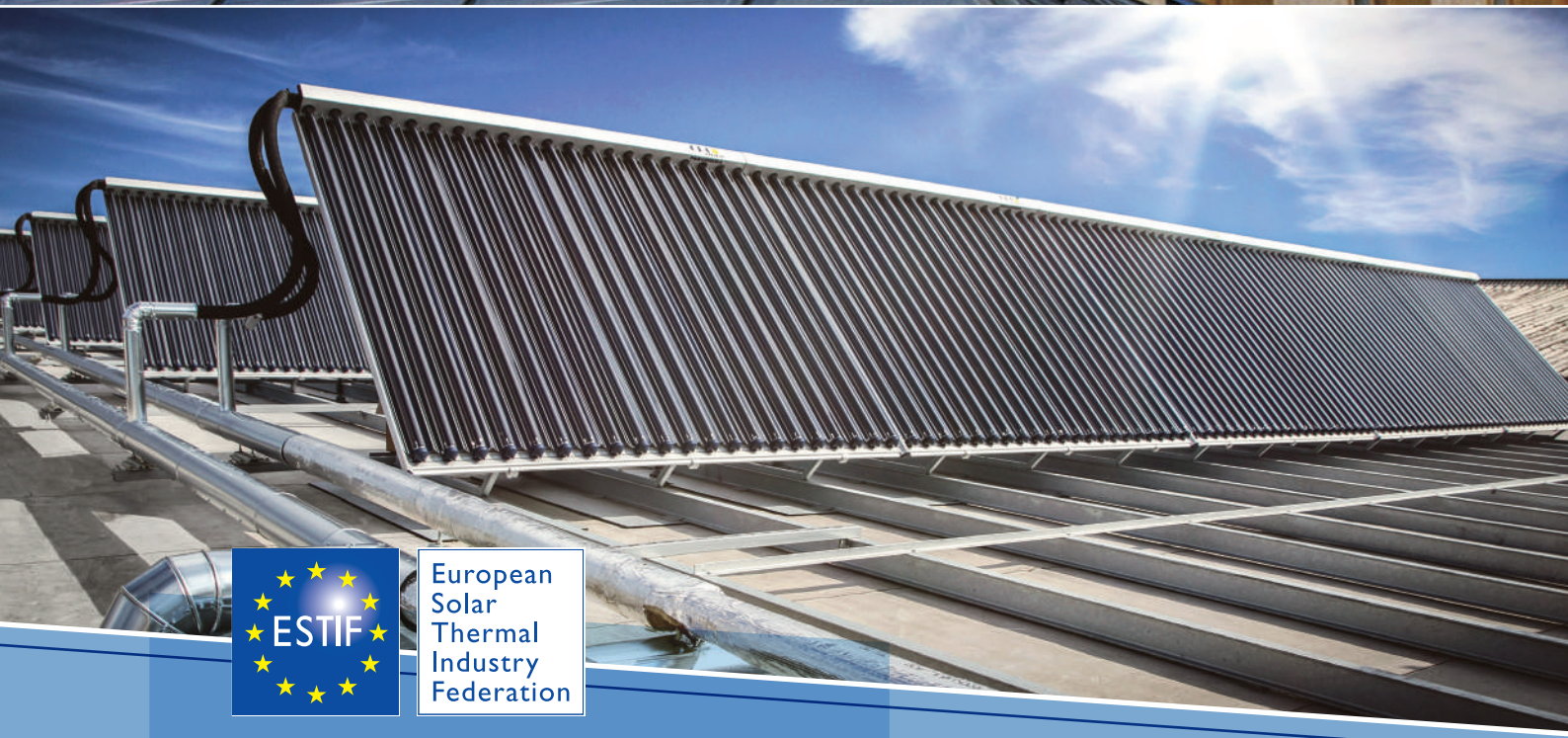
SOLAR THERMAL MARKETS IN EUROPE

Trends and Market Statistics 2014
June 2015



ESTIF

European Solar Thermal Industry Federation

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EDITORIAL: **ROBIN M. WELLING**
ESTIF PRESIDENT

The best way to describe the situation in the European solar thermal market is that we are not on track to realize the industry potential. In particular, we are not on track towards 2020, as the current performance of the sector is not strong enough to achieve the indicative solar thermal targets proposed by the EU Member States in the National Renewable Energy Action Plans (NREAPs).

In fact, the market results in 2014 are once again disappointing, with a decrease of around 7%. Even if in some countries the results were better than expected, with a few markets growing, actually the European market continues to decline due to a sharp slowdown in the construction sector in the main markets, particularly in the German market, which has contracted by 12%.

The European Commission launched the Renewables Progress Report, which shows that the 2020 indicative targets for solar thermal, reflected in the NREAPs, are likely to be missed by 41% - 45%. This is not news for our industry: since the adoption of the Renewables Directive in 2009, our sector has felt the effects of both the financial and economic crises, competition from other renewable energy sources benefitting from extremely attractive support mechanisms and the impact of low fossil fuel prices.

Within the solar heating and cooling industry we have been addressing these issues, trying to bring new answers to meet these challenges. But we need to work with public authorities if we want an integrated and effective response that can also help to stay on the right path for 2020. The European Commission is now directing its attention also to the heating and cooling sector and a heating and cooling strategy is expected by the end of 2015. The solar thermal sector has a significant role to play and is willing to play its part. We deal with this issue further in this publication. In spite of an overall disappointing scenario, there are still some positive news from the market. The Greek market is now growing again, driven by solar water heating investments in the tourism sector. There is still a great potential in these applications and it is good to see that exploring such opportunities is bringing the Greek market into "green". Another interesting example coming from the South is that of Andalusia. This Spanish region, with a population of 8.5 million, reached a market size of about 60 MW_{th} (85 700 m^2), while the rest of the Spanish market still feels the effect of the economic slowdown. The achievements in this region demonstrate the impact that industry initiative, supported by public authorities, can have on the development of the market. We would like to see such cooperation extended to other parts of Europe.

We all know by now that the market is changing. We see that the traditional residential market – single-family houses – is suffering the most, while the multi-family housing segment is behaving better. And we can see positive developments for the commercial, industrial and district heating applications. These segments are still too small compared with the residential market, although their growth in such a short period has confirmed their potential.

This transformation in the market is echoed in the results of the ISOL business Index, reflecting the mood of the industry. We can also see the relevance of the commercial and industrial applications with the creation of new support mechanisms put in place by some countries for such applications, as is the case in Germany with solar heat for industrial processes. We address these market segments in this publication in more detail: solar cooling, solar heat for industrial processes and solar district heating. We can see that the solar district heating success story continues with its expansion reaching beyond Denmark. Yet the Danes are not standing still and are looking into new large solar district heating plants, adding to their impressive 390 MW_{th} of installed capacity in such systems.

Times are changing and players in the sector need to work together to find how we can steer our sector towards better opportunities. In that regard I must also acknowledge the work that solar thermal trade associations are doing at national level. Without naming them, they are pushing industry into looking for new strategies, new ideas for the sector, while defending the industry's interests. Of course, their work is never enough, there is always more to be done to turn the market around. All the same, their work is invaluable and deserves our appreciation and support. We also count on their cooperation within ESTIF as a way to engage with national industry in the important discussions about the sector's future.

This edition of "Solar Thermal Markets in Europe" provides an overview of the European market, a short analysis of the main markets, a summary of market trends and an analysis of the situation regarding the 2020 targets. It also includes a short overview of the developments in market segments such as solar cooling, solar heat for industrial processes and solar district heating, a more detailed analysis on Turkey, the largest market in Europe and the host of the SHC 2015 conference. Finally, it also draws your attention to European initiatives led by ESTIF, on energy labelling (Labelpack A+) and on Fair RES heating and cooling Options and Trade (FROnT). We hope this provides you with a good insight into our sector, the challenges it faces but also its potential.

Good reading and sunny regards,

Robin M. Welling

WHAT HAVE WE ACHIEVED FOR THE EUROPEAN SOLAR THERMAL INDUSTRY IN 2014?

ESTIF Intensified its collaboration with other associations from the renewable heating sector to ensure a clear recognition of heating and cooling issues, to pave the way for an adequate 2030 framework for solar heating and cooling, and to propose concrete measures to be included in official legislation documents.

ESTIF Continued maximizing the positive impact of the introduction of the package label and supporting its members for a smooth implementation of the energy labelling regulations. Secured financing from the European Commission for a project involving several solar thermal trade associations to support the market rollout of the package label and assist the solar thermal sector in this process – Labelpack A+.

ESTIF Kicked-off the coordination of the EU co-financed project "Fair RES-H&C Options and Trade", with the objective to promote a level playing field for Renewable Heating and Cooling in Europe, and develop strategies for its greater deployment.

ESTIF Improved its services to members with new offerings such as weekly policy briefings, a revamped internal newsletter and a daily presence on twitter with tweets about global happenings in the energy sector.

ESTIF Celebrated 10 years of successful Solar Keymark certification, together with stakeholders from the entire Solar Keymark Network, and supported the newly created Global Standards and Certification Network.

ESTIF Collaborated, once again, with the United Nations Environment Programme and its Global Solar Water Heating Development Programme to produce a guide for Architects and Builders.

FROnT

FAIR RHC OPTIONS AND TRADE

PROMOTING a level playing field for Renewable Heating and Cooling in Europe

IDENTIFYING Strategic Policy Priorities

SETTING the framework for efficient and effective support schemes for RHC

ENHANCING clear and transparent communication with European consumers

Stakeholders from industry and public authorities from several EU Member States are involved in this project, which is led by a consortium gathering representatives from industry and national energy agencies.
The consortium is assisted by partners providing specific expertise on technical issues, business assessment and communication with consumers.

During 2015, this project will provide:

- A report giving an evaluation of support schemes for renewable heating and cooling in Europe, including an assessment of key success factors
- An electronic estimation tool for Levelised costs of Heat (LCoH)
- A report on customer key purchase criteria in five European countries, following market surveys carried out in these countries
- Tools to support end-users' decisions regarding their heating system
- An analysis of market outlook, business models & policy instruments
- National consultations with experts from industry, public authorities and other stakeholders.

If you have any questions or suggestions, please get in touch with us - ESTIF is the coordinator of this EU-financed project!

Co-funded by the Intelligent Energy Europe Programme of the European Union

ESTIF European Solar Thermal Industry Federation

www.solarthermalworld.org

Your Entry in the World of Solar Thermal Energy

The *solarthermalworld.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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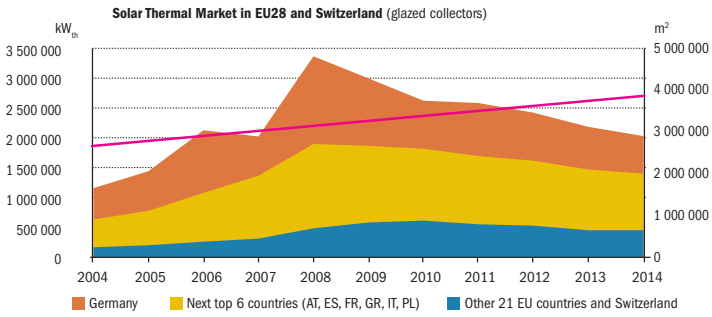
SOLAR THERMAL MARKETS IN EU 28 AND SWITZERLAND (GLAZED COLLECTORS)

In 2014, the European market, once again, underwent a reduction in the newly installed capacity. The 2014 market amounted to 2 GW_{th} (approximately 2.9 mio m²). This represents a decrease of 7.1% in comparison with the previous year. The total installed capacity registered a net increase of 1.6 GW_{th}, now reaching 31.8 GW_{th} (45.4 mio m²). This represents an increase of 5.3% compared with the total installed capacity at the end of 2013.

The European solar heating and cooling market continues to suffer from the contraction of sales in its largest markets, having reached the same market level as in 2007, before the peak year of 2008. There are several main factors behind this sluggish performance, such as the low gas prices, difficult access to finance for consumers, slow-moving construction sector, less public support schemes for solar thermal and competition from other energy sources, namely those with more attractive market incentives.

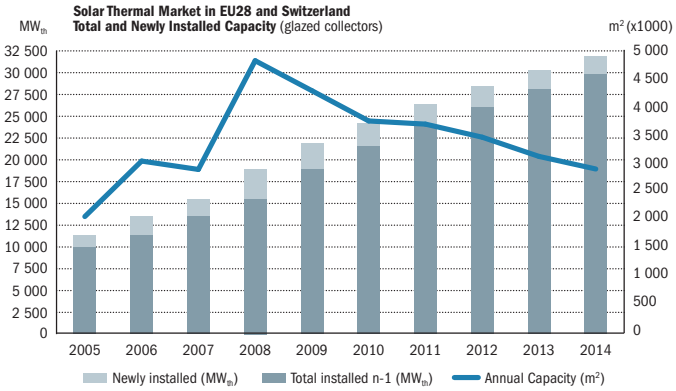
In 2014 some positive signs have come from two of the largest European markets, Greece and Spain. These markets have grown by 18.9% and 9.8% respectively. This evolution is due to greater investments in the tourism sector in Greece and by a good performance in Andalusia, in the case of Spain. These examples show that there are still market development opportunities, if some barriers are effectively tackled.



As can be observed on the graph above, the last ten years were characterised by steep growth until 2008, followed since by a contraction. While the average growth over a 10 year period was 5.6%, the market decrease since 2008 was on average 8.3%,

The single-family housing segment still represents the bulk of the solar thermal market. In some countries there is a trend for smaller average-sized individual installations. For example, the average size of individual systems in Germany is now around 5 m² (3.5 kWth) for domestic hot water systems and 12.5 m² (8.8 kW_{th}) for combisystems.

Market behaviour for larger systems is different. Collective systems for multi-family houses are behaving better than individual systems in most markets, even when they have contracted. **Large size systems** above 35 kW_{th} (50 m²) for commercial and industrial solar heating and cooling applications are also performing better. It must be noted that, for instance, with regard to solar heat for industrial processes, the average size of the solar thermal plants has increased. It is estimated that it evolved from an average of 400 kW_{th} (585 m²) between 2000 and 2007 to an average close to 1.5 MW_{th} (2 100 m²). This places many of these systems in the category of **very large systems** (above 350 kW_{th} / 500 m²) which continues to grow rapidly, mostly thanks to solar district heating plants in Denmark; however, there is clearly some development in other countries where more players are also bringing different solutions. The changes in the power market, including in the support mechanisms for power generation, have created difficulties for combined heat and power solutions coupled with district heating networks. This creates opportunities for alternatives, namely solar assisted district heating, in particular for operation during spring and summer.



Despite a below potential growth of the total installed capacity, solar heating and cooling still plays an important role in the European energy strategy, allowing for decentralised solutions to meet the heating and cooling demand in Europe, replacing the dependency on imported fossil fuels and creating local jobs. The 31.8 GW_{th} in operation generate an estimated 24 TWh_{th} of solar thermal energy while contributing to a saving of 2.75 Mt CO_2. In terms of economic significance, the solar thermal sector reached a combined turnover of 2 billion euros in 2014, employing 25 000 people.

GERMANY

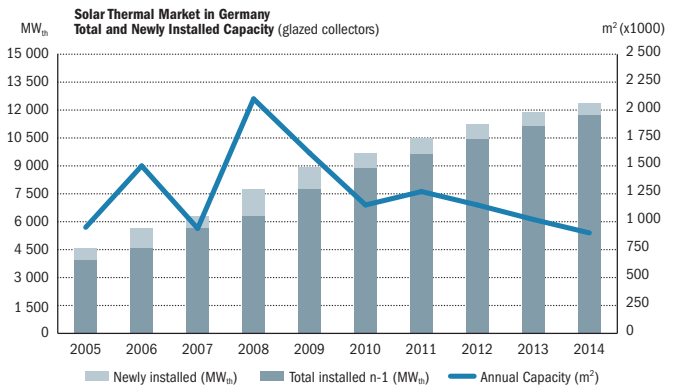
NEWLY INSTALLED CAPACITY: 630 MW_{th} **ANNUAL EVOLUTION 2013/2014: -11.8%**

Germany, the leader and main driver of the European market tumbles even more but prospects improve

In 2014, the leading European solar thermal market encountered further setbacks for the third consecutive year, following a trend initiated in 2008. With only 0.9 mio m², the market has slipped back to 2004 levels and more than halved since the record year of 2008. In 2014, the total cumulated area grew approximately to 12.9 GW_{th} (18.4 mio m²). A decrease of 12 % from year to year reveals that both the technology and the market face major difficulties in Germany. The average size per installed system has continuously decreased to around 5 m² for hot water systems and 12.5 m² for combisystems for one and two family homes. The support for solar combisystems for hot water and space heating, which remained unchanged until March 2015, proved not to be sufficient to stimulate the market.

The new support scheme of up to 50 % of the investment costs for solar process heat applications, introduced in August 2012, has so far only resulted in around 200 new installations for systems with an average size of 44 m². Solar process heat remains unknown among the target groups and driven by only a handful of engineers and planners for rather simple applications, mainly for the agro-industry and car wash facilities.

The final system costs for the consumer remained stable. Although it is not easy to clearly identify a single explanation behind the past three years' decline, some reasons can be identified.



Political: The focus on electricity by the "Energiewende" is gradually diminishing since the energy transition and climate protection goals cannot be reached with the electricity sector on its own, although this is only dawning on decision makers. The support scheme (market incentive programme MAP) as well as the building obligation have provided insufficient incentives for new investments.

GERMANY (CONTINUED)

Industry: A shortage of skilled and motivated installers compounds the problem since other investments in the booming construction sector are more profitable. Solar thermal systems are perceived as rather complicated – both in technical installation as well as in sales to the end customer.

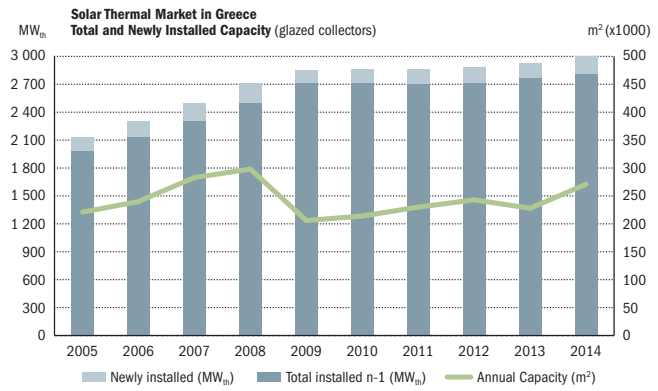
Consumer behaviour: Conventional heating systems in households are not being replaced, many have been in use for over 25 years. High, but stable, electricity rates in 2014 and lower oil and gas prices have had a negative impact on investments. Marketing of the MAP support scheme has been poor and consumers might not be aware of its existence. In addition, consumers tend to install only the minimum required number of m² of collectors to receive the subsidy.

Outlook: In the first months of 2015 the market has deteriorated, although since 1 April a drastically improved MAP offers some hope for improvements in the market. Higher support per m² and inclusion of solar water heaters make investments far more attractive than before. Moreover, policy makers seem to realize that Germany may not reach its 2020 EU goals for renewable energy consumption (18 %). Combined heat and power producers are seriously considering solar thermal technologies to generate heat for their plants - in particular to cover the lower demand over spring and summer - as a response to the low wholesale electricity prices. And even new players such as the utilities, threatened by carbon taxes and even by shutdowns of old coal power plants, recently proposed an incentive programme for the replacement of old heating systems to reduce CO_2 emissions. The market is dire but there is some light at the end of the tunnel.

OTHER SOLAR THERMAL MARKETS ABOVE 35 MW_{TH} NEWLY INSTALLED CAPACITY

GREECE

NEWLY INSTALLED CAPACITY: 189 MW_{th} | **ANNUAL EVOLUTION 2013/2014: 18.9%**



In 2014, despite difficult economic conditions with the impact of the financial crisis and austerity measures, the Greek solar thermal market unexpectedly grew by almost 20% (18.9%). The newly installed capacity totalled 189 MW_{th}, which represents 270 000 m² of newly installed collector area.

These new installations were mainly for hot water supply in the tourism sector/islands (hotels, holiday lets, etc.); a growing market segment thanks to an extra two million tourists visiting Greece during the year. There has also been a welcome market upturn for the installation of new solar thermal systems in replacement of old ones.

Greece reached a total installed capacity of 3 GW_{th} (4.3 mio m²), representing an increase of 2.6% over the previous year. This installed capacity provides an estimated energy supply of 2 989 GWh, which corresponds to 52% of the indicative 2020 target.

The outlook for 2015 is so far very encouraging and seems to be in line with the positive evolution in 2014.

ITALY

NEWLY INSTALLED CAPACITY: 188 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -25%**

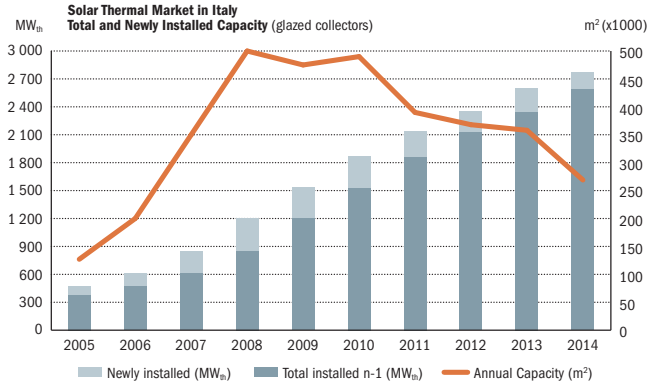
The law No. 90 of 2013 (August) modified the tax deductions for energy efficiency measures in buildings, increasing the deductible share to 65% of the investment costs over 10 years. In November, the incentive was extended with gradually reduced deductible shares: 65% until 31 December 2014; 50% until 31 December 2015 and 36% from 2016 onwards.

The tax deduction scheme has been much appreciated by consumers, and has shown to be more effective and user-friendly than the incentive scheme for renewable heating, Conto Termico.

One year and a half after coming into force, the Conto Termico is struggling to take off, with less than 2% of the available total funds (900 mio euros) being used. However, solar thermal is by far the dominant technology in this scheme, with 5 443 applications approved over a total of 7 948, receiving 12.8 mio euros up to December 2014[1]. The scheme supported the installation of 38 257 m² gross area of solar thermal collectors, and represents therefore a relatively small fraction of the newly installed capacity. Of the installed collectors, 88% were flat plate, 12% evacuated tubes. Moreover, 58.5% were thermosiphon systems, 41.5% forced circulation systems. In 91.5% of the cases, the installations were for sanitary hot water.

An important reform of the scheme, streamlining and simplifying the application procedure (which remains the main barrier), is currently under negotiation. Expectations from the industry are high, as the potential of the fund rests largely unexploited.

1 www.gse.it/it/Conto%20Termico/GSE_Documenti/Relazione%20Conto%20Termico_2013-2014.pdf

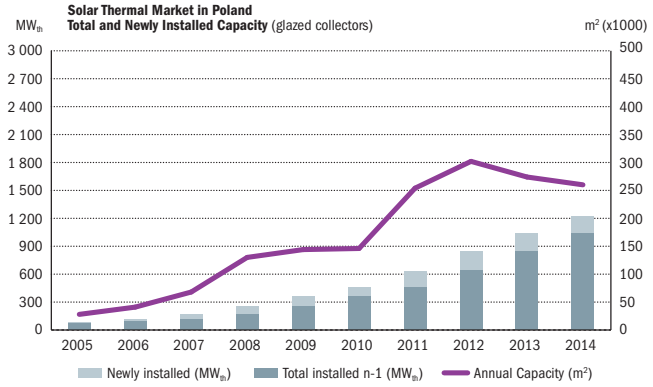


In 2014, the Italian solar thermal market faced another difficult year, and the falling trend in newly installed capacity continued, with newly installed collector area down to 187.9 MW_{th} (268 500 m²) due to the persistent economic crisis and bottlenecks in the support schemes. The market has consequently fallen by 25% compared with 2013.

This is a disappointing result in a market that is now at only 11% of its indicative targets for 2020. Although some efforts have been made to improve the situation, the fact is that they have not achieved the expected impact on the market.

POLAND

NEWLY INSTALLED CAPACITY: 182 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -5.1%**

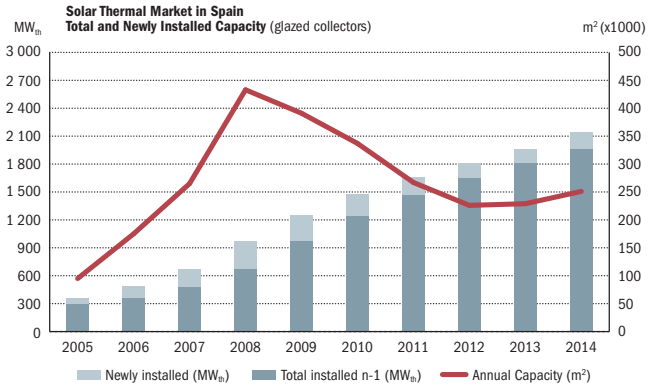


According to the Polish Institute for Renewable Energy, the solar thermal market is the biggest microgeneration RES market in Poland, bigger than biomass, heat pumps, photovoltaics etc. Sales of solar collectors in 2014 were 182 MW_{th} (260 000 m²). A reduction of approx. 5% compared with the previous year; when there had already been a decrease of the order of almost 10%. The total installed capacity reached 1.2 GW_{th} (1.7 mio m²). The subsidies from the National Fund for Environmental Protection and Water Management (NFOSiGW) still had a great impact on the development of the solar thermal market. Over the five years duration of the subsidy programme, grants from NFOSGW contributed to 35% of all installations of solar collectors in Poland. During the forthcoming years, it will be also possible to obtain subsidies under the programme Prosumer – NFOŚiGW. Following on the authoritative solar thermal roadmap up to 2030 (published in 2009), with the support of other organisations, the national solar energy industry, is developing a new renewable heating technology roadmap up to 2030. The roadmap with new targets for solar thermal goals will be published in September 2015.

SPAIN

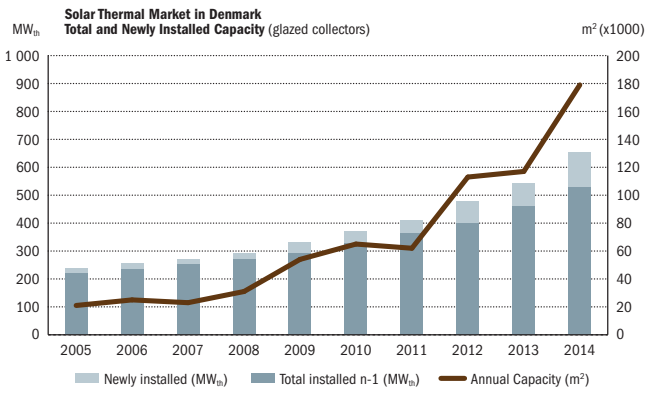
NEWLY INSTALLED CAPACITY: 176 MW_{th} | **ANNUAL EVOLUTION 2013/2014: 9.8%**

The Spanish market has finally stabilised after four consecutive years of decline, when the market almost halved (-47%). The newly installed capacity reached 178.5 MW_{th}, with an increase of 9.8%. In spite of the building sector crisis, the new build is still expected to represent between 100 to 125 MW_{th} (143 000 to 178 500 m²). The main reason behind the results achieved in the Spanish market in 2014 was the growth reported in Andalusia, the only region still actively supporting solar thermal. Aggressive marketing strategies applied by the region's major players have created a significant increase in demand, more than doubling the regional market (estimated to have represented 60 MW_{th} in 2014). By the end of 2014, the installed capacity in Spain totalled 2.24 GW_{th}, an increase of 9% over a one year period. This installed capacity represents an estimated 2.24 TWh_{th} of heat generation, only 20% of the 2020 target for solar thermal set by the Spanish government.



DENMARK

NEWLY INSTALLED CAPACITY: 125 MW_{th} | **ANNUAL EVOLUTION 2013/2014: 52.9%**



The Danish market saw a strong growth in 2014. The newly installed capacity totalled 125 MW_{th} (180 000 m²), of which approx. 95% are large installations for district heating. There are still a lot of large projects under way and significant market growth is expected again in 2015.

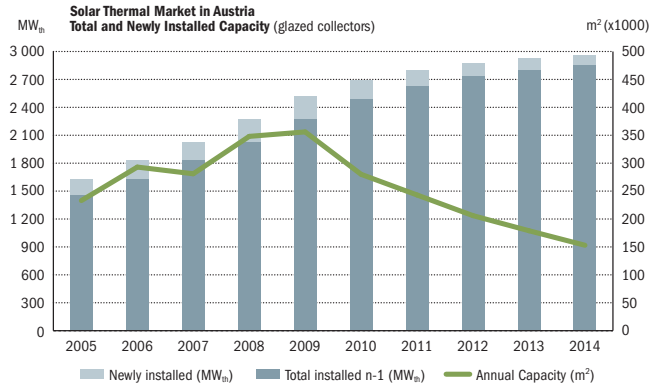
The total installed capacity in Denmark amounted to 675 MW_{th} (965 000 m²) by the end of 2014. From this, approximately 390 MW_{th} correspond to large solar thermal systems (each above 1 000 m² / 700 kW_{th}). The largest Danish solar district system is so far 50 MW_{th} (70 000 m² collectors, 200 000 m³ seasonal storage) - but now a (close to) 100 MW_{th} plant is under consideration.

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

AUSTRIA

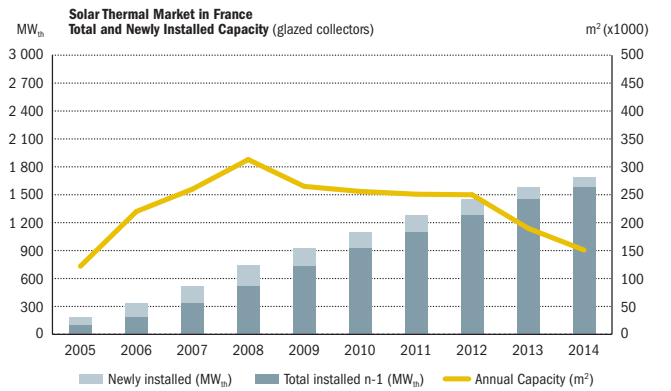
NEWLY INSTALLED CAPACITY: 107 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -14.4%**

The Austrian solar thermal market is one of the most developed markets in the EU but it suffered a further decline in 2014. Overall, the investments in renewable heating systems are facing competition from a strong and successful marketing campaign for gas and oil heating systems with attractive financial grants from the oil associations, the electricity lobby who supports heat pump (power to heat) and PV systems (as an attractive financial product). In addition, the national incentive programme does not fit in with the nine federal countries programmes, which are complicated and not attractive to investors. The main challenge in 2015 will be to find new competitive business models, where the best production cost for solar thermal heating systems is a core argument. It is estimated that in 2015 the market will decrease further. The market development strategy should focus on two areas: process heat systems and large-scale solar thermal plants in district heating systems and industry.



FRANCE

NEWLY INSTALLED CAPACITY: 105 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -20.9%**

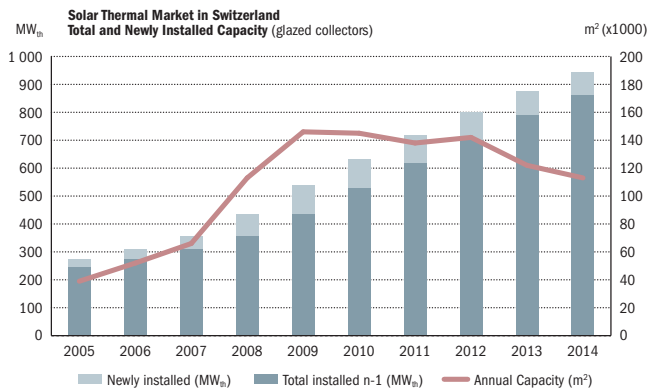


In spite of renewed efforts by professionals in the French solar thermal market to rebuild trust and improve their image, 2014 proved to be yet another difficult year. The overall installed area of solar thermal collectors fell by 21% from 190 900 m² (133.6 MW_{th}) to 150 500 m² (105.4 MW_{th}). In the residential market, domestic solar water heaters took an 18% drop in terms of collector area (-15 000 m²). However, the number of units installed decreased less dramatically (-9%); this is because the average collector area per unit installed has been falling over recent years as new technologies have been developing. The market of "combined" solar water and space heaters contracted strongly both in terms of units (-36%) and area (-30%). Non-domestic sales were also down by 22.6% with a total solar thermal collector area amounting to 75 500 m² (53 MW_{th}). Expected changes in the current regulation for thermal requirements in new buildings were not implemented in 2015 as planned, it is therefore to be expected that the French solar thermal market will also be suffering in the coming months, although an action plan has been put together by Enerplan to enhance consumer trust and help with market structuring over the next three years.

SWITZERLAND

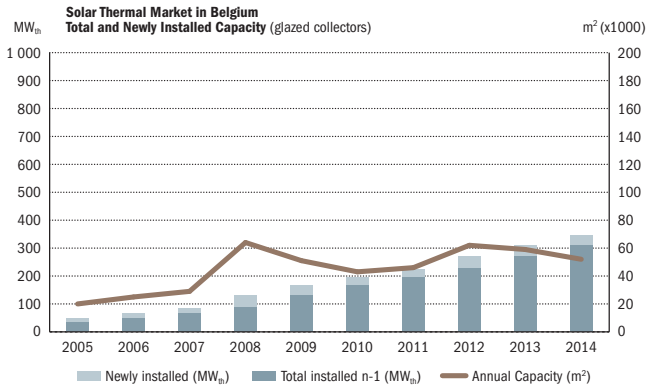
NEWLY INSTALLED CAPACITY: 79 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -7.2%**

The Swiss market has not shrunk as much as feared. In 2014, the newly installed capacity of glazed collectors totalled 79.1 MW_{th} (113 000 m²), i.e. a decrease of 7%. The market volume is on a par with the 2008 level. A shift away from single-family houses can be observed, where heat pumps dominate. More and more often they are combined with PV, now more attractive due to a federal subsidy of 30% for small installations and a new self-consumption rule. On the other hand, multi-family houses (mainly for hot water) are perceived as a potential growth market where solar thermal can be competitive. This is not self-evident, as the price level for installations is very high compared with neighbouring countries. In 2015, the 26 Swiss cantons will adopt a new subsidy model, which will include several improvements for solar thermal.



BELGIUM

NEWLY INSTALLED CAPACITY: 36 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -11.9%**



The newly installed capacity in Belgium is 36.4 MW_{th}. This represents a decrease of almost 12% over the previous year. In terms of total installed capacity the market has increased to a total of 345 MW_{th} (494 033 m²).

The Belgian solar thermal market is struggling as, overall, people are investing less in renewable energy. PV and heat pumps are also facing a difficult situation in Belgium. It is obvious that now solar thermal systems have to be "sold", whereas in the past they used to be "ordered". Installers are not all sales persons and do not take the time and effort to try to sell something people are not asking for.

By the end of 2014, the Walloon Region cut the subsidy scheme from something very interesting to nothing. The effect will be felt at the beginning of 2015. Since in Flanders new dwellings have to install renewable energy, the challenge will be to convince builders that solar thermal is the best choice, and that it is the only way to store energy and to be more independent from the electricity providers. A decrease of 20% is forecast for the Belgian market in 2015, due to the difficult situation in Wallonia and tough market conditions in Flanders.

PORTUGAL

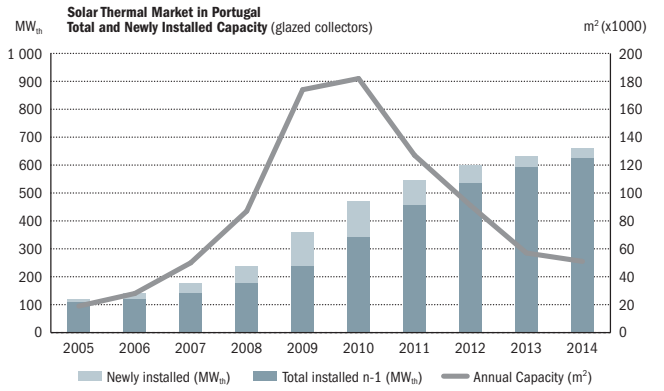
NEWLY INSTALLED CAPACITY: 36 MW_{th} | **ANNUAL EVOLUTION 2013/2014: -10.9%**

In 2014, the Portuguese market declined by 11% compared with the previous year, for a total of 35.7 MW_{th}. This represents a greater decrease than the -7% mid-year forecast. In 2014, a market change is evident: the tertiary sector and services are becoming increasingly important at the expense of the construction sector, which remains clearly dominant (4/5 of sold collectors).

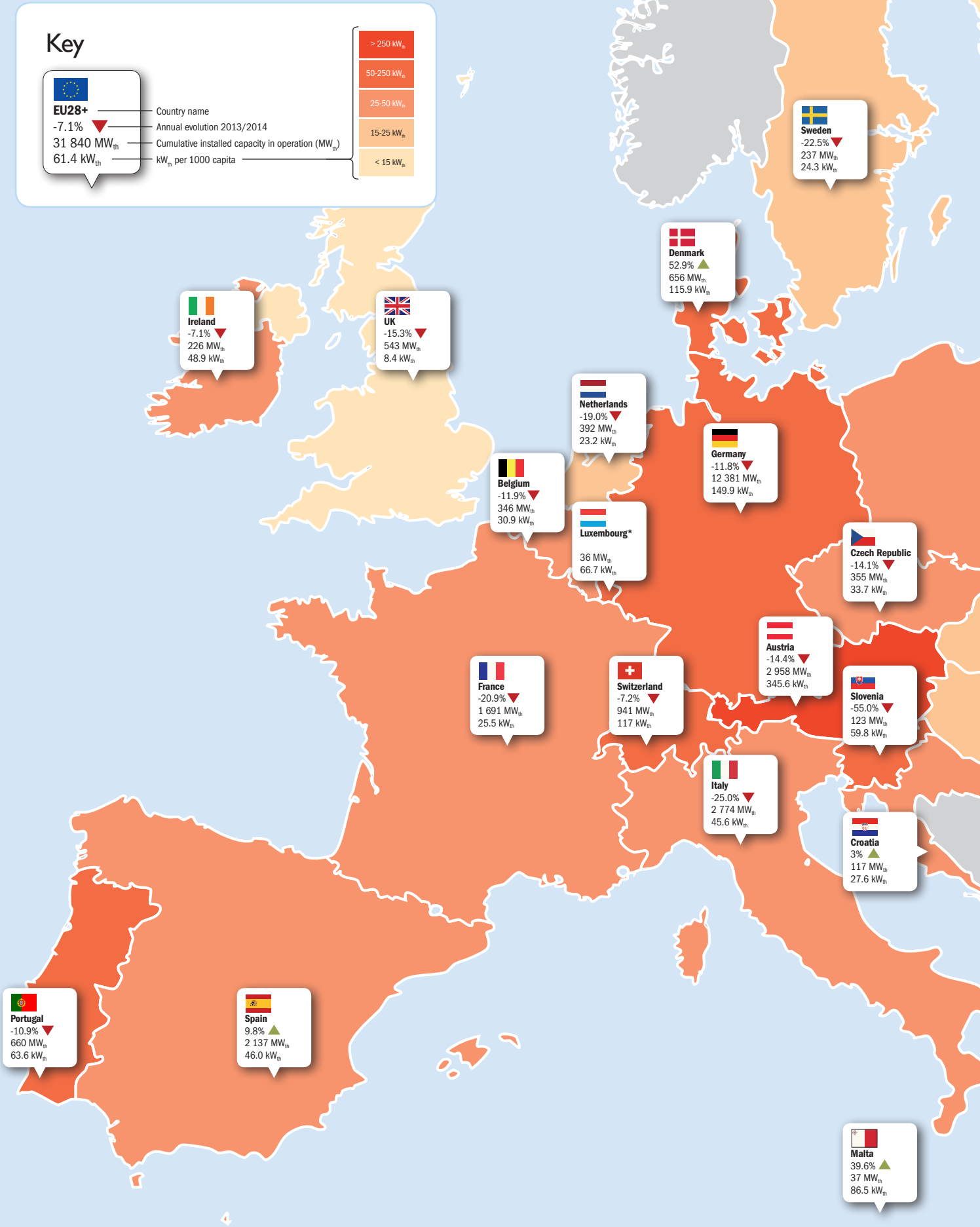
At the end of 2014 and based on APISOLAR's records since 2003, the cumulated installed area is of the order of 1.07 mio m² (789.6 MW_{th}).

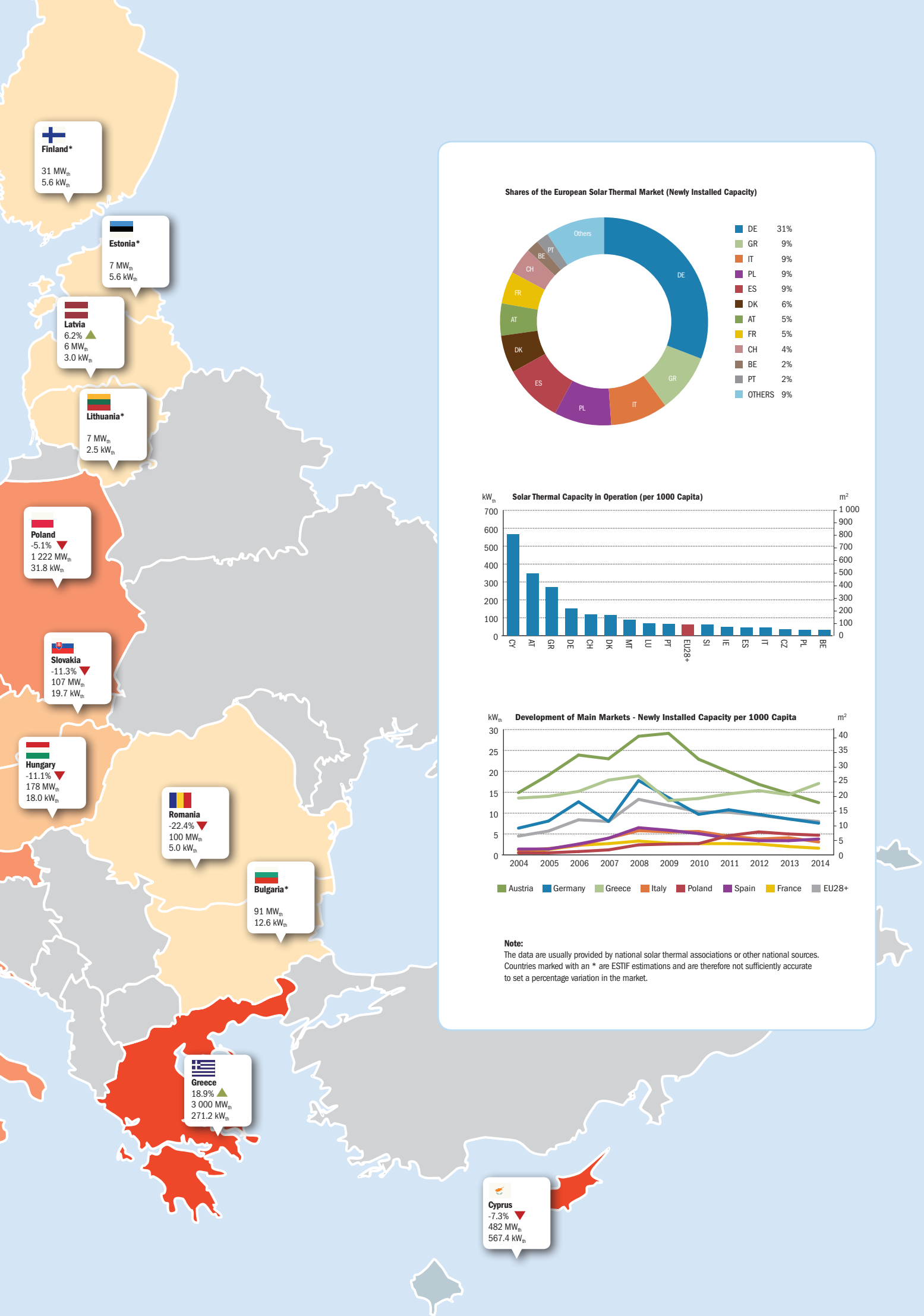
Considering the annual installed capacity, and the estimate for 2015, the market should stabilize around 55 000 m² / year, based on the expected, yet slow, increase in new construction observed in the market since the beginning of this year.

This is clearly insufficient to reach the goals of the National Plan for Energy Efficiency and Renewable Energy, where it was determined that 2.2 mio m² of solar thermal systems should be installed by 2020, which corresponds to an average annual growth of 11.5% between 2010 and 2020. Currently it is forecast that only half that amount will be installed by 2020. To achieve the target, the annual installations must reach 150 000 m² / year, which can only be possible with support measures.



SOLAR THERMAL MARKETS IN EUROPE
DATA FOR 2014



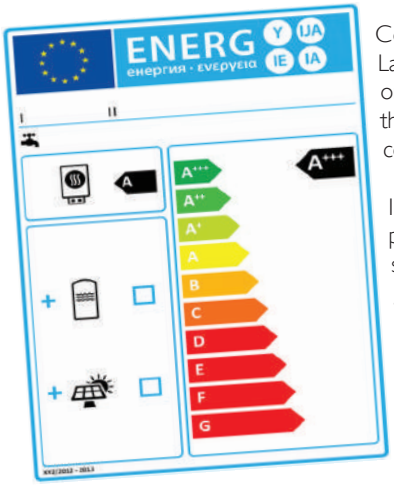


Note:
The data are usually provided by national solar thermal associations or other national sources. Countries marked with an * are ESTIF estimations and are therefore not sufficiently accurate to set a percentage variation in the market.

LABELPACK A+ / ENERGY LABELLING

LabelPack A+

LabelPack A+ is leading the way towards a smooth implementation of energy labelling, mandatory from 26 September 2015 for heating appliances (including Lot 1 'Space heaters' and Lot 2 'Water heaters') under the Energy Labelling Directive 2010/30/EU, specifically the Commission Delegated Regulation (EU) No 811/2013 and No 812/2013.



Coordinated by ESTIF the LabelPack A+ project is focusing on the "package label" to boost the uptake of solar heating and cooling.

Initially targeting markets with particular relevance for the sector, while providing geographic diversity (Germany, Italy, Austria, France, Portugal and United Kingdom), LabelPack will be extended to other countries in the EU, sharing tools and best-practice.

DIRECT BENEFITS FROM THE LABELPACK A+ PROJECT!

The project consortium will:

- develop **guidelines** to clarify the responsibility of each actor in the supply chain;
- participate in the definition of the **National Pilot Actions**;
- provide recommendations for the **legislation revision**, to be communicated to the European Commission and Member States;
- facilitate the **exchange of product related information**, as product databases available to all the actors in the energy labelling process;
- disseminate **periodical information material** for increased visibility and to achieve common understanding.

SUPPORT FOR THE LABELPACK A+ PROJECT!

From September 2015, anyone can make a difference to the national implementation of the project by:

JOINING THE NATIONAL STAKEHOLDERS PLATFORM

Join as an **advisory member** of the National Stakeholders Platform and increase awareness on renewable energy sources and establish a long-term collaboration between actors of the renewable heating and cooling sector in your country. (Available in AT, DE, FR, IT, PT, UK).

PARTICIPATING IN TRAININGS

Participate in training on the Energy Labelling Directive via e-learning sessions and/or in-house training schemes.

USING THE ONLINE TOOL

Calculate, create and edit energy labels via the LabelPack A+ project's online simulation tool. Contact the LabelPack A+ helpdesk for users support.

STAY INFORMED!

Regularly visit the LabelPack A+ project website **www.labelpackaplus.eu** to keep up-to-date with developments, to download the latest documents and give your feedback!

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under grant agreement No 649905

MARKET SIZE IN TERMS OF SOLAR THERMAL CAPACITY (KW_{TH}) AND IN TERMS OF COLLECTOR AREA (M^2)

	Market (=Newly Installed)[3]							In Operation[2]		
	2012	2013	2014				Annual Evolution of the Market	2014		Annual Evolution of the Total Installed Capacity
	Total Glazed	Total Glazed	Flat Plate	Vacuum Collectors	**Total Glazed**	**Total Glazed**	Total Glazed	Total Glazed		Total Glazed
	m^2	m^2	m^2	m^2	m^2	**kW(th)[1]**	%	m^2	**kW(th)**	%
Austria	206 390	179 180	150 530	2 910	153 440	**107 408**	-14.4%	4 225 401	**2 957 781**	1.1%
Belgium	62 000	59 000	42 500	9 500	52 000	**36 400**	-11.9%	494 033	**345 823**	11.6%
Bulgaria*	8 000	5 600	5 100	500	5 600	**3 920**	-	130 300	**91 210**	-
Croatia	18 474	20 900	18 952	2 575	21 527	**15 069**	3.0%	167 092	**116 964**	14.8%
Cyprus	23 917	20 991	18 834	633	19 467	**13 627**	-7.3%	688 234	**481 764**	-1.5%
Czech Republic	50 000	44 531	27 095	11 148	38 243	**26 770**	-14.1%	506 992	**354 894**	7.5%
Denmark	113 000	117 170	179 186	0	179 186	**125 430**	52.9%	936 841	**655 789**	20.5%
Estonia*	1 800	2 000	1 000	1 000	2 000	**1 400**	-	10 520	**7 364**	-
Finland*	4 000	4 000	3 000	1 000	4 000	**2 800**	-	44 023	**30 816**	-
France[4]	249 500	190 300	150 500	0	150 500	**105 350**	-20.9%	2 415 200	**1 690 640**	6.6%
Germany	1 150 000	1 020 000	814 000	86 000	900 000	**630 000**	-11.8%	17 687 000	**12 380 900**	4.4%
Greece	243 000	227 500	270 000	600	270 600	**189 420**	18.9%	4 286 300	**3 000 410**	2.6%
Hungary	50 000	18 000	11 500	4 500	16 000	**11 200**	-11.1%	253 814	**177 670**	6.7%
Ireland	27 087	27 269	14 691	10 644	25 335	**17 735**	-7.1%	323 163	**226 214**	8.5%
Italy	330 000	358 000	236 280	32 220	268 500	**187 950**	-25.0%	3 962 644	**2 773 851**	6.8%
Latvia	300	2 222	1 940	420	2 360	**1 652**	6.2%	8 622	**6 035**	37.7%
Lithuania*	1 800	2 200	800	1 400	2 200	**1 540**	-	10 400	**7 280**	-
Luxemburg*	4 150	6 000	5 000	1 000	6 000	**4 200**	-	51 200	**35 840**	-
Malta*	1 700	1 089	1 065	455	1 520	**1 064**	39.6%	52 984	**37 089**	3.0%
Netherlands	42 470	38 775	31 411	0	31 411	**21 988**	-19.0%	560 693	**392 485**	3.8%
Poland	302 000	274 100	208 100	52 000	260 100	**182 070**	-5.1%	1 745 590	**1 221 913**	17.5%
Portugal	90 612	57 234	50 064	903	50 967	**35 677**	-10.9%	943 051	**660 136**	4.5%
Romania	15 500	23 850	6 200	12 300	18 500	**12 950**	-22.4%	143 050	**100 135**	11.3%
Slovakia	7 500	6 200	4 600	900	5 500	**3 850**	-11.3%	152 450	**106 715**	1.5%
Slovenia	16 500	10 000	3 500	1 000	4 500	**3 150**	-55.0%	176 300	**123 410**	-5.6%
Spain	225 683	228 721	235 355	15 894	251 249	**175 874**	9.8%	3 052 435	**2 136 705**	8.7%
Sweden	11 257	8 611	5 024	1 649	6 673	**4 671**	-22.5%	338 356	**236 849**	-1.2%
Switzerland	142 000	121 974	98 744	14 403	113 147	**79 203**	-7.2%	1 343 962	**940 773**	7.4%
United Kingdom	59 275	43 133	29 508	7 044	36 552	**25 586**	-15.3%	775 558	**542 891**	3.9%
EU28 + Switzerland	3 457 915	3 118 550	-	-	2 897 077	**2 027 954**	-7.1%	45 486 207	**31 840 345**	5.3%

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); Energy Institute Hrvoje Požar; Cyprus Ministry of Energy, Commerce, Industry and Tourism; Czech Ministry of Industry and Trade; Danish Solar Heating Association (DSF); Finish Solar Energy Association / Statistics Finland - Environment and Energy; Syndicat des professionnels de l'énergie solaire (ENERPLAN); Bundesverband Solarwirtschaft (BSW-Solar); Greek Solar Industry Association (EBHE); Solar Thermal Association of Hungarian Building Engineers (MÉGNAP); Sustainable Energy Authority of Ireland (SEIA); Assotermica; Latvian solar thermal collector association; Energy Statistics Division - Statistics Lithuania; Malta Resources Authority; Holland Solar; EC BREC Institute for Renewable Energy (IEO); Associação Portuguesa da Indústria Solar (APISOLAR); Camera de Comerţ şi Industrie Româno-Germană (AHK); THERMO/SOLAR Ziar s.r.o.; University of Ljubljana; ASOCIACIÓN SOLAR DE LA INDUSTRIA TÉRMICA (ASIT); Svensk solenergi; Chalmers University of Technology; Swissolar; Solar Trade Association (STA).
A complete list with acknowledgements and comments can be found on the ESTIF website in the market statistics section.

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. A complete list with updated market figures 2013-2014 can be found on the ESTIF website in the market statistics section.

1) The relation between collector area and capacity is $1m^2 = 0.7kW_{th}$ (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 2015. In some cases there may be later updates, which means 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 m^2).

COUNTRY FOCUS: TURKEY

TURKEY | **POPULATION: 77 695 904** | **AREA: 783 562 km²** | **DENSITY: 97/km²** | **GDP: 9330 EUR/P.C.** | **MEAN GLOBAL RADIATION: 1311 MWh/m²a**

For decades, in parallel with its rising population and increasing GDP, Turkey has been experiencing rapid demand growth in all segments of the energy sector. Turkey's energy consumption of primary energy and electricity has risen at an annual average rate of 4 to 8% in the last two decades. It is expected that this trend will continue in the future. Turkey spends 60 billion dollars in energy imports every year. In 2014, the number of buildings reached 9.3 million, with 22 million dwellings consuming 28.2 million toe. This consumption is mainly supplied by natural gas, coal and wood for heating and electricity for cooling.

Therefore, energy security and sustainable energy supply are among the main policy concerns of Turkey, to reduce import dependency (less than 28% of total produced locally - 32,3 Mtoe), managing current account deficit (energy imports represent 25.3% of total imports) and meeting its target for renewables share by 2023.

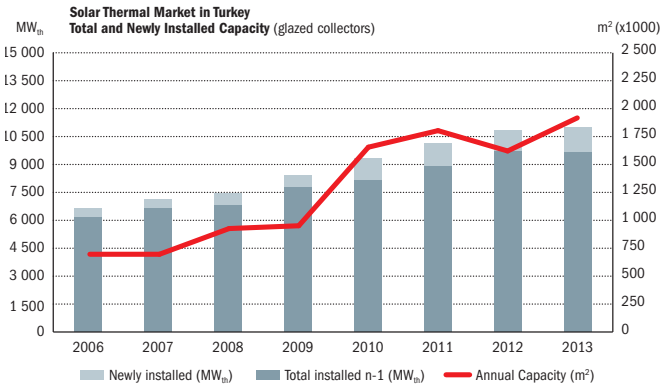
Hence, Turkey gives significant importance to the diversification of energy sources, encouraging the energy production from renewable sources in a secure, economic and cost-effective manner, developing the sector in the country.

In this context; solar energy is a main driver since Turkey is located geographically in a region called the "solar band," which has the greatest utilization potential for solar energy.

According to the latest market surveys in 2011 and 2012[1]; multi-family houses represent the fastest-growing segment in Turkey´s solar thermal market, with 52% of the vote from the survey participants. Another 17% consider single-family houses to be the most important segment, 14% opted for the tourism sector, 10 % for the public sector and 7% for industrial process heat.

The most typical application in Turkey is domestic hot water since the early 1970s. The most typical product type, and still popular, is the individual thermosiphon system with 2 flat plate collectors, each 2m². This market is very mature and widespread throughout the country. There are, however, many other solar heating and cooling applications in the country; such as:

- Water heating in domestic, industrial, tourism, and service facilities,
- Space cooling in hotels and, recently, in shopping malls
- Drying agricultural products without a special setup and recently with solar air heaters,
- Heating vegetable and flower greenhouses in the Mediterranean, Aegean, and partially South-eastern Anatolian regions of Turkey



Some recent developments in application and technology have been:

1. Solar water heaters, gaining importance in Turkey's social housing and public funded projects, built by the country's Housing Development Administration (TOKI),
   - TOKI has provided a total of 20 000 flats for low-income families with solar hot water in Kayabasi/Istanbul, Yapracik/Ankara, and Kayseri[2],
   - TOKI had installed solar heating systems in 100 hospitals across the country[3],
   - One year after the earthquake in the city of Van in eastern Turkey, TOKI has built 15 323 new flats for those who lost their homes, with individual 120 litre thermosiphon solar water heaters, corresponding to a total collector area of 30 646 m² [4].
   - The high-security Silivri Prison is equipped with 3500 m² solar water heaters, as being Turkey´s biggest solar thermal project so far.

2. Solar combisystems, combining solar water and space heating and working alongside gas boilers, are becoming popular reference projects for villas and particularly hotels. Large companies have shown strong interest since each project includes between 70 and 500 solar collector installations.

3. Vacuum tube technology is making gains in the Turkish market[5]. Between 2007 and 2013, the share of vacuum tubes increased from 4 to nearly 33% of the total newly installed collector area in the country.

Currently, Turkey has the biggest European solar thermal energy market. Turkey is still keeping its position as 4th by cumulated installed capacity and 2nd by newly installed capacity worldwide. With more than 90 manufacturers and 3 000 installers, Turkey's solar industry is increasing its activities and supplying over 1.5 mio m² of locally-produced solar thermal collectors. Domestic hot water is still the main usage area rather than solar heating and cooling, which are almost negligible at this stage, although the market is promising great opportunities.

The Turkish Solar Energy Association, GUNDER (ISES-TR) continues its endeavours to facilitate information flow for a healthy market development and is now looking forward to welcoming the participants at the SHC 2015 Conference in Istanbul.

For more information
Tel: +90 312 4181887 E-mail: info@gunder.org.tr

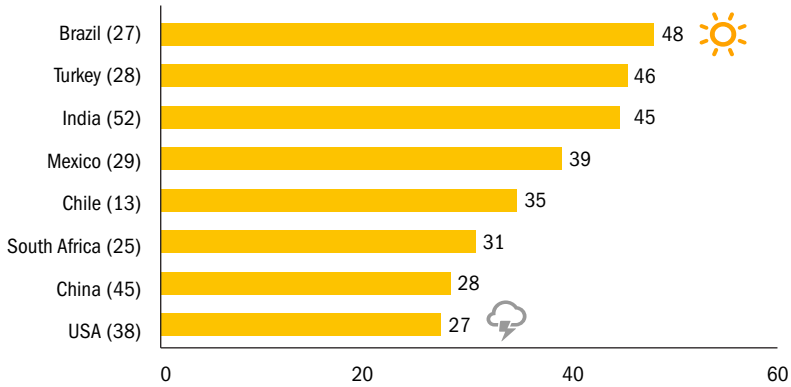
1 www.solarthermalworld.org/content/turkey-high-quality-solar-hot-water-systems-across-earthquake-area
2 www.solarthermalworld.org/content/turkey-high-quality-solar-hot-water-systems-across-earthquake-area
3 www.solarthermalworld.org/content/turkey-solar-hot-water-systems-supply-20000-low-income-family-flats
4 www.solarthermalworld.org/content/turkey-industry-discovers-space-heating-and-process-heat
5 www.solarthermalworld.org/content/turkey-vacuum-tubes-rise

MAJOR MARKET TRENDS

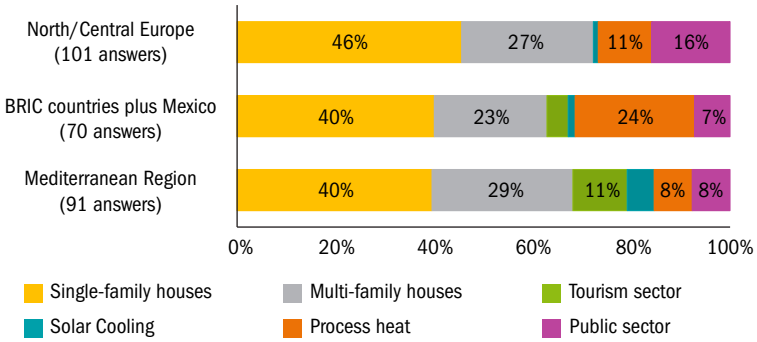
Analyses of solrico
Author: Bärbel Epp

The ISOL business Index compares the attractiveness and the growth opportunities of key solar thermal markets on a scale of 0 to 100 points. The industry in Brazil, Turkey and India is most satisfied with the current business situation reaching high indices of 45 to 48 points. China dropped significantly in the ranking and reached a lowest-ever score with 28 points due to a dramatic turn down on the market from average annual growth rates of +30 % to -20% in 2014. USA is still on the bottom of the ranking with 27 points.

Average ISOL Index = Indicator for market development



Which market segment will dominate your sales in 2020 in your national market?



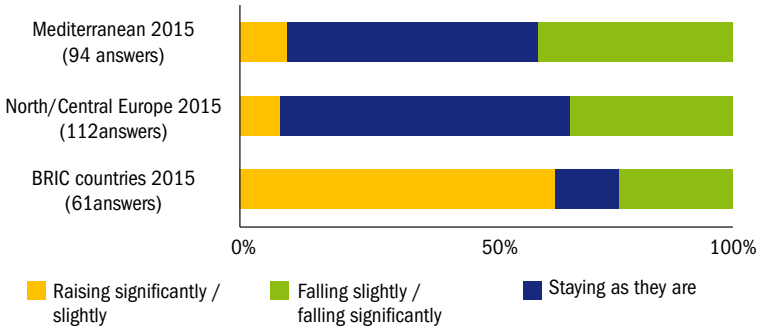
Transition from residential to commercial

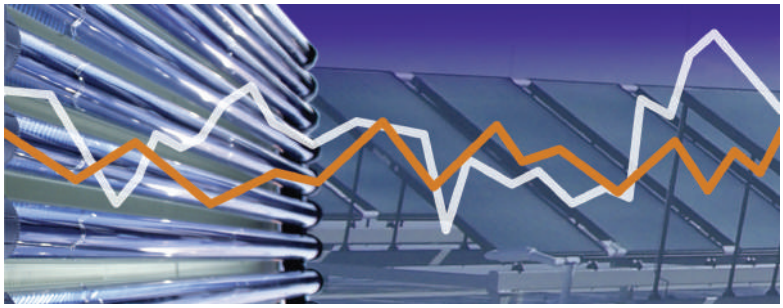
Single-family houses, the currently most important sales segment, will lose relevance. The majority of the solar thermal manufacturers worldwide predict their sales to be dominated by other client groups than homeowners in 2020. In the Mediterranean region for example every third company assumes that multi-family houses will dominate their sales in 2020. In Central Europe every sixth company predicts the highest sales with public orders by 2020. In the BRIC countries, the transition away from residential is even more dynamic. A quarter of the manufacturers in India, Brazil and China foresee industrial process heat to be the main market segment in 2020.

There is a clear correlation between a positive market development and increasing system prices and the opposite. 64 % of the companies from the large BRIC markets expect raising end-consumer solar system prices in 2015, whereas in the slow moving markets in Europe only 9% of the companies consider increasing system prices in the coming months. The price pressure is highest in the Mediterranean region where 39 % expects prices to fall.

The presented results are taken from the latest ISOL Navigator study published in December 2014. Further information: www.solrico.com

How will end consumer prices of solar thermal systems develop in 2015 compared to last year?





SOLAR THERMAL, THE VERSATILE TECHNOLOGY: THREE EXAMPLES OF APPLICATIONS

There are still many opportunities in several market segments to increase the use of solar thermal technology.

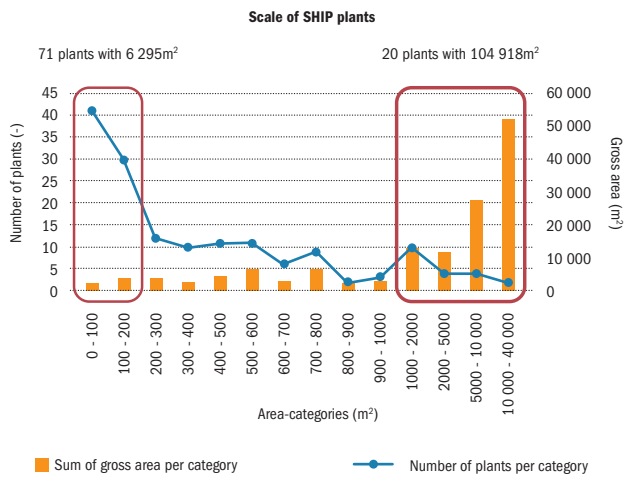
Here are three examples of applications, showcased for their potential role in the energy transition. These applications have a common denominator: they contribute to a reduction in the use of conventional energy – solar energy is free!

SOLAR HEAT FOR INDUSTRIAL PROCESSES

Results from the SHIP database and SHC IEA Task 49
Christoph Brunner, AEE INTEC

Solar Heat for Industrial Processes (SHIP) is a promising market for large-scale solar thermal applications. Currently, there are 155 operating solar thermal systems for process heat worldwide, with a total capacity of about 101 MWth (144 406 m²). The first applications were of an experimental nature with relatively small scale. In recent years, significantly larger solar thermal fields have been used.

The chart below shows the importance of large-scale solar thermal applications. The largest 20 plants represent in total 104 918 m², i.e. 73% of the total installed gross area, and 60 % of the gross area was installed since 2011.



In 2013 the largest collector field worldwide started operating in Chile with a 39 300 m² gross area. The average plant size (of plants > 100 m²) has increased in recent years. Between 2000 and 2007 the average plant size was 585 m² gross area, since then it has risen to 2 118 m².

In recent years, three industry sectors have been particularly receptive to SHIP applications:
- Food and drink industry (30 % of installed gross area)
- Mining and quarrying (28 % of installed gross area)
- Textile and leather industry (22 % of installed gross area)

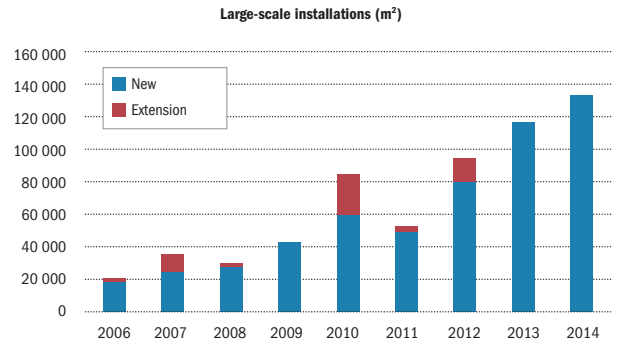
The most common collector types are:
- Flat plate collectors (65 % of installed gross area)
- Evacuated tube collectors (21 % of installed gross area)
- Parabolic trough collectors (7 % of installed gross area)
- Air collectors (5 % of installed gross area)

However, the great potential of SHIP remains largely untapped. Some areas must be improved for the full uptake of SHIP: sector concepts to open new markets, lower system costs for the consumer (this does not necessarily imply reduced collector costs), and financial solutions from the solar industry to meet the short amortization period required by end-users.

SOLAR DISTRICT HEATING

Jan-Olof Dalenbäck, Chalmers University of Technology

For solar heating to be a reliable heating system, as with all renewables, it is a prerequisite to develop large-scale applications. The market for large-scale solar heating systems (>500 m² collector area, >350 kW_{th} nominal thermal power), has increased more or less steadily since 2007. The main reason is a very positive development of solar district heating systems in Denmark, with 61 systems and altogether 555 000 m² of collector area in operation end 2014.



The diagram above shows that the systems are meeting expectations, generating investment both for newly built plants and for enlarging existing ones.

The pioneering RD&D development started in Sweden in the 80s. It was followed later on by RD&D programmes in Germany and Austria, and has now matured in Denmark. The main driver in Denmark is the combination of a high share of wind power and high natural gas cost, which makes large-scale solar heating systems economical in Danish district heating systems. A similar situation may occur in other countries in the near future.

Interest in large-scale systems has gradually increased in other countries and large-scale plants are now demonstrated in 20 European countries. The average size of the 227 plants in operation is 3 500 m² (2.4 MW_{th}). The largest plant so far represents 70 000 m² (49 MW_{th}) of solar collectors and has just been put into operation. The main application is in district heating systems, but there are also a number of systems used for large building complexes and in industry processes, for heating as well as cooling.

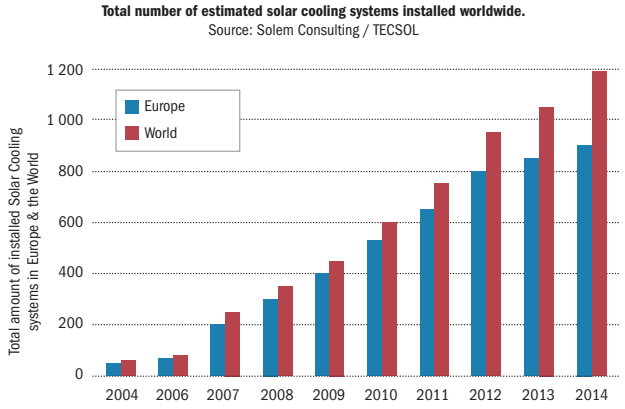
More information about solar district heating systems is provided by the EC IEE project SDH at www.solar-district-heating.eu.

SOLAR COOLING

Daniel Mugnier, TECSOL

In the growing cooling and refrigeration global market, there is a huge potential for cooling systems driven with solar thermal energy. A major argument for their installation is their lower consumption of conventional energy.

In 2014 there were around 1 200 solar cooling plants installed worldwide, covering all types of technologies and sizes. Of course, this still only represents a small market share in view of the tens of millions of compression air-conditioning systems sold annually, but recently a number of large and very large installations were completed or are under development. And – even more important – a number of projects are wholly driven by private investors, without major incentive or funding programme supporting these projects.



Currently, however, only very few companies offer complete solar cooling solutions, as most systems still consist of components or subsystems "custom made". Moreover, there is still a need for greater expertise and experience from planners, installers, and other professionals involved. The next major step to gain market share is to transform today's low volume market channels into a mass market, while driving costs down further through the standardization of concepts, design methods and development of reliable package solutions.

Renewable energies are called to play an important role in future energy systems in an effort to limit CO_2 emissions generated by conventional energy sources. Solar cooling technology is one of the important solutions to this problem and it provides a niche market opportunity for many stakeholders involved, including building owners, planners, manufacturers, and installation companies.

2020 TARGETS: A BERMUDA TRIANGLE OF LOST OPPORTUNITIES?

In the Renewable Energy Progress Report[1] launched in June 2015, the European Commission mentions that the EU Member States are on track to reach the 2020 targets.

However, projections for 2020 show a different scenario with targets not being reached. At first, following the adoption of the Renewables Directive in 2009, the development of renewables was impressive. Afterwards, as support dwindled, there was a dramatic slowdown in renewable energy investments with a lower uptake of renewable technologies.

And, even if the EU Member States combined have exceeded the indicative target for 2014, the results are quite different per country and per technology, highlighting the diversity that characterizes Europe and the different levels of commitment.

Technology Category	Projected deployment 2014	NREAP target 2014	Projected 2020 deployment (max)	2020 target	Deviation 2014	Deviation 2020 deployment (max)
RES total	176.7	172.3	221.5	242.1	3%	-9%
RES heating & cooling	**87.6**	**80.5**	**107.5**	**108.9**	**9%**	**-1%**
RES electricity	72.5	73.3	94.9	103.7	-1%	-9%
RES transport	16.6	18.4	19.1	29.5	-10%	-35%
Solar Thermal	**2.2**	**2.6**	**3.7**	**6.4**	**-15%**	**-42%**

Projected deployment and deviation from planned EU technology deployment 2014 and 2020, Renewable energy progress report, European Commission, June 2015. Values on Mtoe.

The projection in terms of development per technology shows that, for several technologies, the indicative targets were not met in 2014 and risk not being met by 2020. Solar thermal is one of the most obvious cases where, if intentions are not met with concrete actions, the indicative 2020 targets for this technology will unfortunately be missed. While in 2012, the sector was 1.7% below the indicative target, in 2014 it is already -15.3% and the projections indicate that by 2020, the deviation from the target will be between -41.8% and -45.6%.

The indicative targets proposed by the Member States in the NREAPs were already modest in terms of ambition. A study on the Potential of Solar Thermal in Europe, published in 2009, projected different scenarios: Business As Usual (BAU), Advanced Market Deployment (AMD) and a more ambitious one, Full R&D and Policy Scenario (RDP). Interestingly, the combination of national indicative targets for solar thermal in the NREAPS, published slightly later, were extremely close to the AMD scenario[2].

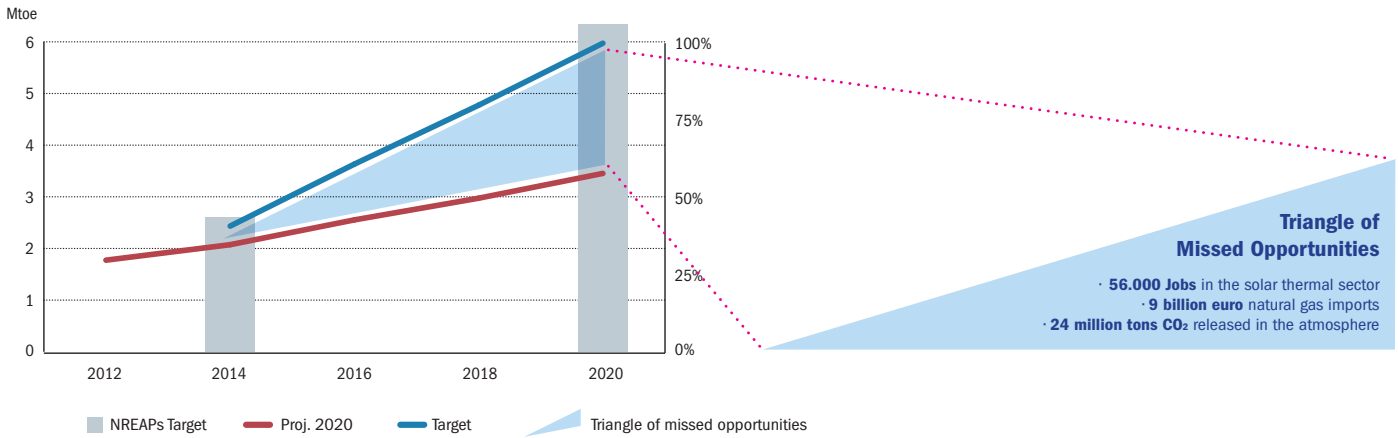
		2020				
		EU Path	**BAU**	**AMD**	**NREAPs**	**RDP**
Total Installed capacity	GWth	60	68	102	104	272
	Million m²	86	97	146	148	388
Target 2020	Mtoe	3.7	4.2	6.3	6.4	16.7

The current projection presented by the European Commission indicates that Members States are on a 'path' that is below the business as usual scenario presented in the referred study. Clearly, measures being taken by the Member States are not supporting the development of the technology as expected.

The main causes behind the difficulties in the solar thermal market have been broadly discussed. It is, in general, agreed that these include consumer preference for lower investment costs needed for conventional heating solutions, being rather more sensitive to this factor than to the actual energy cost. This effect is enhanced by the current market approach, where the replacement of existing equipment is mostly with an equivalent equipment rather than with a new solution. Other factors are the low fossil fuel prices (subsidized in several cases) and additional competition in the market provided by alternative renewable energy solutions.

Removal of several of the existing barriers depends on the eventual intervention of public authorities, such as the limited awareness of the technologies, instability in support measures, lack of regulations promoting the switch from fossil fuels to clean options or scarcity of qualified installers. It is obvious that, in general, Member States are falling short on the implementation of the renewables directive, in particular with regard to 'Administrative procedures, regulations and codes'[3] or 'Information and training'[4], on issues such as building regulations[5], adequate information and awareness raising initiatives at local and regional level[6] or on the certification and qualification of installers[7].

EC Projection of NREAPs implementation Solar thermal

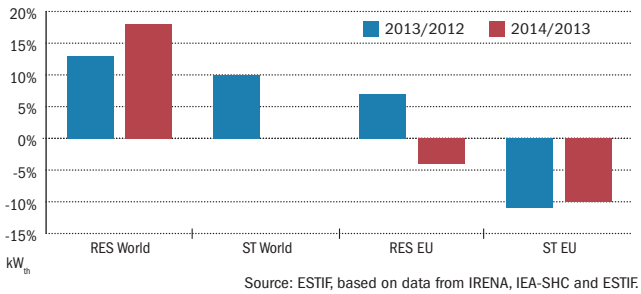


Not meeting the indicative targets for solar thermal also implies a lost opportunity in terms of job creation. Since solar thermal is mostly a decentralized energy source, nearly half the investments in the sector are allocated to the lower end of the value chain. This means that, even when collectors are not produced locally, the installation is done by local companies. This has an important impact on the local economy and thus contributes to local job creation. Local added value is self-evident when analysing the breakdown of the purchase price of a solar thermal system. On average, installation covers from 40 to 60% of the final costs, as can be seen from the graph at the bottom of the page indicating the investment split for a solar thermal system in Germany[8].

The local dimension of the solar thermal sector is a major positive externality and a key success factor for the industry. It gives the opportunity to adapt to different demands in a flexible and timely way, while providing benefits to local economies.

Nonetheless, this potential for job creation is being squandered. While globally the number of jobs in the renewable sector is growing 10 to 20% a year, in Europe the scenario is very different, with a lower growth or even a decrease observed in 2014.

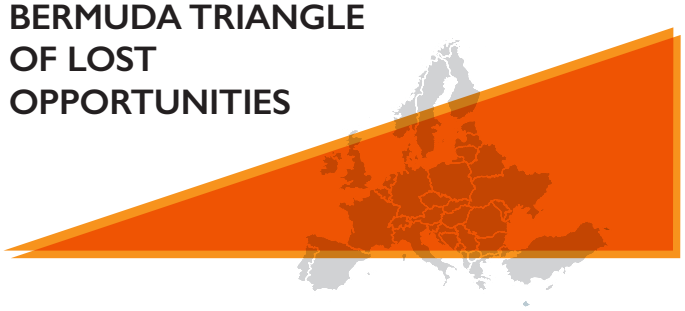
Evolution in terms of jobs



Source: ESTIF, based on data from IRENA, IEA-SHC and ESTIF.

For solar thermal this decrease is more evident, following the decline in the market. For instance, ESTIF evaluates the job losses in the sector at around 16 000 since 2008, while EU Observer estimates a reduction of over 9000 jobs since 2010.

EUROPE CANNOT AFFORD TO BE A **BERMUDA TRIANGLE OF LOST OPPORTUNITIES**

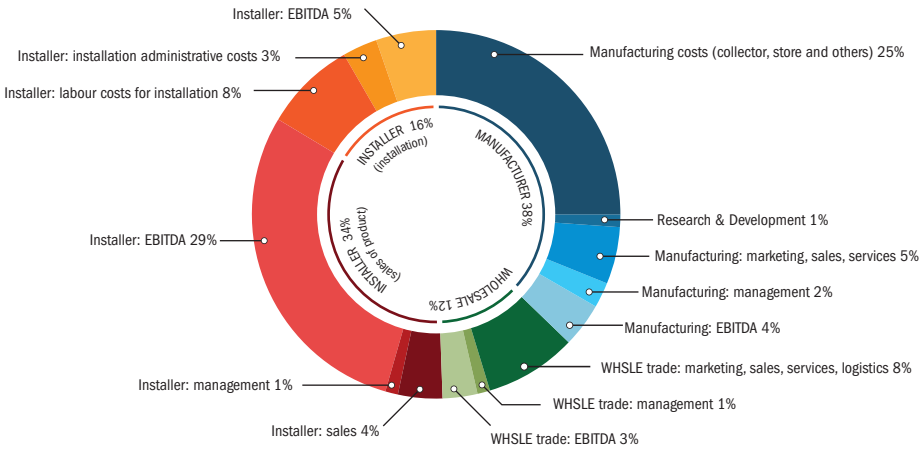


According to the estimation in the study on the Potential of Solar Thermal in Europe, in a Business as Usual scenario (above current EC projections for ST in 2020), the number of jobs in the sector by 2020 would be 46 900. If the indicative targets for solar thermal were achieved, this would represent an additional 56 000 jobs in the solar thermal sector in Europe by 2020, totaling 103 200. Furthermore, it would represent a saving of 9 billion euros in natural gas imports and avoid the release of 24 million tons CO_2 into the atmosphere.

In terms of energy production, it would represent the equivalent to 78 TWh$_{th}$, while in 2014, as indicated in the NREAP barometer, the estimated energy generation amounted to 21.9 TWh$_{th}$, only 28% of the target, with Italy, France and Spain being the countries that are the furthest away from their indicative national targets in absolute terms.

Europe cannot afford to be a Bermuda Triangle of Lost Opportunities. Solar is a no-regret option for Europe, both for power and heat generation, as the biggest energy and economic waste today is the untapped free supply of solar energy!

System costs 2011 (combisystem 11m^2, retail price net for end consumer)



Note: **EBITDA** = earnings before interest, taxes, depreciation and amortization **WHSLE** = Wholesale
Source: ITW, Technomar

1 Renewable energy progress report, European Commission, June 2015
2 The scenarios on the study on the Potential of Solar Thermal in Europe were developed for EU27 and the current total for the NREPAS is for EU28.
3 Art. 13 of the RES-Directive (Directive 2009/28/EC)
4 Art. 14 of the RES-Directive (Directive 2009/28/EC)
5 Art 13.6 - By 31 December 2014, Member States shall, in their building regulations and codes or by other means with equivalent effect, where appropriate, require the use of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation. […]
6 Points 1, 2, 5 and in particular point 6 of Art. 14 of the RES-Directive (Directive 2009/28/EC): Member States, with the participation of local and regional authorities, shall develop suitable information, awareness-raising, guidance or training programmes in order to inform citizens of the benefits and practicalities of developing and using energy from renewable sources.
7 Art. 14.3 - Member States shall ensure that certification schemes or equivalent qualification schemes become or are available by 31 December 2012 for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps. […]
8 Data for a combisystem of 11 m^2 in 2011, including installation, considering the retail price net for end consumer

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