Preparatory Studies for Ecodesign Requirements of EuPs (III)

ENER Lot 20 – Local Room Heating Products
Task 2: Economic and Market Analysis

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Task 2: Economic and market analysis

This chapter presents the economic and market analysis of the products covered in the scope of ENER Lot 20 preparatory study. There are four main objectives of this chapter, which include:

1. To place the ENER Lot 20 product group within the total context of EU industry and trade.
2. To provide market (sales and installed stock) and energy consumption inputs for the assessment of EU-wide environmental impacts of the ENER Lot 20 product groups.
3. To provide insights in the latest market trends so as to indicate the market structures and ongoing trends in product design. This will serve as an input for the subsequent tasks such as improvement potential.
4. The data on consumer prices and rates is provided to be used later in the study for Life Cycle Cost (LCC) calculations.

From Task 1 of this study it could be seen that the range of local room heating products (i.e. decentralised direct heating products) is broad and diverse in terms of technologies, energy sources, applications, power capacities, etc. As the market for residential heating and commercial and industrial space heating is very different, a clear distinction will be made between them. Furthermore as most manufacturers tend to specialise in certain energy sources and technologies, this will also serve as a way of structuring the market analysis.

2.1 Generic economic data

The market for local room heating products, which are covered in this study, shows a great diversity of heating products across the EU. The scope of the ENER Lot 20 does not correspond directly to one EU market for 'local room heating products', but rather several different markets with each of their characteristics based on products and countries. According to a report by the Ecoheatcool project run by the EU Intelligent Energy Europe Programme, no coherent and harmonised description exists of the European heating market[1]. The current magnitude of this market is not yet defined. Due to various climatic, national, regional, and local conditions, space heating demands have been met in many different ways in Europe. The heating appliance market in general is characterised by its diversity and complexity. Local room heating products do not derogate from this fact, rather they add further complexities: they cover a wide range of product types and operations, which can furthermore differ largely from one Member State (MS) to another. The variables resulting in the differences in space heating across Member States could be summed up as follows[2]:

- Region

[1] Ecoheatcool (2003) The European heat market. WP1.

[2] BRG Consult (2006) The boiler and heating system markets in the European Union. Study commissioned by DG Transport and Energy, European Commission.

- Climate (heating days and hours)
- Wealth
- Building stock (e.g. houses, apartment buildings, insulation, size, etc.)
- Tradition and culture
- Energy supply infrastructure

- Product-related
  - By fuel type
  - Power capacity
  - Installed or portable
  - Efficiency range
- Purchasing process related
  - Consumers and end-users
  - Installers
  - Building developers, architects, manufacturers, utility companies
  - Building owners
  - Local authorities

Moreover, the market in most of these products is very fragmented and no previous attempt has been made to make an EU-wide estimate of sales and stock figures.

The most official source of market data is PRODCOM[3] from Eurostat. PRODCOM data is based on manufactured goods whose definitions are standardised across the EU thus guaranteeing comparability between Member States. Although it is used and referenced in other EU policy documents regarding trade and economic policy, it does have its limitations. Many data points are unknown, estimated, confidential and therefore not available. PRODCOM classifies local room heating products in the categories NACE 27.51 "manufacture of electric domestic appliances" and NACE 27.52 "manufacture of non-electric domestic appliances" in the following categories relevant for this study:

- 27.51.26.30 (Electric storage heating radiators)
- 27.51.26.50 (Electric radiators, convection heaters and heaters or fires with built-in fans)
- 27.51.26.90 (Other electric space heaters)
- 27.52.12.33 (Iron/steel gas domestic appliances with an exhaust outlet (including heaters, grates, fires and braziers, for both gas and other fuels; excluding cooking appliances and plate warmers))

[3] Available at: epp.eurostat.ec.europa.eu/portal/page/portal/prodcom/data/database

- 27.52.12.35 (Iron/steel gas domestic appliances (including heaters, grates, fires and braziers, for both gas and other fuels radiators; excluding cooking appliances and plate warmers, those with an exhaust outlet))
- 27.52.12.50 (Iron or steel liquid fuel domestic appliances, including heaters, grates, fires and braziers (excluding cooking appliances and plate warmers))
- 27.52.13.00 (Air heaters/hot air distributors n.e.c., of iron or steel, non- electric)

These categories include a wide range of local room heating products, but it is not clear what each category actually covers, e.g. residential or industrial space heating, fixed or portable, power capacities, etc. Hence, PRODCOM can only serve as a broad overview of the market size. The following tables show import, export, production and sales information for local room heaters derived from PRODCOM.

Table 2-1: Market data from PRODCOM for electric radiators, convection heaters and heaters or fires with built-in fans (PRODCOM code: 27512650)[4]

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	11 411	12 602	10 150	8 115	6 613	-11.9%
Import	12 290	14 772	13 934	11 527	15 168	7.2%
Export	2 172	2 235	1 745	1 619	1 725	-4.9%
Sales[5]	**21 529**	**25 140**	**22 340**	**18 022**	**20 056**	-0.6%
Value in million €						
Production	535	633	585	454	345	-8.9%
Import	150	198	173	161	176	5.5%
Export	100	106	91	84	63	-10.2%
Sales	**584**	**726**	**667**	**531**	**457**	-4.5%
Average price in €						
Production	47	50	58	56	52	3.0%
Import	12	13	12	14	12	-0.5%
Export	46	47	52	52	37	-4.2%
Sales	**27**	**29**	**30**	**29**	**23**	-3.5%

[4] One of the stakeholders (CECED) questioned the reliability of the data presented in the above table in particular the figures for year 2009, and pointing out that the decrease in export prices from 2008 to 2009 is overestimated. It also suggested that the increase in the sales from 2008 to 2009 should be not more than 5% as the markets are still suffering from the impact of economic crisis.

[5] Sales = Production + Imports - Exports

Table 2-2: Market data from PRODCOM for electric storage heating radiators (PRODCOM code: 27512630)[6]

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	1 003	1 000	937	657	629	-10.2%
Import	242	134	341	278	332	27.7%
Export	10	12	11	8	10	1.1%
Sales	**1 235**	**1 122**	**1 266**	**927**	**951**	-5.1%
Value in million €						
Production	213	231	213	142	137	-9.2%
Import	8	5	6	7	7	0.7%
Export	21	30	39	44	39	18.1%
Sales	**200**	**206**	**179**	**105**	**105**	-12.8%
Average price in €						
Production	213	231	227	216	217	0.7%
Import	31	40	17	25	22	0.8%
Export	2 115	2 597	3 458	5 575	4 056	22.5%
Sales	162	184	141	113	111	-7.9%

Table 2-3: Market data from PRODCOM for other electric space heaters (PRODCOM code: 27512690)[7]

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	7 193	7 410	8 141	9 034	8 052	3.2%
Import	8 470	10 168	10 165	11 580	10 430	6.0%
Export	1 206	1 635	1 345	1 319	4 423	62.8%
Sales	**14 457**	**15 944**	**16 960**	**19 294**	**14 059**	0.8%
Value in million €						
Production	288	421	405	489	467	14.6%
Import	117	139	139	136	133	3.5%
Export	52	65	68	70	72	8.7%

[6] According to CECED, the figures corresponding to exports in the above table are too low. They also commented on the discrepancies on the quantity and price for the exports and imports figures.

[7] CECED pointed out that number of exported units for 2009 is probably overestimated. With stable numbers of production and import over the time range, the change from 1.3 to 4.4 million units from 2008 to 2009 is also not possible.

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Sales	**353**	**496**	**476**	**555**	**528**	12.0%
Average price in €						
Production	40	57	50	54	58	11.3%
Import	14	14	14	12	13	-1.8%
Export	43	40	51	53	16	-11.3%
Sales	24	31	28	29	38	12.6%

According to PRODCOM around 34 million electric space heaters were sold in the EU in 2009. Just under a million of these were electric storage heaters. In general the market size for electric heaters seems stable, but the demand for storage heaters is decreasing. A significant number of electric heaters are produced in the EU, but the majority is imported.

Table 2-4: Market data from PRODCOM for iron or steel gas domestic appliances with an exhaust outlet, including heaters, grates, fires and braziers, for both gas and other fuels (flued) (PRODCOM code: 27521233)

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	1 365	1 239	982	914	634	-16.9%
Import	103	96	91	106	96	-1.3%
Export	416	314	310	208	87	-29.2%
Sales	**1 052**	**1 021**	**763**	**813**	**643**	-10.7%
Value in million €						
Production	438	456	391	419	319	-6.7%
Import	4	6	6	5	6	10.7%
Export	38	45	47	34	15	-14.7%
Sales	**404**	**417**	**351**	**390**	**309**	-5.6%
Average price in €						
Production	320	368	398	458	502	11.9%
Import	41	60	70	44	60	15.5%
Export	90	144	151	162	173	19.8%
Sales	**384**	**408**	**460**	**480**	**481**	**5.9%**

Table 2-5: Market data from PRODCOM for iron or steel gas domestic appliances, including heaters, grates, fires and braziers, for both gas and other fuels radiators (flueless) (PRODCOM code: 27521235)

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	2 759	2 119	1 972	2 591	2 101	-4.4%
Import	3 069	1 927	2 062	1 353	2 465	4.4%
Export	709	863	509	536	298	-14.6%
Sales	**5 118**	**3 183**	**3 526**	**3 408**	**4 268**	-1.3%
Value in million €						
Production	238	211	201	221	214	-2.4%
Import	40	46	54	43	47	5.2%
Export	43	51	52	52	34	-3.7%
Sales	**235**	**206**	**203**	**212**	**226**	-0.6%
Average price in €						
Production	86	100	102	85	102	5.2%
Import	13	24	26	32	19	18.8%
Export	61	59	102	97	114	20.5%
Sales	46	65	57	62	53	5.9%

The market for gas-fired flued appliances was around 643,000 units (unclear if they are direct heating or central heating or a mix of these appliance types). The demand for these appliances seems to be shrinking – on average about 10% each year. For unflued appliances (assuming these are almost all direct heating appliances) 4.3 million units were sold in 2009. There is only a slight decrease in demand for these products in the past five years. The majority of flued gas heaters are produced in the EU, whilst about half of the unflued heaters on the EU market were imported. For all gas heaters the average price of a unit is increasing significantly (between 5 – 20% a year).

Table 2-6: Market data from PRODCOM for iron or steel liquid fuel domestic appliances, including heaters, grates, fires and braziers (flued) (PRODCOM code: 27521250)

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	391	515	388	61	112	1.9%
Import	1 621	1 273	982	798	842	-14.4%
Export	132	113	208	185	137	8.4%
Sales	**1 881**	**1 675**	**1 161**	**674**	**816**	-15.6%
Value in million €						
Production	102	108	84	25	39	-7.3%
Import	63	65	46	38	42	-8.1%
Export	10	11	21	23	21	27.4%
Sales	**155**	**162**	**109**	**40**	**61**	-9.9%
Average price in €						
Production	262	209	217	414	353	14.9%
Import	39	51	47	48	50	7.6%
Export	73	94	101	127	151	20.3%
Sales	83	97	94	59	74	0.7%

The sales of liquid fuel heating appliances (direct and central heating) are decreasing rapidly. Annual sales have more than halved between 2005 and 2009. Sales in 2009 were 816,000 units, mostly imported goods.

Table 2-7: Market data from PRODCOM for air heaters or hot air distributors n.e.c., of iron or steel, non-electric (PRODCOM code: 27521300)

EU-27	2005	2006	2007	2008	2009	Annual average increase or decrease
Quantity in 1000 units						
Production	1 425	1 489	1 808	4 109	2 152	26.4%
Import	-	-	-	-	-	-
Export	-	-	-	-	-	-
Sales	**1 425**	**1 489**	**1 808**	**4 109**	**2 152**	26.4%
Value in million €						
Production	504	584	637	631	482	0.1%
Import	27	30	30	25	22	-4.3%
Export	84	104	130	136	89	4.6%
Sales	**447**	**510**	**537**	**519**	**415**	-1.0%
Average price in €						
Production	354	393	352	153	224	-2.5%
Import	-	-	-	-	-	-
Export	-	-	-	-	-	-
Sales	**314**	**343**	**297**	**126**	**193**	-2.2%

The PRODCOM data for non-electric air-heaters does not specify how many of them are direct heating or central heating products, or how many are gas or liquid fuel products. Import and export quantities are missing from the PRODCOM datasets, but it seems that there has been an increase in annual production in the EU of these types of products over the past few years, but surprisingly the market value has remained fairly constant.

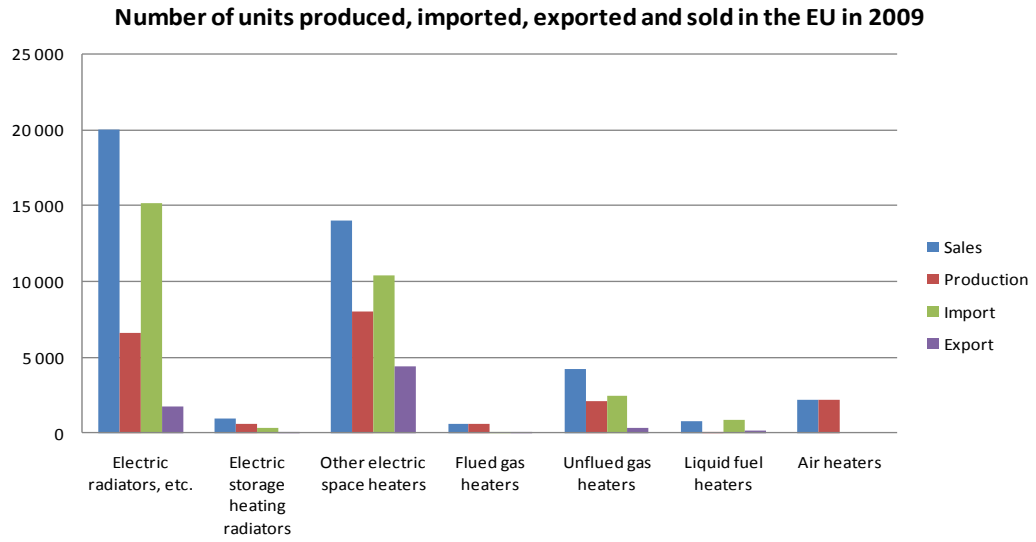

Figure 2-1: Market size of possible local room heating products in the EU in 2009, PRODCOM (in number of units)[8]

From PRODCOM statistics, it would seem that of the local room heating products, electric heaters take the lion's share in number of products sold in the EU. Gas heaters (in particular unflued appliances) represent a large number, whilst the sales of liquid fuel products are relatively small. In terms of market value, however, gas appliances represent a significant turnover. This could indicate that the gas heaters are typically much bigger in size and power capacity than electric heaters. The same seems to hold for air heaters.

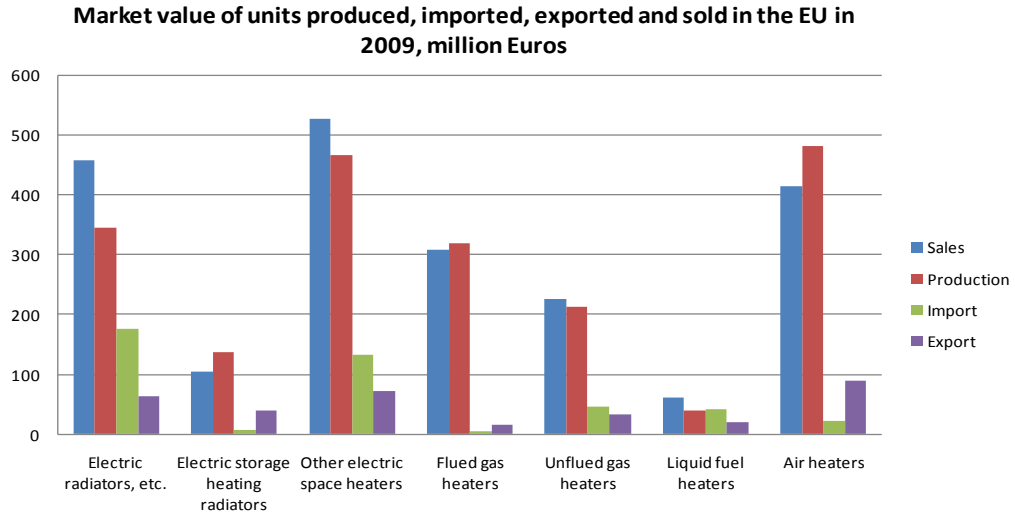

Figure 2-2: Market size of possible local room heating products in the EU in 2009, PRODCOM (in market value)

According to PRODCOM the European manufacturers are well represented on the market. The Czech Republic, France, Finland, Germany, Lithuania, Italy, Spain, Portugal, Poland, Sweden and UK are the main producers of electric space heaters in the EU. Significant numbers of gas heaters are produced in the Czech Republic, Germany, Italy, Spain and the United Kingdom, but also

[8] CECED commented that the difference between market data for flued and flueless gas heaters is too high.

Greece, Hungary and Poland. Liquid fuel heaters are manufactured mainly in Finland, Greece, Italy and the UK. The manufacturing of air heaters in the EU mainly occur in France, Germany, Netherlands, Italy, Lithuania, Spain and United Kingdom.

The limited level of detail, precision, product groupings and definitions and overall reliability of PRODCOM data was questioned and criticised by many stakeholders. Due to these reasons it was necessary to investigate other sources of market and economic data. This information collected via stakeholder's feedback to a questionnaire and other literature review is presented in the following sections.

2.2 Market and stock data

The aim of this subtask is to provide market and stock data for the local room heating products covered in ENER Lot 20 study. Since the Eurostat data is not available to the necessary level of detail as described in the product categorisation in Task 1, it was necessary to investigate other sources of market and product stock data. A review of existing studies was performed in parallel with questionnaires sent to all registered stakeholders of the ENER Lot 20 study to gather market and economic data[9]. The responses of the questionnaires did help provide more specific market data and fill in certain data gaps, but this was done in a consistent way. Stakeholders could typically only provide data for the countries and markets they were familiar with. Although it is possible to extrapolate the data from the few countries where data was received, this may lead to results that are not representative at the European level.

A first principal distinction of the market for local room heating products is the residential and non-residential sector (includes commercial, industrial and public spaces). A second meaningful distinction of the market is by fuel type (electricity, gaseous fuel or liquid fuel) or technology as this is typically how manufacturers are structured.

2.2.1 Residential market sales

The aim of this section is to assess the sales volume (i.e. number of units sold in the EU) of different type of local room space heaters discussed in the Task 1 report. It is important to note that the heating market fluctuates significantly due to weather conditions (colder seasons see the influx of sales in local room heating products). Other influencing factors are urban versus rural conditions and building floor areas of residential dwellings. The main types of local room heating products used in households are:

- Electric heaters
  - Fixed (installed) electrical heaters
  - Portable (mobile) electrical heaters
- Gas-fired heating appliances

[9] By January 2011, 18 responses to the questionnaires were received (three industry associations, one consumer association and the rest manufacturers)

- Flued gas heaters
  - Balanced flue (closed combustion) heaters
  - Chimney connected flue (open combustion) heaters
- Flueless heaters (open combustion)
- Flued gas fires
  - Balanced flue (closed combustion) fires
  - Chimney connected flue (open combustion) fires
- Portable (mobile) gas-fired flueless heaters

- Liquid fuel heaters
  - Kerosene heaters
  - Ethanol/gel fireplaces

The majority of residential heaters (about 80%) are sold to dwellings, but some are also sold to the public, commercial and industrial sectors in offices and other smaller spaces. Radiant heaters are also popular for outdoor spaces in front of shops, restaurants, cafes and bars.

2.2.1.1 *Electrical local room heaters*

The market for electric local room heating can be clearly distinguished between installed heaters and portable heaters. The two types of heaters cater for different types of uses, sales channels, installation requirements and price ranges.

Fixed electric local room heaters

Installed electric heaters are typically used as primary heating in homes and usually installed by professionals. The market composition of fixed electrical room heaters is presented in Table 2-8: Market estimates for installed electric room heaters based on stakeholder inputs and own estimates:

Table 2-8: Market estimates for installed electric room heaters based on stakeholder inputs and own estimates

Type of heater	Capacity range (in kW)	EU average (in kW)	EU-27 sales in 1000 units			Source
			2007	2008	2009	
Convector panel heaters	0.4 – 3.0	1.0	3 000	3 000	3 000	Manufacturers
Radiators[10]	0.5 – 2.0	1.0	2 450	2 610	2 800	Manufacturers
Fan heaters (electric fireplaces)	0.5 – 2.0	1.0	360	360	360	Manufacturers
Fan heaters (fixed fan)	1.0 – 3.0	2.0	200	200	200	Manufacturers
Radiant panel heaters	0.5 – 2.0	1.0	2 450	2 610	2800	Manufacturers
Visibly glowing radiant heaters	0.5 – 2.0	2.0	200	200	200	Manufacturers
Storage heaters (static)	0.85 – 3.4	2.5	275	258	240	Manufacturers
Storage heaters (dynamic)	2.0 – 7.5	3.0	90	90	90	Manufacturers
Underfloor heating (thin film, cable)	35-150W/m²	100 W/m²	1 300	1 300	1 300	Manufacturers
Towel heaters for bathrooms (with or without fans)	0.3 – 2.0	0.6	1 780	1 890	2000	CECED
Total fixed electric			**12 105**	**12 518**	**12 940**	**Estimate**

Stock and sales figures are derived either from data directly obtained from the industry stakeholders or calculated based on a number of available data sources. Compared to the PRODCOM data, the market estimates for annual sales in the table above are much lower – even when accounting for portable electric heaters, e.g. PRODCOM estimates 950,000 electric storage heaters sold each year in the EU, whereas the estimates from stakeholders are only a third of this. Electric visibly glowing (infrared) radiant heaters are also used to heat outdoor areas such as those around bars, restaurants, shops, etc. It is unknown whether the above takes into account heaters that are also used for heating outdoors.

The overall market for electric heaters is fairly stable. Electric radiators which provide softer and more comfortable heating are a growing market, winning over convectors and also radiant heaters. Underfloor heating and towel heaters are also increasing in popularity.

The sales for the year 2007 presented in Table 2-8 is based on the following assumptions:

- 6% annual increase for towel heaters over the period 2007-2009
- 7% annual increase for radiant panel heaters and radiators over the period 2007-2009

[10] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

- 7% annual decrease for static storage heaters over the period 2007-2009
- Stable market over the period 2007-2009 for rest of the fixed electric local room heaters

As there is no extensive data on the direct heating market for the EU, only fragmented data can be provided for individual Member States. The following provides specific data for certain Member States[11]:

France

Electric heating is common in France as most of the electricity is provided by nuclear power. Sales in France of fixed electric heaters amounted to 3.7 million in 2008. In France about half the market of installed electric heaters are convectors, over a third radiant panel and radiators, while towel heaters compose just over 10% of the market.

Table 2-9: Market estimates for installed electric room heaters in France

Type of heater	Sales in 1000 units, France			Source
	2007	2008	2009	
Convector panel heaters	2 094	1 883	2 000	GIFAM & manufacturer
Radiators	1 317	1 402	750	GIFAM & CECED
Radiant panel heaters			750	GIFAM & CECED
Towel heaters	396	414	450	GIFAM & CECED
Total fixed electric in France	**3 807**	**3 700**	**3 950**	**GIFAM & manufacturer**

The electric fixed heating market in France decreased by almost 6% (GIFAM) during the period 2009-2010, this was primarily due to the impact of current economic crisis. The more comfortable heating provided by radiant panel heaters and electrical radiators is gaining market shares over the traditional convector panel heaters (20% are still sold with mechanical control). The market for towel heaters has also increased.

Germany

Electric heating is less common in Germany, but dynamic storage heaters are used. According to manufacturers, the installed electric market in Germany is stable and no increases are expected in the coming years. The sales of storage heaters are however expected to decrease rapidly.

[11] BRG Consult (2006) The boiler and heating system markets in the European Union. Study commissioned by DG Transport and Energy, European Commission.

Table 2-10: Market estimates for installed electric room heaters in Germany

Type of heater	Sales in 1000 units, Germany			Source
	2007	2008	2009	
Convector panel heaters	90	85	95	Manufacturer
Fan heater	65	65	70	Manufacturer
Storage heater, dynamic	60	55	55	Manufacturer
Total fixed electric in Germany	**215**	**205**	**220**	**Manufacturer**

United Kingdom

Although gas is by far the most common heating fuel in the UK, a significant amount of houses have electric direct heating appliances installed. Particularly static storage heaters and electric fire places are characteristic for the UK heating market.

Table 2-11: Market estimates for installed electric room heaters in the UK

Type of heater	Sales in 1000 units, UK			Source
	2007	2008	2009	
Panel heaters	370	320	230	BEAMA[12]
Fan heater (electric fireplaces)[13]	260	240	220	BEAMA
Radiant electric fireplaces[13]	30	20	15	BEAMA
Storage heater, static	246	205	209	BEAMA
Storage heater, dynamic	4	4	5	BEAMA
Total fixed electric in the UK	**910**	**789**	**679**	**BEAMA**

Nordic countries

Electric heating is also popular in Nordic countries, especially Sweden, Finland and Norway are open to electric heating due to the presence of CO_2-neutral electricity (nuclear and hydropower). However, the Danish government has been against electric heating since the beginning of the 1980s, allowing it to be used as primary heating only in summer houses. Recently, even those are switching away from electric heating towards air to air heat pumps. A manufacturer of electric heating panels estimates that the three Nordic countries represent a total market of about 500,000 units a year.

[12] British Electrotechnical and Allied Manufacturers Association (www.beama.org.uk)

[13] Includes freestanding (not installed) fires

Underfloor heating systems

The largest markets for electric underfloor heating in Europe (including non-Member States) are the Nordic countries and UK & Ireland with about 22% each (see Figure 2-3). France, Spain and Portugal also constitute about 22% of the market. About 16% of the sales are in Germany, Austria and Switzerland. The majority of sales (80%) are for renovation, where electric floor heating is installed as additional comfort heating. The remaining sales are for new buildings where electric underfloor heating provides the primary heat. The market of electric underfloor systems is currently decreasing but manufacturers say it may grow again in the future, especially for well insulated houses.

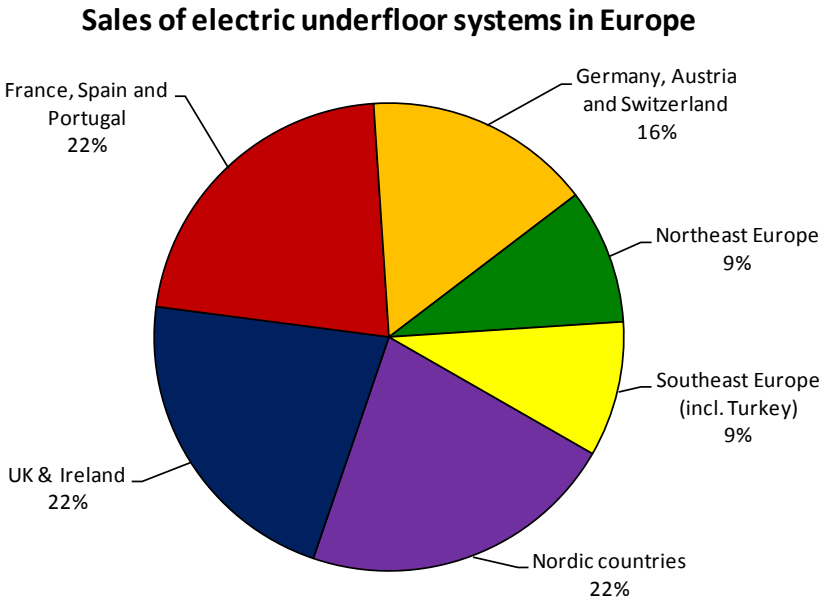

Figure 2-3: Distribution of sales of electric underfloor heating systems in Europe (including non-Member States)

Portable electric local room heaters

Portable electric heaters are typically sold off the shelf in DIY stores as they do not require any special installation. They are typically less expensive then installed heaters and serve mostly as secondary heating, or are used for spaces which do not have an installed heating system. The market for portable electric heaters consists of the main types shown in Table 2-12.

Table 2-12: Market estimates for portable electric room heaters based on stakeholder inputs and own estimates

Type of heater	Capacity range (in kW)	EU average (in kW)	EU-27 sales in 1000 units			Source
			2007	2008	2009	
Convector panel heaters	0.4 – 3.0	1.0	800	800	800	Manufacturer
Radiators[14]	0.5 – 3.0	1.0	500	500	500	CECED
Fan heaters	0.5 – 2.0	1.0	5000	5000	5000	Manufacturer
Radiant panel heaters	0.5 – 3.0	1.0	500	500	500	CECED
Ceramic heaters	0.5 – 3.0	1.0	200	200	200	Estimate
Visibly glowing radiant heaters	0.5 – 3.0	1.5	200	200	200	Estimate
Total portable electric			**7 200**	**7 200**	**7 200**	**Estimate**

The sales estimates presented in Table 2-12 assumes that the portable electric room heater market remains stable in EU over the period 2007-2009.

Again the stakeholder estimates on overall market of portable electrical heaters (also when taking fixed electric heaters into consideration) is lower than the PRODCOM statistics. PRODCOM estimates that around 35 million electric space heaters were sold in the EU-27 in 2009 whereas the estimates from manufacturers only account for about 21 million units (portable and installed electric heaters).

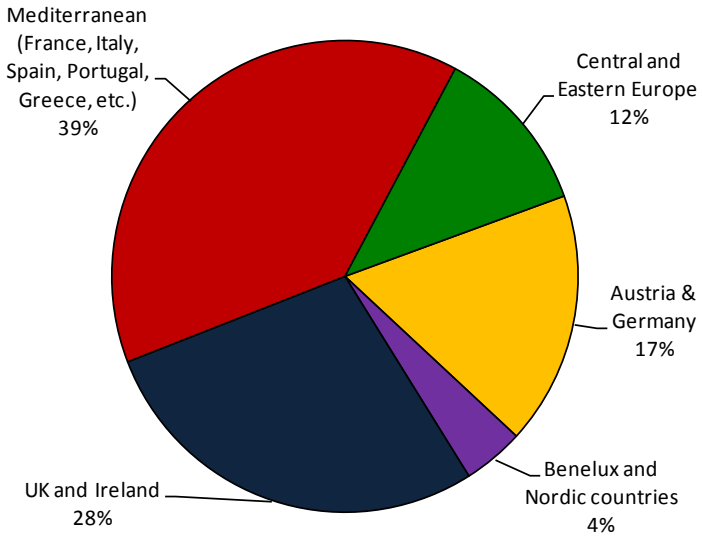

Figure 2-4: Distribution of electric portable heating devices sales in the EU (stakeholder estimate)

[14] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

No market reports for portable heating appliances were identified. Only fragmented data was available for France and the UK.

- **France**

According to the consumer magazine 'Que Choisir', 630,000 portable fan heaters were sold in France during the winter of 2009/2010[15].

- **United kingdom**

According to BEAMA[16], approximately 1.8 million electric portable heaters are sold in the UK each year. The majority of these are fan heaters.

Table 2-13: Market estimates for portable electric room heaters in UK

Type of heater	UK sales in 1000 units	Source
	2008	
Convector panel heaters	450	Manufacturer
Fan heaters	850	Manufacturer
Radiators (oil-filled, dry column)	460	Manufacturer
Other	40	Manufacturer
Total portable electric heaters in the UK	**1 800**	Manufacturer

2.2.1.2 *Gas local room heaters*

Similar to electric heaters, the market for gas local room heating can be clearly distinguished between installed heaters and portable heaters. The installed heaters can then further be divided into those that are flued (combustion gases are ventilated to the outside) and those that are flueless (combustion gases are ventilated into the room). The different types of heaters cater for different types of uses, sales channels, installation requirements and price ranges. This section presents the gas fuel based heaters sales in EU-27 which are derived either from data directly obtained from the industry or calculated based on a number of available data sources.

[15] Que Choisir 486, November 2010.

[16] The British Electrotechnical and Allied Manufacturers Association (www.beama.org.uk)

Table 2-14: EU market for gas based local room heaters (stakeholder and own estimates)

Type of heater	Capacity range (in kW)	EU average (in kW)	EU-27 sales in 1000 units			Source
			2007	2008	2009	
Flued gas heater	4 – 12	4.2	175	175	175	Manufacturer
Flued gas fire	2 –10	4.2	310	310	310	Manufacturer
Flueless gas heater	1.0 – 4.2	2.5	250	250	250	Manufacturer
Total fixed gas heaters			**735**	**735**	**735**	**Manufacturer**

Stakeholders expect a decrease of sales of residential gas heaters in the future. The total market sales cited in Table 2-14 correspond roughly to the amounts given by PRODCOM. PRODCOM however, states a much smaller demand for flued gas appliances and higher demand for unflued appliances.

United Kingdom

The UK and Irish markets are traditionally the largest markets for residential gas direct heating in the EU. HHIC[17] has provided market estimates for the UK, see Table 2-15.

Table 2-15: Market for gas based local room heaters (stakeholder estimates)

Type of heater	UK sales in 2008 in 1000 units	Source
Radiant Convector (fixed, flueless)	48.3	HHIC
Live Fuel Effect (fixed, flueless)	12.3	HHIC
Inset Live Fuel Effect (built-in, flueless)	150	HHIC
Decorative Fuel Effect Fires (fixed and built-in, flueless)	20	HHIC
Power Flue	5	HHIC
Room Sealed	30	HHIC
Flueless	30	HHIC
Total gas heaters in the UK	**295.6**	**HHIC**

In 2008, 295 600 direct heating gas heaters were sold in the UK. Only a few percent of the market was LPG heaters. In the UK the market for flueless gas heaters are thought to be growing[18]. Radiant convectors are likely to become residual.

[17] Heating and Hotwater Industry Council (www.centralheating.co.uk).
[18] BRG Consult (2009) GASQUAL Project.

Other Member States

Rough estimates for selected MS are provided in Table 2-16. Both the Netherlands and Germany seem to comprise significant markets for gas direct heating.

Table 2-16: Market for gas based local room heaters in selected MS (stakeholder estimates)

Country	Sales in 1000 units			Source
	2007	2008	2009	
Germany	10.0	9.5[19]		Manufacturer
Austria	0.3	0.3		Manufacturer
Netherlands	24.0	20.0		Manufacturer
Luxembourg	0.03	0.03		Manufacturer
Total gas heaters in selected MS	**34.3**	**29.8**		Manufacturer

2.2.1.3 *Liquid fuel local room heaters*

The market for liquid fuel heaters for residential use consists of kerosene heaters and ethanol/gel fireplaces. Kerosene heaters are forbidden in Germany. No further market data could be found for these products so estimates were made:

Table 2-17: Market estimates for liquid fuel residential local room heaters

Type of heater	Capacity range (in kW)	EU average (in kW)	EU-27 sales in 1000 units in 2008	Source
Kerosene heater	3.0 – 7.0	4.0	400	Estimate
Liquid fuel fire (gel, ethanol, etc.)	0.4 – 3.0	2.0	100	Estimate
Total residential liquid fuel in the EU			**500**	Estimate

There are anecdotal reports that the popularity of ethanol fires are increasing due to their decorative effect, but this has not been substantiated.

[19] One stakeholder commented that this value is too low.

2.2.2 Non-residential market sales

The main types of direct heating products used in the non-residential market are:

- Industrial (warm air) unit heaters
  - Electric
  - Gas
  - Oil
- Radiant heaters
  - Electric radiant cassettes
  - Gas-fired luminous heaters
  - Gas fired tube heaters
- Air curtains
  - Electric
  - Gas
  - Oil

Warm air heaters and radiant heaters are used in large indoor spaces such as factories, warehouses, sport halls, places of worship and large public spaces. Air curtains are not used for heating spaces directly, but are used to contain climatic zones within a space (typically to block cold air entering a building). Mobile warm air unit heaters do exist, but only represent a very small part of the market (mostly used on construction sites).

About 60% of the non-residential heaters are installed in commercial and public spaces, the rest in factories and warehouses. Gas-fired radiant heaters can also be installed outside and are popular for restaurants, cafes and bars. In France the market sees a high number of gas industrial unit heaters installed in commercial retails shops whereas in Italy, Germany, Belgium and the Netherlands most sales are to the industrial sector. Eastern European Member States have a sales mix in both the application areas (60% industrial and 40% commercial). Industry estimates that the overall share of sales (number of units) of portable and installed local room heaters (excluding industrial unit heaters and air curtains) is very similar, around 50% market share each.

2.2.2.1 Direct space heaters (warm air and radiant)

Warm air heaters use convection, which heats the air, whilst radiant heaters use radiation to heat the exposed surfaces in the space. Industrial unit heaters that use indirect heat (heat generated by a boiler and transferred via pipes to the fan unit) are not considered within the scope of this study. They are hydronic systems covered in DG ENER Lot 1[20]. Some warm air heaters are ductable and can thus be seen as both direct and central heating products. Warm air heaters that

[20] Eco-design of Boilers and Combi-boilers (www.ecoboiler.org)

are located on the outside of a building and provide hot air via a short duct are for practical purposes considered as direct heating products. If extensive duct systems are used then they will be covered in DG ENER Lot 21[21].

Table 2-18: Market for non-residential direct space heaters (based on stakeholder and own estimates)

Type of heater	Capacity range (in kW)	EU average (in kW)	EU-27 sales in 1000 units			Source
			2007	2008	2009	
Electric warm air heaters	10 – 100	20	15	10		Estimate
Gas-fired warm air heaters	10 – 1000 (considering rooftops) 10-150 (otherwise)	40	40	40	36	Manufacturer
Oil-fired warm air heaters	12 – >400	100	5	5	4	Manufacturer
Electric radiant cassettes	1 – 4	2.4				Estimate
Gas-fired radiant heaters (luminous)	2.5 – 40	20	27	30	24	Manufacturer & Estimate
Gas-fired radiant heaters (tube)	5 – 120 (300)	30	27	30	24	Manufacturer & Estimate
Total non-residential space heaters			**114**	**115**	**102**	**Stakeholder**

Compared to the PRODCOM data for liquid fuel based space heaters (0.8 million units sold in 2009) and non-electric air heaters (2.2 million units) the market estimates in Table 2-18 seem to be very low (even when taking residential heating products into consideration).

The market for non-residential space heating, particularly in industrial buildings, has grown due to improved working conditions. In spaces with high ceilings radiant heaters often replace the warm air heaters traditionally installed.

2.2.2.2 *Air curtains*

Air curtains are typically used in commercial and industrial buildings to create an air seal between different climatic environments, e.g. shop entrances. Typically lower power capacities (3 – 24 kW) of air curtains are for public and commercial buildings, whilst bigger openings found in factories and warehouses require higher power capacities (12 -50 kW).

[21] Preparatory study on central heating products using hot air to distribute heat (other than CHP) DG ENER Lot 21 (www.ecoheater.org/lot21)

Following are the four types of air curtains, which are prevalent in the EU market:

- Electric air curtains: direct heated air using electricity
- Water heated air curtains[22]: indirect heated and the hot water for the water heated curtains is generated by a boiler running either on gas, oil, renewable energy source, electricity etc. It is difficult for the air curtain manufacturers to know about the choice of the fuel for the boiler as this is influenced by the choice made by the installer.
- Heat pump based air curtains[23]: indirect heated air using heat generated by the heat pumps
- Gas-fired air curtains having a range capacity of 15-40kW

One manufacturers estimated that in 2009, a total of 15 000 units of air curtains (electric, water heated and heat pump based) were sold in the United Kingdom and Ireland. The same manufacturer estimates combined sales of 10 000 units (electric, water heated and heat pump based) for Netherlands, Belgium, Luxembourg and Denmark. This manufacturer further suggested that the market for oil-fired direct heated air curtains is insignificant in the EU. The markets of commercial and industrial heating products have been affected by the economic crisis as investments in buildings and facilities have been delayed. The market is expected to pick up again once the economy has recovered. For the rest of the study, the sales of air curtains in 2009,is estimated to be 60 000 units in EU-27[24].

2.2.3 Residential stock

Stock' is the installed base of existing appliances, i.e. the number of units in operation in Europe. Various approaches are possible to calculate the existing stock of such appliances. The first analysis presented here rests upon an estimation of the number of dwellings equipped with central/non-central heating appliances.

BRG Consult proposed[25] an approach to characterise the heating market in EU-25 by taking into consideration regional, national and EU level patterns. This approach identified patterns that are common to a group of countries. According to the BRG study of all the dwellings in EU, about 17.5 million to 21 million dwellings use local room heating products. It further estimates that around 25% of these dwellings are located in Spain, 15% in Italy, around 10% each in Portugal, France, Germany and Poland, around 5% each in Greece and Hungary, and the other smaller shares in the remaining EU-25 countries.

Portable electric local room heaters

The stock of portable electric heaters in the EU is estimated based on stakeholder's inputs on their sales and average economic life is presented in the table below.

[22] Water/hydronic based air curtains are out of scope of this study

[23] Heat pump based air /curtain are beyond the scope of this study and should be covered in the ongoing DG ENER Lot [21] study on central heating appliances using hot air to distribute heat (other than CHP)

[24] Source : www.eurovent-association.eu

[25] BRG Consult (2006) The boiler and heating system markets in the European Union.

Table 2-19: Stock of portable electric room heaters (based on stakeholder inputs and own estimates)

Type of heater	Installed EU-27 stock in 1000 units	Source
Convector panel heaters	9 600	Estimate
Radiators[26]	6 000	Estimate
Fan heaters	35 000	Estimate
Radiant panel heaters	6 000	Estimate
Ceramic heaters	2 400	Estimate
Visibly glowing radiant heaters	2 400	Estimate
Total portable electric	**61 400**	**Estimate**

- **Fixed electric local room heaters**

According to BRG Consult[27], 7% of households in the EU-25 in 2004 had dry electric heating installed. This corresponds to 14 million dwellings. If it is assumed that each dwelling on average had 7 electric heaters installed, this would correspond to just fewer than 100 million fixed electric heaters. Based on stakeholder inputs and own estimates, the installed stock is thought to be a bit more (see Table 2-20).

[26] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

[27] BRG Consult (2006) The boiler and heating system markets in the European Union.

Table 2-20: Installed stock of fixed electric room heaters (based on stakeholder inputs and own estimates)

Type of heater	Installed EU-27 stock (in 1000 units)	Source
Convector panel heaters	60 000	Manufacturer
Radiators[28]	5 000	CECED
Fan heaters (electric fireplaces)	7 200	Estimate
Fan heaters (fixed fan heater)	4 000	Estimate
Radiant panel heaters	14 000	CECED
Visibly glowing radiant heaters	2 400	Estimate
Storage heaters (static)	9 000	Estimate
Storage heaters (dynamic)	4 800	Estimate
Underfloor heating (thin film, cable)	13 000	Estimate
Towel heaters for bathrooms (with or without fans)	10 000	Estimate
Total fixed electric	**127 000**	**Estimate**

There is limited information about the installed stock of electric local room heating products across the MS. The following presents the information collected by MS.

- France

In reaction to the oil crisis in the 1970s electric panel convectors were installed in many French homes. According to GIFAM[29], the installed stock of electric convectors in France in 2008 was 56.8 million, of which 22 million are estimated to be over 20 years old. The total stock of fixed electric heating products is believed to be 58 million.

- Germany

According to a stakeholder, 4.8 million dynamic electric storage heaters are installed in Germany.

- United Kingdom

According to one of the stakeholders, the stock in 2008 in United Kingdom of installed panel heaters was estimated to be around 6.5 million units and that of storage heaters to be around 2.5 million units (most of them being static storage units).

[28] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.
[29] Groupement Interprofessionnel des Fabricants d'Appareils d'Equipment Ménager (www.gifam.fr)

- Nordic Countries

More than 1.6 million dwellings are heated by electric panel heaters in the Nordic countries. About 3.5% of dwellings in Denmark (119 000 units, mainly detached houses), 9% of dwellings in Sweden (262 000 units, mainly detached houses) and 18% of dwellings in Finland (approximately 220 000 units) are heated by direct electric heating systems[30], but no information is given on how many units is represented by these fractions. Installation of electric heating as primary heating is forbidden in Denmark.

The stock of electric panel heaters in the Nordic countries exceeds 11 million units. This does not include electric heaters installed in summer houses, cottages and those used for secondary heating purposes. A stakeholder estimated that the stock of these remaining unaccounted electric heaters is also in the range of 11 million units.

- **Gas local room heaters**

The stock of gas-based local room heaters in the EU is estimated based on stakeholder's inputs on their sales and average economic life is presented in the table below.

Table 2-21: Stock of gas-based local room heaters (based on stakeholder inputs and own estimates)

Type of heater	Installed EU-27 stock in 1000 units	Source
Flued gas heater	3 500	Estimate
Flued gas fire	5 600	Estimate
Flueless gas heaters (fixed)	3 750	Estimate
Total fixed gas	**12 850**	**Estimate**

Another study conducted by BRG Consult on gas appliances in the EU estimated the stock for domestic gas space heaters[31] (

[30] BRG Consult (2006) The boiler and heating system markets in the European Union. Study commissioned by DG Transport and Energy, European Commission.

[31] BRG Consult (2009) GASQUAL Project.

Table 2-22). According to this study, gas based direct space heating is a typical characteristic of the UK. Two thirds of the stock in Europe is found in the UK. Gas fires are also particularly popular in the UK. Gas wall heaters can also be found in Germany and Hungary. There is a significant use of older gas stoves in the new MS of Eastern Europe.

Table 2-22: Estimates for installed stock of gas space heaters based on report published by BRG Consult

Country	Installed stock in 1000 units	Source
United Kingdom[32]	11 486	BRG Consult
Hungary	3 500	BRG Consult
Germany	829	BRG Consult
Belgium	250	BRG Consult
Denmark	5	BRG Consult
Total gas heaters in 16 selected MS	**16 070**	BRG Consult

- United Kingdom

A further breakdown of the stock of gas space heaters in the UK can be found in table below. Here different sources provide different figures, but all around 10 to 13 million units.

Table 2-23: Estimates for installed stock of gas space heaters in the UK based on various sources

Type of heater	Installed UK stock in 1000 units			
	BRG Consult (1993 - 2008)	GASTEC (includes pre-1993)	HHIC (for 2005)	HHIC (estimate for 2010)
Radiant Convector (fixed, flueless)	2270	5700	4061	3201
Live Fuel Effect Fire (fixed, flueless)	790	3250	1650	1650
Inset Live Fuel Effect Fire (built-in, flueless)	3250		3251	3266
Live Fuel Effect Fire without chimney	655			
Decorative Fuel Effect Fires (fixed and built-in, flueless)	970	2600	2167	1718
Flueless	120	172	172	302
Wall heaters	485	443		
Gas warm air heaters	230	450		
Total gas heaters in the UK	**13 465**	**12 615**	**11 301**	**10 137**

[32] 480,000 ducted gas warm air systems are not included.

- **Liquid fuel local room heaters**

The stock of liquid fuel space heaters in the EU is estimated based on stakeholder's inputs on their sales and average economic life is presented in the table below.

Table 2-24: Stock of liquid fuel space heaters (based on stakeholder inputs and own estimates)

Type of heater	Installed EU-27 stock (in 1000 units)	Source
Kerosene heater	4 000	Estimate
Liquid fuel fire	1 000	Estimate
Total fixed electric	**5 000**	**Estimate**

2.2.4 Non-residential stock

No direct information concerning the stock of non-residential heaters could be identified from literature review, however, based on the stakeholders inputs on the sales of these appliances and their average economical lifetime, the project team has estimated their stock in the EU as presented in the Table 2-25.

Table 2-25: Installed stock of non-residential heaters (based on stakeholder inputs and own estimates)

Type of heater	Installed EU-27 stock (in 1000 units)	Source
Electric industrial unit heater	200	Estimate
Gas-fired industrial unit heater	800	Manufacturer
Oil-fired industrial unit heater	100	Manufacturer
Gas-fired radiant luminous heater	450	Manufacturer
Gas-fired radiant tube heater	540	Manufacturer
Air curtains	450	Eurovent
Total	**2 060**	Manufacturer

One of the manufacturers estimates the stock of air curtains (electric, water heated and heat pump based) in United Kingdom and Ireland to be 120 000 units. The same manufacturer estimates combined stock of 80 000 units (electric, water heated and heat pump based) for Netherlands, Belgium, Luxembourg and Denmark.

2.3 Market trends

This section presents the recent evolution and expected orientation of the market, as well as a review of the parameters, which are likely to influence appliances sales and design in the future. The key factors influencing the future market of local room heating appliances are:

- Building regulations (e.g. building codes, Energy Performance of Buildings Directive (EPBD))
- Energy and environmental legislation (e.g. taxes and subsidies)
- Energy prices
- General economic situation
- New construction
- Replacement of old heating systems

Some of the major issues which influence the stock of ENER Lot 20 products are demographic trends and macroeconomic conditions which influence the demand for local room heating products. For example, consumers may postpone the purchase of installed central heating systems in an economic recession and opt for more affordable portable heaters. As the markets for residential, commercial and industrial heating are very different, they will be dealt with separately in the following sub-sections.

2.3.1 Residential market

In the residential sector, there is also a clear distinction between the markets for installed heating appliances and portable heaters. Energy and environmental legislation related to construction and energy consumption will certainly be key drivers for the residential market and will influence the size and power capacity of products. Better insulated buildings have smaller heating demands and will therefore require smaller power capacities. Some manufacturers expect the market for local room heaters to slowly decline as better insulated houses and central heating systems (condensing boilers and heat pumps) become more common.

Consumers will also demand products and systems that are well-integrated designs, which can provide the right temperature and thermal comfort in their living spaces. Here new heating and control technologies will influence the market, e.g. presence detectors, open window sensors, etc. The demand for decorative heating appliances could also drive the demand for many local room heating products. In many MS the existing stock of heating systems are relatively old (more than 20 years). When the financial situation improves, consumers may want to change their heating system to have more comfortable and efficient heating.

Energy policy will directly influence the growth or decline of certain products. The security of gas supply might discourage the demand for gas appliances in some MS, or alternatively be considered a better environmental choice compared to electric systems, if the production of electricity is mostly based on fossil fuels. Specifically for installed electric heating systems, e.g.

storage heaters and underfloor heating, these types of products could play an important role for load shifting and Smart Grids, as they can be demand controlled.

Regarding portable heating devices, these are not covered by building regulations. As they are relatively inexpensive to buy, consumers may choose them to boost heating in some specific areas of their house, instead of turning on (or increasing the temperature) of the primary heating system.

2.3.1.1 Product trends – Established technologies

With electric heating products, there is a general trend that radiant panels and electric radiators are slowly replacing convectors (particularly those with mechanical controls). This is driven by the perception of the heat comfort that the different technologies provide. Besides heaters used in bathrooms, e.g. towel heaters, fixed fan heaters are a marginal market. In well-insulated houses, where the heating demand is reduced, electric heating can be an energy efficient choice. Electric underfloor heating has been decreasing, but in well insulated houses it may well increase in the future.

For gas heaters, the sales of radiant convectors and wall heaters are expected to decline in some Member States due to losing market share to electric heaters[33]. The sales of live fuel effect gas fires faces competition from solid fuel fires. Sales are thought to remain stable or maybe even increase slightly. Decorative gas fires (mainly a UK product) are in decline, losing market shares to electric, solid fuel and more efficient live fuel effect fires[34]. The market for flueless gas space heaters is thought to be growing as many new properties do not have chimneys installed in them.

Many of the residential local room heaters are chosen more for their decorative features than as a heating device. It is therefore often perceived as a 'luxury product' to create a certain ambience in a room.

2.3.1.2 Product trends – New emerging and alternative technologies

As local room heaters provide heat directly (many appliances are close to 100% efficient measured as the ratio between energy consumed and heat delivered), the greatest improvements in (system) efficiency come from better control and regulation. In the residential sector more user-friendly controls, and even controls that urge users to use less energy, will become important. Presence and 'open window' detectors exist on some heating devices, but are not yet common. Heating controls are slowly evolving to become more intelligence in the way that they can anticipate user patterns, and adjust themselves automatically without having to have the user interfere. Anti-dust and other self-cleaning features will also play a role is some direct heating products.

[33] In the UK also because the Decent Homes scheme will end in 2012.

[34] BRG Consult (2009) GASQUAL Project.

2.3.2 Non-residential market

In the commercial and industrial markets, energy costs savings will continue to determine the future market. One of the main encouraging factors behind the recent growth in the European space heating market is the ban on smoking in commercial places (e.g. pubs, bars, cafes, restaurants, etc.) in a number of Member States. Some of the countries where smoking bans are already in place include Ireland, UK, Spain, Italy, Norway, Sweden, Belgium and Netherlands. An initial study conducted by Frost & Sullivan[35] considered the European radiant heating market and estimated that the market will grow as commercial establishments offer heated outdoor spaces to their customers.

In the industrial and commercial sector, gas is replacing oil as the preferred fuel. The integration of the heating systems control technology with the building's energy management system will also become important as it will allow better system wide efficiencies. Particularly in the new MS in Eastern Europe the market for efficient heating systems is expected to grow.

2.4 Market channels and production structures

The market structure for local room heating products follows the broad diversity of products and applications. In general, there is a great difference between the residential market and the industrial market. And again a difference between space heaters that are installed in buildings, and those that are portable.

2.4.1 Distribution channels

There are several paths in which local room heating products are sold. In the following sub-sections, these differences between the distribution channels are illustrated.

2.4.1.1 Residential market

Fixed electric heaters are usually installed by professionals, who in turn buy from distributors or wholesalers. Fixed heaters can also be purchased directly from retailers (DIY stores). Very few of these products are sold directly to the end consumer.

[35] European space heating market shows great growth potential, Frost & Sullivan Market Insight (2006)

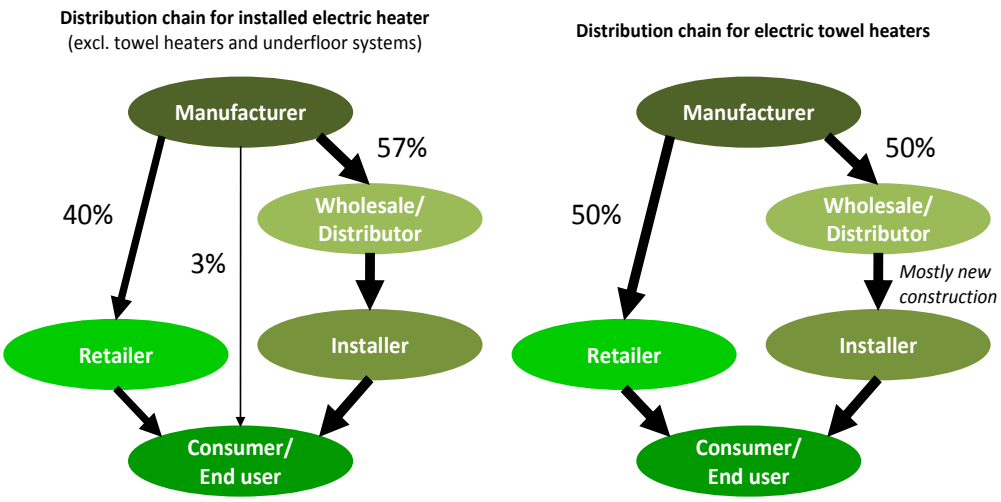

Figure 2-5: Sales mechanisms for fixed electrical appliances

For electric underfloor heating systems, most of the sales are done through the professional network. Portable heaters on the other hand are mainly purchased from retailers as no special installation is required.

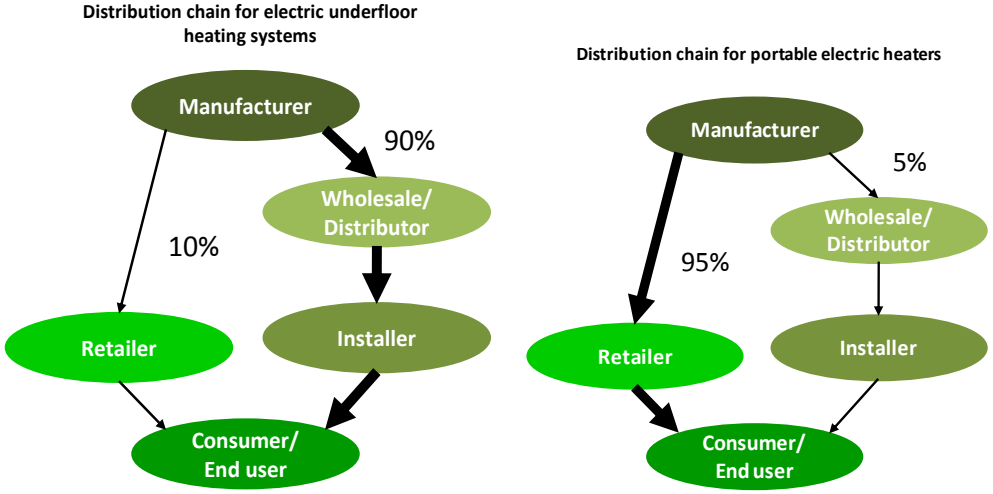

Figure 2-6: Sales mechanisms for underfloor and portable electrical appliances

For gas heaters, the flued appliances are typically installed by professionals. Portable LPG heaters are mostly sold via retailers.

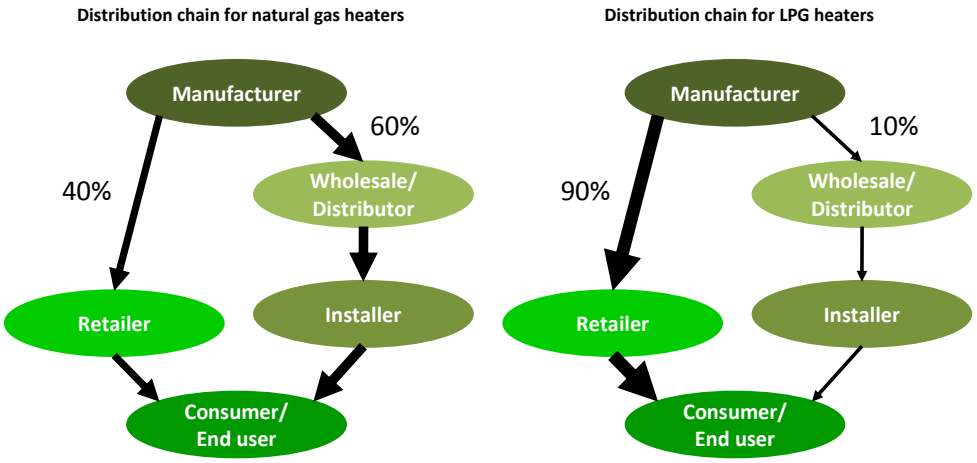

Figure 2-7: Sales mechanisms for gas appliances

2.4.1.2 *Non-residential market*

In the industrial and commercial heating market, manufacturers predominately use the professional network for their sales. If manufacturers are located in the same country as their customers, manufacturers often have their own network of installers that they sell directly to. Otherwise in other countries, manufacturers sell to distributors that then sell them on to installers. It is common for large installations that the manufacturers, in partnership with distributors, consultants/specifiers, building contractors and installers, also specify and detail the plans of the heating system of the building.

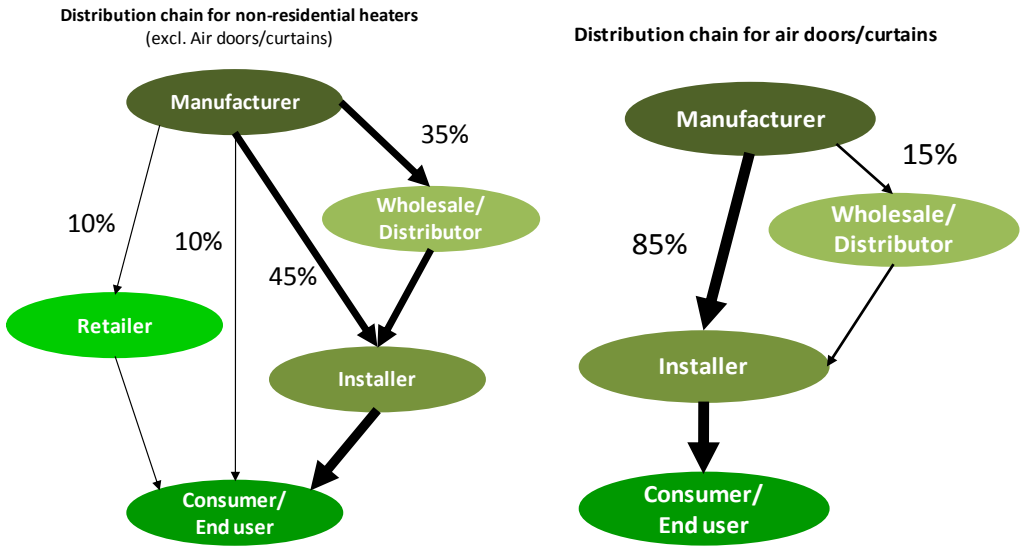

Figure 2-8: Sales mechanisms for non-residential heating products

The products are shipped directly either to the installer or the customer. Usually, wholesalers only stock a few spare parts. In turnkey projects, the manufacturer or distributor can be responsible for the entire process of specifying, planning and installing the heating systems.

2.4.2 Production structures

Manufacturers of heating products have traditionally based their business on the domestic market. This follows the differences in national characteristics of heating systems. As a consequence of this structure, only some international groups have emerged offering their products all over Europe and to other parts of the world, whilst others remain quite regional.

2.4.2.1 Residential market

The residential heating market consists of both big and small manufacturers. The manufacturers of installed electric panel heaters consist mainly of larger companies, whilst the gas and ethanol fires are mainly produced by small and medium sized companies. Most installed space heaters are produced in Europe (over 90%). Some are also produced in countries just outside the EU, such as Turkey and Egypt. Due to the heavy and bulky nature of these products, few of these products come from countries further away. For fixed electric heaters France and Germany are the main producers. For gas appliances the UK, Netherlands, Belgium, Germany and several Eastern European countries are the main producers. International companies often have subsidiaries and manufacturing facilities in new MS. Portable electric heaters are mostly imported from Asia (mainly China), Bulgaria and Italy. Some of the players having an active presence in the EU residential direct heating market are presented in Table 2-26. The residential direct heating appliance manufacturers are also represented by many industry associations at the Member State and the European level. These include CECED[36], EHI[37], HKI[38], BEAMA[39] and HHIC[40]. There are also technical committees set up under CEN[41] that cover domestic ENER Lot 20 products.

[36] CECED represents the household appliance industry in Europe and counts 14 Direct Members and 26 National Associations representing 23 countries. Website: www.ceced.eu

[37] European Heating Industry (EHI) association of manufacturers of hot-water heating boilers, burners, water heaters, components. Website: www.aehi.be

[38] HKI is a German association of catering equipment and domestic heating and cooking appliance manufacturers with approximately 174 members from several MS. Website: www.hki-online.de

[39] British Electrotechnical and Allied Manufacturers Association (BEAMA) represents more than 150 electric heating manufacturers. Website: www.beama.org.uk

[40] Heating and Hotwater Industry Council (HHIC) represents whole of the domestic heating market in UK. Website www.hhic.org.uk

[41] CEN is the European Committee for Standardisation and has 31 National Members (EU and EFTA countries). Technical committees: CEN/TC 62 Independent gas-fired space heaters, CEN/TC 179 Gas-fired air heaters, CEN/TC 180 Non-domestic gas-fired overhead radiant heaters

Table 2-26: The main manufacturers of local room heating appliances (active in EU-27)

Type of heater	Manufacturer's name
Installed heaters	Atlantic Group (Atlantic, Thermor, Sauter), Biddle Air Systems, Glen Dimplex, Muller Group (Noirot, Airelec, etc.), Rettig, Stiebel Eltron, Vent-Axia, Zehnder
Electric fires	Be Modern, Continental Fires, Dimplex, Focal Point, Valor
Portable heaters	Dimplex, Delonghi, Honeywell, Bionaire, Groupe Seb (Calor), retailers' own brand (e.g. Argos, B&Q, Homebase, etc.), Vent-Axia
Storage heaters	Glen Dimplex, Elnur, EV, Muller Group, Steibel Eltron, Vent-Axia
Electric floor heating systems	AEG, Atlantic Group (Atlantic, Thermor), Devi (Danfoss), Elektra, Fenix, Nexans, Rettig, Tyco, Warmup,
Sauna heaters	Tylö,
Flued heaters	Baxi Group (Valor), Bellfires, Be Modern, BFM Europe, Burley Appliances, Charlton & Jenrick, Crosslee, Dimplex, DRU/Drugasar, GAZCO, Focal Point, Italkero, Fondital, Rinnai, Legend, Oranier, Robinson Wiley, Robur Group, Widney Leisure
Flueless heaters	Delonghi, Focal Point
Kerosene heaters	Zibro (PVG International)
Ethanol fires	CVO Fire, Gel Fireplaces Ltd,

2.4.2.2 *Non-residential market*

The industrial unit heaters and air curtains markets in EU are comprised of a few large manufacturers, but otherwise most are small and medium sized companies as these are often niche markets. For industrial warm air heaters and radiant heaters, these products are mainly made and sold in Europe. The main producing countries of these heaters are Italy, France, Germany, Spain, UK, Belgium, the Netherlands, Czech Republic, Poland and Hungary. Very few large heating systems are imported from countries outside of Europe. However, manufacturers in the EU do export about 20% of their products to countries outside of the EU. The main producers are shown in Table 2-27. The non-residential direct heating appliance manufacturers are also represented by many industry association's technical committees at the Member State and the European level. These include ELVHIS[42], EURO-AIR[43], EHI[44], FIGAWA[45] and HEVAC[46]. There are also technical committees set up under CEN[47] that cover non-domestic ENER Lot 20 products.

[42] ELVHIS is the European federation of manufacturers of luminous radiant gas heaters. Website: www.elvhis.com

[43] Euro-air is European Association of Air Heater Manufacturers. Website: www.euro-air.com

[44] European Heating Industry (EHI) association of manufacturers of hot-water heating boilers, burners, water heaters, components. Website: www.aehi.be

Table 2-27: The main manufacturers of industrial unit heaters, gas fired radiant heaters and air curtains (active in EU-27)

Type of heater	Manufacturer's name
Industrial unit heaters	Ambirad, Atlantic Group (Atlantic, Thermor), Apen Group, BensonHeating, CIAT, Mark, Consort Claudgen, Dantherm, Dunham-Bush, Frico, Gaz Industrie, Generfeu, Italkero, Kampmann, Lennox, Lersen, Nordair Niche, Nordluft, Pakole, Powrmatic, Reznor, Roberts Gordon, Solaronics, Seet, Systema, Tecnoclima and Winterwarm, Thermagas, Robur, Mark, Yahtek,
Gas-fired radiant heaters	Ambirad, Colt, Gaz Industrie, Generfeu,Gewea, Gogas, Italkero, Mark, Roberts Gordon, SBM, Schwank, Solaronics, Reznor
Air curtains	Airbloc, Air Technique, Atlantic Group (Atlantic, Thermor), Berner, Biddle, Consort Claudgen, Dimplex, Diffusion, Dunham-Bush, Envirotec, Frico (Shearflow), JS, Kampmann and Winterwarm, LSA, Gelu, Nordair Niche, S & P Coil Products, Teddington Group, Thermoscreens, Vent-Axia, Mars, 2VV

2.5 Consumer expenditure base data

The choice of a heating system is not simply a matter of its purchase price, but also the energy consumption costs. One aspect that has made local room heating products popular is their relatively low installation costs compared to central heating systems. There are, however, differences among the product types investigated in the ENER Lot 20 study. In general, electric heaters are cheaper to buy, but are often far more expensive to operate, because electricity is typically more expensive per unit of heat energy produced than gas or liquid fuel.

In the context of this study, average consumer expenditure is of interest as they are required as an input for Life Cycle Cost (LCC) calculations that will be performed in Task 5. The total costs of a local room heater can therefore be divided in:

- Purchase costs
- Installation costs
- Energy consumption costs
- Repair and maintenance costs
- Disposal cost

[45] Technical Association of all German companies in the Water & Gas related industries – 1,000 member companies. Website: www.figawa.de

[46] UK trade group of air curtain suppliers and manufacturers. Website: www.feta.co.uk/hevac/index.htm

[47] CEN is the European Committee for Standardisation and has 31 National Members (EU and EFTA countries). Technical committees: CEN/TC 180 Non-domestic gas-fired overhead radiant heaters

All these costs do not necessarily affect the same person. For example, the owner of a building is concerned by the installation and purchase of an appliance, whereas the running costs are borne by the tenant(s).

2.5.1 Purchase cost

There are large differences in purchase prices for the different appliances covered in this study. The parameters that are the most critical for determining the price of residential heaters are the technical features and the design of the appliance. Aesthetic and decorative features appear to be an important parameter, in particular in the case of fireplaces because these products are often considered not only as heat sources, but as part of the interior decoration. In the industrial and commercial sectors, efficiency and expected energy savings are considered to be the most important parameters for customers.

Stakeholder responses to the questionnaire and prices observed in product catalogues indicate that average product prices[48] for the ranges of capacity concerned in this study for residential heaters are 15-333 €/kW for electric heaters, 31-86 €/kW for gas fuel based heaters and 63-1000 €/kW for liquid fuel based heaters. In case of non-residential heaters the price range from 40-70 €/kW for warm air unit heaters and 42-65 €/kW for radiant heaters. The detailed cost estimates for each of the type of heaters considered in this study are presented in table 2.27 (residential heating) and table 2.28 (non-residential heating).

[48] "Average" product price in this context is not understood as an arithmetic mean, but more as a representative price for a typical average product in each category.

Table 2-28: Average purchase prices for residential appliances (excluding VAT and installation costs)

Main category	Type of appliance	European product price range (in €)	Average EU product price (in €)	Average product power capacity (in kW)	Average EU product price (in €/kW)
Fixed electric heaters	Convector panel heaters	50 – 200	120	1.0	120
	Radiators[49]	50 – 800	375	1.0	375
	Fan heaters (electric fireplaces)	40 – 2 000	150	2.0	75
	Fan heaters (fixed fan heater)	50 – 2 000	100	2.0	50
	Radiant panel heaters	50 – 400	250	1.0	250
	Storage heaters (static)		375	2.5	150
	Storage heaters (dynamic)	400 – 1000	600	3.0	200
	Underfloor heating	50 – 250	150	100 W/m²	
	Towel heaters for bathrooms	80 – 1400	250	0.6	415
Portable electric heaters	Convector panel heaters	30 – 150	80	1.0	80
	Radiators[50]	50 – 150	80	1.0	80
	Fan heaters	10 – 80	30	1.0	30
	Radiant panel heaters	30 – 50	40	1.0	40
	Ceramic heaters	30 – 50	40	1.0	40
	Visibly glowing radiant heaters	30 – 50	40	1.5	26
Gas heaters	Flued gas heater	350 – 2000	600	4.2	143
	Flued gas fire	350 – 2000	600	4.2	143
	Flueless gas heater	400 – 2000	600	2.5	240
Liquid fuel heaters	Kerosene heater	100 – 1000	250	4.0	63
	Gel fire	100-4000	2000	2.0	1000

[49] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.
[50] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

Table 2-29: Average purchase costs for non-residential heating appliances (excluding VAT and installation costs)

Main category	Type of appliance	European product price range (in €)	Average European product price (in €)	Average product power capacity (in kW)	Average European product price (in €/kW)
Warm air heaters	Electric warm air heaters	300 – 1000	800	20	40
	Gas-fired warm air heaters	400 – 5000	3700	40	92
	Oil-fired warm air heaters		7000	100	70
Radiant heaters	Electric radiant cassettes		100	2.4	42
	Gas-fired radiant heaters (luminous)	800 – 1800	1300	20	65
	Gas-fired radiant heaters (tube)	1200 – 2600	1900	30	64
Air curtains			2500	18	139

2.5.2 Installation cost

The installation costs of a heating appliance to the final consumer can vary according to many parameters. For many local room heaters, particularly the portable kinds, no installation is required and therefore there are no installation costs. For appliances that have specific installation requirements, Table 2.29 presents the main factors that influence installation costs and gives examples of the variability that can be observed.

Table 2-30: Main factors influencing appliances installation costs

Element	Influencing factors	Examples of variability / comments
Type of project	Type of building	New construction vs. replacement vs. first time installation
		Conversion from central or district heating
		Detached house vs. flat
	Existing system	Chimney for gas fuel based heaters available/suitable. Installing a new chimney adds at least 900-1500 Euros to the costs.
	Regulation and legal requirements	Vary widely, although now EPBD should bring them more in line
Labour hourly rates	Country	Great variety, especially between old and new Member States
	New build / existing building	In new build, labour cost may be less clearly identified
	Size of installer firm	Sole trader vs. large firm
	Relative scarcity of installers	In areas where few installers are available, higher prices can be charged
	"Black" market	In many countries this is a relevant phenomenon - making labour costs considerably lower
Cost of components	Quality of components	Influenced by consumer, installers, building contractor
	Price of comparable components	Fairly comparable across countries, with some difference between old and new Member States

Stakeholders' responses to the questionnaire provided an average estimation of installation costs as indicated in Table 2.30.

Table 2-31: Average installation cost for residential applications of local room space heaters

Main category	Type of appliance	Range of installation costs in the EU (in €)	Average installation cost per unit (in €)
Fixed electric heaters[51]	Convector panel heaters	20 – 100	30
	Radiators[52]	20 – 100	30
	Fan heaters (electric fireplaces)	20 – 100	30
	Fan heaters (fixed fan heater)	20 – 100	30
	Radiant panel heaters	20 – 100	30
	Ceramic heaters	20 – 100	30
	Visibly glowing radiant heaters	20 – 100	30
	Storage heaters (static)	50 – 120	80
	Storage heaters (dynamic)	50 – 120	80
	Underfloor heating	25 €/m^2	250 €/kW
	Towel heaters for bathrooms	20 – 100	30
Portable electric heaters	Convector panel heaters	0	0
	Radiators[53]	0	0
	Fan heaters	0	0
	Radiant panel heaters	0	0
	Ceramic heaters	0	0
	Visibly glowing radiant heaters	0	0
Gas heaters	Flued gas heater	60 – 400	250
	Flued gas fire	60 – 400	250
	Flueless gas heater (fixed)	50 – 100	75
	Flueless gas heater (portable)	0	0
Liquid fuel heaters	Kerosene heater	0	0
	Gel fire	0 – 200	70

Underfloor heaters' installation cost is more expensive than the installation of other appliances because it includes insulation placing, cabling, and concrete pouring. Considering the usual dimensioning habit of 100W/m^2, we obtain a cost of 250€/kW.

[51] CECED points out that the average installation cost for fixed products per unit shall be lower as a significant part of the products is sold through DIY (Do It Yourself) and has therefore no installation costs, which lowers the average.
[52] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.
[53] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

Table 2-32: Average installation costs for non-residential heating appliances

Main category	Type of appliance	Range of installation costs in the EU (in €)	Average installation cost per unit (in €)
Warm air heaters	Electric warm air heaters	50 – 400	150
	Gas-fired warm air heaters	50 – 600	250
	Oil-fired warm air heaters	50 – 600	250
Radiant heaters	Electric radiant cassettes	50 – 400	150
	Gas-fired radiant heaters (luminous)	50 – 600	250
	Gas-fired radiant heaters (tube)	50 – 600	250
Air curtains			1000

2.5.3 Energy cost

The main operation cost is the energy consumed. This depends on the time it is used, at what power capacity and the price of the fuel/electricity. The annual energy consumption is a function of the heating season duration and the overall system efficiency.

- Fuel prices

In order to calculate the life cycle costs of local room heaters in the later stages of the study, it is necessary to determine representative fuel prices. Furthermore, fuel (especially electricity) prices differ from a country to another depending on their energy policies and local characteristics, e.g. availability of different resources. Energy price plays a major role in appliance operating costs and also in appliance choice. Therefore, it is interesting to compare the prices of fuels used for local room heating with the prices of other energy sources. Figure 2-9 shows the differences observed in France. Fuel used in local room heating appliances is in general more expensive than other energy sources. Within the local room heating fuel category, electricity and propane appear to be the most expensive ones. Energy prices also vary from domestic consumers to industrial consumers and both will be presented in this section.

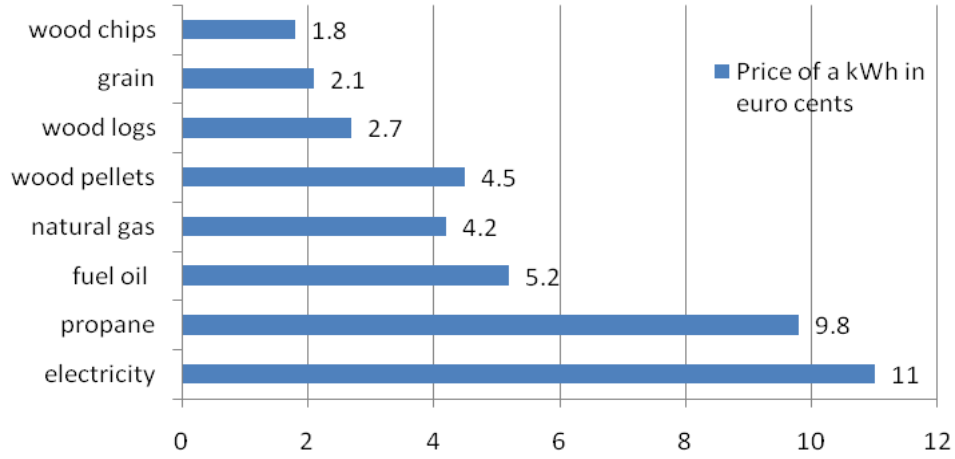

Figure 2-9: Price of different energy sources in France in 2005[54]

- Electricity prices

Electricity costs have to be taken into account for electric heating appliances and for the other appliances having an electrically controlled part (e.g. fan for forced convection gas fuel based heaters, etc.). The electricity price varies along the day according to the on-peak and off-peak period fluctuation. As an example, current prices for France are 11.54 in on-peak hours and 7.34 in off-peak hours (cents per kW taxes included). The evolution of average electricity prices in EU Member States since 2008 are reported by Eurostat are presented in Table 2-33.

[54] Source: French Ministry of the Economy, the Exchequer and the Industry (2005) www.arecpc.com/Energie/bois/combustible.htm

Table 2-33: Electricity prices[55] (including taxes) for household consumers[56]

Member State	Electricity prices [Euros/kWh]		
	2008	2009	2010 S1
Austria	0.18	0.19	0.20
Belgium	0.20	0.19	0.20
Bulgaria	0.08	0.08	0.08
Cyprus	0.19	0.16	0.19
Czech Republic	0.13	0.14	0.13
Denmark	0.27	0.26	0.27
Estonia	0.08	0.09	0.10
Finland	0.12	0.13	0.13
France	0.12	0.12	0.13
Germany	0.22	0.23	0.24
Greece	0.11	0.11	0.12
Hungary	0.16	0.16	
Italy	0.21	0.20	0.20
Ireland	0.19	0.19	0.18
Latvia	0.09	0.11	0.10
Lithuania	0.09	0.09	0.12
Luxembourg	0.16	0.19	0.17
Malta	0.13	0.16	
Netherlands	0.18	0.19	0.17
Poland	0.13	0.12	0.13
Portugal	0.15	0.16	0.16
Romania	0.11	0.10	0.10
Slovenia	0.12	0.13	0.14
Slovakia	0.14	0.16	0.15
Spain	0.15	0.16	0.17
Sweden	0.17	0.16	0.18
United Kingdom	0.15	0.14	0.14
TOTAL EU-27	**0.157**	**0.163**	**0.175**

Electricity prices for industrial consumers are determined according to the industry needs. The higher its electricity consumption is, the lower the electricity price per kWh will be. The electricity demand categories are presented in Table 2-34, as well as the average EU-27 electricity kWh

[55] EUROSTAT. Energy statistics. Available at : www.epp.Eurostat.ec.Europa.eu

[56] Household consumers refer to consumer band Dc (annual consumption between 2 500 and 5 000 kWh).

price for each category in 2008. Because the most representative categories for the industry sector in EU-27 are the three first one (categories IA to IC), the evolution of average electricity prices for these categories in EU-27 since 2008 is presented in Table 2-35.

Table 2-34: Industrial electricity consumer categories, their electricity consumption and the corresponding electricity prices (EU-27, 2008)[57]

Category	Electricity consumption	Electricity prices [Euros/kWh]
Band IA	Consumption < 20 MWh	0.154
Band IB	20 MWh < Consumption < 500 MWh	0.146
Band IC	500 MWh < Consumption < 2 000 MWh	0.128
Band ID	2 000 MWh < Consumption < 20 000 MWh	0.114
Band IE	20 000 MWh < Consumption < 70 000 MWh	0.107
Band IF	70 000 MWh < Consumption < 150 000 MWh	0.099
Band IG	Consumption > 150 000 MWh	0.106

[57] Source : EUROSTAT

Table 2-35: Electricity prices (including taxes) for industrial consumers, average of the prices for categories IA to IC.[57]

Member State	Electricity prices [Euros/kWh]		
	2008	2009	2010
Austria	0.143	n.a.[58]	n.a.
Belgium	0.167	0.159	0.160
Bulgaria	0.081	0.086	0.086
Cyprus	0.199	0.169	0.200
Czech Republic	0.163	0.164	0.167
Denmark	0.231	0.221	0.208
Estonia	0.076	0.085	0.093
Finland	0.089	0.094	0.096
France	0.101	0.106	0.110
Germany	0.179	0.187	0.193
Greece	0.121	0.132	0.139
Hungary	0.161	0.152	0.140
Italy	0.203	0.212	0.208
Ireland	0.168	0.165	0.156
Latvia	0.099	0.122	0.122
Lithuania	0.111	0.117	0.135
Luxembourg	0.129	0.158	0.138
Malta	0.157	0.158	0.235
Netherlands	0.168	0.182	0.168
Poland	0.137	0.138	0.152
Portugal	0.123	0.128	0.132
Romania	0.122	0.112	0.118
Slovenia	0.147	0.158	0.145
Slovakia	0.174	0.209	0.183
Spain	0.139	0.161	0.170
Sweden	0.113	0.108	0.131
United Kingdom	0.137	0.138	0.141
Average EU-27	**0.150**	**0.156**	**0.160**

[58] Please note : n.a. stands for « not available »

Natural gas prices

Natural gas costs have to be taken into account for gas fuel based heating appliances. The evolution of natural gas prices in EU Member States since 2008 as reported by Eurostat are presented in Table 2-36.

Table 2-36: Natural gas average price (including taxes) for domestic household consumers (the prices relate to appliances between 20GJ and 200GJ)

Member State	Natural gas prices [Euros/GJ]		
	2008	2009	2010 S1
Austria	16.7	17.6	17.3
Belgium	18.3	15.6	14.7
Bulgaria	10.4	11.4	10.2
Czech Republic	13.4	13.4	13.0
Denmark	26.6	26.2	29.7
Estonia	9.8	10.5	10.1
France	15.3	15.7	14.5
Germany	19.5	17.2	15.7
Hungary	12.1	13.3	n.a.
Ireland	16.6	16.6	13.8
Italy	18.7	17.9	17.1
Latvia	11.3	12.5	8.7
Lithuania	9.9	11.5	10.4
Luxembourg	14.9	13.3	12.1
Netherlands	20.2	20.9	19.5
Poland	12.9	11.8	11.8
Portugal	17.4	16.6	16.5
Romania	9.3	7.8	7.6
Slovakia	12.2	13.0	12.1
Slovenia	17.6	16.6	16.0
Spain	17.1	15.9	14.8
Sweden	27.7	25.8	28.7
United Kingdom	12.1	11.8	11.3
EU-27 average	**16.3**	**15.4**	**14.7**

Similarly to electricity prices, the natural gas prices for the industry vary according to the consumption of the customer. The categories defined on the natural gas demand are presented in Table 2-37, as well as the average EU-27 natural gas kWh price for each category in 2008. Because the most representative categories for the industry sector in EU-27 are the three first

one (categories I1 to I3), the evolution of average natural gas prices for these categories in EU-27 since 2008 is presented in

Table 2-38.

Table 2-37: Industrial natural gas consumer categories, their natural gas consumption and the corresponding natural gas prices (EU-27, 2008)[57]

Category	Natural gas consumption	Natural gas prices [Euros/GJ]
Band I1	Consumption < 1 000 GJ	14.85
Band I2	1 000 GJ < Consumption < 10 000 GJ	13.47
Band I3	10 000 GJ < Consumption < 100 000 GJ	11.92
Band I4	100 000 GJ < Consumption < 1 000 000 GJ	10.52
Band I5	1 000 000 GJ < Consumption < 4 000 000 GJ	n.a.
Band I6	Consumption > 4 000 000 GJ	n.a.

Table 2-38: Natural gas prices (including taxes) for industrial consumers, average of the prices for categories I1 to I3 [57]

Member State	Natural gas prices [Euros/GJ]		
	2008	2009	2010
Austria	n.a.	n.a.	n.a.
Belgium	14.71	11.83	12.47
Bulgaria	8.28	10.46	9.59
Czech Republic	12.51	10.99	12.08
Denmark	24.76	17.92	26.88
Estonia	10.03	15.78	9.88
Finland	10.55	9.88	10.72
France	12.85	11.61	12.92
Germany	16.64	13.01	14.55
Hungary	14.23	14.35	13.42
Italy	13.09	12.72	12.05
Ireland	13.79	12.99	10.72
Latvia	11.86	11.64	10.43
Lithuania	12.63	12.12	11.32
Luxembourg	12.11	11.32	12.31
Netherlands	16.00	14.29	14.75
Poland	12.10	14.58	11.75
Portugal	11.97	10.29	11.29
Romania	9.17	10.00	7.52
Slovenia	16.03	11.18	15.80
Slovakia	13.61	14.65	12.77
Spain	10.47	12.99	11.15
Sweden	20.36	15.28	18.69
United Kingdom	11.35	12.41	9.25
Average EU-27	**13.41**	**11.58**	**12.45**

Liquefied Petroleum Gas (LPG) prices

LPG costs have to be taken into account for liquid fuel based heating appliances. The LPG gasoil prices in EU Member States as of April 2010 are presented in Table 2-39.

Table 2-39: LPG prices (including taxes) for Member States in EU as of April 2010[59]

Member State	LPG prices in April 2010 [Euros/litre]	LPG prices in Sept 2011 [Euros/litre]
Belgium	0.57	0.66
Bulgaria	0.52	0.67
Czech Republic	0.57	n.a.
Estonia	0.63	0.74
France	0.72	0.73
Germany	0.62	0.76
Hungary	0.64	0.70
Italy	0.66	0.71
Latvia	0.54	0.57
Lithuania	0.57	0.65
Luxembourg	0.53	0.59
Netherlands	0.7	0.78
Poland	0.53	0.57
Portugal	0.69	0.83
Romania	0.46	0.71
Slovakia	0.48	0.69
Slovenia	0.67	0.74
Spain	0.62	0.62
United Kingdom	0.75	0.87
EU-27 average	0.60	0.70

[59] www.energy.eu

Heating oil prices

Heating oil costs have to be taken into account for liquid fuel based heating appliances. The heating oil prices in EU Member States as of January 2009 are presented in Table 2-40.

Table 2-40: Heating gasoil prices (including taxes) for Member States in EU as of on 26/01/2009[60]

Member State	Heating oil prices [Euros/1000 litre]
Austria	599
Belgium	452
Bulgaria	776
Cyprus	524
Czech Republic	493
Denmark	895
Estonia	547
Finland	574
France	593
Germany	555
Greece	510
Hungary	849
Italy	1026
Ireland	620
Latvia	509
Lithuania	475
Luxembourg	420
Malta	770
Netherlands	639
Poland	520
Portugal	657
Romania	512
Slovenia	538
Slovakia	543
Spain	536
Sweden	890
United Kingdom	479
TOTAL EU-27	611

[60] http://ec.europa.eu/energy/observatory/oil/doc/prices/oil_price_in_2008.pdf

2.5.4 Maintenance and repair cost

Besides the energy costs, maintenance, repair, service charges and inspection costs are also part of the operational costs. The costs related to heating controls are also accounted for in the operational costs. Some Member States have certain requirements for the annual inspection of gas and oil appliances. This is however not the case in UK, where such requirements are only applicable in case of rented properties and not in case of private property owners. The main elements influencing maintenance are presented in Table 2-41: Factors influencing maintenance costs.

Table 2-41: Factors influencing maintenance costs

Influencing factors	Examples of variability / comments
Legal requirements	Imposing frequency of inspections
Actual practice	How well are legal requirements enforced
Terms of warranty	Standard length of warranty varies by more than 100% across countries
Cost of inspections	Maintenance contracts vs one-off calls
Cost of component replacement	Related to type and quality of system installed

Costs for maintenance and repair of the appliances over the appliance economic lifetime have been estimated based on the stakeholder input (Table 2-42: Average maintenance and repair cost for residential applications of local room space heaters).

Table 2-42: Average maintenance and repair cost for residential applications of local room space heaters

Main category	Type of appliance	Range of maintenance costs (in €)	Average maintenance costs (in €)	Range of repair costs (in €)	Average repair costs (in €)
Fixed electric heaters	Convector panel heaters	0 – 30	0	0 – 30	0
	Radiators[61]	0 – 30	0	0 – 30	0
	Fan heaters (electric fireplaces)	0 – 50	0	0 – 30	0
	Fan heaters (fixed fan heater)	0 – 50	0	0 – 30	0
	Radiant panel heaters	0 – 30	0	0 – 30	0
	Ceramic heaters	0 – 30	0	0 – 30	0
	Visibly glowing radiant heaters	0 – 30	0	0 – 30	0
	Storage heaters (static)	0 – 100	0	0 – 30	0
	Storage heaters (dynamic)	0 – 100	0	0 – 30	0
	Underfloor heating	0 – 30	0	0 – 30	0
	Towel heaters for bathrooms	0 – 30	0	0 – 30	0
Portable electric heaters	Convector panel heaters	0 – 20	0	0	0
	Radiators[62]	0 – 20	0	0	0
	Fan heaters	0 – 20	0	0	0
	Radiant panel heaters	0 – 20	0	0	0
	Ceramic heaters	0 – 20	0	0	0
	Visibly glowing radiant heaters	0 – 20	0	0	0
Gas heaters	Flued gas heater	0 – 100/year	20/year	0 – 50	30
	Flued gas fire	0 – 100/year	20/year	0 – 50	30
	Flueless gas heater (fixed)	0 – 100/year	20/year	0 – 50	0
	Flueless gas heater (portable)	0	0	0 – 20	0
Liquid fuel heaters	Kerosene heater	20 – 100	50	0 – 50	0
	Gel fire	20 – 100	50	0 – 50	0

[61] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.
[62] Includes fluid-filled, cast iron element, aluminium element, glass facade, ceramic, steatite stone, etc.

Table 2-43: Average maintenance and repair cost per type of non-residential heating appliance

Main category	Type of appliance	Range of maintenance costs (in €)	Average maintenance costs (in €)	Range of repair costs (in €)	Average repair costs (in €)
Warm air heaters	Electric warm air heaters	0 – 50	0	0 – 100	50
	Gas-fired warm air heaters	50 – 200/year	100/year	0 – 50	30
	Oil-fired warm air heaters	50 – 200/year	100/year	0 – 50	30
Radiant heaters	Electric radiant cassettes	0 – 30	0	0 – 30	0
	Gas-fired radiant heaters (luminous)	50 – 200/year	100/year	0 – 30	20
	Gas-fired radiant heaters (tube)	50 – 200/year	100/year	0 – 50	30
Air curtains			500		500

2.5.5 Disposal cost

Most of the local room heating appliances are made of either steel or cast iron, and in the current market situation, they have a positive value as a scrap metal at end-of-life. However, in practice, the installer of new heating appliances or systems in most cases takes back the old appliance without any charge. Thus, the revenue at the end-of-life goes to the installer rather than to the consumer, who nevertheless benefits as he does not need to worry about the transport of the heavy and bulky appliance. With the exception of a few decorative appliances, there is no second hand market for local room heaters. Hence, on average both the disposal costs and resale value (as scrap metal or second-hand product) for these heaters are considered negligible.

2.5.6 Interest and inflation rates

Table 2.39 shows national inflation and interest rates for the EU-27 as published by Eurostat and the European Central Bank (ECB).

Table 2-44: The most recent average interest and inflation rates for EU-27

Member State	Inflation rate[63] [%]	Interest rate[64] [%]
Austria (AT)	1.1p*	3.99
Belgium (BE)	1.5	4.15
Bulgaria (BG)	5.4	6.78
Cyprus (CY)	1.4	4.60
Czech Republic (CZ)	2.2	4.82
Denmark (DK)	1.9	3.81
Estonia (EE)	3.8	8.34
Finland (FI)	2.6	3.98
France (FR)	0.8	3.85
Germany (DE)	0.8	3.43
Greece (EL)	1.9	5.19
Hungary (HU)	3.9	9.39
Ireland (IE)	0.0	5.09
Italy (IT)	1.6	4.55
Latvia (LV)	7.7	10.03
Lithuania (LT)	6.9	11.46
Luxembourg (LU)	0.6	4.47
Malta (MT)	3.6	4.65
Poland (PL)	4	6.08
Portugal (PT)	0.1	4.41
Romania (RO)	6.4	9.30
Slovakia (SK)	2.3	4.90
Slovenia (SI)	1.7	4.62
Spain (ES)	0.8	4.17
Sweden (SE)	2.2	3.34
The Netherlands (NL)	1.6p	3.90
United Kingdom (UK)	2.9	3.67
Euro area (MUICP)	1.1p	4.32
EU (EICP)	1.8p	

* Signifies provisional

[63] 12 month average rates Aug 09-08 / Aug 08-07, source: Eurostat (www.europa.eu/rapid/pressReleasesAction.do?reference=STAT/09/132&format=HTML&aged=0&language=EN&guiLanguage=en)

[64] ECB long-term interest rates; 10-year government bond yields, secondary market. Most recent 13 month average (%), Aug 2008 to Aug 2009 (www.ecb.int/stats/money/long/html/index.en.html)

2.6 Conclusions

The data presented in Task 2 will form the basis for selecting the most representative products on the European market and eventually formulating the base-case(s) in Task 5. However, estimating sales and establishing the stock of local room heating appliances in sufficient detail to allow base-case selection through existing data sources represents a challenge. This report represents the best estimates based on a number of individual sources. The available data shows that the yearly sales of the many products are higher than the indicative 200,000 unit threshold set in the EuP Directive.

Energy prices and fuel availability are the most important parameters that explain the current structure of the market. Government actions at a national level (e.g. financial incentives) have played a fundamental role in some countries. Available energy sources, increasing environmental concerns on the one hand and consumers' preference for aesthetic quality and comfort on the other hand appear to be the main elements that currently determine appliance design.

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