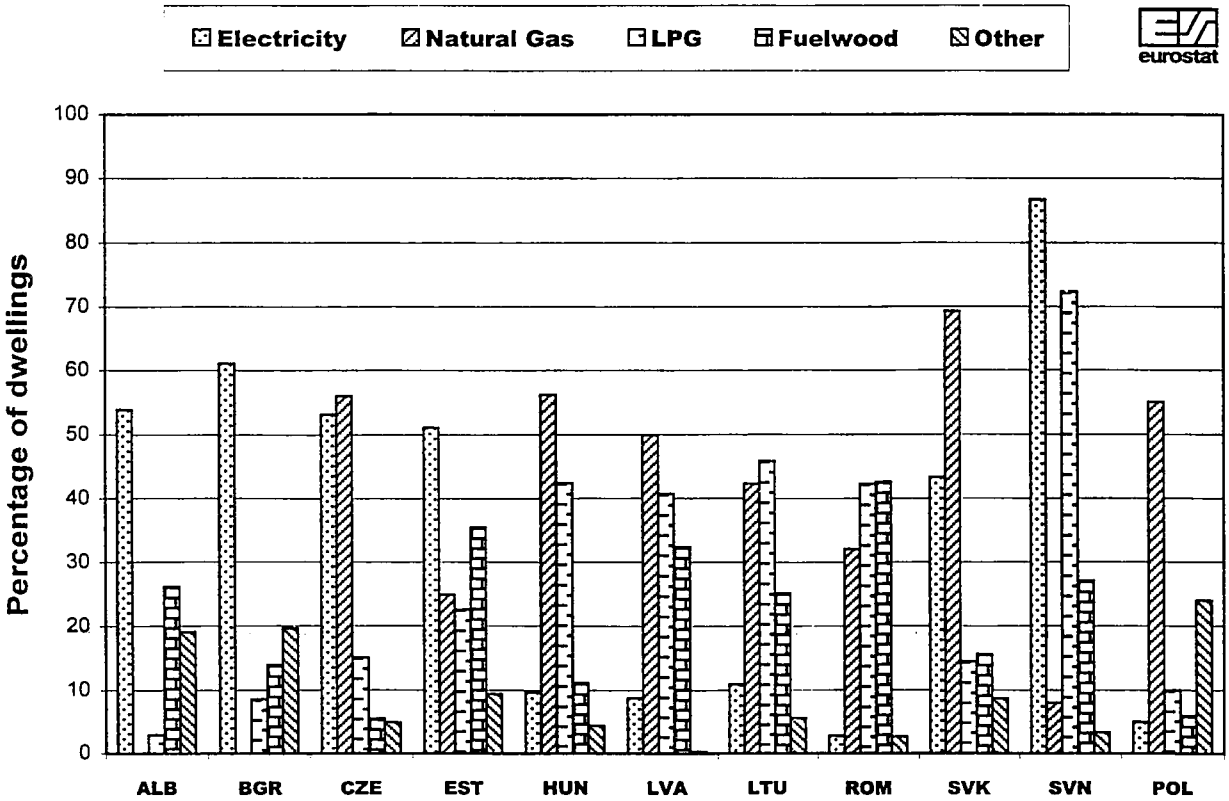


FIGURE 17 **HOUSEHOLD ENERGY CONSUMPTION BY END USE**

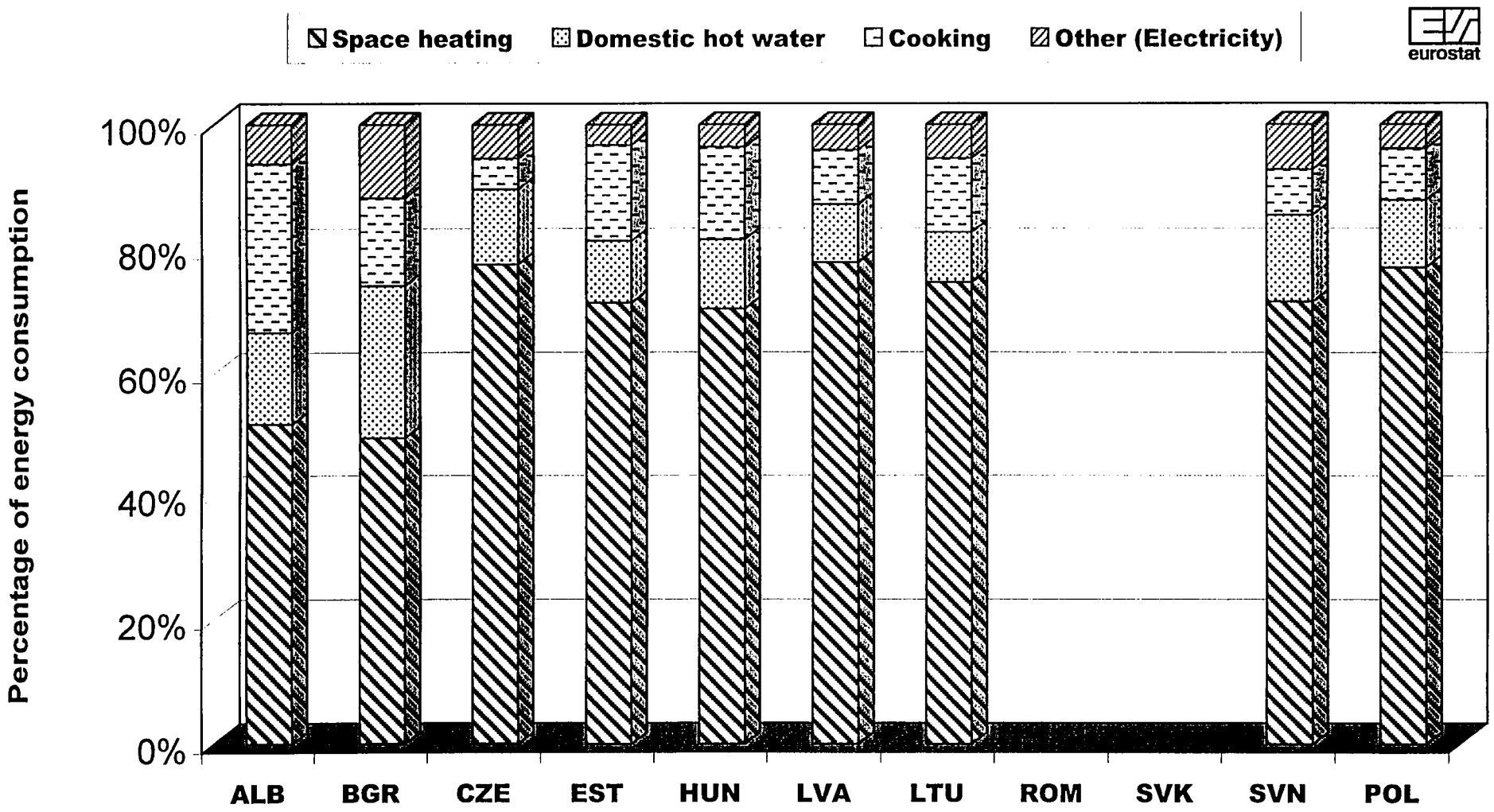
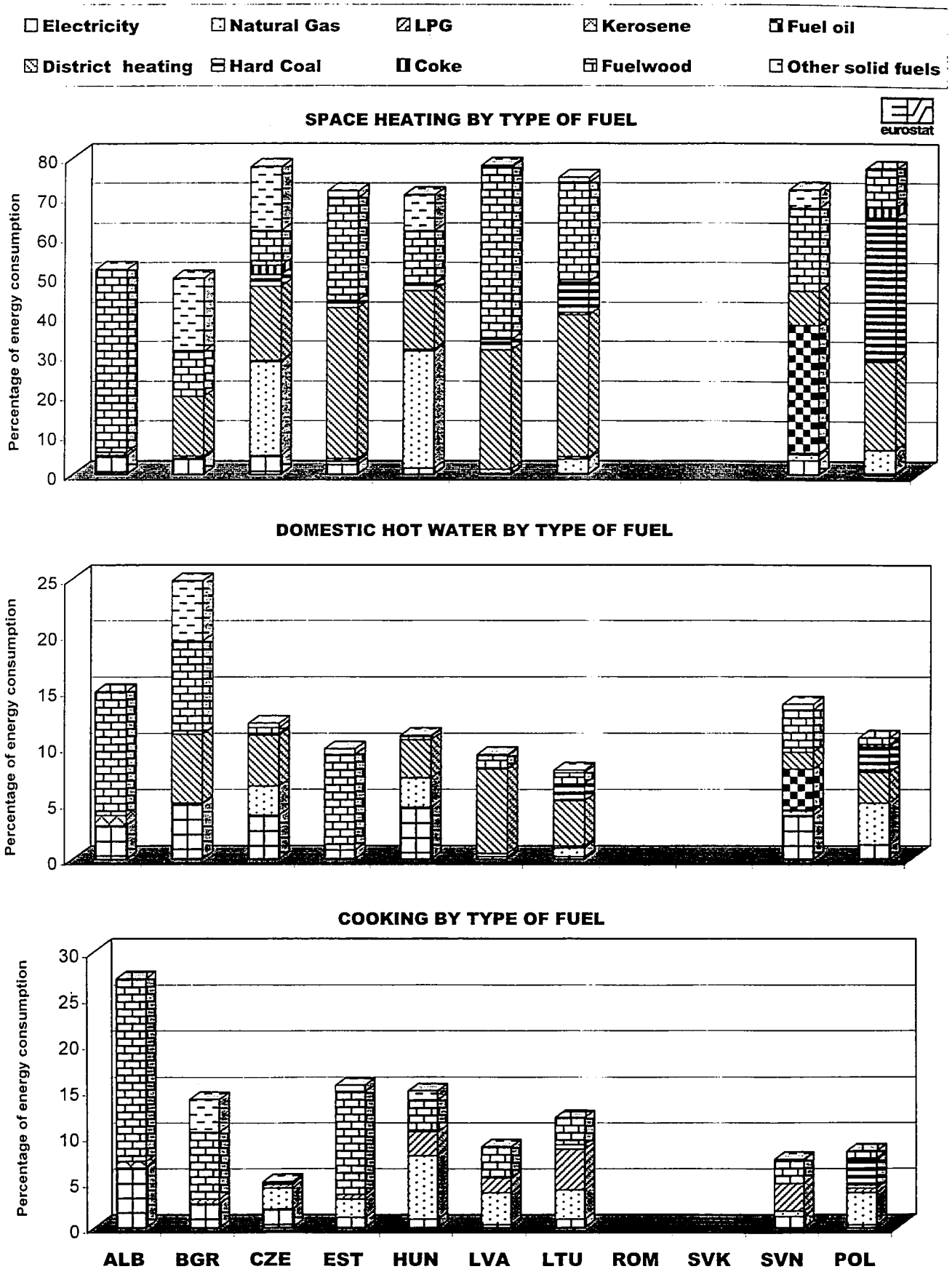


FIGURE 18


Electricity
Natural Gas
LPG
Kerosene
Fuel oil
District heating
Hard Coal
Coke
Fuelwood
Other solid fuels
SPACE HEATING BY TYPE OF FUEL
eurostat
Percentage of energy consumption
0
10
20
30
40
50
60
70
80
DOMESTIC HOT WATER BY TYPE OF FUEL
Percentage of energy consumption
0
5
10
15
20
25
COOKING BY TYPE OF FUEL
Percentage of energy consumption
0
5
10
15
20
25
30
ALB
BGR
CZE
EST
HUN
LVA
LTU
ROM
SVK
SVN
POL

APPENDIX: DEFINITIONS

DEFINITIONS

1.- Structural definitions

Household: The term household denotes a person or group of persons, related or not to one another, who occupy the same accommodation and live there together.

Dwelling: Dwelling is considered the physical structure used to house a person or group of persons that constitute a household. There are two types of dwellings :

- Single houses. The following house types are considered as single houses : detached, semi-detached, terraced houses and bungalows.

- Flats. Flats are individual dwellings contained within an overall building structure. Usually there is more than one flat on the same level.

Owned dwellings: Dwellings bought on mortgage are included under this heading.

Rented dwellings: Also considered as rented dwelling are those rented from Local Authorities and those which are free of rent provided by private or public institutions or in return for work.

Average floor area. The living space floor area, not including the garden and balcony is considered in this section.

2.- Space heating

The heating may be of various types: non-central (independent) or central (individual, collective, district):

Central heating system: A central heating system is considered to be one where there is one central source of heat that serves one or more dwellings. Heat is distributed to the dwellings and the rooms of the dwelling(s) via pipes and radiators or ducts. A distinction is made between :

- Individual central heating : the boiler heats only the rooms of that particular dwelling.

- Collective central heating : the boiler heats all the dwellings in a building or in several buildings of the same complex.

- District heating: the heating system supplies an entire built-up area or district. District heating, using "heating networks" is a way of distributing hot water from a distance.

N.B. : electric heating is included in central heating when the equipment is fixed in one place (storage heaters, under-floor heating).

Non-central or individual heating: A system of heating is known as "non-central" when individual appliances are used for heating individual rooms in a dwelling.

In many cases, space heating is associated with the production of domestic hot water, that is to say, the same boiler supplies the domestic hot water and the hot water which feeds the central heating circuit.

Where this is so, the contractor of the study will do a flat-rate division based on technical criteria or on more detailed comparable studies. The same procedure will be applied in cases where, although there are separate boilers for heating and hot water, the meter is the same.

Despite the difficulties represented by the evaluation of consumption for heating, the cross-referencing of sources and appliances for each type of heating system may act as an effective check and point of comparison.

A further point not to be neglected concerns supplementary (secondary) heating which in certain cases represents the considerable use of a second source of energy such as wood for rural households.

3.- Water heating systems

This is consumption for the purposes of producing hot water for washing or sanitary purposes whether this is done collectively, individually or combined with heating or produced by a separate water heater.

Water heating system conected to central heating: In this case hot water for washing or sanitary purposes is produced from a central boiler which is also used for space heating.

Water heating system not connected to central heating: Hot water for washing or sanitary purposes is produced by separate equipment not linked to space heating.

As in the case of space heating, there is a problem in evaluation where there is combined production or metering. Flat-rate division or estimates will also be the only means of isolating domestic hot water consumption.

4.- Cooking

This refers to energy consumption for cooking and reheating meals. The energy used by the following must be taken into account: hot-plates, ovens, micro-wave ovens, cookers and other equipment in regular use for cooking.

5.- Other

This covers all other energy use in households other than heating, domestic hot water, cooking and transport in private vehicles. Under this heading are classified large and small domestic appliances which consume electric energy (freezer, refrigerator, air-conditioning, television, personal computer, etc.) and lighting.

6.- Transport

This will list the quantities and expenditure of motor fuels bought for the use of household cars, including rented ones but excluding vehicles bought or rented in the course of a professional activity.

7.- Fuel types

See Eurostat publication "Principles and Methods of the Energy Balance Sheets" for the definition of the different fuel types.

European Commission

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European Union and Norway, 1995 survey
Central and eastern European countries, 1996 survey – Data 1995-1996

Luxembourg: Office for Official Publications of the European Communities, 1999

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