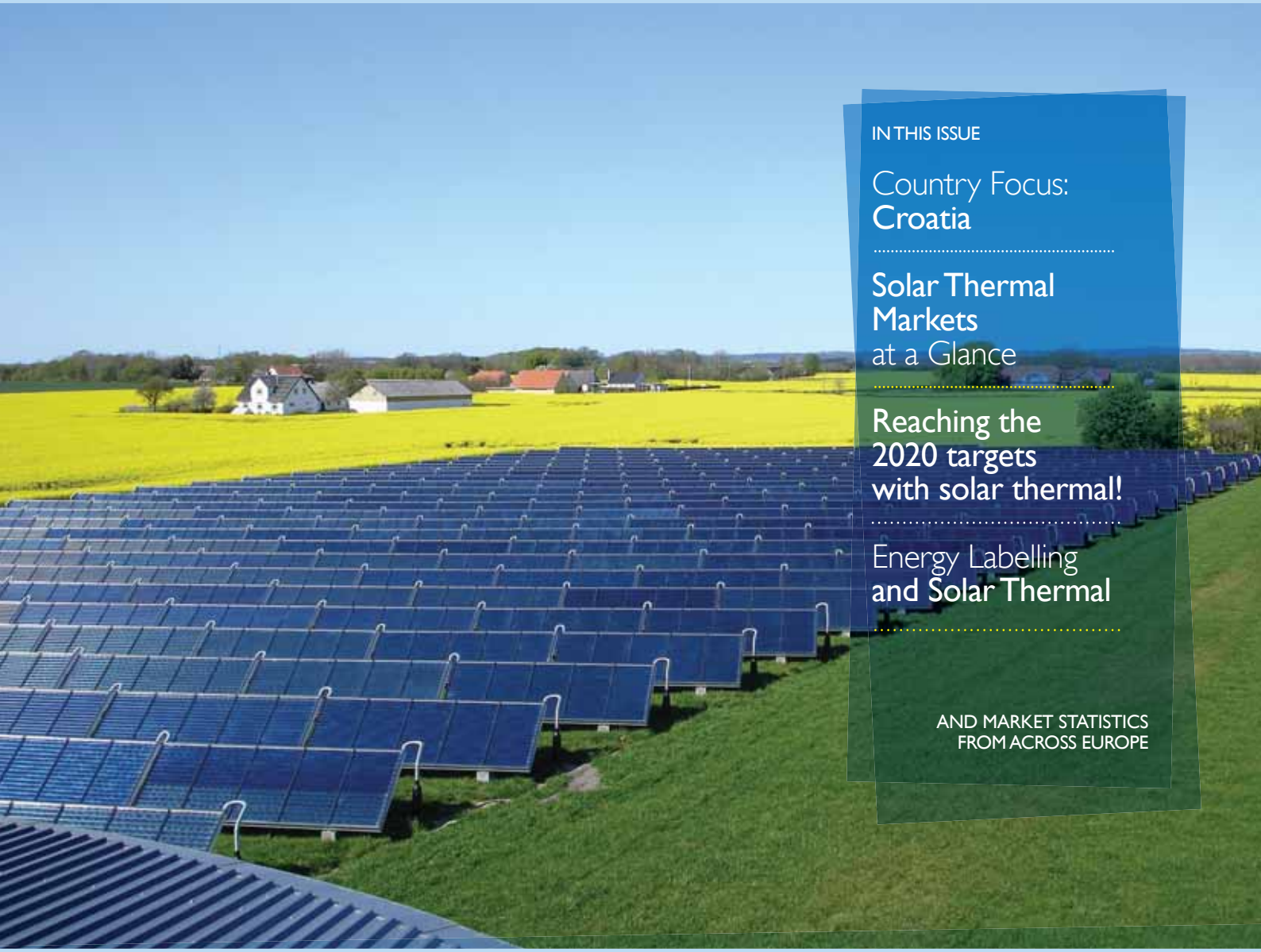
Solar Thermal Markets in Europe



IN THIS ISSUE

Country Focus:
Croatia

Solar Thermal Markets at a Glance

Reaching the 2020 targets with solar thermal!

Energy Labelling **and Solar Thermal**

AND MARKET STATISTICS FROM ACROSS EUROPE

Trends and Market Statistics 2012
June 2013

ESTIF
European Solar Thermal Industry Federation

Table of contents

Download the Brochure here:

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For some countries, the data provided are only ESTIF estimations.
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A word from the President

On the road to achieving the 2020 EU energy savings objectives, with an increased share of renewable energy sources, 2012 will probably not feature among the best years.

The image of renewable technologies in the media has been blurred by recurring discussions and polemics over the costs of financial incentives and their alleged impact on energy prices. Public opinion and industry leaders are now questioning the EU and national climate priorities. Since the "Carbon Capture" has definitely proved to be uncompetitive; the spotlight has moved to the shale gas "fracking" issue, and to divert attention from the environmental risks, policies favourable to renewable energy sources are blamed for the delay in exploiting gas reserves.

Moreover, the economic growth, in general, and in the building sector, in particular, has not resumed in Europe. We need to view the 6.4% decrease in the EU solar thermal market in this broader context: PV has declined by 23%, heat pumps by 2% and fossil fuels have not been spared as sales of gas and oil boilers have also declined by over 4%. Of course, these figures are of no comfort to us, and stagnation in the renewable and efficient heating market is not good news for solar thermal. However, gearing up to growth is extremely challenging in a declining market, where consumers and investors are obviously expecting definite signs of recovery and clearer recommendations from public authorities.

On a note of optimism, I would like mention the "Greek miracle". Against all odds, the Greek market has remained stable over the past two years, in spite of the hard hitting recession. What does that tell us? A national industry producing a price competitive product does not necessarily require public support for a sustained growth. In these times of uncertainties, solar heat is affordable and gives consumers independence from energy bills.

When looking closely at other growing countries, such as Belgium, Hungary, and Poland, it is interesting to note that, in each of these emerging markets, financial incentive schemes sustain the uptake of solar thermal. This confirms that financial support is vital in the early stages of market development. I would like to seize this opportunity to reaffirm our position on the question of financial support for solar heat, renewable heat and/or energy efficiency. The debate on their design, amounts, administration and impact should not make us forget that energy policy has always relied heavily on public support, and that gas, oil, nuclear, coal benefit from direct or indirect public financial investment, tax reductions and R&D funding. The support for solar heat, energy savings and renewable energy should be about a real level playing field in the market. The "energy transition" is a political choice implemented via public policies as energy policies always are.

In the "Solar Thermal Markets 2012" you will find a new presentation of national market figures highlighting the cumulated installed capacity and clearly showing that solar thermal is a significant component of the EU energy mix; a focus on Croatia, an interesting market joining the EU in 2013; information on the energy labelling for solar thermal and the recently pubilshed Strategic Research Priorities for solar thermal.

Good reading and sunny regards,
Robin Welling

Some of ESTIF's achievement for the European Solar Thermal Industry

Members of the thermal community, whether panel/systems or component manufacturers, certification bodies, test labs or service providers, ESTIF is fighting for you!

ESTIF has strengthened its collaboration with the IEA solar heating and cooling programme to organise a joint reference solar thermal conference in Europe, starting in 2013: The SHC 2013 International Conference on solar heating and cooling for buildings and industry.

ESTIF, together with the Solar Keymark Network, is monitoring and influencing crucial developments in the field of standardisation, certification and technical regulations. For example, with the completion of the process leading to the CE marking for solar collectors or the forthcoming revision of several solar thermal standards to comply with the energy labelling regulations.

ESTIF has supported the work of the European solar thermal panel (ESTTP) within the Renewable Heating and Cooling Technology Platform, resulting in the publication of the Strategic Research Priorities for solar thermal technology: the reference document at EU and national level for technological innovations in our industry.

ESTIF remains, until the final adoption of the energy labelling regulations, in close contact with the EU institutions to ensure the most favourable outcome for our industry.

ESTIF organised or participated in several events, conferences, workshops involving EU institutions, national public authorities and other industries to promote solar thermal as a key technology in the EU energy mix.

ESTIF is, in anticipation of the upcoming energy labelling legislation, pro-actively preparing to guide the industry through a smooth implementation of the requirements; also ensuring both visibility and promotion for solar thermal as a highly efficient and carbon free heating technology.

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, resulting in several amendments and improved drafting for our industry. Moreover, following these joint efforts, the Commission has announced a dedicated heating and cooling initiative for late 2013.

...a far from exhaustive list!

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European Solar Thermal Industry Federation

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THE NEXT CAMPAIGN IS SCHEDULED FOR **1-18 May 2014**

Solar thermal markets in EU 27 and Switzerland (glazed collectors)

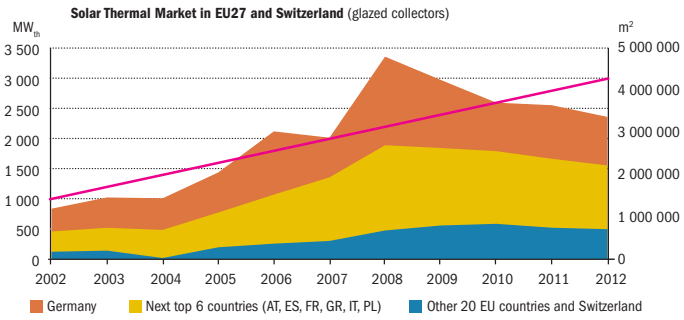
EU

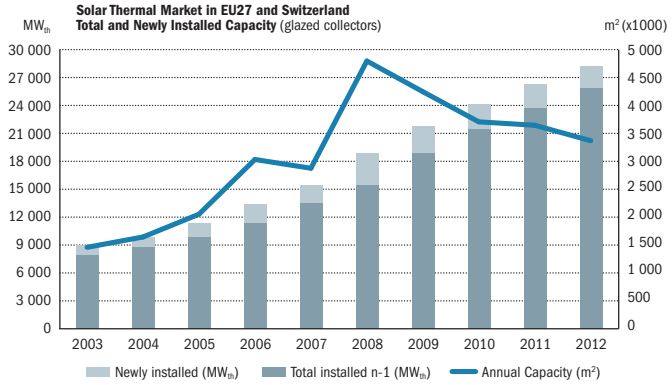
TURNOVER: 2.4 bn EUR | **EMPLOYMENT: 32 000 JOBS**

In 2012, the European market experienced a reduction in the overall newly installed capacity which amounted to 2.4 GW_{th} (approximately 3.4 mio m^2): a decrease of 6.4% in comparison with the previous year. The total installed capacity registered a net increase of 2 GW_{th}, now reaching 28.3 GW_{th} (40.5 mio m^2). This represents an increase of 7.7% compared with the 2011 total installed capacity.

The European Union market continues to suffer from the constraints imposed by the financial and economic crises affecting most of the continent, resulting in a sluggish construction sector and reduction of public support schemes for solar thermal. The annual market has been contracting since the peak year of 2008. The 2.41 GW_{th} sold in 2012 are well above the 2007 sales (2 GW_{th} / 2.88 mio m^2) but are a far cry from the 3.36 GW_{th} (4.8 mio m^2) reached in 2008.

Over the past ten years, there was a continuous steep uptrend in the growth rate up to 2008; followed by a decline, steeper in the first two years (2009, 2010) and then flattening out (2011, 2012). The variation in the newly installed capacity is illustrated with the blue line in the graph on the right. In spite of the decrease recorded over the last four years, the annual market size has doubled, over the past decade at an average annual growth rate of 10%. Using the same comparison over the last five years (2007-2012), we can observe an absolute growth in the annual sales of 20% and an average annual growth rate of 3.6%.





Residential applications still represent the bulk of the solar thermal market. Nevertheless, large installations are increasing apace. Large size systems above 35 kW_{th} (50 m^2) for commercial heating and cooling applications have shown a positive development, but it is mainly for very large systems (above 350 kW_{th} / 500 m^2) that the market has been moving rapidly. 2012 confirmed Denmark as the land of large solar district heating, with a total of 71.4 MW_{th} (102 000 m^2) installed, contributing to a total installed capacity of 196 MW_{th} (280 000 m^2), solely in large solar thermal plants, that account for 65% of the European total installed capacity in large systems. With regard to industrial process heat, several pilot projects have been implemented, with other large ones in the pipeline. This is clearly a market segment to watch closely in the coming years.

Traditional market segments are mostly affected by the downturn in several of the largest European markets, including domestic hot water production for single family dwellings; they are still feeling the effects of the slump in construction and retrofitting caused by the 2008 financial crisis and consequent worsening economic climate.

Despite a below expectation growth of the total installed capacity (the evolution is shown by the grey bars in the graph referred to above, the lighter shade of grey indicates the increment from the newly installed capacity in 2012), solar thermal plays an increasingly important role in the European energy strategy, namely through the National Renewable Energy Action Plans. The 28 GW_{th} in operation generate an estimated 20 TWh_{th} of solar thermal energy while contributing to a saving of 2.5 Mt CO_2. In terms of economic significance, the solar thermal sector reached a combined turnover of 2.4 billion Euros in 2012, employing 32 000 people (full time equivalent).

GERMANY

NEWLY INSTALLED CAPACITY: 805 MW_{th} | **ANNUAL EVOLUTION 2012/2011: -9.4%**

Germany, the leader and main driver of the European market

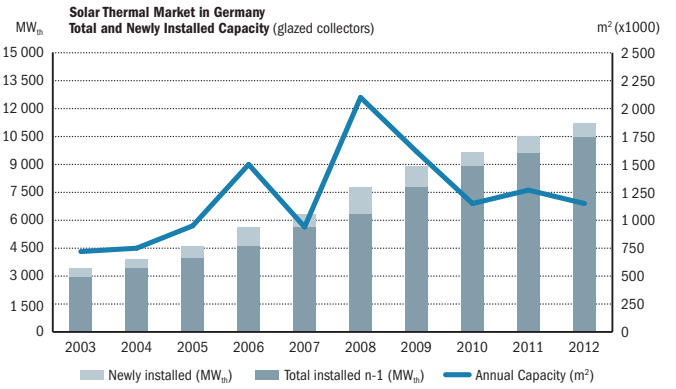
The European solar thermal colossus stumbled in 2012, after an 11% increase in 2011. Germany represents almost 40% of the total installed capacity in Europe. In terms of annual installed capacity, its share of the total market has decreased slightly but still represents around one third of the total sales in EU Member States and Switzerland. Hence, the performance of the German market has a huge influence on the whole European market. With a decrease of 9.4%, Germany has contributed, together with other large markets, to this year's negative results in Europe. In 2012, Germany reached an annual installed capacity of 805 MW_{th} (1.15 mio m^2), approximately 20% above the 2007 sales, before the financial crisis and the peak year of 2008 (1 470 MW_{th} / 2.1 mio m^2).

Although it is not possible to single out only one main reason behind last year's decline, it is believed that the ongoing discussion about digressive Feed-in-Tariffs for photovoltaics might leave the less informed consumers under the impression that "solar is not worth an investment".

On the other hand, the discussion on new tax depreciation regulations for investments in energy efficiency technologies (e.g. solar) might have put off other investors.

In Germany, a strong macroeconomic performance and a buoyant building sector have not been mirrored in an increase in solar thermal sales. As system prices have remained steady, installers were able to offer many installation options besides solar thermal.

The total installed capacity has reached 11.2 GW_{th} (16 mio m^2), representing an increase of 7% on the German solar thermal park. In order to reach its NREAP



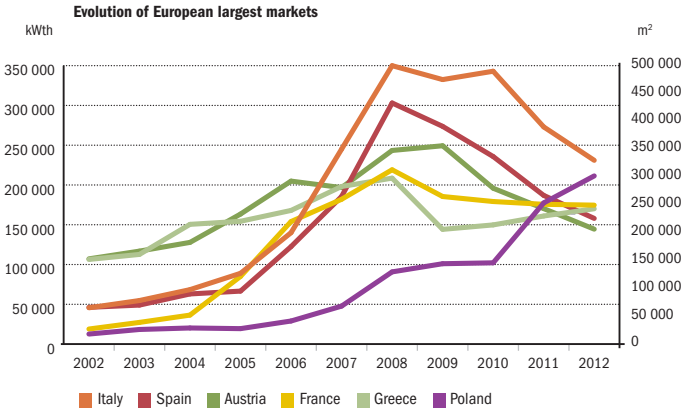
target for 2020 of 1.245 Mtoe equivalent, i.e. 20.2 GW_{th} of installed capacity, Germany needs to install on average 1.4 GW_{th} per annum (2 mio m^2). And, in order to reach the more ambitious target of 27.3 GW_{th} set by the German solar thermal industry (Solar Thermal Roadmap, BSW, 2012), the total installed per year should reach 2 GW_{th} (2.85 mio m^2). The total energy produced by solar thermal systems in operation in Germany is now estimated at 6 TWh_{th} (BMU, February 2013).

Solar Thermal Markets between 140 MW_{th} and 350 MW_{th}

The group of countries between 140 and 350 MW_{th} (200 000 and 500 000m²) of annual newly installed capacity have followed the same pattern as in 2011. Poland continued its impressive growth, Greece presents a resilient growth and France remains stagnant. The other markets in this group, Italy, Spain and Austria have experienced substantial declines.

For instance, Italy, previously by far the largest market of this group, suffered a sizeable decrease over the last two years, with the 2012 market not reaching the 250 MW_{th} threshold. On the other hand, the Polish market continued its steep growth curve, with a 19% increase in comparison with the previous period. This means that Poland is now close to becoming the second largest market in Europe, with 211.4 MW_{th} (302 000 m²). In Spain, the market continues to contract (158 MW_{th}), being pulled down by the ongoing recession and now overtaken in market size by France where the market remained at a similar level to that of 2011 (175 MW_{th}).

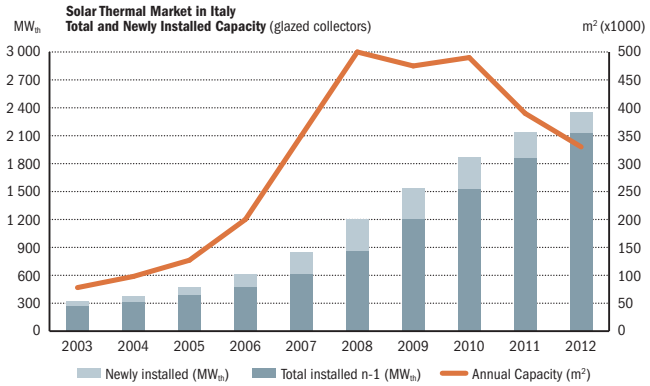
Taking this group of countries as a whole, the newly installed capacity amounted to 1.1 GWth, a reduction of almost 5% in comparison with 2011. With reference to the total installed capacity, the combined capacity represents 12.2 GW_{th}, which shows an increase of 7.5% in comparison with the previous 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. In these mature markets, the rate of growth of the total installed capacity in operation (0.7% in Greece and 2.7% in Austria) is now much lower than in other countries, for instance Poland (33%).



This presents a new challenge for these countries in terms of increasing their heat production from solar thermal, in order to meet their 2020 target for energy production from renewable energy sources.

ITALY

NEWLY INSTALLED CAPACITY: 231 MW_{th} **ANNUAL EVOLUTION 2012/2011: -15.4%**



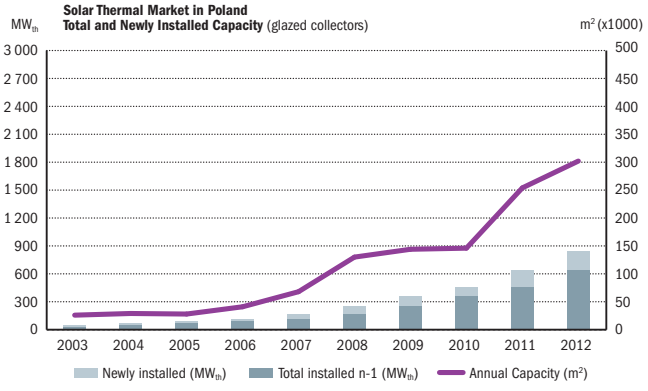
Against all odds, with 231 MW_{th} (330 000 m²), Italy remains the second largest EU market in terms of newly installed capacity. The economic stagnation, the "Monti" government rigorous budgetary measures and related uncertainties surrounding the future of solar thermal incentives, have all contributed to very pessimistic forecasts. Under these circumstances, a market decrease of 15% is a respectable outcome: especially after the announcement, in November 2012, of the new incentive mechanism for renewable heating systems and energy-efficient measures which all give rise to a certain optimism for 2013. The 55% tax deduction mechanism, in place since 2007, will remain unchanged until at least the end of June 2013. It seems very likely that it will be extended until 31 December 2013 and modified to avoid overlaps with other incentive mechanisms. At the end of 2012, the total installed capacity amounted to 2.4 GW_{th}, an increase of 10% compared with the previous year, giving an estimated heat production of 2 TWh_{th}.

POLAND

NEWLY INSTALLED CAPACITY: 211 MW_{th} **ANNUAL EVOLUTION 2012/2011: 19.1%**

Thanks to a strong support policy, the Polish market continued its steep growth, becoming the third largest market in terms of newly installed capacity, after Germany and Italy. In 2012, 211.4 MW_{th} (302 000 m²) were installed in the Polish market. It represents an increase of 19%, a modest increase compared with the 70% increase of the previous year, but still a significant one. The total installed capacity amounts to 848 MW_{th} (1.2 mio m²): an increase of 33% in comparison with 2011. The impressive growth over recent years must continue if Poland is to reach its ambitious 2020 target of 10 GW_{th} (14 mio m²). The size of the challenge is illustrated by the energy production from solar thermal: the estimated total in 2012 was 0.5 TWh_{th}, approximately 10% of the target set for 2020.

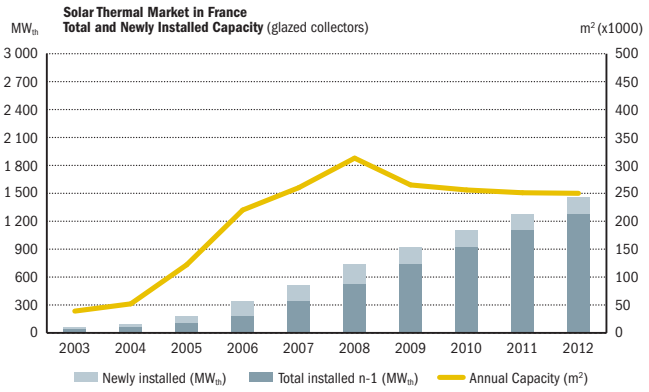
This success is due to several support programmes, the most relevant being the programme of National Environmental Fund (NFSiGW) that allocated approximately 100 million Euros, over three years, to solar thermal installations. Considering that it will end at the beginning of 2014, Poland must clarify soon whether this programme will be extended or even improved.



FRANCE

NEWLY INSTALLED CAPACITY: 175 MW_{th} | **ANNUAL EVOLUTION 2012/2011: -0.6%**

The solar thermal collector market totalled 174.7 MW_{th} (249 500m²) in 2012, remaining very close to the 2011 level (decrease of 0.6%) in metropolitan France. After several successive years of decline, a relative stabilization can now be observed in this market. This stabilization is the result of a strong growth in installations of collective solar domestic hot water systems. Sales of domestic hot water heaters only amounted to 25 900 units against 30 000 in 2011, a decrease of 14%. However, sales of compact boilers, integrated with domestic solar water heaters, rose by nearly 9%. These systems, which now represent around 22% of the domestic hot water market, are mostly installed in new houses. As regards combi systems, the market continues to decline, with a decrease of 19% compared with 2011. These systems have not found a place in the new or existing buildings sector in France, whereas this sector is well developed in Germany. The average collector area for individual systems is stable at 3 kW_{th} (4.2 m²) for DHWH and 7.6 kW_{th} (10.9 m²) for combi systems. Sales of collectors for collective or commercial buildings continued to progress and now represent 87 MW_{th} (124,600 m²) or 50% of the total market for solar thermal collectors. The year 2012 marks an important milestone in the evolution of the solar thermal market, as the collective hot water systems sector is now larger than the sector for individual hot water systems. The total installed capacity for France (metropolitan) is now slightly above 1.4 GW_{th} (2 mio m²), with an estimated annual heat production of 853 GWh_{th}.



GREECE

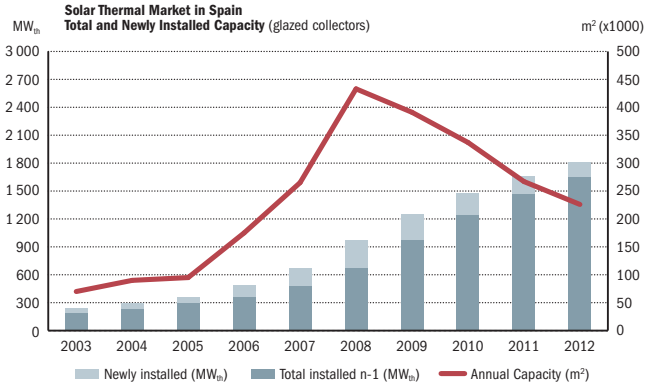
NEWLY INSTALLED CAPACITY: 170 MW_{th} | **ANNUAL EVOLUTION 2012/2011: 5.7%**

The Greek solar thermal market continued to grow in 2012. Following a decrease in 2009, the market has been growing steadily in spite of the country's current difficult economic and financial conditions. The newly installed capacity grew by 5.7%, amounting to 170.1 MW_{th} (243 000 m²). The new-build housing market has reduced substantially; hence the growth is due mostly to replacement of electric and oil heating systems, as energy costs have driven consumers towards the more economical (and providing stable energy costs) solar thermal solution. In terms of total installed capacity, Greece now counts 2.9 GW_{th} (4.1 mio m²), representing an increase of 1%. Greece has the second largest total installed capacity, after the German giant and is almost level with Austria. In fact, Greece is in a unique situation in this regard. In the early 1990s, the annual installed capacity was already similar to current levels. Bearing in mind that the average lifetime of a system considered for statistical purposes is 20 years, it means that in the Greek market the total installed capacity has stabilized over recent years. This is a situation currently particular to Greece but which will become applicable to other countries in the future. Therefore, it should be better understood and the rate of replacement of old systems studied in depth.

SPAIN

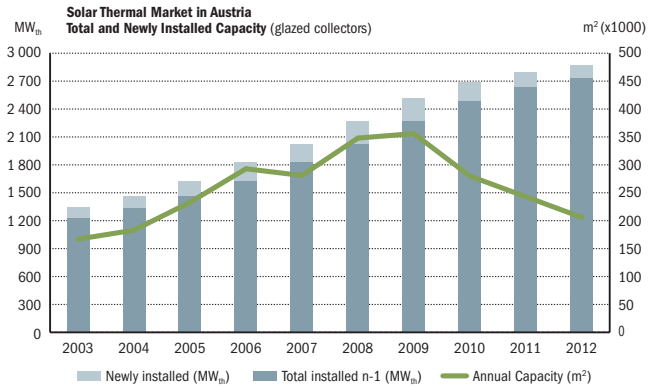
NEWLY INSTALLED CAPACITY: 158 MW_{th} | **ANNUAL EVOLUTION 2012/2011: -15.5%**

The Spanish market has been contracting since the peak year of 2008. The market has halved during these four consecutive years of decline, reaching a six year low at 158 MW_{th} (225 683 m²). This corresponds to a negative annual variation of 15.5%. The Spanish solar thermal market, which for many years was the third largest in Europe and one of the most promising, is now only ranked sixth in the European solar thermal market. The sales relied, by an estimated 85%, on the solar thermal obligation for the new build sector now frozen. The Spanish Government will soon launch a support mechanism for renovation work which should only concern about 25 000 households, not necessarily including solar thermal. At regional level, only Andalucia maintains support schemes for solar thermal. Other options for solar heat would be industrial applications. A support scheme was approved, but then put on hold as a result of the austerity measures. Moreover, subsidies for Spanish industries are facing difficult times, namely with regard to access to credit, which limits strongly the opportunities for new investments. By the end of 2012, the installed capacity in Spain totalled 1.8 GWth, an increase of 9% over a one year period. This installed capacity represents an estimated 1.8 TWh_{th} of heat generation, only 17% of the 2020 target for solar thermal set by the Spanish government.



AUSTRIA

NEWLY INSTALLED CAPACITY: 144 MW_{th} | **ANNUAL EVOLUTION 2012/2011: -15.2%**



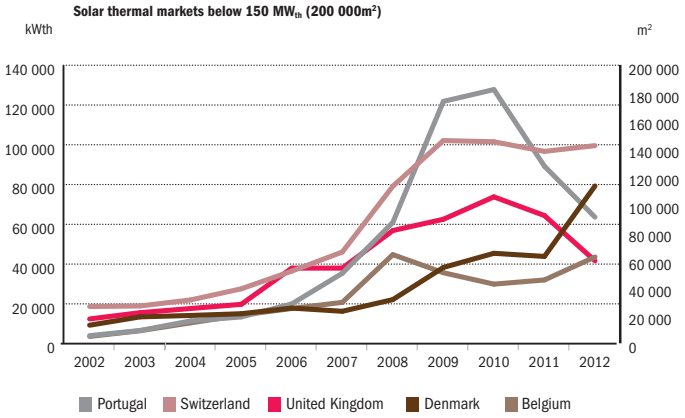
The Austrian market is facing tough times, with sales contracting for the third consecutive year.

In 2012, the decline corresponded to 15% in comparison with the previous year: the newly installed capacity amounted to 144.5 MW_{th} (206 390 m^2). One of the main reasons given to explain this contraction is the attraction of solar photovoltaics investment for consumers, competing directly with solar heating installations in this traditional market. Austria remains one of the most important markets in Europe, still being the largest market per capita in continental Europe and the third in total installed capacity: 2.9 GW_{th} or 4.1 mio m^2 by the end of 2012 (3% increase with reference to the previous year). This installed capacity provided an estimated heat supply of 1.8 TWh_{th}. Austria has now reached 56% of the 2020 target foreseen in the National Renewable Energy Action Plan. This is a high percentage compared with other countries; however, taking into account the maturity of the Austrian market and the decline in sales over recent years, national and regional authorities will have to up their game to reach their national target.

Solar Thermal Markets between 35 and 140 MW_{th}

Demark and Belgium, both with several years of growth, are becoming beacons of hope in an otherwise contracting European market.

The Danish growth is due to a dramatic increase in a particular market segment: solar district heating. This segment alone is enough to put Denmark in the top ten of the European solar thermal markets. The Belgian growth, on the other hand, is based on traditional segments, sustained by a lasting support policy, particularly in Flanders. The other markets between 35 and 140 MW_{th} (50 000 and 200 000m^2) of newly installed capacity felt the negative impact of different support policies: in Switzerland creating expectation about photovoltaics, putting on hold investments in solar thermal; while Portugal and the United Kingdom are examples of how poorly implemented support schemes can have a detrimental effect on the market. Two other countries, not quite above 35 MW_{th}, but worth mentioning are Hungary and Czech Republic, also as examples of the negative effect of stop-and-go measures. The Hungarian market more than doubled in 2012 based on the interesting support scheme put in place last year for individual systems. Nevertheless, this support is likely to be discontinued in 2013, with a strong reduction expected in the market. The Czech market reached its peak year in 2010 due to the positive effects of a strong support scheme. Since then it has been contracting, being close to the 2009 sales level. Hopefully, this might change over the next few years with the new programme being prepared.

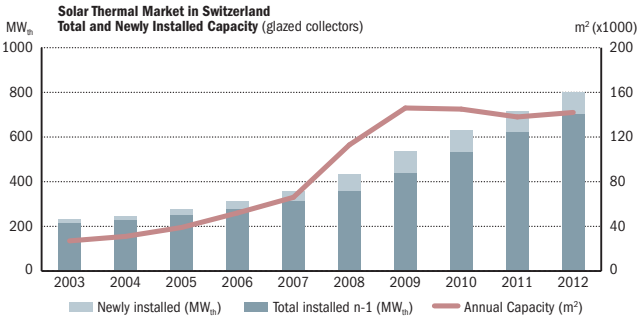


Overall, for the group of countries between 35 and 140 MW_{th} of newly installed capacity in 2012 (Belgium, Denmark, Portugal, Switzerland and United Kingdom), the market has contracted by 3% in 2012. In terms of total installed capacity, these countries now add up to a combined total of 2.6 GW_{th} in operation, which represented an increase of almost 12% in comparison with the previous period.

SWITZERLAND

NEWLY INSTALLED CAPACITY: 99 MW_{th} | **ANNUAL EVOLUTION 2012/2011: 3.0%**

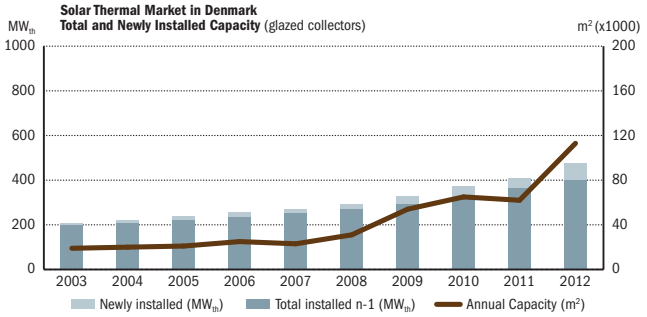
The Swiss market is facing stagnation for the third year in a row. In 2012 the newly installed capacity totalled 99.4 MW_{th} (142 000 m^2), i.e. a growth of 3.1%. The main contributor to this stagnation is considered to be the general anticipation about the support for PV installations, reflected in the large waiting list for installing new photovoltaic systems with federal support (FiT). While flat plate collectors still represent 88% of the market, the sales of evacuated tube collectors have doubled in 2012, in part related to the increasing aesthetical potential explored by architects. This market has shown a strong growth in the total installed capacity, reaching 0.8 GW_{th} (1.1 mio m^2), an increase of 15.3% over the previous year.



DENMARK

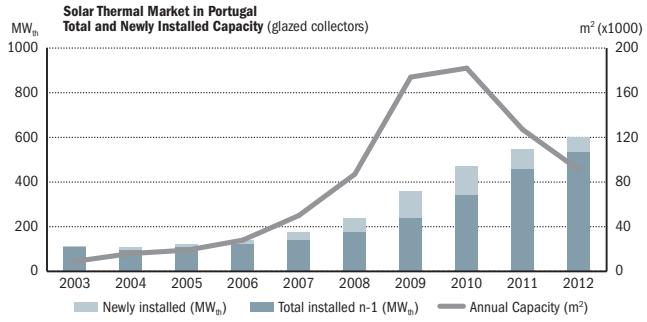
NEWLY INSTALLED CAPACITY: 79 MW_{th} **ANNUAL EVOLUTION 2012/2011: 81.1%**

The Danish market grew by 81% in 2012. This growth was already anticipated, as it results from large solar district heating projects that had been approved but not yet installed. The newly installed capacity amounted to 79 MW_{th} (113 000 m^2), 90% of which referred to very large installations (70 MW_{th} / 102 000 m^2). There are other large projects being prepared and it is expected that in 2013 growth will continue. The total installed capacity in Denmark amounted to 478 MW_{th} (682 345m^2) by the end of 2012, an increase of 17% over the previous period. Out of this, approximately 193MW_{th} correspond to large solar thermal systems (above 350 kW_{th}), which represent also 65% of the European total installed capacity in large systems.



PORTUGAL

NEWLY INSTALLED CAPACITY: 63 MW_{th} **ANNUAL EVOLUTION 2012/2011: -28.8%**

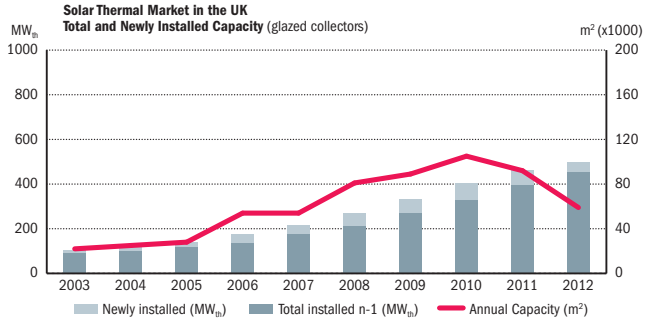


Portugal experienced a strong decrease over the past two years, following the end of the large support scheme "Medida Solar Térmico" as its effect was felt in 2009 and 2010. In fact, the market is now almost down to the same level as that of 2008. In the meantime, many jobs were created and later disappeared, illustrating the negative effects of stop-and-go measures. In 2012, the market contracted to 63 MW_{th} (90 612 m^2), which represented a variation of – 29%. By the end of 2012, the total installed capacity was 600 MW_{th} (856 867m^2), an increase of almost 10% on the previous year.

UNITED KINGDOM

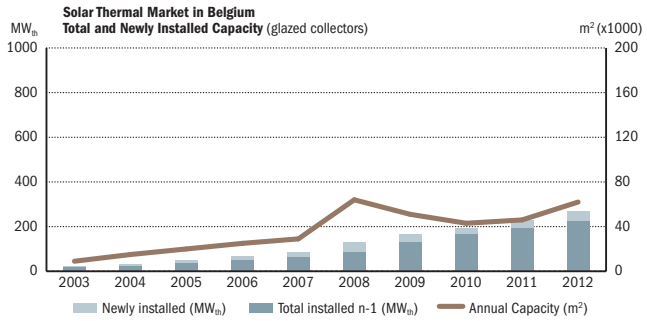
NEWLY INSTALLED CAPACITY: 41 MW_{th} **ANNUAL EVOLUTION 2012/2011: -35.4%**

The uncertainty regarding the Renewable Heat Incentive (RHI) scheme for domestic applications continued in 2012, with an obvious negative impact on the British solar thermal market. In 2012 this market contracted to 41.5 MW_{th} (59 275 m^2), which represents a variation of -35%. Even if the RHI for commercial applications is in place, this support scheme has mostly benefitted biomass applications, with a residual number of applications for either solar thermal or heat pump systems. Hopefully, the recently announced increase in the Renewable Heat Premium Payments for solar heating to £600 (from £300) will improve the situation. The total installed capacity in the United Kingdom, by the end of 2012, was 0.5 GW_{th} (709 673 m^2), corresponding to an increase of 8% over the previous period.



BELGIUM

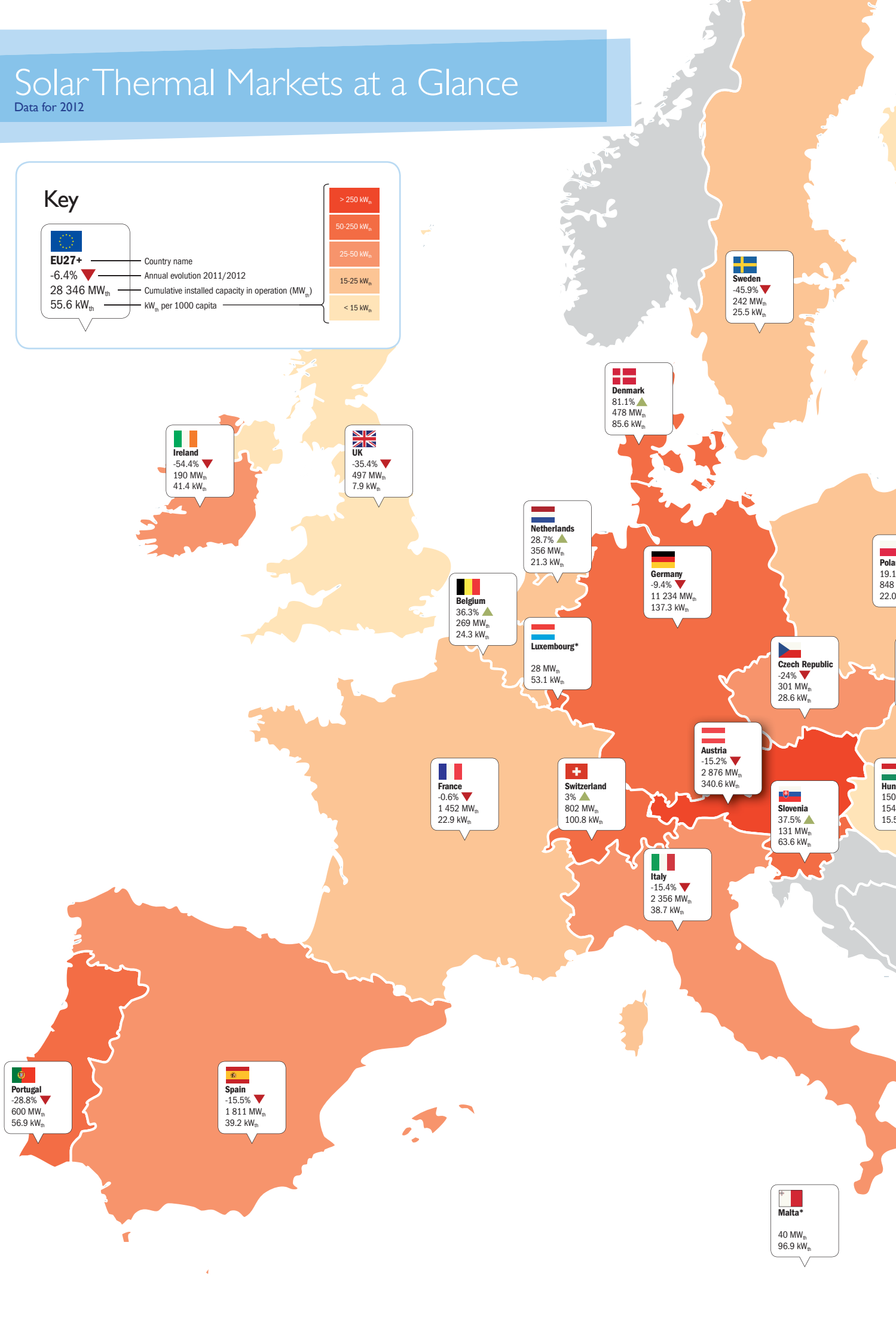
NEWLY INSTALLED CAPACITY: 43 MW_{th} **ANNUAL EVOLUTION 2012/2011: 36.3%**

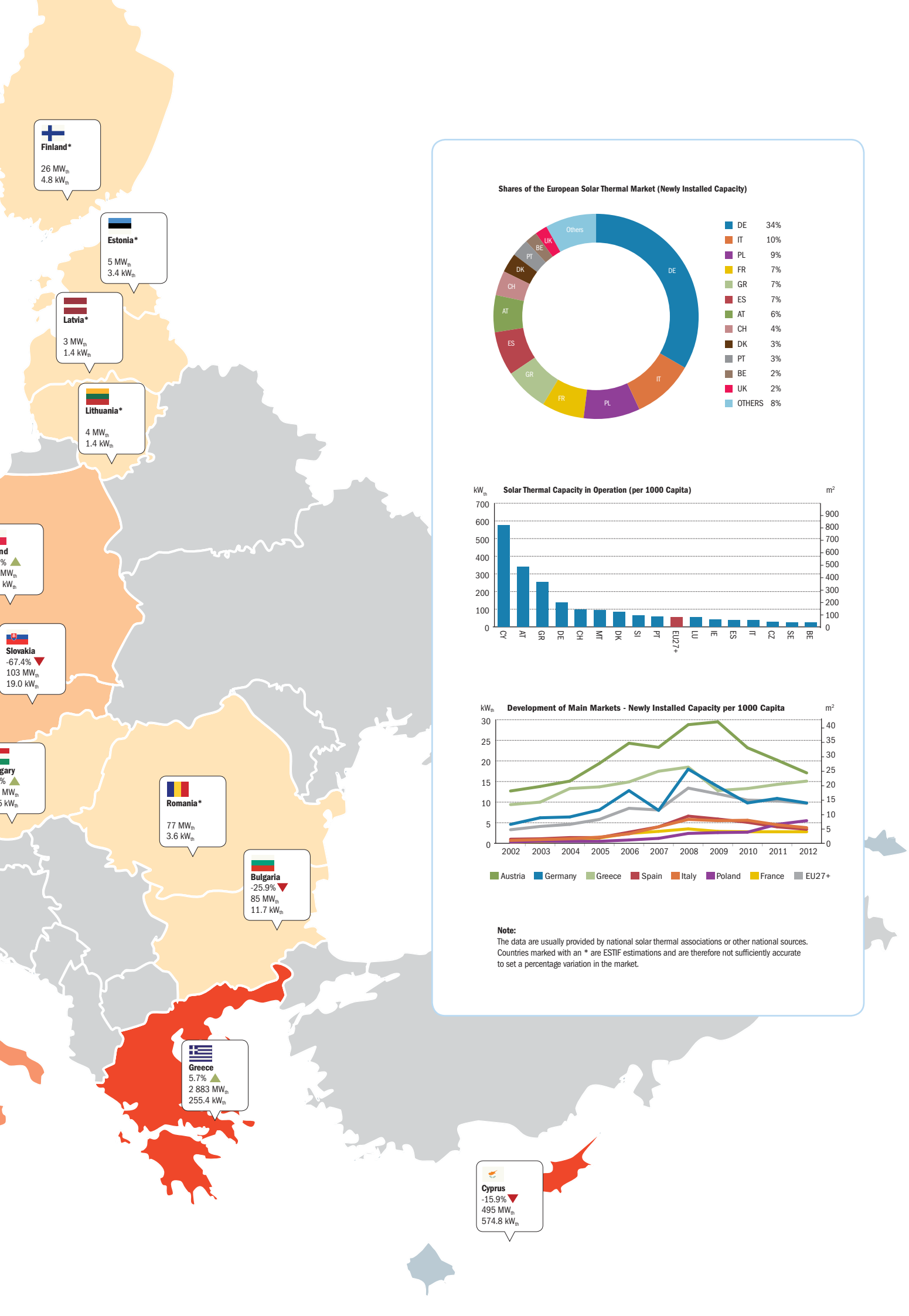


With a third consecutive positive year, Belgium is becoming one of the good examples of growth in the European market. In 2012, the market grew by 36% compared with 2011, resulting in 43.4 MW_{th} (62 000 m^2) of newly installed solar collectors. In spite of the crisis and stagnation in the construction sector, the solar thermal market and energy efficiency renovations are sustained by several incentive schemes put in place by the three regions. The strongest support is provided by Flanders, which naturally represents 70% of the Belgian market. In this region most systems are installed on single-family homes, whereas the market in Wallonia is dominated by systems in multi dwellings. Overall the total installed capacity in Belgium is still small, reaching 269 MW_{th} (384 533 m^2 by the end of 2012).

Solar Thermal Markets at a Glance

Data for 2012





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.

Paving the way towards sustainable heating and cooling in Europe

The European Solar Thermal Technology Panel (ESTTP) recently published a new document describing the potential of solar thermal technologies and the most important R&D priorities that can facilitate the large deployment of solar thermal in multiple market segments.

With the contribution from experts in the research, industry and public sectors across Europe, the ESTTP prepared this publication to provide solutions on how solar thermal can contribute to the EU's goal of achieving a 80 to 95 % reduction in greenhouse gas emissions by 2050.

A multi-approach strategy, including the following requirements, is being developed:

- a considerable increase in the **number of annually installed solar thermal systems**;
- an **increased solar fraction** of systems per building;
- a **systematic development of market segments** with low solar thermal penetration, and
- a strong support for solar thermal applications in the R&D and pilot phase by **increasing both the R&D effort and the number of pilot plants**.

According to this document, those requirements can be met with technological achievements that:

- significantly **reduce the costs** of solar thermal energy for different applications and for high solar fractions
- ensure a **high system performance and reliability** of solar thermal systems,
- allow solar thermal to play a **more important role in medium temperature** applications;
- boost the combination of solar thermal systems with other technologies into **hybrid systems**, and
- improve the **production technology** for solar thermal components and systems.

The ESTTP is now following up on these Strategic Research Priorities, promoting them to the most relevant stakeholders in preparation of the Solar Heating and Cooling Technology Roadmap. This Roadmap defines the main actions required by industry, research and public authorities to achieve the technological solutions that can address some of the main societal challenges, such as providing clean, sustainable and affordable thermal comfort.

All RHC-Platform members can join the European Solar Thermal Technology Panel and contribute to the development of the Solar Heating and Cooling Technology Roadmap. More information at www.rhc-platform.org.

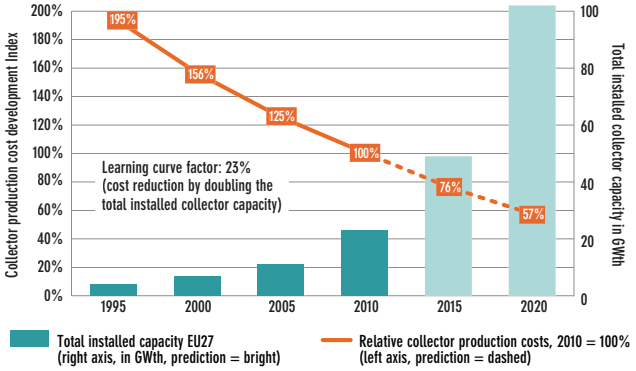


Figure 1: Collector production costs and market evolution from 1995 until 2020
Source: Strategic Research Priorities for Solar Thermal Technology, European Technology Platform on Renewable Heating and Cooling

Strategic Research and Innovation Agenda

This Strategic Research and Innovation Agenda (SRIA) has been prepared by the RHC-Platform providing stakeholders with a structured and comprehensive view of the strategic research priorities to enable an increasing share of renewable heating and cooling.

The SRIA identifies the R&D activities and investments needed to make RHC technologies cost-competitive in all market segments (residential, non-residential, and industrial) in the short term (by 2020) or in the medium term (by 2030).

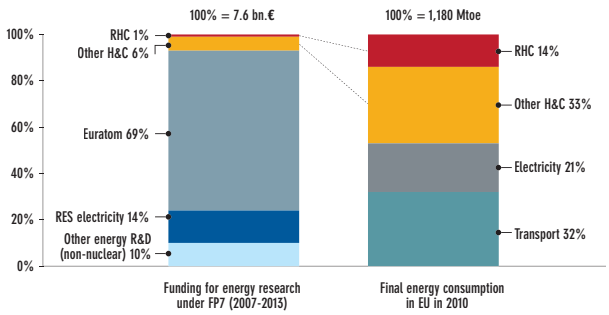


Figure 2: Funding for energy research under FP7 and final energy consumption by sector
Source: Strategic Research and Innovation Agenda for Renewable Heating & Cooling, European Technology Platform on Renewable Heating and Cooling

This document also explains how to prioritise the allocation of resources for R&D under 'Horizon 2020', the successor to the seventh framework programme for research and development. The total volume of resources required to implement the RHC-SRIA until 2020 is estimated at around 4 billion Euros, approximately 60% of which is expected to come from the European industry. It is anticipated that 3 out of 5 Euros will be spent by the private sector, if the European Commission as well as Member States spend 1 Euro each in addition.

Join us and shape the future of RHC in Europe!
Membership is free! Join the RHC-Platform today and become part of the community!

Download the publications here:
www.rhc-platform.org

Market size in terms of Solar Thermal Capacity (KW_{th}) and in terms of Collector Area (m^2)

	Market (=Newly Installed)							In Operation[2]		
	2010	2011	2012				Annual Evolution of the Market	End of 2012		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)**	%	m^2	**kW(th)**	%
Austria	279 898	243 285	200 800	5 590	206 390	**144 473**	-15.2%	4 108 338	**2 875 837**	2.7%
Belgium	42 500	45 500	50 500	11 500	62 000	**43 400**	36.3%	384 533	**269 173**	18.9%
Bulgaria	8 400	10 800	7 400	600	8 000	**5 600**	-25.9%	122 100	**85 470**	6.1%
Cyprus	30 713	28 437	22 373	1 544	23 917	**16 742**	-15.9%	707 776	**495 443**	-0.8%
Czech Republic	91 717	65 800	37 000	13 000	50 000	**35 000**	-24.0%	427 327	**299 129**	12.8%
Denmark	64 651	62 401	112 500	500	113 000	**79 100**	81.1%	682 345	**477 642**	16.9%
Estonia*	500	1 800	900	900	1 800	**1 260**	-	6 520	**4 564**	-
Finland*	3 700	4 000	3 000	1 000	4 000	**2 800**	-	36 723	**25 706**	-
France	256 000	251 000	240 750	8 750	249 500	**174 650**	-0.6%	2 074 400	**1 452 080**	13.7%
Germany	1 150 000	1 270 000	1 036 000	114 000	1 150 000	**805 000**	-9.4%	16 049 000	**11 234 300**	7.0%
Greece	214 000	230 000	241 500	1 500	243 000	**170 100**	5.7%	4 119 200	**2 883 440**	0.8%
Hungary	21 000	20 000	35 000	15 000	50 000	**35 000**	150%	219 814	**153 870**	29.4%
Ireland	52 966	59 349	18 803	8 284	27 087	**18 961**	-54.4%	270 769	**189 538**	11.1%
Italy	490 000	390 000	287 900	42 100	330 000	**231 000**	-15.4%	3 365 730	**2 356 011**	10.4%
Latvia*	200	1 800	150	150	300	**210**	-	4 040	**2 828**	-
Lithuania*	200	1 800	600	1 200	1 800	**1 260**	-	6 000	**4 200**	-
Luxemburg*	4 500	4 500	3 250	900	4 150	**2 905**	-	39 800	**27 860**	-
Malta*	5 000	5 980	5 500	480	5 980	**4 186**	-	57 820	**40 474**	-
Netherlands	40 834	33 000	42 470	0	42 470	**29 729**	28.7%	509 065	**356 346**	7.3%
Poland	145 906	253 500	216 000	86 000	302 000	**211 400**	19.1%	1 211 390	**847 973**	33.2%
Portugal	182 271	127 198	90 121	491	90 612	**63 428**	-28.8%	856 867	**599 807**	9.7%
Romania	15 500	15 500	8 500	7 000	15 500	**10 850**	0%	110 700	**77 490**	5.2%
Slovakia	15 000	23 000	6 500	1 000	7 500	**5 250**	-67.4%	147 000	**102 900**	3.3%
Slovenia	11 000	12 000	13 500	3 000	16 500	**11 550**	37.5%	186 800	**130 760**	6.6%
Spain	336 800	266 979	213 060	12 623	225 683	**157 978**	-15.5%	2 587 162	**1 811 013**	9.2%
Sweden	20 699	20 807	8 251	3 006	11 257	**7 880**	-45.9%	345 731	**242 012**	2.6%
Switzerland	144 772	137 863	125 000	17 000	142 000	**99 400**	3.0%	1 145 431	**801 802**	12.1%
United Kingdom	105 200	91 778	47 893	11 382	59 275	**41 493**	-35.4%	709 673	**496 771**	8.0%
EU27 + Switzerland	3 733 927	3 678 077	-	-	3 443 721	**2 410 605**	-6.4%	40 494 094	**28 345 866**	7.7%

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), 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), 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 $1 m^2 = 0.7 kW_{th}$ (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 2013. 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 m^2).

Country Focus:
Croatia

Croatia: the 28th member of the European Union from 1 July 2013

Croatia has a population of 4.4 million, with a low density (78.5 inhabitants per km²), and a GDP per capita of 10 300 Euros. The country is quite diverse, from plains, lakes and rolling hills in the north and northeast with continental climate conditions to rocky coastlines on the Adriatic Sea, including over a thousand islands and islets, with Mediterranean climate.

This country has a long solar thermal tradition, from the times of former Yugoslavia when, in the 1970s and 1980s, this technology was already quite well developed compared with the rest of Europe.

Croatia offers a great potential for solar heating and cooling. Energy costs and climate conditions make solar thermal an interesting option. It could be the answer to the energy challenge faced by the high number of inhabited islands (47), with a combined population of 110 000, and where during Spring and Summer the demand for domestic hot water rises due to the number of secondary homes and the tourism infrastructure: an important opportunity for solar thermal applications!

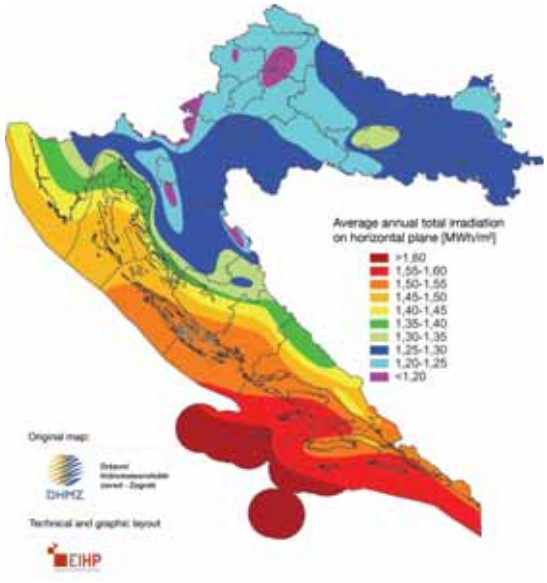
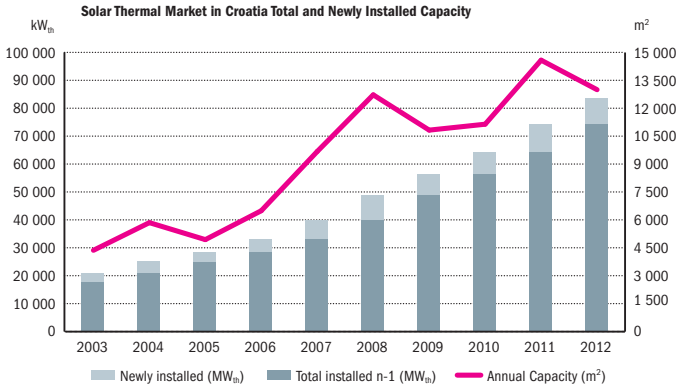


Figure 3: Annual sum of global irradiation on a horizontal plane (Source EIHP)



The annual installed capacity reached a peak of 10 200 kW_{th} (14 500 m²) in 2011. In 2012 preliminary data indicates similar annual installed capacity between 9.1 and 10.1 MW_{th} (13 000 and 14 500 m2).

The total installed capacity by the end of 2012 is approximately 84 MW_{th} (120 000 m²), with an increase of the order of 12 % compared to the end of the previous year.

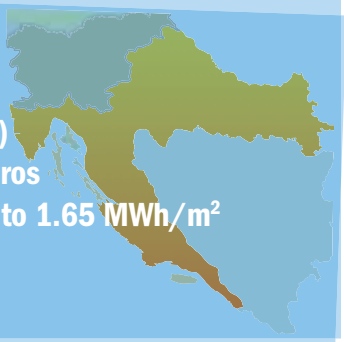
The most widely installed systems include flat plate collectors with selective absorber, close loop systems with pump, heat exchanger, integrated in heat storage and antifreeze protection. There has been a noticeable increase in the use of vacuum tube collectors, mainly in systems requiring higher temperatures and all-year round availability. This type of collector should represent around 12% of the market. Despite the seasonal DHW demand, termosyphon systems are not as common as could be expected.

The lack of support measures is one of the main hurdles in the faster development of the solar thermal market in Croatia, as public support has been rather limited so far (more information on support schemes on the next page). However, some flanking measures have been put in place, such as a broad awareness raising campaign launched in 2009 and the situation regarding the availability of qualified installers has improved considerably over recent years. The arrival on the market of international companies and the impact of support schemes in some counties has resulted in an increase in the number of qualified installers. Also, on the educational front, solar thermal is a feature of the curriculum for undergraduate, graduate and post-graduate courses.

CROATIA

Population: 4 398 150
Density: 78.5/km²
Area: 56 594 km²

Number of islands (inhabited): 1 185 (47)
GDP per capita: 10 300 Euros
Global annual irradiation: from 1.15 to 1.65 MWh/m²



Support schemes

There are two support schemes operating in parallel, applicable to solar thermal, heat pumps and off-grid solar photovoltaics. One of the schemes is focused on the residential sector, offering direct subsidies to the acquisition of small RES systems. Another scheme is targeted at commercial applications, more specifically on the tourism sector, comprising interest-free loans. FZOEU, the Croatian Environmental Protection and Energy Efficiency Fund, administers both schemes which, in their current form, were launched in December 2012. The support does not apply to the whole country, but is only in operation in those counties that have applied for it (currently available in eight counties).

Residential

The scheme grants households up to 40% of the solar water heater investment, capped at approximately 1 580 Euros. The support scheme was initiated at Regional level, in Northwest Croatia by the Regional Energy Agency (REGEA). The success of the scheme contributed to its replication at national level. Regions and municipalities are important partners, as they manage the entire application process and control its implementation and co-fund the scheme (at least 10%). The demand was very high in 2013, exceeding the programme budget(1).

Commercial

The target group for the commercial support scheme is the tourism sector. It is available to both private and public entities (maximum of only two projects per entity). It consists of interest-free loans amounting to 40% of the total investment in the system. The support can go up to approximately 185 000 Euros, with a repayment period limited to a maximum of seven years.

More information about these support schemes at **solarthermalworld.org**. Country report and factsheet available on the Trans-solar project website. Text developed with the support of EIHP - Energetski Institut Hrvoje Pozar.

(1) Croatia: Demand for Residential Subsidy Scheme Exceeds Budget, 2/04/2013, solarthermalworld.org

Energy Labelling and...

The entry into force of the regulations begins with the publication in the Official Journal of the European Union

4th quarter 2013

Publication

ESTIF continues to provide input to the Commission and other Institutions (Council, Parliament) until publication, in order to secure the best possible regulations for the solar thermal industry.

Latest very important item is the **ESTIF** input regarding **the methodology to measure the performance of solar water heaters**, which must be amended.

Industry and public authorities have 2 years to prepare the implementation

2 years

ESTIF supports the industry in the preparation of the labelling during the so-called "transition period".

ESTIF, together with the **Solar Keymark Network, will prepare the revised harmonised standards** as required by the Commission as part of the energy labelling.

ESTIF will also issue guidelines and organise training on the implementation of the labelling.

Package label up to A+++ and product label up to A (water heating and A++ (space heating) become mandatory.

4th quarter 2015

Labelling

ESTIF promotes the labelling of solar heat and supports the industry for the implementation, once the labelling is mandatory.

ESTIF, together with the Solar Keymark Network, **is designing tools and materials to support and facilitate the administration of the "package label"** for solar thermal experts.

ESTIF promotes **the package label as a reference for** renewable and energy efficiency **incentive schemes**.

Solar Thermal

WHEN?

Considering the status of the legislative process, we foresee a publication of the regulations in the official journal in September 2013; **mandatory labelling would then begin in September 2015. Packages including solar will constitute the only water heating technology able to reach A+++**. Regarding factory-made **solar water heaters, the label will go up to A** and then A+ will be introduced two years later, i.e. in September 2017.

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 rated 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 put 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.

WHAT?

Two types of solar systems will be subject to the mandatory energy labelling:

Package Label, A+++ possibly 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 systems (space and water heating).

Product Label, A in 2015, A+ in 2017: Factory-made systems incorporating an electric immersion heater and/or other immersed non-solar heater and placed on the market **as one unit** will be labelled as **product for water heating only**.

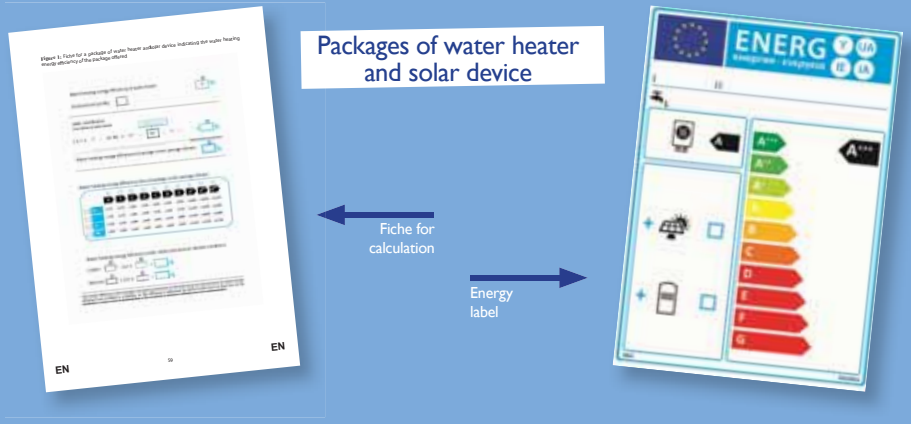
HOW?

Manufacturers of heaters, storage tanks and solar devices will **test the performance of their products using methods based on current standards in order to provide product information (fiche required for the labelling)**. However, all existing standards will be revised and harmonised in the coming years as part of the energy labelling implementation process. 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.

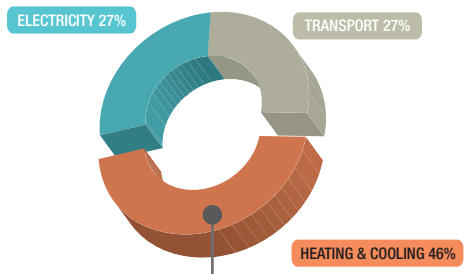
For more information contact directly ESTIF:
xavier.noyon@estif.org



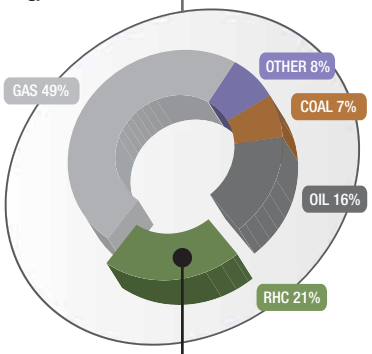
Reaching the 2020 targets with solar thermal!

The energy mix in Europe by 2020

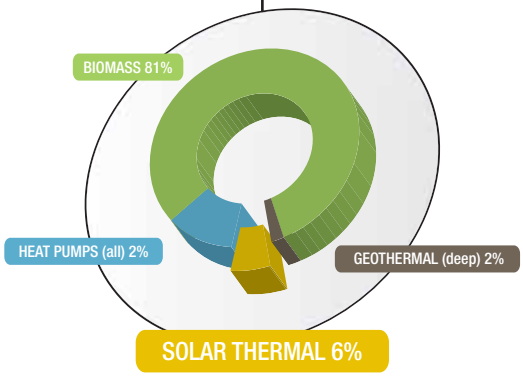
Energy Consumption by 2020
(final energy demand)



Heating and cooling consumption by 2020 by energy source



2020 targets for renewable heating and cooling per technology



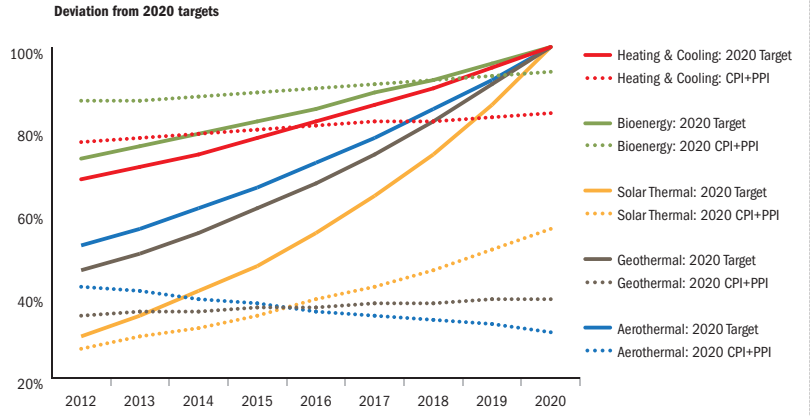
In 2010, 47 % of the final energy consumption in the EU 27 was for heating and cooling and mostly used in the residential sector (42%). By 2020, this share of the energy demand is expected to remain at the same high level (46%). Energy saving developments should have a strong impact towards lowering the heat demand, whereas the cooling demand will increase as a result of new expectations in terms of thermal comfort.

According to the National Renewable Energy Action Plans (NREAP), by 2020 21% of the heating and cooling demand should be met by renewable heating and cooling (RHC) technologies, with solar thermal representing approximately 6% of this renewable share. At present RHC technologies only account for 12% of the total European heating and cooling consumption, and while there are formidable challenges ahead of us, the opportunities for growth are tremendous.

Currently, the European Union's net fossil fuel imports total 388 billion Euros whereas its trade deficit reaches "only" 150 billion Euros[2]. Would Europe start using more of the renewable energy available within its borders, then an important trade deficit reduction could be achieved while simultaneously lowering our "imports" of CO^2 emissions in the form of fossil fuels.

On the global fossil fuel market the EU remains a price-taker, unable to fix or even influence significantly prices. Rising fossil fuel costs, as well as the insecurity generated by our high dependency on imports, are compromising Europe's competitiveness.

Despite those hard facts, the binding policy objectives and the legislative framework, the EU Member States do not give the impression to be seriously implementing renewable policies. The latest European Commission "Renewable energy progress report"[3] from March 2013 confirms this. The Commission states that: *"The heating and cooling sector …has experienced slow growth since 2005. Moreover the analysis undertaken for the Commission suggests that the share of renewable energy in the heating and cooling sector may actually decline in the coming years."*



Key:
CPI+PPI: projections combining current policy initiatives (CPI) and planned policy initiatives (PPI)
2020 target: total resulting from the compilation, of national targets set by EU member states in the NREAP (National Renewable Energy Action Plans). The 2020 target for each technology is used as the reference value for the projections in the graph.

Figure 4: Expected RHC deviation from planned EU technology deployment 2012 and 2020
(ESTIF adaptation based on: Renewable energy progress and biofuel sustainability, ECOFYS et al, 2012)

The graph above shows the deployment projection for RHC technologies until 2020. The total for RHC is currently above target, mainly due to the bioenergy input. The projection based on current and planned policy initiatives indicates that, in spite of being currently above the target, heating and cooling from renewable energy sources will be 19.5%[4] below the NREAPs 2020 target. With regard to other technologies, this underachieving pattern is even clearer: their contribution is already below the expected level and this trend will accentuate over the coming years. In the case of solar thermal, projections indicate that its contribution by 2020 might represent only 56% of the target.

In view of the overall significance of heating and cooling in the total EU's energy consumption, failing to reach the current targets for renewable heating and cooling would have a negative ripple effect for meeting the mandatory RES Directive 2020 targets.

According to the solar thermal energy growth paths based on the NREAPs, an average annual growth of over 15% in the total installed capacity should be expected from 2010 to 2020. In spite of the difficult years following the financial crisis, the total installed capacity has grown at an average rate of 10.7%, clearly below the 15% needed and far from the 14.7% average growth over the previous five years (2003-2008).

(2) Hat-trick 2030 : an integrated climate and energy framework, EREC 2013
(3) Renewable energy progress report - COM (2013)175final - European Commission 2013
(4) Commission Staff Working Document for Renewable energy progress report - SWD (2013) 102 final - European Commission 2013

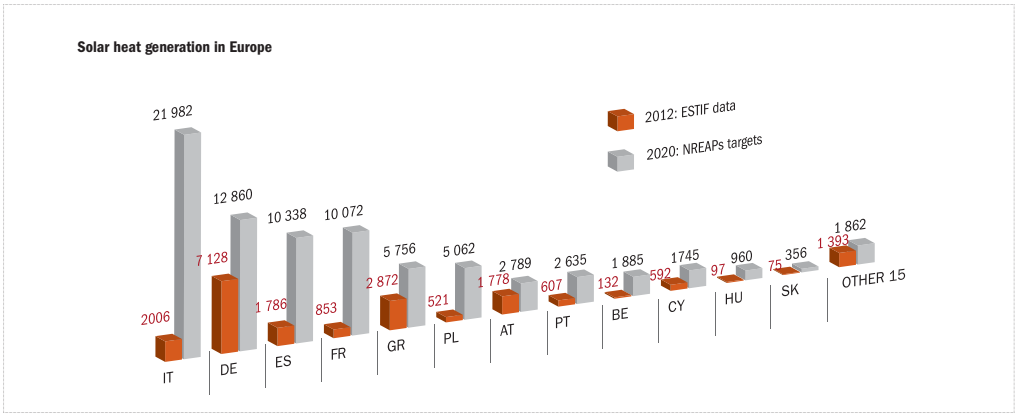


Figure 5: Estimated solar heat generation per country in comparison with national targets for annual heat generation using solar thermal systems by 2020 expressed in GWh

As shown on the NREAP Barometer, which ESTIF will publish every year until 2020, the estimated energy supplied by solar thermal systems reached 19.9 TWh(th) in 2012. This represents only 25% of the 2020 NREAPs target. With less than eight years left to reach this target, it should be a serious wake-up call for policy makers in Europe. In particular, some countries with the most ambitious targets have been hit hard by austerity measures reducing drastically any mechanism put in place to support the uptake of solar thermal energy, in particular, and renewable heating and cooling, in general.

Member States need to up their game. Public support mechanisms are being developed for energy efficiency and building renovation, including cost optimal solutions. These have an important potential for generating investments in efficient solutions and economic growth while reducing energy consumption.

Solar thermal is part of the solution. Although, in recent years the sector has suffered the consequences of ill-conceived and/or badly-implemented support mechanisms. Therefore, it is generally felt within the sector that such support schemes are not necessary, provided that there is a level playing field in the energy market. Unfortunately there isn't one. Conventional energy sources (mostly fossil and nuclear) have relied on substantial public investments, either direct or indirect. A level playing field for renewable energy sources needs to be strongly promoted with effective policies and stable support mechanisms. Solar thermal is one of the "no-regrets" options identified by the European Commission in its Energy Roadmap 2050 that can provide "locally produced" renewable heating and cooling. However, solar thermal is not only a clean and decentralized solution and as shown in the graph below, for some applications and regions, it is already **competitive against conventional energy sources.**

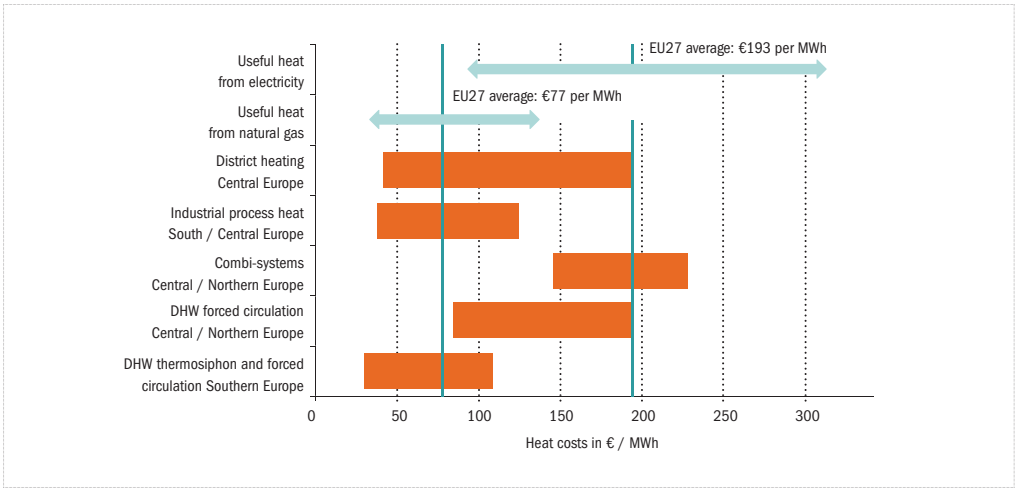


Figure 6: Comparison of heat costs between different solar thermal applications in different regions and costs of useful heat from electricity and natural gas
Source: ESTTP based on data from ESTIF and EUROSTAT

As a decentralized energy source, approximately half the investment is allocated to the lower end of the value chain. This means that, even when collectors are not produced locally, installing solar thermal has an important **impact on the local economy**, thus **replacing fossil fuel imports** with **job creation.** This is even more so when we consider that there are low barriers to entry for new industry players, 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 the **energy consumption** and of the **CO^2 emissions**.

All this makes solar thermal not only a "no-regrets" but also an **"all-reasons" option**. Boosting local economies, creating jobs, reducing CO^2 emissions, decentralizing energy supply, reducing dependency on fossil fuel imports, reducing the trade deficit: all grounds to put in place effective mechanisms to support the uptake of solar thermal in the market.

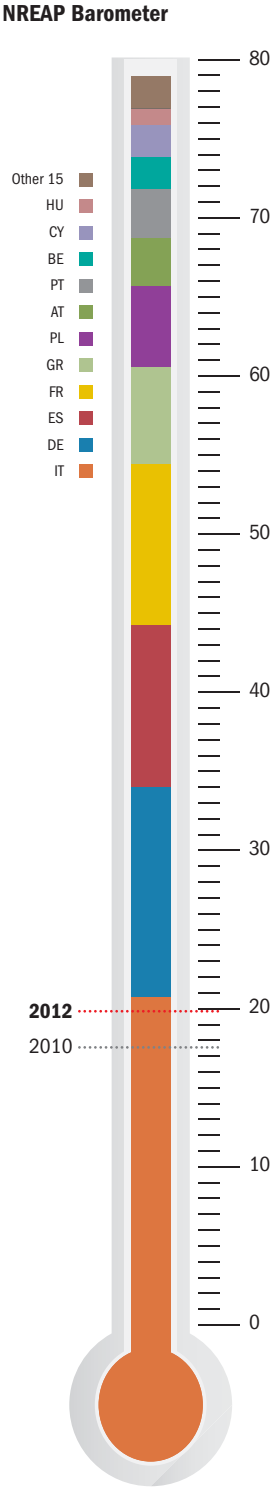


Figure 7: Estimated energy produced (TWh) in 2012 in comparison with EU 2020 targets (NREAPs) for annual solar thermal energy generation

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