



*Preparatory Study on*

# **Eco-design of Water Heaters**

**Task 2 Report (FINAL)**

**Market Analysis**

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# 1 INTRODUCTION

The scope of Task 2 of the preparatory study on Eco-design of Water Heaters is:

- To place the product group within the total of EU industry and trade policy (subtask 2.1).
- To provide market and cost inputs for the EU-wide environmental impact of the product group (subtask 2.2).
- To provide insight in the latest market trends so as to indicate the market-structures and ongoing trends in product design (subtask 2.3, also relevant for the impact analyses).
- And finally, to provide a practical dataset of prices and rates to be used in a Life Cycle Cost (LCC) calculation (Subtask 2.4).

Subtask 2.1 is reported in Chapter 2 and provides generic economic data on EU Production, Extra-EU Trade, Intra-EU Trade and Apparent EU-consumption[1] Data relate to the latest full year for which at least half of the Member States have reported., i.e. 2004. Production data could be provided in physical volume and in money units and split up per Member State. The information for this subtask was derived from official EU Eurostat statistics and coherent with official data used in EU industry and trade policy. Water Heaters are part of PRODCOM categories 28.22.11 (CH Boilers, including but not specified as combi), 29.71.25 (electric WH), 29.72.14 (non-electric WH).

Market and stock data are reported in Chapter 3. Sales and stock data will be provided in physical units. The reference years are

- 1990 (Kyoto reference)
- 2004/'05 (most recent real data),
- 2010 (forecast, end of Kyoto phase 1, relevant also for Stockholm, etc.),
- 2020 (forecast, year in which all new eco-designs of today will be absorbed by the market)

The following parameters were identified:

- Installed base (“stock”) and penetration rate,
- Annual sales growth rate (% or physical units)
- Total sales/real EU-consumption[2] , (total market in €)
- Replacement sales (indicative)
- New sales (indicative)
- Average Product Life, differentiated in overall lifetime and time in service, (in years) and a rough indication of the spread (e.g. standard deviation)

The proposed data structure comprises volume, list and street price, value for:

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<sup>1</sup> Calculated from production, imports and exports. .

<sup>2</sup> The objective is to define the actual consumption as reliably as possible for the categories defined in task 1.1, for the latest full year for which consistent data could be retrieved. Significant differences between the actual consumption and the apparent consumption in subtask 2.2 may occur.

- electric storage. unpressurized (categories, <5 litres; 10-15 litres, >15 litres);
- electric storage pressurised (< 30 litres, 30-200 litres subdivided, >200 litres);
- electric instantaneous;
- gas storage;
- gas instantaneous;
- indirect cylinders storage, split by:
  - integrated vs. external;
  - volume classes (<200, 300, 400, 500, etc. litres);
- combi-boilers and wall-hung with indirect cylinders, split in:
  - conventional/storage-type;
  - Solar and other renewable hot water systems.

Data can be delivered for 2004/'05 and a period going back to 1990, allowing the construction of a linear stock model with years 1990, 1995, 2000, 2004/'05 with projections for 2010 and 2020.

The forecasts for 2010 and 2020 are accompanied by an overview of the relevant market trends, in Chapter 3 and the COUNTRY-SECTION. This is actually the first part of Subtask 2.3 ('general trends in product-design and product-features'), but it makes sense to provide the trends behind the forecasts in the same chapter.

# 2 GENERIC ECONOMIC DATA

## 2.1 Introduction

This section presents official production, imports and exports data as extracted from the Eurostat COMEXT database, using PRODCOM and Combined Nomenclature categorisation <sup>3</sup>.

For Water Heaters the following PRODCOM categories were assessed:

- 29.71.25.30 Electric instantaneous water heaters;
- 29.71.25.50 Electric water heaters with storage;
- 29.72.14.00 Non-electric instantaneous or storage water heaters.

According to the BRG Consult study on central heating boilers some 83% of sales are confirmed sales of boilers linked to hot water production (either as combi or with external hot water storage cylinders). Of the remaining 13% a certain percentage will also be linked to existing hot water facilities. The generic economic data for boilers is covered in the Task 2 Report of the "Preparatory study on Eco-design of CH Boilers" (VHK, August 2006).

VHK believes that simply repeating that data and presenting it next to the data for Water Heaters here would seriously limit the readability of this chapter. Therefore the central heating boiler data is kept separate, apart from the overview in Table 2-1 below, which combines the main findings of the two reports. The data in Table 2-1 are limited to 2004 only, using data according the PRODCOM. classification.

In the MEEUP Methodology Report (VHK 2005) reservations about the reliability of the PRODCOM data were already expressed. The main value of presenting these data here, is that they represent the official data that is currently used by the European Community.

**Table 2-1. Overview main results generic economic data**

PRODCOM	29.71.25.30		29.71.25.50		29.72.14.00		28.22.12.00	
EU25, 2004	Electric instantaneous		Electric storage		Non-electric instant. + storage		Boilers (combis and boilers with separate cylinders)	
	in mln. units	in mln. euro	in mln. units	in mln. euro	in mln. units	in mln. euro	in mln. units	in mln. euro
Production	3.8	423	9.8	746	4.8	1368	7.31	4797
Imports	1.9	31	17.3	162	n.a.	99	(1)	838
Exports	0.7	40	6.9	235	n.a.	239	(1)	304
App. consumption	5.0	415	20.1	673	4.8 + PM	1230	6.6 (2)	4263

(1): data not available at Eurostat public domain server

(2): VHK estimate, based upon EU25 consumption divided by average boiler value (EU25 Production value divided by volume = 623 euro/boiler)

<sup>3</sup> Extracted from <http://fd.comext.eurostat.cec.eu.int/xtweb/during> May and August 2006.

## 2.2 EU25 Production

Table 2-2 provide PRODCOM data for the EU25 production of water heaters categories 29.71.25.30 (electric instant.), 29.71.25.50 (electric storage) and 29.72.14.00 (non-electric) for the year 2004 (other years can be found in the Annex). The data for 29.71.25.50 (electric storage) are highly unreliable as they may be 'contaminated' with the production data of small water cookers and kettles, for which PRODCOM does not provide a separate category. However, given an assumption that kettles and small water heaters are largely no longer produced in the EU anyway, the figures may still say something and that is why they are presented here.

The extracted tables contain many blank cells and data for 2005 is limited. Large fields of data are confidential or estimated and are suppressed, especially fields regarding recent years. Furthermore, import and export data expressed in physical units are lacking for non-electric water heaters. Manufacturer's association CECED remarks that e.g. Belgian production (MTS-plant 400.000 storage units) seems not considered in the table.

Table 2-2. Eurostat WATER HEATER PRODUCTION

Category PRODCOM	Production 2004					
	Electric water heaters - instantaneous		Electric water heaters - storage		Non-electric water heaters - storage + instantaneous	
	29.71.25.30		29.71.25.50		29.72.14.00	
	000 units	mln. euro	000 units	mln. euro	000 units	mln. euro
Austria					30	26
Belgium						
Cyprus						
Czech Rep.						
Denmark					53	28
Estonia						
Finland	30	3	5	6	18	2
France			1028	135	631	171
Germany	802	141	2694	110	969	665
Greece	29	2	246	19	102	36
Hungary					41	5
Ireland						
Italy			3373	149	371	76
Latvia						
Lituania						
Luxemburg						
Malta						
Netherlands			186	34		
Poland	179	8	242	17	123	13
Portugal			10	3	1190	163
Slovakia				8	39	4
Slovenia						
Spain			173	32	804	66
Sweden						
UK	1720	187	636	110	93	24
EU15	3110	389	8900	697		
EU25	3840	423	9783	746	4756	1368

Eurostat concludes that in 2004 the production value of the combined categories is 2.54 bln. euro with a total production volume of 18.4 mln. units.

The 2004 single unit production value, calculated as EU25 value divided by EU25 volume, for an "average" electric instantaneous water heater produced in the EU25 is 110 euro (2005 value is static), an "average" electric storage water heater is 76 euro (2005 value is 134%) and a non-electric water heater is 288 euro (2005 value shows slight increase of 1.7%). Again the reliability is very limited.

**Table 2-3. Unit production value of WATER HEATERS EU25**

	in euro		
	2003	2004	2005
Electric instant.	111	110	111
Electric storage	73	76	102
Non-electric	276	288	293

## 2.3 EU25 Trade

The tables below shows the Eurostat PRODCOM data on imports and exports of water heaters in the EU25 from the PRODCOM statistics. Data relate to PRODCOM categories 29.71.25.30 (electric instant.) and 29.72.14.00 (non-electric water heaters) for the year 2004 (non-electric: value only). The data for 29.71.25.50 (electric storage water heaters) exists, but is not reliable –especially for the imports—as it is most likely to include also electric kettles and small water cookers, because these small water heaters have no other designated category than 29.71.25.50.

Table 2-4 shows that the largest imports (both in volume and value) of instantaneous water heaters are by Ireland (21 mln. euro) and the UK (17 mln. euro), possibly indicating the popularity of electric shower heaters.

For non-electric (mainly gas) water heaters the largest importing countries are Germany (205 mln. euro), Spain (70), Italy (58) and France (41).

Again, manufacturer's association CECED would like to stress that these data are unreliable.

**Table 2-4. Eurostat WATER HEATERS IMPORTS**

Category PRODCOM unit	Electric water heaters - instantaneous		Non-electric water heaters - storage + instantaneous	
	29.71.25.30		29.72.14.00	
	000 units	mln. euro	000 units	mln. euro
<b>Austria</b>	19	2,34	-	37,6
<b>Belgium</b>	74	6,74	-	28,3
<b>Cyprus</b>	47	0,68	-	0,8
<b>Czech Republic</b>	38	1,16	-	11,1
<b>Denmark</b>	7	0,72	-	2,0
<b>Estonia</b>	0	0,07	-	1,0
<b>Finland</b>	4	0,36	-	0,8
<b>France</b>	209	5,24	-	41,2
<b>Germany</b>	48	4,59	-	205,4
<b>Greece</b>	135	0,95	-	3,0
<b>Hungary</b>	18	0,98	-	12,1
<b>Ireland</b>	257	21,04	-	2,5
<b>Italy</b>	9	0,41	-	57,7
<b>Latvia</b>	6	0,20	-	0,9
<b>Lituania</b>	16	0,63	-	1,2
<b>Luxemburg</b>	7	0,30	-	3,8
<b>Malta</b>	10	0,39	-	0,7
<b>Netherlands</b>	1	0,09	-	16,7
<b>Poland</b>	261	3,60	-	26,5
<b>Portugal</b>	20	0,27	-	7,0
<b>Slovakia</b>	3	0,22	-	4,3
<b>Slovenia</b>	17	0,65	-	1,6

<b>Spain</b>	63	3,59	-	69,8
<b>Sweden</b>	23	2,89	-	2,5
<b>United Kingdom</b>	881	17,07	-	34,2
<b>EU15 TOTALS</b>	1128	25,80	-	94,1
<b>EU25 TOTALS</b>	1873	31,26	-	99,2

Largest exporting countries for instantaneous electric water heaters are the UK (35 mln. euro), Germany (17 mln. euro) and France (almost 7 mln. euro).

The largest exports of non-electric water heaters are by Germany (156 mln. euro), France (93), Italy (57) and Austria, Poland, Spain and the UK (43 to 46 mln. euro).

**Table 2-5. Eurostat WATER HEATERS EXPORTS**

Category PRODCOM	Electric water heaters - instantaneous		Non-electric water heaters - storage + instantaneous	
	29.71.25.30		29.72.14.00	
	000 units	mln. euro	000 units	mln. euro
<b>Austria</b>	2	0,17	-	44,0
<b>Belgium</b>	8	1,15	-	21,8
<b>Cyprus</b>	0,1	0,01	-	0,0
<b>Czech Republic</b>	7	0,60	-	5,8
<b>Denmark</b>	23	0,61	-	9,6
<b>Estonia</b>	0,1	0,01	-	0,1
<b>Finland</b>	7	0,13	-	2,0
<b>France</b>	40	6,76	-	92,5
<b>Germany</b>	209	16,90	-	155,9
<b>Greece</b>	2	0,03	-	10,2
<b>Hungary</b>	8	0,95	-	5,7
<b>Ireland</b>	4	0,38	-	1,2
<b>Italy</b>	91	3,55	-	57,1
<b>Latvia</b>	0,01	0,00	-	0,6
<b>Lituania</b>	1,3	0,10	-	0,1
<b>Luxemburg</b>	0,03	0,00	-	0,2
<b>Malta</b>	0,0	0,0	-	0,0
<b>Netherlands</b>	4	0,30	-	28,1
<b>Poland</b>	55	3,05	-	46,0
<b>Portugal</b>	0,5	0,00	-	72,3
<b>Slovakia</b>	3	0,19	-	3,8
<b>Slovenia</b>	7	0,45	-	1,9
<b>Spain</b>	49	3,37	-	44,4
<b>Sweden</b>	13	2,85	-	7,1
<b>United Kingdom</b>	589	35,09	-	43,1
<b>EU15 TOTALS</b>	620	38,56	-	228,4
<b>EU25 TOTALS</b>	686	39,60	-	238,5

Table 2-6 shows the extra-EU trade, not according to PRODCOM categories but following Combined Nomenclature CN8 classification (compatible with Harmonised System HS6). The data relate to gas-instantaneous, non-electric instant./storage, electric-instantaneous. and electric non-instantaneous water heaters. The table also gives some indication of the physical quantity (weight) involved.

The category 'Electric water heaters, excluding instantaneous and immersion water heaters' nr. 85.16.10.19 was excluded, because –at average weight of 1 to 2 kg per unit– they simply must include also other types of water heaters such as kettles and cookers.

**Table 2-6. Eurostat EU25 Imports, exports and trade balance**

Reported by: EU25 Trade partner: EU25 EXTRA		Instantaneous gas water heaters (84.19.11.00)				Non-electric instantaneous or storage water heater (84.19.19.00)				Electric instantaneous water heaters (85.16.10.11)			
		1995	2000	2004	2005	1995	2000	2004	2005	1995	2000	2004	2005
<b>IMPORTS</b>													
<b>Quantity</b>	<b>mln. kg</b>	1,6	3,0	1,5	2,5	6,1	10,6	9,7	9,5	0,1	1,3	2,7	3,9
<b>Value</b>	<b>mln. €</b>	10,6	25,3	12,2	22,3	26,1	42,2	49,7	46,8	1,1	16,3	21,3	24,6
<b>EXPORTS</b>													
<b>Quantity</b>	<b>mln. kg</b>	4,1	6,0	9,5	10,6	8,1	11,0	20,6	24,2	1,6	3,1	6,2	3,0
<b>Value</b>	<b>mln. €</b>	36,0	43,8	75,0	84,3	45,1	62,5	100,7	112,7	14,2	22,9	32,8	32,5
<b>BALANCE (exports - imports)</b>													
<b>Quantity</b>	<b>mln. kg</b>	2,5	3,1	8,0	8,2	2,0	0,4	10,9	14,7	1,5	1,8	3,5	-0,9
<b>Value</b>	<b>mln. €</b>	25,4	18,4	62,8	62,0	19,0	20,3	51,0	65,9	13,0	6,6	11,6	7,9

Tables 2.7 and 2.8 on the next page give a split up of the extra-EU imports and exports by country of provenience and destination. Overall the significance and reliability of the extra-EU trade data should not be overrated.

**Table 2-7. Extra EU25 WATER HEATERS IMPORTS 2004-2005 in mln. Euro (excl. EI. Storage)**

COUNTRY	Gas_instant. 84191100		Non-electric instant/storage 84191900		Electric instant. WH 85161011		Total	
	2004	2005	2004	2005	2004	2005	2004	2005
<b>from</b>								
China	4,4	6,2	2	2,9	8,9	9,9	15,3	19
Norway	0	0	0,1	0,1	3,5	4,3	3,6	4,4
Macedonia	-	-	-	-	-	-	-	-
HongKong	0,1	0	-	-	0	0,2	0,1	0,2
Turkey	6,1	10,1	7,2	4,7	0,3	1,3	13,6	16,1
Switzerland	0,1	0,6	11,1	13	0,2	0,2	11,4	13,8
United States	0,4	0,7	11,7	9	0,4	0,5	12,5	10,2
Bulgaria	-	-	0,2	0,3	-	0,3	0,2	0,6
Malaysia	-	-	-	-	2,6	3,5	2,6	3,5
India	0,1	0	1,6	1,2	-	0	1,7	1,2
Australia	0	0	4,2	5,2	4,1	3,2	8,3	8,4
<b>other (&lt;2 mln.)</b>	1,1	4,8	11,5	10,4	1,1	1,2	18,2	20,9
<b>EU25_EXTRA</b>	12,2	22,3	49,7	46,8	21,3	24,6	83,2	93,7

Table 2-8. Extra EU25 WATER HEATERS EXPORTS 2004-2005 in mln. Euro (excl. EI. Storage)

COUNTRY	Gas_instant. 84191100		Non-electric instant/storage 84191900		Electric instant. 85161011		Total	
	2004	2005	2004	2005	2004	2005	2004	2005
to								
Russia	10,4	11,9	8	8,1	3	5,4	21,4	25,4
Australia	1	0,5	1,2	1,4	0,9	0,9	3,1	2,8
Switzerland	0,7	0,9	19,8	20,3	1,2	1,7	21,7	22,9
United States	14,9	18,5	15,7	14,8	2,5	3,9	33,1	37,2
Saudi Arabia	0,4	0,7	1,1	4,6	0,8	0,2	2,3	5,5
Arab Emirates	4,3	1,1	0,5	0,8	0,3	0,4	5,1	2,3
Croatia	0,8	0,8	3,3	2,7	-	-	4,1	3,5
Romania	3,1	3,1	2,7	4,5	0,3	0,5	6,1	8,1
South Korea	0,2	0,2	0,7	7,3	0,2	0,2	1,1	7,7
Nigeria			0,3	0,7	0	0,1	0,3	0,8
							0	0
Turkey	1,5	1,3	4	3,8	0,7	1,4	6,2	6,5
Libya	-	0,1	0	0,3	0,1	0,2	0,1	0,6
Kazakhstan	-	0,1	1,2	0,6	0,1	0,1	1,3	0,8
Serbia	-	-	-	-	-	-		
Kuwait	0,1	0	-	-	0,1	0,6	0,2	0,6
							0	0
Indonesia	0	0	0,1	0,5	0,1	0	0,2	0,5
Bosnia/H'govina	0	0	-	-	0,1	0,3	0,1	0,3
China	1	4,5	13,1	5,6	1,2	0,7	15,3	10,8
Canada	1,6	0,7	1,4	1,5	2,7	3,3	5,7	5,5
Ukraine	6,4	9,1	2,6	3,3	0,5	3	9,5	15,4
							0	0
Chile	4,8	4,6	0,6	0,7	3	2,5	8,4	7,8
Tunesia	3,7	3,8	0,6	0,6	0,3	0,1	4,6	4,5
Iran	2,4	2,3	0,3	0,7	0	0,1	2,7	3,1
Iceland	0,1	2,2	0,3	0,3	0	0	0,4	2,5
Israel	1,7	2	0,9	0,6	0	0,1	2,6	2,7
Iraq	-	-	-	3,5	-	-		3,5
other (< 2mln.)	15,9	16	22,3	25,6	14,6	6,8	52,8	48,4
EU25_EXTRA	75	84,3	100,7	112,7	32,8	32,5	208,5	229,5



## 2.4 EU25 Apparent consumption

Table 2-9 shows the apparent consumption (defined as production + imports - exports) of water heaters as calculated from the official Eurostat data and as required by contract.

At the same time Table 2-9 also shows the **very limited reliability of these data** as some values are highly unlikely or just plain wrong: Probably because of low declared values on production or imports or too high values for exports many countries show negative consumption - this is of course not realistic. In the remainder of the study we will not use the above dataset, but instead refer to the sales data in the next chapter.

**Table 2-9. Eurostat WATER HEATERS APPARENT CONSUMPTION**

	CONSUMPTION 2004			
	Electric water heaters - instantaneous		Non-electric water heaters - storage + instantaneous	
	29,71,25,30		29,72,14,00	
	'000 units	mln, euro	'000 units	mln, euro
<b>Austria</b>	0,02	2,17	0,03	19,55
<b>Belgium</b>	0,07	5,6	-	6,45
<b>Cyprus</b>	0,05	0,67	-	0,77
<b>Czech Rep,</b>	0,03	0,57	-	5,31
<b>Denmark</b>	0,02-	0,11	0,05	20,03
<b>Estonia</b>	0	0,07	-	0,99
<b>Finland</b>	0,03	3,72	0,02	1,11
<b>France</b>	0,17	1,52-	0,63	120,16
<b>Germany</b>	0,64	128,24	0,97	715
<b>Greece</b>	0,16	3,14	0,1	28,53
<b>Hungary</b>	0,01	0,03	0,04	11,85
<b>Ireland</b>	0,25	20,67	-	1,31
<b>Italy</b>	0,08-	3,14-	0,37	76,78
<b>Latvia</b>	0,01	0,2	-	0,38
<b>Lituania</b>	0,01	0,53	-	1,12
<b>Luxemburg</b>	0,01	0,29	-	3,63
<b>Malta</b>	0,01	0,39	-	0,69
<b>Netherlands</b>	0,00-	0,22-	-	11,43-
<b>Poland</b>	0,39	8,93	0,12	6,51-
<b>Portugal</b>	0,02	0,27	1,19	97,96
<b>Slovakia</b>	0	0,03	0,04	4,64
<b>Slovenia</b>	0,01	0,2	-	0,34-
<b>Spain</b>	0,01	0,22	0,8	90,95
<b>Sweden</b>	0,01	0,04	-	4,55-
<b>UK</b>	2,01	168,81	0,09	14,99
<b>EU25</b>	5,03	414,92	4,76	1.229,00

# 3 MARKET AND STOCK DATA

## 3.1 Introduction

BRG Consult ('BRGC') has prepared a report on the market and stock data, both at EU and Member State Level. Especially with the stock or 'park' data BRGC is treading new ground and had to develop a methodology to estimate and elaborate parameters thus far unknown. In a sense this inevitably leads to a more approximate approach than with e.g. whitegoods, where parameters can be assessed at the point-of-sales and by questionnaires without much explaining. Also the approach is more 'soft' than with central heating boilers, where traditionally there has been more interest (read: budget) from industry, utilities and government to check calculated stock data against data from surveys at people's homes. Therefore, what is presented in this report is very new and undoubtedly can be improved if. Better data from stakeholders are very welcome.

The full report on the methodology and the situation in each EU Member State can be found in the COUNTRY-SECTION of the underlying Task 2 report. In this EU-section we will restrict ourselves to a summary of the methodology and the results for the European Union.

## 3.2 Methodology

The above coverage of sanitary water heating includes products that fall both within and outside the scope of the Eco-Design Study (Lot 2):

- falling outside the of Lot 2 scope (but mostly within the scope of Lot 1) are:
  - direct (instantaneous) water heating by the central heating boiler (essentially combi boilers)
  - indirect cylinders that are integrated into the central heating boiler (including those integrated into combi boilers). These are considered to be a part of the boiler
- falling within the scope of Lot 2:
  - separate indirect cylinders (although Lot 2 considers these to be components since they do not on there own generate the hot water)
  - all dedicated water heaters.

All water heating can be divided into:

- direct/instantaneous/flow through water heating, where the water is heated on demand and there is no storage tank. This for of water heating is associated with:
  - combi boilers (although some have supplementary storage to boost the initial flow rate)
  - instantaneous water heater (electric and gas)
- storage water heating, where the water is pre-heated and stored in a tank.

In many ways the water heaters market is more complex than the boiler market. Not only is the water heating function divided between that which is linked to the boiler and that which is dedicated, but there is also a great variety of usage patterns.

At the most basic level, a distinction needs to be made between:

- **primary water heating**, used by BRG CONSULT to describe appliances that provide the main supply of sanitary hot water to the dwelling
- **secondary water heating**, used by BRG CONSULT to describe water heaters that have a supplementary role (usually in supplying hot water to just one room or location in dwellings that already have a primary water heating appliance).

Although for the sake of manageability BRG CONSULT's park modelling uses these two broad distinctions, in practice there are many sub-variants that need to be taken into account when, for examples calculating average tapping patterns. For example:

- there is likely to be a significant differences in tapping cycles of primary water heaters in second homes than in primary residences. It is suggested than for secondary residences an average of 100 days use a year might be assumed
- some dwellings with district heating also have a primary water heater to use as a back-up for when the district heating system breaks down or is shut down for annual maintenance
- while it can generally be assumed that each dwelling has just one primary (multi-point) water heating appliance, it is known that in Germany many dwellings use more than one instantaneous electric water heater (BRG CONSULT has allowed for this in its park model)
- secondary water heating encompasses a wide range of usage/tapping patterns, from daily to very occasional use
- in the UK and Ireland, the situation is complicated by the large park and sales of dedicated instantaneous electric showers. These are classified by BRG CONSULT as secondary, but some a subject to very frequent use.

Thus any modelling of the water heating park is likely to be simplification, and BRG CONSULT has used some basic parameters to distinguish between primary and secondary water heating, while at the same time building in allowances for the most evident exceptions.

As a starting point, BRG CONSULT has adopted the following classifications to distinguish between primary and secondary water heating:

	<b>Multi-point/primary</b>	<b>Single point/secondary</b>
<b>Daily usage</b>	Principle source of hot water	Sole water heating for single room
<b>Occasional usage</b>	Back-up/seasonal	Guest room, garage, garden shed, caravan etc.

As far as primary electric storage water heaters are concerned, the tendency is for countries without night rate tariffs to see demand concentrated in the 80-100 litres range, while in France, where night rate tariffs are offered, demand is concentrated in the 150+ litre ranges.

For instantaneous gas water heaters, BRG CONSULT has assumed that in the main Mediterranean markets, primary water heaters start at 10 litres/minute, while in the northern countries the threshold is taken as 13 litres/minute.

Function	Water Heater Categories
Mainly primary	All water heating derived from central heating boiler/heat exchanger All storage water heaters >50 litres Instantaneous gas 13+ litres/minute (10+ litres in Italy, Spain & Portugal) Instantaneous electric 12 kW+ All dedicated solar thermal water tanks
Mainly secondary	Instantaneous electric <12 kW All instantaneous gas <13 litres/minute (<10 litres in Italy, Spain & Portugal) All storage <50 litres

In order to get to a set of workable estimates, BRG CONSULT has been obliged to adopt a pragmatic modelling approach based on its own historical sales data and its boiler park estimates, together with any independent water heater park data that park may be available.

It has been necessary to start with certain basic assumptions, and then to adapt these in countries where reality checks suggest that this is required:

- it is assumed that if the central heating boiler/generator (including district heating) also provides SHW, that this is always the household's primary source of hot water
- assumptions have been made about the proportion of different types of central heating boiler that also produce SHW:
  - for combi boilers, it is assumed that this is 100% of the park
  - for non combi individual boilers (including almost all individual floor standing boilers) assumptions have been guided by BRG CONSULT's estimated of the proportion of boilers that are sold with indirect cylinders (while recognising that some boilers sold without cylinders might eventually still be connected to a cylinder)
  - for collective and district heating, a good deal of guesswork has been involved, and BRG CONSULT would particularly welcome any stakeholder inputs. It is generally assumed that:
    - in dwellings connected to DH is it assumed that SHW is usually also provided, and only in an average 10-15% of cases a primary water heater is needed
    - about 25-30% of dwellings on collective systems use dedicated water heaters as their primary source of sanitary hot water. However, for example in Italy SNAM/DOXA studies (available up to 1995) suggests that only some 40% of dwellings on collective heating derive their SHW from the same source.

On this basis it was possible to estimate the total number of dwellings in which SHW is provided by the same source providing hot water for the space heating system. Of those, BRG CONSULT already had an estimate of the park of combi boilers, whereas the split of indirect cylinders was estimated on the basis of historical sales in each country. The balance of dwellings is therefore expected to have some form of dedicated water heating.

The mix of primary dedicated water heater types in was estimated on the basis of historical (2000-2005) water heater sales in each country. Therefore if in country X it is estimated that say 100 dwellings have a dedicated water heater, we looked at the mix of sales in country X over the last 5 years, and applied the same percentage split to those 100 dwellings.

This approach is justifiable under the assumption that the majority of water heater sales are now for replacement. However when this did not appear to be the case in any given country (i.e. sales have been growing or declining more quickly over the last 5 years

than the natural replacement trends would suggest), this was taken into account and appropriate adjustments were made.

As far as secondary water heaters are concerned, because it is very difficult to make assumptions as to how many dwellings may have one (or several – and how many) such appliances installed, an estimate was made under the simplifying assumption that all secondary water heaters have an average life of 15 years (with the exception of instantaneous showers in Ireland and the UK, and instantaneous electric in Germany and Poland, which are estimated to have an average life of 8 years).

It is recognised that this approach is somewhat “soft”. However a check of the average number of secondary water heaters per dwelling does not throw up any unreasonable values, considered within the specific context of each country culture and habits.

### 3.3 Stock and sales data

The 2004/'05 stock data per EU Member State, excluding Malta, Cyprus and Luxembourg, are given in a large summary table on the following pages. The table gives sales figures in '000 units and percentages. The first segmentation is between primary and secondary water heaters. The second segmentation is per type.

Table 3-2 summarizes EU water heater sales data, containing 1990-2020 figures split up by various technical segments. The table gives EU totals for 1990, 1995, 2000, 2005, 2010 and 2020. Please note that the forecast for the 2020 'Business-as-Usual' is very preliminary and liable to be adjusted at a later stage. Given the preliminary nature, the 2020 forecasts were not included in the country sales table.

The country sales tables and a description of trends per Member State country are given in the COUNTRY-SECTION, which is based on the report that BRG Consult prepared for VHK (Oct. 2006).

Highlights from the BRGC study, specifically answering the contract requirements, are:

- In 2004/'05 there was and installed base (“stock”) of 236 million water heaters, of which
  - 2,6 mln. (1,5% of primary water heaters) based on district heating ,
  - 87 mln. units linked to a central heating boiler as a ‘combi’ or with an indirect cylinder (48,9% of primary water heaters) and
  - 146 mln. dedicated water heaters (49,6% of primary and 100% of secondary water heaters).
- The market penetration of water heaters in the same year was 132%, meaning that 32,4% of EU households owned a secondary water heater, usually a small electric storage water heater for the kitchen (18,5%), a second electric instantaneous unit (7,9%) or a small gas-fired instantaneous unit (5,9%).
- Over the last 15 years (1990-2005) the annual unit sales of water heaters have increased by 25%. This is on average a long term annual growth rate of 1,5%. This growth rate was highest over 1995-2000 (1,7%) and seems to have slowed down to 1,3% currently.
- Total EU 2004/'05 sales of water heaters were 17,2 mln. units, of which
  - 6,8 mln. units linked to boilers, where
    - 4,5 mln. are ‘combi’-boilers and
    - 2,3 mln. indirect cylinders (including 0,25 mln. solar storage tanks).
  - 10,4 mln. dedicated water heaters, where
    - 8,3 mln. are electric and
    - 2,1 mln. are gas-fired.
- Dedicated electric water heater sales (8,3 mln.) consisted of :

- 2,4 mln. electric instantaneous units, including
  - 1,4 mln. electric showers in the UK and Ireland (<12 kW)
  - 0,3 mln. other instantaneous units, smaller than or equal to 12 kW
  - 0,7 mln. other instantaneous units, with capacity larger than 12 kW.
- 5,9 mln. electric storage units, including
  - 1,9 mln. units with a tank <30 litres, of which 1 mln. unpressurised types
  - 1,7 mln. with a tank of 30-80 litres
  - 1,9 mln. with a tank of >80-200 litres
  - 0,3 mln. with a tank >200 litres
- Dedicated gas-fired water heater sales (2,1 mln.) consisted of
  - 1,85 mln. gas instantaneous types, of which 68% were in the mid capacity range 10-13 litres/unit, whereas the remainder was split evenly between small (5-10 liter/min.) and more powerful (> 13 liter/min.).
  - 0,23 mln. gas storage types, where some Western European countries (UK, NL) still buy the very large types (> 220 litres) but the single-household size (<160 litres) has only a significant market share in Eastern European Member States.
- The replacement sales of dedicated water heaters is around 70%, which leaves 30% as new sales (new buildings plus secondary water heaters in existing buildings)
- There is a considerable spread in product life per type, but on average the estimated average product life is 15 years for dedicated water heaters (17 years for boilers and 20 years for indirect cylinders).
- For 2010 BRGC data suggest no spectacular change in growth rate. Relatively the fastest growers are the new Member States (Baltic States, Central Europe), where dedicated water heaters are also bought as a back-up in case of failure of the district heating system. Other trends indicated by BRGC projections are:
  - The BRGC projection for 2010 shows a slow-down of the rise of combi-boilers, which in the past has increased from a 15% share in 1990 to 26% in 2005. For 2010 also a share of 26% is expected.
  - Instead, a growth is expected in the category 'indirect cylinders', where the share is expected to grow from 13,5 to 15,8% mainly due to increased sales of solar storage tanks (0,5 mln. in 2010).
  - For electric storage water heaters a slight decline is expected from 34,3% in 2005 to 33,8% in 2010. Within that group the sales of unpressurised units will drop, but units with larger tanks (> 200 litres, typical of heat pump water heaters) are expected to rise in sales.
  - The overall market share of electric instantaneous water heaters is expected to drop from 7,8% to 4,5% in the next 5 years, whereas within that group BRGC expects the niche market (UK and Ireland only) of electric showers to remain stable. Electronic instantaneous units are expected to rise at the expense of units with hydraulic control.
  - The market for dedicated gas water heaters will continue to decline and a share of 9,1% is expected for 2010 (2005: 12,7%) . Within that group, only the very small group of condensing storage water heaters is expected to do better in 2010 than in 2005.

**Table 3-1. TOTAL EU DOMESTIC WATER HEATER PARK 2004 in '000 units (BRGC for VHK 2006)**

	A	B	CZ	DK	EST	SF	F	D***	GR	H	IRL	I	LV	LIT	NL	PL	P	SK	RS	E	S	UK	Total EU-22	% EU-22
<b>PRIMARY</b>																								
<b>District Heating</b>	74	0	189	212	55	152	120	441	0	86	0	0	59	95	32	650	0	100	13	0	329	0	2 606	1,5%
<b>Linked to Boiler</b> , of which	1378	1671	1364	643	41	589	12096	15071	1308	1326	1105	14387	87	155	4899	2427	234	291	295	5619	1717	20598	87 301	48,9%
Combi Boilers	179	749	642	12	9	0	7356	2095	31	519	27	12672	24	48	4230	576	176	181	36	4249	0	7711	41 523	23,3%
Indirect Cylinders Integrated	107	247	0	129	0	377	2353	2248	153	0	0	834	0	0	23	257	23	0	18	640	1150	0	8 558	4,8%
Indirect Cylinders Separate	1052	674	722	478	32	213	2383	10581	1119	807	1077	878	63	107	621	1595	35	110	240	724	560	12886	36 958	20,7%
Solar Thermal (Combined)	40	1	0	24	0	0	4	147	6	0	0	3	0	0	26	0	0	0	0	6	6	0	263	0,1%
<b>Dedicated</b> , of which	1465	1900	1139	591	155	1163	13928	17427	3614	2150	219	11668	357	425	1043	4855	5018	815	362	15241	699	4337	88 572	49,6%
Solar Thermal (WH Only)	159	13	0	36	0	0	36	587	559	0	0	53	0	0	66	0	0	0	0	105	39	7	1 661	0,9%
Electric Instantaneous >12 kW	67	6	50	4	6	11	0	9659	36	0	55	0	9	25	7	572	11	64	1	82	4	2044	12 713	7,1%
Electric Storage >30 litres	1230	1192	958	548	148	1152	11992	4421	3010	1541	113	9198	346	399	672	3985	711	634	358	6120	656	1978	51 360	28,8%
Gas Instantaneous 13+ l/m	0	619	0	0	1	0	1462	1621	6	226	0	1775	0	0	208	0	4276	11	3	8860	0	0	19 069	10,7%
Gas Storage	9	70	131	3	0	0	439	1139	3	383	51	643	2	0	90	299	20	107	0	74	0	307	3 769	2,1%
<b>Total Primary (A)</b>	2917	3571	2692	1446	251	1904	26144	32938	4922	3562	1323	26055	503	674	5974	7933	5252	1207	670	20860	2745	24935	178 479	100%
<i>in % of total</i>	1,6%	2,0%	1,5%	0,8%	0,1%	1,1%	14,6%	18,5%	2,8%	2,0%	0,7%	14,6%	0,3%	0,4%	3,3%	4,4%	2,9%	0,7%	0,4%	11,7%	1,5%	14,0%	100,0%	
<b>SECONDARY</b>																								
<b>Electric Storage</b> , of which	1166	1329	672	204	30	53	1409	15411	379	545	99	6157	51	53	1410	813	101	169	432	1648	18	927	33 077	18,5%
<30 Litres Pressurised	237	1064	429	195	28	53	491	271	38	130	66	6157	35	29	1308	813	101	138	189	1630	18	537	13 958	7,8%
<30 Litres Unpressurised	929	266	242	9	2	0	919	15139	341	415	33	0	15	24	102	0	0	31	243	19	0	390	19 120	10,7%
<b>Electric Instantaneous (&lt;12 kW)</b>	14	23	320	8	15	22	0	941	30	1	999	0	13	55	24	1296	23	131	0	9	2	10145	14 071	7,9%
<b>Gas Instantaneous</b> , of which	186	423	241	6	24	0	843	1073	22	372	7	47	15	43	500	2146	233	64	8	3347	0	1018	10 619	5,9%
5 -<10 Litres/Minute	0	160	0	0	13	0	843	76	5	181	0	47	0	0	256	0	233	50	4	3347	0	0	5 214	2,9%
10 -<13 Litres/Minute *	186	263	241	6	10	0	0	998	17	192	7	0	15	43	245	2146	0	14	5	0	0	1018	5 405	3,0%
<b>Total Secondary (B)</b>	1366	1775	1233	218	68	76	2252	17425	431	919	1105	6204	79	152	1934	4255	358	365	441	5004	20	12090	57 767	32,4%
<i>in % of total</i>	2,4%	3,1%	2,1%	0,4%	0,1%	0,1%	3,9%	30,2%	0,7%	1,6%	1,9%	10,7%	0,1%	0,3%	3,3%	7,4%	0,6%	0,6%	0,8%	8,7%	0,0%	20,9%	100,0%	
Ava Secondary per Dwelling	0,34	0,48	0,31	0,08	0,11	0,03	0,13	0,45	0,08	0,22	0,81	0,22	0,08	0,12	0,28	0,34	0,07	0,19	0,55	0,23	0,00	0,48	0,32	
<b>All Water Heaters (A + B)</b>	4283	5346	3924	1664	319	1980	28397	50363	5353	4481	2428	32259	582	827	7909	12188	5609	1571	1110	25863	2765	37025	236 246	132,4%
<b>All non-integrated **</b>	3923	4350	3093	1311	255	1451	18568	45579	5170	3876	2401	18754	499	683	3624	10705	5411	1290	1043	20975	1286	29313	183 559	102,8%

\* For Italy, Portugal and Spain Gas Instantaneous 10 -<13 Litres/Minute are considered as primary ; \*\* Dedicated Water Heaters plus Separate Indirect Cylinders; \*\*\* For Germany, refers to products not dwellings  
NB: does not include Cyprus, Luxembourg and Malta

**Table 3-2. EU Water Heater Sales TECHNICAL SEGMENTATION in '000 units and % of total (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	2020*	% 1990	% 1995	% 2000	% 2005	% 2010*	% 2020*
<b>COMBI BOILERS</b>	<b>2029</b>	<b>2639</b>	<b>3774</b>	<b>4481</b>	<b>4576</b>	<b>5379</b>	<b>14.8%</b>	<b>18.4%</b>	<b>23.4%</b>	<b>26.0%</b>	<b>25.9%</b>	<b>27.9%</b>
Combi Boilers	1988	2533	3537	4233	4311	5086	14,5%	17,7%	21,9%	24,6%	24,4%	26,4%
Combi Boilers (Storage only)	41	105	237	248	265	293	0,3%	0,7%	1,5%	1,4%	1,5%	1,5%
<b>INDIRECT CYLINDERS</b>	<b>1889</b>	<b>2066</b>	<b>2156</b>	<b>2316</b>	<b>2800</b>	<b>3444</b>	<b>13.8%</b>	<b>14.4%</b>	<b>13.4%</b>	<b>13.5%</b>	<b>15.8%</b>	<b>17.9%</b>
Indirect Cylinders Integrated	312	324	351	384	411	472	2,3%	2,3%	2,2%	2,2%	2,3%	2,5%
Indirect Cylinders Separate	1577	1640	1622	1641	1724	1825	11,5%	11,5%	10,0%	9,5%	9,7%	9,5%
Solar Storage Tanks		103	170	249	543	916		0,7%	1,1%	1,4%	3,1%	4,8%
Gas WH: Indirect Cyll. Buffer Storage			13	43	122	231			0,1%	0,2%	0,7%	1,2%
60-80L			234	290	402	571			1,4%	1,7%	2,3%	3,0%
80-120L			630	710	982	1335			3,9%	4,1%	5,6%	6,9%
120-200L			603	576	650	697			3,7%	3,3%	3,7%	3,6%
200-500L			345	330	315	286			2,1%	1,9%	1,8%	1,5%
500-1000L			105	112	125	145			0,7%	0,6%	0,7%	0,8%
>1000L			43	66	91	139			0,3%	0,4%	0,5%	0,7%
Coil System			1661	1686	1940	2220			10,3%	9,8%	11,0%	11,5%
Plate to Plate System			298	391	605	911			1,8%	2,3%	3,4%	4,7%
<b>ELECTRIC WATER HEATERS</b>	<b>7248</b>	<b>7420</b>	<b>7955</b>	<b>8335</b>	<b>8379</b>	<b>8804</b>	<b>52.8%</b>	<b>51.8%</b>	<b>49.3%</b>	<b>48.4%</b>	<b>47.3%</b>	<b>45.7%</b>
<b>Electric Storage</b>	<b>5629</b>	<b>5450</b>	<b>5652</b>	<b>5905</b>	<b>5973</b>	<b>6295</b>	<b>41.0%</b>	<b>38.1%</b>	<b>35.0%</b>	<b>34.3%</b>	<b>33.8%</b>	<b>32.7%</b>
≤ 30 (Unpressurised)			1264	1034	986	708			7,8%	6,0%	5,6%	3,7%
≤ 30 L (Pressurised)			844	893	873	902			5,2%	5,2%	4,9%	4,7%
> 30 (Pressurised), of which			<u>3544</u>	<u>3978</u>	<u>4115</u>	<u>4685</u>			<u>22.0%</u>	<u>23.1%</u>	<u>23.2%</u>	<u>24.3%</u>
80L			1699	1785	1701	1704			10,5%	10,4%	9,6%	8,9%
100L			477	542	532	587			3,0%	3,1%	3,0%	3,1%
150L			416	473	502	588			2,6%	2,7%	2,8%	3,1%
200L			742	909	1056	1369			4,6%	5,3%	6,0%	7,1%
400L			210	270	323	436			1,3%	1,6%	1,8%	2,3%
<b>El. Instantaneous (excl. showers)</b>	<b>1619</b>	<b>1970</b>	<b>2303</b>	<b>2430</b>	<b>2406</b>	<b>2509</b>	<b>11.8%</b>	<b>13.8%</b>	<b>14.3%</b>	<b>14.1%</b>	<b>13.6%</b>	<b>13.0%</b>
Electric Showers (IRL and UK only)	739	878	1213	1452	1459	1705	5,4%	6,1%	7,5%	8,4%	8,2%	8,9%
Other instant Elec >12 kW	880	1092	772	705	679	586			4,8%	4,1%	3,8%	3,0%
Other instant Elec <12 kW			318	272	268	218			2,0%	1,6%	1,5%	1,1%
<b>Hydraulic, of which</b>			<b>761</b>	<b>576</b>	<b>482</b>	<b>203</b>			<b>4.7%</b>	<b>3.3%</b>	<b>2.7%</b>	<b>1.1%</b>
< 12kW			290	224	203	115			1,8%	1,3%	1,1%	0,6%
12kW			80	47	46	12			0,5%	0,3%	0,3%	0,1%
18kW			119	55	53	-13			0,7%	0,3%	0,3%	-0,1%
21kW			163	118	89	15			1,0%	0,7%	0,5%	0,1%
24kW			85	107	75	65			0,5%	0,6%	0,4%	0,3%
27kW			24	25	16	9			0,1%	0,1%	0,1%	0,0%
<b>Electronic, of which</b>			<b>329</b>	<b>401</b>	<b>465</b>	<b>601</b>			<b>2.0%</b>	<b>2.3%</b>	<b>2.6%</b>	<b>3.1%</b>
< 12kW			27	49	65	103			0,2%	0,3%	0,4%	0,5%
12kW			64	43	49	34			0,4%	0,2%	0,3%	0,2%
18kW			87	41	50	12			0,5%	0,2%	0,3%	0,1%
21kW			96	105	122	148			0,6%	0,6%	0,7%	0,8%
24kW			40	127	141	243			0,2%	0,7%	0,8%	1,3%
27kW			15	36	38	62			0,1%	0,2%	0,2%	0,3%
<b>GAS WATER HEATERS</b>	<b>2558</b>	<b>2190</b>	<b>2263</b>	<b>2083</b>	<b>1942</b>	<b>1621</b>	<b>18.6%</b>	<b>15.3%</b>	<b>14.0%</b>	<b>12.1%</b>	<b>11.0%</b>	<b>8.4%</b>
<b>Gas Instantaneous</b>	<b>2308</b>	<b>1929</b>	<b>1972</b>	<b>1849</b>	<b>1734</b>	<b>1495</b>	<b>16.8%</b>	<b>13.5%</b>	<b>12.2%</b>	<b>10.7%</b>	<b>9.8%</b>	<b>7.8%</b>
13+ Litre/Minute *			295	330					1,8%	1,9%		
10 -<13 Litre/Minute *			1277	1253					7,9%	7,3%		
5 -<10 Litre/Minute *			400	266					2,5%	1,5%		
<b>Gas Storage</b>	<b>250</b>	<b>261</b>	<b>291</b>	<b>234</b>	<b>208</b>	<b>126</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.4%</b>	<b>1.2%</b>	<b>0.7%</b>
<b>Condensing, of which</b>			<b>2</b>	<b>7</b>	<b>15</b>	<b>29</b>			<b>0.0%</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.1%</b>
130L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
160L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
190L			0	0	0	0			0,0%	0,0%	0,0%	0,0%
220L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
>220L			2	6	14	26			0,0%	0,0%	0,1%	0,1%
<b>Non Condensing, of which</b>			<b>289</b>	<b>227</b>	<b>193</b>	<b>97</b>			<b>1.8%</b>	<b>1.3%</b>	<b>1.1%</b>	<b>0.5%</b>
<80L			87	78	70	53			0,5%	0,5%	0,4%	0,3%
80-130L			100	67	50	1			0,6%	0,4%	0,3%	0,0%
160L			53	40	32	10			0,3%	0,2%	0,2%	0,1%
190L			12	11	9	6			0,1%	0,1%	0,1%	0,0%
220L			12	10	10	8			0,1%	0,1%	0,1%	0,0%
>220L			19	17	16	14			0,1%	0,1%	0,1%	0,1%
Open Flue			216	126	69	-78			1,3%	0,7%	0,4%	-0,4%
Fan Flue			69	97	118	168			0,4%	0,6%	0,7%	0,9%
<b>TOTAL (incl. el. showers)</b>	<b>13724</b>	<b>14315</b>	<b>16147</b>	<b>17216</b>	<b>17698</b>	<b>19248</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>



# 4 PRICES & RATES

## 4.1 Introduction

Ingredients of the LCC calculation are:

- Product price;
- Installation costs;
- Energy (gas, oil & electricity) prices;
- Service, maintenance & repair costs;
- Prices of other consumables;
- Disposal tariffs;
- Discount rate (interest minus inflation)
- Average product life expectation.

Annex II of the EuP-Directive provides some guidance regarding the definition of Life Cycle Costs (LCC). The LCC analysis method *'uses a real discount rate on the basis of data provided from the European Central Bank and a realistic lifetime for the EuP; it is based on the sum of the variation in purchase price (resulting from variations in industrial costs) and in operating expenses, which result from the different levels of technical improvement options, discounted over the lifetime of the representative EuP. The operating expenses cover primarily energy consumption and additional expenses in other resources (such as water or detergent).'*

The relevant equation is

$$LCC = PP + PWF * OE$$

where LCC is Life Cycle Costs, PP is the purchase price (incl. installation costs) and OE is the operating expense.

The PWF (Present Worth Factor) is defined as

$$PWF = N * 1 / (1 + r)^N$$

in which N is the product life and r is the discount (interest-inflation) rate.

Eurostat is the source for the energy prices presented in the tables in this chapter. The discrepancy between the lower Eurostat prices versus prices identified by most consumer's associations has been discussed in the MEEUP Methodology Report (VHK 2005), but for the moment it is not possible to make a comprehensive correction Eurostat data for the whole of the EU-25. For that reason we will have to use the Eurostat prices, rounded to the highest near whole number. We will restrict ourselves to energy prices for households, as they are the most relevant for water heaters.

## 4.2 Consumer prices

Prices for combi-boilers have been established in the preparatory Eco-design study for lot 1 CH Boilers. For dedicated water heaters BRG Consult has retrieved list prices (incl. VAT) presented in the tables below.

**Table 4-1. Examples of Water Heater List Prices 2005 in €, by type (BRGC 2006)**

Country	electr. storage	electr. instant.	gas storage	gas instant.	indirect cylinder	solar tank
Austria	-	197	800	520	870	1170
Belgium	-	175	710	336	755	810
Czech Rep.	-	118	540	184	480	
Denmark	300	340	1080	680	620	2000
Estonia	200	156			740	
Finland	-	267			933	
France	-		875		775	1750
Germany	-	330	717		1150	925
Greece	212	130	924	260	802	600
Hungary	162	90	300	166	520	
Ireland	330	250	458	376	122	
Italy	-		523*	402	1130	1356
Latvia	160	134	540	270	840	
Lithuania	-	140		270	880	
Netherlands	-	290		420	660	1180
Poland	166	102	200	268	756	
Portugal	316	167		263	943	
Slovakia	224	98	476	220	348	
Slovenia	150	180		400	500	
Spain	200	164	503	191	1036	975
Sweden	910				1450	2000
UK	-	328		412	319	1820
<b>average</b>	<b>278</b>	<b>192</b>	<b>625</b>	<b>332</b>	<b>756</b>	<b>1326</b>

Type/range	avg. List	countries	prices (EUR incl. VAT)
<b>Electric storage</b>	<b>278</b>		
unpressurised 5 litres	35	AT	35
unpressurised 10-15 litres	87	AT/DE	57/117
unpressurised 15-30	124	AT	124
unpressurised large (UK/IRL)	892	UK	
<b>pressurised 0-10 litres</b>	<b>121</b>	<b>BE/IT</b>	<b>172/70</b>
pressurised 10-30 litres	224	BE/DE/IT/PT	185/436/88/200/209
pressurised <30/15 litres	149	AT/FR/ES	195/170/81
pressurised 30 litres	166	PT/ES	210/121
pressurised up to 50 litres	200	FI/FR/IT/PT/ES	250/164
pressurised 80 litres	248	PT/ES	297/198
pressurised 31-100 litres	263	BE/IT/PT/ES	295/176/320/261
pressurised 101-150 litres	318	BE/FR/IT	379/240/334
pressurised 151-200 litres	387	BE/FR/PT/ES	408/450/340/350
pressurised 30-200 litres	438	AT/DE	290/585
pressurised >200 litres	710	AT/BE/FR/DE	559/470/710/1100
pressurised 50-300 litres	515	FI	515
pressurised 500 litres+	918	FI/FR	725/1100
<b>Gas storage</b>	<b>625</b>		
<80 litres	380	IT	380
80-200 litres	667	IT	667
>200 litres	3823		
<b>Gas instantaneous</b>	<b>332</b>		
5-<10 litres/minute	215	BE/FR/DE/IT/PT/ES	218/217/300/230/220/105
10-<13 litres/minute	286	BE/FR/DE/IT/PT/ES	305/268/355/320/262/205
13+ litres/minute	394	BE/FR/DE/IT/PT/ES	375/335/508/481/350/312

The average EU25 consumer prices that are used to calculate LCC data are presented in Task 5 (Base cases). In the interest of the sensitivity analysis (Task 7/8) the consumer prices, including taxes, for various (clusters of) individual Member States are established through 'country multipliers' for the (street/consumer) prices:

- High: (SV, DK, AT): 2.6 - 2.2 - 2;
- Higher than average (DE, FIN): 1.65 - 1.55;
- Average (Fr, UK/BE/SL, NL/IT): 1.1 - 0.9 - 0.85
- Lower than average (IRL/ES/GR/SK/EE/LT/LV, PO): 0.7 - 0.65
- Low (PL/CZ/HU): 0.5.

#### 4.2.1 Electricity

According to the Eurostat July 2006 news release, electricity prices for EU25-households rose by 4,6% in the year 2005, leading to an average price of € 14,16 per 100 kWh per Jan. 2006. For the Life Cycle Cost calculations (Tasks 5 and 6) a rounded figure of € 0,15/kWh will be used. Over a longer time period, household and industrial electricity prices in the EU15 rose in total by 9% between January 2000 and January 2006. This amounts to a longer-term average annual price increase of 1,5%, to be taken into account in the Life Cycle Cost calculations.

Price changes between January 2005 and January 2006 varied significantly between Member States. For households, the largest price rises were observed in Cyprus (+31,4%), Malta (+23,3%) and the United Kingdom (+14,2%), while prices remained stable in Latvia and Lithuania and fell in Belgium (-2,6%) and Austria (-5,2%).

**Table 4-3. Electricity prices Jan. 2006 in Euro/100 kWh, incl. all taxes, standard household consumer 3500 kWh, of which 1300 kWh/a overnight (Eurostat ref., 90 m<sup>2</sup> dwelling)**

	Jan 2006 (nat. Currency per 100 kWh)	% increase Jan 2006/Jan 2005	<b>Jan 2006 (euro/100 kWh)</b>	Jan 2006 (PPS)*	% taxes
<b>EU25</b>	14,16	4,6	<b>14,16</b>		
<b>Belgium</b>	14,42	-2,6	14,42	13,33	22,1
<b>Czech Republic</b>	283,00	7,6	9,85	15,81	15,8
<b>Denmark</b>	176,25	4,0	23,62	17,17	57,8
<b>Germany</b>	18,32	2,6	18,32	16,65	25,0
<b>Estonia</b>	114,40	7,8	7,31	11,78	15,2
<b>Greece</b>	7,01	1,9	7,01	8,01	8,3
<b>Spain</b>	11,47	4,6	11,47	11,95	18,0
<b>France</b>	12,05	0,9	12,05	10,92	24,9
<b>Ireland</b>	14,90	3,8	14,90	11,95	13,8
<b>Italy</b>	21,08	7,0	21,08	20,23	26,6
<b>Cyprus</b>	8,21	31,4	14,31	15,01	14,4
<b>Latvia</b>	5,77	0,0	8,29	15,37	15,3
<b>Lithuania</b>	24,80	0,0	7,18	13,77	15,2
<b>Luxembourg</b>	16,03	8,5	16,03	13,97	13,3
<b>Hungary</b>	26,95	2,7	10,75	17,14	16,7
<b>Malta</b>	4,07	23,3	9,49	13,26	4,7
<b>Netherlands</b>	20,87	7,3	20,87	19,15	42,2
<b>Austria</b>	13,40	-5,2	13,40	12,47	33,3
<b>Poland</b>	45,45	4,7	11,90	20,05	22,4
<b>Portugal</b>	14,10	2,1	14,10	16,30	5,0
<b>Slovenia</b>	2512,00	1,4	10,49	13,71	16,7
<b>Slovakia</b>	543,00	5,2	14,48	24,48	16,0
<b>Finland</b>	10,78	2,0	10,78	9,38	25,0
<b>Sweden</b>	133,59	5,7	14,35	12,06	39,0
<b>United Kingdom</b>	7,00	14,2	10,20	9,05	4,8

\*=PPS is weighted with purchasing power indicator

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Source: Eurostat, *Electricity prices in the EU in January 2006* "Household electricity prices rose by 5% in 2005, industrial prices up by 16%", news release, July 2006

In absolute values, household electricity prices were highest in January 2006 in Denmark (23,62 euro per 100 kWh), followed by Italy (21,08), the Netherlands (20,87) and Germany (18,32)<sup>4</sup>. The lowest prices were observed in Greece (7,01), Lithuania (7,18), Estonia (7,31) and Latvia (8,29).

When adjusted for purchasing power, household electricity prices in Greece (8,01 PPS3 per 100 kWh) remained the cheapest, followed by the United Kingdom (9,05), Finland (9,38) and France (10,92), while the highest prices were recorded in Slovakia (24,48), Italy (20,23), Poland (20,05) and the Netherlands (19,15).

The share of taxation in household electricity prices varied greatly between Member States, ranging from around 5% in Malta, the United Kingdom and Portugal to more than 40% in Denmark (58%) and the Netherlands (42%).

Electricity prices in the table refer to a household with 3500 kWh/a consumption, of which 1300 kWh overnight, living in a 90 m<sup>2</sup> dwelling.

CECED mentions night-time tariffs for Belgium of € 8,69/100 kWh and for France of € 6,54/100 kWh. It is not specified whether this includes a partitioning of fixed costs.

When using the variations in prices for the sensitivity analysis (Task 7/8), the electricity prices has to be considered in conjunction with the water heater prices (see country multipliers). In some parts of the EU25 like Eastern Europe and the UK, both the absolute electricity prices and the water heater prices are low. In countries like Sweden the water heater prices are high and the electricity prices are low. In the Netherlands and Italy, electricity tariffs are high, whilst boiler prices are moderate, etc..

#### **4.2.2 Natural gas**

Gas prices (all taxes included) for households in the EU25 rose by 16% on average between January 2005 and January 2006. Over a longer time period, household and industrial gas prices in the EU15 rose in total by 34% between January 2000 and January 2006. They followed the same pattern: a strong increase in 2000, four years of relatively stable prices and a further sharp increase in 2005. Over the same period, crude oil prices doubled.

All Member States are largely dependent on imported gas, except for Denmark and the Netherlands, which are self-sufficient, and the United Kingdom, which imports around 7% of the gas it uses.

Price changes between January 2005 and January 2006 varied significantly between Member States. For households, prices rose by more than 25% in Slovakia (+30%), Luxembourg and the Czech Republic (both +27%), Slovenia (+26%) and Ireland (+25%), while prices remained nearly stable in Estonia and increased by less than 10% in Denmark (+5%) and Italy (+8%).

In absolute values, household gas prices were highest in January 2006 in Denmark (29,82 euro per GJ), followed by Sweden (25,95), the Netherlands (16,92) and Italy (16,50). The lowest prices were observed in the three Baltic Member States, Estonia (4,63), Latvia (5,34) and Lithuania (6,24).

However, when adjusted for purchasing power, gas prices in the United Kingdom (7,30 PPS4 per GJ) were the cheapest, followed by Estonia (7,47) and Luxembourg (9,00), while the highest prices were recorded in Sweden (21,81), Denmark (21,68), Slovakia (18,40) and Slovenia (16,97). The share of taxation in gas prices varied greatly between

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<sup>4</sup> UBA reports that in Germany most suppliers provide tariffs especially for use in heat pumps that are about 1/3 cheaper than common household electricity. Electricity prices for electric heating systems are even lower.

Member States, ranging from around 5% in Portugal, the United Kingdom and Luxembourg to more than 40% in Denmark (56%) and Sweden (43%).

For the Life Cycle Cost calculation (Tasks 5 and 6) we will use a value of € 13,- per GJ, which is roughly equivalent to € 0,46/m<sup>3</sup>. Furthermore, we will assume the annual price increase of 5,6% to stretch also into the future.

Regarding the variations in gas price to be taken into account in the sensitivity analysis (Task 7/8), also here we have to consider the context with e.g. water heater prices in the specific countries.

**Table 4-4. Gas prices Jan. 2006 per GJ, incl. all taxes, standard household consumer 83.7 GJ/year**

	January 2006 (nat. currency)	% increase January 2006/2005	January 2006 (euro/GJ)	January 2006 (PPS)*	% taxes Jan. 2006
<b>EU25 (weighted avg.)</b>	13,02	15,6	<b>13,02</b>		
<b>Belgium</b>	13,5	21	13,5	12,48	20,4
<b>Czech Republic</b>	287,97	26,8	10,03	16,09	16
<b>Denmark</b>	222,5	5,2	29,82	21,68	55,8
<b>Germany</b>	15,98	17,8	15,98	14,53	23,3
<b>Estonia</b>	72,52	0,1	4,63	7,47	15,1
<b>Spain</b>	13,63	14,5	13,63	14,2	13,8
<b>France</b>	12,72	20,3	12,72	11,53	15
<b>Ireland</b>	12,51	25,3	12,51	10,03	11,9
<b>Italy</b>	16,5	7,6	16,5	15,83	36,8
<b>Latvia</b>	3,72	17,7	5,34	9,91	15
<b>Lithuania</b>	21,54	15,3	6,24	11,96	15,2
<b>Luxembourg</b>	10,33	26,9	10,33	9	5,7
<b>Hungary</b>	1856,25	21,6	7,4	11,8	13
<b>Netherlands</b>	16,92	11,5	16,92	15,53	34,5
<b>Austria</b>	15,65	17,1	15,65	14,56	31,5
<b>Poland</b>	36,15	17,3	9,46	15,95	18
<b>Portugal</b>	14,52	17,7	14,52	16,79	4,8
<b>Slovenia</b>	3110	25,6	12,99	16,97	22,8
<b>Slovakia</b>	408	29,9	10,88	18,4	16,2
<b>Sweden</b>	241,6	20,4	25,95	21,81	43
<b>United Kingdom</b>	5,65	11,4	8,24	7,3	4,8

Greece, Cyprus and Malta do not have a significant gas market and therefore did not report gas prices. Finland does not have a significant gas market for household consumers and therefore does not report prices for household consumers.

\*= PPS is weighted with purchasing power indicator

Source: Eurostat, Gas prices in the EU in January 2006 "Household gas prices rose by 16% in 2005, industrial prices up by 33%", news release, July 2006

### **4.2.3 Heating Oil**

For heating oil Eurostat has not yet released an overview of developments and the data in the table below were retrieved and analyzed by VHK from various Oil Bulletins 2006, 2005, 2003 published by the European Commission.

The table shows heating oil prices (all taxes included) for households in the EU25 rose by as much as 32% (!) on average between January 2005 and January 2006. The EU25 average for Jan. 2006 was ca. € 645,-/1000 litres, which we will take as an anchorpoint for life cycle costs calculation. This is the price for gas heating oil delivered at a quantity of between 2000 and 5000 litres, free at home.

Over a longer time period, it was found that heating oil prices rose by a total of 11% between Jan. 2003 and 2005. For the period 2000-2002 there was no consistent data set available, but assuming that the price rise was similar to 2003-2005 it was concluded that the long-term average price rise is around 8,2% per year (see table below). This 8,2% is taken to calculate the oil-specific PWF (Present Worth Factor) in

our life cycle cost calculations, starting from the “anchorpoint” of € 645,-/1000 litres mentioned above <sup>5</sup>.

Price changes between January 2005 and January 2006 varied significantly between Member States. For households, prices rose by more than 40% in Malta (+51%), Belgium (+50%), Poland (+48%), United Kingdom (+45%), Finland (+44%) and Luxembourg (42%). (+26%), while price rises in Hungary (+5%), Cyprus (+14%), Italy (+17%), Sweden (+17%) and Slovenia (+18%) remained below the 20%-mark.

In absolute values, household heating oil prices were highest in January 2006 in Italy (1108 euro per 1000 l.), followed by Hungary (1012), Denmark (1004) and Sweden (998). At the lower end prices of around € 520-€ 650 can be found, with the UK, Belgium and many new Member States being the cheapest. The middle segment is represented by the Netherlands (889) and the Czech Republic (712), whereas most of the rest of the EU Member States are in a relatively narrow price range € 530 to € 630, with Luxemburg (€ 524) being the cheapest.

**Table 4-5. Heating oil prices Jan. 2006 in Euro/100 litres incl. all taxes, consumer prices for deliveries between 2000 and 5000 litres free at home.**

	Jan 2006 (nat. Currency per 1000 l.)	% increase Jan 2006/Jan 2005	% increase Jan 2005/Jan 2003	% estimated avg. annual increase 2000-2006	Jan 2006 (euro/1000 l.)	% taxes Jan. 2006
<b>EU25 (weighted avg.)</b>	644,17	32,4	.		<b>644</b>	
<b>EU15 (weighted avg.)</b>	645	32,0	10,6	8,3	<b>645</b>	
<b>Belgique</b>	566	50	9	11	566	21
<b>Cyprus (CYP)</b>	408	14	.		712	15
<b>Czech Republic (CZK)</b>	18162	26	.		630	19
<b>Danmark (DKK)</b>	7489	20	13	7	1004	25
<b>Deutschland</b>	595	37	9	9	595	16
<b>Ellas</b>	581	37	20	12	581	18
<b>Espana</b>	582	20	19	8	582	16
<b>Estonia (EEK)</b>	8450	24	.		540	18
<b>France</b>	631	33	14	9	631	19,6
<b>Hungary (HUF)</b>	252613	5	.		1012	20
<b>Ireland</b>	672	29	12	8	672	13,5
<b>Italia</b>	1108	17	8	5	1108	20
<b>Latvia (LVL)</b>	418	27	.		601	18
<b>Lithuania (LTL)</b>	1821	37	.		527	18
<b>Luxembourg</b>	524	42	14	11	524	12
<b>Malta (MTL)</b>	239	51	.		557	0
<b>Nederland</b>	889	32	6	7	889	19
<b>Österreich</b>	656	32	15	10	656	20
<b>Poland (PLN)</b>	2277	48	.		606	22
<b>Portugal</b>	644	23	12	7	644	12
<b>Slovakia (SKK)</b>	21875	37	.		585	19
<b>Slovenia (SIT)</b>	139800	18	.		584	20
<b>Suomi</b>	609	44	5	9	609	22
<b>Sverige (SEK)</b>	9320	17	21	9	998	25
<b>United Kingdom (GBP)</b>	366	45	18	12	536	5

Source: European Commission, DG TREN, Oil Bulletin, 9 Jan. 2006/3 Jan. 2005/6 Jan. 2003 (gas heating oil data)

<sup>5</sup> Pers. Comm. Eurofuel reports that official DG TREN and Eurostat prices mentioned in the tables for gas and oil are different from prices and rates published by their national members like IWO ([http://www.iwo.de/sites/iwo\\_website/standard.jsp?nodeId=44900&open=x&pagename=TECH\\_HEL\\_PREIS](http://www.iwo.de/sites/iwo_website/standard.jsp?nodeId=44900&open=x&pagename=TECH_HEL_PREIS)), Informazout and Chaleur Fioul.

Please note that prices mentioned above apply to light fuel oil or 'gas heating oil', which is the heating oil used in residential boilers. Specific weight is 0,85 kg/l. and the Gross Calorific Value is approx. 38 GJ per 1000 litres (42,5 MJ/kg). Therefore, a price of € 645/1000 litres is equivalent to € 17,-/GJ. This is around 30% higher than the current natural gas price (€ 13,-/GJ).

#### **4.2.4 Other petroleum products: HFO and LPG**

##### **Heavy Fuel Oil (HFO)**

Apart from gas heating oil, there is also an official price quote from the European Commission's Oil Bulletin for '**heavy fuel oil**' (HFO). HFO is a low-grade fuel primarily used in industrial boilers and other direct source heating applications (i.e., blast furnaces). It is also used as a principal fuel in marine applications in large diesel engines. Given its high boiling point and tar-like consistency, HFO typically requires heating before it can be moved through pipes or dispensed into a boiler or other heating vessel to be burned.

HFO is the least expensive of the refined oil fuels and can only be used by facilities that have preheating capabilities. HFO is typically high in sulphur and other impurities that are released into the air when the fuel is burned. The Oil Bulletin gives price quotes for HFO with sulphur content  $\leq 1\%$  (ca. € 380,-/1000 liters, July 2006) and HFO with sulphur content  $> 1\%$  (ca. € 300,-/1000 litres, July 2006).<sup>6</sup>

##### **Liquefied Petroleum Gas (LPG)**

LPG is a mixture of third family gases (propane 70-80 vol. %, butane 20-30%)<sup>7</sup> that comes from petroleum distillation or from natural gas fields as a by-product. In Europe it is most known for its use in cars. However, it is also used in residential CH boilers and water heaters. The LPG storage tank is filled before/during the heating season by a delivery truck, similarly to the current practice with oil-fired boilers. LPG has a negligible sulphur content and low emissions.

Density is around 0,52 kg/litre and it has a GCV of around to 50 MJ/kg.<sup>8</sup> Per litre the GCV is thus around 25 MJ. LPG Prices from the European Commission's Oil Bulletin, Jan. 2006, are given below. The (straight) average price is estimated at € 570 per 1000 litres. An additional analysis shows that per litre the prices are on average some 16% lower than those of gas heating oil. However, per GJ the LPG is around 23% higher on average (€ 23/GJ).

Pricing strategy varies widely between Member States. For instance, in Hungary (7%), Italy (10%) and the Netherlands (0,3%) LPG prices also per GJ are cheaper than those for gas heating fuel oil.

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<sup>6</sup> To calculate prices per GJ for HFO: The density of HFO is higher than that of gas heating oil (0,94 kg/dm<sup>3</sup>) and the Gross Calorific Value of HFO per weight unit is lower than that of (approx. 40 MJ/kg), therefore also here—as with gas heating oil—there is a conversion of 38 GJ (GCV) per 1000 litres.

<sup>7</sup> This also known as 'LPG Mix'. As bottled gas it is also often referred to as 'propane'. Pure or almost pure propane also exists ('LPG Propane') but for industrial use there is also 'LPG propane' and 'LPG Butane' which contains also

<sup>8</sup> <http://www.lpga.co.uk/TypicalPropofCommercialLPG.htm>



**Table 4-6. LPG prices Jan. 2006 in Euro/100 litres incl. all taxes, consumer prices for deliveries between 2000 and 5000 litres free at home.**

	Jan 2006 (euro/1000 l.)	price compared to gas	
		heating oil per litre	price compared to gas heating oil per GJ
<b>EU 25 (straight avg.)</b>	<b>568</b>	-16%	+23%
Belgique	534	-6%	+30%
Cyprus (CYP)	.		
Czech Republic (CZK)	535	-18%	+23%
Danmark (DKK)	.		
Deutschland	562	-6%	+30%
Ellas	.		
Espana	590	+1%	+35%
Estonia (EEK)	499	-8%	+29%
France	692	+9%	+40%
Hungary (HUF)	621	-63%	-7%
Ireland	.		
Italia	664	-67%	-10%
Latvia (LVL)	487	-23%	+19%
Lithuania (LTL)	485	-9%	+28%
Luxembourg	513	-2%	+33%
Malta (MTL)	.		
Nederland	583	-52%	-0%
Österreich	.		
Poland (PLN)	568	-7%	+30%
Portugal	593	-9%	+29%
Slovakia (SKK)	607	+4%	+37%
Slovenia (SIT)	552	-6%	+30%
Suomi	.		
Other (SEK)	.		
United Kingdom (GBP)	.		

Source: European Commission, DG TREN, Oil Bulletin, 9 Jan. 2006; comparative analysis by VHK 2006

When recalculated to 1 GJ of energy the average EU25 energy prices for these energy sources compare as follows:

<b>Table 4-7. Energy prices per GJ</b>		
Energy type	euro/GJ	calculated:
electric (grid)	39	1 kWh = 3.6 MJ
gas (GCV)	13	(given)
oil (GCV)	17	@ 0.85kg/ltr @ 42,5 GJ NCV/1000kg @ NCV/GCV = 0.95 = 38GJ GCV



# **Annex A: Country-section**



*Preparatory Study on*

# **Eco-design of Water Heaters**

Task 2 Report

**Market Analysis COUNTRY REPORT**

BRG CONSULT for VHK

*Michael Denison-Pender*

*Andrea Corso*

With contributions, final editing & lay-out by VHK

**Delft, 2 July 2007**

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# 1

## MARKET ANALYSIS METHODOLOGY

### 1.1 Definitions and Classifications

The analysis that follows covers all types of product that are used, directly or indirectly, to provide sanitary hot water (including hot water for personal washing and for kitchen use).

The broad categories are listed in Fig. 2.1. It can be seen that the analysis covers both **water heating linked to central heating** (where the central heating boiler is the heat generator for the sanitary hot water) and **dedicated water heaters** (where the sole purpose of the heat generator is to provide sanitary hot water). Not covered by the sales numbers is direct sanitary hot water supply from district heating, although this is included in the park analysis.

The above coverage of sanitary water heating includes products that fall both within and outside the scope of the Eco-Design Study (Lot 2):

- falling outside the of Lot 2 scope (but mostly within the scope of Lot 1) are:
  - direct (instantaneous) water heating by the central heating boiler (essentially combi boilers)
  - indirect cylinders that are integrated into the central heating boiler (including those integrated into combi boilers). These are considered to be a part of the boiler
- falling within the scope of Lot 2:
  - separate indirect cylinders (although Lot 2 considers these to be components since they do not on there own generate the hot water)
  - all dedicated water heaters.

All water heating can be divided into:

- direct/instantaneous/flow through water heating, where the water is heated on demand and there is no storage tank. This for of water heating is associated with:
  - combi boilers (although some have supplementary storage to boost the initial flow rate)
  - instantaneous water heaters (electric and gas)
- storage water heating, where the water is pre-heated and stored in a tank.

### 1.2 Usage Analysis

In many ways the water heaters market is more complex than the boiler market. Not only is the water heating function divided between that which is linked to the boiler and that which is dedicated, but there is also a great variety of usage patterns.

At the most basic level, a distinction needs to be made between:

- **primary water heating**, used by BRG CONSULT to describe appliances that provide the main supply of sanitary hot water to the dwelling
- **secondary water heating**, used by BRG CONSULT to describe water heaters that have a supplementary role (usually in supplying hot water to just one room or location in dwellings that already have a primary water heating appliance).

Although for the sake of manageability BRG CONSULT's park modelling uses these two broad distinctions, in practice there are many sub-variants that need to be taken into account when, for examples calculating average tapping patterns. For example:

- there is likely to be a significant differences in tapping cycles of primary water heaters in second homes than in primary residences. It is suggested than for secondary residences an average of 100 days use a year might be assumed
- some dwellings with district heating also have a primary water heater to use as a back-up for when the district heating system breaks down or is shut down for annual maintenance
- while it can generally be assumed that each dwelling has just one primary (multi-point) water heating appliance, it is known that in Germany many dwellings use more than one instantaneous electric water heater (BRG CONSULT has allowed for this in its park model)
- secondary water heating encompasses a wide range of usage/tapping patterns, from daily to very occasional use
- in the UK and Ireland, the situation is complicated by the large park and sales of dedicated instantaneous electric showers. These are classified by BRG CONSULT as secondary, but some are subject to very frequent use.

Thus any modelling of the water heating park is likely to be simplification, and BRG CONSULT has used some basic parameters to distinguish between primary and secondary water heating, while at the same time building in allowances for the most evident exceptions.

Before looking at these classifications, it is worth setting out some basic hypotheses of usage patterns for domestic hot water.

According to industry estimates, the "classic" household usage of hot water is around 110 litres a day. According to the building standards and independent surveys the average usage of an EU household is the equivalent of around 75 litres of 60°C hot water (see Task 3 Report). The lowest usage of a primary water heater can be in the range of 30-40 litres per day and high usage families can consume up to 200 litres a day. On average, most recent building standards would agree on a consumption of around 30 litres per person per day. Older studies, e.g. the ones cited in the 1997 SAVE studies, mention an average of 36 litres per person per day. In general these averages are said to apply to Monday-Saturday, with Sunday usage being on average considerably higher. Usage in southern Member States is likely to be lower than in the north.

The size or capacity of water heater needed to ensure sufficient hot water for the family varies according to such factors as climate and electricity supply. As a starting point, BRG CONSULT has adopted the following classifications to distinguish between primary and secondary water heating:

	<b>Multi-point/primary</b>	<b>Single point/secondary</b>
<b>Daily usage</b>	Principle source of hot water	Sole water heating for single room
<b>Occasional usage</b>	Back-up/seasonal	Guest room, garage, garden shed, caravan etc.

As far as primary electric storage water heaters are concerned, the tendency is for countries without night rate tariffs to see demand concentrated in the 80-100 litres range, while in France, where night rate tariffs are offered, demand is concentrated in the 150+ litre ranges.

For instantaneous gas water heaters, BRG CONSULT has assumed that in the main Mediterranean markets, primary water heaters start at 10 litres/minute, while in the northern countries the threshold is taken as 13 litres/minute.

### 1.3 Methodology and Sources for Sales and Stock Data

The sales data are derived from BRG CONSULT's database up to base year 2005.

The main purpose of attempting an analysis of the park of water heaters per EU Member State is to provide a basis for evaluating energy use and emissions by water heaters.

Existing data on the park of water heaters in most EU countries are extremely scarce and unreliable.

Function	Water Heater Categories
Mainly primary	All water heating derived from central heating boiler/heat exchanger All storage water heaters >50 litres Instantaneous gas 13+ litres/minute (10+ litres in Italy, Spain & Portugal) Instantaneous electric 12 kW+ All dedicated solar thermal water tanks
Mainly secondary	Instantaneous electric <12 kW All instantaneous gas <13 litres/minute (<10 litres in Italy, Spain & Portugal) All storage <50 litres

In order to get to a set of workable estimates, BRG CONSULT has been obliged to adopt a pragmatic modelling approach based on its own historical sales data and its boiler park estimates, together with any independent water heater park data that park may be available.

It has been necessary to start with certain basic assumptions, and then to adapt these in countries where reality checks suggest that this is required:

- it is assumed that if the central heating boiler/generator (including district heating) also provides SHW, that this is always the household's primary source of hot water
- assumptions have been made about the proportion of different types of central heating boiler that also produce SHW:
  - for combi boilers, it is assumed that this is 100% of the park
  - for non combi individual boilers (including almost all individual floor standing boilers) assumptions have been guided by BRG CONSULT's estimated of the proportion of boilers that are sold with indirect cylinders (while recognising that some boilers sold without cylinders might eventually still be connected to a cylinder)
  - for collective and district heating, a good deal of guesswork has been involved, and BRG CONSULT would particularly welcome any stakeholder inputs. It is generally assumed that:
    - in dwellings connected to DH is it assumed that SHW is usually also provided, and only in an average 10-15% of cases a primary water heater is needed
    - about 25-30% of dwellings on collective systems use dedicated water heaters as their primary source of sanitary hot water. However, for example in Italy SNAM/DOXA studies (available up to 1995) suggests that only some 40% of dwellings on collective heating derive their SHW from the same source

On this basis it was possible to estimate the total number of dwellings in which SHW is provided by the same source providing hot water for the space heating system. Of those, BRG CONSULT already had an estimate of the park of combi boilers, whereas the split of indirect cylinders was estimated on the basis of historical sales in each country. The balance of dwellings is therefore expected to have some form of dedicated water heating.

The mix of primary dedicated water heater types in was estimated on the basis of historical (2000-2005) water heater sales in each country. Therefore if in country X it is

estimated that say 100 dwellings have a dedicated water heater, we looked at the mix of sales in country X over the last 5 years, and applied the same percentage split to those 100 dwellings.

This approach is justifiable under the assumption that the majority of water heater sales are now for replacement. However when this did not appear to be the case in any given country (i.e. sales have been growing or declining more quickly over the last 5 years than the natural replacement trends would suggest), this was taken into account and appropriate adjustments were made.

As far as secondary water heaters are concerned, because it is very difficult to make assumptions as to how many dwellings may have one (or several – and how many) such appliances installed, an estimate was made under the simplifying assumption that all secondary water heaters have an average life of 15 years (with the exception of instantaneous showers in Ireland and the UK, and instantaneous electric in Germany and Poland, which are estimated to have an average life of 8 years).

It is recognised that this approach is somewhat “soft”. However a check of the average number of secondary water heaters per dwelling does not throw up any unreasonable values, considered within the specific context of each country culture and habits.

The table on the next page gives an overview of some of the quantitative assumptions regarding the use of dedicated water heaters in dwellings that have wet space heating systems.

## **1.4 Reporting**

The 2004 park data per EU Member State, excluding Malta, Cyprus and Luxembourg, are given in two large summary tables on the following pages. The first table, already presented in the previous section is given in '000 units and the second table gives the percentage of the country totals. The first segmentation is between primary and secondary water heaters. The second segmentation is per type.

A sales data table, containing 1990-2010 figures split up by various technical segments, and a short discussion of the trends is given in separate chapters per country. For the EU a summary table, which includes a very preliminary 2020 forecast, is given.

**Table 1-1. TOTAL EU DOMESTIC WATER HEATER PARK 2004, ASSUMED % DEDICATED WH IN DWELLINGS WITH WET SYSTEM HEATING (BRGC 2006)**

<b>% Dedicated WH in Dwellings</b>	<b>A</b>	<b>B</b>	<b>CZ</b>	<b>DK</b>	<b>EST</b>	<b>SF</b>	<b>F</b>	<b>D</b>	<b>GR</b>	<b>H</b>	<b>IRL</b>	<b>I</b>	<b>LV</b>	<b>LIT</b>	<b>NL</b>	<b>PL</b>	<b>P</b>	<b>SK</b>	<b>RS</b>	<b>E</b>	<b>S</b>	<b>UK</b>
with District Heating	15%	-	2%	5%	10%	5%	1%	37%	-	8%	-	-	-	-	10%	10%	-	5%	20%	-	-	-
with Collective Heating	15%	30%	30%	10%	30%	15%	20%	40%	15%	30%	10%	60%	20%	30%	25%	25%	30%	30%	-	15%	-	5%
with Individual Heating, of which	18%	28%	20%	15%	36%	30%	17%	21%	34%	9%	6%	8%	39%	38%	6%	26%	6%	57%	36%	11%	13%	6%
Gas Wall Hung Cast Iron	-	-	-	-	-	-	-	-	-	-	6%	-	-	-	-	-	-	-	-	-	-	5%
Gas Wall Hung Non-Cond.	12%	10%	7%	5%	30%	-	3%	2%	2%	8%	6%	1%	10%	-	5%	15%	3%	5%	2%	-	30%	5%
Gas Wall Hung Condensing	20%	5%	15%	5%	30%	-	10%	20%	-	10%	8%	5%	10%	-	6%	20%	-	15%	20%	-	20%	5%
Gas Atmospheric Back	-	-	-	-	-	-	-	-	-	-	10%	-	-	-	-	-	-	-	-	-	-	5%
Gas Floor Stand. Atmosph.	8%	40%	30%	25%	35%	-	30%	25%	-	10%	10%	30%	50%	50%	10%	50%	10%	75%	40%	8%	-	5%
Gas Floor St. Jet Burner	35%	35%	-	20%	-	-	-	20%	35%	10%	-	40%	50%	50%	-	20%	10%	-	40%	35%	20%	5%
Oil Jet Burner	35%	35%	-	20%	35%	30%	30%	30%	35%	10%	4%	40%	50%	50%	-	20%	10%	-	40%	35%	20%	15%
Solid Fuel	5%	70%	30%	30%	35%	30%	30%	30%	35%	10%	10%	40%	50%	50%	20%	30%	20%	70%	40%	30%	30%	5%
Electric Boilers	-	-	100%	-	90%	30%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5%
Heat Pumps	50%	-	-	20%	-	20%	30%	30%	-	-	-	50%	-	-	20%	-	-	-	-	-	5%	-
<b>Total % WH in Dwellings with Wet System Heating</b>	<b>17%</b>	<b>28%</b>	<b>13%</b>	<b>8%</b>	<b>15%</b>	<b>15%</b>	<b>17%</b>	<b>30%</b>	<b>28%</b>	<b>10%</b>	<b>6%</b>	<b>22%</b>	<b>11%</b>	<b>12%</b>	<b>9%</b>	<b>17%</b>	<b>9%</b>	<b>29%</b>	<b>30%</b>	<b>12%</b>	<b>5%</b>	<b>6%</b>

Table 1-2. TOTAL EU DOMESTIC WATER HEATER PARK 2004 \* in % of country totals (BRGC for VHK 2006)

	A	B	CZ	DK	EST	SF	F	D***	GR	H	IRL	I	LV	LIT	NL	PL	P	SK	RS	E	S	UK	EU-22
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
<b>PRIMARY</b>																							
<b>District Heating</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>15</b>	<b>22</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>14</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>1,5</b>
<b>Linked to Boiler</b> , of which	<b>47</b>	<b>47</b>	<b>51</b>	<b>44</b>	<b>16</b>	<b>31</b>	<b>46</b>	<b>46</b>	<b>27</b>	<b>37</b>	<b>83</b>	<b>55</b>	<b>17</b>	<b>23</b>	<b>82</b>	<b>31</b>	<b>4</b>	<b>24</b>	<b>44</b>	<b>27</b>	<b>63</b>	<b>83</b>	<b>49</b>
Combi Boilers	6,1	21,0	23,9	0,8	3,7	0,0	28,1	6,4	0,6	14,6	2,1	48,6	4,7	7,1	70,8	7,3	3,4	15,0	5,4	20,4	0,0	30,9	23,3
Indirect Cylinders Integrated	3,7	6,9	0,0	8,9	0,0	19,8	9,0	6,8	3,1	0,0	0,0	3,2	0,0	0,0	0,4	3,2	0,4	0,0	2,7	3,1	41,9	0,0	4,8
Indirect Cylinders Separate	36,1	18,9	26,8	33,1	12,6	11,2	9,1	32,1	22,7	22,7	81,4	3,4	12,6	15,8	10,4	20,1	0,7	9,1	35,9	3,5	20,4	51,7	20,7
Solar Thermal (Combined)	1,4	0,0	0,0	1,6	0,0	0,0	0,0	0,4	0,1	0,0	0,0	0,0	0,0	0,0	0,4	0,0	0,0	0,0	0,0	0,0	0,2	0,0	0,1
<b>Dedicated</b> , of which	<b>50</b>	<b>53</b>	<b>42</b>	<b>41</b>	<b>62</b>	<b>61</b>	<b>53</b>	<b>53</b>	<b>73</b>	<b>60</b>	<b>17</b>	<b>45</b>	<b>71</b>	<b>63</b>	<b>17</b>	<b>61</b>	<b>96</b>	<b>68</b>	<b>54</b>	<b>73</b>	<b>25</b>	<b>17</b>	<b>50</b>
Solar Thermal (WH Only)	5,5	0,4	0,0	2,5	0,0	0,0	0,1	1,8	11,4	0,0	0,0	0,2	0,0	0,0	1,1	0,0	0,0	0,0	0,0	0,5	1,4	0,0	0,9
Electric Instantaneous >12 kW	2,3	0,2	1,9	0,3	2,4	0,6	0,0	29,3	0,7	0,0	4,2	0,0	1,7	3,8	0,1	7,2	0,2	5,3	0,1	0,4	0,1	8,2	7,1
Electric Storage >30 litres	42,2	33,4	35,6	37,9	58,7	60,5	45,9	13,4	61,1	43,2	8,6	35,3	68,8	59,2	11,2	50,2	13,5	52,5	53,5	29,3	23,9	7,9	28,8
Gas Instantaneous 13+ l/m	0,0	17,3	0,0	0,0	0,5	0,0	5,6	4,9	0,1	6,4	0,0	6,8	0,0	0,0	3,5	0,0	81,4	0,9	0,5	42,5	0,0	0,0	10,7
Gas Storage	0,3	2,0	4,8	0,2	0,0	0,0	1,7	3,5	0,1	10,7	3,8	2,5	0,5	0,0	1,5	3,8	0,4	8,8	0,0	0,4	0,0	1,2	2,1
<b>Total Primary (A)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
<b>SECONDARY</b>																							
<b>Electric Storage</b> , of which	<b>85</b>	<b>75</b>	<b>54</b>	<b>94</b>	<b>44</b>	<b>71</b>	<b>63</b>	<b>88</b>	<b>88</b>	<b>59</b>	<b>9</b>	<b>99</b>	<b>65</b>	<b>35</b>	<b>73</b>	<b>19</b>	<b>28</b>	<b>46</b>	<b>98</b>	<b>33</b>	<b>92</b>	<b>8</b>	<b>57</b>
<30 Litres Pressurised	17,3	59,9	34,8	89,4	40,7	70,6	21,8	1,6	8,9	14,2	5,9	99,2	45,1	19,1	67,6	19,1	28,3	37,8	42,9	32,6	92,0	4,4	24,1
<30 Litres Unpressurised	68,0	15,0	19,6	4,2	3,1	0,0	40,8	86,9	79,1	45,1	3,0	0,0	19,4	16,0	5,3	0,0	0,0	8,6	55,2	0,4	0,0	3,2	33,1
<b>Electric Instantaneous (&lt;12 kW)</b>	<b>1</b>	<b>1</b>	<b>26</b>	<b>4</b>	<b>21</b>	<b>29</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>90</b>	<b>0</b>	<b>17</b>	<b>36</b>	<b>1</b>	<b>30</b>	<b>6</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>84</b>	<b>24</b>
<b>Gas Instantaneous</b> , of which	<b>14</b>	<b>24</b>	<b>20</b>	<b>3</b>	<b>35</b>	<b>0</b>	<b>37</b>	<b>6</b>	<b>5</b>	<b>41</b>	<b>1</b>	<b>1</b>	<b>19</b>	<b>28</b>	<b>26</b>	<b>50</b>	<b>65</b>	<b>18</b>	<b>2</b>	<b>67</b>	<b>0</b>	<b>8</b>	<b>18</b>
5 -<10 Litres/Minute	0,0	9,0	0,0	0,0	19,6	0,0	37,4	0,4	1,1	19,6	0,0	0,8	0,0	0,0	13,2	0,0	65,3	13,8	0,8	66,9	0,0	0,0	9,0
10 -<13 Litres/Minute *	13,6	14,8	19,6	2,8	15,2	0,0	0,0	5,7	3,9	20,9	0,6	0,0	18,5	28,5	12,6	50,4	0,0	3,9	1,0	0,0	0,0	8,4	9,3
<b>Total Secondary (B)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Avg Secondary per Dwelling	0,34	0,48	0,31	0,08	0,11	0,03	0,13	0,45	0,08	0,22	0,81	0,22	0,08	0,12	0,28	0,34	0,07	0,19	0,55	0,23	0,00	0,48	0,32
All Water Heaters (A + B)	1,34	1,48	1,31	1,08	1,11	1,03	1,13	1,45	1,08	1,22	1,81	1,22	1,08	1,12	1,28	1,34	1,07	1,19	1,55	1,23	1,00	1,48	1,32

\* For Italy, Portugal and Spain Gas Instantaneous 10 -<13 Litres/Minute are considered as primary; \*\*\* For Germany, refers to products not dwellings

NB: does not include Cyprus, Luxembourg and Malta



**Table 1-3. TOTAL EU DOMESTIC WATER HEATER PARK 2004 (BRGC for VHK 2006)**

UNITS	A	B	CZ	DK	EST	SF	F	D***	GR	H	IRL	I	LV	LIT	NL	PL	P	SK	RS	E	S	UK	Total EU-22	% EU-22
PRIMARY																								
<b>District Heating</b>	<b>74</b>	<b>0</b>	<b>189</b>	<b>212</b>	<b>55</b>	<b>152</b>	<b>120</b>	<b>441</b>	<b>0</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>95</b>	<b>32</b>	<b>650</b>	<b>0</b>	<b>100</b>	<b>13</b>	<b>0</b>	<b>329</b>	<b>0</b>	2 606	<b>1,5%</b>
<b>Linked to Boiler, of which</b>	<b>1378</b>	<b>1671</b>	<b>1364</b>	<b>643</b>	<b>41</b>	<b>589</b>	<b>12096</b>	<b>15071</b>	<b>1308</b>	<b>1326</b>	<b>1105</b>	<b>14387</b>	<b>87</b>	<b>155</b>	<b>4899</b>	<b>2427</b>	<b>234</b>	<b>291</b>	<b>295</b>	<b>5619</b>	<b>1717</b>	<b>20598</b>	87 301	<b>48,9%</b>
Combi Boilers	179	749	642	12	9	0	7356	2095	31	519	27	12672	24	48	4230	576	176	181	36	4249	0	7711	41 523	23,3%
Indirect Cylinders Integrated	107	247	0	129	0	377	2353	2248	153	0	0	834	0	0	23	257	23	0	18	640	1150	0	8 558	4,8%
Indirect Cylinders Separate	1052	674	722	478	32	213	2383	10581	1119	807	1077	878	63	107	621	1595	35	110	240	724	560	12886	36 958	20,7%
Solar Thermal (Combined)	40	1	0	24	0	0	4	147	6	0	0	3	0	0	26	0	0	0	0	6	6	0	263	0,1%
<b>Dedicated, of which</b>	<b>1465</b>	<b>1900</b>	<b>1139</b>	<b>591</b>	<b>155</b>	<b>1163</b>	<b>13928</b>	<b>17427</b>	<b>3614</b>	<b>2150</b>	<b>219</b>	<b>11668</b>	<b>357</b>	<b>425</b>	<b>1043</b>	<b>4855</b>	<b>5018</b>	<b>815</b>	<b>362</b>	<b>15241</b>	<b>699</b>	<b>4337</b>	88 572	<b>49,6%</b>
Solar Thermal (WH Only)	159	13	0	36	0	0	36	587	559	0	0	53	0	0	66	0	0	0	0	105	39	7	1 661	0,9%
Electric Instantaneous >12 kW	67	6	50	4	6	11	0	9659	36	0	55	0	9	25	7	572	11	64	1	82	4	2044	12 713	7,1%
Electric Storage >30 litres	1230	1192	958	548	148	1152	11992	4421	3010	1541	113	9198	346	399	672	3985	711	634	358	6120	656	1978	51 360	28,8%
Gas Instantaneous 13+ l/m	0	619	0	0	1	0	1462	1621	6	226	0	1775	0	0	208	0	4276	11	3	8860	0	0	19 069	10,7%
Gas Storage	9	70	131	3	0	0	439	1139	3	383	51	643	2	0	90	299	20	107	0	74	0	307	3 769	2,1%
<b>Total Primary (A)</b>	<b>2917</b>	<b>3571</b>	<b>2692</b>	<b>1446</b>	<b>251</b>	<b>1904</b>	<b>26144</b>	<b>32938</b>	<b>4922</b>	<b>3562</b>	<b>1323</b>	<b>26055</b>	<b>503</b>	<b>674</b>	<b>5974</b>	<b>7933</b>	<b>5252</b>	<b>1207</b>	<b>670</b>	<b>20860</b>	<b>2745</b>	<b>24935</b>	178 479	<b>100%</b>
<i>in % of total</i>	<i>1,6%</i>	<i>2,0%</i>	<i>1,5%</i>	<i>0,8%</i>	<i>0,1%</i>	<i>1,1%</i>	<i>14,6%</i>	<i>18,5%</i>	<i>2,8%</i>	<i>2,0%</i>	<i>0,7%</i>	<i>14,6%</i>	<i>0,3%</i>	<i>0,4%</i>	<i>3,3%</i>	<i>4,4%</i>	<i>2,9%</i>	<i>0,7%</i>	<i>0,4%</i>	<i>11,7%</i>	<i>1,5%</i>	<i>14,0%</i>	<i>100,0%</i>	
SECONDARY																								
<b>Electric Storage, of which</b>	<b>1166</b>	<b>1329</b>	<b>672</b>	<b>204</b>	<b>30</b>	<b>53</b>	<b>1409</b>	<b>15411</b>	<b>379</b>	<b>545</b>	<b>99</b>	<b>6157</b>	<b>51</b>	<b>53</b>	<b>1410</b>	<b>813</b>	<b>101</b>	<b>169</b>	<b>432</b>	<b>1648</b>	<b>18</b>	<b>927</b>	33 077	<b>18,5%</b>
<30 Litres Pressurised	237	1064	429	195	28	53	491	271	38	130	66	6157	35	29	1308	813	101	138	189	1630	18	537	13 958	7,8%
<30 Litres Unpressurised	929	266	242	9	2	0	919	15139	341	415	33	0	15	24	102	0	0	31	243	19	0	390	19 120	10,7%
<b>Electric Instantaneous (&lt;12 kW)</b>	<b>14</b>	<b>23</b>	<b>320</b>	<b>8</b>	<b>15</b>	<b>22</b>	<b>0</b>	<b>941</b>	<b>30</b>	<b>1</b>	<b>999</b>	<b>0</b>	<b>13</b>	<b>55</b>	<b>24</b>	<b>1296</b>	<b>23</b>	<b>131</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>10145</b>	14 071	<b>7,9%</b>
<b>Gas Instantaneous, of which</b>	<b>186</b>	<b>423</b>	<b>241</b>	<b>6</b>	<b>24</b>	<b>0</b>	<b>843</b>	<b>1073</b>	<b>22</b>	<b>372</b>	<b>7</b>	<b>47</b>	<b>15</b>	<b>43</b>	<b>500</b>	<b>2146</b>	<b>233</b>	<b>64</b>	<b>8</b>	<b>3347</b>	<b>0</b>	<b>1018</b>	10 619	<b>5,9%</b>
5 -<10 Litres/Minute	0	160	0	0	13	0	843	76	5	181	0	47	0	0	256	0	233	50	4	3347	0	0	5 214	2,9%
10 -<13 Litres/Minute *	186	263	241	6	10	0	0	998	17	192	7	0	15	43	245	2146	0	14	5	0	0	1018	5 405	3,0%
<b>Total Secondary (B)</b>	<b>1366</b>	<b>1775</b>	<b>1233</b>	<b>218</b>	<b>68</b>	<b>76</b>	<b>2252</b>	<b>17425</b>	<b>431</b>	<b>919</b>	<b>1105</b>	<b>6204</b>	<b>79</b>	<b>152</b>	<b>1934</b>	<b>4255</b>	<b>358</b>	<b>365</b>	<b>441</b>	<b>5004</b>	<b>20</b>	<b>12090</b>	57 767	<b>32,4%</b>
<i>in % of total</i>	<i>2,4%</i>	<i>3,1%</i>	<i>2,1%</i>	<i>0,4%</i>	<i>0,1%</i>	<i>0,1%</i>	<i>3,9%</i>	<i>30,2%</i>	<i>0,7%</i>	<i>1,6%</i>	<i>1,9%</i>	<i>10,7%</i>	<i>0,1%</i>	<i>0,3%</i>	<i>3,3%</i>	<i>7,4%</i>	<i>0,6%</i>	<i>0,6%</i>	<i>0,8%</i>	<i>8,7%</i>	<i>0,0%</i>	<i>20,9%</i>	<i>100,0%</i>	
Ava Secondary per Dwelling	0.34	0.48	0.31	0.08	0.11	0.03	0.13	0.45	0.08	0.22	0.81	0.22	0.08	0.12	0.28	0.34	0.07	0.19	0.55	0.23	0.00	0.48	0.32	
<b>All Water Heaters (A + B)</b>	<b>4283</b>	<b>5346</b>	<b>3924</b>	<b>1664</b>	<b>319</b>	<b>1980</b>	<b>28397</b>	<b>50363</b>	<b>5353</b>	<b>4481</b>	<b>2428</b>	<b>32259</b>	<b>582</b>	<b>827</b>	<b>7909</b>	<b>12188</b>	<b>5609</b>	<b>1571</b>	<b>1110</b>	<b>25863</b>	<b>2765</b>	<b>37025</b>	236 246	<b>132,4%</b>
All non-integrated **	3923	4350	3093	1311	255	1451	18568	45579	5170	3876	2401	18754	499	683	3624	10705	5411	1290	1043	20975	1286	29313	183 559	102,8%

\* For Italy, Portugal and Spain Gas Instantaneous 10 -<13 Litres/Minute are considered as primary ; \*\* Dedicated Water Heaters plus Separate Indirect Cylinders; \*\*\* For Germany, refers to products not dwellings

NB: does not include Cyprus, Luxembourg and Malta



MARKET ANALYSIS

**WATER HEATER MARKET:  
COUNTRY ANALYSES**



## 2 EUROPEAN UNION

This country section is preceded by an EU summary table, which also contains a very preliminary **forecast for 2020**, as required by contract. The 2020 forecast by VHK is based on a linear extrapolation of 2000-2010 trends as indicated by the BRGC model and can hopefully be improved upon in later drafts. Given the preliminary nature, the 2020 forecasts were not included in the country sales table.

**Table 2-1. EU Water Heater Sales TECHNICAL SEGMENTATION in '000 units and % of total (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	2020*	% 1990	% 1995	% 2000	% 2005	% 2010*	% 2020*
<b>COMBI BOILERS</b>	<b>2029</b>	<b>2639</b>	<b>3774</b>	<b>4481</b>	<b>4576</b>	<b>5379</b>	<b>14,8%</b>	<b>18,4%</b>	<b>23,4%</b>	<b>26,0%</b>	<b>25,9%</b>	<b>27,9%</b>
Combi Boilers	1988	2533	3537	4233	4311	5086	14,5%	17,7%	21,9%	24,6%	24,4%	26,4%
Combi Boilers (Storage only)	41	105	237	248	265	293	0,3%	0,7%	1,5%	1,4%	1,5%	1,5%
<b>INDIRECT CYLINDERS</b>	<b>1889</b>	<b>2066</b>	<b>2156</b>	<b>2316</b>	<b>2800</b>	<b>3444</b>	<b>13,8%</b>	<b>14,4%</b>	<b>13,4%</b>	<b>13,5%</b>	<b>15,8%</b>	<b>17,9%</b>
Indirect Cylinders Integrated	312	324	351	384	411	472	2,3%	2,3%	2,2%	2,2%	2,3%	2,5%
Indirect Cylinders Separate	1577	1640	1622	1641	1724	1825	11,5%	11,5%	10,0%	9,5%	9,7%	9,5%
Solar Storage Tanks		103	170	249	543	916		0,7%	1,1%	1,4%	3,1%	4,8%
Gas WH: Ind. Cyl. Buffer Storage			13	43	122	231			0,1%	0,2%	0,7%	1,2%
												0,0%
60-80L			234	290	402	571			1,4%	1,7%	2,3%	3,0%
80-120L			630	710	982	1335			3,9%	4,1%	5,6%	6,9%
120-200L			603	576	650	697			3,7%	3,3%	3,7%	3,6%
200-500L			345	330	315	286			2,1%	1,9%	1,8%	1,5%
500-1000L			105	112	125	145			0,7%	0,6%	0,7%	0,8%
>1000L			43	66	91	139			0,3%	0,4%	0,5%	0,7%
						0						0,0%
Coil System			1661	1686	1940	2220			10,3%	9,8%	11,0%	11,5%
Plate to Plate System			298	391	605	911			1,8%	2,3%	3,4%	4,7%
<b>ELECTRIC WATER HEATERS</b>	<b>7248</b>	<b>7420</b>	<b>7955</b>	<b>8335</b>	<b>8379</b>	<b>8804</b>	<b>52,8%</b>	<b>51,8%</b>	<b>49,3%</b>	<b>48,4%</b>	<b>47,3%</b>	<b>45,7%</b>
<b>Electric Storage</b>	<b>5629</b>	<b>5450</b>	<b>5652</b>	<b>5905</b>	<b>5973</b>	<b>6295</b>	<b>41,0%</b>	<b>38,1%</b>	<b>35,0%</b>	<b>34,3%</b>	<b>33,8%</b>	<b>32,7%</b>
≤ 30 (Unpressurised)			1264	1034	986	708	-	-	7,8%	6,0%	5,6%	3,7%
≤ 30 L (Pressurised)			844	893	873	902			5,2%	5,2%	4,9%	4,7%
> 30 (Pressurised), of which			3544	3978	4115	4685	-	-	22,0%	23,1%	23,2%	24,3%
80L			1699	1785	1701	1704			10,5%	10,4%	9,6%	8,9%
100L			477	542	532	587			3,0%	3,1%	3,0%	3,1%
150L			416	473	502	588			2,6%	2,7%	2,8%	3,1%
200L			742	909	1056	1369			4,6%	5,3%	6,0%	7,1%
400L			210	270	323	436			1,3%	1,6%	1,8%	2,3%
<b>El. Instantaneous (excl. showers)</b>	<b>1619</b>	<b>1970</b>	<b>2303</b>	<b>2430</b>	<b>2406</b>	<b>2509</b>	<b>11,8%</b>	<b>13,8%</b>	<b>14,3%</b>	<b>14,1%</b>	<b>13,6%</b>	<b>13,0%</b>
Electric Showers (IRL and UK only)	739	878	1213	1452	1459	1705	5,4%	6,1%	7,5%	8,4%	8,2%	8,9%
Other instant Elec >12 kW			772	705	679	586			4,8%	4,1%	3,8%	3,0%
Other instant Elec <12 kW	880	1092	318	272	268	218			2,0%	1,6%	1,5%	1,1%
<b>Hydraulic, of which</b>			761	576	482	203			4,7%	3,3%	2,7%	1,1%
< 12kW			290	224	203	115			1,8%	1,3%	1,1%	0,6%
12kW			80	47	46	12			0,5%	0,3%	0,3%	0,1%
18kW			119	55	53	-13			0,7%	0,3%	0,3%	-0,1%
21kW			163	118	89	15			1,0%	0,7%	0,5%	0,1%
24kW			85	107	75	65			0,5%	0,6%	0,4%	0,3%
27kW			24	25	16	9			0,1%	0,1%	0,1%	0,0%
<b>Electronic, of which</b>			329	401	465	601			2,0%	2,3%	2,6%	3,1%
< 12kW			27	49	65	103			0,2%	0,3%	0,4%	0,5%
12kW			64	43	49	34			0,4%	0,2%	0,3%	0,2%
18kW			87	41	50	12			0,5%	0,2%	0,3%	0,1%
21kW			96	105	122	148			0,6%	0,6%	0,7%	0,8%
24kW			40	127	141	243			0,2%	0,7%	0,8%	1,3%
27kW			15	36	38	62			0,1%	0,2%	0,2%	0,3%
<b>GAS WATER HEATERS</b>	<b>2558</b>	<b>2190</b>	<b>2263</b>	<b>2083</b>	<b>1942</b>	<b>1621</b>	<b>18,6%</b>	<b>15,3%</b>	<b>14,0%</b>	<b>12,1%</b>	<b>11,0%</b>	<b>8,4%</b>
<b>Gas Instantaneous</b>	<b>2308</b>	<b>1929</b>	<b>1972</b>	<b>1849</b>	<b>1734</b>	<b>1495</b>	<b>16,8%</b>	<b>13,5%</b>	<b>12,2%</b>	<b>10,7%</b>	<b>9,8%</b>	<b>7,8%</b>
13+ Litre/Minute *			295	330					1,8%	1,9%		
10 -<13 Litre/Minute *			1277	1253					7,9%	7,3%		
5 -<10 Litre/Minute *			400	266					2,5%	1,5%		
<b>Gas Storage</b>	<b>250</b>	<b>261</b>	<b>291</b>	<b>234</b>	<b>208</b>	<b>126</b>	<b>1,8%</b>	<b>1,8%</b>	<b>1,8%</b>	<b>1,4%</b>	<b>1,2%</b>	<b>0,7%</b>
<b>Condensing, of which</b>			2	7	15	29			0,0%	0,0%	0,1%	0,1%
130L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
160L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
190L			0	0	0	0			0,0%	0,0%	0,0%	0,0%
220L			0	0	0	1			0,0%	0,0%	0,0%	0,0%
>220L			2	6	14	26			0,0%	0,0%	0,1%	0,1%
<b>Non Condensing, of which</b>			289	227	193	97			1,8%	1,3%	1,1%	0,5%
<80L			87	78	70	53			0,5%	0,5%	0,4%	0,3%
80-130L			100	67	50	1			0,6%	0,4%	0,3%	0,0%
160L			53	40	32	10			0,3%	0,2%	0,2%	0,1%
190L			12	11	9	6			0,1%	0,1%	0,1%	0,0%
220L			12	10	10	8			0,1%	0,1%	0,1%	0,0%
>220L			19	17	16	14			0,1%	0,1%	0,1%	0,1%
Open Flue			216	126	69	-78			1,3%	0,7%	0,4%	-0,4%
Fan Flue			69	97	118	168			0,4%	0,6%	0,7%	0,9%
<b>TOTAL (incl. el. showers)</b>	<b>13724</b>	<b>14315</b>	<b>16147</b>	<b>17216</b>	<b>17698</b>	<b>19248</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 3 AUSTRIA

## 3.1 Water Heater Sales

- Relatively low volume sales of water heaters (both linked and dedicate), reflecting the relatively high share of district and collective heating (38% of dwellings).
- The total market splits:
  - 22.000 appliances (9%) with water heating integrated with the central heating boiler;
  - 223.500 water heaters (91%) coming within the scope of this Task 2 study:
    - 52.600 (28%) separate cylinders linked to the boiler;
    - 170.500 (63%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 13% below the 1990 levels, but all products suffered from the poor market conditions of 1998-2002.
- Within the main product categories
  - some 83% of indirect cylinders are over 200 litres;
  - the use of solar thermal is relatively advanced;
  - the electric storage market is split 49% >30 litres and 51% <30 litres. Of the >30 litre models, >90% are in the range 80-150 litres;
  - in contrast to Germany, the electric instantaneous market is low;
  - the instantaneous gas market is also small and declining, and is almost entirely in the 10-13 litres per minute range;
  - gas storage is mainly sold to non domestic customers.
- Some 63% of sales (excluding integrated water heating) are to domestic replacement, including 70% of dedicated water heater sales;
- Excluding integrated water heating, it is estimated that 64% of water heating appliances are sold for use as the primary source of sanitary hot water, and 36% are secondary appliances.

## 3.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 50% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 84% use electric storage water heaters (mainly 80-150 litres);
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 25% are indirect cylinders;
  - 63% are electric storage water heaters;
  - 6% use solar thermal;
  - 4% use instantaneous electric.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 37% of dwellings have a secondary water heater;
- about 85% of such appliances are electric storage, and 14% are instantaneous electric.

### **3.3 Distribution Structures**

In Austria the majority of boilers and indirect cylinders (50% of wall hung and 90% of floor standing), are sold direct from the manufacturer/importer to the installers, with the balance going through the Sanitär- und Heizungsfachgrßhandel (wholesalers). This trade is dominated by two national chains (WOLSELEY's ÖAG and SHT HAUSTECHNIK) that between them share perhaps 70% of their sector. In addition there are 8-10 significant regional chains.

Electric storage water heaters are sold 26% through the Sanitär- und Heizungsfachgrßhandel, 20% through electrical channels and 29% through DIY stores (including 4% reaching DIY stores through specialist distributors).



**Table 3-1. AUSTRIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>8</b>	<b>11</b>	<b>17</b>	<b>17</b>	<b>19</b>	<b>3,0%</b>	<b>3,7%</b>	<b>6,1%</b>	<b>6,9%</b>	<b>6,9%</b>
Combi Boilers	8	11	17	17	19	3,0%	3,7%	6,1%	6,9%	6,9%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>64</b>	<b>91</b>	<b>76</b>	<b>78</b>	<b>94</b>	<b>23,7%</b>	<b>30,2%</b>	<b>28,3%</b>	<b>31,1%</b>	<b>34,0%</b>
Indirect Cylinders Integrated	6	7	5	5	5	2,2%	2,2%	1,8%	1,9%	1,8%
Indirect Cylinders Separate	58	65	52	49	54	21,4%	21,6%	19,3%	19,5%	19,6%
Solar Storage Tanks	0	20	16	20	29		6,5%	6,0%	8,0%	10,5%
Gas WH: Ind. Cyl. Buffer Storage	0	0	3	4	6			1,3%	1,7%	2,1%
60-80L	-	-	1	1	0			0,4%	0,3%	0,2%
80-120L	-	-	3	2	3			1,1%	0,8%	0,9%
120-200L	-	-	7	6	8			2,7%	2,4%	2,9%
200-500L	-	-	39	41	48			14,3%	16,3%	17,3%
500-1000L	-	-	25	25	30			9,2%	10,0%	10,9%
>1000L	-	-	1	3	5			0,4%	1,3%	1,8%
Coil System	-	-	69	61	70			25,6%	24,3%	25,5%
Plate to Plate System	-	-	7	17	23			2,7%	6,8%	8,5%
<b>ELECTRIC WATER HEATERS</b>	<b>178</b>	<b>182</b>	<b>165</b>	<b>146</b>	<b>153</b>	<b>65,8%</b>	<b>60,4%</b>	<b>61,0%</b>	<b>58,4%</b>	<b>55,7%</b>
<b>Electric Storage</b>	<b>175</b>	<b>176</b>	<b>159</b>	<b>140</b>	<b>148</b>	<b>64,7%</b>	<b>58,4%</b>	<b>58,9%</b>	<b>56,2%</b>	<b>53,7%</b>
> 30 (Pressurised), of which	-	-	73	69	73	-	-	27,2%	27,6%	26,6%
80L	-	-	24	21	20			8,8%	8,4%	7,3%
100L	-	-	29	27	28			10,8%	10,7%	10,2%
150L	-	-	16	16	17			5,9%	6,2%	6,3%
200L	-	-	3	4	6			1,2%	1,7%	2,2%
400L	-	-	1	1	2			0,5%	0,6%	0,6%
< 30 (Pressurised)	-	-	16	13	12	-	-	5,9%	5,1%	4,3%
< 30 L (Unpressurised)	-	-	70	59	63	-	-	25,8%	23,5%	22,8%
<b>El. Instantaneous</b>	<b>3</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>1,1%</b>	<b>2,1%</b>	<b>2,1%</b>	<b>2,3%</b>	<b>2,0%</b>
Instant Elec >12 kW	-	-	5	5	5			1,7%	1,9%	1,7%
Instant Elec <12 kW	-	-	1	1	1			0,4%	0,4%	0,3%
<b>Hydraulic</b>	-	-	5	3	2	-	-	1,7%	1,4%	0,9%
< 12kW	-	-	1	1	0			0,3%	0,2%	0,1%
12kW	-	-	1	0	0			0,2%	0,1%	0,1%
18kW	-	-	1	1	0			0,3%	0,3%	0,2%
21kW	-	-	1	1	1			0,3%	0,3%	0,2%
24kW	-	-	1	1	0			0,3%	0,2%	0,2%
27kW	-	-	1	0	0			0,2%	0,2%	0,1%
<b>Electronic</b>	-	-	1	2	3	-	-	0,4%	0,9%	1,1%
< 12kW	-	-	0	0	0			0,1%	0,1%	0,2%
12kW	-	-	0	0	0			0,0%	0,1%	0,1%
18kW	-	-	0	0	0			0,0%	0,1%	0,1%
21kW	-	-	0	0	1			0,1%	0,2%	0,2%
24kW	-	-	0	1	1			0,1%	0,2%	0,3%
27kW	-	-	0	0	1			0,1%	0,2%	0,2%
<b>GAS WATER HEATERS</b>	<b>21</b>	<b>17</b>	<b>12</b>	<b>9</b>	<b>9</b>	<b>7,6%</b>	<b>5,6%</b>	<b>4,6%</b>	<b>3,5%</b>	<b>3,4%</b>
<b>Gas Instantaneous</b>	<b>17</b>	<b>15</b>	<b>11</b>	<b>8</b>	<b>9</b>	<b>6,3%</b>	<b>5,0%</b>	<b>4,1%</b>	<b>3,1%</b>	<b>3,1%</b>
13+ Litre/Minute *	-	-	0	0	-			0,0%	0,0%	0,0%
10 -<13 Litre/Minute *	-	-	11	8	-			4,1%	3,1%	0,0%
5 -<10 Litre/Minute *	-	-	0	0	-			0,0%	0,0%	0,0%
<b>Gas Storage</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1,3%</b>	<b>0,7%</b>	<b>0,5%</b>	<b>0,4%</b>	<b>0,3%</b>
<b>Condensing, of which</b>	-	-	0,0	0,0	0,2	-	-	0,0%	0,0%	0,1%
>220L	-	-	0,0	0,0	0,2			0,0%	0,0%	0,1%
<b>Non Condensing, of which</b>	-	-	1,4	1,0	0,7	-	-	0,5%	0,4%	0,2%
<80L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
80-130L	-	-	0,4	0,3	0,2			0,1%	0,1%	0,1%
160L	-	-	0,4	0,3	0,2			0,1%	0,1%	0,1%
190L	-	-	0,4	0,3	0,1			0,1%	0,1%	0,1%
220L	-	-	0,3	0,2	0,1			0,1%	0,1%	0,1%
>220L	-	-	0,1	0,0	0,0			0,0%	0,0%	0,0%
Open Flue	-	-	1,3	0,7	0,4			0,5%	0,3%	0,1%
Fan Flue	-	-	0,1	0,3	0,2			0,0%	0,1%	0,1%
<b>TOTAL (incl. el. showers)</b>	<b>271</b>	<b>301</b>	<b>270</b>	<b>249</b>	<b>275</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 4 BELGIUM

## 4.1 Water Heater Sales

- With central heating penetration having lagged behind most of the rest of western Europe, Belgium has in the past had a relatively high reliance on dedicated water heaters. However this has changed in recent years, with sales of water heating appliances linked to central heating more than doubling between 1994 and 2005, and sales of dedicated water heaters falling by 20% over the same period.
- The total market splits:
  - 139.300 appliances (33%) with water heating integrated with the central heating boiler;
  - 285.200 water heaters (67%) coming within the scope of this Task 2 study:
    - 49.700 (12%) separate cylinders linked to the boiler;
    - 235.400 (56%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at more than double the 1990 levels.
- Within the main product categories
  - some 86% of indirect cylinders are in the 80-200 litre range and only 5% are over 200 litres;
  - the use of solar thermal is now starting to develop from a low base;
  - the electric storage market is split 53% >30 litres and 47% <30 litres. Of the >30 litre models, 75% are in the range 80-150 litres;
  - the electric instantaneous market is marginal;
  - the instantaneous gas market is significant but declining (2005 sales were 46% below the 1990 level). 63% of sales are in the 13 litres/minute + category ;
  - gas storage is estimated to be sold 90% mainly sold to domestic customers.
- Some 62% of sales (excluding integrated water heating) are to domestic replacement, including 71% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 64% of water heating appliances are sold for use as the primary source of sanitary hot water, and 36% are secondary appliances.

## 4.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 47% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 55% use electric storage water heaters (mainly 80-150 litres) and 39% use instantaneous gas water heaters;
- of the total stock of primary water heating appliances (excluding integrated water heating);
- 25% are indirect cylinders;
- 41% are electric storage water heaters;

- 29% use instantaneous gas water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 51% of dwellings have a secondary water heater;
- about 74% of such appliances are electric storage, and 24% use instantaneous gas water heaters.

## **4.3 Distribution Structures**

About 28% of wall hung boilers and 51% of floor standing boilers are sold direct to installers. Related indirect cylinders follow the same routes. Most of the balance is channelled through the heating and sanitary wholesale trade. Easily the largest wholesaler grouping is VAN MARKE with some 93 depots. FIMS is a voluntary grouping with whose members (including FACQ, DESCO, LAMBRECHTS and GIVORD) have 28 depots between them. The rest of the trade is fairly fragmented.

Some 80% of instantaneous gas water heaters are channelled through the specialist wholesalers. 20% are sold via DIY stores (including 10% channelled via the wholesalers. 10% are sold direct.

Electric water heater distribution is a mix of direct supply to installers, sales through the specialist heating and sanitary wholesale trade, and sales through electrical distributors.

**Table 4-1. BELGIUM Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b><u>COMBI BOILERS</u></b>	<b>21</b>	<b>37</b>	<b>57</b>	<b>117</b>	<b>163</b>	<b>6,3%</b>	<b>9,9%</b>	<b>15,5%</b>	<b>28,5%</b>	<b>37,2%</b>
Combi Boilers	21	37	53	104	144	6,3%	9,9%	14,4%	25,2%	33,0%
Combi Boilers (Storage only)	0	0	4	14	19	0,0%	0,0%	1,1%	3,3%	4,2%
						0	0	0	0	0
<b><u>INDIRECT CYLINDERS</u></b>	<b>33</b>	<b>57</b>	<b>73</b>	<b>75</b>	<b>78</b>	<b>9,9%</b>	<b>15,3%</b>	<b>19,8%</b>	<b>18,3%</b>	<b>17,9%</b>
Indirect Cylinders Integrated	4	15	20	22	29	1,2%	4,0%	5,4%	5,4%	6,5%
Indirect Cylinders Separate	29	42	52	50	44	8,7%	11,3%	14,2%	12,0%	10,1%
Solar Storage Tanks	0	0	1	4	6		0,1%	0,2%	0,9%	1,3%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
60-80L	-	-	6	6	7			1,8%	1,5%	1,5%
80-120L	-	-	27	26	26			7,2%	6,3%	5,9%
120-200L	-	-	36	39	42			9,9%	9,5%	9,5%
200-500L	-	-	2	3	3			0,6%	0,7%	0,7%
500-1000L	-	-	1	1	1			0,3%	0,3%	0,3%
>1000L	-	-	0	0	0			0,1%	0,1%	0,1%
Coil System	-	-	67	67	69			18,1%	16,3%	15,9%
Plate to Plate System	-	-	6	8	9			1,7%	2,0%	2,0%
<b><u>ELECTRIC WATER HEATERS</u></b>	<b>171</b>	<b>194</b>	<b>170</b>	<b>171</b>	<b>164</b>	<b>51,4%</b>	<b>52,0%</b>	<b>46,2%</b>	<b>41,7%</b>	<b>37,5%</b>
<b>Electric Storage</b>	<b>167</b>	<b>192</b>	<b>168</b>	<b>170</b>	<b>163</b>	<b>50,2%</b>	<b>51,4%</b>	<b>45,7%</b>	<b>41,4%</b>	<b>37,3%</b>
<u>&gt; 30 (Pressurised), of which</u>	-	-	89	90	86	-	-	24,2%	21,9%	19,8%
80L	-	-	19	20	19			5,2%	4,9%	4,3%
100L	-	-	26	27	26			7,2%	6,7%	5,9%
150L	-	-	22	20	21			5,9%	4,9%	4,8%
200L	-	-	12	13	12			3,3%	3,1%	2,7%
400L	-	-	10	10	9			2,6%	2,4%	2,1%
<u>&lt; 30 (Pressurised)</u>	-	-	62	63	60	-	-	16,9%	15,3%	13,8%
<u>&lt; 30 L (Unpressurised)</u>	-	-	17	17	16	-	-	4,6%	4,1%	3,7%
<b>El. Instantaneous</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1,2%</b>	<b>0,5%</b>	<b>0,5%</b>	<b>0,3%</b>	<b>0,2%</b>
Instant Elec >12 kW	-	-	0	0	0			0,1%	0,1%	0,0%
Instant Elec <12 kW	-	-	1	1	1			0,4%	0,2%	0,1%
<u>Hydraulic</u>	-	-	1	1	0	-	-	0,3%	0,2%	0,1%
< 12kW	-	-	1	1	0			0,3%	0,1%	0,1%
<u>Electronic</u>	-	-	1	1	0	-	-	0,1%	0,1%	0,1%
< 12kW	-	-	0	0	0			0,1%	0,1%	0,1%
<b><u>GAS WATER HEATERS</u></b>	<b>108</b>	<b>85</b>	<b>72</b>	<b>61</b>	<b>51</b>	<b>32,4%</b>	<b>22,8%</b>	<b>19,5%</b>	<b>14,8%</b>	<b>11,6%</b>
<b>Gas Instantaneous</b>	<b>103</b>	<b>80</b>	<b>67</b>	<b>56</b>	<b>47</b>	<b>30,9%</b>	<b>21,4%</b>	<b>18,1%</b>	<b>13,6%</b>	<b>10,6%</b>
13+ Litre/Minute *	-	-	41	35	-			11,2%	8,6%	0,0%
10 -<13 Litre/Minute *	-	-	16	13	-			4,4%	3,1%	0,0%
5 -<10 Litre/Minute *	-	-	10	8	-			2,6%	1,9%	0,0%
<b>Gas Storage</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>1,5%</b>	<b>1,3%</b>	<b>1,4%</b>	<b>1,2%</b>	<b>1,0%</b>
<u>Condensing, of which</u>	-	-	0,0	0,1	0,3	-	-	0,0%	0,0%	0,1%
>220L	-	-	0,0	0,1	0,3			0,0%	0,0%	0,1%
<u>Non Condensing, of which</u>	-	-	5,3	4,9	4,1	-	-	1,4%	1,2%	0,9%
<80L	-	-	0,1	0,2	0,1			0,0%	0,0%	0,0%
80-130L	-	-	1,0	0,8	0,6			0,3%	0,2%	0,1%
160L	-	-	2,1	1,6	1,2			0,6%	0,4%	0,3%
190L	-	-	2,0	1,9	1,8			0,5%	0,5%	0,4%
220L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
>220L	-	-	0,1	0,3	0,4			0,0%	0,1%	0,1%
Open Flue	-	-	4,2	3,6	2,8			1,1%	0,9%	0,6%
Fan Flue	-	-	1,1	1,2	1,3			0,3%	0,3%	0,3%
<b><u>TOTAL (incl. el. showers)</u></b>	<b>333</b>	<b>373</b>	<b>367</b>	<b>411</b>	<b>437</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 5 CYPRUS

In 2001, 32% of Cypriot households had central heating (oil or storage heaters). Another 60% used independent room heating systems (9.38% fixed room units; 8.39% electric stoves and 41.38% gas stoves). Some 5.85% use other form of heating, including fireplaces and 1.82% of dwellings have no heating at all.

The low percentage of dwellings with central heating can be attributed to the relatively mild climate (4 months of winter with average temperatures between 10 and 15 degrees C), and to the low level of per capita income. It must also be remembered that the water heating function is largely taken care of by solar thermal panels. Cyprus has by far the highest per capita penetration of solar thermal installations per capita in the EU. Some 90% of all buildings are equipped.

According to the Cypriot Ministry of Commerce, Industry and Tourism, an introduction of natural gas is considered essential to the energy sector.

Because of the absence of a centralised distribution network, natural gas may at present only be used for electricity generation by the Electricity Authority of Cyprus (EAC) and later on by other large consumers.

The Government of Cyprus decided to build an integrated Energy Centre at the Vassilikos area (in the southern part of Cyprus between Larnaca and Limassol) to store petroleum products, including liquefied natural gas, and a LNG receiving/regasification terminal.

# 6 CZECH REPUBLIC

## 6.1 Water Heater Sales

- Much of the water heater market has developed since 1990. Over the period 1990-2005 sales of water heating appliances linked to central heating grew from just 6.000 to 88.000, and sales of dedicated water heaters have risen by >90% over the same period.
- The total market splits:
  - 65.100 appliances (19%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 281.000 water heaters (81%) coming within the scope of this Task 2 study:
    - 23.300 (7%) separate cylinders linked to the boiler;
    - 257.700 (74%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 13% below the 1990 levels.
- Within the main product categories
  - some 78% of indirect cylinders are in the range 80-120 litres and only 14% are over 200 litres;
  - the use of solar thermal is negligible;
  - the electric storage market is split 49% >30 litres and 51% <30 litres. Of the >30 litre models, 87% are in the range 80-150 litres;
  - there is a small electric instantaneous market (80% <12 kW);
  - the instantaneous gas market grew up to 1995, and then fell back. It is currently static declining (2005 sales were 27% below the 1995 level). Almost all sales are in the 10-13 litres/minute category;
  - gas storage sales grew up to 2000, but have since declined. It is estimated that 70% are sold to domestic customers.
- Some 57% of sales (excluding integrated water heating) are to domestic replacement, including 55% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 69% of water heating appliances are sold for use as the primary source of sanitary hot water, and 31% are secondary appliances.

## 6.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 72% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 78% use electric storage water heaters (mainly 80-150 litres), 16% use gas storage and 6% instantaneous electric;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating),
  - 39% are indirect cylinders;

- 48% are electric storage water heaters;
- 7% are instantaneous gas;
- 3% are instantaneous electric.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 32% of dwellings have a secondary water heater;
- about 55% of such appliances are electric storage, 25% use instantaneous electric and 20% use instantaneous gas water heaters.

## **6.3 Distribution Structures**

Distribution of boilers and related cylinders is both through wholesalers and direct to the larger installers, with the former taking the biggest share of the market. The wholesaler trade remains fairly fragmented, although there are some significant chains. Foreign investment in the trade includes WOLSELEY with CESARO (23 depots), GC with GIENGER, VANEK and SEBOLD (29 depots combined) and RICHTER & FRENZEL with SCHULTE (18 depots). Other significant groups are PTACEK (14) and SIKO (19).

Gas water heaters follow similar patterns to boilers. For electric water heaters there are significant sales through DIY stores.

**Table 6-1. CZECH REPUBLIC Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>5</b>	<b>35</b>	<b>81</b>	<b>65</b>	<b>63</b>	<b>3,5%</b>	<b>13,8%</b>	<b>25,0%</b>	<b>18,7%</b>	<b>18,4%</b>
Combi Boilers	5	35	81	65	63	3,5%	13,8%	25,0%	18,7%	18,4%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>1</b>	<b>6</b>	<b>14</b>	<b>25</b>	<b>26</b>	<b>0,7%</b>	<b>2,4%</b>	<b>4,2%</b>	<b>7,1%</b>	<b>7,5%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	1	6	13	23	24	0,7%	2,4%	4,0%	6,7%	7,1%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind. Cyl. Buffer Storage	0	0	1	1	1			0,2%	0,3%	0,4%
60-80L	-	-	2	2	1			0,5%	0,5%	0,4%
80-120L	-	-	6	18	16			1,8%	5,0%	4,7%
120-200L	-	-	4	2	1			1,2%	0,5%	0,4%
200-500L	-	-	2	2	4			0,5%	0,5%	1,1%
500-1000L	-	-	0	1	2			0,1%	0,3%	0,7%
>1000L	-	-	0	1	1			0,0%	0,2%	0,4%
Coil System	-	-	13	23	23			3,9%	6,5%	6,7%
Plate to Plate System	-	-	0	1	1			0,1%	0,2%	0,4%
<b>ELECTRIC WATER HEATERS</b>	<b>115</b>	<b>182</b>	<b>187</b>	<b>226</b>	<b>225</b>	<b>81,6%</b>	<b>71,7%</b>	<b>58,1%</b>	<b>65,1%</b>	<b>66,2%</b>
<b>Electric Storage</b>	<b>110</b>	<b>143</b>	<b>162</b>	<b>207</b>	<b>211</b>	<b>78,0%</b>	<b>56,3%</b>	<b>50,3%</b>	<b>59,6%</b>	<b>62,0%</b>
> 30 (Pressurised), of which	-	-	122	155	158	-	-	37,7%	44,7%	46,5%
80L	-	-	39	47	42	-	-	12,1%	13,4%	12,4%
100L	-	-	32	41	44	-	-	10,1%	11,9%	13,0%
150L	-	-	37	48	49	-	-	11,6%	13,7%	14,3%
200L	-	-	11	17	19	-	-	3,5%	4,8%	5,6%
400L	-	-	2	3	4	-	-	0,5%	0,9%	1,2%
< 30 (Pressurised)	-	-	21	37	42	-	-	6,4%	10,7%	12,4%
< 30 L (Unpressurised)	-	-	20	14	11	-	-	6,2%	4,2%	3,1%
<b>El. Instantaneous</b>	<b>5</b>	<b>39</b>	<b>25</b>	<b>19</b>	<b>14</b>	<b>3,5%</b>	<b>15,4%</b>	<b>7,8%</b>	<b>5,5%</b>	<b>4,1%</b>
Instant Elec >12 kW	-	-	5	4	3	-	-	1,6%	1,1%	0,8%
Instant Elec <12 kW	-	-	20	15	11	-	-	6,1%	4,4%	3,3%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>24</b>	<b>18</b>	<b>13</b>	<b>-</b>	<b>-</b>	<b>7,3%</b>	<b>5,2%</b>	<b>3,9%</b>
< 12kW	-	-	19	15	11	-	-	5,8%	4,2%	3,1%
12kW	-	-	4	3	2	-	-	1,1%	0,8%	0,6%
18kW	-	-	1	0	0	-	-	0,2%	0,1%	0,1%
21kW	-	-	0	0	0	-	-	0,1%	0,1%	0,0%
24kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>0,4%</b>	<b>0,2%</b>	<b>0,2%</b>
< 12kW	-	-	1	1	1	-	-	0,3%	0,2%	0,2%
<b>GAS WATER HEATERS</b>	<b>20</b>	<b>31</b>	<b>41</b>	<b>32</b>	<b>27</b>	<b>14,2%</b>	<b>12,2%</b>	<b>12,7%</b>	<b>9,1%</b>	<b>7,9%</b>
<b>Gas Instantaneous</b>	<b>20</b>	<b>22</b>	<b>13</b>	<b>14</b>	<b>13</b>	<b>14,2%</b>	<b>8,7%</b>	<b>4,0%</b>	<b>4,1%</b>	<b>3,7%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
10 -<13 Litre/Minute *	-	-	13	14	-	-	-	4,0%	4,1%	0,0%
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
<b>Gas Storage</b>	<b>0</b>	<b>9</b>	<b>28</b>	<b>18</b>	<b>15</b>	<b>0,0%</b>	<b>3,5%</b>	<b>8,7%</b>	<b>5,0%</b>	<b>4,3%</b>
<b>Condensing, of which</b>	<b>-</b>	<b>-</b>	<b>0,0</b>	<b>0,0</b>	<b>0,1</b>	<b>-</b>	<b>-</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
130L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
160L	-	-	0,0	0,0	0,1	-	-	0,0%	0,0%	0,0%
190L	-	-	0,0	0,0	0,1	-	-	0,0%	0,0%	0,0%
<b>Non Condensing, of which</b>	<b>-</b>	<b>-</b>	<b>28,0</b>	<b>17,5</b>	<b>14,4</b>	<b>-</b>	<b>-</b>	<b>8,7%</b>	<b>5,0%</b>	<b>4,2%</b>
<80L	-	-	6,4	5,1	3,7	-	-	2,0%	1,5%	1,1%
80-130L	-	-	12,3	8,0	6,6	-	-	3,8%	2,3%	1,9%
160L	-	-	6,7	2,8	2,3	-	-	2,1%	0,8%	0,7%
190L	-	-	0,6	0,3	0,4	-	-	0,2%	0,1%	0,1%
220L	-	-	1,4	0,9	1,0	-	-	0,4%	0,3%	0,3%
>220L	-	-	0,6	0,3	0,3	-	-	0,2%	0,1%	0,1%
Open Flue	-	-	22,0	10,0	7,0	-	-	6,8%	2,9%	2,0%
Fan Flue	-	-	6,0	7,5	7,4	-	-	1,9%	2,2%	2,2%
<b>TOTAL (incl. el. showers)</b>	<b>141</b>	<b>254</b>	<b>322</b>	<b>347</b>	<b>340</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>



# 7 DENMARK

## 7.1 Water Heater Sales

- Relatively low volume sales of water heaters (both linked and dedicate), reflecting the relatively high share of district and collective heating (66% of dwellings).
- The total market splits:
  - 4.500 appliances (6%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 71.100 water heaters (94%) coming within the scope of this Task 2 study:
    - 24.600 (33%) separate cylinders linked to the boiler;
    - 46.500 (61%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 28% above the 1990 levels.
- Within the main product categories
  - some 61% of indirect cylinders are in the range 60-80 litres and only 9% are over 200 litres;
  - there is use of solar thermal but sales are rather static;
  - the electric storage market is split 65% >30 litres and 35% <30 litres. Of the >30 litre models, 97% are in the range 80-150 litres;
  - the electric instantaneous market is negligible;
  - the instantaneous gas market is also negligible ;
  - the gas storage is also negligible.
- Some 58% of sales (excluding integrated water heating) are to domestic replacement, including 68% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 77% of water heating appliances are sold for use as the primary source of sanitary hot water, and 23% are secondary appliances.

## 7.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 79% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 94% use electric storage water heaters (mainly 80-100 litres);
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating),
  - 46% are indirect cylinders;
  - 51% are electric storage water heaters;
  - 3% are solar thermal (water heating only).

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 8% of dwellings have a secondary water heater;
- about 94% of such appliances are electric storage.

### **7.3 Distribution Structures**

In Denmark there is very little direct distribution to installers. It is estimated that 95% of heating products are channelled through the VVS wholesale trade. The trade is concentrated, with the market leader (SAINT GOBAIN).

A significant proportion of electric water heater sales are through electrical channels.

**Table 7-1. DENMARK Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0,0%</b>	<b>1,3%</b>	<b>1,0%</b>	<b>0,7%</b>	<b>0,5%</b>
Combi Boilers	0	1	1	1	0	0,0%	1,3%	1,0%	0,7%	0,5%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>18</b>	<b>22</b>	<b>28</b>	<b>33</b>	<b>36</b>	<b>29,2%</b>	<b>35,4%</b>	<b>42,1%</b>	<b>42,7%</b>	<b>43,3%</b>
Indirect Cylinders Integrated	6	4	4	4	3	9,7%	6,7%	6,7%	5,1%	3,0%
Indirect Cylinders Separate	12	12	16	23	26	19,5%	19,7%	23,6%	29,6%	30,7%
Solar Storage Tanks	0	6	6	4	5		9,0%	9,5%	5,3%	6,2%
Gas WH: Ind Cyl. Buffer Storage	0	0	2	2	3			2,4%	2,7%	3,4%
60-80L	-	-	17	20	23			26,3%	25,7%	27,4%
80-120L	-	-	4	5	5			6,3%	6,9%	6,5%
120-200L	-	-	4	6	6			6,6%	7,1%	6,7%
200-500L	-	-	1	2	2			1,9%	2,0%	1,9%
500-1000L	-	-	1	1	1			0,8%	0,8%	0,7%
>1000L	-	-	0	0	0			0,2%	0,1%	0,1%
Coil System	-	-	26	31	33			39,3%	39,8%	39,7%
Plate to Plate System	-	-	0	0	0			0,5%	0,3%	0,2%
<b>ELECTRIC WATER HEATERS</b>	<b>43</b>	<b>38</b>	<b>37</b>	<b>43</b>	<b>46</b>	<b>69,8%</b>	<b>62,5%</b>	<b>55,9%</b>	<b>55,8%</b>	<b>55,2%</b>
<b>Electric Storage</b>	<b>43</b>	<b>38</b>	<b>36</b>	<b>43</b>	<b>45</b>	<b>69,0%</b>	<b>61,5%</b>	<b>54,9%</b>	<b>54,7%</b>	<b>54,0%</b>
≥ 30 (Pressurised), of which	-	-	24	28	28	-	-	36,7%	35,4%	33,8%
80L	-	-	15	18	18	-	-	23,5%	22,6%	21,8%
100L	-	-	6	8	8	-	-	9,8%	9,7%	9,2%
150L	-	-	2	2	2	-	-	2,3%	2,1%	1,8%
200L	-	-	1	1	1	-	-	0,9%	0,8%	0,7%
400L	-	-	0	0	0	-	-	0,3%	0,3%	0,2%
< 30 (Pressurised)	-	-	12	15	17	-	-	17,5%	18,7%	19,8%
< 30 L (Unpressurised)	-	-	0	1	0	-	-	0,6%	0,6%	0,4%
<b>El. Instantaneous</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0,8%</b>	<b>1,1%</b>	<b>1,1%</b>	<b>1,2%</b>	<b>1,2%</b>
Instant Elec >12 kW	-	-	0	0	0	-	-	0,2%	0,3%	0,3%
Instant Elec <12 kW	-	-	1	1	1	-	-	0,8%	0,9%	0,9%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>0,9%</b>	<b>1,0%</b>	<b>0,9%</b>
< 12kW	-	-	0	1	1	-	-	0,7%	0,7%	0,7%
12kW	-	-	0	0	0	-	-	0,2%	0,3%	0,2%
18kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0,2%</b>	<b>0,2%</b>	<b>0,3%</b>
< 12kW	-	-	0	0	0	-	-	0,2%	0,2%	0,2%
12kW	-	-	0	0	0	-	-	0,0%	0,0%	0,1%
18kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1,0%</b>	<b>0,7%</b>	<b>0,9%</b>	<b>0,8%</b>	<b>1,0%</b>
<b>Gas Instantaneous</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0,3%</b>	<b>0,5%</b>	<b>0,8%</b>	<b>0,6%</b>	<b>0,8%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
10 -<13 Litre/Minute *	-	-	1	1	-	-	-	0,8%	0,6%	0,0%
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,6%</b>	<b>0,2%</b>	<b>0,2%</b>	<b>0,1%</b>	<b>0,1%</b>
Condensing	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Non Condensing, of which	-	-	0,1	0,1	0,0	-	-	0,2%	0,1%	0,0%
<80L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
80-130L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
160L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
190L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
220L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
>220L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Open Flue	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Fan Flue	-	-	0,0	0,1	0,0	-	-	0,0%	0,1%	0,0%
<b>TOTAL (incl. el. showers)</b>	<b>62</b>	<b>61</b>	<b>66</b>	<b>78</b>	<b>83</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 8 ESTONIA

## 8.1 Water Heater Sales

- Much of the water heater market has developed since 1990. However the market is influenced by the high penetration of district heating (an estimated 79% of dwellings derive their hot water from district or collective space heating system).
- The total market splits:
  - 2.400 appliances (7%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 34.300 water heaters (93%) coming within the scope of this Task 2 study:
    - 1.000 (3%) separate cylinders linked to the boiler;
    - 33.300 (90%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some four times the 1990 levels.
- Within the main product categories
  - the use of solar thermal is negligible;
  - the electric storage market is split 87% >30 litres and 13% <30 litres. Of the >30 litre models, 95% are in the range 80-150 litres;
  - there is a small electric instantaneous market (70% <12 kW);
  - the instantaneous gas market experience a sudden jump in 2005 because of a new law requiring all products more than 15 years old to be replaced;
  - there is no gas storage market.
- Some 69% of sales (excluding integrated water heating) are to domestic replacement, including 70% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 67% of water heating appliances are sold for use as the primary source of sanitary hot water, and 33% are secondary appliances.

## 8.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 75% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 99% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating),
  - 17% are indirect cylinders;
  - 82% are electric storage water heaters;
  - <1% are instantaneous gas.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 11% of dwellings have a secondary water heater;
- about 44% of such appliances are electric storage, 22% use instantaneous electric and 34% use instantaneous gas water heaters.

### 8.3 Distribution Structures

The prevalent method of distributing the (mainly imported) heating products is via Tallinn based importer distributors (Tartu in the case of the FERROLI importer KS TEMO). These then sell on to regional distributors, who are most often installer/dealers. There are some significant distributors including FEB (8 depots nationwide), the Finnish ONNINEN (in Tallinn, Ufa and Tartu), SANISTAL's SIA MAX SCHÖN with 2 outlets in Tallinn, SKSVARU (Varu, Tallinn), AS VANNED DAHL with 4 depots, TORU JURI with 5 depots and VIPEX. A high proportion of electric water heaters go through DIY and white goods shops.

Table 8-1. ESTONIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<u>0</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>5</u>	<u>3,5%</u>	<u>1,8%</u>	<u>2,6%</u>	<u>6,6%</u>	<u>12,6%</u>
Combi Boilers	0	0	1	2	5	3,5%	1,8%	2,6%	6,6%	12,6%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1,2%</u>	<u>4,7%</u>	<u>3,9%</u>	<u>2,8%</u>	<u>4,4%</u>
Indirect Cylinders Separate	0	1	1	1	2	1,2%	4,7%	3,9%	2,8%	4,4%
<b>ELECTRIC WATER HEATERS</b>	<u>8</u>	<u>19</u>	<u>23</u>	<u>24</u>	<u>29</u>	<u>94,1%</u>	<u>88,9%</u>	<u>89,6%</u>	<u>65,3%</u>	<u>75,0%</u>
<b>Electric Storage</b>	<u>7</u>	<u>18</u>	<u>21</u>	<u>22</u>	<u>27</u>	<u>82,4%</u>	<u>84,2%</u>	<u>81,8%</u>	<u>59,9%</u>	<u>69,8%</u>
<u>&gt; 30 (Pressurised), of which</u>	-	-	<u>18</u>	<u>19</u>	<u>21</u>	-	-	<u>71,4%</u>	<u>52,3%</u>	<u>54,4%</u>
80L	-	-	13	13	7	-	-	49,1%	35,9%	17,5%
100L	-	-	3	3	8	-	-	11,2%	8,2%	20,9%
150L	-	-	2	2	3	-	-	7,7%	5,6%	8,4%
200L	-	-	1	1	3	-	-	2,4%	1,7%	7,0%
400L	-	-	0	0	0	-	-	1,1%	0,8%	0,7%
<u>&lt; 30 (Pressurised)</u>	-	-	<u>2</u>	<u>2</u>	<u>1</u>	-	-	<u>8,5%</u>	<u>6,3%</u>	<u>1,4%</u>
<u>&lt; 30 L (Unpressurised)</u>	-	-	<u>0</u>	<u>1</u>	<u>5</u>	-	-	<u>1,9%</u>	<u>1,4%</u>	<u>14,0%</u>
<b>El. Instantaneous</b>	<u>1</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>11,8%</u>	<u>4,7%</u>	<u>7,8%</u>	<u>5,4%</u>	<u>5,2%</u>
Instant Elec >12 kW	-	-	1	1	1	-	-	2,3%	1,7%	3,0%
Instant Elec <12 kW	-	-	1	1	1	-	-	5,5%	3,7%	2,2%
<b>Hydraulic</b>	-	-	<u>2</u>	<u>2</u>	<u>2</u>	-	-	<u>7,3%</u>	<u>5,0%</u>	<u>4,6%</u>
< 12kW	-	-	1	1	1	-	-	5,4%	3,5%	2,1%
12kW	-	-	0	0	0	-	-	0,8%	0,7%	0,7%
18kW	-	-	0	0	0	-	-	0,6%	0,5%	0,8%
21kW	-	-	0	0	0	-	-	0,3%	0,2%	0,4%
24kW	-	-	0	0	0	-	-	0,2%	0,1%	0,4%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,2%
<b>Electronic</b>	-	-	<u>0</u>	<u>0</u>	<u>0</u>	-	-	<u>0,5%</u>	<u>0,5%</u>	<u>0,6%</u>
< 12kW	-	-	0	0	0	-	-	0,2%	0,2%	0,1%
12kW	-	-	0	0	0	-	-	0,1%	0,1%	0,2%
18kW	-	-	0	0	0	-	-	0,1%	0,1%	0,2%
21kW	-	-	0	0	0	-	-	0,1%	0,1%	0,1%
24kW	-	-	0	0	0	-	-	0,0%	0,1%	0,1%
27kW	-	-	0	0	0	-	-	0,0%	0,1%	0,1%
<b>GAS WATER HEATERS</b>	<u>0</u>	<u>1</u>	<u>1</u>	<u>9</u>	<u>3</u>	<u>1,2%</u>	<u>4,7%</u>	<u>3,9%</u>	<u>25,2%</u>	<u>8,0%</u>
<b>Gas Instantaneous</b>	<u>0</u>	<u>1</u>	<u>1</u>	<u>9</u>	<u>3</u>	<u>1,2%</u>	<u>4,7%</u>	<u>3,9%</u>	<u>25,2%</u>	<u>8,0%</u>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,8%	1,2%	0,0%
10 -<13 Litre/Minute *	-	-	0	4	-	-	-	1,6%	10,3%	0,0%
5 -<10 Litre/Minute *	-	-	0	5	-	-	-	1,6%	13,6%	0,0%
<b>Gas Storage</b>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0,0%</u>	<u>0,0%</u>	<u>0,0%</u>	<u>0,0%</u>	<u>0,0%</u>
<b>TOTAL (incl. el. showers)</b>	<u>9</u>	<u>21</u>	<u>26</u>	<u>37</u>	<u>39</u>	<u>100,0%</u>	<u>100,0%</u>	<u>100,0%</u>	<u>100,0%</u>	<u>100,0%</u>

# 9 FINLAND

## 9.1 Water Heater Sales

- Low volume sales of water heaters (both linked and dedicate), reflecting the relatively high share of district and collective heating (56% of dwellings).
- The total market splits:
  - 4.100 appliances (8%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 45.200 water heaters (92%) coming within the scope of this Task 2 study:
    - 3.600 (7%) separate cylinders linked to the boiler;
    - 41.600 (84%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 4% above the 1990 levels.
- Within the main product categories
  - there is a minimal use of solar thermal ;
  - the electric storage market is split 91% >30 litres and 9% <30 litres. Of the >30 litre models, 45% are in the range 80-150 litres and 55% are >150 litres;
  - there is a small electric instantaneous market (84% >12 kW);
  - the instantaneous gas market is also negligible ;
  - the gas storage is also negligible.
- Some 61% of sales (excluding integrated water heating) are to domestic replacement, including 58% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 88% of water heating appliances are sold for use as the primary source of sanitary hot water, and 12% are secondary appliances.

## 9.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 65% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 98% use electric storage water heaters (mainly 80-100 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating),
  - 21% are indirect cylinders;
  - 79% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 3% of dwellings have a secondary water heater;
- about 69% of such appliances are electric storage.

### 9.3 Distribution Structures

Almost all boilers and heat pumps are distributed through wholesalers, with 85-90% going through the HEVAC trades (which in some cases also handle electrical products). This trade is very concentrated, with ONNINEN, SAINT GOBAIN's DAHL, CINVEN's AHLSELL and RAUTAKESKO between them accounting for >85% of the sector.

In water heaters the share of the HEVAC wholesalers is closer to 70%, with the electrical and DIY trades taking most of the balance.

Table 9-1. FINLAND Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
Combi Boilers	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>12</b>	<b>7</b>	<b>11</b>	<b>8</b>	<b>8</b>	<b>23,6%</b>	<b>19,8%</b>	<b>21,3%</b>	<b>15,6%</b>	<b>16,8%</b>
Indirect Cylinders Integrated	9	5	7	4	5	16,9%	13,1%	14,6%	8,3%	9,4%
Indirect Cylinders Separate	4	2	3	4	4	6,7%	6,7%	6,7%	7,3%	7,4%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
60-80L	-	-	0	0	0			0,1%	0,2%	0,3%
80-120L	-	-	0	0	0			0,7%	0,6%	0,8%
120-200L	-	-	5	3	3			9,9%	5,5%	5,7%
200-500L	-	-	3	2	2			6,7%	4,3%	3,3%
500-1000L	-	-	0	1	1			0,8%	1,4%	2,5%
>1000L	-	-	2	2	2			3,0%	3,7%	4,3%
	-	-								
Coil System	-	-	11	8	8			21,3%	15,6%	16,8%
Plate to Plate System	-	-	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<b>40</b>	<b>28</b>	<b>39</b>	<b>42</b>	<b>41</b>	<b>76,4%</b>	<b>80,2%</b>	<b>78,7%</b>	<b>84,4%</b>	<b>83,2%</b>
<b>Electric Storage</b>	<b>36</b>	<b>27</b>	<b>36</b>	<b>39</b>	<b>39</b>	<b>68,7%</b>	<b>77,3%</b>	<b>73,7%</b>	<b>79,9%</b>	<b>79,1%</b>
> 30 (Pressurised), of which	-	-	32	36	35	-	-	65,5%	72,4%	72,2%
80L	-	-	3	3	3			6,4%	6,9%	6,8%
100L	-	-	4	5	4			7,8%	10,1%	9,1%
150L	-	-	7	8	7			14,2%	15,4%	15,2%
200L	-	-	18	19	19			35,4%	38,5%	39,4%
400L	-	-	1	1	1			1,8%	1,4%	1,7%
< 30 (Pressurised)	-	-	4	4	3	-	-	8,1%	7,5%	6,9%
< 30 L (Unpressurised)	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>El. Instantaneous</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>7,7%</b>	<b>2,9%</b>	<b>5,1%</b>	<b>4,5%</b>	<b>4,1%</b>
Instant Elec >12 kW	-	-	0	0	0			0,8%	0,7%	0,4%
Instant Elec <12 kW	-	-	2	2	2			4,3%	3,8%	3,7%
<b>Hydraulic</b>	-	-	1	0	0	-	-	2,0%	0,9%	0,8%
< 12kW	-	-	1	0	0			1,7%	0,8%	0,7%
12kW	-	-	0	0	0			0,2%	0,1%	0,1%
18kW	-	-	0	0	0			0,1%	0,0%	0,0%
<b>Electronic</b>	-	-	2	2	2	-	-	3,0%	3,5%	3,3%
< 12kW	-	-	1	1	1			2,6%	3,0%	3,0%
12kW	-	-	0	0	0			0,3%	0,4%	0,2%
18kW	-	-	0	0	0			0,2%	0,2%	0,1%
21kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>TOTAL</b>	<b>52</b>	<b>34</b>	<b>49</b>	<b>49</b>	<b>49</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 10 FRANCE

## 10.1 Water Heater Sales

- The special feature of the French market is the large demand for electric storage water heaters, which are complementary to the large park of night rate dry electric space heating systems.
- The total market splits:
  - 677.800 appliances (29%) with water heating integrated with the central heating boiler;
  - 1.691.800 water heaters (71%) coming within the scope of this Task 2 study:
    - 87.800 (4%) separate cylinders linked to the boiler;
    - 1.6045.000 (68%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 18% above the 1990 levels.
- Within the main product categories
  - some 89% of indirect cylinders are in the 80-200 litre range and only 11% are over 200 litres;
  - the use of solar thermal is now starting to develop quite rapidly from a low base;
  - the electric storage market is split 89% >30 litres and 11% <30 litres. Because they are used extensively to store water heated by night rate electricity, average sizes are large. Of the >30 litre models, 91% are in the range 150 litres + range;
  - there is no market for electric instantaneous water heaters;
  - the instantaneous gas market is significant but is declining in the face of competition from combis (2005 sales were 48% below the 1990 level). Only 10% of sales are in the 13 litres/minute + category ("chauffe-bain") while 90% are 5-13 litres/minute ("chauffe-eau");
  - gas storage is estimated to be sold 72% to domestic customers.
- Some 64% of sales (excluding integrated water heating) are to domestic replacement, including 64% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 83% of water heating appliances are sold for use as the primary source of sanitary hot water, and 17% are secondary appliances.

## 10.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 54% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 98.5% use electric storage water heaters (mainly >150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating),
  - 15% are indirect cylinders;



- 84% are electric storage water heaters;
- 1% use instantaneous gas water heaters;
- 2% use gas storage.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 14% of dwellings have a secondary water heater;
- about 35% of such appliances are electric storage, and 65% use instantaneous gas water heaters.

## **10.3 Distribution Structures**

The great majority of boilers are channelled through wholesalers (Figs. 3.8.7-1 and 3.8.7-2). These are mainly specialist “distributeurs en sanitaire et chauffage” but there are some “generalistes” involved. The top 8 owned chains (BROSSETTE/WOLSELEY, POINT P DSC/SAINT GOBAIN, COMAFRANC, RICHARDSON, DESCOURS ET CABAUD, MARTIN BELAYSOU and ANJAC) account for just under 50% of the business. There are also major buying groups (GAPSA, RESIA, SOCODA) which take another 20%+.

The distribution of gas water heaters is similar to that for boilers, with some 70% going through the heating and sanitary wholesalers, 8% going through DIY and 15% going direct. For electric water heaters, the DIY share is around 18%, and the wholesaler business is shared between the heating & sanitary specialists and the electrical trade, with the latter having the higher share.

**Table 10-1. FRANCE Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>300</b>	<b>374</b>	<b>604</b>	<b>574</b>	<b>622</b>	<b>16,9%</b>	<b>21,0%</b>	<b>29,3%</b>	<b>25,3%</b>	<b>24,6%</b>
Combi Boilers	299	361	500	472	512	16,8%	20,3%	24,3%	20,8%	20,3%
Combi Boilers (Storage only)	1	13	104	102	110	0,1%	0,7%	5,1%	4,5%	4,4%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>113</b>	<b>168</b>	<b>204</b>	<b>208</b>	<b>206</b>	<b>6,4%</b>	<b>9,5%</b>	<b>9,9%</b>	<b>9,2%</b>	<b>8,2%</b>
Indirect Cylinders Integrated	40	76	112	104	73	2,3%	4,3%	5,4%	4,6%	2,9%
Indirect Cylinders Separate	73	92	91	86	60	4,1%	5,2%	4,4%	3,8%	2,4%
Solar Storage Tanks	0	0	1	17	65		0,0%	0,0%	0,7%	2,6%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	2	8			0,0%	0,1%	0,3%
60-80L	-	-	40	45	45			1,9%	2,0%	1,8%
80-120L	-	-	100	100	98			4,9%	4,4%	3,9%
120-200L	-	-	43	41	40			2,1%	1,8%	1,6%
200-500L	-	-	5	6	7			0,2%	0,3%	0,3%
500-1000L	-	-	7	7	7			0,3%	0,3%	0,3%
>1000L	-	-	9	9	9			0,4%	0,4%	0,4%
Coil System	-	-	191	187	180			9,2%	8,3%	7,1%
Plate to Plate System	-	-	13	21	26			0,6%	0,9%	1,0%
<b>ELECTRIC WATER HEATERS</b>	<b>1060</b>	<b>1015</b>	<b>1160</b>	<b>1410</b>	<b>1660</b>	<b>59,7%</b>	<b>57,1%</b>	<b>56,3%</b>	<b>62,1%</b>	<b>65,8%</b>
<b>Electric Storage</b>	<b>1060</b>	<b>1015</b>	<b>1160</b>	<b>1410</b>	<b>1660</b>	<b>59,7%</b>	<b>57,1%</b>	<b>56,3%</b>	<b>62,1%</b>	<b>65,8%</b>
≥ 30 (Pressurised), of which	-	-	1050	1255	1480	-	-	51,0%	55,3%	58,6%
80L	-	-	75	70	65			3,6%	3,1%	2,6%
100L	-	-	50	40	35			2,4%	1,8%	1,4%
150L	-	-	150	170	200			7,3%	7,5%	7,9%
200L	-	-	615	764	910			29,9%	33,7%	36,0%
400L	-	-	160	211	270			7,8%	9,3%	10,7%
< 30 (Pressurised)	-	-	40	55	60	-	-	1,9%	2,4%	2,4%
< 30 L (Unpressurised)	-	-	70	100	120	-	-	3,4%	4,4%	4,8%
<b>El. Instantaneous</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>GAS WATER HEATERS</b>	<b>305</b>	<b>234</b>	<b>196</b>	<b>179</b>	<b>147</b>	<b>17,2%</b>	<b>13,2%</b>	<b>9,5%</b>	<b>7,9%</b>	<b>5,8%</b>
<b>Gas Instantaneous</b>	<b>280</b>	<b>192</b>	<b>155</b>	<b>147</b>	<b>118</b>	<b>15,8%</b>	<b>10,8%</b>	<b>7,5%</b>	<b>6,5%</b>	<b>4,7%</b>
13+ Litre/Minute *	-	-	4	15	-			0,2%	0,7%	0,0%
10 -<13 Litre/Minute *	-	-	92	92	-			4,5%	4,1%	0,0%
5 -<10 Litre/Minute *	-	-	59	40	-			2,9%	1,8%	0,0%
<b>Gas Storage</b>	<b>25</b>	<b>42</b>	<b>41</b>	<b>32</b>	<b>29</b>	<b>1,4%</b>	<b>2,4%</b>	<b>2,0%</b>	<b>1,4%</b>	<b>1,1%</b>
<u>Condensing, of which</u>	-	-	0,1	0,1	0,2	-	-	0,0%	0,0%	0,0%
130L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
160L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
190L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
220L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
>220L	-	-	0,1	0,1	0,2			0,0%	0,0%	0,0%
<u>Non Condensing, of which</u>	-	-	40,9	32,3	28,5	-	-	2,0%	1,4%	1,1%
<80L	-	-	2,0	1,0	0,7			0,1%	0,0%	0,0%
80-130L	-	-	4,1	2,2	1,6			0,2%	0,1%	0,1%
160L	-	-	25,6	19,4	16,0			1,2%	0,9%	0,6%
190L	-	-	1,6	1,6	1,6			0,1%	0,1%	0,1%
220L	-	-	1,6	1,6	1,6			0,1%	0,1%	0,1%
>220L	-	-	6,0	6,5	7,0			0,3%	0,3%	0,3%
Open Flue	-	-	34,8	22,6	14,3			1,7%	1,0%	0,6%
Fan Flue	-	-	6,1	9,7	14,3			0,3%	0,4%	0,6%
<b>TOTAL (incl. el. showers)</b>	<b>1.777</b>	<b>1.778</b>	<b>2.060</b>	<b>2.269</b>	<b>2.525</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 11 GERMANY

## 11.1 Water Heater Sales

- Germany has a very large water heater market, characterised by the high demand for secondary water heaters and the large market for instantaneous electrical water heaters for which the German electrical supply is well suited. Often several such water heaters (sited in different rooms) combined to act as the primary source of hot water.
- The total market splits:
  - 250.000 appliances (11%) with water heating integrated with the central heating boiler;
  - 2.025.500 water heaters (89%) coming within the scope of this Task 2 study:
    - 447.200 (20%) separate cylinders linked to the boiler;
    - 1.578.300 (69%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 13% below the 1990 levels, with indirect cylinders showing some underlying growth and dedicated water heaters declining.
- Within the main product categories
  - some 25% of indirect cylinders are over 200 litres, and 75% in the 80-150 litre category;
  - the use of solar thermal is relatively advanced although development has been erratic;
  - the electric storage market is split 10% >30 litres and 90% <30 litres. Of the >30 litre models, >90% are in the range 80-150 litres;
  - the instantaneous gas market is in long term decline after the post-unification boom, and is now running 92% below the 1992 peak. Some 36% of sales are in the 13 litres/minute+ category ;
  - there is a substantial but now declining gas storage market, with some 70% of sales going to non domestic customers.
- Some 71% of sales (excluding integrated water heating) are to domestic replacement, including 73% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 59% of water heating appliances are sold for use as the primary source of sanitary hot water, and 41% are secondary appliances.

## 11.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 63% of dwellings derive their sanitary hot water from their space heating generators.
- The calculation of dwellings using dedicated water heaters per type of water heater is on a different basis from the other countries. This is to allow for the fact that many German households use more than one instantaneous electric water heater as their primary source of hot water. BRG CONSULT is assuming that where this type of water heater is used, there is an average of two primary water heaters per

dwelling. Thus while some 9.6 million instantaneous electric water heaters may be in use as a primary source of sanitary hot water, BRG CONSULT is assuming that these are used by only 4.8 million homes.

- On this (admittedly rather soft) basis, of those using dedicated water heaters, some 34% use instantaneous electric water heaters, 31% use electric storage water heaters (mainly 80-150 litres) and 12% use instantaneous gas and 4% use solar thermal.
- Of the total stock of primary water heating appliances (excluding integrated water heating, and counting products rather than dwellings):
  - 36% are indirect cylinders;
  - 33% are instantaneous electric water heaters;
  - 15% are electric storage water heaters;
  - 9% are gas storage water heaters;
  - 6% are instantaneous gas water heaters;
  - 2% are solar thermal.

The low share of instantaneous gas water heaters reflects the fact that the great majority sold during the boom years of the early 1990's were 10 - <13 litre models rather than 13+ litre models. It is however possible that some 10 - <13 litre models are used as primary water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 48% of dwellings have a secondary water heater
- about 88% of such appliances are electric storage, 6% are instantaneous gas and 5% are instantaneous electric.

## **11.3 Distribution Structures**

The origins of heating product distribution in Germany reflect the old distinction between:

- Thermen (including wall hung boilers and instantaneous gas water heaters), the vast majority of which were sold by the then dominant producers (BOSCH and VAILLANT) through the Sanitär –und Heizungs Fachgroßhandel (specialist wholesale trade)
- Heizkessel (floor standing boilers), a majority of which were sold direct to installers (e.g. VIESSMANN, WOLF in part) or through manufacturers' integrated distribution structures (e.g. BUDERUS, BRÖTJE).

Although the distinctions have become blurred and the distribution patterns more varied (partly because supply structures have become less concentrated), there are still differences between the two sectors.

The Fachgroßhandel trade structures have been rather fluid during the turbulent period following unification. While GC GRUPPE (CORDES UND GRAEFE) has clung onto, and strengthened, its market leadership, the overall trade structure is less concentrated than in some other countries. The top 7 owned chains take perhaps 55% of the sector (GC well in front, plus the integrated BUDERUS chain, RICHTER UND FRENZEL, SCHULTE-GRUPPE, ELMER, REISSER) and the 5 largest buying groups (ISG, SANITÄR-UNION, NORDWEST, WUPPER-RING and VGH) take a further c.40%.

The distribution of gas water heaters is almost entirely through the Sanitär –und Heizungs Fachgroßhandel. For electric water heater, the Sanitär –und Heizungs Fachgroßhandel has some 36%, electrical wholesalers 30%, DIY stores 24% and 10% is supplied direct.

**Table 11-1. GERMANY Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>236</b>	<b>238</b>	<b>155</b>	<b>120</b>	<b>95</b>	<b>8,8%</b>	<b>8,0%</b>	<b>6,0%</b>	<b>5,2%</b>	<b>4,0%</b>
Combi Boilers	236	238	155	120	95	8,8%	8,0%	6,0%	5,2%	4,0%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>510</b>	<b>581</b>	<b>569</b>	<b>685</b>	<b>889</b>	<b>18,9%</b>	<b>19,6%</b>	<b>21,9%</b>	<b>29,7%</b>	<b>37,1%</b>
Indirect Cylinders Integrated	120	110	80	130	185	4,5%	3,7%	3,1%	5,6%	7,7%
Indirect Cylinders Separate	390	445	410	427	485	14,5%	15,0%	15,8%	18,5%	20,2%
Solar Storage Tanks	0	26	74	101	139		0,9%	2,8%	4,4%	5,8%
Gas WH: Ind.Cyl. Buffer Storage	0	0	5	27	80			0,2%	1,2%	3,3%
60-80L	-	-	87	102	184			3,3%	4,4%	7,7%
80-120L	-	-	168	207	365			6,5%	9,0%	15,2%
120-200L	-	-	168	207	220			6,5%	9,0%	9,2%
200-500L	-	-	105	123	65			4,0%	5,3%	2,7%
500-1000L	-	-	30	34	28			1,2%	1,5%	1,1%
>1000L	-	-	11	12	28			0,4%	0,5%	1,1%
Coil System	-	-	530	615	680			20,4%	26,7%	28,4%
Plate to Plate System	-	-	39	70	209			1,5%	3,0%	8,7%
<b>ELECTRIC WATER HEATERS</b>	<b>1705</b>	<b>1956</b>	<b>1754</b>	<b>1425</b>	<b>1350</b>	<b>63,2%</b>	<b>65,9%</b>	<b>67,4%</b>	<b>61,8%</b>	<b>56,3%</b>
<b>Electric Storage</b>	<b>1105</b>	<b>1256</b>	<b>1096</b>	<b>815</b>	<b>760</b>	<b>41,0%</b>	<b>42,3%</b>	<b>42,1%</b>	<b>35,3%</b>	<b>31,7%</b>
> 30 (Pressurised), of which	-	-	110	82	76			4,2%	3,5%	3,2%
80L	-	-	66	49	47			2,5%	2,1%	1,9%
100L	-	-	22	17	16			0,8%	0,7%	0,6%
150L	-	-	11	9	8			0,4%	0,4%	0,3%
200L	-	-	8	6	5			0,3%	0,2%	0,2%
400L	-	-	4	2	2			0,1%	0,1%	0,1%
< 30 (Pressurised)	-	-	16	12	12			0,6%	0,5%	0,5%
< 30 L (Unpressurised)	-	-	970	721	673			37,3%	31,3%	28,1%
<b>El. Instantaneous</b>	<b>600</b>	<b>700</b>	<b>658</b>	<b>610</b>	<b>590</b>	<b>22,3%</b>	<b>23,6%</b>	<b>25,3%</b>	<b>26,5%</b>	<b>24,6%</b>
Instant Elec >12 kW	-	-	603	556	536			23,2%	24,1%	22,3%
Instant Elec <12 kW	-	-	55	54	55			2,1%	2,3%	2,3%
<b>Hydraulic</b>	-	-	395	300	235	-	-	15,2%	13,0%	9,8%
< 12kW	-	-	50	33	30			1,9%	1,4%	1,2%
12kW	-	-	32	15	15			1,2%	0,7%	0,6%
18kW	-	-	80	30	30			3,1%	1,3%	1,3%
21kW	-	-	138	100	76			5,3%	4,3%	3,2%
24kW	-	-	75	100	71			2,9%	4,3%	2,9%
27kW	-	-	20	22	14			0,8%	1,0%	0,6%
<b>Electronic</b>	-	-	263	310	355	-	-	10,1%	13,5%	14,8%
< 12kW	-	-	5	21	25			0,2%	0,9%	1,0%
12kW	-	-	40	14	18			1,5%	0,6%	0,8%
18kW	-	-	78	28	35			3,0%	1,2%	1,5%
21kW	-	-	90	95	113			3,5%	4,1%	4,7%
24kW	-	-	37	120	132			1,4%	5,2%	5,5%
27kW	-	-	13	32	32			0,5%	1,4%	1,3%
<b>GAS WATER HEATERS</b>	<b>245</b>	<b>192</b>	<b>123</b>	<b>76</b>	<b>63</b>	<b>9,1%</b>	<b>6,5%</b>	<b>4,7%</b>	<b>3,3%</b>	<b>2,6%</b>
<b>Gas Instantaneous</b>	<b>160</b>	<b>102</b>	<b>63</b>	<b>40</b>	<b>32</b>	<b>5,9%</b>	<b>3,4%</b>	<b>2,4%</b>	<b>1,7%</b>	<b>1,3%</b>
13+ Litre/Minute *	-	-	23	15	-			0,9%	0,6%	0,0%
10 -<13 Litre/Minute *	-	-	37	24	-			1,4%	1,0%	0,0%
5 -<10 Litre/Minute *	-	-	3	2	-			0,1%	0,1%	0,0%
<b>Gas Storage</b>	<b>85</b>	<b>90</b>	<b>60</b>	<b>36</b>	<b>31</b>	<b>3,2%</b>	<b>3,0%</b>	<b>2,3%</b>	<b>1,6%</b>	<b>1,3%</b>
<b>Condensing, of which</b>	-	-	1,1	3,3	10,0	-	-	0,0%	0,1%	0,4%
>220L	-	-	1,1	3,3	10,0			0,0%	0,1%	0,4%
<b>Non Condensing, of which</b>	-	-	58,9	32,7	21,0	-	-	2,3%	1,4%	0,9%
<80L	-	-	0,8	0,5	0,3			0,0%	0,0%	0,0%
80-130L	-	-	50,0	27,8	18,0			1,9%	1,2%	0,8%
160L	-	-	5,0	2,8	1,6			0,2%	0,1%	0,1%
190L	-	-	2,0	1,1	0,7			0,1%	0,0%	0,0%
220L	-	-	0,8	0,5	0,3			0,0%	0,0%	0,0%
>220L	-	-	0,3	0,2	0,1			0,0%	0,0%	0,0%
Open Flue	-	-	28,0	14,5	7,3			1,1%	0,6%	0,3%
Fan Flue	-	-	30,9	18,2	13,7			1,2%	0,8%	0,6%
<b>TOTAL</b>	<b>2.696</b>	<b>2.967</b>	<b>2.601</b>	<b>2.306</b>	<b>2.397</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 12 GREECE

## 12.1 Water Heater Sales

- With gas heating still at its early stages in Greece, the water heater market is mainly a mix of indirect cylinders, solar thermal and electric storage water heaters.
- The total market splits:
  - 32,300 appliances (11%) with water heating integrated with the central heating boiler;
  - 257,400 water heaters (89%) coming within the scope of this Task 2 study:
    - 47,000 (16%) separate cylinders linked to the boiler;
    - 210,500 (73%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 25% above the 1990 levels. The dedicated water heater market peaked in 2002. but there is still some growth in water heating linked to central heating.
- Within the main product categories
  - the use of solar thermal is well developed but sales are now rather static;
  - the electric storage market is split 80% >30 litres and 20% <30 litres. Of the >30 litre models. 98% are in the range 80-150 litres;
  - the electric instantaneous market is marginal;
  - the instantaneous gas market has started to develop from a low base. especially in the North;
  - a gas storage is just starting to emerge.
- Some 55% of sales (excluding integrated water heating) are to domestic replacement, including 53% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 86% of water heating appliances are sold for use as the primary source of sanitary hot water, and 14% are secondary appliances.

## 12.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 30% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 85% use electric storage water heaters (mainly 80-150 litres) and 28% use instantaneous gas water heaters;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 21% are indirect cylinders;
  - 68% are electric storage water heaters;
  - 11% solar thermal.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 8% of dwellings have a secondary water heater;
- about 8% of such appliances are electric storage, and 7% use instantaneous electric and 5% instantaneous gas water heaters.

## 12.3 Distribution Structures

The first stage of distribution is mainly in the hands of importer distributors (with some local manufacturers also acting as importers. They then sell (sometimes via their own retail outlets) direct to installers or to small provincial wholesalers. There are no national merchant chains.

A substantial proportion of electric water heaters are sold through bathroom retailers.

**Table 12-1. GREECE Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>20</b>	<b>51</b>	<b>0,3%</b>	<b>0,2%</b>	<b>0,3%</b>	<b>7,0%</b>	<b>16,7%</b>
Combi Boilers	1	0	1	19	48	0,3%	0,2%	0,2%	6,6%	15,8%
Combi Boilers (Storage only)	0	0	0	1	3	0,0%	0,0%	0,0%	0,5%	1,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<b>50</b>	<b>92</b>	<b>107</b>	<b>104</b>	<b>109</b>	<b>24,1%</b>	<b>46,7%</b>	<b>40,9%</b>	<b>35,9%</b>	<b>35,8%</b>
Indirect Cylinders Integrated	1	3	10	12	17	0,5%	1,5%	3,8%	4,2%	5,4%
Indirect Cylinders Separate	49	45	50	47	45	23,6%	23,0%	19,2%	16,1%	14,8%
Solar Storage Tanks	0	44	47	45	47		22,2%	17,9%	15,6%	15,5%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<b>156</b>	<b>103</b>	<b>152</b>	<b>162</b>	<b>141</b>	<b>75,1%</b>	<b>52,6%</b>	<b>58,4%</b>	<b>56,2%</b>	<b>46,5%</b>
<b>Electric Storage</b>	<b>150</b>	<b>100</b>	<b>148</b>	<b>161</b>	<b>140</b>	<b>72,3%</b>	<b>51,1%</b>	<b>56,9%</b>	<b>55,8%</b>	<b>46,2%</b>
≥ 30 (Pressurised), of which	-	-	120	129	115	-	-	46,1%	44,8%	37,9%
80L	-	-	100	108	98	-	-	38,4%	37,3%	32,3%
100L	-	-	12	13	10	-	-	4,6%	4,5%	3,4%
150L	-	-	6	7	5	-	-	2,3%	2,3%	1,7%
200L	-	-	2	2	2	-	-	0,8%	0,7%	0,6%
400L	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
< 30 (Pressurised)	-	-	3	3	3	-	-	1,2%	1,0%	1,0%
< 30 L (Unpressurised)	-	-	25	29	22	-	-	9,6%	10,1%	7,3%
<b>El. Instantaneous</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2,9%</b>	<b>1,5%</b>	<b>1,5%</b>	<b>0,3%</b>	<b>0,3%</b>
Instant Elec >12 kW	-	-	2	1	1	-	-	0,8%	0,2%	0,2%
Instant Elec <12 kW	-	-	2	1	0	-	-	0,8%	0,2%	0,1%
<b>Hydraulic</b>	-	-	3	1	1	-	-	1,0%	0,2%	0,2%
< 12kW	-	-	2	0	0	-	-	0,6%	0,1%	0,1%
12kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
18kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
21kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
24kW	-	-	1	0	0	-	-	0,2%	0,0%	0,0%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	-	-	2	0	0	-	-	0,6%	0,1%	0,1%
< 12kW	-	-	1	0	0	-	-	0,2%	0,1%	0,0%
12kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
18kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
21kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
24kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
27kW	-	-	0	0	0	-	-	0,1%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>0,5%</b>	<b>0,5%</b>	<b>0,4%</b>	<b>1,4%</b>	<b>2,0%</b>
<b>Gas Instantaneous</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>0,5%</b>	<b>0,5%</b>	<b>0,4%</b>	<b>1,1%</b>	<b>1,4%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,1%	0,0%
10 -<13 Litre/Minute *	-	-	1	3	-	-	-	0,3%	0,9%	0,0%
5 -<10 Litre/Minute *	-	-	0	1	-	-	-	0,1%	0,2%	0,0%
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,2%</b>	<b>0,6%</b>
Condensing	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Non Condensing	-	-	0,0	0,6	1,8	-	-	0,0%	0,2%	0,6%
<b>TOTAL</b>	<b>208</b>	<b>196</b>	<b>260</b>	<b>288</b>	<b>303</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 13 HUNGARY

## 13.1 Water Heater Sales

- In 1990 there was already a significant market for instantaneous gas and electric storage water heaters, and there has not been any underlying growth in sales of these products since then. Sales of water heating linked to central heating and of gas storage water heaters have however grown from a low base.
- The total market splits:
  - 66.100 appliances (22.5%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 227.500 water heaters (77.5%) coming within the scope of this Task 2 study:
    - 19.000 (6.5%) separate cylinders linked to the boiler;
    - 208.500 (77.5%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 16% above the 1990 levels.
- Within the main product categories
  - some 42% of indirect cylinders are <80 litres, 37% are in the range 80-120 litres and only 20% are over 200 litres;
  - the use of solar thermal is negligible;
  - the electric storage market is split 73% >30 litres and 27% <30 litres. Of the >30 litre models, 95% are in the range 80-150 litres;
  - there is a marginal electric instantaneous market;
  - the instantaneous gas market is fairly static. Sales are fairly evenly split between 5-<10 litres/minute, 10-<13 and 13+;
  - gas storage sales have grown steadily. Some 67% are <80 litres.
- Some 50% of sales (excluding integrated water heating) are to domestic replacement, including 55% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 67% of water heating appliances are sold for use as the primary source of sanitary hot water, and 33% are secondary appliances.

## 13.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 48.5% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 86.5% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 27% are indirect cylinders;
  - 63% are electric storage water heaters;
  - 10% instantaneous gas.



### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 24% of dwellings have a secondary water heater;
- about 60% of such appliances are electric storage, and 40% use instantaneous gas water heaters.

### **13.3 Distribution Structures**

The great majority of heating products are channelled through wholesalers (including importer/wholesalers). Some importers (e.g. BOSCH, BUDERUS, MTS, RIELLO) have their own representative offices. The wholesaler trade itself is fairly fragmented, with the top 16 companies accounting for about 50% of the trade. Of these the most important are SZATMARI (c. 11%), CITY-GAS (c. 8%), D-EG (c.5%), MEGATHERM (c. 3.8%), GRAVITACIO (c. 3.3%), and WOLSELEY HUNGARIA (c.3.2%).

**Table 13-1. HUNGARY Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>4</b>	<b>14</b>	<b>71</b>	<b>66</b>	<b>60</b>	<b>2,0%</b>	<b>7,5%</b>	<b>25,4%</b>	<b>22,5%</b>	<b>23,0%</b>
Combi Boilers	4	14	71	66	60	2,0%	7,5%	25,4%	22,5%	23,0%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>19</b>	<b>29</b>	<b>0,5%</b>	<b>1,1%</b>	<b>2,5%</b>	<b>6,5%</b>	<b>11,2%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	1	2	7	19	29	0,5%	1,1%	2,5%	6,5%	11,0%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind. Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,1%	0,2%
60-80L	-	-	1	8	16			0,3%	2,8%	6,1%
80-120L	-	-	3	4	6			1,1%	1,5%	2,3%
120-200L	-	-	2	3	3			0,7%	1,0%	1,1%
200-500L	-	-	1	3	3			0,4%	1,0%	1,1%
500-1000L	-	-	0	1	2			0,1%	0,3%	0,6%
>1000L	-	-	0	0	0			0,0%	0,0%	0,0%
Coil System	-	-	7	18	27			2,4%	6,1%	10,2%
Plate to Plate System	-	-	0	1	2			0,1%	0,3%	0,8%
<b>ELECTRIC WATER HEATERS</b>	<b>150</b>	<b>120</b>	<b>130</b>	<b>131</b>	<b>106</b>	<b>75,0%</b>	<b>64,5%</b>	<b>46,8%</b>	<b>44,4%</b>	<b>40,0%</b>
<b>Electric Storage</b>	<b>150</b>	<b>120</b>	<b>130</b>	<b>130</b>	<b>105</b>	<b>75,0%</b>	<b>64,5%</b>	<b>46,8%</b>	<b>44,2%</b>	<b>39,9%</b>
≥ 30 (Pressurised), of which	-	-	88	95	82	-	-	31,8%	32,3%	31,1%
80L	-	-	39	35	21			14,0%	11,9%	8,0%
100L	-	-	4	5	5			1,4%	1,7%	2,0%
150L	-	-	46	50	50			16,4%	17,0%	19,1%
200L	-	-	0	5	5			0,0%	1,7%	2,0%
400L	-	-	0	0	0			0,0%	0,0%	0,0%
< 30 (Pressurised)	-	-	13	5	2	-	-	4,7%	1,7%	0,8%
< 30 L (Unpressurised)	-	-	29	30	21	-	-	10,3%	10,2%	8,0%
<b>El. Instantaneous</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,2%</b>	<b>0,2%</b>
Instant Elec >12 kW	-	-	0	0	0			0,0%	0,0%	0,1%
Instant Elec <12 kW	-	-	0	0	0			0,0%	0,2%	0,1%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0,0%</b>	<b>0,2%</b>	<b>0,2%</b>
< 12kW	-	-	0	0	0			0,0%	0,2%	0,1%
12kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>GAS WATER HEATERS</b>	<b>45</b>	<b>50</b>	<b>70</b>	<b>78</b>	<b>68</b>	<b>22,5%</b>	<b>26,9%</b>	<b>25,2%</b>	<b>26,5%</b>	<b>25,8%</b>
<b>Gas Instantaneous</b>	<b>38</b>	<b>35</b>	<b>33</b>	<b>43</b>	<b>38</b>	<b>19,0%</b>	<b>18,8%</b>	<b>11,9%</b>	<b>14,6%</b>	<b>14,4%</b>
13+ Litre/Minute *	-	-	11	15	-			4,0%	4,9%	
10 -<13 Litre/Minute *	-	-	11	16	-			4,0%	5,4%	
5 -<10 Litre/Minute *	-	-	11	13	-			4,0%	4,3%	
<b>Gas Storage</b>	<b>7</b>	<b>15</b>	<b>37</b>	<b>35</b>	<b>30</b>	<b>3,5%</b>	<b>8,1%</b>	<b>13,3%</b>	<b>11,9%</b>	<b>11,4%</b>
Condensing	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Non Condensing, of which	-	-	37,0	35,0	30,0	-	-	13,3%	11,9%	11,4%
<80L	-	-	23,5	23,5	20,0			8,5%	8,0%	7,6%
80-130L	-	-	7,9	6,2	5,5			2,8%	2,1%	2,1%
160L	-	-	5,5	4,8	3,8			2,0%	1,6%	1,4%
190L	-	-	0,0	0,1	0,1			0,0%	0,0%	0,0%
220L	-	-	0,1	0,2	0,3			0,0%	0,1%	0,1%
>220L	-	-	0,1	0,4	0,4			0,0%	0,1%	0,2%
Open Flue	-	-	37,0	24,5	14,0			13,3%	8,3%	5,3%
Fan Flue	-	-	0,0	10,5	16,0			0,0%	3,6%	6,1%
<b>TOTAL</b>	<b>200</b>	<b>186</b>	<b>278</b>	<b>294</b>	<b>263</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 14 IRELAND

## 14.1 Water Heater Sales

- Ireland, like the UK, is notable for the dominance of open vented “traditional” cylinders (used as indirect cylinders and/or as cylinders heated by an electric element), and of instantaneous electric showers.
- The total market splits:
  - 16.600 appliances (4%) with water heating integrated with the central heating boiler (essentially wall hung gas combis);
  - 268.900 water heaters (96%) coming within the scope of this Task 2 study:
    - 95.400 (33%) separate cylinders linked to the boiler (including all “traditional” cylinders;
    - 178.500 (63%) dedicated water heaters, including instantaneous electric showers.
- Volume sales (excluding integrated water heating) in 2005 were running at more some 3 times the 1990 levels, within which instantaneous electric shower sales have grown almost fourfold.
- Within the main product categories
  - the use of solar thermal is negligible;
  - the electric storage market is split 70% >30 litres and 30% <30 litres. Of the >30 litre models, 83% are in the range 80-150 litres;
  - of the electric instantaneous market, some 97% comprises instantaneous electric showers;
  - the instantaneous gas market is minimal;
  - gas storage is estimated to be sold 91% mainly sold to commercial customers.
- Some 43% of sales (excluding integrated water heating) are to domestic replacement, including 51% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 38% of water heating appliances are sold for use as the primary source of sanitary hot water, and 62% are secondary appliances (including instantaneous electric showers).

## 14.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 84% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 66% use electric storage water heaters (mainly 80-150 litres) and 31% use instantaneous electric water heaters;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 83% are indirect cylinders;
  - 11% are electric storage water heaters;
  - 6% are instantaneous electric water heaters.

### ***Secondary Water Heating***

BRGC's estimates suggest that:

- most dwellings have a secondary water heater;
- about 93% of such appliances are instantaneous electric, and 7% electric storage.

### **14.3 Distribution Structures**

Almost all boiler sales go through merchants. The merchant trade is more fragmented than in the UK, but there are some important chains including WOLSELEY's HEATMERCHANTS (36 depots) and BROKS THOMAS (13 depots), GRAFTON's HEATON BUCKLEY's (22 depots) and CHADWICK's (24 depots), DUBLIN PROVIDERS (7 depots) and BSS (2 depots). There are many independents, many of which are affiliated to one of the three large buying groups (AMALGAMATED HARDWARE, ASSOCIATED HARDWARE and NATIONAL HARDWARE).

**Table 14-1. IRELAND Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b><u>COMBI BOILERS</u></b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>12</b>	<b>17</b>	<b>0,2%</b>	<b>0,5%</b>	<b>0,5%</b>	<b>4,0%</b>	<b>5,9%</b>
Combi Boilers	0	1	1	12	17	0,2%	0,5%	0,5%	4,0%	5,9%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b><u>INDIRECT CYLINDERS</u></b>	<b>37</b>	<b>51</b>	<b>66</b>	<b>95</b>	<b>83</b>	<b>44,9%</b>	<b>39,1%</b>	<b>34,4%</b>	<b>33,4%</b>	<b>29,9%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	37	51	66	95	83	44,9%	39,1%	34,4%	33,4%	29,9%
Solar Storage Tanks										
Gas WH: Ind. Cyl. Buffer Storage										
<b><u>ELECTRIC WATER HEATERS</u></b>	<b>45</b>	<b>77</b>	<b>122</b>	<b>176</b>	<b>176</b>	<b>54,5%</b>	<b>58,7%</b>	<b>63,6%</b>	<b>61,6%</b>	<b>63,2%</b>
<b>Electric Storage</b>	<b>5</b>	<b>10</b>	<b>11</b>	<b>16</b>	<b>17</b>	<b>5,5%</b>	<b>7,7%</b>	<b>5,7%</b>	<b>5,6%</b>	<b>6,1%</b>
<u>&gt; 30 (Pressurised), of which</u>	-	-	<u>4</u>	<u>6</u>	<u>6</u>	-	-	<u>2,1%</u>	<u>2,0%</u>	<u>2,2%</u>
80L	-	-	2	3	3			1,1%	1,1%	1,2%
100L	-	-	1	1	2			0,5%	0,5%	0,5%
150L	-	-	1	1	1			0,3%	0,3%	0,4%
200L	-	-	0	0	0			0,1%	0,1%	0,1%
400L	-	-	0	0	0			0,0%	0,0%	0,0%
<u>&lt; 30 (Pressurised)</u>	-	-	<u>5</u>	<u>7</u>	<u>8</u>	-	-	<u>2,5%</u>	<u>2,5%</u>	<u>2,9%</u>
<u>&lt; 30 L (Unpressurised)</u>	-	-	<u>2</u>	<u>3</u>	<u>3</u>	-	-	<u>1,1%</u>	<u>1,1%</u>	<u>1,0%</u>
<b>El. Instantaneous (incl. showers)</b>	<b>40</b>	<b>67</b>	<b>111</b>	<b>160</b>	<b>159</b>	<b>49,1%</b>	<b>51%</b>	<b>57,9%</b>	<b>56%</b>	<b>57,1%</b>
<i>Electric Showers (IRL and UK only)</i>	39	63	103	151	149	47,3%	48,3%	53,7%	52,8%	53,4%
Other instant Elec >12 kW	1	4	2	3	3	1,8%	2,7%	1,3%	0,9%	1,1%
Other instant Elec <12 kW			6	6	7			2,9%	2,2%	2,6%
<u>Hydraulic</u>	-	-	<u>6</u>	<u>6</u>	<u>5</u>	-	-	<u>3,0%</u>	<u>2,1%</u>	<u>1,9%</u>
< 12kW	-	-	4	4	4			2,1%	1,5%	1,3%
12kW	-	-	1	1	1			0,3%	0,2%	0,2%
18kW	-	-	0	0	0			0,1%	0,1%	0,1%
21kW	-	-	1	1	1			0,3%	0,2%	0,2%
24kW	-	-	0	0	0			0,1%	0,1%	0,0%
27kW	-	-	0	0	0			0,1%	0,1%	0,0%
<u>Electronic</u>	-	-	<u>2</u>	<u>3</u>	<u>5</u>	-	-	<u>1,3%</u>	<u>1,1%</u>	<u>1,8%</u>
< 12kW	-	-	2	2	4			0,9%	0,7%	1,3%
12kW	-	-	0	0	1			0,1%	0,1%	0,2%
18kW	-	-	0	0	0			0,1%	0,1%	0,1%
21kW	-	-	0	0	1			0,1%	0,1%	0,2%
24kW	-	-	0	0	0			0,0%	0,0%	0,0%
27kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b><u>GAS WATER HEATERS</u></b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0,4%</b>	<b>1,7%</b>	<b>1,5%</b>	<b>1,0%</b>	<b>1,0%</b>
<b>Gas Instantaneous</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0,4%</b>	<b>0,3%</b>	<b>0,3%</b>	<b>0,2%</b>	<b>0,2%</b>
13+ Litre/Minute *	-	-	0	0	-			0,0%	0,0%	
10 -<13 Litre/Minute *	-	-	1	1	-			0,3%	0,2%	
5 -<10 Litre/Minute *	-	-	0	0	-			0,0%	0,0%	
<b>Gas Storage</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0,0%</b>	<b>1,3%</b>	<b>1,2%</b>	<b>0,8%</b>	<b>0,8%</b>
<u>Condensing</u>	-	-	<u>0,0</u>	<u>0,0</u>	<u>0,0</u>	-	-	<u>0,0%</u>	<u>0,0%</u>	<u>0,0%</u>
<u>Non Condensing</u>	-	-	<u>2,3</u>	<u>2,3</u>	<u>2,3</u>	-	-	<u>1,2%</u>	<u>0,8%</u>	<u>0,8%</u>
Open Flue	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
Fan Flue	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
<b><u>TOTAL (incl. el. showers)</u></b>	<b>82</b>	<b>130</b>	<b>192</b>	<b>285</b>	<b>279</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 15 ITALY

## 15.1 Water Heater Sales

- The large Italian market has been characterised by preponderance of combi boilers (still growing) and electric storage water heaters (now declining. However indirect cylinders, and instantaneous and storage gas water heaters are also significant.
- The total market splits:
  - 1.375.800 appliances (47.5%) with water heating integrated with the central heating boiler;
  - 1.468.600 water heaters (52.5%) coming within the scope of this Task 2 study:
    - 52.700 (2%) separate cylinders linked to the boiler;
    - 1.521.300 (50.7%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 13% below the 1990 levels, with indirect cylinders showing some underlying growth and dedicated water heaters declining (a current exception is instantaneous gas water heaters which fell from 1990-1998 and then saw an unexpected recovery).
- Within the main product categories
  - some 52% of indirect cylinders are over 200 litres, and 45% in the 80-150 litre category;
  - the significant use of solar thermal started only recently but it is now growing on a modest scale;
  - the electric storage market is split 73% >30 litres and 27% <30 litres. Of the >30 litre models, 98% are in the range 80-150 litres;
  - there is almost no electric instantaneous market;
  - the instantaneous gas market expected to plateau following 6 years of recovery. Some 57% of sales are in the 13 litres/minute+ category, and 52% are in the 10-<13 litres/minute category. As in Spain and Portugal, it is assumed that both categories are used as primary water heaters;
  - there is a substantial but now declining gas storage market, with 80% of sales going to domestic customers.
- Some 85% of sales (excluding integrated water heating) are to domestic replacement, including 87% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 71% of water heating appliances are sold for use as the primary source of sanitary hot water, and 29% are secondary appliances.

## 15.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 57% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 79% use electric storage water heaters (mainly 80-150 litres) and 15% use instantaneous gas (assuming that all models of 10+ litres/minute are primary);

- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 7% are indirect cylinders;
  - 73% are electric storage water heaters;
  - 14% are instantaneous gas water heaters;
  - 5% are gas storage.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 22% of dwellings have a secondary water heater;
- about 99% of such appliances are electric storage.

## **15.3 Distribution Structures**

It is estimated that 72% of boilers are channelled through wholesales and 28% are sold direct, mainly to the contract trade.

The relevant wholesalers are the idro-termo-sanitari grossisti. Historically this trade has been far more fragmented than is the norm in northern Europe, and apart from WOLSELEY's ownership of MANZARDO there has been little foreign investment in the sector. There are some 600 firms with about 1,000 outlets. 70% of the business is in the hands of the top 250 firms. There has been some concentration over the years partly through the expansion (partly by acquisition) of the owned chains, and partly through buying groups.

Of the owned firms, the largest are:

- CAMBIELI GROUP (including EDILFRIULI) with 35 depots
- WOLSELEY's MANZARDO (20 depots)
- IDROCENTRO (38 depots)
- CENTRO GAMMA (8 depots)
- BOXZZOLA (8 depots)
- FALDATI MARCO ORFEO (8 depots)
- AFIS CLERICI (12 depots)
- FISAR (15 depots)
- ISER ZAULI (12 depots)
- IMETER (10 depots)
- BELTRAMI (9 depots)
- ABBATISTA (10 depots)
- BOREA DUE (13 depots)
- SVAI (10 depots)
- CORRADINI (10 depots)
- TOMMASI (8 depots)

Significant buying groups include EUROPA 2000/PRONTOGROS, IDROTRATE, DELTA, INTESA, C7, UNION, DTA, MISTRAL, I.C.L 2001 and POLO.

Of water heater sales, about 5% go through white goods channels.

**Table 15-1. ITALY Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>875</b>	<b>1025</b>	<b>1162</b>	<b>1342</b>	<b>1370</b>	<b>32,6%</b>	<b>40,4%</b>	<b>43,7%</b>	<b>48,0%</b>	<b>48,5%</b>
Combi Boilers	835	945	1070	1237	1267	31,1%	37,2%	40,3%	44,3%	44,9%
Combi Boilers (Storage only)	40	80	92	105	103	1,5%	3,2%	3,5%	3,7%	3,6%
<b>INDIRECT CYLINDERS</b>	<b>144</b>	<b>119</b>	<b>103</b>	<b>101</b>	<b>114</b>	<b>5,4%</b>	<b>4,7%</b>	<b>3,9%</b>	<b>3,6%</b>	<b>4,0%</b>
Indirect Cylinders Integrated	94	60	44	34	29	3,5%	2,4%	1,7%	1,2%	1,0%
Indirect Cylinders Separate	50	58	53	52	48	1,9%	2,3%	2,0%	1,9%	1,7%
Solar Storage Tanks	0	1	4	12	34		0,1%	0,1%	0,4%	1,2%
Gas WH: Ind. Cyl. Buffer Storage	0	0	2	3	3			0,1%	0,1%	0,1%
60-80L	-	-	2	3	6			0,1%	0,1%	0,2%
80-120L	-	-	15	16	23			0,6%	0,6%	0,8%
120-200L	-	-	31	29	32			1,2%	1,1%	1,1%
200-500L	-	-	33	31	32			1,2%	1,1%	1,2%
500-1000L	-	-	12	12	11			0,5%	0,4%	0,4%
>1000L	-	-	9	9	9			0,3%	0,3%	0,3%
Coil System	-	-	72	70	69			2,7%	2,5%	2,4%
Plate to Plate System	-	-	31	31	45			1,1%	1,1%	1,6%
<b>ELECTRIC WATER HEATERS</b>	<b>1380</b>	<b>1230</b>	<b>1215</b>	<b>1160</b>	<b>1150</b>	<b>51,4%</b>	<b>48,5%</b>	<b>45,7%</b>	<b>41,5%</b>	<b>40,7%</b>
<b>Electric Storage</b>	<b>1380</b>	<b>1230</b>	<b>1215</b>	<b>1160</b>	<b>1150</b>	<b>51,4%</b>	<b>48,5%</b>	<b>45,7%</b>	<b>41,5%</b>	<b>40,7%</b>
> 30 (Pressurised), of which	-	-	883	847	851	-	-	33,2%	30,3%	30,1%
80L	-	-	751	696	689	-	-	28,2%	24,9%	24,4%
100L	-	-	88	101	115	-	-	3,3%	3,6%	4,1%
150L	-	-	27	33	33	-	-	1,0%	1,2%	1,2%
200L	-	-	13	13	12	-	-	0,5%	0,5%	0,4%
400L	-	-	5	4	2	-	-	0,2%	0,2%	0,1%
< 30 (Pressurised)	-	-	332	313	299	-	-	12,5%	11,2%	10,6%
< 30 L (Unpressurised)	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>El. Instantaneous</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>GAS WATER HEATERS</b>	<b>325</b>	<b>244</b>	<b>270</b>	<b>297</b>	<b>292</b>	<b>12,1%</b>	<b>9,6%</b>	<b>10,2%</b>	<b>10,6%</b>	<b>10,3%</b>
<b>Gas Instantaneous</b>	<b>240</b>	<b>185</b>	<b>218</b>	<b>252</b>	<b>248</b>	<b>8,9%</b>	<b>7,3%</b>	<b>8,2%</b>	<b>9,0%</b>	<b>8,8%</b>
13+ Litre/Minute *	-	-	127	144	-	-	-	4,8%	5,1%	-
10 -<13 Litre/Minute *	-	-	88	104	-	-	-	3,3%	3,7%	-
5 -<10 Litre/Minute *	-	-	3	4	-	-	-	0,1%	0,2%	-
<b>Gas Storage</b>	<b>85</b>	<b>59</b>	<b>52</b>	<b>46</b>	<b>44</b>	<b>3,2%</b>	<b>2,3%</b>	<b>2,0%</b>	<b>1,6%</b>	<b>1,6%</b>
<b>Condensing</b>	<b>-</b>	<b>-</b>	<b>0,0</b>	<b>0,0</b>	<b>0,0</b>	<b>-</b>	<b>-</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>Non Condensing, of which</b>	<b>-</b>	<b>-</b>	<b>52,0</b>	<b>45,5</b>	<b>44,0</b>	<b>-</b>	<b>-</b>	<b>2,0%</b>	<b>1,6%</b>	<b>1,6%</b>
<80L	-	-	39,4	35,8	35,2	-	-	1,5%	1,3%	1,2%
80-130L	-	-	1,0	0,9	0,8	-	-	0,0%	0,0%	0,0%
160L	-	-	1,2	1,0	0,9	-	-	0,0%	0,0%	0,0%
190L	-	-	2,1	1,6	1,5	-	-	0,1%	0,1%	0,1%
220L	-	-	3,4	2,5	2,3	-	-	0,1%	0,1%	0,1%
>220L	-	-	4,9	3,7	3,3	-	-	0,2%	0,1%	0,1%
Open Flue	-	-	39,0	18,2	4,4	-	-	1,5%	0,7%	0,2%
Fan Flue	-	-	13,0	27,3	39,6	-	-	0,5%	1,0%	1,4%
<b>TOTAL</b>	<b>2.684</b>	<b>2.538</b>	<b>2.658</b>	<b>2.795</b>	<b>2.823</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>



# 16 LATVIA

## 16.1 Water Heater Sales

- Much of the water heater market has developed since 1990. However the market is influenced by the high penetration of district heating (an estimated 56% of dwellings derive their hot water from district or collective space heating system).
- The total market splits:
  - 4.500 appliances (11%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 36.900 water heaters (89%) coming within the scope of this Task 2 study:
    - 3.900 (9%) separate cylinders linked to the boiler;
    - 33.000 (80%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 30 times the 1990 levels.
- Within the main product categories
  - the use of solar thermal is negligible;
  - the electric storage market is split 82% >30 litres and 18% <30 litres. Of the >30 litre models, 96% are in the range 80-150 litres;
  - there is a small electric instantaneous market (70% <12 kW);
  - the instantaneous gas market remains small;
  - there is a minimal gas storage market.
- Some 75% of sales (excluding integrated water heating) are to domestic replacement, including 80% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 79% of water heating appliances are sold for use as the primary source of sanitary hot water, and 21% are secondary appliances.

## 16.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 63% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 96% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 15% are indirect cylinders;
  - 82% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 8% of dwellings have a secondary water heater;

- about 64% of such appliances are electric storage, 17% use instantaneous electric and 20% use instantaneous gas water heaters.

### 16.3 Distribution Structures

As in the other Baltic States, the distribution of heating products is mainly in the hands of importer/wholesalers in the capital (Riga) selling on to local dealer/installers or small wholesalers. BOSCH has its own distribution facility in Riga. There are some significant wholesalers including the Finnish ONNINEN (3 depots), SANISTAL's MAX SCHÖN (2 depots), SB (2 depots), MNS (3 depots), KEF (4 depots) and SIA SANTEH KOMPLEKTS (3 depots). Most electric water heaters are channelled through white goods and DIY retailers.

Table 16-1. LATVIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>5</u>	<u>6</u>	<u>0,0%</u>	<u>5,1%</u>	<u>7,4%</u>	<u>11,0%</u>	<u>12,8%</u>
Combi Boilers	0	1	2	5	6	0,0%	5,1%	7,4%	11,0%	12,8%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
						0	0	0	0	0
<b>INDIRECT CYLINDERS</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>16,3%</u>	<u>8,0%</u>	<u>4,6%</u>	<u>9,4%</u>	<u>11,7%</u>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	0	1	2	4	6	16,3%	8,0%	4,6%	9,4%	11,7%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<u>0</u>	<u>11</u>	<u>28</u>	<u>32</u>	<u>35</u>	<u>2,0%</u>	<u>79,7%</u>	<u>86,1%</u>	<u>77,2%</u>	<u>74,3%</u>
<b>Electric Storage</b>	<u>0</u>	<u>10</u>	<u>26</u>	<u>30</u>	<u>33</u>	<u>0,0%</u>	<u>72,5%</u>	<u>79,9%</u>	<u>72,4%</u>	<u>70,0%</u>
≥ 30 (Pressurised), of which	-	-	<u>22</u>	<u>25</u>	<u>26</u>	-	-	<u>66,5%</u>	<u>59,1%</u>	<u>54,6%</u>
80L	-	-	10	12	8			31,7%	28,7%	17,5%
100L	-	-	10	10	10			30,2%	23,4%	21,0%
150L	-	-	1	2	4			3,0%	4,9%	8,4%
200L	-	-	0	1	3			0,8%	1,4%	7,0%
400L	-	-	0	0	0			0,8%	0,7%	0,7%
< 30 (Pressurised)	-	-	<u>4</u>	<u>5</u>	<u>1</u>	-	-	<u>12,6%</u>	<u>10,9%</u>	<u>1,4%</u>
< 30 L (Unpressurised)	-	-	<u>0</u>	<u>1</u>	<u>7</u>	-	-	<u>0,8%</u>	<u>2,4%</u>	<u>14,0%</u>
<b>EI. Instantaneous</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2,0%</u>	<u>7,2%</u>	<u>6,2%</u>	<u>4,8%</u>	<u>4,2%</u>
Instant Elec >12 kW	-	-	1	1	1			1,7%	1,4%	2,2%
Instant Elec <12 kW	-	-	1	1	1			4,5%	3,4%	2,1%
<b>Hydraulic</b>	-	-	<u>2</u>	<u>2</u>	<u>2</u>	-	-	<u>5,7%</u>	<u>4,2%</u>	<u>3,6%</u>
< 12kW	-	-	1	1	1			4,3%	3,2%	1,9%
12kW	-	-	0	0	0			0,5%	0,3%	0,5%
18kW	-	-	0	0	0			0,4%	0,3%	0,6%
21kW	-	-	0	0	0			0,3%	0,2%	0,3%
24kW	-	-	0	0	0			0,1%	0,1%	0,3%
27kW	-	-	0	0	0			0,1%	0,0%	0,3%
<b>Electronic</b>	-	-	<u>0</u>	<u>0</u>	<u>0</u>	-	-	<u>0,5%</u>	<u>0,6%</u>	<u>0,6%</u>
< 12kW	-	-	0	0	0			0,2%	0,2%	0,2%
12kW	-	-	0	0	0			0,1%	0,1%	0,1%
18kW	-	-	0	0	0			0,1%	0,1%	0,1%
21kW	-	-	0	0	0			0,1%	0,1%	0,1%
24kW	-	-	0	0	0			0,1%	0,0%	0,0%
27kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>81,6%</u>	<u>7,2%</u>	<u>1,9%</u>	<u>2,4%</u>	<u>1,3%</u>
<b>Gas Instantaneous</b>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>81,6%</u>	<u>7,2%</u>	<u>1,5%</u>	<u>1,7%</u>	<u>1,1%</u>
13+ Litre/Minute *	-	-	0	0	-			0,0%	0,0%	
10 -<13 Litre/Minute *	-	-	1	1	-			1,5%	1,7%	
5 -<10 Litre/Minute *	-	-	0	0	-			0,0%	0,0%	
<b>Gas Storage</b>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0,0%</u>	<u>0,0%</u>	<u>0,3%</u>	<u>0,7%</u>	<u>0,2%</u>
Condensing	-	-	<u>0,0</u>	<u>0,0</u>	<u>0,0</u>	-	-	<u>0,0%</u>	<u>0,0%</u>	<u>0,0%</u>
Non Condensing	-	-	<u>0,1</u>	<u>0,3</u>	<u>0,1</u>	-	-	<u>0,3%</u>	<u>0,7%</u>	<u>0,2%</u>
<b>TOTAL</b>	<b>1</b>	<b>14</b>	<b>32</b>	<b>41</b>	<b>47</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 17 LITHUANIA

## 17.1 Water Heater Sales

- The water heating market has progressively shifted away from instantaneous gas and electric towards combi boilers and electric storage water heaters. 56% of dwellings derive their hot water from district or collective heating systems.
- The total market splits:
  - 4.600 appliances (16%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 43.900 water heaters (84%) coming within the scope of this Task 2 study:
    - 4.600 (9%) separate cylinders linked to the boiler;
    - 39.300 (75%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some double the 1990 levels.
- Within the main product categories
  - the use of solar thermal is negligible;
  - the electric storage market is split 86% >30 litres and 14% <30 litres. Of the >30 litre models, 96% are in the range 80-150 litres;
  - there is a small electric instantaneous market (70% <12 kW);
  - the instantaneous gas market as fallen to a low level;
  - there is a minimal gas storage market.
- Some 66% of sales (excluding integrated water heating) are to domestic replacement, including 69% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 81% of water heating appliances are sold for use as the primary source of sanitary hot water, and 19% are secondary appliances.

## 17.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 67% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 96% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 20% are indirect cylinders;
  - 77% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 13% of dwellings have a secondary water heater;

- about 33% of such appliances are electric storage, 35% use instantaneous electric and 32% use instantaneous gas water heaters.

### 17.3 Distribution Structures

The importing and distribution of heating products tends to be in the hands of wholesalers based in one of the five main urban centres, with concentrations in Vilnius and Kaunas. There are some wholesalers offering more or less national coverage including HYDRUVA (5 depots), VILPRA (7 depots), CELSIS (4 depots), GILIUS (3 depots), ONNINEN (3 depots) and MURESTA (4 depots).

Most electric water heaters are channelled through white goods and DIY retailers.

**Table 17-1. LITHUANIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>0,0%</b>	<b>6,4%</b>	<b>14,0%</b>	<b>15,7%</b>	<b>16,4%</b>
Combi Boilers	0	2	6	8	10	0,0%	6,4%	14,0%	15,7%	16,4%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>3,4%</b>	<b>2,9%</b>	<b>2,3%</b>	<b>8,8%</b>	<b>10,5%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	1	1	1	5	6	3,4%	2,9%	2,3%	8,8%	10,5%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<b>11</b>	<b>25</b>	<b>35</b>	<b>39</b>	<b>43</b>	<b>53,1%</b>	<b>78,0%</b>	<b>81,4%</b>	<b>73,9%</b>	<b>71,8%</b>
<b>Electric Storage</b>	<b>7</b>	<b>17</b>	<b>31</b>	<b>35</b>	<b>40</b>	<b>33,8%</b>	<b>52,5%</b>	<b>72,1%</b>	<b>67,2%</b>	<b>66,3%</b>
> 30 (Pressurised), of which	-	-	26	30	34	-	-	60,5%	57,6%	56,5%
80L	-	-	13	15	17	-	-	29,6%	28,8%	28,5%
100L	-	-	10	11	12	-	-	24,2%	21,7%	20,6%
150L	-	-	2	2	3	-	-	4,3%	4,7%	4,9%
200L	-	-	1	1	1	-	-	1,4%	1,3%	1,3%
400L	-	-	0	1	1	-	-	1,1%	1,1%	1,2%
< 30 (Pressurised)	-	-	3	3	3	-	-	6,5%	5,8%	5,4%
< 30 L (Unpressurised)	-	-	2	2	3	-	-	5,0%	3,8%	4,4%
<b>El. Instantaneous</b>	<b>4</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>19,3%</b>	<b>25,5%</b>	<b>9,3%</b>	<b>6,7%</b>	<b>5,6%</b>
Instant Elec >12 kW	-	-	1	1	1	-	-	2,0%	1,9%	1,7%
Instant Elec <12 kW	-	-	3	3	2	-	-	7,3%	4,8%	3,8%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>8,8%</b>	<b>6,0%</b>	<b>4,9%</b>
< 12kW	-	-	3	2	2	-	-	7,2%	4,6%	3,5%
12kW	-	-	0	0	0	-	-	0,5%	0,5%	0,4%
18kW	-	-	0	0	0	-	-	0,5%	0,5%	0,4%
21kW	-	-	0	0	0	-	-	0,4%	0,3%	0,3%
24kW	-	-	0	0	0	-	-	0,3%	0,2%	0,2%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0,4%</b>	<b>0,7%</b>	<b>0,7%</b>
< 12kW	-	-	0	0	0	-	-	0,1%	0,3%	0,3%
12kW	-	-	0	0	0	-	-	0,1%	0,1%	0,1%
18kW	-	-	0	0	0	-	-	0,1%	0,1%	0,1%
21kW	-	-	0	0	0	-	-	0,0%	0,1%	0,1%
24kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>9</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>43,5%</b>	<b>12,7%</b>	<b>2,3%</b>	<b>1,5%</b>	<b>1,2%</b>
<b>Gas Instantaneous</b>	<b>9</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>43,5%</b>	<b>12,7%</b>	<b>2,3%</b>	<b>1,5%</b>	<b>1,2%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	-
10 -<13 Litre/Minute *	-	-	1	1	-	-	-	2,3%	1,5%	-
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	-
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>TOTAL</b>	<b>21</b>	<b>31</b>	<b>43</b>	<b>52</b>	<b>60</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 18 LUXEMBOURG

With a population of around 450.000 in 2004, Luxembourg is one of the smallest countries in the EU. It has few domestic energy resources, and it is almost entirely dependent on imports of both fossil fuels and electricity to meet its energy needs. 92% of the electricity is imported from Belgium and Germany.

In 2001, the vast majority of the 161.530 dwellings in Luxembourg had central heating (96.8%). Oil and gas are the main forms of energy, 48% and 43% respectively. Other forms of energy play a minor role.

Because of its small market size, the Luxembourgian boiler market is often considered as an extension of the Belgian market.

Almost all radiators in use have a TRV fitted.

# 19 MALTA

Malta had a population of about 400.000 in 2004, with an average GDP per capita of around €10.000.

In 1995, 82,67% of Maltese dwellings had some form of heating; however this thought to be almost entirely room heating. It is unlikely that Malta has any significant park of central heating systems. Out of the existing heating systems, 53,5% use electricity as their energy source, 24% use gas and another 22,5% paraffin.

The low percentage of dwellings with central heating can be attributed to the relatively mild climate (4 month of winter with average temperatures between 11 and 15° C).

Due to the absence of a gas network, bottled gas is used for heating purposes. There are however plans to connect the island of Malta to the European gas grid through Italy.

# 20 NETHERLANDS

## 20.1 Water Heater Sales

- With a high penetration of gas central heating, sales of dedicated water heaters have declined over the years. In spite of the dominance of gas in space heating, electric water heaters far outsell gas in the dedicated water heater market.
- The total market splits:
  - 370.800 appliances (64%) with water heating integrated with the central heating boiler;
  - 210.900 water heaters (36%) coming within the scope of this Task 2 study:
    - 28.200 (5%) separate cylinders linked to the boiler;
    - 182.700 (31%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at 36% below the 1990 levels.
- Within the main product categories
  - some 67% of indirect cylinders are in the 80-200 litre range and only 14% are over 200 litres;
  - the use of solar thermal is now starting to develop from a low base;
  - the electric storage market is split 37% >30 litres and 63% <30 litres. Of the >30 litre models, 90% are in the range 80-150 litres;
  - the electric instantaneous market is marginal (80% <12 kW);
  - the instantaneous gas market is significant but declining (2005 sales were 72% below the 1990 level). 31% of sales are in the 13 litres/minute + category ;
  - gas storage is estimated to be sold 90% to domestic customers.
- Some 69% of sales (excluding integrated water heating) are to domestic replacement, including 74% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 48% of water heating appliances are sold for use as the primary source of sanitary hot water, and 52% are secondary appliances.

## 20.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 85% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 74% use electric storage water heaters (mainly 80-150 litres) and 19% use instantaneous gas water heaters;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 38% are indirect cylinders;
  - 46% are electric storage water heaters;
  - 12% use instantaneous gas water heaters.

### ***Secondary Water Heating***

BRGC's estimates suggest that:

- some 31% of dwellings have a secondary water heater;
- about 71% of such appliances are electric storage, and 27% use instantaneous gas water heaters.

### **20.3 Distribution Structures**

Some 85% of boiler distribution is through wholesalers.

The wholesalers handling heating products are members of the GCV branch of the trade association TGF. There are 26 GCV members, of which 14 are also members of the sanitary branch GISA.

The trade is fairly concentrated. Of the combined heating and sanitary sector, TECHISCHE UNIE holds some 40%, PLIEGER 9% and VEGRO 11%. Three heating specialists are WOLSELEY's WASCO (6.6%), RENSA and THERMO NORD. These last three between them may hold 30-35% of the heating market.

**Table 20-1. NETHERLANDS Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>213</b>	<b>282</b>	<b>322</b>	<b>370</b>	<b>383</b>	<b>39,0%</b>	<b>53,2%</b>	<b>58,5%</b>	<b>63,3%</b>	<b>65,5%</b>
Combi Boilers	213	282	322	370	383	39,0%	53,2%	58,5%	63,3%	65,5%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>20</b>	<b>26</b>	<b>32</b>	<b>37</b>	<b>40</b>	<b>3,6%</b>	<b>4,9%</b>	<b>5,8%</b>	<b>6,3%</b>	<b>6,9%</b>
Indirect Cylinders Integrated	1	1	1	1	1	0,1%	0,2%	0,2%	0,2%	0,2%
Indirect Cylinders Separate	19	22	23	25	26	3,5%	4,1%	4,2%	4,4%	4,5%
Solar Storage Tanks	0	3	8	10	13		0,6%	1,5%	1,7%	2,2%
Gas WH: Ind. Cyl. Buffer Storage	0	0	0	0	1			0,0%	0,1%	0,1%
60-80L	-	-	9	8	7			1,6%	1,4%	1,2%
80-120L	-	-	10	13	16			1,7%	2,2%	2,7%
120-200L	-	-	9	11	12			1,5%	1,9%	2,1%
200-500L	-	-	4	4	4			0,7%	0,7%	0,7%
500-1000L	-	-	0	1	1			0,1%	0,1%	0,1%
>1000L	-	-	1	1	1			0,1%	0,1%	0,1%
Coil System	-	-	30	32	35			5,4%	5,4%	6,0%
Plate to Plate System	-	-	3	5	5			0,5%	0,8%	0,9%
<b>ELECTRIC WATER HEATERS</b>	<b>172</b>	<b>162</b>	<b>149</b>	<b>137</b>	<b>128</b>	<b>31,5%</b>	<b>30,5%</b>	<b>27,1%</b>	<b>23,5%</b>	<b>21,9%</b>
<b>Electric Storage</b>	<b>168</b>	<b>160</b>	<b>147</b>	<b>135</b>	<b>126</b>	<b>30,8%</b>	<b>30,2%</b>	<b>26,7%</b>	<b>23,1%</b>	<b>21,6%</b>
> 30 (Pressurised), of which	-	-	61	50	37	-	-	11,0%	8,6%	6,3%
80L	-	-	28	23	15			5,0%	3,9%	2,6%
100L	-	-	22	18	15			3,9%	3,1%	2,5%
150L	-	-	5	4	3			1,0%	0,8%	0,6%
200L	-	-	4	4	3			0,8%	0,6%	0,5%
400L	-	-	1	1	1			0,3%	0,2%	0,1%
< 30 (Pressurised)	-	-	79	80	85	-	-	14,4%	13,7%	14,5%
< 30 L (Unpressurised)	-	-	7	5	4	-	-	1,3%	0,9%	0,7%
<b>EI. Instantaneous</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0,7%</b>	<b>0,4%</b>	<b>0,4%</b>	<b>0,3%</b>	<b>0,3%</b>
Instant Elec >12 kW	-	-	1	0	0			0,1%	0,1%	0,1%
Instant Elec <12 kW	-	-	1	2	2			0,3%	0,3%	0,3%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>0,3%</b>	<b>0,2%</b>	<b>0,2%</b>
< 12kW	-	-	1	1	1			0,2%	0,2%	0,1%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>0,1%</b>	<b>0,1%</b>	<b>0,2%</b>
< 12kW	-	-	0	1	1			0,1%	0,1%	0,1%
<b>GAS WATER HEATERS</b>	<b>141</b>	<b>60</b>	<b>48</b>	<b>40</b>	<b>33</b>	<b>25,8%</b>	<b>11,3%</b>	<b>8,7%</b>	<b>6,9%</b>	<b>5,7%</b>
<b>Gas Instantaneous</b>	<b>120</b>	<b>52</b>	<b>41</b>	<b>34</b>	<b>27</b>	<b>22,0%</b>	<b>9,8%</b>	<b>7,4%</b>	<b>5,8%</b>	<b>4,7%</b>
13+ Litre/Minute *	-	-	14	13	-			2,5%	2,2%	0,0%
10 -<13 Litre/Minute *	-	-	13	11	-			2,4%	1,9%	0,0%
5 -<10 Litre/Minute *	-	-	14	11	-			2,5%	1,8%	0,0%
<b>Gas Storage</b>	<b>21</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>3,8%</b>	<b>1,5%</b>	<b>1,2%</b>	<b>1,1%</b>	<b>1,0%</b>
<b>Condensing, of which</b>	<b>-</b>	<b>-</b>	<b>0,8</b>	<b>1,6</b>	<b>2,6</b>	<b>-</b>	<b>-</b>	<b>0,1%</b>	<b>0,3%</b>	<b>0,4%</b>
>220L	-	-	0,8	1,6	2,6			0,1%	0,3%	0,4%
<b>Non Condensing, of which</b>	<b>-</b>	<b>-</b>	<b>6,0</b>	<b>4,6</b>	<b>3,4</b>	<b>-</b>	<b>-</b>	<b>1,1%</b>	<b>0,8%</b>	<b>0,6%</b>
<80L	-	-	0,3	0,3	0,1			0,1%	0,0%	0,0%
80-130L	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
160L	-	-	1,0	0,8	0,6			0,2%	0,1%	0,1%
190L	-	-	1,5	1,1	0,8			0,3%	0,2%	0,1%
220L	-	-	1,5	1,1	0,9			0,3%	0,2%	0,2%
>220L	-	-	1,8	1,4	1,1			0,3%	0,2%	0,2%
Open Flue	-	-	3,2	2,3	1,0			0,6%	0,4%	0,2%
Fan Flue	-	-	2,8	2,3	2,4			0,5%	0,4%	0,4%
<b>TOTAL</b>	<b>546</b>	<b>530</b>	<b>551</b>	<b>584</b>	<b>584</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>



# 21 POLAND

## 21.1 Water Heater Sales

- Poland already had a substantial and varied dedicated water heater market in 1990. Since then the market for water heating linked to boilers has grown, without seriously eroding the dedicated water heater market. In addition, it is estimated that 37 of dwellings derive hot water from district or collective heating systems.
- The total market splits:
  - 89.600 appliances (12%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 638.700 water heaters (88%) coming within the scope of this Task 2 study:
    - 46.000 (6%) separate cylinders linked to the boiler;
    - 592.700 (81%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 8% above the 1990 levels.
- Within the main product categories
  - some 77% of indirect cylinders are in the range 80-120 litres and 24% are over 200 litres;
  - the use of solar thermal is negligible;
  - the electric storage market is split 86% >30 litres and 14% <30 litres. Of the >30 litre models, 99% are in the range 80-150 litres;
  - there is a significant electric instantaneous market (25% <12 kW) which grew to 290.000 pieces in 1999 but had fallen back to 178.000 pieces by 2005;
  - the instantaneous gas market grew up to 1999, but has since stagnated. Almost all sales are in the 10-13 litres/minute category ;
  - gas storage sales grew up to 2000, but have since declined. It is estimated that 90% are sold to domestic customers.
- Some 66% of sales (excluding integrated water heating) are to domestic replacement, including 69% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 48% of water heating appliances are sold for use as the primary source of sanitary hot water, and 52% are secondary appliances.

## 21.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 62% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 82% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 25% are indirect cylinders;

- 62% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 43% of dwellings have a secondary water heater;
- about 16% of such appliances are electric storage, 42% use instantaneous electric and 42% use instantaneous gas water heaters.

### **21.3 Distribution Structures**

Boiler distribution is mainly through wholesalers. Poland is a difficult country logistically (rather reminiscent of Spain in the 1980's), with long distances between urban centres and a relatively poor transport infrastructure.

The heating and sanitary wholesaler trade is still rather fragmented. SAINT GOBAIN's TADMAR is easily the leader with some 14%. SBS, ABG and SANPOL have 1-4% each. GRUPA CENTRUM is a significant buying group. CG GRUPPE is present with BIMS PLUS.

For electric water heaters, DIY stores handle some 22% of sales.

**Table 21-1. POLAND Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>5</b>	<b>45</b>	<b>74</b>	<b>83</b>	<b>101</b>	<b>0,8%</b>	<b>6,5%</b>	<b>9,1%</b>	<b>11,3%</b>	<b>14,9%</b>
Combi Boilers	5	45	74	83	101	0,8%	6,5%	9,1%	11,3%	14,9%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>10</b>	<b>30</b>	<b>48</b>	<b>54</b>	<b>66</b>	<b>1,7%</b>	<b>4,2%</b>	<b>5,9%</b>	<b>7,4%</b>	<b>9,7%</b>
Indirect Cylinders Integrated	0	5	7	7	7	0,0%	0,6%	0,9%	1,0%	1,0%
Indirect Cylinders Separate	10	25	41	46	58	1,7%	3,6%	5,0%	6,3%	8,5%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	1	1			0,0%	0,1%	0,2%
60-80L	-	-	2	2	2			0,2%	0,3%	0,3%
80-120L	-	-	13	21	32			1,6%	2,9%	4,8%
120-200L	-	-	24	17	19			3,0%	2,4%	2,7%
200-500L	-	-	6	8	7			0,7%	1,1%	1,1%
500-1000L	-	-	2	3	4			0,2%	0,4%	0,6%
>1000L	-	-	1	2	2			0,1%	0,2%	0,3%
Coil System	-	-	44	47	59			5,4%	6,5%	8,7%
Plate to Plate System	-	-	3	6	7			0,4%	0,8%	1,0%
<b>ELECTRIC WATER HEATERS</b>	<b>440</b>	<b>470</b>	<b>533</b>	<b>418</b>	<b>354</b>	<b>73,6%</b>	<b>67,7%</b>	<b>65,6%</b>	<b>57,4%</b>	<b>52,1%</b>
<b>Electric Storage</b>	<b>320</b>	<b>259</b>	<b>293</b>	<b>240</b>	<b>196</b>	<b>53,5%</b>	<b>37,3%</b>	<b>36,0%</b>	<b>32,9%</b>	<b>28,9%</b>
> 30 (Pressurised), of which	-	-	220	206	171	-	-	27,0%	28,3%	25,2%
80L	-	-	184	172	141	-	-	22,6%	23,6%	20,8%
100L	-	-	15	13	10	-	-	1,8%	1,8%	1,5%
150L	-	-	20	20	19	-	-	2,5%	2,7%	2,7%
200L	-	-	0	1	1	-	-	0,0%	0,1%	0,1%
400L	-	-	0	1	1	-	-	0,0%	0,1%	0,1%
< 30 (Pressurised)	-	-	73	34	25	-	-	9,0%	4,7%	3,7%
< 30 L (Unpressurised)	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>El. Instantaneous</b>	<b>120</b>	<b>211</b>	<b>240</b>	<b>178</b>	<b>158</b>	<b>20,1%</b>	<b>30,4%</b>	<b>29,5%</b>	<b>24,4%</b>	<b>23,3%</b>
Instant Elec >12 kW	-	-	70	45	36	-	-	8,5%	6,1%	5,3%
Instant Elec <12 kW	-	-	171	134	122	-	-	21,0%	18,3%	18,0%
<b>Hydraulic</b>	-	-	234	167	145	-	-	28,8%	22,9%	21,4%
< 12kW	-	-	170	133	120	-	-	20,9%	18,3%	17,7%
12kW	-	-	22	10	9	-	-	2,7%	1,4%	1,3%
18kW	-	-	22	10	8	-	-	2,6%	1,4%	1,2%
21kW	-	-	17	11	7	-	-	2,1%	1,5%	1,0%
24kW	-	-	3	2	1	-	-	0,4%	0,3%	0,1%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	-	-	6	11	13	-	-	0,7%	1,5%	1,9%
< 12kW	-	-	0	0	2	-	-	0,0%	0,0%	0,3%
12kW	-	-	1	2	4	-	-	0,1%	0,2%	0,5%
18kW	-	-	2	4	3	-	-	0,3%	0,5%	0,5%
21kW	-	-	2	4	3	-	-	0,2%	0,5%	0,4%
24kW	-	-	1	1	1	-	-	0,1%	0,2%	0,1%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>143</b>	<b>150</b>	<b>158</b>	<b>175</b>	<b>158</b>	<b>23,9%</b>	<b>21,6%</b>	<b>19,4%</b>	<b>24,0%</b>	<b>23,2%</b>
<b>Gas Instantaneous</b>	<b>140</b>	<b>136</b>	<b>130</b>	<b>156</b>	<b>142</b>	<b>23,4%</b>	<b>19,6%</b>	<b>16,0%</b>	<b>21,4%</b>	<b>20,9%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
10 -<13 Litre/Minute *	-	-	130	156	-	-	-	16,0%	21,4%	0,0%
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
<b>Gas Storage</b>	<b>3</b>	<b>14</b>	<b>28</b>	<b>19</b>	<b>16</b>	<b>0,5%</b>	<b>2,0%</b>	<b>3,4%</b>	<b>2,6%</b>	<b>2,4%</b>
<b>Condensing</b>	-	-	0,0	0,0	0,1	-	-	0,0%	0,0%	0,0%
<b>Non Condensing, of which</b>	-	-	28,0	18,7	16,1	-	-	3,4%	2,6%	2,4%
<80L	-	-	9,3	4,9	4,5	-	-	1,1%	0,7%	0,7%
80-130L	-	-	15,4	11,1	8,8	-	-	1,9%	1,5%	1,3%
160L	-	-	3,0	2,1	1,8	-	-	0,4%	0,3%	0,3%
190L	-	-	0,1	0,3	0,3	-	-	0,0%	0,0%	0,0%
220L	-	-	0,1	0,2	0,4	-	-	0,0%	0,0%	0,1%
>220L	-	-	0,1	0,2	0,3	-	-	0,0%	0,0%	0,0%
Open Flue	-	-	28,0	12,2	6,8	-	-	3,4%	1,7%	1,0%
Fan Flue	-	-	0,0	6,5	9,3	-	-	0,0%	0,9%	1,4%
<b>TOTAL</b>	<b>598</b>	<b>695</b>	<b>813</b>	<b>729</b>	<b>679</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 22 PORTUGAL

## 22.1 Water Heater Sales

- Given the still low penetration of central heating, Portugal relies mainly on dedicated water heaters. These in turn are mainly instantaneous gas, but there is also a significant market for electric storage water heaters, especially in the North. It is clear that many of the instantaneous gas water heaters used as primary sources of sanitary hot water are 10-13 litres/minute as well as 13 litres+.
- The total market splits:
  - 40.800 appliances (10%) with water heating integrated with the central heating boiler;
  - 390.500 water heaters (90%) coming within the scope of this Task 2 study:
    - 9.700 (2%) separate cylinders linked to the boiler;
    - 340.000 (87%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 34% above the 1990 levels, although instantaneous gas sales had peaked in 2000 at 74% above the 1990 level.
- Within the main product categories
  - the use of solar thermal is very underdeveloped;
  - the electric storage market is split 76% >30 litres and 24% <30 litres. Of the >30 litre models, 98% are in the range 80-150 litres;
  - there is only a very small electric instantaneous market (2,100 pieces);
  - the instantaneous gas market is now static having peaked in 2000. Only some 4% of sales are in the 13 litres/minute+ category, and 91% are in the 10-<13litres category. It is believed that the great majority of these are used as primary water heaters;
  - there is a small gas storage market, all sales going to domestic customers.
- Some 62% of sales (excluding integrated water heating) are to domestic replacement, including 64% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 91% of water heating appliances are sold for use as the primary source of sanitary hot water, and 9% are secondary appliances.

## 22.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 5% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 16% use electric storage water heaters (mainly 80-150 litres) and 84% use instantaneous gas;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 1% are indirect cylinders;
  - 16% are electric storage water heaters;

- 83% are instantaneous gas water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 7% of dwellings have a secondary water heater;
- about 29% of such appliances are electric storage and 65% are instantaneous gas.

### **22.3 Distribution Structures**

As far as heating is concerned, the distribution structures have developed more for water heaters (sold through builders' merchants or electrical wholesalers) than for the still young and small boiler market. It is thought that most boilers are supplied direct to installers and contractors.

The wholesaling structure is mainly fragmented and local, but there are some national and multi-regional chains including CUHNA GOMES, TIBA and the buying group EMACOR.

**Table 22-1. PORTUGAL Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>2</b>	<b>10</b>	<b>42</b>	<b>35</b>	<b>40</b>	<b>0,8%</b>	<b>3,2%</b>	<b>9,2%</b>	<b>8,9%</b>	<b>9,8%</b>
Combi Boilers	2	10	41	32	38	0,8%	3,2%	8,8%	8,3%	9,1%
Combi Boilers (Storage only)	0	0	2	2	3	0,0%	0,0%	0,4%	0,6%	0,7%
<b>INDIRECT CYLINDERS</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>16</b>	<b>17</b>	<b>0,4%</b>	<b>1,6%</b>	<b>2,2%</b>	<b>4,1%</b>	<b>4,0%</b>
Indirect Cylinders Integrated	0	2	3	6	6	0,1%	0,6%	0,6%	1,6%	1,5%
Indirect Cylinders Separate	1	3	8	10	10	0,3%	1,0%	1,6%	2,5%	2,5%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind. Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<b>57</b>	<b>50</b>	<b>53</b>	<b>67</b>	<b>71</b>	<b>21,6%</b>	<b>15,9%</b>	<b>11,5%</b>	<b>17,2%</b>	<b>17,3%</b>
<b>Electric Storage</b>	<b>56</b>	<b>48</b>	<b>50</b>	<b>65</b>	<b>69</b>	<b>21,2%</b>	<b>15,2%</b>	<b>10,8%</b>	<b>16,6%</b>	<b>16,7%</b>
> 30 (Pressurised), of which	-	-	47	49	63	-	-	10,2%	12,6%	15,2%
80L	-	-	34	34	47	-	-	7,3%	8,8%	11,3%
100L	-	-	8	8	10	-	-	1,8%	2,0%	2,3%
150L	-	-	4	5	6	-	-	0,8%	1,4%	1,3%
200L	-	-	2	1	1	-	-	0,3%	0,3%	0,2%
400L	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
< 30 (Pressurised)	-	-	3	16	6	-	-	0,6%	4,0%	1,6%
< 30 L (Unpressurised)	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>EI. Instantaneous</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0,4%</b>	<b>0,6%</b>	<b>0,7%</b>	<b>0,5%</b>	<b>0,5%</b>
Instant Elec >12 kW	-	-	1	1	1	-	-	0,2%	0,3%	0,3%
Instant Elec <12 kW	-	-	2	1	1	-	-	0,5%	0,3%	0,3%
<b>Hydraulic</b>	-	-	3	1	2	-	-	0,5%	0,4%	0,4%
< 12kW	-	-	2	1	1	-	-	0,4%	0,2%	0,3%
12kW	-	-	0	0	0	-	-	0,1%	0,1%	0,0%
18kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>Electronic</b>	-	-	1	1	1	-	-	0,1%	0,2%	0,1%
< 12kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
12kW	-	-	0	1	0	-	-	0,1%	0,1%	0,1%
18kW	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>204</b>	<b>250</b>	<b>357</b>	<b>273</b>	<b>287</b>	<b>77,3%</b>	<b>79,4%</b>	<b>77,4%</b>	<b>70,4%</b>	<b>69,6%</b>
<b>Gas Instantaneous</b>	<b>204</b>	<b>249</b>	<b>355</b>	<b>272</b>	<b>285</b>	<b>77,3%</b>	<b>79,0%</b>	<b>77,0%</b>	<b>70,1%</b>	<b>69,2%</b>
13+ Litre/Minute *	-	-	32	11	-	-	-	6,9%	2,8%	0,0%
10 -<13 Litre/Minute *	-	-	298	248	-	-	-	64,6%	63,9%	0,0%
5 -<10 Litre/Minute *	-	-	25	13	-	-	-	5,4%	3,3%	0,0%
<b>Gas Storage</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0,0%</b>	<b>0,3%</b>	<b>0,5%</b>	<b>0,4%</b>	<b>0,5%</b>
Condensing	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
<b>Non Condensing, of which</b>	-	-	<b>2,1</b>	<b>1,4</b>	<b>1,9</b>	-	-	<b>0,5%</b>	<b>0,4%</b>	<b>0,5%</b>
<80L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
80-130L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
160L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
190L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
220L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
>220L	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
<b>TOTAL</b>	<b>264</b>	<b>315</b>	<b>461</b>	<b>388</b>	<b>412</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 23 SLOVAKIA

## 23.1 Water Heater Sales

- Much of the water heater market has developed since 1990. Over the period 1990-2005 sales of water heating appliances linked to central heating grew from just 34,000 to 123,900, and sales of dedicated water heaters have risen by >90% over the same period. Around 43% of dwellings derive the sanitary hot water from district or collective heating systems.
- The total market splits:
  - 22.600 appliances (18%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 101.300 water heaters (82%) coming within the scope of this Task 2 study:
    - 8.700 (7%) separate cylinders linked to the boiler;
    - 92.600 (75%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 3 times the 1990 levels.
- Within the main product categories
  - some 67% of indirect cylinders are in the range 80-120 litres and only 11% are over 200 litres;
  - the use of solar thermal is negligible;
  - the electric storage market is split 77% >30 litres and 23% <30 litres. Of the >30 litre models, 90% are in the range 80-150 litres;
  - there is a significant electric instantaneous market which peaked at 18.000 pieces in 2001 before falling back to 12.500 by 2005 (80% <12 kW);
  - the instantaneous gas market is modest, having peaked at 8.000 pieces in 1999 and fallen back to 3.500 by 2005. 89% of sales are in the 5-13 litres/minute category ;
  - gas storage sales peaked at 15.000 pieces in to 2002, but have since declined slightly. It is estimated that 82% are sold to domestic customers.
- Some 27% of sales (excluding integrated water heating) are to domestic replacement, including 27% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 69% of water heating appliances are sold for use as the primary source of sanitary hot water, and 31% are secondary appliances.

## 23.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 57% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 94% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)

- 12% are indirect cylinders;
- 83% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 20% of dwellings have a secondary water heater;
- about 47% of such appliances are electric storage, 35% use instantaneous electric and 18% use instantaneous gas water heaters.

### **23.3 Distribution Structures**

Some 70% of boiler sales are through wholesalers or specialist retailers and 30% are direct. The wholesaler trade is fairly fragmented. TMS-MONTYS is probably the largest distributor with 16 outlets. Others include EMPIRA (2 in western Slovakia), TECHNOPOINT (2 in western Slovakia) and GAMA MYJAVA (5). There are significant sales of electric water heaters through DIY and electrical retail channels.



**Table 23-1. SLOVAKIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>0</b>	<b>7</b>	<b>20</b>	<b>23</b>	<b>27</b>	<b>0,0%</b>	<b>12,2%</b>	<b>18,5%</b>	<b>18,2%</b>	<b>20,3%</b>
Combi Boilers	0	7	20	23	27	0,0%	12,2%	18,5%	18,2%	20,3%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>9</b>	<b>10</b>	<b>1,7%</b>	<b>5,2%</b>	<b>3,9%</b>	<b>7,2%</b>	<b>7,2%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	1	3	4	9	9	1,7%	5,2%	3,8%	7,0%	7,0%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind. Cyl. Buffer Storage	0	0	0	0	0			0,2%	0,2%	0,2%
60-80L	-	-	0	1	1			0,5%	0,7%	0,8%
80-120L	-	-	2	4	4			1,7%	3,0%	2,8%
120-200L	-	-	1	2	3			1,1%	1,9%	1,9%
200-500L	-	-	1	1	2			0,6%	1,1%	1,2%
500-1000L	-	-	0	0	0			0,1%	0,2%	0,2%
>1000L	-	-	0	0	0			0,0%	0,1%	0,1%
Coil System	-	-	4	8	9			3,6%	6,7%	6,6%
Plate to Plate System	-	-	0	0	0			0,2%	0,3%	0,3%
<b>ELECTRIC WATER HEATERS</b>	<b>30</b>	<b>43</b>	<b>67</b>	<b>75</b>	<b>85</b>	<b>86,7%</b>	<b>73,8%</b>	<b>63,0%</b>	<b>60,3%</b>	<b>63,8%</b>
<b>Electric Storage</b>	<b>30</b>	<b>32</b>	<b>50</b>	<b>62</b>	<b>73</b>	<b>86,7%</b>	<b>55,6%</b>	<b>47,0%</b>	<b>50,3%</b>	<b>54,6%</b>
> 30 (Pressurised), of which	-	-	39	48	55	-	-	36,7%	38,7%	41,5%
80L	-	-	12	14	15			11,5%	11,6%	10,9%
100L	-	-	13	16	18			11,7%	12,6%	13,1%
150L	-	-	11	13	15			9,9%	10,6%	11,5%
200L	-	-	4	4	7			3,3%	3,5%	5,5%
400L	-	-	0	1	1			0,2%	0,5%	0,5%
< 30 (Pressurised)	-	-	5	8	12	-	-	4,7%	6,5%	8,7%
< 30 L (Unpressurised)	-	-	6	6	6	-	-	5,6%	5,0%	4,4%
<b>El. Instantaneous</b>	<b>0</b>	<b>11</b>	<b>17</b>	<b>13</b>	<b>12</b>	<b>0,0%</b>	<b>18,2%</b>	<b>16,0%</b>	<b>10,1%</b>	<b>9,2%</b>
Instant Elec >12 kW	-	-	3	3	2			3,2%	2,0%	1,8%
Instant Elec <12 kW	-	-	14	10	10			12,8%	8,1%	7,4%
<b>Hydraulic</b>	-	-	16	12	12	-	-	15,1%	9,6%	8,7%
< 12kW	-	-	13	10	9			12,1%	7,7%	7,0%
12kW	-	-	2	2	2			2,2%	1,4%	1,3%
18kW	-	-	0	0	0			0,4%	0,3%	0,3%
21kW	-	-	0	0	0			0,2%	0,1%	0,1%
24kW	-	-	0	0	0			0,2%	0,1%	0,1%
27kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>Electronic</b>	-	-	1	1	1	-	-	0,8%	0,5%	0,5%
< 12kW	-	-	1	1	0			0,7%	0,4%	0,4%
12kW	-	-	0	0	0			0,1%	0,1%	0,1%
18kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>4</b>	<b>5</b>	<b>16</b>	<b>18</b>	<b>12</b>	<b>11,6%</b>	<b>8,9%</b>	<b>14,6%</b>	<b>14,3%</b>	<b>8,7%</b>
<b>Gas Instantaneous</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>11,6%</b>	<b>8,3%</b>	<b>5,6%</b>	<b>2,8%</b>	<b>1,4%</b>
13+ Litre/Minute *	-	-	1	0	-			0,9%	0,3%	0,0%
10 -<13 Litre/Minute *	-	-	3	0	-			2,8%	0,2%	0,0%
5 -<10 Litre/Minute *	-	-	2	3	-			1,9%	2,3%	0,0%
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>14</b>	<b>10</b>	<b>0,0%</b>	<b>0,5%</b>	<b>8,9%</b>	<b>11,4%</b>	<b>7,3%</b>
Condensing	-	-	0,0	0,0	0,0	-	-	0,0%	0,0%	0,0%
Non Condensing, of which	-	-	9,5	14,2	9,8	-	-	8,9%	11,4%	7,3%
<80L	-	-	1,7	2,6	1,6			1,6%	2,1%	1,2%
80-130L	-	-	5,4	7,8	5,4			5,1%	6,3%	4,0%
160L	-	-	1,6	2,6	1,9			1,5%	2,1%	1,4%
190L	-	-	0,5	0,7	0,5			0,4%	0,6%	0,4%
220L	-	-	0,2	0,3	0,2			0,2%	0,2%	0,1%
>220L	-	-	0,1	0,3	0,2			0,1%	0,2%	0,1%
Open Flue	-	-	7,6	9,1	5,3			7,2%	7,3%	4,0%
Fan Flue	-	-	1,9	5,1	4,4			1,8%	4,1%	3,3%
<b>TOTAL</b>	<b>35</b>	<b>58</b>	<b>106</b>	<b>124</b>	<b>134</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 24 SLOVENIA

## 24.1 Water Heater Sales

- In 1990 there was already an established electric storage water heater market., and in spite of the emergence of a combi boiler market since then, electric storage remains the main form of water heating. An estimated 18.5% of dwellings derive their hot water from district or collective heating systems.
- The total market splits:
  - 8.600 appliances (12%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 69.900 water heaters (88%) coming within the scope of this Task 2 study:
    - 7.500 (11%) separate cylinders linked to the boiler;
    - 53.800 (77%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 11% below the 1990 levels.
- Within the main product categories
  - the use of solar thermal is negligible;
  - the electric storage market is split 50% >30 litres and 50% <30 litres. Of the >30 litre models, 98% are in the range 80-150 litres;
  - there is a very small electric instantaneous market (80% >12 kW);
  - the instantaneous gas market that started to emerge after 1990 has stagnated at a low level. It is currently declining. Some 31% of sales are in the 13+ litres/minute category;
  - there is no gas storage market.
- Some 74% of sales (excluding integrated water heating) are to domestic replacement, including 82% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 56% of water heating appliances are sold for use as the primary source of sanitary hot water, and 44% are secondary appliances.

## 24.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 54% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 96% use electric storage water heaters (mainly 80-150 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 40% are indirect cylinders;
  - 58% are electric storage water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 59% of dwellings have a secondary water heater;
- about 98% of such appliances are electric storage and 2% use instantaneous gas water heaters.

### 24.3 Distribution Structures

Boiler distribution is mostly through non-exclusive importer wholesalers. The trade is fairly fragmented. Easily the largest wholesaler is MERKUR (including KONINOTEHN, BOFEX, SOCA and NOVOTEHNA) with 34 depots between them.

**Table 24-1. SLOVENIA Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>0</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>11</b>	<b>0,6%</b>	<b>5,7%</b>	<b>8,0%</b>	<b>11,2%</b>	<b>13,2%</b>
Combi Boilers	0	5	6	8	11	0,6%	5,7%	8,0%	11,2%	13,2%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>9</b>	<b>12</b>	<b>8</b>	<b>8</b>	<b>11</b>	<b>13,0%</b>	<b>14,7%</b>	<b>12,1%</b>	<b>11,9%</b>	<b>14,0%</b>
Indirect Cylinders Integrated	1	1	1	1	1	0,7%	0,9%	1,2%	1,1%	1,4%
Indirect Cylinders Separate	9	11	8	8	10	12,2%	13,8%	10,9%	10,7%	12,6%
Solar Storage Tanks	0	0	0	0	0		0,0%	0,0%	0,0%	0,0%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
<b>ELECTRIC WATER HEATERS</b>	<b>60</b>	<b>63</b>	<b>54</b>	<b>52</b>	<b>57</b>	<b>86,4%</b>	<b>79,2%</b>	<b>78,4%</b>	<b>75,1%</b>	<b>71,6%</b>
<b>Electric Storage</b>	<b>60</b>	<b>63</b>	<b>54</b>	<b>52</b>	<b>56</b>	<b>86,4%</b>	<b>79,2%</b>	<b>78,4%</b>	<b>74,4%</b>	<b>70,5%</b>
<b>&gt; 30 (Pressurised), of which</b>	-	-	<b>26</b>	<b>26</b>	<b>30</b>	-	-	<b>37,8%</b>	<b>37,2%</b>	<b>37,8%</b>
80L	-	-	13	13	15	-	-	18,9%	18,6%	18,9%
100L	-	-	8	8	9	-	-	11,6%	11,5%	10,7%
150L	-	-	5	5	6	-	-	6,5%	6,4%	6,9%
200L	-	-	1	1	1	-	-	0,7%	0,7%	1,3%
400L	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>&lt; 30 (Pressurised)</b>	-	-	<b>12</b>	<b>12</b>	<b>11</b>	-	-	<b>17,1%</b>	<b>17,2%</b>	<b>13,8%</b>
<b>&lt; 30 L (Unpressurised)</b>	-	-	<b>16</b>	<b>14</b>	<b>15</b>	-	-	<b>23,5%</b>	<b>20,0%</b>	<b>18,9%</b>
<b>El. Instantaneous</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,6%</b>	<b>1,1%</b>
Instant Elec >12 kW	-	-	0	0	1	-	-	0,0%	0,6%	1,1%
Instant Elec <12 kW	-	-	0	0	0	-	-	0,0%	0,1%	0,0%
<b>Hydraulic</b>	-	-	<b>0</b>	<b>0</b>	<b>1</b>	-	-	<b>0,0%</b>	<b>0,6%</b>	<b>1,0%</b>
< 12kW	-	-	0	0	0	-	-	0,0%	0,1%	0,0%
12kW	-	-	0	0	0	-	-	0,0%	0,1%	0,1%
18kW	-	-	0	0	0	-	-	0,0%	0,2%	0,4%
21kW	-	-	0	0	0	-	-	0,0%	0,1%	0,3%
24kW	-	-	0	0	0	-	-	0,0%	0,1%	0,2%
27kW	-	-	0	0	0	-	-	0,0%	0,0%	0,1%
<b>Electronic</b>	-	-	<b>0</b>	<b>0</b>	<b>0</b>	-	-	<b>0,0%</b>	<b>0,1%</b>	<b>0,1%</b>
<b>GAS WATER HEATERS</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0,1%</b>	<b>0,4%</b>	<b>1,5%</b>	<b>1,9%</b>	<b>1,3%</b>
<b>Gas Instantaneous</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0,1%</b>	<b>0,4%</b>	<b>1,5%</b>	<b>1,9%</b>	<b>1,3%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,5%	0,6%	-
10 -<13 Litre/Minute *	-	-	0	1	-	-	-	0,5%	0,9%	-
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,5%	0,4%	-
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>TOTAL</b>	<b>69</b>	<b>80</b>	<b>69</b>	<b>70</b>	<b>79</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 25 SPAIN

## 25.1 Water Heater Sales

- Spain has traditionally had very large markets for both instantaneous gas water heaters and electric storage water heaters. Although the former has seen its sales eroded by the growth in combi boiler sales, the electric storage market has continued to grow. It is clear that many of the instantaneous gas water heaters used as primary sources of sanitary hot water are 10-13 litres/minute as well as 13 litres+.
- The total market splits:
  - 564.300 appliances (26%) with water heating integrated with the central heating boiler;
  - 1.616.600 water heaters (74%) coming within the scope of this Task 2 study:
    - 41.500 (2%) separate cylinders linked to the boiler;
    - 1.575.200 (72%) dedicated water heaters.
- Volume sales (excluding integrated water heating) in 2005 were running at some 19% above the 1990 levels.
- Within the main product categories
  - the use of solar thermal is now growing rapidly, backed by first regional and now national legislation requiring new buildings and those undergoing major renovations to have solar thermal panels installed;
  - the electric storage market is split 76% >78 litres and 22% <30 litres. Of the >30 litre models, 95% are in the range 80-150 litres;
  - there is only a very small electric instantaneous market (5.300 pieces), of which >90% are >12 kW;
  - the instantaneous gas market is now static having peaked in 2000. Only some 11% of sales are in the 13 litres/minute+ category, and 67% are in the 10-<13litres category. It is believed that the great majority of these are used as primary water heaters;
  - there is a small gas storage market, with some 94% of sales going to domestic customers.
- Some 55% of sales (excluding integrated water heating) are to domestic replacement, including 58% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 79% of water heating appliances are sold for use as the primary source of sanitary hot water, and 21% are secondary appliances.

## 25.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 31% of dwellings derive their sanitary hot water from their space heating generators;

- of those using dedicated water heaters, some 50% use electric storage water heaters (mainly 80-150 litres) and 49% use instantaneous gas;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 5% are indirect cylinders;
  - 48% are electric storage water heaters;
  - 47% are instantaneous gas water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 24% of dwellings have a secondary water heater;
- about 33% of such appliances are electric storage and 67% are instantaneous gas.

## **25.3 Distribution Structures**

The distribution patterns and structures in Spain reflect:

- the logistically difficult geography;
- the importance of new build (contract market) within the total boiler market.

Direct supply to contractors and installers still plays an important role.

The wholesaler trade has developed in a fairly haphazard way, with the manufacturers/importers maintaining a more direct involvement than in most other countries, not least through their networks of regional "delegaciones".

Heating wholesaling is still highly fragmented and is based on a mix of:

- heating specialists;
- sanitary and heating wholesalers;
- general builders merchants.

Of the wholesalers handling heating products, THISA is the only truly national chain with 49 depots. SALTOKI (11 depots) is a multi-regional heating specialist, and GALLEGO VILAR is a multi-regional sanitary and heating wholesaler. SAINT GOBAIN is developing a national mixed merchant chain (POINT P ESPANA) having acquired MERCADER in CATALUÑA. Other important regional wholesalers include:

- in Madrid LA GUADIA, PEREDA, CALVO Y MUNAR, GALINDO, IBERICA DEL CALOR;
- TERMOCLUB in Cataluña, SUMINISTROS VALS in Valencia, SANIGRIF in Alicante.

CEALCO, ALMAGRUPPO and NOSFOR are national buying groups.

A substantial proportion of electric water heaters go through white goods channels.

**Table 25-1. SPAIN Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>153</b>	<b>250</b>	<b>498</b>	<b>515</b>	<b>568</b>	<b>10,0%</b>	<b>16,9%</b>	<b>26,3%</b>	<b>23,9%</b>	<b>24,6%</b>
Combi Boilers	153	238	463	491	540	10,0%	16,0%	24,5%	22,8%	23,4%
Combi Boilers (Storage only)	0	12	35	24	28	0,0%	0,8%	1,9%	1,1%	1,2%
<b>INDIRECT CYLINDERS</b>	<b>75</b>	<b>75</b>	<b>115</b>	<b>120</b>	<b>297</b>	<b>4,9%</b>	<b>5,1%</b>	<b>6,1%</b>	<b>5,5%</b>	<b>12,9%</b>
Indirect Cylinders Integrated	26	33	54	49	45	1,7%	2,2%	2,9%	2,3%	2,0%
Indirect Cylinders Separate	49	41	52	40	43	3,2%	2,8%	2,7%	1,9%	1,9%
Solar Storage Tanks	0	1	9	29	192		0,1%	0,5%	1,3%	8,3%
Gas WH: Ind.Cyl. Buffer Storage	0	0	0	2	17			0,0%	0,1%	0,7%
60-80L	-	-	16	19	45			0,9%	0,9%	1,9%
80-120L	-	-	30	30	89			1,6%	1,4%	3,9%
120-200L	-	-	42	42	89			2,2%	2,0%	3,9%
200-500L	-	-	16	19	44			0,9%	0,9%	1,9%
500-1000L	-	-	8	7	18			0,4%	0,3%	0,8%
>1000L	-	-	3	3	12			0,2%	0,1%	0,5%
Coil System	-	-	97	98	237			5,1%	4,5%	10,3%
Plate to Plate System	-	-	18	20	43			1,0%	0,9%	1,8%
<b>ELECTRIC WATER HEATERS</b>	<b>436</b>	<b>396</b>	<b>492</b>	<b>780</b>	<b>742</b>	<b>28,5%</b>	<b>26,7%</b>	<b>26,0%</b>	<b>36,1%</b>	<b>32,2%</b>
<b>Electric Storage</b>	<b>430</b>	<b>390</b>	<b>486</b>	<b>775</b>	<b>736</b>	<b>28,1%</b>	<b>26,3%</b>	<b>25,7%</b>	<b>35,9%</b>	<b>31,9%</b>
≥ 30 (Pressurised), of which	-	-	385	608	573			20,3%	28,1%	24,8%
80L	-	-	250	408	400			13,2%	18,9%	17,4%
100L	-	-	87	144	126			4,6%	6,7%	5,5%
150L	-	-	22	26	21			1,2%	1,2%	0,9%
200L	-	-	12	13	12			0,6%	0,6%	0,5%
400L	-	-	13	16	14			0,7%	0,8%	0,6%
< 30 (Pressurised)	-	-	100	165	160			5,3%	7,6%	7,0%
< 30 L (Unpressurised)	-	-	1	2	3			0,1%	0,1%	0,1%
<b>El. Instantaneous (excl. showers)</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>0,4%</b>	<b>0,4%</b>	<b>0,3%</b>	<b>0,2%</b>	<b>0,2%</b>
Instant Elec >12 kW	-	-	5	5	5			0,3%	0,2%	0,2%
Instant Elec <12 kW	-	-	1	1	1			0,0%	0,0%	0,0%
<b>Hydraulic</b>	-	-	2	2	2			0,1%	0,1%	0,1%
21kW	-	-	1	1	1			0,0%	0,0%	0,0%
24kW	-	-	1	1	1			0,0%	0,0%	0,0%
27kW	-	-	0	0	0			0,0%	0,0%	0,0%
<b>Electronic</b>	-	-	4	3	3			0,2%	0,1%	0,1%
21kW	-	-	1	1	1			0,1%	0,0%	0,0%
24kW	-	-	1	1	1			0,1%	0,0%	0,0%
<b>GAS WATER HEATERS</b>	<b>868</b>	<b>774</b>	<b>821</b>	<b>768</b>	<b>728</b>	<b>56,7%</b>	<b>52,2%</b>	<b>43,4%</b>	<b>35,6%</b>	<b>31,6%</b>
<b>Gas Instantaneous</b>	<b>865</b>	<b>770</b>	<b>815</b>	<b>761</b>	<b>721</b>	<b>56,5%</b>	<b>51,9%</b>	<b>43,1%</b>	<b>35,3%</b>	<b>31,3%</b>
13+ Litre/Minute *	-	-	41	81	-			2,2%	3,8%	-
10 -<13 Litre/Minute *	-	-	501	512	-			26,5%	23,7%	-
5 -<10 Litre/Minute *	-	-	273	168	-			14,4%	7,8%	-
<b>Gas Storage</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>0,2%</b>	<b>0,3%</b>	<b>0,3%</b>	<b>0,3%</b>	<b>0,3%</b>
<b>Condensing</b>	-	-	0,0	0,0	0,0			0,0%	0,0%	0,0%
<b>Non Condensing, of which</b>	-	-	6,0	6,8	6,8			0,3%	0,3%	0,3%
<80L	-	-	3,0	3,5	3,5			0,2%	0,2%	0,2%
80-130L	-	-	1,5	1,7	1,7			0,1%	0,1%	0,1%
160L	-	-	0,6	0,7	0,7			0,0%	0,0%	0,0%
190L	-	-	0,4	0,4	0,4			0,0%	0,0%	0,0%
220L	-	-	0,3	0,3	0,3			0,0%	0,0%	0,0%
>220L	-	-	0,2	0,2	0,2			0,0%	0,0%	0,0%
Open Flue	-	-	5,0	4,7	3,4			0,3%	0,2%	0,1%
Fan Flue	-	-	1,0	2,1	3,4			0,1%	0,1%	0,1%
<b>TOTAL</b>	<b>1.532</b>	<b>1.483</b>	<b>1.891</b>	<b>2.158</b>	<b>2.306</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

# 26 SWEDEN

## 26.1 Water Heater Sales

- In Sweden around 53% of dwellings derive their sanitary hot water from district or collective heating systems, and a further 24% from individual central heating. Thus the market for dedicated water heaters is modest and consists almost entirely of electric storage water heaters.
- The total market splits:
  - 4.900 appliances (7.5%) with water heating integrated with the central heating boiler (this excludes district heat exchangers);
  - 65.600 water heaters (92.5%) coming within the scope of this Task 2 study:
    - 3.100 (4.7%) separate cylinders linked to the boiler;
    - 57.600 (87.8%) dedicated water heaters, large part of which are heat pump water heaters based on ventilation air.<sup>9</sup>
- Volume sales (excluding integrated water heating) in 2005 were running at some 8% above the 1990 levels.
- Within the main product categories
  - 42% of indirect cylinders are 200 litres+;
  - the use of solar thermal is growing (7.000 tanks sold in 2995);
  - the electric storage market is split 97% >30 litres and 3% <30 litres. Of the >30 litre models, 52% are in the range 80-150 litres and 48% are >150 litres;
  - there is a small electric instantaneous market (57% >12 kW);
  - the instantaneous gas market is negligible ;
  - the gas storage is also negligible.
- Some 56% of sales (excluding integrated water heating) are to domestic replacement, including 65% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 96% of water heating appliances are sold for use as the primary source of sanitary hot water, and 4% are secondary appliances.

## 26.2 Water Heater Park

### **Primary Water Heating Park**

BRGC's estimates suggest that:

- 86% of dwellings derive their sanitary hot water from their space heating generators (including district heating);
- of those using dedicated water heaters, some 90% use electric storage water heaters (mainly 80-100 litres) ;
- of the total stock of primary water heating appliances (excluding integrated water heating and district heating)
  - 46% are indirect cylinders;

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<sup>9</sup> VHK on basis of LBNL.

- 49% are electric storage water heaters.

### ***Secondary Water Heating***

BRGC's estimates suggest that:

- <1% of dwellings have a secondary water heater;
- about 93% of such appliances are electric storage.

### **26.3 Distribution Structures**

Around 95% of boilers and 70% of heat pumps are sold through wholesalers. The VVS wholesale trade is very concentrated, with CINVEN's AHLSELL, SAINT GOBAIN's DAHL and the Finnish ONNINEN together accounting for around 90% of the business. Most of the rest is in the hands of LUNDAGROSSTEN, ALVESTA and A&) MAVAB.



**Table 26-1. SWEDEN Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b><u>COMBI BOILERS</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>
Combi Boilers	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b><u>INDIRECT CYLINDERS</u></b>	<b><u>10</u></b>	<b><u>7</u></b>	<b><u>9</u></b>	<b><u>14</u></b>	<b><u>21</u></b>	<b><u>15,7%</u></b>	<b><u>21,1%</u></b>	<b><u>18,4%</u></b>	<b><u>20,7%</u></b>	<b><u>28,7%</u></b>
Indirect Cylinders Integrated	5	3	3	5	7	7,4%	9,9%	6,6%	7,5%	9,3%
Indirect Cylinders Separate	5	2	1	2	2	8,3%	4,4%	2,5%	3,4%	2,7%
Solar Storage Tanks	0	2	4	7	12		6,7%	9,3%	9,9%	16,6%
Gas WH: Ind.Cylin. Buffer Storage	0	0	0	0	0			0,0%	0,0%	0,0%
60-80L	-	-	0	0	1			0,4%	0,6%	0,8%
80-120L	-	-	2	3	5			3,7%	4,3%	6,6%
120-200L	-	-	3	5	7			6,6%	7,2%	9,1%
200-500L	-	-	3	4	5			6,1%	5,7%	6,9%
500-1000L	-	-	1	1	2			1,2%	2,1%	3,2%
>1000L	-	-	0	1	1			0,6%	0,9%	2,0%
Coil System	-	-	3	4	7			7,4%	6,5%	10,0%
Plate to Plate System	-	-	5	9	14			11,1%	14,2%	18,7%
<b><u>ELECTRIC WATER HEATERS</u></b>	<b><u>51</u></b>	<b><u>27</u></b>	<b><u>39</u></b>	<b><u>52</u></b>	<b><u>52</u></b>	<b><u>84,3%</u></b>	<b><u>78,9%</u></b>	<b><u>81,6%</u></b>	<b><u>79,3%</u></b>	<b><u>71,3%</u></b>
<b>Electric Storage</b>	<b>51</b>	<b>27</b>	<b>37</b>	<b>49</b>	<b>48</b>	<b>84,3%</b>	<b>78,9%</b>	<b>78,4%</b>	<b>74,7%</b>	<b>65,8%</b>
≥ 30 (Pressurised), of which	-	-	35	48	45	-	-	74,2%	72,4%	61,7%
80L	-	-	2	3	4			3,2%	4,6%	5,5%
100L	-	-	2	2	4			3,2%	3,0%	5,5%
150L	-	-	11	20	18			23,3%	29,7%	24,0%
200L	-	-	11	12	12			23,3%	18,3%	15,8%
400L	-	-	10	11	8			21,2%	16,8%	11,0%
< 30 (Pressurised)	-	-	2	2	3	-	-	4,2%	2,3%	4,1%
< 30 L (Unpressurised)	-	-	0	0	0	-	-	0,0%	0,0%	0,0%
<b>El. Instantaneous</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>0,0%</b>	<b>0,0%</b>	<b>3,2%</b>	<b>4,6%</b>	<b>5,5%</b>
Instant Elec >12 kW	-	-	1	2	2			2,3%	2,7%	3,0%
Instant Elec <12 kW	-	-	0	1	2			0,8%	1,8%	2,5%
<b>Hydraulic</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>2,1%</b>	<b>2,6%</b>	<b>2,7%</b>
< 12kW	-	-	0	1	1			0,6%	1,2%	1,4%
12kW	-	-	0	0	0			0,0%	0,0%	0,0%
18kW	-	-	0	0	0			0,4%	0,5%	0,4%
21kW	-	-	0	0	0			0,6%	0,5%	0,4%
24kW	-	-	0	0	0			0,2%	0,3%	0,4%
27kW	-	-	0	0	0			0,2%	0,2%	0,1%
<b>Electronic</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>1,1%</b>	<b>2,0%</b>	<b>2,7%</b>
< 12kW	-	-	0	0	1			0,2%	0,6%	1,1%
12kW	-	-	0	0	0			0,0%	0,2%	0,1%
18kW	-	-	0	0	0			0,4%	0,5%	0,5%
21kW	-	-	0	0	0			0,2%	0,2%	0,4%
24kW	-	-	0	0	0			0,2%	0,5%	0,4%
27kW	-	-	0	0	0			0,0%	0,2%	0,1%
<b><u>GAS WATER HEATERS</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>	<b><u>0,0%</u></b>
<b>Gas Instantaneous</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b>Gas Storage</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>	<b>0,0%</b>
<b><u>TOTAL</u></b>	<b><u>61</u></b>	<b><u>34</u></b>	<b><u>47</u></b>	<b><u>66</u></b>	<b><u>73</u></b>	<b><u>100,0%</u></b>	<b><u>100,0%</u></b>	<b><u>100,0%</u></b>	<b><u>100,0%</u></b>	<b><u>100,0%</u></b>

# 27 UK

## 27.1 Water Heater Sales

- The UK, is notable for the dominance of open vented “traditional” cylinders (used as indirect cylinders and/or as cylinders heated by an electric element), and of instantaneous electric showers. Until the revision of the Water Bye Laws in 1989 it had been illegal to store more than 15 litres of hot water under mains pressure. Although by that time combi boilers had already circumvented this requirement by not requiring stored hot water, open vented water heating has continued to hold a substantial share of the UK market.
- The total market splits:
  - 1.099.900 appliances (32.9%) with water heating integrated with the central heating boiler, essentially wall hung gas combis;
  - 2.244.000 water heaters (67%) coming within the scope of this Task 2 study:
    - 618.100 (18.5%) separate cylinders linked to the boiler (including all “traditional” cylinders;
    - 1.625.900 (49%) dedicated water heaters, including instantaneous electric showers.
- Volume sales (excluding integrated water heating) in 2005 were running at more some 14% above the 1990 levels. However, while instantaneous electric showers were 57% up, all other products were 17% down.
- Within the main product categories
  - some 68% of indirect cylinders are in the 80-200 litre range and only 20% are over 200 litres;
  - the use of solar thermal remains negligible, but there are signs of increased activity in 2006;
  - the electric storage market is split 53% >30 litres and 47% <30 litres. Of the >30 litre models, 57% are in the range 80-150 litres and 40% are >150 litres;
  - of the electric instantaneous market, some 92% comprises instantaneous electric showers;
  - the instantaneous gas market is declining. Almost all are in the 10-13 litres/minute range ;
  - gas storage is estimated to be sold 91% mainly sold to commercial customers.
- Some 43% of sales (excluding integrated water heating) are to domestic replacement, including 54% of dedicated water heater sales.
- Excluding integrated water heating, it is estimated that 35% of water heating appliances are sold for use as the primary source of sanitary hot water, and 65% are secondary appliances (including instantaneous electric showers).

## 27.2 Water Heater Park

### Primary Water Heating Park

BRGC's estimates suggest that:

- 84% of dwellings derive their sanitary hot water from their space heating generators;
- of those using dedicated water heaters, some 50% use electric storage water heaters (mainly 80-200 litres) and 50% use instantaneous electric water heaters;
- of the total stock of primary water heating appliances (excluding integrated water heating)
  - 57% are indirect cylinders;
  - 22% are electric storage water heaters;
  - 21% use instantaneous electric water heaters.

### **Secondary Water Heating**

BRGC's estimates suggest that:

- some 81% of dwellings have a secondary water heater;
- about 84% of such appliances are instantaneous electric (including 81% instantaneous electric showers), 6% use instantaneous gas water heaters and 5% electric storage.

### **27.3 Distribution Structures**

Nearly all boilers (except some commercial boilers) are channelled through merchants. These are generally "lightside" (heating, sanitary and plumbing) specialists, but most belong to groups that are also involved in "heavyside" builders' merchanting.

Lightside merchanting is very concentrated, with the national chains WOLSELEY, SAINT GOBAIN, TRAVIS PERKINS, BSS/PTS and GRAFTON together holding >80% of the business.

Sales of electric water heaters are channelled more through electrical distributors. The DIY chains handle about 40% of instantaneous electric shower sales.

**Table 27-1a. UK Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b>COMBI BOILERS</b>	<b>206</b>	<b>301</b>	<b>654</b>	<b>1100</b>	<b>967</b>	<b>10,1%</b>	<b>14,1%</b>	<b>23,8%</b>	<b>32,9%</b>	<b>29,8%</b>
Combi Boilers	206	301	654	1100	967	10,1%	14,1%	23,8%	32,9%	29,8%
Combi Boilers (Storage only)	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
<b>INDIRECT CYLINDERS</b>	<b>780</b>	<b>710</b>	<b>671</b>	<b>620</b>	<b>653</b>	<b>38,2%</b>	<b>33,4%</b>	<b>24,4%</b>	<b>18,5%</b>	<b>20,1%</b>
Indirect Cylinders Integrated	0	0	0	0	0	0,0%	0,0%	0,0%	0,0%	0,0%
Indirect Cylinders Separate	780	710	670	618	650	38,2%	33,3%	24,4%	18,5%	20,0%
Solar Storage Tanks	0	0	1	1	1		0,0%	0,0%	0,0%	0,0%
Gas WH: Cyl. Buffer Storage	0	0	0	1	2			0,0%	0,0%	0,0%
60-80L	-	-	50	73	65			1,8%	2,2%	2,0%
80-120L	-	-	248	260	294			9,0%	7,8%	9,1%
120-200L	-	-	224	163	166			8,1%	4,9%	5,1%
200-500L	-	-	125	82	88			4,5%	2,4%	2,7%
500-1000L	-	-	18	17	18			0,7%	0,5%	0,5%
>1000L	-	-	6	24	22			0,2%	0,7%	0,7%
Coil System	-	-	499	418	433			18,1%	12,5%	13,3%
Plate to Plate System	-	-	172	202	220			6,3%	6,0%	6,8%
<b>ELECTRIC WATER HEATERS</b>	<b>940</b>	<b>1030</b>	<b>1353</b>	<b>1569</b>	<b>1572</b>	<b>46%</b>	<b>48,4%</b>	<b>49,2%</b>	<b>46,9%</b>	<b>48,5%</b>
<b>Electric Storage</b>	<b>120</b>	<b>120</b>	<b>136</b>	<b>151</b>	<b>132</b>	<b>5,9%</b>	<b>5,6%</b>	<b>4,9%</b>	<b>4,5%</b>	<b>4,1%</b>
> 30 (Pressurised), of which	-	-	71	80	69	-	-	2,6%	2,4%	2,1%
80L	-	-	8	8	7			0,3%	0,2%	0,2%
100L	-	-	24	24	19			0,9%	0,7%	0,6%
150L	-	-	11	13	13			0,4%	0,4%	0,4%
200L	-	-	25	29	22			0,9%	0,9%	0,7%
400L	-	-	2	6	8			0,1%	0,2%	0,2%
< 30 (Pressurised)	-	-	38	41	48	-	-	1,4%	1,2%	1,5%
< 30 L (Unpressurised)	-	-	27	30	15	-	-	1,0%	0,9%	0,5%
<b>El. Instantaneous</b>	<b>840</b>	<b>910</b>	<b>1217</b>	<b>1418</b>	<b>1440</b>	<b>40,2%</b>	<b>42,8%</b>	<b>44,3%</b>	<b>42,4%</b>	<b>44,4%</b>
<i>Electric Showers</i>	700	815	1110	1301	1310	34,3%	38,3%	40,4%	38,9%	40,4%
Instant Elec >12 kW			71	79	81			2,6%	2,4%	2,5%
Instant Elec <12 kW	140	95	36	38	49	5,9%	4,5%	1,3%	1,1%	1,5%
<b>Hydraulic</b>	-	-	62	53	53	-	-	2,3%	1,6%	1,6%
< 12kW	-	-	21	18	21			0,7%	0,5%	0,6%
12kW	-	-	18	15	16			0,6%	0,4%	0,5%
18kW	-	-	14	12	12			0,5%	0,3%	0,4%
21kW	-	-	4	4	3			0,1%	0,1%	0,1%
24kW	-	-	4	3	1			0,1%	0,1%	0,0%
27kW	-	-	2	2	1			0,1%	0,1%	0,0%
<b>Electronic</b>	-	-	45	64	77	-	-	1,6%	1,9%	2,4%
< 12kW	-	-	15	20	29			0,6%	0,6%	0,9%
12kW	-	-	21	25	25			0,8%	0,7%	0,8%
18kW	-	-	5	8	10			0,2%	0,2%	0,3%
21kW	-	-	2	4	3			0,1%	0,1%	0,1%
24kW	-	-	1	4	6			0,0%	0,1%	0,2%
27kW	-	-	1	3	5			0,0%	0,1%	0,2%

Table continues next page →

**Table 27-1b. c'td UK Water Heater Sales Segmentation in '000 units and % (BRGC for VHK 2006)**

year-->	1990	1995	2000	2005	2010*	% 1990	% 1995	% 2000	% 2005	% 2010*
<b><u>GAS WATER HEATERS</u></b>	<b>117</b>	<b>88</b>	<b>71</b>	<b>58</b>	<b>53</b>	<b>5,7%</b>	<b>4,1%</b>	<b>2,6%</b>	<b>1,7%</b>	<b>1,6%</b>
<b>Gas Instantaneous</b>	<b>105</b>	<b>78</b>	<b>60</b>	<b>47</b>	<b>43</b>	<b>5,1%</b>	<b>3,7%</b>	<b>2,2%</b>	<b>1,4%</b>	<b>1,3%</b>
13+ Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
10 -<13 Litre/Minute *	-	-	60	47	-	-	-	2,2%	1,4%	0,0%
5 -<10 Litre/Minute *	-	-	0	0	-	-	-	0,0%	0,0%	0,0%
<b>Gas Storage</b>	<b>12</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>0,6%</b>	<b>0,5%</b>	<b>0,4%</b>	<b>0,3%</b>	<b>0,3%</b>
<u>Condensing, of which</u>	-	-	<u>0,0</u>	<u>1,5</u>	<u>1,8</u>	-	-	<u>0,0%</u>	<u>0,0%</u>	<u>0,1%</u>
130L	-	-	0,0	0,2	0,3	-	-	0,0%	0,0%	0,0%
160L	-	-	0,0	0,1	0,2	-	-	0,0%	0,0%	0,0%
190L	-	-	0,0	0,2	0,1	-	-	0,0%	0,0%	0,0%
220L	-	-	0,0	0,3	0,4	-	-	0,0%	0,0%	0,0%
>220L	-	-	0,0	0,8	0,8	-	-	0,0%	0,0%	0,0%
<u>Non Condensing, of which</u>	-	-	<u>11,0</u>	<u>9,5</u>	<u>8,2</u>	-	-	<u>0,4%</u>	<u>0,3%</u>	<u>0,3%</u>
<80L	-	-	0,6	0,8	0,3	-	-	0,0%	0,0%	0,0%
80-130L	-	-	1,2	0,6	0,6	-	-	0,0%	0,0%	0,0%
160L	-	-	0,7	1,1	0,6	-	-	0,0%	0,0%	0,0%
190L	-	-	1,0	1,4	0,7	-	-	0,0%	0,0%	0,0%
220L	-	-	2,7	2,3	2,7	-	-	0,1%	0,1%	0,1%
>220L	-	-	4,8	3,3	3,2	-	-	0,2%	0,1%	0,1%
Open Flue	-	-	5,4	3,5	2,2	-	-	0,2%	0,1%	0,1%
Fan Flue	-	-	5,6	6,0	6,0	-	-	0,2%	0,2%	0,2%
<b><u>TOTAL (incl. el. showers)</u></b>	<b>2.043</b>	<b>2.129</b>	<b>2.749</b>	<b>3.346</b>	<b>3.245</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>



# **ANNEX: BRGC FULL REPORT – COUNTRY-SECTION**

*by*

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*Andrea Corso*

Report to VHK, 18 Oct. 2006

