

Solar Thermal Markets in Europe

Trends and Market Statistics 2013
June 2014



European
Solar
Thermal
Industry
Federation

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Disclaimer:

Please note that all figures presented in this brochure reflect ESTIF knowledge at the time of publication.
For some countries, the data provided are only ESTIF estimations.
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A word from ESTIF President



Our industry knows only too well that the past few years have been harsh ones. 2013 was unfortunately no exception and we have seen the market contract by almost 12%, continuing the trend we have observed over the last five years. Following the boom of 2008, we have faced successive years of downturn, due to a variety of reasons already widely debated.

As everyone else in the sector, I have witnessed and participated in many discussions about this subject. And, of course, these discussions will continue, as there is no single reason behind this decrease but rather a combination of several factors

There is greater consensus on some arguments put forward, such as the unfair advantage of feed-in tariffs for solar photovoltaic systems. This is partly responsible for the decline in some markets such as Austria. On the other hand, we can observe some confusion arising among consumers when there are negative changes in support mechanisms (e.g. FiT) perceived as affecting solar in general. Other general issues raised are the lack of installers, which is often mentioned in Germany, or the high installation costs a common complaint in France. Erratic, stop-and-go, support mechanisms are also affecting the market, as can be observed in some Eastern European countries or even Portugal. We could also mention delays in the implementation of incentive schemes, as was the case in the United Kingdom.

Amid this dismal situation, there are some interesting pointers that offer some glimmer of hope for better days. Some market segments are growing in sales and visibility. This is the case for large systems, as the solar district heating success story continues in Denmark and industrial process heat is getting into more demonstration projects.

How can our industry respond to the decline in traditional market segments? For instance, finding new ways to reach out to the market. It can be either with new products to reduce installation complexity and, therefore, lower costs and risks. Or, by using more aggressive marketing strategies. This actually happened in Spain. The Spanish market, which had been contracting for several consecutive years, eventually stabilised in 2013 due to increased sales in Andalucía. This increase was not the outcome of some modification to the support scheme that the Andalusian Regional Government had decided to maintain. The main difference was the marketing strategy adopted by the main industry players, i.e. ambitious media campaigns along with tools such as telemarketing. As a result they were able to more than double the Andalusian market in one year. Our industry needs to find solutions. The industry must find effective ways of meeting some challenges affecting its future. ESTIF has been working on this, facilitating strategic discussions between industry players, conveying appropriate messages to relevant stakeholders and increasing the industry's visibility to influence European policy or its implementation at national level.

ESTIF has been promoting the role of solar thermal in reducing CO₂ emissions, on creating local jobs and boosting the local economies, on helping to tackle the energy security issues and the dependency on fossil fuel imports that Europe is facing. We address some of these points later on in this publication. There is work to be done in the field and work to be done with policy-makers. We can better tackle both if the main players in our industry can work together promoting our ideas for the solar thermal market.

I invite you to be part of this joint work, sharing ideas, experience, expertise, so that as a sector we can find new and better answers. And be aware; a strong industry starts with a strong industry association! I am looking forward to seeing you at ESTIF's next meeting.

Good reading and sunny regards,

Robin M. Welling

What have we done for the European solar thermal industry in 2013?

Some of ESTIF's actions on behalf of the European Solar Thermal Industry:

ESTIF pro-actively supported the industry towards a smooth implementation of the requirements of energy labelling legislation; also ensuring both visibility and promotion for solar thermal as a highly efficient and carbon free heating technology.

ESTIF assisted in the work of the European solar thermal panel (ESTTP) within the Renewable Technology Platform. During 2013 it resulted in the publication of the Strategic Research Priorities for Solar Thermal Technology and the preparation of the Solar Heating and Cooling Technology Roadmap, to be launched in 2014. Furthermore, ESTIF supported the work done towards the inclusion of solar heating and cooling within the European SET-Plan Integrated Roadmap.

ESTIF supports the work of the Solar Keymark Network, including monitoring and influencing crucial developments in the field of standardisation, certification and technical regulations. ESTIF is also supporting the Solar Certification Fund that finances technical projects relevant to standardisation & certification.

ESTIF worked in close contact with the EU institutions to ensure the most favourable implementation of the Energy Labelling and Eco-design regulations for our industry.

ESTIF, together with other industries from the renewable and heating sector, highlighted the importance of renewable heating in several policy and legislative initiatives, e.g. the Energy Efficiency directive, the debate on the post 2020 EU policies.

ESTIF collaborated with the IEA solar heating and cooling programme in the organisation of the first SHC International Conference on solar heating and cooling for buildings and industry in Europe, which took place in Freiburg in September 2013.

ESTIF established, in cooperation with EHI (the association of the European Heating Industry) and the support of BSW and BDH, a European Solar Thermal Energy Standardisation and Certification Working Group (ESTESC). This group, gathering experts from members of these organisations, follows actively the main issues relating to standardisation & certification in Europe.

...a far from exhaustive list!

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Solar thermal markets in EU 28 and Switzerland (glazed collectors)



EU

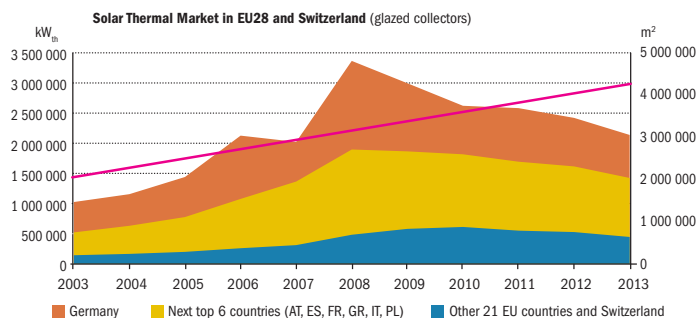
TURNOVER: 2.3 bn EUR

EMPLOYMENT: 26 800 JOBS

In 2013, the European market contracted again for the newly installed capacity, which totalled 2.14 GW_{th} (approximately 3.05 million m²). This represents a decrease of 11.8% in comparison with 2012. The total installed capacity increased by 1.75 GW_{th}, attaining 30.2 GW_{th} (43.1 mio m²). It shows an increase of 6.2% on the total installed capacity at the end of 2012.

solar thermal. However, an overall lack of confidence in solar thermal technologies is mainly to blame for the decline in the French market. Restoring the trust of project owners and private landlords is key to turning it around, which is why structuring actions are being developed in France throughout the industry, on national as well as regional levels. In the case of Portugal we can observe the dramatic impact of stop-and-go incentive programmes. The market is still suffering the effect of a major support scheme of 90 mio EUR implemented over two years (2009 and 2010) and abruptly suspended. Other European markets are affected by installations costs and the scarcity of installers. And we must not forget the incentives offered to other technologies, i.e. the feed-in-tariff, making them interesting investments. In another country, Italy, a new support scheme is not being used due to lack of information and complexity of the process.

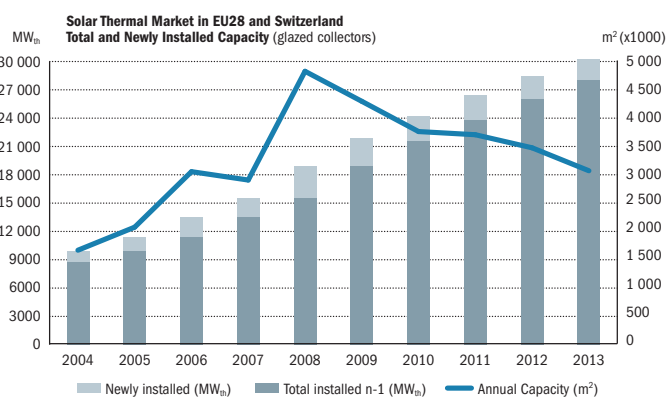
In brief, these cases demonstrate some of the main challenges facing the industry: adequate legislative and regulatory framework, stable and effective support schemes, technological development and better communication, raising the industry profile among consumers and decision makers.



The European solar thermal market decreased in 2013. Contrary to what happened in previous years, when there were significant variations between markets, the downturn in 2013 affected almost all of the largest and medium size markets. The main markets declined or, at best, stagnated. The main European market, Germany, representing one third of the European market, has led this decline with a decrease of 11% compared with 2012, totalling only 714 MW_{th} (1.02 mio m²). Among the larger markets France experienced the strongest decrease (-24%), while in the medium size markets Portugal was the most affected (-31%).

It should be noted that the market has contracted by one third since the peak year of 2008. Subsequently, the European solar thermal market has suffered a decrease of 8.7% per annum on average. It remains above the size reached in 2007, but only by a mere 6%. Nevertheless, over the past ten years the market doubled, which would correspond to an average annual growth of 7.6%.

The decrease in the market is due to various reasons, depending also on country-specific conditions. For instance, in France the market has faced a reduction in numbers of individual systems for some years, while collective systems were still growing. In 2013 collective systems also experienced a decrease. This downturn can be partly explained by technological breakthroughs or efforts to reduce energy costs in reducing the solar fraction, both resulting in less collector area needed. Regarding individual systems, we should also consider the impact of new commercial offers, such as "optimized" solar water heaters on the domestic market. These are widely available and sold as kit combined with a boiler, requiring only one solar thermal collector. On the other hand, the new building regulation (RT2012) is detrimental to



This is crucial to push for a stronger market deployment of this technology. Solar heating and cooling has proved to be a key player in the European energy policy framework, especially towards achieving the 2020 targets. With the 2.14 GW_{th} installed in 2013, the total installed capacity in the European Union (EU 28) is now 30.1 GW_{th}, generating 21 TWh of solar thermal energy and contributing to savings of 3.8 mio tCO₂. The economic importance of solar thermal cannot be ignored either; with a turnover of around 2.3 billion Euros in 2013 and 26 700 full time equivalent jobs in Europe.



GERMANY

NEWLY INSTALLED CAPACITY: 714 MW_{th}

ANNUAL EVOLUTION 2013/2012: -11.3%

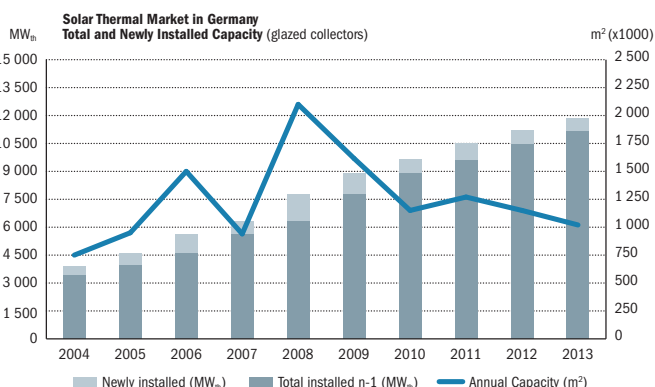
Again in 2013, the leading European solar thermal market encountered some major setbacks in its market development. With only 1.02 mio m², the market has slipped back to 2005 levels and more than halved since the record year of 2008. However, in 2013 the total cumulated area grew approximately to 11.9 GW_{th} (17.5 Mio m²). The second consecutive year with a decrease of 11 % reveals that the technology is facing difficulties in Germany. The average size per installed system has continuously reduced to around 5 m² for hot water systems and 12.5 m² for combi-systems for one and two family homes. The support for solar combi systems for hot water and space heating has remained stable since 2012 for the residential sector. The new support scheme of up to 50 % of the investments costs for solar

process heat applications, introduced in August 2012, has so far only resulted in around 100 new applications for systems with an average size of 30 to 40 m² and mainly in agro-industrial applications. Despite the difficulties facing the industry, the final costs for the consumer have remained stable.

Although it is not easy to clearly identify the reasons behind the past two years' decline, one reason is the focus on electricity by the "Energiewende", the politically influenced transition of the energy system. This gives the media and the less informed consumers the impression that "solar is only about electricity". While digressive Feed-in-Tariffs for solar photovoltaic have created a stronger focus on money and energy savings, it is still solely about electricity. The discussion on new tax depreciation regulations for investments in energy efficiency technologies (e.g. solar) might have put off other investors in 2013, though it ended without any political results.

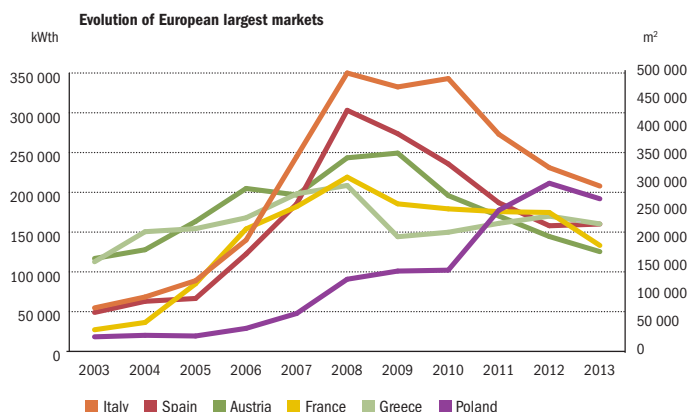
Prices for oil and gas, the most common (conventional) heating sources have stabilised at a high level. Nevertheless, this has not yet meant a broad replacement of heating systems, leaving important sources of economic savings untapped. The construction boom in Germany, while beneficial to the economy and the renewable energy market, due to renewable heating obligation for new buildings (EeWärmeG), offers several options besides the use of solar, either with improved insulation or the use of other renewable heating systems. Last but not least, a greater number of solar thermal installers have been focusing their activities on other, more lucrative, equipments than solar thermal.

The total cumulated installed capacity reached 12.3 GW_{th} (17.5 mio m²), representing a total increase of 5.8% on the German solar thermal park. In order to reach its NREAP target for 2020 of 1.245 Mtoe equivalent, i.e. 20.2 GW_{th} of installed capacity, Germany needs to install on average 1.65 GW_{th} per annum (2.36 mio m²) in the future.



Solar Thermal Markets between 105 MW_{th} and 350 MW_{th} of newly installed capacity

For the group of larger markets (excluding Germany), with a solar thermal market above 105 MW_{th} (150 000 m²) of annual newly installed capacity, 2013 was not a particular good year. Apart from Spain, where the market finally stabilised after several years of decline, these markets have contracted. The combined retrenchment of these markets was close to 10%.



For Italy, the largest market in this group, there were expectations that the market would show a positive behaviour; due to the introduction of new support schemes.

These expectations were not fulfilled and the market contracted by 10%. Poland remains the second largest market in this group; however, the market reflected strongly the effects of the Government's support policy, with a decrease of 9%.

Spain, the next largest market, had an interesting result, as it stabilised with a small growth of 1.5%. This is mainly due to the fact that one region, Andalucía, is still retaining support schemes for solar thermal; demonstrating that the market could get back to a growth path again if such support was replicated in other regions.

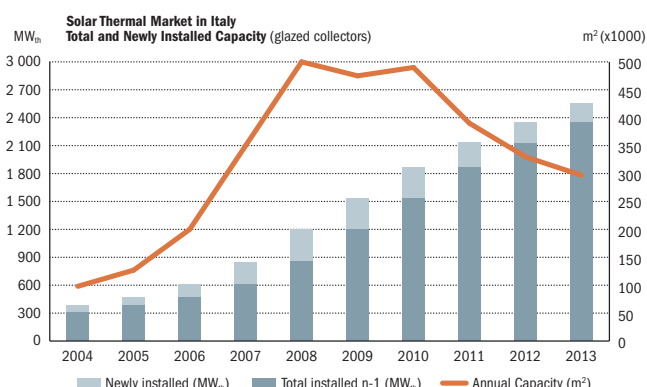
France suffered a dramatic decrease of 24%, the highest decrease in the European market in 2013. This is the result of several factors, the main being a new building regulation that is not favourable to solar thermal. As a result, the segment of collective installation, which had been growing steadily over recent years in France, shrank for the first time in many years.

Taking this group of countries as a whole, the newly installed capacity amounted to 0.98 GW_{th}, a reduction of around 10% in comparison with 2012. With reference to the total installed capacity, the combined capacity represents 13 GW_{th}, which shows an increase of 6.3% compared with the previous period. Greece and Austria remain the major markets in this group in terms of installed capacity in operation, both in total as well as per capita.

ITALY

NEWLY INSTALLED CAPACITY: 208 MW_{th}

ANNUAL EVOLUTION 2013/2012: -10%



In 2013, the Italian solar thermal market was characterized by a difficult start due to the economic crisis and uncertainty with the legislative framework. Only in the last quarter of 2013 were there signs of market recovery. The law No. 90 of 2013 (August) modified the tax deductions for energy efficiency measures in buildings, increasing the deductible share to 65% of the investment costs over 10 years. In November, the incentive was extended with gradually reduced deductible shares: 65% until 31 December 2014; 50% until 31 December 2015 and 36% from 2016 onwards.

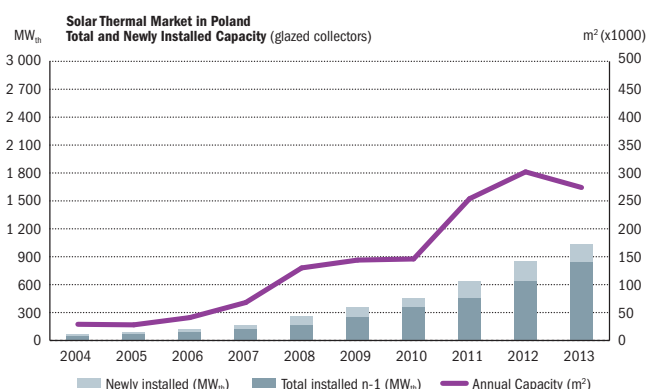
One year and a half after coming into force, the new incentive for renewable heating (Conto termico) is still struggling to take off with less than 1% of the available funds being used. And, while there are specific rules for each subsidised technology (solar thermal, biomass and heat pumps), industry associations are unanimously stressing the need for a simplification of the application process.

POLAND

NEWLY INSTALLED CAPACITY: 192 MW_{th}

ANNUAL EVOLUTION 2013/2012: -9.2%

Following several years of strong support for the uptake of solar thermal in Europe, the Polish market has faced the hardships already felt by other markets when major support schemes cease. Poland remains the third largest market in terms of newly installed capacity, after Germany and Italy. In spite of a strong decrease of 9.2%, in 2013, the Polish market totalled 191.9 MW_{th} (274 100 m²) of newly installed capacity. The total installed capacity has finally exceeded the threshold of 1 GW_{th} (1.5 mio m²): an increase of 33% in comparison with 2011. The impressive growth over recent years must continue if Poland is to achieve its ambitious 2020 target of 10 GW_{th} (14 mio m²). This is still a long way from the target set in the national renewable energy action plan, considering that the energy production from solar thermal in Poland was .64 TWh_{th}, only 13% of the 2020 target.

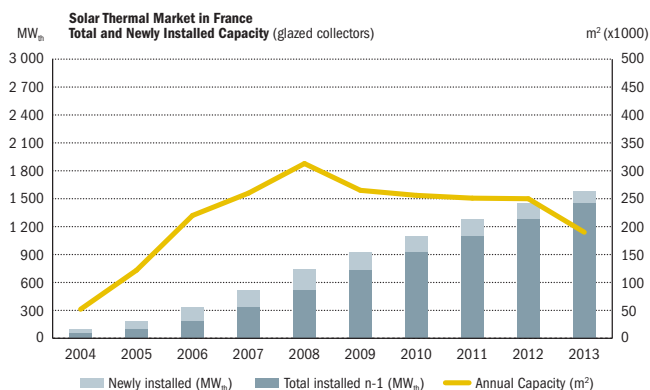


FRANCE

NEWLY INSTALLED CAPACITY: 133 MW_{th}

ANNUAL EVOLUTION 2013/2012: -23.7%

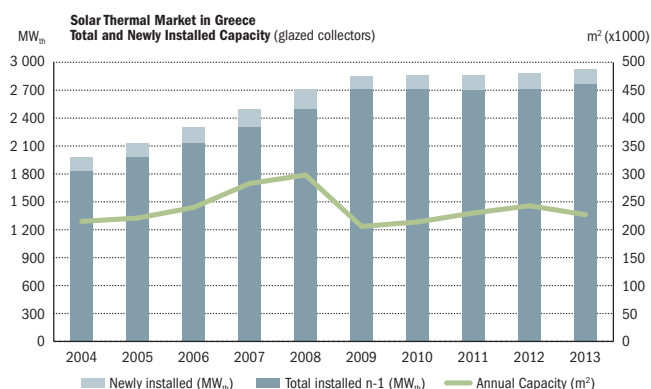
The French market contracted by 24% in terms of overall solar thermal collectors installed surface: 133 MW_{th} (190 300 m²), against 174.7 MW_{th} (249 500 m²) in 2012. The decline occurred in both the residential and non-residential markets. Sales of domestic solar water heaters were down 21% to 20 500 units (from 25 900 in 2012), while "combined" solar systems (catering for both hot water and heating needs) also fell by 21% to 11 000 units. It should be noted that for collective systems, installations amounted to only 68.1 MW_{th} (97 500 m²) in 2013 - a 22% drop over the previous year. One of the reasons behind this slump is a change in the Regulation regarding thermal requirements for new buildings. This market segment now accounts for 51% of all solar thermal collectors installed in France. Other identified reasons are: lower area required per installation and a decrease in consumer trust.



GREECE

NEWLY INSTALLED CAPACITY: 159 MW_{th}

ANNUAL EVOLUTION 2013/2012: -6.5%



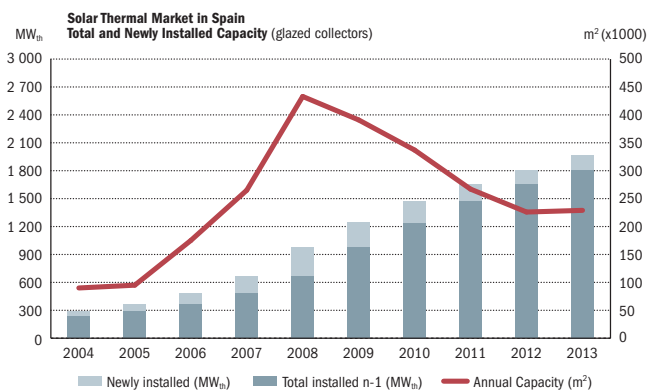
The Greek solar thermal market contracted in 2013. The Greek solar thermal market, as well as the Greek economy in general, still feels the effects of the economic and financial crisis, and of the austerity measures. After withstanding the overall crisis for some years, the newly installed capacity decreased by 7%, amounting to 159 MW_{th} (227 150 m²). The new housing market remains flat, not creating opportunities for new installations. Therefore, the solar thermal market is driven by the replacement of old solar thermal systems, and also of electric and oil heating systems. It should be noted that the Greek market is a mature one, booming in the early 1990s, and today it is almost identical in size as it was then. This means that the replacement of old solar thermal systems is an important market segment. This also means that there are no major increases in the accumulated installed capacity. The market now counts 2.9 GW_{th} (4.2 mio m²), representing an increase of 1.4%.

SPAIN

NEWLY INSTALLED CAPACITY: 160 MW_{th}

ANNUAL EVOLUTION 2013/2012: 1.3%

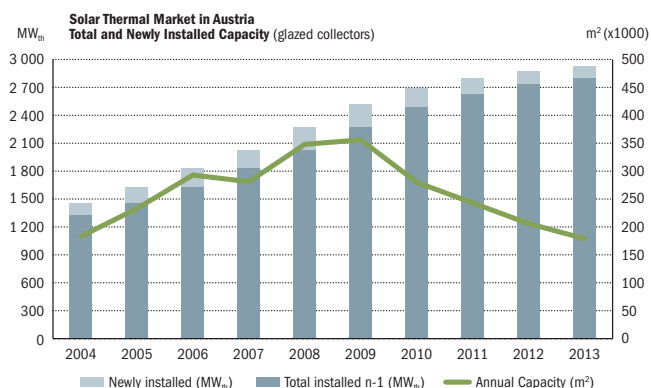
The Spanish market has finally stabilised after four consecutive years of decline, when the market almost halved (-47%). The newly installed capacity reached 160 MW_{th}, with a small increase of 1.3%. In spite of the building sector crisis, the new built is still expected to represent between 70 to 100 MW_{th} (100 000 to 150 000 m²). The main reason behind the results achieved in the Spanish market in 2013 was the growth reported in Andalucía, the only region still actively supporting solar thermal. Aggressive marketing strategies, by the main players in the region, have created a significant increase in demand, more than doubling the regional market (estimated to have represented 49 MW_{th} in 2013). By the end of 2013, the installed capacity in Spain totalled 1.9 GW_{th}, an increase of 9% over a one year period. This installed capacity represents an estimated 1.9 TWh(th) of heat generation, only 19% of the 2020 target for solar thermal set by the Spanish government.



AUSTRIA

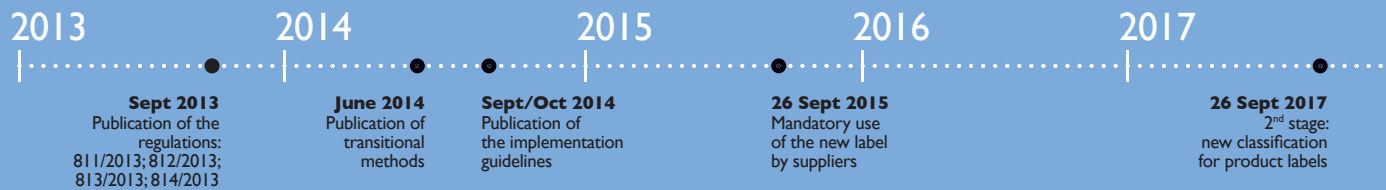
NEWLY INSTALLED CAPACITY: 125 MW_{th}

ANNUAL EVOLUTION 2013/2012: -13.2%



The Austrian market is still facing difficult times, with sales declining for the fourth consecutive year. In 2013, the decline corresponded to 13% in comparison with the previous year: the newly installed capacity amounted to 125 MW_{th} (189 000 m²). One of the main reasons given to explain this decline is the attraction that solar photovoltaic and heat pump investment represent for consumers. This traditional market must meet some important challenges to revive the sector, such as improving the image of solar heating, the price of solar plants and the cooperation with installers. Austria remains one of the most important European markets, still being the largest market per capita in continental Europe and the third in total installed capacity. This installed capacity provided an estimated heat supply of 1.8 TWh_{th}.

Energy labelling and solar thermal



WHEN?

The regulations related to 'Space heaters and combination heaters' (Lot1) and 'Water heaters, hot water storage tanks and packages of water heater and solar device' (Lot2) were published in the EU official journal in September 2013. The first requirements, including the **mandatory labelling, will start on 26 September 2015**. The packages including solar will be the only technology able to reach A+++ in water heating. Regarding factory-made solar water heaters, the label will go up to A and A+ and will be introduced two years later; i.e. in 26 September 2017.

Regulations		
	Energy Labelling Directive 2010/30/EU	Ecodesign Directive 2009/125/EC
Lot 1	811/2013 space heaters, combination heaters, packages of space heater; temperature control and solar device and packages of combination heater; temperature control and solar device	813/2013 space heaters and combination heaters
Lot 2	812/2013 water heaters, hot water storage tanks and packages of water heater and solar device	814/2013 water heaters and hot water storage tanks

WHO?

The product and package labelling obligations apply to the whole supply chain, from those "placing on the market", to those "selling" and "putting into service" heating devices below 70 kw heat output. The principle being that the product/package must bear a label at the latest stage when offered for purchase to the end consumer. **Only for the "package label", the stage and responsibility for the labelling will vary according to the way the "package" is bundled.**

Manufacturers/suppliers of factory-made systems will need to label their water heaters with the **product label**.

Manufacturers of Storage tanks below 500 litres will also need to label the tanks they place on the market as **products**.

Manufacturers of heaters AND solar devices – Collector(s) storage tanks - will have to label the "packages" they place on the market.

Manufactures of solar devices - collector(s), storage tanks and possibly pumps - will need to provide product information and fiches.

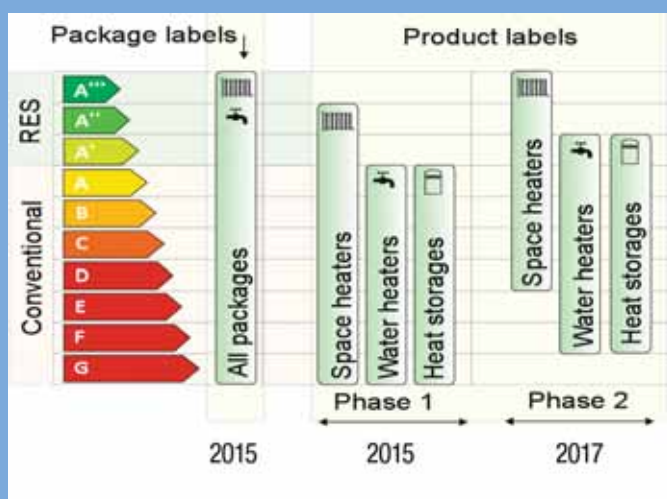
Installers/resellers/distributors who bundle "packages" to be offered for sale to consumers must ensure that these packages bear an energy label, either provided by the supplier and/or issue the label themselves on the basis of the products' fiches.

HOW?

Manufacturers of heaters, storage tanks and solar devices will test the performance of their products using current standards and provide product information required for the labelling. For the labelling, the principle of self-certification applies, implying that no control from a third party is required.

The calculation for the "package label" will be done using a calculation fiche and information extracted from the product fiches for the different products.

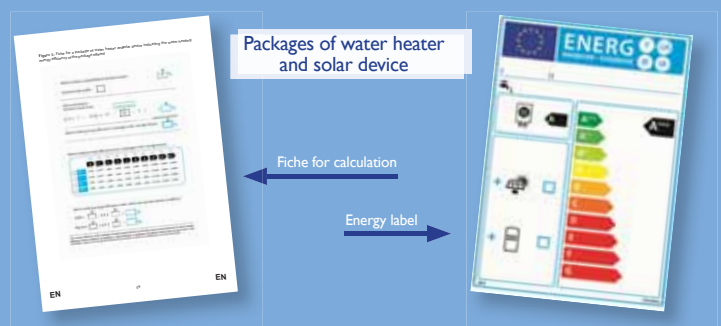
In any case, the installer offering the package has the final responsibility for the "package labelling", either provided by the supplier or calculated by him.



WHAT?

Two types of solar systems will be subject to the mandatory energy labelling:
Package Label: A+++ from 2015 onwards: Custom-built solar systems - Collector(s), storage tank, pump in the loop - **only and exclusively if sold with Heater(s)** (Boiler(s) or heat pump(s) – **will be labelled as packages (solar + heater)** for water heating and/or for combi (space and water heating).

Product Label: A in 2015, A+ in 2017 Factory-made systems, incorporating one or more back-up immersion heaters (e.g. electric) and placed on the market as one unit will be labelled as **product for water heating only**.



Solar Thermal Markets at a Glance

Data for 2013

Key



EU28+

-11.7% ▼

30 178 MW_{th}

58.8 kW_{th}

Country name

Annual evolution 2013/2012

Cumulative installed capacity in operation (MW_{th})

kW_{th} per 1000 capita

> 250 kW_{th}

50-250 kW_{th}

25-50 kW_{th}

15-25 kW_{th}

< 15 kW_{th}



Ireland

2.3% ▲

209 MW_{th}

45.5 kW_{th}



UK

-31.2% ▼

521 MW_{th}

8.1 kW_{th}



Sweden

-23.5% ▼

240 MW_{th}

25.1 kW_{th}



Denmark

-8.0% ▼

535 MW_{th}

95.5 kW_{th}



Netherlands

13.0% ▲

385 MW_{th}

22.9 kW_{th}



Germany

-11.3% ▼

11 859 MW_{th}

144.6 kW_{th}



Belgium

-4.8% ▼

310 MW_{th}

27.8 kW_{th}



Luxembourg*

32 MW_{th}

59.3 kW_{th}



Czech Republic

-10.9% ▼

330 MW_{th}

31.4 kW_{th}



France

-23.7% ▼

1 585 MW_{th}

24.9 kW_{th}



Switzerland

-14.1% ▼

876 MW_{th}

109.0 kW_{th}



Austria

-13.2% ▼

2 926 MW_{th}

346.2 kW_{th}



Slovenia

-39.1% ▼

131 MW_{th}

63.5 kW_{th}



Italy

-10.0% ▼

2 554 MW_{th}

42.8 kW_{th}



Croatia

13.1% ▲

102 MW_{th}

23.9 kW_{th}



Portugal

-36.8% ▼

632 MW_{th}

60.2 kW_{th}



Spain

1.3% ▲

1 966 MW_{th}

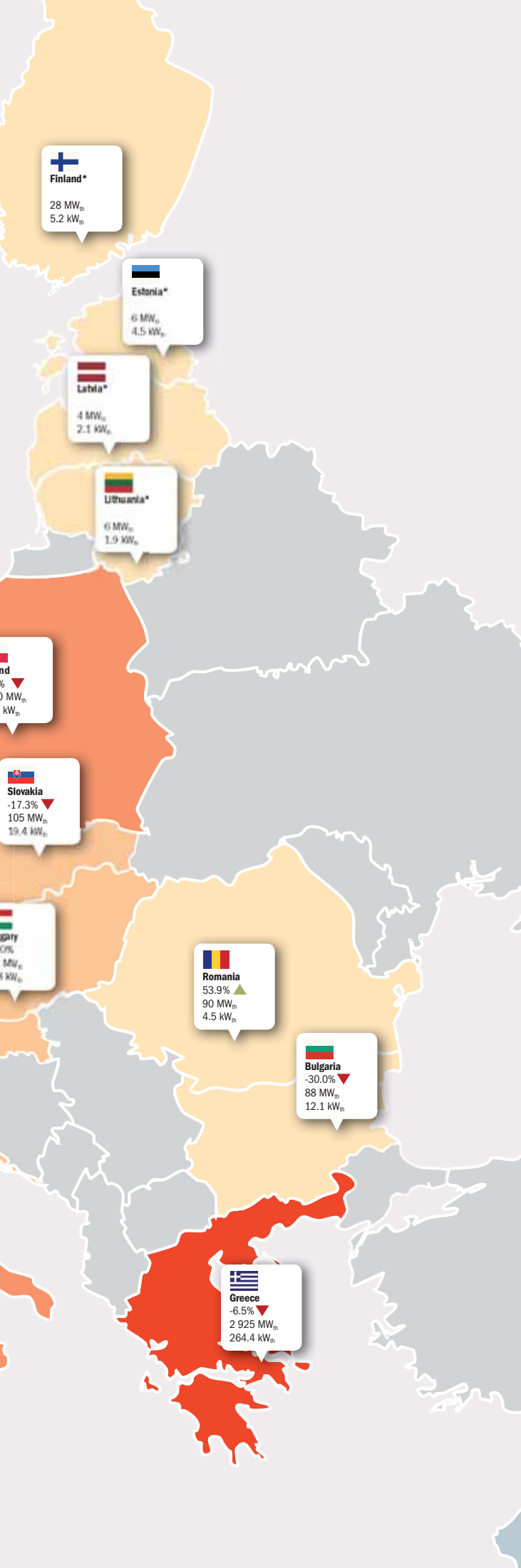
42.1 kW_{th}



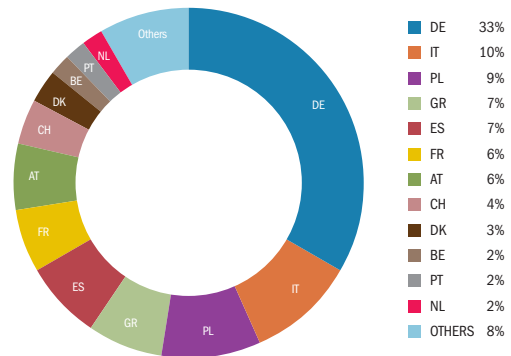
Malta*

36 MW_{th}

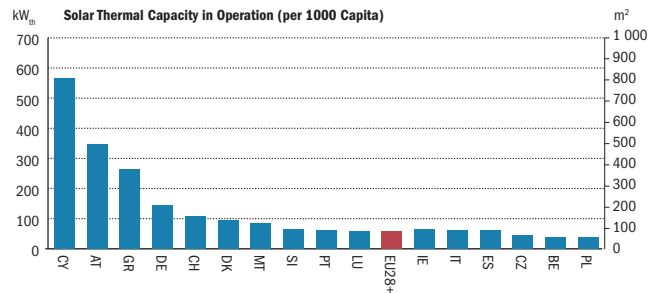
86.2 kW_{th}



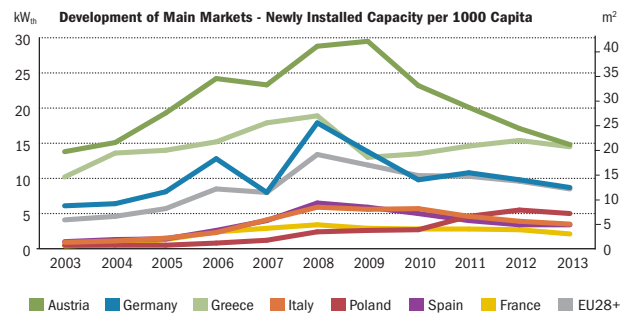
Shares of the European Solar Thermal Market (Newly Installed Capacity)



Solar Thermal Capacity in Operation (per 1000 Capita)



Development of Main Markets - Newly Installed Capacity per 1000 Capita



Note:

The data are usually provided by national solar thermal associations or other national sources. Countries marked with an * are ESTIF estimations and are therefore not sufficiently accurate to set a percentage variation in the market.

Solar Heating & Cooling Technology Roadmap

The Solar Heating and Cooling Technology Roadmap, developed by the European Solar Thermal Technology Panel (ESTTP) of the RHC-Platform, constitutes a crucial blueprint for a successful implementation of the Solar Thermal Strategic Research Priorities, as well as the RHC-Platform Strategic Research and Innovation Agenda for Renewable Heating & Cooling, published in 2013.

The main objective of this technology roadmap is to ensure that informed decisions are made to meet some important 2020 societal challenges using solar heating and cooling solutions. Therefore, it focuses on three major areas: industrial applications, retrofitting opportunities and the new-build sector; and the NZEBs (Nearly-Zero Energy Buildings). Solar heat for industrial processes (SHIP), solar compact hybrid heating systems (SCOHYS) and the solar active house (SAH) should provide a solution to these challenges.

Challenge	Objective
Increase the competitiveness of solar heating and cooling	Price reduction of solar heat by 50% (in comparison with 2013)
Simplification of the entire heating system including the solar thermal part	Development of easy-to-install compact solar hybrid heating systems with increased reliability and user-friendliness
Major role of solar energy to the heating demand of buildings	Increase the solar fraction (share of solar energy on the overall heat demand) from about 25% to 60% in Solar-Active-Houses
Extend the use of solar heat to new market segments	Adapted solar thermal technology for industrial processes and vice versa.

The roadmap incorporates several research topics divided into three roadmap pathways, each dedicated to a specific type of SHC application. It aims at identifying the actions and tasks to be addressed until 2020 to accelerate the Research & Innovation (R&I) and achieve concrete results towards a greater deployment of the SHC technology, within the timescale of the European Framework Programme for Research and Innovation "Horizon 2020".

To meet the main short to mid-term challenges for a significant increase in solar thermal market share, three pathways were identified:

- Development of **Solar Compact Hybrid Systems (SCOHYS)**
- Development of **Solar-Active-Houses (SAH)**
- Development of systems for **Solar Heat for Industrial Processes (SHIP)**



The three pathways of the roadmap are intended to increase significantly the competitiveness of the solar heating technology. How they are influenced by the societal challenges and the Research & Innovation (R&I) actions is shown in the figure above. The R&I actions are selected from the research priorities which are described in detail in the document "Strategic Research Priorities for Solar Thermal Technology".

Stakeholders from the solar heating and cooling sector are invited to endorse the proposals in this roadmap at: www.rhc-platform.org

www.solartermalworld.org

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The *solartermalworld.org* is a global knowledge-based web portal offering the latest news and background information on the development of the international solar thermal sector.

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Market size in terms of Solar Thermal Capacity (KWth) and in terms of Collector Area (m²)

	Market (=Newly Installed)							In Operation²		
							Annual Evolution of the Market			Annual Evolution of the Total Installed Capacity
	2011	2012	2013					2013		
			Total Glazed	Total Glazed	Flat Plate	Vacuum Collectors			Total Glazed	
	m²	m²	m²	m²	m²	kW(th)¹	%	m²	kW(th)	%
Austria	243 285	206 390	175 140	4 040	179 180	125 426	-13.2%	4 179 792	2 925 854	1.7%
Belgium	45 500	62 000	48 500	10 500	59 000	41 300	-4.8%	442 783	309 948	15.1%
Bulgaria	10 800	8 000	5 100	500	5 600	3 920	-30.0%	126 200	88 340	3.4%
Croatia	14 587	18 474	18 400	2 500	20 900	14 630	13.1%	145 565	101 896	16.8%
Cyprus	28 437	23 917	20 519	472	20 991	14 694	-12.2%	698 767	489 137	-1.3%
Czech Republic	65 800	50 000	32 306	12 225	44 531	31 172	-10.9%	471 599	330 119	9.8%
Denmark	62 401	113 000	103 600	400	104 000	72 800	-8.0%	764 575	535 203	12.1%
Estonia*	1 800	1 800	1 000	1 000	2 000	1 400	-	8 520	5 964	-
Finland*	4 000	4 000	3 000	1 000	4 000	2 800	-	40 423	28 296	-
France⁴	251 000	249 500	181 800	8 500	190 300	133 210	-23.7%	2 264 700	1 585 290	9.2%
Germany	1 270 000	1 150 000	908 000	112 000	1 020 000	714 000	-11.3%	16 942 000	11 859 400	5.6%
Greece	230 000	243 000	226 700	450	227 150	159 005	-6.5%	4 178 350	2 924 845	1.4%
Hungary	20 000	50 000	10 500	7 500	18 000	12 600	-64.0%	237 814	166 470	8.2%
Ireland	59 349	27 087	17 022	10 679	27 701	19 391	2.3%	298 380	208 866	10.2%
Italy	390 000	330 000	261 360	35 640	297 000	207 900	-10.0%	3 649 130	2 554 391	8.4%
Latvia*	1 800	300	1 500	500	2 000	1 400	-	6 040	4 228	-
Lithuania*	1 800	1 800	800	1 400	2 200	1 540	-	8 200	5 740	-
Luxemburg*	4 500	4 150	5 000	1 000	6 000	4 200	-	45 500	31 850	-
Malta*	2 815	1 700	1 300	200	1 500	1 050	-	51 875	36 313	-
Netherlands	33 000	42 470	43 000	5 000	48 000	33 600	13.0%	549 565	384 696	8.0%
Poland	253 500	302 000	199 100	75 000	274 100	191 870	-9.2%	1 485 490	1 039 843	22.6%
Portugal	127 198	90 612	57 149	85	57 234	40 064	-36.8%	902 501	631 751	5.3%
Romania	15 500	15 500	9 000	14 850	23 850	16 695	53.9%	128 550	89 985	16.1%
Slovakia	23 000	7 500	5 200	1 000	6 200	4 340	-17.3%	150 200	105 140	2.2%
Slovenia	12 000	16 500	8 000	2 000	10 000	7 000	-39.4%	186 800	130 760	0.0%
Spain	266 979	225 683	222 552	6 169	228 721	160 105	1.3%	2 808 499	1 965 949	8.6%
Sweden	20 807	11 257	6 124	2 487	8 611	6 028	-23.5%	342 592	239 814	-0.9%
Switzerland	137 863	142 000	107 962	14 012	121 974	85 382	-14.1%	1 251 261	875 883	9.2%
United Kingdom	91 778	59 275	32 234	8 566	40 800	28 560	-31.2%	743 873	520 711	4.8%
EU28 + Switzerland	3 689 499	3 457 915	-	-	3 051 543	2 136 080	-11.8%	43 109 543	30 176 680	6.2%

ESTIF would like to thank the solar thermal associations and other national sources for providing the data for these statistics, in particular:

AEE INTEC, Association pour Techniques Thermiques de Belgique (ATTB/Belsolar), Association of Producers of Ecological Energy (APEE), Energy institute Hrvoje Požar (EIHP), Cyprus Institute of Energy, Czech Ministry of Industry and Trade, Danish Solar Heating Association (DSF), Syndicat des professionnels de l'énergie solaire (ENERPLAN)/UNICLIMA, Bundesverband Solarwirtschaft (BSW), Greek Solar Industry Association (EBHE), Solar Thermal Association of Hungarian Building Engineers (MÉGNAP), Sustainable Energy Authority of Ireland (SEIA), Associazione Italiana Solare Termico (Assolterm), Holland Solar, EC BREC Institute for Renewable Energy (IEO), Associação Portuguesa da Indústria Solar (APISOLAR), Camera de Comerț și Industrie Româno-Germană (AHK), University of Ljubljana, Asociación Solar de la Industria Térmica (ASIT), Svensk solenergi; CHALMERS University of Technology, SWISSOLAR, Solar Trade Association (STA).

Figures for countries marked with an * are ESTIF estimations and, therefore, these are not sufficiently accurate to be used for percent change calculations in these markets.

1) The relation between collector area and capacity is $1 \text{ m}^2 = 0.7 \text{ kW}_{\text{th}}$ (kilowatt-thermal)

2) Capacity "in operation" refers to the solar thermal capacity built in the past and deemed to be still in use. ESTIF assumes a 20 year product life for all systems installed since 1990. Most products today would last considerably longer; but they often cease to be used earlier; e.g. because the building was demolished, or there has been a change of building use.

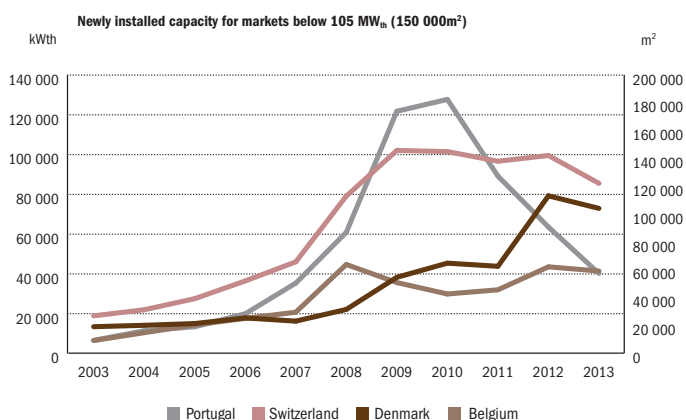
3) The figures presented are the latest available information at the end of May 2014. In some cases there may be later updates, which mean that figures for one given year may be revised subsequently.

4) The figures shown here relate to Metropolitan France (mainland). As a reference, in 2010 the overseas departments amounted to 49 MW_{th} (70,000 m²).

Solar Thermal Markets between 35 and 105 MW_{th}

The medium size markets have also had a negative year in 2013. These markets combined contracted by 15.7% in 2013.

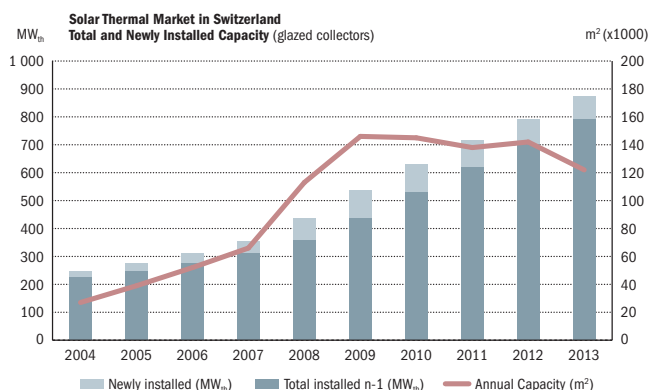
In the Portuguese market the situation is quite dramatic, as it shrank again by 37%, representing only one third of the market size reached in 2010. Denmark and Belgium, the markets with the best behaviour over the last years have also receded in 2013, by 4 and 8% respectively. Nonetheless, these markets are expected to stabilise over the coming year; in Denmark with further investments in solar assisted district heating, and in Belgium with favourable initiatives covering energy efficiency and renewable heating and cooling. The Swiss market is still feeling the impact of the recent switch towards solar photovoltaic and the need to improve support mechanisms to provide fairer opportunities for solar thermal systems. Other markets are no longer in this category, as they now represent less than 35 MW_{th} (50 000 m²) of newly installed capacity. The Czech market continues to contract following the end of the "Green savings" programme, tending to stabilise at a pre-programme level (31.2 MW_{th} or 44 531 m²). The British market has endured the constraints caused by delays in the introduction of the "domestic" RHI (Renewable Heat Incentive), contracting by an additional 31% to 28.5 MW_{th} (40 800 m²).



SWITZERLAND

NEWLY INSTALLED CAPACITY: 85 MW_{th}

ANNUAL EVOLUTION 2013/2012: -14%



The Swiss market has shrunk considerably after three years of stagnation. In 2013, the newly installed capacity totalled 85.4 MW_{th} (122 000 m²), i.e. a decrease of 14%. The main contributor to this development is considered to be the continuing growth of the PV sector (45% compared with the previous year). The breakdown between flat plate and evacuated tube collectors has not changed, the latter covering 11% of the market. For 2014, a further decrease is to be expected, because a newly introduced federal one-time remuneration, combined with a new self-consumption rule, makes small PV installations much more attractive as there is no waiting list in contrast to bigger installations applying for FiT.



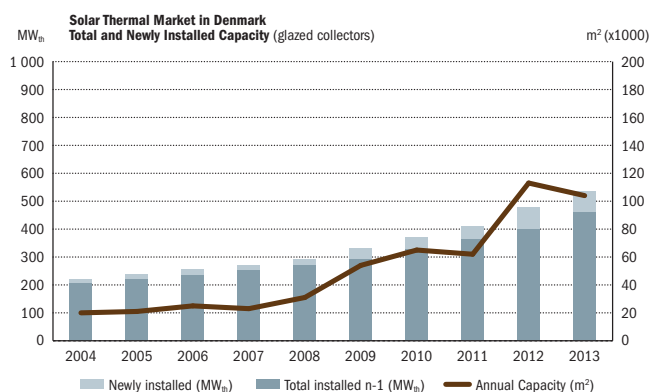
DENMARK

NEWLY INSTALLED CAPACITY: 73 MW_{th}

ANNUAL EVOLUTION 2013/2012: -8%

The Danish market remained steady in 2013. Greater growth for district heating systems was anticipated, but not realized due to delays for a few large systems. The newly installed capacity totalled 73 MW_{th} (104 000 m²), of which more than 90% referred to very large installations (67 MW_{th} / 96 000 m²). There are still a lot of large projects under way and growth is expected in 2014. The total installed capacity in Denmark amounted to 550 MW_{th} (786 000 m²) by the end of 2013. From this, approximately 262 MW_{th} correspond to large solar thermal systems (each above 1 000 m² / 700 kW_{th}), which represent around two-thirds of the European total installed capacity in large systems.

The market for individual systems appeared to have stagnated at a rather low level of around 7 MW_{th} (10 000 m²) due to low activity in the construction industry and little political focus on the sector.

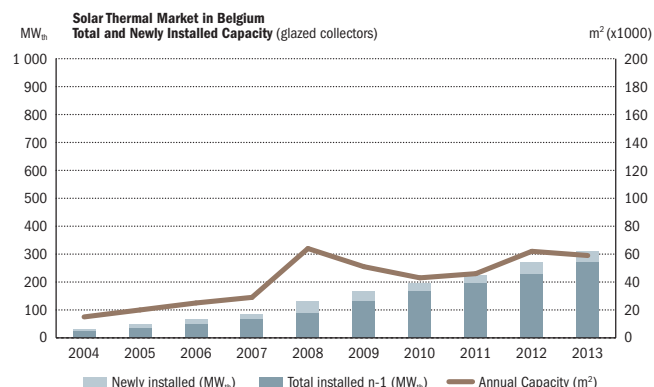




BELGIUM

NEWLY INSTALLED CAPACITY: 41 MW_{th}

ANNUAL EVOLUTION 2013/2012: -4.8%



After three consecutive years of growth, the Belgian market has contracted by 4.8%, totalling 41.3 MW_{th} (59 000 m²) of newly installed capacity. The year started with a strong growth in the first quarter, as a result of the last installations being made under a support scheme that ended in February 2013. The end of this scheme has been strongly felt throughout the rest of the year and there are also no signs of strong growth in the new build in Belgium. The Belgian market is very diverse and while Flanders represents around 75% of the Belgian market with mainly installation in single-family homes (80%), in Wallonia collective systems prevail. Overall, the total installed capacity in Belgium reached 310 MW_{th} (443 000 m² by the end of 2013).

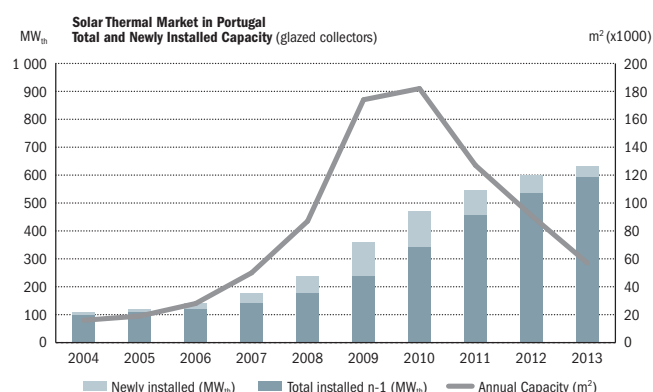


PORTUGAL

NEWLY INSTALLED CAPACITY: 40 MW_{th}

ANNUAL EVOLUTION 2013/2012: -36.8%

Portugal experienced a strong decrease over the past three years, following the end of the major support scheme "Medida Solar Térmico", as its effect was felt in 2009 and 2010. In fact, the market is now almost down to the same level as that of 2007. In the meantime, many jobs were created and later disappeared, illustrating the negative effects of stop-and-go measures. Not even the new scheme "Fundo de Eficiência Energética" (Energy Efficiency Fund) was enough to increase numbers due to its great bureaucracy. In 2013, the market contracted to 40 MW_{th} (57 234 m²), which represented a variation of - 37%.



The Solar Keymark CEN Keymark Scheme

The Quality Label for Solar Thermal

Benefits:

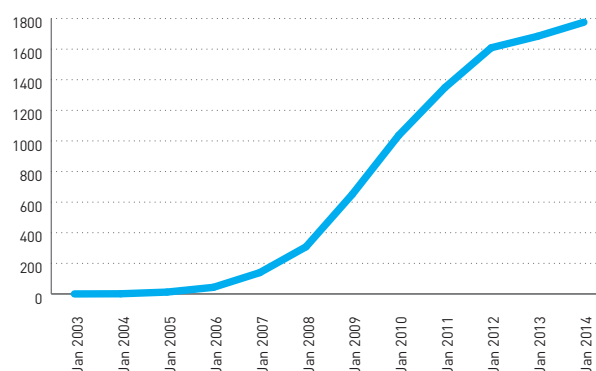
- Simple test procedure
- One test valid across Europe
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- Access to subsidies
- Reliable quality and performance

The Solar Keymark is a voluntary third-party certification mark for solar thermal products, showing that a product conforms to relevant European standards and fulfils additional requirements. It is used in Europe and increasingly recognized worldwide.

It was developed by the European Solar Thermal Industry Federation (ESTIF) and CEN (European Committee for Standardisation) in close co-operation with leading European test labs and with the support of the European Commission. It is the European quality label for solar thermal products, aiming to reduce trade barriers and promote the use of high quality solar thermal products in the European market and beyond.



Number of Solar Keymark licences



European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung



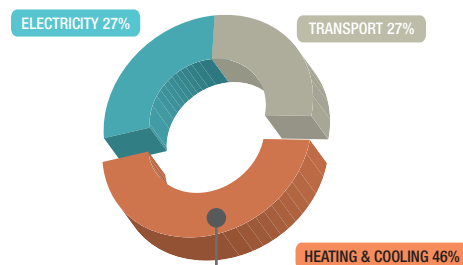
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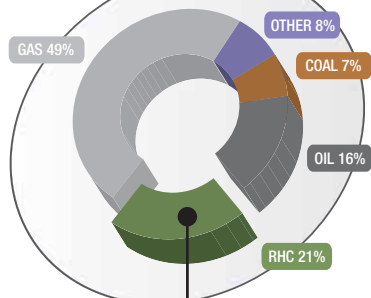
Securing a sustainable future with decentralised solar heat

The energy mix in Europe by 2020

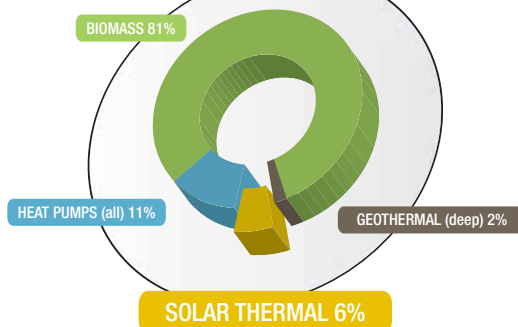
Energy Consumption by 2020
(final energy demand)



Heating and cooling consumption by 2020
by energy source



2020 targets for renewable heating and cooling per technology



Recent developments in terms of Renewable Energy Sources for Heating and Cooling (RES-H&C), i.e. biomass, geothermal, solar thermal, aerothermal and hydrothermal, have not been impressive.

The latest Eurostat data indicate that energy consumption from RES-H&C progressed in 2012 (+5.4%) totalling 82.8 Mtoe, following the downturn in 2011 (-2.2%, a reduction of -1.7 Mtoe).

This is a result of the increased installed capacity of RES-H&C systems in Europe. Over the past five years, the RES-H&C share in the total energy consumption for heating and cooling increased from 12% to 15.6%. However, the uptake of RES-H&C technologies in the market has not been in line with the 2020 targets, as observed by the EU in its 2013 "Renewable Energy Progress Report⁽¹⁾".

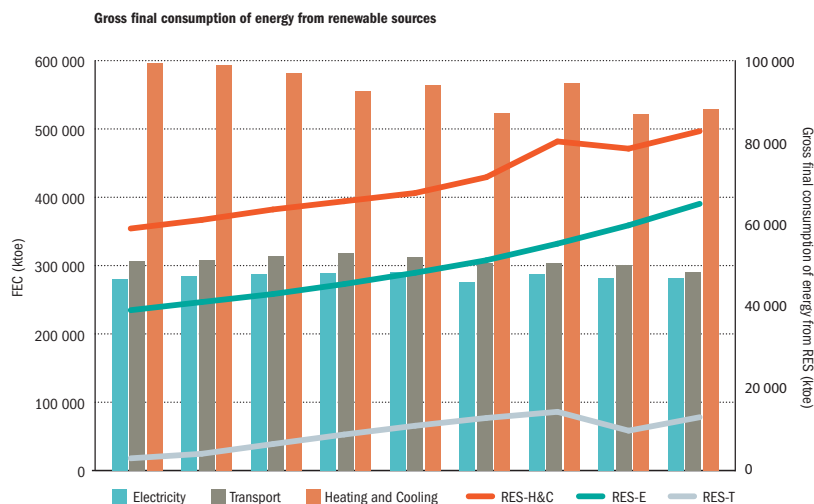


Figure 1: Final Energy Consumption in EU28. Source: Eurostat

The development of the heating and cooling sector in Europe shows that oil and gas boilers are still the preferred option, with RES-H&C technologies continuing on a faltering path. One of the main reasons is the higher upfront investment required for RES-H&C, in comparison with conventional technologies using fossil fuels.

The final energy demand for heating and cooling represents 46% of the total; it is therefore obvious that to tackle this demand, a future energy system must be designed to take into account the renewable solutions. Indeed, the European Commission, in its Communication on Energy Security⁽²⁾ calls on Member States to "Accelerate fuel switch in the heating sector to renewable heating technologies".

In fact, as stressed by the industry associations representing renewable heating and cooling, "by achieving the targets for renewables in heating and cooling (21.4 % in 2020), the EU could reduce its gas imports by the equivalent of 28.7 Mtoe annually in 2020. With current average import prices, this would save the EU some € 9.6 bn. However, with more ambitious policies, it would be possible to cover 25% of the total heat demand by the end of this decade. The annual savings in reduced fossil fuel imports would amount to as much as € 21.8 bn compared with 2012⁽³⁾. With regard to solar thermal, the 2020 targets would represent a saving of 6.3 Mtoe, an increase of around 4 Mtoe on current levels.

(1) Renewable energy progress report – COM (2013) 175final – European Commission 2013

(2) European Energy Security Strategy, COM(2014) 330 final, May 2014

(3) Position paper: "Renewables for heating and cooling and EU security of supply: Save over 20 billion Euros annually in reduced fossil fuel imports", AEBIOM, EGEC, ESTIF, 2014

Nevertheless, as indicated in the graph below (expressed in GWh), several Member States are a long way from reaching their national targets. The combined energy generated in 2013 totalled 21 GWh_{th}, far from the GWh_{th} foreseen in the NREAPs.

Solar heat generation in Europe

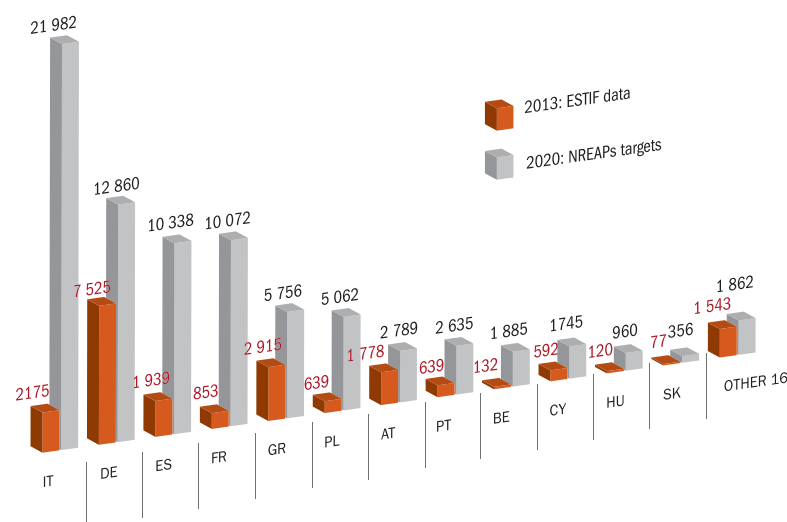


Figure 2: Estimated solar heat generation per country in comparison with national targets for annual heat generation using solar thermal systems by 2020 expressed in GWh

The sector is not only relevant in connection with energy security by helping towards reducing fossil fuels imports; it is also a **driver for local growth**. Indeed, ESTIF estimates that half the **investment in solar thermal results in economic growth at local level** and over three quarters at the European level. As a decentralized energy source, a large part of the investment is allocated to the lower end of the value chain. This means that, even when collectors are not manufactured locally, installing solar thermal has an important impact on the local economy, substituting fossil fuel imports for job creation.

This is even more so when we consider that there are low barriers to entry for new industry players into the market - meaning that it is possible, and already a reality, for most European countries to have a national solar thermal industry. As most of the market is still residential, **support mechanisms have an almost immediate impact in terms of private investment, reduction of energy consumption and of CO₂ emissions**. Considering that the vast majority of systems sold in Europe are manufactured there, it is clear that the share of investment not remaining locally still stays within European borders.

Therefore, it is not surprising that the **solar thermal sector can represent 100 000 jobs by 2020**. In 2020, the cumulated solar thermal capacity in Europe, based on the indicative national targets expressed in the NREAPs, should represent a total installed capacity of 1 02 GW_{th} (146 mio m²). This corresponds to the intermediate scenario (Advanced Market Development) included in the study on the Potential of SolarThermal in Europe published by ESTIF in 2009, which estimated that a total of 100 000 solar thermal jobs would be required for that level of deployment.

Both local growth and job creation also depend on the activation of local investment, mostly coming from consumers, assisted by relevant support mechanisms launched by public authorities at European, national, regional and local level. Solar thermal systems in residential applications are the embodiment of self-consumption. Everything produced by a solar thermal system must address the needs of that same dwelling. **Home-owners that have a solar thermal system are real prosumers – simultaneously energy producers and consumers**. In fact, solar thermal is very likely the technology that created the largest number of prosumers.

This is why we need to engage our citizens, communities in the design of the future energy system; because they cannot afford to have only a passive role as consumers. They can be producers and investors, participating actively in the energy transition needed in Europe towards more renewable energy.

NREAP Barometer

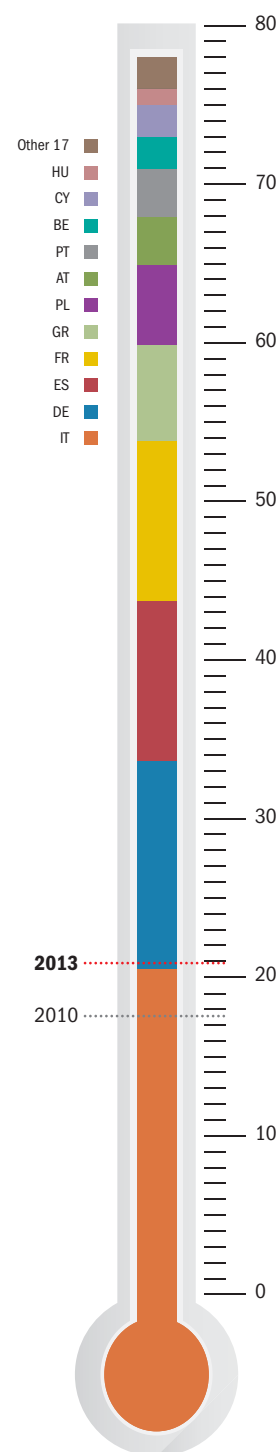


Figure 3: Estimated energy produced (TWh) in 2013 in comparison with EU 2020 targets (NREAPs) for annual solar thermal energy generation

With members across 17 European countries, the European Solar Thermal Industry Federation represents over 90% of the industry, both directly or indirectly.



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