Come On Labels

Common appliance policy – All for one, One for all – Energy Labels

Contract N°: **IEE/09/628/SI2.558219**

State of the appliances in Italy: an overview of household equipment in use

(Work package 6 - Deliverable 6.15)

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1. Summary

The Come On Labels project investigates the state-of the-art and supports the implementation of energy labels for household appliances and other products covered by implementing measures under the framework Directive 2010/30/EU [1].

Within the project, the consortium members – ENEA for Italy - have investigated:

- the level of proper presence of energy labels in shops,
- the existing national schemes aimed at promoting the sales of more energy efficient household appliances
- the national actions developed to promote the EU energy labels towards the consumers to support their purchasing decisions.

This document has been prepared by ENEA to report the 2010 findings on the status of the appliances installed in the Italian households.

The summary of the findings is:

- In 2010, the most common energy class of appliances in use at home was A+.
  → 75% of refrigerating appliances were A+, 15% were A++,
  → 31% of dishwashers were A+, and 16% were A++ class,
  → 33% of washing machines were A+, 17% were A++ class,
  → 20% of tumble dryers were A class, 27% were A+, and 17% were A++ class.

- The average age of installed appliances goes from 5.5 to 8 years, depending on the appliance type.

- Between 15 to 35% of the respondents do not know the energy efficiency class of the product in use in their household.

- 35% of respondents claim to know the energy label scheme, 29.8% have heard about it, 34.5% does not know about it.

2. Introduction

To assess the effectiveness of the EU energy efficiency policy measures for household appliances on the national market an enquiry was developed by ENEA in the second half of 2010 to investigate the presence and the main energy efficiency and technical characteristics of the domestic appliances installed in the Italian households. The enquiry was developed in the framework of the Agreement between ENEA and the Italian Ministry for Sustainable Development.

This document is a follow up to the Come On Labels deliverable D 6.14, which summarises the possible support schemes aimed to support the replacement of household appliances with more energy efficiency models[1].

The document (in Italian) "*Sostituzione degli apparecchi domestici installati: strumenti e risultati in Italia*" [2] specifically describes the programmes and activities available in Italy aimed to support the replacement of appliances with more efficient models. ENEA will continue to monitor the availability of any support schemes aimed to promote the sale of energy efficient products using the energy labels.

For an overview of the proper presence of energy labels in shops, please, visit the Come On Labels project website[2].

3. The methodological approach to the questionnaire on household appliances

The enquiry was realised through an on-line Questionnaire. It included questions with closed answers and was designed to last no more than about 20 minutes. The content of the questions was prepared by ENEA while the questionnaire layout and adaptation to the on-line environment and collection of the answers was done by the society ODC Services, a firm specialised in on-line interviews with a panel of 425,000 households in Europe.

Among those having answered to the Questionnaire, and therefore owning a PC and able to use Internet, a sample of 3,001 answers was selected with the following characteristics:

- respondents with more than 18 years and with some household appliances installed home
- the number of answers represents the 0,012% of the 25,175,793 Italian households.

The dimension of the sample, chosen taking into consideration the budget available for this action, allows to derive acceptably reliable hypothesis and to highlight trends in the ownership of the installed households appliances but its dimension is not sufficient to give statistically sound results.

[1] http://www.come-on-labels.eu/replacements/summary-of-mechanisms
[2] http://www.come-on-labels.eu/displaying-energy-labels/status-of-appliance-labelling

4. Characteristics of the sample

The respondents are almost equally divided by gender: male 49.7% and female 50.3.

The largest age group is 35-44 years (24.4%), followed by 25-34 years (23.6%) and 45-54 years (20.6%) as shown in Figure 1.

The most represented geographical area is "South and Islands (S&I)" with 35.4%, followed by "North West (NW)" regions with 25.5%, "Central Italy (C)" with 20.3% and "North-East (NE)" regions with (18.8%); in general males and female are equally represented in each geographical area (see Figure 2). About 33.5% of the respondents live in town with more than 100.000 inhabitants, followed by those living in municipalities with 10,001-50,000 inhabitants (29%), in municipalities up to 10,000 inhabitants (21%) and in municipalities with 50,001-100,000 inhabitants (15%).

When the profession of the respondents is considered, employees represent the largest group with 30%, followed by pensioners (11.1%), university students (9.4%), housewives (7.7%) and unemployed (6.7%) as shown in Figure 3.

Figure 1: Age and gender of the respondents

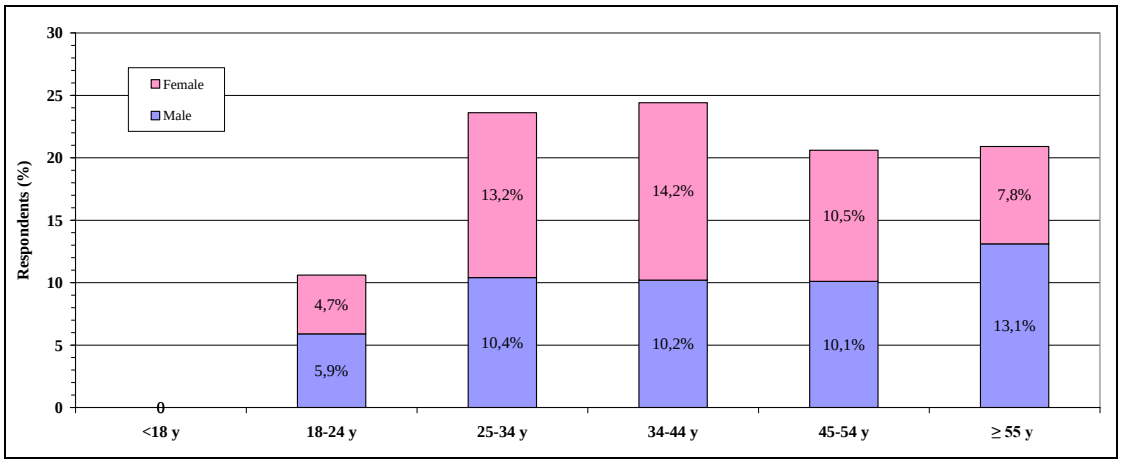


Figure 2: Geographic origin and gender of the respondents

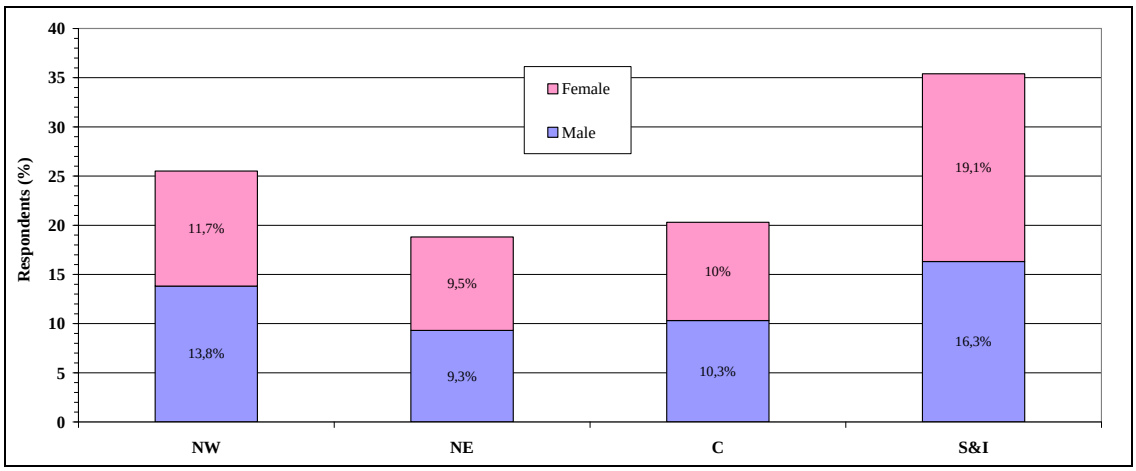
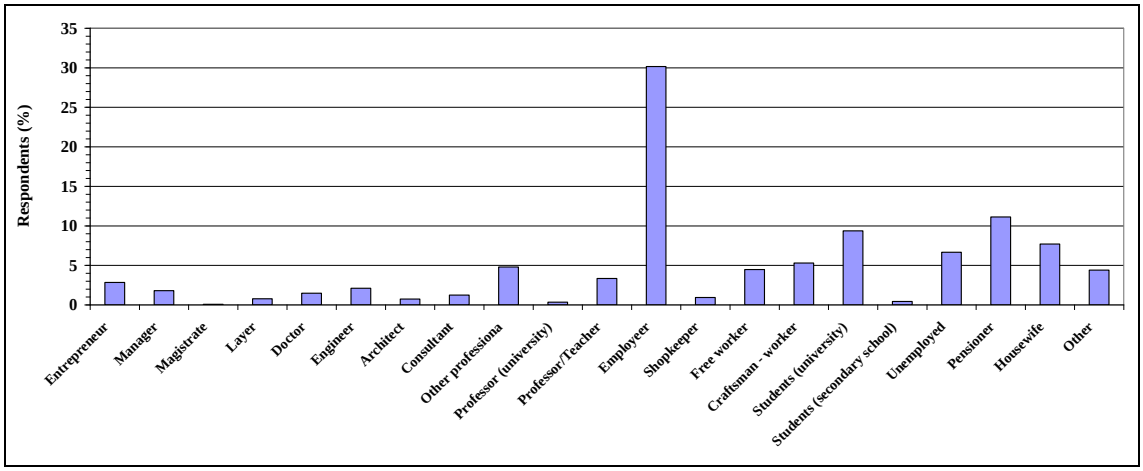


Figure 3: Profession of the respondents



In conclusions, the respondents are almost homogeneously representing gender and national macro geographic; 60-70% of the answers to the questionnaire are given by employees with an age of 25-50 years and living in towns with more than 10,000 inhabitants.

5. Household appliances owned in 2010 in Italian households

The answers to the on-line questionnaire resulted in the following picture of the installed appliances:

- Washing machine (95.3%)
- Television (95.0%)
- Oven (94.4%)
- Iron (93.5%)
- Vacuum cleaner (88.6%)
- Hob (86.8%)
- Range hood (81.3%)
- Refrigerator-freezer (70.9%)
- Dishwasher (60.0%)
- Coffee machine (57.2%)
- Air conditioner (51.3%)
- Water heater (48.4%)
- Freezer (37.6%)
- Refrigerator (37.1%)
- Tap filter (24.6%)
- Wine storage appliance (9.2%)
- Tumble dryer (7.7%)
- Washer-dryer (5.3%)
- Other (3.6%)
- None of the above (0.1%).

In Figure 4 the same results are given but the appliances are grouped by families: refrigerating appliances, washing appliances, cooking appliances, IT, etc. Most of these appliances (73%) are not domotic[3]. When they are the most common is the washing machine (20.6%), the oven (18.2%), the refrigerator-freezer (15.3%), the hob (13.6%) and the dishwasher (12.7%).

5.1 Refrigerating appliances

The main characteristics of the installed refrigerating appliances are summarised in Table 1. In particular:

- refrigerator, freezer and refrigerator-freezer are in general of the freestanding type, although the built-in is about 47% for the refrigerator
- refrigerators and freezers are in general static, i.e. cooled without air circulation, while for the refrigerator-freezers no-frost is about 38%
- about 75% of the respondents know the energy efficiency class of the installed appliances (less for the wine storage appliances); A+ was the most common already in 2010, followed by A class. A++ models are also relatively widespread with about 15%. Probably the lack of knowledge of this characteristic by some respondents is due to the age of the owned models
- in general the new appliances were not purchased with the state incentives
- in general refrigerating appliances are not considered noisy
- the volume of the refrigerating appliances is not well known with a high number of non-respondents. The average volume is 128.2 litre for the refrigerator, 129.1 litre for the freezer and 159.2 litre for the refrigerator-freezer.

Table 2 and Figure 5 show the distribution (in percentage) of the refrigerating appliance age. In particular:

- refrigerators: the average age is 6.8 years; 23.7% of the appliances are less than 3 years old, while about 7% is older than 15 years
- refrigerator-freezers: the average age is 6.0 years; 23.5% of the appliances are less than 3 years old, while about 5.5% is older than 15 years
- freezers: the average age is 6.5 years; 26.8% of the appliances are less than 3 years old, while about 4.6% is older than 15 years
- wine storage appliances: not surprisingly the average age is 5.3 years; 38.6% of the appliances are less than 3 years old, while about 4.7% is older than 15 years.

[3] Through home automation, also called domotics, devices may be connected through a computer network to allow control by a personal computer, and may allow remote access from the internet. Through the integration of information technologies with the home environment, systems and appliances are able to communicate in an integrated manner which results in convenience, energy efficiency, and safety benefits.

Figure 4: Installed household appliances in the households of the respondents (rank by the percentage – from to the most used to the least within each appliance group)

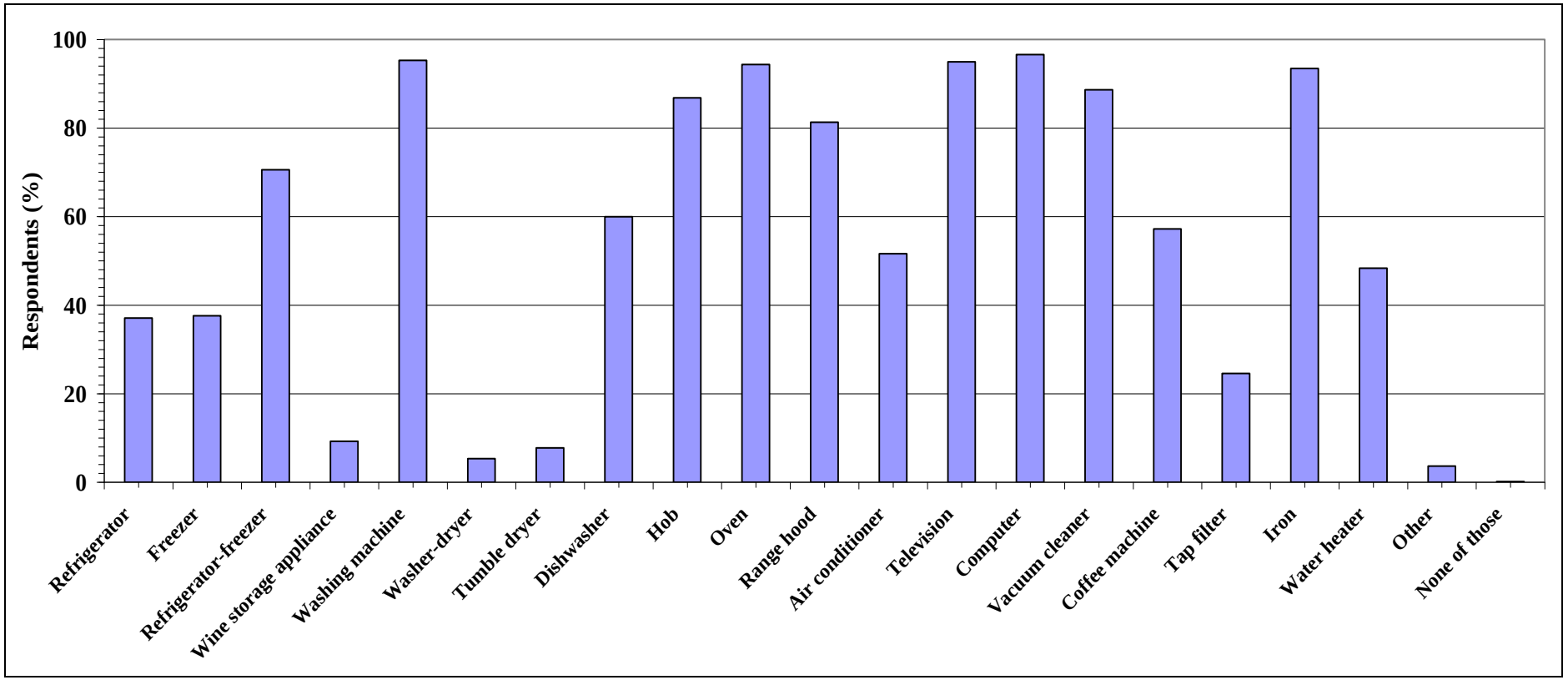


Table 1: Characteristics of the installed refrigerating appliances

Appliance	**Refrigerator**	**Refrigerator-freezer**	**Freezer**	**Wine storage appliance**
Energy efficiency class	A++ (14.5%) A+ (27.8%) A (24.3%) don't know (24.5%)	A++ (17.6%) A+ (34.8%) A (21.4%) don't know (20.1%)	A++ (12.9%) A+ (28.4%) A (22.1%) don't know (25.5%)	A++ (12.6%) A+ (21.3%) A (21.3%) don't know (40.1%)
Installation	freestanding (51.3%) built-in (47.0%) other (1.6%)	freestanding (62.0%) built-in (37.6%) other (0.4%)	freestanding (81.5%) built-in (17.4%) other (1.2%)	n.a.
Cooling system	static (29.6%) air-circulation (21.2%) no-frost (27.2%) don't know (22%)	static (20.0%) air-circulation (20.8%) no-frost (38.1%) don't know (21.2%)	static (36.2%) air-circulation (12.7%) no-frost (20.0%) don't know (31.1%)	n.a.
Low temperature compartments	3-star (40.6%) 2–star (10.6%) 1-star (4.3%) 0 star (7.8%) don't know (36.7%)	(4 stars only)	(4 stars only)	none
Number of doors and configuration		combi (49.2%) 2-porte (45.2%) side-by-side (4.4%) >2 doors (1.1%)		n.a.
Purchased with state incentives?	No (89.1%) Yes (10.9%)	No (88,.%) Yes (11.7%)	No (90.5%) Yes (9.5%)	n.a.
Noise	No (78.3%) Yes (18%) Don't know (1.6%) Installed in another room (2.1%)	No (79.7%) Yes (16.2%) Installed in another room (2.5%) Don't know (1.6%)	No (69.5%) Yes (11.5%) Installed in another room (17.7%) Don't know (1.2%)	n.a.
Average volume	128.2 litre	159.2 litre	129.1 litre	n.a.

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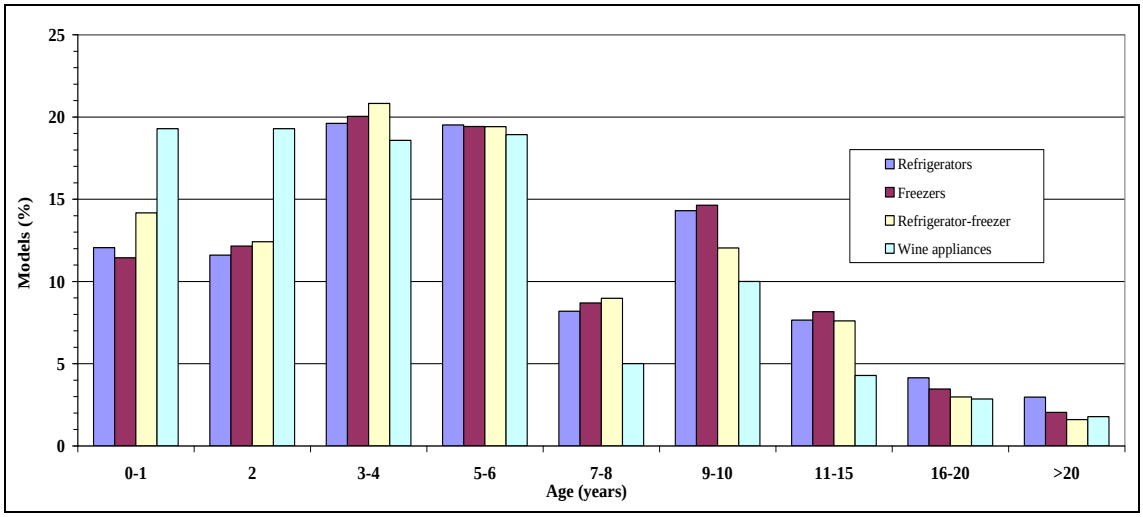
Table 2: Distribution (in percentage) of the refrigerating appliances age

Refrigerating appliances	Average age	Age classes (years)								
		0-1	**2**	**3-4**	**5-6**	**7-8**	**9-10**	**11-15**	**16-20**	**>20**
Refrigerators	6.8	12.1	11.6	19.6	19.5	8.2	14.3	7.6	4.1	3.0
Refrigerator-freezers	6.0	11.4	12.1	20.0	19.4	8.7	14.6	8.2	3.5	2.0
Freezers	6.5	14.2	12.4	20.8	19.4	9.0	12.0	7.6	3.0	1.6
Wine appliances	5.3	19.3	19.3	18.6	18.9	5.0	10.0	4.3	2.9	1.8

Figure 5: Distribution (in percentage) of the refrigerating appliances age



5.2 Washing appliances

The main characteristics of the installed washing appliances are summarised in Table 3. In particular:

- washing machines and washer-dryers are in general freestanding, while dishwashers are instead built-in
- washing machines are mostly front loading appliances
- about 70-80% of the respondent know the energy efficiency class of the installed appliances; A+ is the most common, followed by A class. A++ models are also relatively widespread, although the new label with energy efficiency classes beyond class A was not mandatory at the time of the questionnaire compilation. Probably the lack of knowledge of this characteristic by some respondent is due to the age of the owned models
- in general washing appliances are considered noisy only by one third of the respondents.

Table 3: Characteristics of the installed washing appliances

Appliance	**Dishwashers**	**Washing machines**	**Washer-dryers**	**Tumble dryers**
Energy efficiency class	A++ (16.2%) A+ (31.4%) A (22.2%) don't know (23.3%)	A++ (17.7%) A+ (33.4%) A (22.3%) don't know (20.8%)	A++ (21.3%) A+ (33.1%) A (20.6%) don't know (13.8%)	A++ (17.7%) A+ (27.2%) A (20.3%) don't know (16.8%)
Installation	freestanding (24.4%) built-in (72.2%) built-under (3.4%)	freestanding (90.0%) built-in (7.6%) built-under (2.3%)	freestanding (73.8%) built-in (20.0%) built-under (6.3%)	--
Configuration	--	front loading (83.7%) top loading (15.2%) tilted (1.0)	--	--
Noise	No (44.0%) Yes (36.2%) Installed in another room (19.1%) don't know (0.7%)	No (42.2%) Yes (39.4%) Installed in another room (17.7%) don't know (0.7%)	No (51.0%) Yes (32.7%) Installed in another room (14.4%) don't know (1.9%)	No (48.9%) Yes (32.1%) Installed in another room (17.6%) don't know (1.4%)

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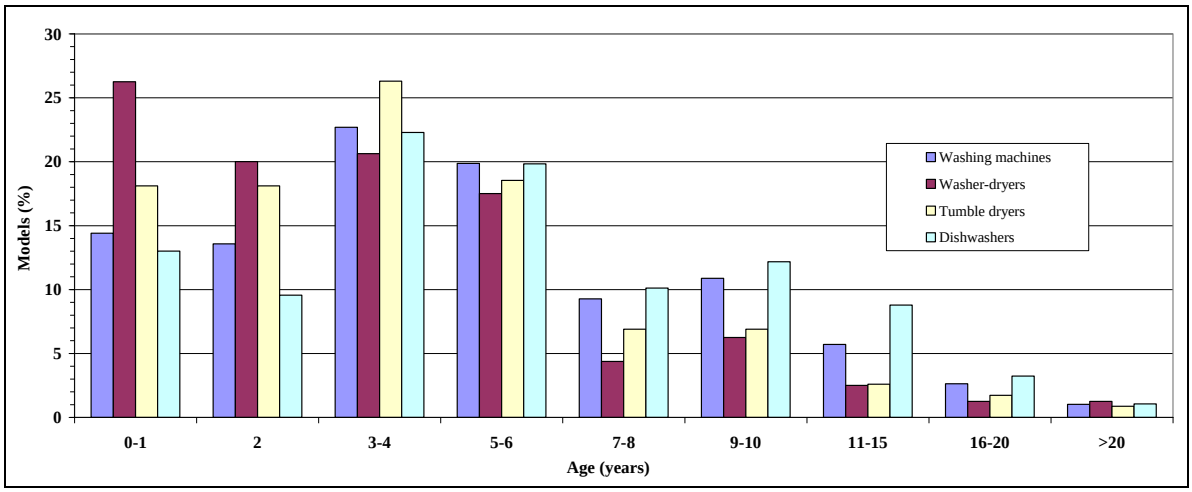
Table 4 and Figure 6 show the distribution (in percentage) of the washing appliance age. In particular:

- dishwashers: the average age is 6.2 years; 22.6% of the appliances are less than 3 years old, while about 4.3% is older than 15 years
- washing machines: the average age is 5.5 years; 28.0% of the appliances are less than 3 years old, while about 3.6% is older than 15 years
- washer-dryers: the average age is 4.1 years; 46.3% of the appliances are less than 3 years old, while about 2.6% is older than 15 years
- tumble dryers: not surprisingly the average age is 4.5 years; 36.2% of the appliances are less than 3 years old, while about 2.6% is older than 15 years.

Table 4: Distribution (in percentage) of the washing appliances age

Washing appliances	Average age	Age class (years)								
		0-1	**2**	**3-4**	**5-6**	**7-8**	**9-10**	**11-15**	**16-20**	**>20**
Dishwashers	6.2	13.0	9.6	22.3	19.8	10.1	12.2	8.8	3.2	1.1
Washing machines	5.5	14.4	13.6	22.7	19.9	9.3	10.9	5.7	2.6	1.0
Washer-dryers	4.1	26.3	20.0	20.6	17.5	4.4	6.3	2.5	1.3	1.3
Tumble dryers	4.5	18.1	18.1	26.3	18.5	6.9	6.9	2.6	1.7	0.9

Figure 6: Distribution (in percentage) of the washing appliances age

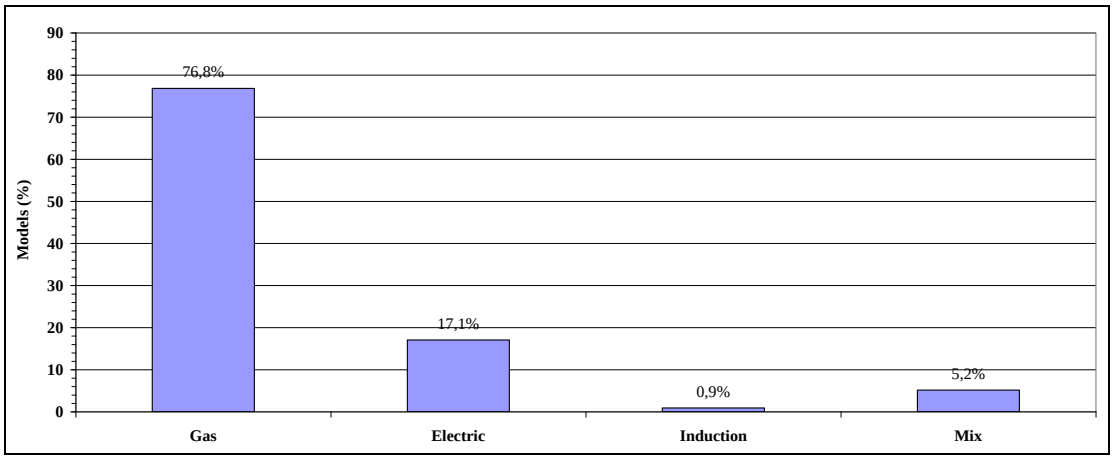


5.3 Cooking appliances

5.3.1 Hobs

76.8% of the respondents owning a hob own a gas hob, 17.1% an electric one and 5.2% a mixed one. The induction hobs represent only 0.9% of the installed hobs.

Figure 7: Type of hob installed the households of the respondents



5.3.2 Ovens

Main characteristics of installed ovens are presented in Table 5. As expected ovens are in general built-in (73.3%) and the electric ones with air ventilation are the largest subset (47.4%). Gas ovens account for 19.1% of the total installed ovens. Microwave ovens are apparently not popular in the country with only 2% of all households reviewed.

Table 5: Characteristics of the installed ovens

Appliance	**Oven**
Energy efficiency class	A+ (8.8%) A (37.8%) B (12.4%) other (2.1%) don't know (38.0%)
Type	electric vented (47.4%) electric static (14.6%) electric combi (5.6%) electric multifunction (5.4%) gas static (10.1%) gas vented (9%) microwave (2%)
Installation	built-in (73.3%) freestanding (21%)
Opening	vertical (76.2%) lateral (15.7%) without door (2.5%)

The energy efficiency class A is the most common (37.8%) followed by B class (12.4%). Although no energy efficiency classes beyond A were enforced for ovens at the time of the survey, 8.8% of the installed models were declared as A+ class. This can be explained considering that waiting for the review of the energy labelling scheme

some oven suppliers have added to the mandatory label and additional mark indicating that the specific model was better than A or A+.

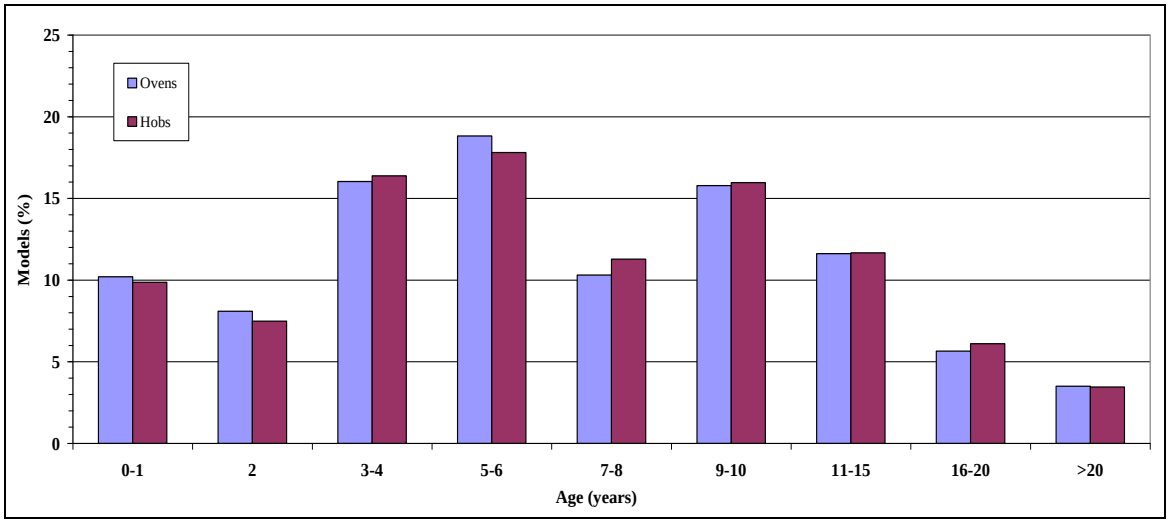
The age of the installed ovens is shown in Table 6 and Figure 8. In general coking appliances are older than refrigerating and washing appliances, and hobs are older than ovens:

- hobs: the average age is 7.2 years; 18.3% of the appliances are less than 3 years old, while about 9.1% is older than 15 years
- ovens: the average age is 8.0 years; 17.4% of the appliances are less than 3 years old, while about 9.6% is older than 15 years.

Table 6: Distribution (in percentage) of the cooking appliances age

Cooking appliances	Average age	Age class (years)								
		0-1	**2**	**3-4**	**5-6**	**7-8**	**9-10**	**11-15**	**16-20**	**>20**
Ovens	7.8	10.2	8.1	16.0	18.8	10.3	15.8	11.6	5.6	3.5
Hobs	8.0	9.9	7.5	16.4	17.8	11.3	16.0	11.7	6.1	3.5

Figure 8: Distribution (in percentage) of the cooking appliances age



6. Energy label classes of installed household appliances

A specific question about the knowledge of the EU energy labelling was included in the Questionnaire. 35.7% of respondents know it, 29.8% have heard about the label and 34.5 % do not know it. This last percentage is in line with the results shown in Tables 1, 3 and 5 where about 15-25% of the respondents did not know the energy efficiency class of the owned appliances for most of the products, with the exception of the ovens with 38% and wine storage appliances with about 40%.

The relatively high percentage of respondents not knowing the energy efficiency class of the owned ovens can be explained considering the age of the appliances and the fact that the percentage of for ovens sold in the shops without the label is higher than for the

other investigated products[4]. For the wine storage appliances the (new) energy label was still voluntary in 2010 and become mandatory only at the end of 2011. It is nevertheless worth noting that the old energy label for refrigerators and freezers allowed to label some types of wine storage appliances (depending on the inside temperature).

In Table 7 and Figure 9 the energy efficiency class of the installed appliances, as declared by the respondents, is compared. A part from ovens, for all the other appliances the most populated class is A+, followed by A and then A++. Although the amount of unknown answers is significant and taking into account the considerations about the sample dimensions made at the beginning of this document, this outcome suggests an improvement in the energy efficiency of installed household appliances.

[4] See for example the results of the shop visit developed within the Come On Labels project.

Table 7: Energy efficiency class of the installed appliances as reported by the on-line survey respondents

Appliances	Energy efficiency class										Total
	A++	**A+**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**Unknown**	
Refrigerators	14.5	27.8	24.3	5.9	1.9	0.6	0.3	0.1	0.2	24.5	100
Refrigerator-freezers	12.9	28.4	22.1	7.4	2.5	0.6	0.2	0.3	0.1	25.5	100
Freezers	17.6	34.8	21.4	4.6	1.0	0.1	0.1	0.2	0.1	20.1	100
Wine storage	12.6	21.3	21.3	3.6	1.1	0.0	0.0	0.0	0.0	40.1	100
Dishwashers	16.2	31.4	22.2	5.1	1.2	0.3	0.1	0.1	0.1	23.3	100
Washing machines	17.7	33.4	22.3	4.3	1.1	0.1	0.1	0.0	0.1	20.8	100
Washer-dryers	21.3	33.1	20.6	6.9	3.1	0.6	0.0	0.6	0.0	13.8	100
Tumble dryers	17.7	27.2	20.3	9.1	8.2	0.4	0.4	0.0	0.0	16.8	100
Ovens	--	8.8	37.8	12.4	2.0	0.5	0.2	0.0	0.2	38.0	100

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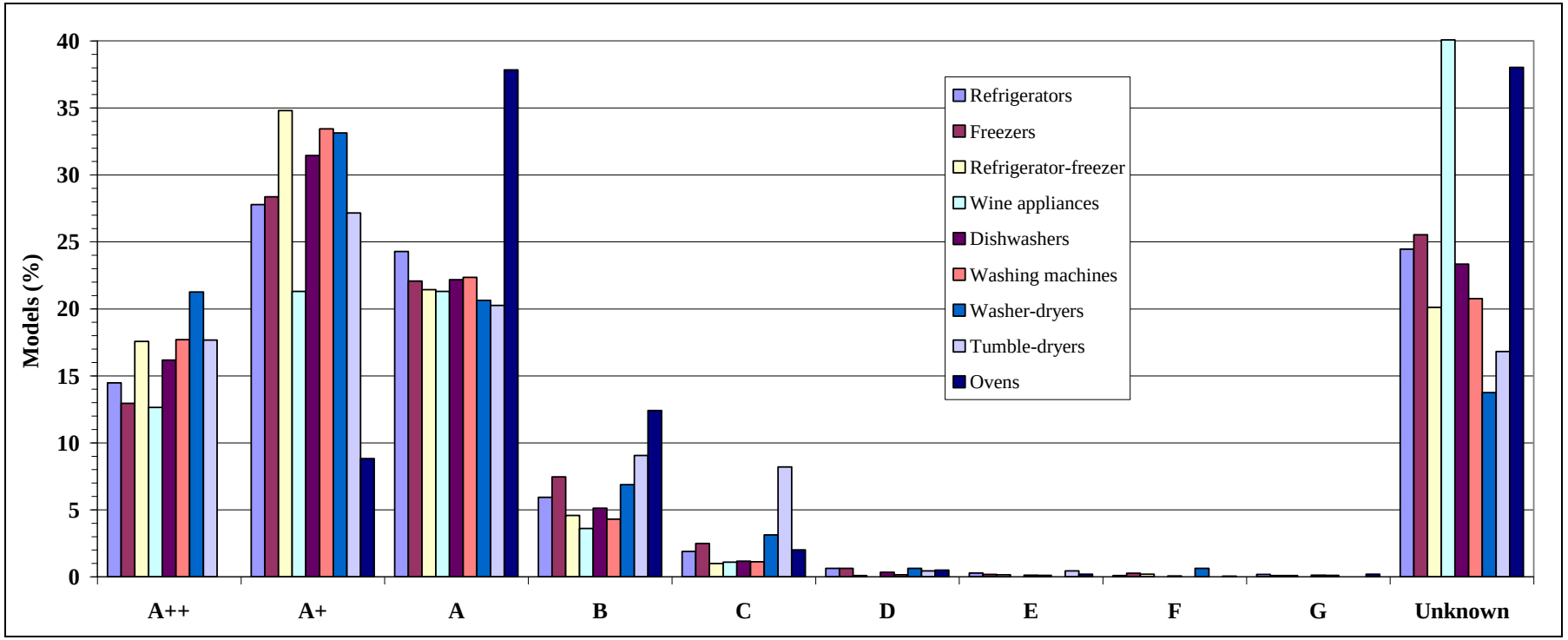
Figure 9: Energy efficiency class of the installed appliances as reported by the on-line survey respondents



References

1. Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast), OJ L 153, 18.06.2010, p. 1

2. Villani M. G., 2011 Inchiesta su caratteristiche e utilizzo degli elettrodomestici del freddo, del lavaggio e della cottura da parte degli utenti finali, Report ENEA n. 317, Ricerca di sistema elettrico.

More information about the 'Come On Labels' project activities and the achieved results are published on:

www.come-on-labels.eu