

**Euro Topten**  
**Monitoring of appliances listed into the national databases**  
**Semester 4 (I/2008), Deliverable 18, Work package 3**

**Market Monitoring Note n. 4**

**Prepared by SEVEN, The Energy Efficiency Center, Czech Republic**

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Within the Euro Topten project, only products allocated to the highest energy classes are able to enter the national databases. A set of other criteria (including the energy efficiency index, washing and drying classes, water consumption and other) is being used to select the most energy efficient appliances. This monitoring report shows the results of the fourth semester of the project (until September 2008). Furthermore, it summarizes the trends and development in the main appliances categories (cold appliances, washing and drying, lighting, cars) and their subcategories as well as in participating countries over the whole period of the project. As in the previous semesters, the database has been updated in terms of removal of outdated appliances and inclusion of new models on the market.

***Overall results***

In the **fourth** semester of the Topten project, the number of appliances listed on national websites increased significantly. In the first semester 2008, the number of appliances amounted to 5032 appliances, which means a **21%** increase compared to previous semester (Table 1). The positively growing trend over the whole period of the project is shown in Figure 1. The graph also reveals that this fourth semester has seen the fastest growth in total numbers of listed appliances compared to previous semesters. Importantly, as shown in the analysis below, this trend is accompanied by the decrease of average consumption of these appliances.

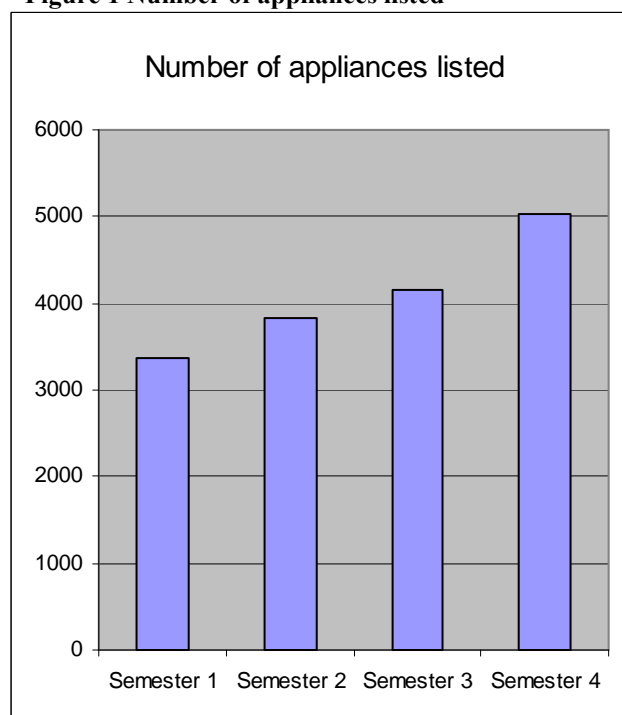
The highest increase in listed appliances among the participating countries can be found at Austria and Poland. This rise can be attributed mainly to the introduction of new appliance categories and subcategories by these two countries, but also to the increase of listed appliances within the already existing categories (mainly in case of Austria).

Conversely, in other countries, a steep decrease in number of listed appliances is observed (Switzerland, Netherlands or Italy). This is caused mainly by tightening the selection criteria, which results in the fact that less appliances comply to these new criteria at the beginning.

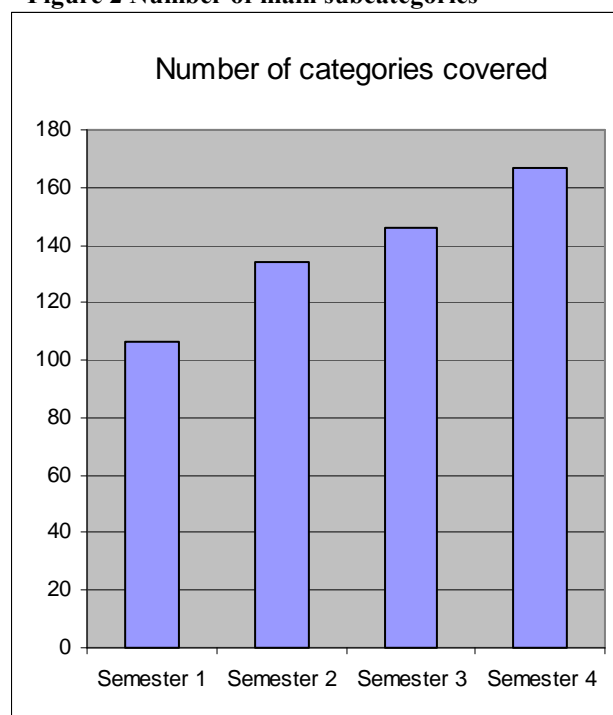
**Table 1 Number of main subcategories covered and appliances listed**

Country	Number of main subcategories covered				Number of appliances listed			
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 1	Semester 2	Semester 3	Semester 4
Austria	23	25	23	26	959	1104	1020	1541
Belgium	7	7	8	11	266	266	267	194
Czech	11	12	13	14	110	168	142	207
Finland	0	3	6	13	0	67	149	284
France	9	10	10	12	213	247	246	365
Hungary	0	10	10	0	0	102	101	0
Italy	4	9	12	13	133	289	491	298
Netherlands	8	9	12	12	210	176	247	171
Poland	6	11	12	22	148	314	363	825
Switzerland	29	29	30	30	1091	843	893	652
Top Ten EU	9	9	10	14	244	251	246	495
<b>Total</b>	<b>106</b>	<b>134</b>	<b>146</b>	<b>167</b>	<b>3374</b>	<b>3822</b>	<b>4165</b>	<b>5032</b>

**Figure 1 Number of appliances listed**



**Figure 2 Number of main subcategories**



Similarly to the total number of appliances, number of covered categories and subcategories increased notably during the past period. As seen in Table 1, the number of covered subcategories of appliances in individual countries increased **from 146 to 167** during the first semester 2008. This means a growth by almost 15%. Throughout the whole course of the project - from September 2006 to September 2008 - the number of covered subcategories increased by almost 60% as the participating countries were adding further categories and subcategories into their curricula (the trend is presented in Figure 2).

In 2006, mostly cooling appliances and washing appliances were covered. Similarly, most of the participating countries included lighting (CFL lamps) and cars into their national databases by the fourth semester. At the end of the project, in September 2008 the categories were extended by such appliance types as electric motors, vacuum cleaners. More and more countries also included the appliances from TV/Video and office equipment; however the latter still remains rather underrepresented.

More specifically, the fourth semester was rather rich in adding new categories and subcategories. There were the following **5** completely **new** categories added:

*Czech Republic:* vacuum cleaners

*Poland:* electric motors - further divided into subcategory of electric motors (0.09 – 0.12 kW), electric motors (0.18 – 0.37 kW), electric motors (0.55 – 1.1 kW), electric motors (1.5-3 kW), electric motors (4-7.5 kW), and boilers - further divided into subcategories of gas-fired condensing boilers, gas-fired boilers (standard), solid fuels-fired boilers (periodically loaded fuel), solid fuels-fired boilers (automatically loaded fuel)

*Finland:* circulation pumps, windows

Although each of the new categories has been so far introduced only in one respective country, thanks to the project and the possibility to share the knowledge and lessons learnt, the replicability potential towards the other countries is high. An indispensable role in this process is taken by the *Topten.info* database, operated by Topten association, which gathers the best products on a European level and serves as an inspiration to individual country representatives.

In the fourth semester 8 countries of the project and also Topten association included some of the already existing categories and subcategories of appliances into their databases, thus confirming the previously expressed assumption.

The countries were namely:

*Austria:* laser multifunctional device (MFD) b/w, laser MFDs colour, LCD televisions

*Belgium:* CFLs, cars 3.5 – 4.4 m wide, cars 4.5 – 4.9 m. and over wide

*Czech Republic:* laser printers colour

*Finland:* dishwashers, washing machine front, washing machine top, LCD monitors

*France:* LCD televisions, CFLs

*Italy:* LCD monitors

*Netherlands:* electric tumble driers

*Poland:* electric tumble driers

*Top Ten Association:* ink-jet equipment, laser printers b/w, laser printers colour, laser MFDs b/w, laser MFD colour, LCD monitors

### ***Development by appliance types***

When looking at the development within the categories over the duration of the project, it can be concluded that in most of the subcategories, the consumption is decreasing while the number of appliances complying with the selection criteria is increasing. Major trends and development for the main appliances are described below.

As to the cold appliances, in all the subcategories, the average consumption per day has decreased over the monitored period (second semester 2006- September 2008). The only

exception is the combined refrigerators and freezers. The reason seems to be mainly in the increasing size of the new appliances on the market.

In general, the energy label used as a criterion for selecting the appliance as a Topten product remained A+ or A++. At the upright freezer though, there has been a positive shift: in 2008, in any of the countries there were no A freezers anymore - only A+ and A++. As to number of appliances, the trend is rather varying; one can not observe either growing or decreasing trend. This is caused by three factors: removal of appliances which are no longer available in the market, tightening of criteria and change in the definition of the subcategories themselves in some countries (e.g. the case of Italy). The development in cold appliances over the two years is shown in Table 2.

Importantly, the average consumption decreased in all the appliance subcategories and in some countries, the criteria for selection were tightened at several appliance types; for example in Austria, the in-built refrigerators upgraded from A+ to A++. Similarly, in Netherlands, Czech Republic and Finland, the A++ category was added in combined refrigerators and freezers.

**Table 2 Development of main parameters - cold appliances (2006 - 2008)**

	Label	Number of appliances	Mean consumption (kWh/day)
<b>Refrigerator free</b>			
2006	A+, A++	341	190.6
2007	A, A+, A++	223	148.4
2008	A+, A++	195	135.7
<b>Refrigerator in-built</b>			
2006	A+, A++	372	184.6
2007	A+, A++	260	177.5
2008	A+, A++	252	164.0
<b>Refrigerator freezer</b>			
2006	A+, A++	231	223.5
2007	A+, A++	343	270.3
2008	A+, A++	313	239.2
<b>Upright freezer</b>			
2006	A,A+, A++	254	220.5
2007	A,A+, A++	310	229.9
2008	A+, A++	323	214.1
<b>Chest freezer</b>			
2006	A+, A++	170	215.1
2007	A+, A++	210	213.9
2008	A+, A++	184	209.4

Note: Year 2008 covers the period until September, i.e. the end of the project, whereas 2006 means only second semester.

The development in dishwashers, both freestanding and in-built, shows a similar pattern. The selection criteria for products to enter the Topten database remained AAA; i.e. A for energy consumption, A for washing and A for drying. The consumption per washing cycle has improved only slightly on average (Table 3); nevertheless the number of appliances included in the databases increased rather significantly (23% for freestanding dishwashers and 45% in

case of inbuilt dishwashers). This leads to a conclusion that the number of highly efficient dishwashers available on markets across Europe is increasing.

**Table 3 Development of main parameters - dishwashers (2006 - 2008)**

	Label	Number of appliances	Mean consumption (kWh/day)
<b>Dishwasher free</b>			
2006	A, A, A	101	0.98
2007	A, A, A	103	1.01
2008	A, A, A	124	0.96
<b>Dishwasher in-built</b>			
2006	A, A, A	188	0.98
2007	A, A, A	229	1.01
2008	A, A, A	273	0.98

Note: Year 2008 the period until September, i.e. the end of the project, whereas 2006 means only second semester.

There are four subcategories of washing and drying appliances, which are monitored under the Topten project: front and top loading washing machines, combined washers and driers and electric tumble driers. As to washing machines, the number of listed appliances increased gradually over the given period; however, so did the average consumption per one cycle (Table 4), even though the criteria for selection remained unchanged or were even tightened in some cases (e.g. in Italy or Poland, the spin drying energy efficiency for front loaded washing machines changed from B to A). The reasoning is that there are more washing machines which are designed for higher loads (up to 11 kg compared to “usual” 5 kg). If recalculated, the average consumption would be actually lower.

The very same applies also to the category of combined washers and driers. Conversely, the average consumption per drying cycle at electric tumble driers decreased, while the number of listed appliances increased<sup>1</sup>.

Overall, indeed more efficient washing and drying appliances are being offered in European markets. However, the increasing load of the new appliances to large extent disguises this positive trend.

<sup>1</sup> It is indeed acknowledged that the washers and driers seem rather inefficient as to water consumption. And, similarly to the tumble driers, they may not seem as a suitable representative of the most efficient appliances to be promoted. On the other hand, the promotion from the producers’ side is rather strong, due to their low market share and therefore, some countries just decided to provide a list of the best appliances within this subcategory without promoting these appliances in any other way.

**Table 4 Development of main parameters - washing and drying appliances (2006 - 2008)**

	Label	Number of appliances	Mean consumption (kWh/cycle)
<b>Washing machines front</b>			
2006	AAA, AAB	211	0.88
2007	AAA, AAB	254	0.90
2008	AAA, AAB	232	1.04
<b>Washing machine top</b>			
2006	AAA, AAB	39	0.79
2007	AAA, AAB	43	0.72
2008	AAA, AAB (C)	52	0.97
<b>Washer and drier</b>			
2006	BAB	12	4.54
2007	BAB	13	4.18
2008	AAB	17	5.32
<b>Tumble drier</b>			
2006	A	43	2.61
2007	A	45	2.46
2008	A	74	2.42

Note: Year 2008 the period until September, i.e. the end of the project, whereas 2006 means only second semester. At washer and drier, the consumption means washing, spinning and drying.

The CFL lamps, offered in the participating countries' markets and listed in the national databases, are mostly of energy class A. Only in Switzerland, the database includes both CFL lamps of class A and B, thus the A, B in the second column of Table 5. The positive observation is that number of appliances (and countries covering this category in their national database) is increasing over time – number of listed appliances almost doubled over the monitored period. Similarly, the number of countries covering the CFL lamps grew from 4 to 9 (including the Topten association). This trend is coupled with the continuous decrease of the mean input power of the lamps (from 16.4 W at the end of 2006 to 13 W in 2008).

**Table 5 Development of main parameters - CFL lamps (2006 - 2008)**

	Label	Number of appliances	Mean input power (W)	Mean rated lifetime (hours)
<b>CFL Lamps</b>				
2006	A, B	321	16.4	13697
2007	A, B	502	15.2	13974
2008	A, B	638	13.0	13865

Note: Year 2008 the period until September, i.e. the end of the project, whereas 2006 means only second semester.

In addition to the CFL lamps, Austria has included LED lamps in their database. They are not yet selected according to some specific criteria, but rather presented as examples that can be currently purchased on the market. Similarly, several countries are planning to add a subcategory of halogen lamps with a classic (incandescent bulb type) cap-base in their databases. Despite the fact that this type of bulbs is not by far as energy efficient as CFL

lamps, some countries decided to consider to introduce this category as it may be important for those (numerous) consumers who are still reluctant to change their incandescent bulbs for CFLs.

All the participating countries now included 3.5-4.4 m wide cars into their databases and most countries also cover the category of 4.5 – 4.9 m and over wide cars. For both subcategories the average consumption has decreased over the two year period (14% and 12% respectively) despite the different selection criteria used in individual countries. Related to this, the CO2 emissions are also declining. As to the fuel type, petrol, diesel and natural gas vehicles are present as well as hybrid cars in some countries (France, Switzerland, Netherlands and topten.info).

**Table 6 Development of main parameters - cars (2006 - 2008)**

	Number of cars	Consumption (liters/100 km avg.) mean	CO2 emission (g/km) mean
<b>Cars (3.5-4.4 m wide)</b>			
2006	321	5.7	142.4
2007	342	5.6	140.1
2008	278	5.0	122.6
<b>Cars (4.5 – 4.9 m. and over wide)</b>			
2006	197	6.6	175.7
2007	208	6.4	169.6
2008	416	5.9	147.7

Note: Year 2008 the period until September, i.e. the end of the project, whereas 2006 means only second semester.

The office equipment category includes a plethora of appliance types under the project – from inkjet printers, through laser printers, Multi Functional Devices (MFDs) to monitors. Nevertheless, still only a few countries have included these subcategories into their national databases. Compared to the categories of cold or washing appliances, which are covered literally by all countries, the office equipment (but also for example cooking appliances - ovens) are covered by maximum three to four countries (including Topten association). Yet, the front runner countries can serve as a good practice examples and help in spreading the information and broadening the representation of these appliance types to other countries in the project.

Notably, one subcategory was removed from the listings – namely the CRT televisions, which seem to be less and less represented in the markets all across Europe. In exchange, the subcategory of LCD televisions is now covered by 5 countries.

### **Conclusions**

The common Euro Topten product categories cover the products with the most outstanding performance and available widely throughout the EU. Over the course of the project, there has been an improvement in the performance of the listed appliances. This concerns mostly the cooling and freezing appliances, but also office equipment or cars. Despite the overall growth in absolute counts of the listed appliances, the average energy consumption decreased within these categories (with, but also without tightening the selection criteria). In some cases (washing and cooling appliances) this trend was however minimized by the changing design of the appliance (higher loads or volumes).

Nevertheless, it has been shown the number of energy efficient appliances on the European markets is growing and also their performance is improving. Moreover, brand new categories of appliances are added every semester among the Topten products.

The Topten project has been promoted in a number of presentations, leaflets, articles and in other promotion activities. Given the broad offer of product categories in the countries' databases and thanks to a synergic effect of the cooperation among countries and support from Topten Association as well as the promotion activities, the number of visitors in the countries' websites has increased steadily over the course of the project. Thus the information on most efficient appliances is being efficiently spread to the target audience and helps their establishing in the markets.

It can be concluded, that by preparing and publishing a transparent summary of the best appliances available, the project successfully contributes to introducing and raising awareness of the most efficient products to European consumers.



In Figure 3, the final table with all numbers filled in within the fourth semester is shown.

**Figure 3 Resulting table of the Topten database (Jan – Sep 2008)**

semester: 4	year 2008	EURO TOPTEN		Market Monitoring n.4 / Deliverable n. 12			
<b>Refrigerator freestanding</b>							
State	Energy/annum in kWh best	Energy/annum in kWh mean	Number of appliances	Efficiency index average best	Efficiency index average mean	EU Energy Class (A, A+ or A++)	Price (Eur) best
Austria	84	120	34	29,5	41,4	A++	479
Belgium	84	122	9	29,01	32,5	A+ or A++	280
CZ	84	131	4	0	0	A++	0
Finland	119	138	21	41	42	A+	399
France	113	157,7	27	29,8	39,8	A+	205
Hungary							
Italy	141	172	26	29,94	35,8	A+	565
Netherlands	84	119	19			A++ and A+	269
Poland	161	158	17	29,84	39,9	A++, A+	527
Switzerland	84	120,4	15	28	29,43	A++	0
TopTen association	84	118,66	23	28	29,48	A++	0
<b>Refrigerator in-build</b>							
State	Energy/a (kWh) best	Energy/a (kWh) mean	EU Energy Class (A, A+ or A++)	Efficiency index average best	Efficiency index average mean	Number of appliances	Price (Eur) best
Austria	102	131,4	A++	28,6	41	56	1156
Belgium	201	251	A+ or A++	26,52	36,15	13	460
CZ	120	163	A+, A++	0	0	17	0
Finland	120	129	A+	36	42	17	249
France	124	175,15	A+ and A++	29,3	38,9	30	435
Hungary							
Italy	158	184	A+	32,4	37,1	25	944
Netherlands	87	125	A++ and A+			13	359
Poland	219	204	A+	40,67	41,52	9	330
Switzerland	128	164,84	A++	27	29,45	32	0
TopTen association	88	158,8	A++	27,1	29,42	40	0

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Databáze spotřebičů TOP TEN

Chladnička samostatná					
▲ ▼ Značka	Ardo	Liebherr	Liebherr	Liebherr	Neznačkový
▲ ▼ Adresa	<a href="http://www.ardo.cz">www.ardo.cz</a>	<a href="http://www.mctree.cz">www.mctree.cz</a>	<a href="http://www.mctree.cz">www.mctree.cz</a>	<a href="http://www.mctree.cz">www.mctree.cz</a>	
▲ ▼ Model	MPO 34SHS	KTPes 1750 Premium	KTPes 1544 Premium	KTPes 1554 Premium	Neznačkový
▲ ▼ Energie/rok v kWh	160.6	84	124	127	240
▲ ▼ Energetická třída (A+ nebo A++)	A++	A++	A++	A++	B
▲ ▼ Výška (cm)	159	85	85	85	165
▲ ▼ Šířka (cm)	59	60	60	60	60
▲ ▼ Hloubka (cm)	60	60	60	60	63
▲ ▼ Celkový užitečný objem (l)	270	156	131	137	269
▲ ▼ Přibližné náklady za dobu životnosti 10 let	6424	3360	4960	5080	9600