



# SUPPORT SCHEMES FOR SOLAR THERMAL – TRENDS IN EUROPE

## Table of Contents

Introduction.....	3
European Union Framework.....	5
Analysis of selected European countries.....	7
Germany.....	7
France.....	9
United Kingdom.....	11
Italy.....	12
The Netherlands.....	15
Slovakia.....	16
Austria.....	17
Greece.....	19
Poland.....	20
Spain.....	21
Norway.....	23
Comparative analysis.....	25
Conclusion.....	27



European  
Solar  
Thermal  
Industry  
Federation



## Introduction

This section aims at analysing the recent trends and evolution of support schemes covering solar thermal heating and cooling technology in Europe. It shows that after several years of incentives downsizing following the economic crisis (broadly, from 2011 to 2014), the tide is now slowly turning and many European countries are now rethinking their strategies when it comes to supporting solar thermal. The potential of this technology to meet countries' energy and climate 2020 targets is being more and more recognised, and actions are being taken to help the recovery of a still too stagnating market.

The European solar heating and cooling market has been suffering from the contraction of sales in most part of the European markets in recent years. There are several factors behind this under-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.

While worldwide IRENA stated that "In 2014, solar thermal had the largest total installed capacity of all non-hydro renewable technologies, slightly more than wind and more than two times greater than PV"<sup>1</sup>, in Europe solar thermal is far from delivering its real potential in terms of growth, jobs and decarbonisation. Despite this growth below potential, 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<sub>th</sub> in operation generate an estimated 24 TWh<sub>th</sub> of solar thermal energy while contributing to a saving of 2.75 Mt CO<sub>2</sub>. In terms of economic significance, the solar thermal sector reached a combined turnover of 2 billion euros in 2014, directly employing 25 000 people.

2016 has been a key year for the renewable energy and solar thermal sector. After the COP21 in Paris in December, 2016 has been repeatedly called by EU officials the 'year of delivery', as major legislation underpinning the sector will be reviewed and enhanced. Renewable heating and cooling has benefited from a particular focus, as a result of increased attention from policy-makers on the share of heating and cooling in Europe's final energy consumption. The publication of the European Commission's Heat Strategy in February has been a key policy momentum for the renewable heating and the solar thermal sector, giving a clear signal to European governments, the markets, and industry.

Many Member States are reacting to this new trend, and are recognising the need to better support renewables in the heating and cooling sector, in order to achieve their 2020 energy and climate targets. Some countries have enlarged the scope of pre-existing support schemes, or increased the available funding, others have created new ones where none were existing.

Solar thermal has an important potential in all EU Member States, and across different sectors, from the building to the industrial process heat<sup>2</sup>. This technology is already available, established and competitive in many segments across Europe, and it would be even more competitive if a level-playing field in the European heating and cooling sector were to exist. Solar thermal must compete with heavily subsidised traditional sources of

---

<sup>1</sup> [http://www.irena.org/DocumentDownloads/Publications/IRENA\\_QI\\_3\\_SWH\\_2015.pdf](http://www.irena.org/DocumentDownloads/Publications/IRENA_QI_3_SWH_2015.pdf)

<sup>2</sup> [http://www.estif.org/fileadmin/estif/content/publications/downloads/Potential%20of%20Solar%20Thermal%20in%20Europe\\_Full%20version.pdf](http://www.estif.org/fileadmin/estif/content/publications/downloads/Potential%20of%20Solar%20Thermal%20in%20Europe_Full%20version.pdf)



energy<sup>3</sup>, which negative externalities are not captured in their prices. Until a level-playing field is not in place, support schemes will be needed in order to compensate solar thermal for the imbalances in the market, and to allow the technology to reach a maturity level sufficient to trigger further cost-reductions and deployment on a large scale.

This section summarises the main recent evolutions and changes in support schemes in selected Member States across Europe, using established sources such as the IEA-SHC country reports, the RES-Legal portal of the EU<sup>4</sup>, the SolarThermalWorld database of incentives<sup>5</sup>, Eur'Observer Policy and Statistics Reports<sup>6</sup>, national energy agencies' web-portals, and ESTIF's own data and reports. The countries analysed are those in which a change in the policy regime and support schemes for solar thermal took place in the period 2014-2016.

---

<sup>3</sup>[https://ec.europa.eu/energy/sites/ener/files/publication/Energy%20Prices%20and%20costs%20in%20Europe%20\\_en.pdf](https://ec.europa.eu/energy/sites/ener/files/publication/Energy%20Prices%20and%20costs%20in%20Europe%20_en.pdf)

<sup>4</sup><http://www.res-legal.eu/home/>

<sup>5</sup><http://www.solarthermalworld.org/incentive>

<sup>6</sup><http://www.eurobserv-er.org/euroobserver-policy-files-for-all-eu-28-member-states/>



## European Union Framework

2015-2016 have been key years for the recognition of the importance of decarbonising the heating & cooling sector at EU level. In February 2015, EU Energy Commissioner Cañete announced, during the conference ‘Heating and cooling in the European energy transition’<sup>7</sup>, the intention to publish a Strategy on the heating and cooling sector. The European Commission officially planned the publication of the Strategy in its Roadmap for the Energy Union<sup>8</sup>, as part of its Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.

Later on, the Commission engaged in a series of stakeholders consultation events, in order to gather feedbacks and inputs from the industry, consumers and environmental associations across Europe. ESTIF participated actively to this consultation process, and elaborated a position paper on the Strategy (see dedicated section in this publication).

The EU Strategy on Heating and Cooling is the result of an increasing positive attention the EU institutions have been giving to the Heating and Cooling (H&C) sector, and is a fundamental step in the recognition of its key role in the overall EU climate and energy objectives. The Strategy has therefore the potential to lay solid and long-lasting foundations for the European H&C sector, and must be considered a milestone for future policy interventions in the sector.

The Strategy, delivered in February 2016, aims at the decarbonisation of the heating and cooling sector, focusing on the buildings and industry sectors. Energy efficiency and renewables are recognised as major players in this decarbonisation path. Moreover, Member States are recommended to focus their incentives on non-fossil fuel based heating and cooling technologies.

In June 2015, the Commission released its Renewable Energy Progress Report<sup>9</sup>, assessing Member States progress in achieving the 2020 RES targets. It shows mixed results for the heating and cooling sector, and in particular, it showed that Member States are severely lagging behind in achieving their targets for solar thermal.

During the course of 2016, all major EU legislation underpinning the renewable energy sector (RES-Directive, Energy Efficiency Directive, and Energy Performance of Buildings Directive) is being reviewed. After the Commission proposals, in late 2016, debates in the EU Parliament and Council are underway for 2017.

The European Commission is consulting the sectorial stakeholders in this legislation review process. The accompanying document of the RES-Directive consultation shows in particular that the Commission is willing to increase support measures for the renewable heating and cooling sector:

‘more targeted measures could be considered to further increase renewables deployment in the heating and cooling sector, building on and interacting with energy efficiency and security of energy supply legislation. A comprehensive approach could be developed targeting buildings, individual energy use for heating and cooling, and the share of renewable energy in district heating and CHP units. Efficient ways need to be found to stimulate switching from fossil fuels to renewable heating and cooling and hot water

<sup>7</sup> <http://ec.europa.eu/energy/en/events/heating-and-cooling-european-energy-transition-conference>

<sup>8</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC\\_2&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_2&format=PDF)

<sup>9</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:4f8722ce-1347-11e5-8817-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:4f8722ce-1347-11e5-8817-01aa75ed71a1.0001.02/DOC_1&format=PDF)



generation in the large number of EU homes with individual heating equipment [...] Measures will also need to encourage a shift in consumer behaviour, perhaps through better information about renewable energy alternatives from heating equipment suppliers and installers'

The Commission also wants to identify barriers hampering the deployment of renewable heating and cooling in the EU, and will propose measures to tackle them.

This legislation review process is giving a clear indication to Member States on the direction the EU as a whole, and each country accordingly, should embrace when it comes to the decarbonisation of the heating and cooling sector. It is therefore expected that the new legislative proposals issued during 2016 will reinforce EU support for renewables in the heating and cooling sector.



## Analysis of selected European countries

### GERMANY

#### Key elements:

- Market stagnating up to 2015. Some improvements since.
- Main support scheme (MAP) increased in scope and budget in April 2015.
- Incentive based on performance introduced

#### ESTIF Market Statistics:

The support for solar combi-systems 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 m<sup>2</sup>. [..]

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. 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 m<sup>2</sup> of collectors to receive the subsidy.

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 m<sup>2</sup> 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 %).

#### From IEA-SHC:

Besides the environmental awareness of the population the main market drivers in Germany are the European and national building regulations for nearly zero emission buildings in 2020. In Germany this is being achieved through regulation with the Energy Savings Regulation (EnEV) to reduce energy consumption and the Renewable Energies Heat Act (EEWärmeG) to use renewable energy.

The most important support for solar thermal systems is the German Market Incentive Programme (MAP) for renewable heat. The funding depends on solar yield and quality assurance (Solar keymark). Since the middle of August 2012, the funding rates increased for solar thermal systems, especially for solar process heat and solar district heating.

#### From SolarThermalWorld.org:



On 1 April 2015, the German Federal Ministry for Economic Affairs and Energy, BMWi, increased the subsidies for renewable heating systems – solar thermal, biomass boilers and heat pumps – within the German Market Rebate Programme for Renewable Energies, MAP. The main reason for taking this step was that political targets have not been achieved [...]. The MAP amendment is needed to achieve the ambitious 2020 target of 14 % set forth in the Renewable Energy Heat Act[...].

The following list shows the adjustments which were made to the basic subsidy scheme and are relevant to existing buildings. All subsidies will be paid based on gross collector area.

- Domestic hot water systems will again be subsidised with 50 EUR/m<sup>2</sup>, capped at 500 EUR per system (at least 3 m<sup>2</sup> and 200 litres).
- The subsidy level for combi systems of hot water and space heating of up to 14 m<sup>2</sup> will increase from EUR 1,500 to 2,000.
- All other applications, such as combi systems above 14 m<sup>2</sup>, process heat and solar cooling, will receive higher specific subsidies of 140 EUR/m<sup>2</sup>, up from 90 EUR/m<sup>2</sup>.

The most important changes were implemented for subsidising innovative designs. So far, this kind of subsidy was restricted to solar thermal installations with a collector area of between 20 and 40 m<sup>2</sup>, whereas it will now cover systems from 20 to 100 m<sup>2</sup>. There will also be new building types eligible for the innovative design subsidy: Besides the already approved multi-family houses with three flats or more and the non-residential buildings with a minimum floor space of 500 m<sup>2</sup>, the subsidy for innovative designs has been extended to include single- and two-family homes as well, as long as their share in solar heat is above 50 %. [...]The three new building types will profit from the following subsidy levels:

- Solar systems in new builds will receive funding again – 75 EUR/m<sup>2</sup> for domestic hot water and 150 EUR/m<sup>2</sup> for all other applications (combi, cooling, process heat).
- The subsidy level for domestic hot water will increase from 90 to 100 EUR/m<sup>2</sup>.
- The subsidy level for all other applications (combi, cooling, process heat) will go up from EUR 180 to 200.

#### **BMW<sub>i</sub> introduced a performance-based incentive for solar heat**

In addition to the existing grants subsidising innovative designs per square metre, the BMW<sub>i</sub> introduced a performance-based incentive to follow up on a request important to the solar thermal industry. Owners of installations of between 20 and 100 m<sup>2</sup> which meet the criteria of innovative design can apply for a subsidy of 45 Ct/kWh per year, based on the additional table of the Solar Keymark certificates, which includes the annual collector unit output for different solar radiation sites in Europe. [...]

The amendment of the national subsidy scheme has been welcomed by all renewable associations in Germany [...]. According to the national 2015 budget, the total funds available for the MAP, including the clearing house for the feed-in tariff, add up to EUR 254 million, which is double as much as was spent last year.

#### More information:

[http://www.estif.org/fileadmin/estif/content/market\\_data/downloads/2014\\_solar\\_thermal\\_markets\\_LR.pdf](http://www.estif.org/fileadmin/estif/content/market_data/downloads/2014_solar_thermal_markets_LR.pdf)

<http://solarthermalworld.org/content/germany-national-subsidy-scheme-gets-significant-amendment>

<http://www.iea-shc.org/country-report-germany>





[www.bafa.de/bafa/de/energie/erneuerbare\\_energien/index.html](http://www.bafa.de/bafa/de/energie/erneuerbare_energien/index.html)

## FRANCE

### **Key elements:**

- Market stagnating up to 2015. Some improvements since.
- Main scheme (Fonds de Chaleur) to double its budget up to 2017
- New scheme for large solar thermal systems introduced in 2015

### **ESTIF Market Statistics:**

2014 proved to be yet another difficult year. The overall installed area of solar thermal collectors fell by 21% from 190 900 m<sup>2</sup> (133.6 MWth) to 150 500 m<sup>2</sup> (105.4 MWth). In the residential market, domestic solar water heaters took an 18% drop in terms of collector area (-15 000 m<sup>2</sup>). 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 m<sup>2</sup> (53 MWth). 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.

### **From IEA-SHC:**

Solar thermal systems for the existing building stock are subsidised either with a tax credit (for individual installations) or with subsidies (for collective systems). Building regulations for new buildings impose more or less a choice for renewable hot water supply. Given the high cost of solar thermal in France, combined with low electricity prices, solar thermal systems are facing fierce competition from thermodynamic water heater systems. The latter are also perceived as easier to install.

The current French energy policy dates from 2007 (“Grenelle law”). A new law (Energy Transition for Green Growth) has been adopted by parliament in May 2015 [..]. One of its objectives is that renewables should represent 32% of final energy consumption by 2030.

Today, solar thermal is supported by the Government through financial incentives. Two types of financial support exist. One type of support for individual solar thermal systems and another for collective solar thermal systems (see below).

### **Tax credit**



This financial measure is a tax credit for homeowners and is not an actual reduction of the tax. Therefore, people who do not pay taxes can still receive a payment. The tax credit has been revised and harmonised and is at 15-25% of eligible costs for 2014, depending on the family income and the number of energy related projects undertaken.

### **Renewable heat fund “Fonds chaleur”**

The Heat Fund subsidizes projects for collective hot water systems in the collective housing sector, the tertiary sector and the agriculture and industry sector. The subsidy level should allow the costs of the exploitation of solar systems to be slightly below those of “classic systems”. With the RT 2012 regulation now well in place, only projects for existing buildings are eligible to the Heat Fund. Furthermore, a minimum surface of 25 m<sup>2</sup> of collectors is required for a project to be eligible.

#### From SolarThermalWorld.org:

The French energy agency Ademe has been supporting renewable heat production in the industry, the district heating sector and at multi-family buildings since 2009. The budget of the national subsidy scheme, Fonds Chaleur (Heat Fund), will double in amount from around EUR 240 million per year to EUR 420 million in 2017. During 2009 to 2014, solar installations accounted for as little as 6 % of Fonds Chaleur's EUR 1.2 billion (see the attached report). Despite the high subsidy amount, the number of solar thermal applications is declining, as is the French solar market in general. Ademe is trying to counter the negative trend by offering new incentive schemes to address the large solar systems segments.

Between 2009 and 2014, Fonds Chaleur helped finance a total of 1,514 solar installations – 1,377 in France and 137 in the French overseas territories – the equivalent of 123,000 m<sup>2</sup> of solar collectors. Among the total are a small number of 17 industrial installations amounting to almost EUR 1.4 million [..].

Fonds Chaleur can cover between 20 % and 70 % of the solar installation costs. The number of financed projects was growing between 2009 and 2011, but demand has been decreasing since 2012 [..].

Since 2012, Fonds Chaleur has been complemented by another incentive scheme, the call for proposals, entitled New Emerging Technologies (Nouvelles Technologies Emergentes, also known as NTE). This program intends to support technologies that are mature but with which France has still little experience, such as solar heating in multi-family housing or solar cooling in the industry. Once these technologies have been monitored and evaluated, they can expect grant support by Fonds Chaleur just like other installations. Between 2012 and 2014, the NTE program has awarded grants of almost EUR 4.9 million.

### **Subsidy for large-scale systems**

In March 2015, there was a second call for proposals, this time for large solar array projects (Grandes Installations solaires thermiques) of more than 300 m<sup>2</sup> to be installed at multi-family buildings, on industry premises and at hospitals, as well as of more than 500 m<sup>2</sup> in case of district heating. Public funds cover between 50 % and 70 % of the preliminary studies and between 45 % and 65 % of the total investment. By early November, Ademe had received 5 proposals for large-scale systems, but the second application deadline is still far away, ending in April 2016. “The proposals we have received so far came mostly from the multi-family building sector,” Khebchache said. “The industry expects short ROIs, and the drop in natural gas prices makes it more difficult to



convince the industrial sector of solar installations. We also hope that we will have more projects in the district heating segment by the end of the second application period.”

More information:

[http://www.estif.org/fileadmin/estif/content/market\\_data/downloads/2014\\_solar\\_thermal\\_markets\\_LR.pdf](http://www.estif.org/fileadmin/estif/content/market_data/downloads/2014_solar_thermal_markets_LR.pdf)

<http://www.iea-shc.org/country-report-france>

<http://solarthermalworld.org/content/france-increases-public-support-solar-thermal>

[www.solisart.fr/](http://www.solisart.fr/)

[www.ademe.fr](http://www.ademe.fr)

<https://appelsaprojets.ademe.fr/aap/NTE%2020152015-35>

<http://www.enerplan.asso.fr/>

## UNITED KINGDOM

### **Key elements:**

- Strong decline in the market in 2015.
- Main support scheme (RHI) maintained up to 2020.
- Cuts to RHI introduced in 2015 of up to 700m £.
- Uncertainty in the industry on the consequences of these cuts.

### From IEA-SHC:

The Renewable Heat Incentive has failed to stimulate the market for solar thermal, which continues to contract in the UK. There are technical issues in the regulations preventing the use of solar thermal with other renewable heating systems such as biomass and heat pumps. The subsidy rate is relatively low compared to the Feed in Tariff for solar photovoltaics. Consequently the main driver for solar thermal in the UK is people wanting to ‘do the right thing’.

### From SolarThermalWorld.org:

Although the long-awaited Domestic Renewable Heat Incentive (Domestic RHI) came into force in April 2014, sales volume decreased again last year for the fourth time in a row, down to 36,552 m<sup>2</sup> (-15 %). [...] the three major barriers:

- Cheaper and rapidly falling PV prices compared to solar thermal
- Lack of demonstration projects by large building developers
- Lack of sector coordination to remove market barriers



The application figures of the Domestic RHI confirm [...] the imbalance between the different renewable heating technologies. Solar thermal is still lagging behind a great deal in this year's statistic [...]. The growth in demand for newly installed solar water heaters is much lower than for biomass boilers or heat pumps.

The spending balance also shows an unequal distribution between technologies. According to the first year's balance covering 9 April 2014 to 31 March 2015 [...], Pound Sterling (GBP) 16.3 million were spent in total on renewable heat technologies, of which 55 % were spent on biomass, 41 % on both heat pump types and only 3 % on solar thermal. The administrators of the Domestic RHI responded to the unexpectedly high uptake of biomass boilers by using a so-called depression trigger. In April 2015, the tariff for biomass heat was reduced by 20 % to 0.0714 GBP/kWh, and it was planned to be reduced again by 10 % in October 2015 [...].

#### From STA:

The Renewable Heat Incentive (RHI) will continue to be funded until 2020, contrary to rumours that it might be scrapped altogether.

The RHI will provide £1.15bn of funding in 2020/21 and will also be reformed with a focus on value for money, saving around £700m. However, it's not clear yet exactly where these savings come from. There will also be budgetary caps providing a backstop on expenditure, meaning that if the forecast expenditure reaches the agreed budget, the Secretary of State will be able to take action to suspend the scheme to new applications. [...]The latest statistics for renewable heat show that in 2014 it provided 4.8% of the UK's heat, against a DECC target of 12% in 2020.

#### More information:

<http://www.iea-shc.org/country-report-united-kingdom>

<http://solarthermalworld.org/content/iea-shc-20-country-profile-analyse-market-and-industry-development>

<http://solarthermalworld.org/content/great-britain-performance-two-uk-renewable-heat-incentive-schemes>

<https://www.ofgem.gov.uk/>

[www.gov.uk/government/organisations/department-of-energy-climate-change](http://www.gov.uk/government/organisations/department-of-energy-climate-change)

<http://www.solar-trade.org.uk/renewable-heatays-chancellor/>

## ITALY

### Key elements:

- Market contracting in 2014. Economic crisis, support schemes bottlenecks and building sector slowdown main causes.
- Two main incentives: tax deductions and support scheme (Conto Termico)
- User-friendly tax deductions have been gradually reduced from 2014 on (from 65% to 36%).
- Support scheme underperforming so far. Reviewed in 2015, scope and budget extended, red tape tackled.



### ESTIF Market Statistics:

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. The scheme supported the installation of 38 257 m<sup>2</sup> 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.

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<sub>th</sub> (268 500 m<sup>2</sup>) 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.

### From IEA-SHC:

Building regulations for energy efficiency support the adoption of solar thermal systems in new buildings. But the market for new construction performed weakly in recent years (0.5-0.7% growth p.a.). As a consequence the technology penetration remains low.

In Italy two incentives support solar applications:

- The national tax deduction scheme has been active for several years and mainly addresses persons. The scheme started in 2008 with an impressive growth in applications, and it is considered by the industry as a major measure in these economically depressed phases. The schemes support energy efficiency measures, as well as the installation of solar thermal systems. From the 2013 it has increased the deduction to 65% of the investment costs over 10 year. It successfully supports energy efficiency and solar measures, in particular solar systems for DHW production.



- The new incentive scheme for renewable energy ("Conto Termico" or thermal account) started in early 2013 supports the adoption of energy efficiency and solar technologies for individuals and public buildings and is dedicated to private and public users. It supports other renewable technologies: solar heating and cooling systems, installation of solar protection devices (including automation), heat pumps (including ground coupling) and biomass. Also innovative solutions, like solar cooling and ground coupled heat pumps, are funded within the scheme. Because of the low success (only a minimum percentage of the available fund were used) this incentive is currently in a phase of changing (in particular for the simplification of the application process).

National and local energy regulation are in force for new and renovated buildings in Italy. They fix performance targets mainly focused on space heating and domestic hot water consumption. Such regulation have a very limited impact on the penetration of solar buildings or solar technologies in energy efficient buildings.

Current energy prices and consumer bills are not yet helping the market transformation. Financial incentive schemes are more efficient in driving such transformation. [..]

Calls for energy efficiency and renewable integration in buildings are published by the Ministry of Environment, Ministry of Economic Development and local authorities based on availability of funds. Specific funds are dedicated to the depressed area of southern Italy.

#### Reform of 'Conto Termico':

The main changes introduced in the 2015 reform of the support scheme are the following:

- Red tape for local authorities applying for support is diminished;
- Social cooperatives included in support for local authorities;
- Budget remains the same as previous edition (900m EUR, 700 earmarked for private sector, 200 for public sector);
- 3 new intervention categories for public sector: transformation into NZEB, efficient lighting, building automation and smart metering;
- RES in heating & cooling maximum size supported growing from 1 MW to 2 MW;
- Energy efficiency for building investments covered up to 55% (from 40%) if combined with heating equipment modernization;
- Energy audits for transformation into NZEBs are covered up to 100% for public administrations and up to 50% for private sector;
- Amounts inferior to 5 000 EUR will be given in a single rate;
- Final rate after conclusion of the procedure to be given after max. 90 days (from previously 180 days).
- Application documents and procedures are to be standardized and simplified;
- A list of certified solar thermal collectors up to 35 kW and 50m<sup>2</sup> is to be drawn, which will have a priority, semi-automatic standard procedure for the application to the fund. Applicants selecting a collector from the list will not need to indicate technical details of the product.

More information:



<http://www.iea-shc.org/country-report-italy>

<http://www.qualenergia.it/articoli/20160121-decreto-nuovo-conto-termico-le-novit%C3%A0-del-testo-approvato>

<http://solarthermalworld.org/content/italy-first-18-months-results-conto-termico-subsidy-scheme>

## THE NETHERLANDS

### **Key elements:**

- Stagnating market for solar thermal. Strong barriers and competition.
- Large solar thermal systems supported under feed-in tariff premium scheme (SDE+) working with tenders putting all RES in competition. Solar thermal disadvantaged by scheme design.
- Building regulation code main market driver for solar thermal
- New subsidy scheme for solar thermal currently debated.

### **From IEA-SHC:**

The main market drivers is the building regulation for new buildings. The regulation requires a certain performance level and solar water heaters help to reach the requirement. There is a lot of competition from other technologies like PV. For existing buildings there is an energy label, but there are no demands to the required performance. Most installers are still not very active in selling solar water heaters. Hot water is mostly produced with efficient gas boilers and gas is cheap. It is therefore difficult for solar water heaters to be cost competitive. The main sales in existing buildings is with owners who specifically chose a solar water heater for environmental reasons.

Large systems (> 100 m<sup>2</sup>) can benefit from a feed-in tariff from the SDE+ scheme, but this has little effect up to now. The subsidy scheme for solar water heaters was ended in February 2011. Commercial businesses can still benefit from the tax-reduction for energy investments (EIA), which comes to about 15% of the investment costs.

A new support scheme is the SDE+. This is a feed-in tariff that has been expanded to include large (>100 m<sup>2</sup>) solar heating systems. The feed-in tariff works with a tender system. The tariff is between €0 and €20 per GJ produced useful heat. For solar buildings the main incentive is the building regulation and local climate policies.

### **From SolarThermalWorld.org:**

The newly installed collector area in the Netherlands has not grown by a significant margin since 2011, and it even decreased slightly in 2013 (see the chart on the left). According to the Dutch industry association Holland Solar, this is to be considered a fair outcome, as the number of new residential construction permits has declined in recent years. Residential construction is by far the most important market for solar thermal technology in the country. [..]

Prospects for 2015 are quite good, as the first quarter revealed 90 % more building permits compared to the same period in 2014 and the number of newbuilds increased by 11 %. This recuperation of the residential construction sector might contribute to a growth in solar thermal sales. [..] But this potential is far from being



16ulfil16 properly. The experts believe that 20 % of the total heat demand could be provided by solar thermal, whereas today it accounts for only 1 %.

### **National subsidy scheme SDE+ disadvantages solar thermal**

Holland Solar has often – but so far, unsuccessfully – called for an equal treatment of solar heating and cooling and photovoltaics in the national renewable energy promotion programme SDE+ 2015. SDE stands for Stimuleren Duurzame Energieproductie (Stimulating Sustainable Energy Production), a national subsidy scheme which has been in force since 2008 and was amended several times.

The programme provides feed-in tariffs for all sorts of renewable technologies, as well as combined heat and power plants, but only includes solar thermal installations of more than 100 m<sup>2</sup>. Most solar thermal heating installations in the Netherlands, however, do not meet the size requirement, but range from 20 to 100 m<sup>2</sup>. Solar thermal installations must have a capacity of 70 kW in order to profit from SDE+, whereas photovoltaics installations only have to provide about 15 kWp. Hence, there are very few solar thermal applications within SDE+. In 2013, there were five solar thermal applications with a grant volume of EUR 1 million out of a total budget of EUR 3 billion. Regarding 2014, statistics show 14 solar heating projects with a total support of EUR 3 million as part of the EUR 3.5 billion funding.

If the Dutch government wants to meet the minimum targets for renewable energy, solar thermal technology will have to expand drastically over the coming years. [...] There have already been two stimulating factors: The foster growth in the construction sector and the regulation for energy efficiency in new construction which makes zero-energy houses obligatory by 2020.

#### More information:

<http://www.iea-shc.org/country-report-netherlands>

<http://solarthermalworld.org/content/netherlands-ambitious-targets-sluggish-market>

[www.hollandsolar.nl](http://www.hollandsolar.nl)

<http://english.rvo.nl/subsidies-programmes/sde-publications>

## SLOVAKIA

### **Key elements:**

- Dormant market for solar thermal up until 2015
- New support scheme introduced in December 2015

#### From SolarThermalWorld:

The long-awaited support scheme for the utilisation of renewable energy sources in residential buildings, **Green Homes**, was launched on 1 December 2015 [...]. With the EU-funded programme, the Slovak government intends to get homeowners to transform their energy supply ecologically. Any kind of small-scale renewable technology is eligible for the programme. Not only residential homeowners will get back up to 50% of their project costs, but also associations of flat owners are eligible for financial support, whereas companies are not entitled to any incentive. [...]





The delay in implementation was caused by a two-phase preparation period. According to the Slovak Innovation and Energy Agency (SIEA), the first phase had been used to register qualified products and the second phase to establish a list of qualified installers. [..]

The Green Homes programme will be implemented during several allocation periods. [..] the budget allocated during the first grant period was EUR 3.25 million, of which EUR 470,000 went to the region of Bratislava and EUR 2.78 million to the rest of the country. [*The government*] seems satisfied with Slovaks' great interest in the programme. In January 2016, the second round will be launched, and it will have a higher amount allocated [..]. Until 2018, a total for EUR 45 million should be granted to residential building owners who wish to install renewable energy systems, including solar collectors.

#### **472 SWH vouchers issued after four-day allocation period**

Before submitting their application, homeowners should already know what kind of installation they want and which size the system will have, since the amount of support depends on the installed solar thermal capacity of the individual installation [..]. Single-family homes receive 500 EUR per kW of solar thermal capacity, capped at EUR 1,750. Owners of blocks of flats receive 350 EUR/kW for systems of up to 20 kW and 450 EUR/kW for systems of more than 20 kW. The power of a particular collector in Watt is taken from the Solar Keymark certificate [..].

Applicants receive a voucher entitling them to buy and install a renewable energy system and can choose among the installers registered with SIEA. To obtain an accreditation as a supplier, companies have to be registered in Slovakia or another EU member country, whereas their solar collectors have to be certified by Solar Keymark. [..] According to the communications officer, the highest interest in the first round was sparked by photovoltaics. Solar collectors took second place, whereas heat pumps ranked third and biomass boilers last.

More information:

<http://solarthermalworld.org/content/slovakia-solar-collectors-second-most-favourite-choice-green-homes>

[www.siea.sk](http://www.siea.sk)

[www.zelenadomacnostiam.sk](http://www.zelenadomacnostiam.sk)

## **AUSTRIA**

### **Key elements:**

- Declining market up until 2014
- New federal incentive programme launched in summer 2015
- Market decline gradually stabilising over second half 2015

ESTIF Market Statistics:



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. [...] in 2015 the market decreased 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

From IEA-SHC:

The main market driver is still the environmental awareness of the population, but also subsidy schemes, which are in place in all provinces of Austria and also on federal level. For large-scale systems a special subsidy program has been in place since 2010.

From SolarThermalWorld.org:

The market report 'Innovative Energy Technologies in Austria. Market Development 2014' published by the Austrian Federal Ministry for Transport, Innovation and Technology (bmvit) shows that in 2014, the national solar thermal industry had to deal with declining sales for the fifth time in a row. The solar thermal market in Austria dropped by 15 % from 2013 to 2014, resulting in a total annual volume of 108.6 MW<sub>th</sub> (155,170 m<sup>2</sup>) last year. [...] According to recent data by the industry association Austria Solar on the first two quarters of 2015, the decline seems to be slowing down, partly because of a new federal incentive programme.

According to the market report, flat plate collectors account for 97 % of Austria's market volume. The total production volume of solar collectors was 556.5 MW<sub>th</sub> (795,056 m<sup>2</sup>), which is half of the production volume in 2009. With an 82 % share, export was still the main driver of the solar thermal industry. But deliveries to the main export markets (Germany, Italy, Spain, and Portugal) shrank, which means total export figures fell by 18 % versus 2013. [...] The solar thermal sector generated a turnover of EUR 255 million, of which EUR 134 million was made with solar thermal plants installed domestically (including system assembly and installation) and EUR 121 million with exports.

Despite the market decline, the round about 500 m<sup>2</sup> per 1,000 inhabitants is still leading in Europe in terms of total solar thermal collector area installed per capita. Regarding new installations per head, Austria had far surpassed any other country in Europe until 2012.

**Best federal incentive for residential solar heat – ever**

During the summer of 2015, the situation seems to have improved a bit. [...] Both quarters combined again showed a decline of 15 % compared to the same period last year. A national incentive scheme for solar thermal energy and industry efforts have slowed down market decline [...]

In Austria, incentives for solar thermal are often part of the housing subsidies, which are the responsibility of the nine federal states and vary widely from state to state. Still, it is the second time now that there exists a federal incentive. From 24 February 2015 to 30 November 2015, Austrian consumers can apply for grants directly at the Austrian Climate and Energy Fund. The government calls it a "mass incentive programme". Conditions have significantly improved compared to the last federal incentive scheme back in 2012. Instead of EUR 350 for any kind of system, the current programme offers EUR 750 for solar water heaters (with at least 5 m<sup>2</sup> of collector



area) and EUR 1,500 for solar heating systems. The programme budget is EUR 9.1 million, which would be enough money for more than 6,000 solar heating plants or more than 12,000 hot water systems. Based on hot water systems of 5 m<sup>2</sup>, the budget would equal 60,000 m<sup>2</sup> of solar collectors. There has not yet been any data on the current number of applications, but the programme has so far not run out of cash. The federal incentive can be combined with federal state and community incentives if the state allows it.

More information:

[www.klimafonds.gv.at/foerderungen/aktuelle-foerderungen/2015/solaranlage...](http://www.klimafonds.gv.at/foerderungen/aktuelle-foerderungen/2015/solaranlage...)

[www.solarwaerme.at](http://www.solarwaerme.at)

<http://solarthermalworld.org/content/austria-hope-market-decline-slowdown>

<http://www.iea-shc.org/country-report-austria>

## GREECE

### Key elements:

- Booming market in 2014, despite the crisis.
- Stability in incentives measures.
- Opportunity for a new domestic tax reduction scheme being investigated.

### ESTIF Market Statistics:

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 MWth, which represents 270 000 m<sup>2</sup> 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 GWth (4.3 mio m<sup>2</sup>), 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.

### From RES-Legal:

RES-H&C is supported by a tax relief, a number of national programmes and a new investment law. Tax relief is granted for the installation of renewable boilers or the replacement of existing fossil heating boilers with renewable ones. The Programme “Exoikonomisi kat’oikon” supports measures to increase the energy performance of buildings through the provision of interest-free loans and subsidies for the installation of RES plants. Apart from that, the new investment law (Law No. 3908/2011) supports the installation of RES- H plants. Law No. 3908/2011 (known as Investment Law) does not clearly state that RES related projects should be supported; however, support may be provided under the provisions of art. 6 (General Investment Plans). Art. 6 distinguishes between three types of general investment plans: General Entrepreneurship, Technological



Development and Regional Convergence plans. RES projects are eligible for funding if they come under one of the categories below.

From SolarThermalWorld.org:

Greece's solar water heater manufacturers have proved to be highly resilient at a time when the country is in economic crisis. The collector manufacturers were able to increase both domestic (+19 %) and export (+16 %) sales in 2014, according to the Greek Solar Industry Association, EBHE. The industry provides a high level of vertical integration and exports 50 % of its annual production volume. [...] At the beginning of the year, the association [...] commissioned [...] a survey on the economic impact of a domestic tax reduction scheme.

More information:

<http://solarthermalworld.org/content/greece-tax-incentives-benefit-national-economy>

<http://www.res-legal.eu/search-by-country/greece/single/s/res-hc/t/promotion/aid/subsidy-subsidy-combined-with-tax-exemption-1/lastp/139/>

[http://www.estif.org/fileadmin/estif/content/market\\_data/downloads/2014\\_solar\\_thermal\\_markets\\_LR.pdf](http://www.estif.org/fileadmin/estif/content/market_data/downloads/2014_solar_thermal_markets_LR.pdf)

<http://iobe.gr/>

<http://www.ebhe.gr/>

## POLAND

### **Key elements:**

- Declining market in last few years.
- Established support scheme (NFOSiGW) extinguished after 5 years of operation.
- Scheme replaced by new one (Prosument) running from 2014 to 2022.
- New scheme more restrictive and far less attracting for solar thermal, giving priority to electric sources.

### ESTIF Market Statistics:

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 MWth (260 000 m<sup>2</sup>). A reduction of 20% 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 GWth (1.7 mio m<sup>2</sup>). 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 NFOSiGW 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 have been published in September 2015.



From SolarThermalWorld.org:

The Polish solar thermal industry is going through difficult times right now. At the end of December 2014, the National Fund for Environmental Protection and Water Management, NFOŚiGW, approved the last applications for the national residential incentive programme. The follow-up financial mechanism, Prosument, is a lot less attractive and has not really started yet for solar thermal. In contrast to the previous long-term subsidy scheme, which focused on solar heat, Prosument basically subsidises renewable sources of electricity. Solar thermal is only accepted in combination with an electric source, e.g., heat pump + PV or solar thermal collector + PV [..]. The programme was first introduced as a two-year interim programme, but has now been turned into a nine-year scheme running until 2022. Polish Zloty (PLN) 800 million (EUR 187 million) is available in funding [..].

The expiring solar thermal subsidy scheme had a budget of PLN 450 million for 2010 to 2014 (EUR 105 million). According to NFOŚiGW, only PLN 81 million was left for the year 2014, whereas the available budget had almost been twice as much in the year before [..].

The national fund supported 67,363 projects with a total grant volume of PLN 449.562 million during August 2010 and the end of December 2014. This includes 55 multi-family houses, whose owners received a total of PLN 2.5 million. The average bank loan of a residential solar water heater was PLN 14,759 (around EUR 3,440); the average project amount for a multi-family building was PLN 102,281 (around EUR 23,843). [..]

There have not yet been any statistics on the Prosument programme, because NFOŚiGW only started to process applications at the end of 2014. According to the NFOŚiGW press office, the scheme is being implemented in three ways:

- Via local communities: An official call for applications in April 2014 collected twelve applications with a total budget of PLN 62.5 million PLN (mostly for photovoltaics and not solar systems). No contract had been signed until the middle of December 2014.
- By using regional funds for environmental protection: Seven applications with a total budget of PLN 85 million have been signed, and the first regional funds started their call for applications at the end of the year. Only two of them decided to accept applications from individuals. The majority focuses on housing cooperatives.
- Through banks: This is how the previous solar water heater programme was executed. Banks are expected to start calling for applications in April or May 2015.

More information:

<http://nfosigw.gov.pl/srodki-krajowe/programy/prosument-dofinansowanie-m...>

<http://nfosigw.gov.pl>

<http://solarthermalworld.org/content/poland-renewable-heat-renewable-electricity-funding>

<http://solarthermalworld.org/content/prosument-long-term-support-scheme-renewable-technologies-poland>

## SPAIN

**Key elements:**

- Declining market up until 2014, stabilisation since.
- New regional incentive programme launched in 2014 in Andalusia



- New national support scheme for energy efficiency in buildings (Pareer-Crece) in place in 2015
- New national support scheme for large RES heating & cooling systems (GIT)
- Main driver for solar thermal remains building codes.

#### ESTIF Market Statistics:

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 MWth, 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 MWth (143 000 to 178 500 m<sup>2</sup>). 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 MWth in 2014). By the end of 2014, the installed capacity in Spain totalled 2.24 GWth, an increase of 9% over a one year period. This installed capacity represents an estimated 2.24 TWhth of heat generation, only 20% of the 2020 target for solar thermal set by the Spanish government.

#### From IEA-SHC:

Since 2006, the Spanish Technical Building Code imposes the coverage of a portion of DHW in every building. This code is to be revised to include other forms of renewable heat and the inclusion of district heating and cooling networks.

In the Spanish Renewable Plan until 2020 it is also considered to develop some public incentives to the commercialization of renewable heat. A recent regional program for solar heat in Andalucía has produced an increase of the market during 2014 close to 9%

The main strategic plan regarding solar thermal is performed by the Institute for Energy Savings and Diversification (Instituto para la Diversificación y el Ahorro de la Energía, IDEA). It is included in the National renewable plan (actually developed until 2020 and called "Plan de Energías Renovables 2011-2020"). The most important support measure for solar buildings comes from the Spanish Building Technical Code. Building energy labelling will be mandatory starting the 1<sup>st</sup> of June of 2013 for all buildings to be sold or rented.

#### From SolarThermalWorld.org:

On 5 May 2015, the Ministry of Industry, Energy and Tourism approved the so-called PAREER-CRECE programme (Programa de Ayudas para la Rehabilitación Energética de Edificios existentes), a support scheme for increasing the energy efficiency of existing buildings. Since this very day, investors of solar thermal systems can apply for grants of up to 20 % of their investment costs.

#### More information:

<http://www.idae.es/index.php/id.858/reImenu.409/mod.pags/mem.detalle>

[http://www.solarthermalworld.org/content/subsidy-scheme-renewable-heat-and-energy-efficiency?\\_ga=1.243364609.585165144.1446799436](http://www.solarthermalworld.org/content/subsidy-scheme-renewable-heat-and-energy-efficiency?_ga=1.243364609.585165144.1446799436)



<http://www.iea-shc.org/country-report-spain>

[http://www.estif.org/fileadmin/estif/content/market\\_data/downloads/2014\\_solar\\_thermal\\_markets\\_LR.pdf](http://www.estif.org/fileadmin/estif/content/market_data/downloads/2014_solar_thermal_markets_LR.pdf)

## NORWAY

### Key elements:

- Dormant market up until 2015. Strong barriers and competition.
- Existing support scheme improved
- Increased market interest for solar thermal in 2015

### From SolarThermalWorld.org:

In January 2015, the Norwegian energy agency ENOVA improved the national subsidy scheme that grants energy efficiency technologies as well as renewable energies in the residential sector since 2008. Since 2015 the applicant has a legal right for the funding if the household fulfils all eligible criteria. This is called “rettighetsbasert” in Norwegian, which could be translated to „rights-based“. Households enjoy a financial support of 25 % of the documented total expenses (including VAT). For a solar heating system a maximum refund of NOK 10,000 can be given, plus NOK 200 NOK/m<sup>2</sup> up to 25 m<sup>2</sup> collector area.

### From IEA-SHC:

Hydropower has been the main source of electricity generation in Norway, meeting roughly more than 95% of the demand. Electricity is also widely used for heating purposes, both space heating and DHW. A relatively low electricity price level is the main explanation for why the market for solar thermal systems is relatively limited, although increased market interest and activity is noted since early 2013. An important competitor in the small segment, especially for single family houses, are heat pumps (mainly air/air) and in some instances small biomass fueled systems.

Enova SF, a public agency established to improve energy system efficiency and increase renewable energy production, has offered households financial support for investments in solar thermal energy since 2008.

Norway has goals to increase renewable energy production, energy efficiency and reduction of greenhouse gas emissions. [...] Revised energy regulations for new buildings are being developed (TEK 2015). Incentive programs are mostly technology neutral. Consequently, there is no particular target for solar energy.

- Financial support schemes: Enova SF is a public agency established to improve energy system efficiency and increase renewable energy production. Since 2008, Enova has offered households financial support for investments in solar thermal energy
- (Building) regulation: Through the national building codes, new and refurbished buildings are required to have a certain heating capacity based on renewable energy aside from (hydro) electricity. This means in practice some solutions based on biomass or heat pumps. But in some cases solar energy is utilized.



European  
Solar  
Thermal  
Industry  
Federation

There is increased interest in solutions where heat pumps and solar thermal capacity are linked to make use of seasonal heat storage.

More information:

<http://www.iea-shc.org/country-report-norway>

[http://www.solarthermalworld.org/content/residential-support-programme-norway?\\_ga=1.243364609.585165144.1446799436](http://www.solarthermalworld.org/content/residential-support-programme-norway?_ga=1.243364609.585165144.1446799436)



## Comparative analysis

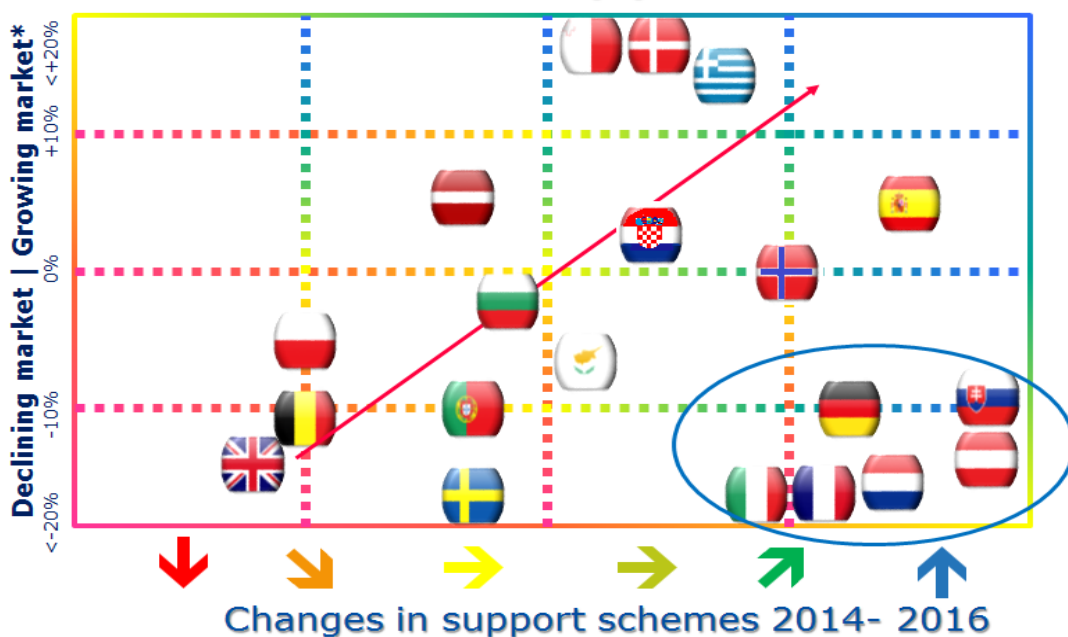
Across Europe, the solar thermal markets are behaving in very different ways. Factors influencing this diversity are many. The persistence and depth of the economic crisis, the slowdown in the building sector, uncertainties and step backs in support schemes, the competition with alternative RES technology and dominant traditional fuels in a period of low oil prices are just a few of them. The interrelation between such factors are even more complicated.

In some countries such as Italy and Portugal, the economic crisis is severely impacting the market, while in other countries equally hit by the crisis, such as Greece and Malta, the solar thermal market managed nonetheless to grow significantly. Some countries with established support schemes and policies did perform badly in the last few years (such as Austria), while other countries thrived while maintaining their policies and incentives at a constant level (Denmark, Malta). Several countries did upgrade or expand their support schemes during the period 2014- 2016 (France, Italy, Germany most notably), while being affected by severe market conditions.

The decision to improve and expand specific support schemes for solar thermal can be linked both to market performance of the technology, or of the whole renewable heating and cooling sector when support schemes address those multiple technologies altogether. Such decisions should also be seen in the light of the more general economic performance of a country, whereas new austerity measures and budget restraints following the economic crisis might severely impact governments' capacity to increase or even maintain a particular support scheme. It is also to be taken into consideration that some austerity-bound countries might have had the need to reduce their incentives before 2014, and then decided to react to several years of market decline by changing direction and increasing support. It may well be the case of Spain, for instance.

Moreover, policy choices in terms of supporting solar thermal technology must also be read in the light of countries' own energy resources, existing infrastructure and strategic priorities, as well as in the light of political parties dynamics and citizens' preferences, level of information and sensitivity to environmental issues.

## Solar Thermal support schemes



\*Data from last available figures: 2014. Decline/growth based on sales of 2014 over 2013.



↑	New scheme introduced
↗	Existing scheme increased
→	Existing scheme maintained
→	No scheme in place
↘	Existing scheme reduced
↓	Existing scheme eliminated

It is therefore interesting to compare countries according to their different market situation and approaches towards solar thermal support schemes. The above graph depicts such comparison: on the vertical axis, countries are rated according to their market performance in 2014, as evolution vis-à-vis the previous year, while on the horizontal axis countries are rated according to their policy interventions to support solar thermal, during the years from 2014 until now.

Some observations are clearly noteworthy:

1. The majority of the countries are in the 'declining market' half of the graph according to the vertical axis.
2. The majority of the countries are in the positive half of the graph according to the horizontal axis.
3. Countries can be grouped into two groups: the 'red arrow' group and the 'blue circle' group.
4. Countries on the red arrow group show a tendency to gradually perform better in one axis the more they also perform better on the other axis.
5. Countries on the blue circle show a tendency contrary to the previous observation, whereas such countries are badly performing in the market and also improving their support schemes.
6. Countries with positive market performances in 2014 tend to react by keeping their incentives stable or increasing them.
7. Countries with negative market performances in 2014 are equally split between those reacting positively the following years (increasing incentives or creating new support schemes, such as France and Italy in 2015) and those reacting negatively (still without incentives, or decreasing the existing support schemes, such as UK in 2015).
8. Blue circle countries' support increase could be read as a tentative from national government to redress a particularly negative situation in the market.
9. Countries' distribution do not match exactly with an 'austerity' cleavage: there are austerity-bound countries both diminishing their incentives or with no incentive in place (Portugal), and increasing their support schemes or creating new ones (Italy, Spain). Similarly, there are less austerity-constrained countries both in the negative part of the axis (UK, Sweden), and in the positive part (Germany, Austria, the Netherlands).
10. Countries in the 'existing scheme maintained' column are those performing the best.

In light of these observations, it would be interesting to compare these results with the following years market trends (2015-2016), and assess if 'blue circle' countries' tentative to improve their market performance, via increased support schemes, has delivered. It will be also important to assess whether the market performance of countries on the bottom of the 'red arrow' group has further reacted to the negatively changed incentive framework.



## Conclusion

This section assessed the current situation and recent trends of support schemes for solar thermal across Europe, focusing on a selected number of countries which witnessed policy changes in the period 2014-2016. It demonstrated that, after several years of set-backs and support schemes downsizing, since 2014 some new support schemes and reinforced existing incentives are being promoted across Europe. The majority of the analysed countries are either keeping their incentives at a stable level, or they are increasing the scope and budget of their support schemes, or else are creating new ones.

This positive trend in terms of increasing support for solar thermal can be linked to two major circumstances. The first one is the current mostly negative situation in the market, which pushes concerned governments towards prompt reaction. The European solar thermal market is mostly covered by European industries, hence European jobs and European added value. Governments are increasingly recognising the potential benefits of having a solid and growing national solar thermal industry in place.

The second one is the overall EU political framework, whereas the achievement of the EU Climate and Energy 2020 goals and the international commitments in the follow up of COP21 in December 2015 are demanding to European countries a step further in their action in favour of a wide decarbonisation of all economic sectors. European countries are thus reacting to the changed EU landscape: heating and cooling has vigorously entered the EU debate, the European Commission has launched a Strategy on Heating and Cooling, with decarbonisation of the sector as the main goal. The role of renewables in this debate, together with energy efficiency, is prominent. If this improved policy landscape for solar thermal is providing a 'pull' dynamic for European countries, there is also a 'push' dynamic in place, provided by the compelling need to comply with the RES 2020 targets, which, as stated by the Commission in its RES Progress Report, are still way far below the planned trajectories as far as solar thermal is concerned. Member States are thus recognising the need to increase the path towards the decarbonisation of their heating and cooling sector, providing a growing share of renewables in the sector. Solar thermal is increasingly seen as an effective way to fully reach the EU climate and energy targets, as it will be impossible to meet them without a proper decarbonisation of the heating and cooling sector and an increased share of RES production from solar thermal.

Hopefully, countries which suffered from very negative solar thermal market performances, but took decisive and swift actions to restore their conditions improving their support policies, will manage to reboot growth for their solar thermal industries in the next few years. The worst ideal situation in which a country could find itself would be the one where a contracting market is met with further downsizing of the incentives and support measures. Such an outcome is likely to lead the market further backwards, depriving such a country from the benefits the solar thermal industry can bring to each European country, in terms of growth, local jobs, energy security and decarbonisation of the economy. Moreover, it would leave such countries short of achieving their 2020 energy and climate targets.

The increasing support for solar thermal across Europe shows that this technology is entrusted to deliver its full potential: markets need public support in order to tackle the existing barriers and uneven playing field in the heating and cooling sector, thus starting to grow again; while governments need functioning and dynamic solar thermal markets in order to deliver on their EU energy and climate targets.