

WP 4: THE REGIONAL STATE OF THE ART IN CRETE REGION



WP leader: FUNDITEC

JUNE 2013 3RD version

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1. A regional Solar Policies overview in Crete: preliminary state of the art and needs identification for the SHAAMS POLICY ACCELERATOR

Solar energy and renewable energy sources play today an important role in Crete, particularly for heat and power generation. Their uses include:

- a) Production of hot water with solar thermal systems. Various SMES in Crete manufacture such systems which are mainly used in houses and hotels.
- b) Power generation with PV systems installed in agricultural fields and building roofs.
- c) Wind farms which generate electricity for the grid and are mainly installed on hills and mountains.
- d) Solid biomass produced from local agricultural by-products and residues, which is mainly used for heat generation in buildings, greenhouses and small industries.

1.2 Institutional organisation of the solar sector

The solar energy sector in Crete consists of :

- a) Solar thermal applications for hot water production for various uses in buildings and hotels (bathroom, kitchen etc)
- b) Solar thermal applications focused on space heating, mainly using the techniques of bioclimatic architecture (passive solar buildings)
- c) Few solar thermal applications for space cooling with absorption cooling systems
- d) A solar thermal power plant (50 MWe) with parabolic troughs is planned to be constructed in the coming years in the eastern part of the island.
- e) Various photovoltaic installations with nominal power 80KWp mainly in agricultural fields.
- f) Various small PV installations 3-10KWp, mainly on the roofs of the buildings
- g) Few applications of solar drying of agricultural products
- h) In Crete there are various SMEs which manufacture solar thermal systems for hot water production. Also, there are other small companies which install PV systems and they maintain them regularly.



1.3 The energy/solar strategy in Crete

The energy solar strategy in Crete includes the following:

- a) Governmental financial incentives and attractive bank loans concerning energy saving in buildings and increased use of renewable in them
- b) Governmental financial and tax relief incentives concerning promotion of PV on the building roofs
- c) Governmental incentives for the promotion of solar power plants generating electricity.
- d) Incentives to hotels for installing solar energy systems in them.

1.4 Crete 2020 and the MED Solar Plan

1) Crete 2020

The 2020 National Renewable Energy Action plan scenario has the following targets:

	% of total electricity consumption
Photovoltaic electricity	4.2%
Solar thermal electricity	1%

	% of total heat consumption
Solar thermal heat	3.7%

National targets apply for the region of Crete.

2) The MED Solar Plan

The Mediterranean Solar Plan (MSP) aims at the promotion of solar energy as well as other renewable energy sources in MED basin with various supporting measures concerning:

- a) Institutional environment
- b) Financing and
- c) Technology transfer.

The general objective of MSP is the creation of new generation capacity of

20 GW from solar and other RES around MED sea by 2020.

MSP also includes efforts to control energy demand suggesting an objective of 20% energy saving or 60 Mtoe by 2020. According to the forecasts, the share of RES in North MED countries will reach 5.3% and in South will be lower in the range 3.3%.

According to International best practices there are some Key points in successful implementation RE and E.E. strategies.

First of all, there is not a unique instrument, but a successful use of a mix of proper articulated instruments.

Second, the means used by EU countries are aimed at meeting the commitments of the Kyoto protocol.

Third, there is a remarkable diversification of public incentives, particularly in finance.

The objective of MSP to reach 20 GW by 2020 is very ambitious taking into account the fact that to day in MPC less than 1% of electrical consumption is provided by RE (excluding hydro), which represents less than 1 GW of installed capacity.

Currently there are various serious difficulties for obtaining the objective of MSP for 2020.

First of all, the economic crisis results in limited availability of capital, which is needed for investments in large RES projects.

Second, the low oil and gas prices reduce the competitiveness of RES compared with fossil fuels.

Third, there is a lack of qualified engineers and other experts to promote RE projects.

In the island of Crete, solar energy, wind energy and solid biomass are currently used for heat and power generation. There are also minor applications of biogas, small hydro and geothermal heat pumps. According to recent data, RES contributed in Crete in 14% of total electricity consumption.

Main current applications of renewables in Crete include:

- a) Power generation with wind farms
- b) Power generation with PV
- c) Heat generation with solar thermal systems
- d) Heat generation with solid biomass

The Region of Crete does not have any Regional plan for reaching the objectives of MSP-2020. This is mainly due to the fact that Greece is a very centralized country, where decisions are made in the capital (Athens) and the regions do not have the opportunity to create their own policies. According to the National energy action plan, Greece aims to cover 20% of its energy consumption with renewable by 2020, exceeding the target set by the EU (18%) by 2%. Regarding electricity, it is estimated that in 2020, the consumption in Greece will

be 27.270 GWh and 39.8% of it will be generated from renewables. However, it should be noted that during the last years the severe economic crisis in Greece has limited the investments in RES projects, as well as the state subsidies to support them.

Crete has the privilege to have abundant solar and wind energy and the drawback that its power grid is isolated and not interconnected with the grid of continental Greece and EU.

Therefore, there are limitations to the installed capacity of renewable power plants due to grid stability reasons. In the future, it is foreseen that either pump storage power systems will be constructed in Crete, or an underwater electrical cable will connect Crete with continental Greece.

Currently, the power of the installed wind farms and PV systems in Crete does not exceed 250-300 MW_e and, as it has been mentioned previously, there are limitations to increase the installed power capacity in the island.

1.5 Barriers and facilitators to the strategy implementation: Analysis and results

All policy stakeholders agree on the following regarding the state of the art in Greece:

Information on renewable energy is adequately disseminated.

There are economic incentives for the installation of PV and solar thermal systems through grant schemes like the “Energy Efficiency at Household Buildings” Program, which is co-financed by the EU and aims at the implementation of energy efficiency upgrading interventions in residential buildings

The Program on the installation on PV panels on building roofs

The Program on the creation of PV parks

Concerning energy consumption in existing buildings, there are no building regulations concerning renewable energy, but the new building codes include obligations on energy saving and use of renewable.

1.6 SWOT analysis and results

	HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	STRENGTHS <ul style="list-style-type: none"> - Information on RES adequately conveyed - Some financial incentives on the installation of solar energy systems and other renewables already exist and work well 	WEAKNESSES <ul style="list-style-type: none"> - Very few solar cooling systems are installed - Fossil fuels are still widely used and will continue to be used in the next 5 years - Bureaucracy
EXTERNAL ORIGIN	OPPORTUNITIES <ul style="list-style-type: none"> - New building codes with requirements on energy saving installations - EU and national targets for future energy production from RES 	THREATS <ul style="list-style-type: none"> - The weak economic situation of the country, which results in lack of funding from the state to implement actions, as well as limited liquidity of the banks to finance new investments in solar energy

Following our contact and discussions with solar energy policymakers, we can see that they are well-informed on solar energy production and they already implement projects on solar energy systems successfully. In the next few years, the new building codes and their requirements on energy saving, as well as the EU

and national targets for energy production from RES will reinforce investments in the solar sector. On the other hand, bureaucracy and the wide use of fossil fuels have had a suspending effect on new solar energy investments, while the unstable economic situation of the country discourages all types of investments, including investments in RES systems.

1.7 Global conclusions for the policy accelerator in Crete region.

Today, solar energy finds various applications in Crete for power and heat generation. Various policies focused on capital subsidies, feed-in tariffs and tax reliefs resulted in the promotion of solar energy in Crete in the last years.

Remarkably, the very high feed-in tariffs for PV electricity resulted in boosting PV investments in the last 5 years, so the national target for the year 2020 regarding PV electricity has already been achieved, many years in advance.

Regarding PV power generation, which has been the most attractive type of investment in the regional level, our suggestions are:

- Continuation of the successful incentive of feed-in tariffs for PV power generation, where lower and realistic values should be imposed to assure sustainability
- Improve the existing infrastructure regarding the existing electrical grid as well as promote the interconnection of the electrical grid of Crete with the grid of continental Greece.
- Facilitation of installing solar PVs on building roofs by introducing a net metering system.
- Obligatory installation of solar PVs in public building roofs, considering also the support of third-party financing.

Regarding other solar technologies (solar thermal hot water production systems, solar thermal cooling, solar thermal space heating, solar thermal power generation, solar drying), it is estimated that there is room for increasing their energy share in Crete in the coming years, with various measures including:

- Financial incentives (state aid linked to the investing capital) for installing high capacity solar thermal systems to large consumers like hotels and industry.
- Support “new” (for the region) solar technologies, such as solar space heating and solar cooling, with measures such as state aid for the required investing capital, tax reliefs etc.
- Facilitation and simplification of the licences procedure for investments on solar thermal power generation

2. The SHAAMS ENTERPRISE RESEARCH ACCELERATOR in Crete region

2.1 The R&D for energy and the solar market in Crete

A number of R&D projects regarding solar energy are currently implemented in Crete, either with National or EU support. Regional Universities, Research Centers and SMEs are participating in these projects, whose aim is either to improve existing solar energy technologies or to enhance current solar energy policies, resulting in higher penetration of solar energy in Crete and Greece in general.

2.2 The R&D and the market strategies

R&D strategies currently focus on improving existing solar energy technologies, promoting innovations in solar energy and enhancing the cooperation among researchers and enterprises.

The solar energy market has a high potential for further increase in Crete and it is foreseen that the appropriate measures (as presented in section 2.5) will increase the share of solar energy in the local market. In this direction, various enterprises active in solar energy can grow further, not only selling in the local market but also expanding abroad.

2.3 Economic, market and financial barriers and facilitators to the strategy implementation: results and analysis

The research/enterprise stakeholders interviewed in Crete include 2 Universities and 8 SMES, of which:

- 60% have already adopted and used solar energy systems in their organization
- 50% have already implemented or been part of a solar energy grant program
- 70% have the intention to further invest on new or existing solar systems
- 70% employ staff specialized on solar energy systems

Regarding the two main difficulties they faced in implementing solar energy systems in their organization:

- All stakeholders identified as difficulty the lack of capital
- 20% referred to the complexity of the legislation
- 40% mentioned the cost efficiency of the investment.

2.4 SWOT Analysis

	HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	<p>STRENGTHS</p> <ul style="list-style-type: none"> - Solar energy is already being used, even in its simplest way - Climate of Crete/ strong sunshine 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - Legislation - Cost efficiency - Lack of capital - Commercialization process not still identified
EXTERNAL ORIGIN	<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - Stakeholders express an investing interest in solar energy - There is specialized staff in the market 	<p>THREATS</p> <ul style="list-style-type: none"> - The weak economic situation of the country, which results in lack of funding from the state to implement actions, as well as limited liquidity of the banks to finance new investments in solar energy

Following our contact and discussions with this stakeholder category, which includes the organizations which actually own and operate solar energy systems, i.e. Universities/Research centers and SMES, we can see that the majority of them employ specialized staff to run those systems. The main existing difficulties are the complexity of the legislation and lack of capital, but despite these difficulties they are willing to invest further in the solar energy sector. According to this stakeholder category, the most important threat of the market is financial uncertainty in a national level, which discourages all types of investments, including investments in RES.

2.5 Global conclusions for R&D and Enterprise in Crete region

There are currently various enterprises in Crete in the field of renewable energy sources focusing mainly on:

- a) Solar thermal energy (production & use of STS)
- b) Photovoltaic energy (Installing PV systems and generating electricity)
- c) Wind energy (installations of wind farms and generating electricity)
- d) Solid biomass
 - (- production of solid biomass
 - manufacturing of heating systems using solid biomass
 - installing heating systems using solid biomass)

Because of the ongoing economic crisis, the main problem solar energy R&D and enterprises in Crete face is the lack of capital and the low income of their potential clientele. Therefore, suggested actions should focus on their financial support, as well as on ways to reduce their costs. Examples of such measures are:

- a) Increase financing of solar energy R+D projects from EU or National funds.
- b) Establish a permanent cooperation among academic researchers and SMEs. Enterprises should communicate technical problems they face in their everyday experience and assign relevant projects to researchers, towards technological improvement and cost efficiency.
- c) Promote clustering of solar energy enterprises, in order to achieve economies of scale (joint purchasing of materials, joint R&D projects etc)
- d) Support the expansion of solar energy SMEs abroad (subsidize exhibitions costs, organize trade missions etc)
- e) State aid measures for the creation of new enterprises in the solar energy sector.

3. The SHAAMS SOCIAL ACCELERATOR in Crete Region

3.1 The public awareness in the Crete region

In Crete, public awareness regarding solar energy technologies has been both building up and expanding during the last 15 years. This progress has been achieved through various local events and articles in newspapers, targeting the general public. Moreover, numerous events have been taking place in primary and secondary schools, as well as in various municipalities, targeting both students and their families. Also, several seminars have been organized by professional organizations, targeting different professional groups, such as engineers, architects and solar energy systems installers.

3.2. The Partnerships and initiatives in the solar sector

In reference to the solar energy sector, several partnerships have been developed in Crete, involving mainly researchers, solar energy industry associations, the association of engineers and ecological parties. In addition, various municipalities in Crete participate in the EU initiative of Covenant of Mayors, promoting solar energy use in their municipalities.

3.3. The main barriers and facilitators to the public participation and the public awareness about solar energy: analysis of the results

The Social Stakeholders are mainly professional unions or organizations which interact with many different social groups and are considered to influence public opinion. Based on their answers:

The majority of social stakeholders questioned are adequately informed on the current use of solar energy and RES in general

Their expectations on the use of energy in 20 years are quite high

They believe that the main barriers of developing RES solutions are lack of information of civil society and lack of pressure from civil society to develop renewable energies

They stress the positive influence of public hearings, campaigns and educational activities would have on the future energy policy of the country

3.4 SWOT Analysis

		HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	STRENGTHS	<ul style="list-style-type: none"> - Many stakeholders are adequately informed and seem sensitized on the subject 	WEAKNESSES <ul style="list-style-type: none"> - Lack of information of civil society - Lack of pressure from civil society to develop renewable energies
	EXTERNAL ORIGIN	OPPORTUNITIES Social stakeholders are keen to participate in promotional activities for RES	THREATS The weak economic situation of the country, which results in lack of funding from the state to implement actions, as well as limited liquidity of the banks to finance new investments in solar energy

Following our contact and discussions with social stakeholders, we can see that they are informed on solar energy production and are keen to participate in promotional activities for RES. Lack of information and lack of pressure from civil society to develop renewable energies are spotted as the most important barriers to new solar energy investments, while the main threat is the weak economic situation of the country.

3.5 Global conclusions for the social sector in Crete region

The Social sector in Crete has created various activities regarding the promotion of solar energy in the region. These activities can be categorized as follows:

- Training of qualified engineers and scientists in sustainable energy issues
- Raising awareness among citizens
- Creating political pressures to various political parties regarding sustainable energies.
- Promoting various solar energy applications in daily life
- Raising awareness among young pupils particularly in primary schools.

In order to further activate social stakeholders towards the promotion of solar

energy in the regional level, suggested actions would be:

- a) Install demonstration solar technology systems in public sector buildings, so that both local authorities and the general public will realize the benefits of different types of solar energy technologies.
- b) Increase political pressure, both to the central government and to local authorities, to take measures towards the support of solar energy.
- c) More awareness-raising actions addressing different target groups (students, professionals, the general public) on the advantages of solar energy.
- d) More seminars and vocational training courses for specific target groups (engineers, PV installers, students of related fields etc) concerning solar energy technologies.

The aim of the following considerations is to examine various measures which can increase the use of solar energy in Greece and in the region of Crete. These measures will create a framework, different to the existing in various aspects, to include various pillars, like:

- a) Financial incentives for various investments in solar energy
- b) Improvement of the existing infrastructure to facilitate the use of solar energy
- c) New regulations promoting the use of solar energy in different sectors
- d) Actions to raise awareness among citizens

1. Existing applications in solar energy

The most widespread existing applications of solar energy in Crete and in Greece include:

1.a. Solar Photovoltaics

Solar PV have taken off the last five years in Greece due to high solar irradiance, as well as the successful PV promotion policies, by contrast to the severe economic crisis in the country.

Existing applications of solar PV in Greece include:

- PV installations on building roofs, mainly on house roofs, in the range of up to 10 KWp
- PV installation on fields, their capacity ranging from 20 KWp up to various MWp. The majority of them are in the range of 80-120K KWp.

1.b.Solar thermal applications for hot water production

In Greece, solar thermal applications for hot water production mainly in buildings have developed in the last 30 years, resulting in a high penetration of solar thermal

collectors in the country. This was achieved due to the country's high solar irradiance and thanks to the successful state policies at the initial stage of growth of solar thermal systems.

The development of solar thermal applications for hot water production has been supported by many small and medium manufacturing companies specialized in the manufacturing of such systems.

The majority of the existing applications of solar thermal systems for hot water production in Greece are:

- a) In household buildings
- b) In hotels (mainly season-operating)

On the contrary, there are not many applications in industry and agriculture.

2. New applications of solar energy

Innovations and improvements in solar energy technologies have resulted in new applications on solar energy in Greece, including:

- a) Solar thermal cooling
- b) Solar thermal space heating
- c) Solar thermal power generation
- d) Solar drying

Unlike solar PVs and solar thermal hot water production, these new applications of solar energy have not propagated widely in Crete and in Greece so far. However, the establishment of proper policies can assist and promote the abovementioned applications in the near future.

- a) Solar thermal cooling

Very few applications of solar thermal cooling systems (with absorption systems) exist currently in Greece, although there are financial incentives, i.e. state aid linked to the required investing capital. Technical innovations are expected to make these systems more attractive soon.

- b) Solar thermal space heating

Like solar thermal production for hot water, solar energy can be used for space heating in buildings. For the climate conditions in Crete, it is estimated that solar energy can cover a significant part of the energy needs in different types of buildings through active and passive systems; therefore, in combination with another fuel, it can be used efficiently for space heating in buildings.

It should be noted that, according to the EU Directive 2010/31/EU concerning "near zero energy buildings", solar thermal cooling and solar thermal space heating can be used to achieve these targets.

- c) Solar thermal power generation

Unlike solar PVs, solar thermal power generation has not been developed so far in Greece. However, there is an increasing interest in Crete and southern Greece for the installation of such systems. Technology improvements have resulted in more reliable and competitive solar thermal power systems, which will be used soon for power generation in Greece.

d) Solar drying

In Greece, solar energy has been used to some extent for drying agricultural and industrial products. Moreover, solar energy is used in other agricultural applications like greenhouses or soil disinfection. Since agriculture is an important sector of the Greek economy, solar energy applications can be used further in the future.

3. PROPOSALS FOR EXISTING APPLICATIONS

Although applications of solar PVs and of solar thermal production of hot water are currently very successful in Crete, further growth of these systems can be obtained with suitable policies, which are outlined below.

a. Solar PVs

In the past, fast growth of solar PVs was obtained with high feed-in tariffs, which are no longer sustainable for Greece. Further growth could be obtained with the following measures:

- Improving the electrical grid infrastructure

In many islands which are not interconnected with the electrical grid of continental Greece, it is not currently allowed to install more solar PVs exceeding a specific target, for electrical grid stability reasons. In the case of interconnection of these electrical grids in the future, more solar PVs could be installed in these islands.

- Continuation of the successful incentive of feed-in tariffs, where lower and realistic values should be imposed.
- Facilitation of installing solar PVs on building roofs by introducing a net metering system.
- Obligatory installation of solar PVs in public building roofs, considering also the support of third-party financing.

b. Solar thermal hot water production systems

Solar thermal systems for hot water production are quite developed in Greece. Their use could however be further increased, particularly with the application of EU Directive 2010/31/EU on zero energy buildings. Apart from the building sector, they can be applied in industry when process water of 50-80⁰ C is needed.

Further growth of solar thermal systems for hot water production can be obtained with the following measures:

- Obligatory installation of solar thermal systems for hot water production in public buildings
- Run informative campaigns addressed to the general public concerning solar thermal systems for hot water
- Financial incentives (state aid linked to the investing capital) for installing high capacity solar thermal systems to large consumers like hotels and industry.
- Tax relief measures concerning the installation of solar thermal systems for hot water production in households.

4. PROPOSALS FOR NEW APPLICATIONS

a) Solar thermal cooling

Solar thermal cooling applications have a high potential in Greece and other Med countries, since, when cooling is needed during the summer period, solar irradiance is high.

However, only few solar thermal applications exist today in Greece due to technical and economical reasons. For small and medium size applications, cooling systems are rather complicated and nit cost-effective. Therefore, further improvement of these systems is necessary, as is their demonstration to end users.

For further growth of solar thermal cooling systems, the following measures are needed:

- Installation of several demonstration systems in public buildings
- Promotion of R&D for solar thermal cooling systems
- Creation of governmental incentives for installation of solar thermal cooling systems
- Raising awareness of final users on the advantages of solar thermal cooling systems

b) Solar thermal space heating

Solar thermal space heating is not actually developed today in Crete and in Greece; only few systems exist, mainly for experimental reasons. Solar thermal energy can cover only a part of the annual heating needs of various buildings, however hybrid systems combining solar energy with solid biomass or another fuel can be used for this purpose.

Aiming in creating near zero energy buildings in the coming years, solar thermal systems can be used for space heating in a cost effective way (always in hybrid systems).

The following measures can assist the promotion of solar thermal space heating in Greece:

- Installation of several demonstration systems in public buildings
- Creation of governmental incentives for installation of solar thermal space heating

- Raising awareness of the general public on the advantages of solar thermal space heating

c) Solar thermal power generation

Solar thermal power generation in southern Greece can be achieved only in large power plants in the range of 30-50 MW. In the past, efforts have been made to create such plants in Crete but with no success. Currently, there is a proposed investment on a solar thermal power plant in eastern Crete, which can be operated in the next few years. For the promotion of such plants, the following measures are needed:

- Facilitation and simplification of the licences procedure of these investments.
- Improving the infrastructure of the electrical grid
- Offering realistic feed-in tariffs for selling the generated electricity to the grid.

d) Solar drying

Solar drying of products can find numerous applications in Greece. For the support of solar drying installations, suggested measures would be:

- Creation of few pilot demonstration systems with financial support from EU Structural Funds
- Offer of financial incentives for their use mainly in rural areas.
- Raising awareness of final users on the advantages of solar drying

5. Conclusions

Higher penetration of solar energy in the Greek market requires various measures concerning:

- a) Policy makers,
- b) Enterprises and research,
- c) Social sector,

including the following:

POLICY MAKERS

- a) Financial incentives for various types of investments in solar energy
- b) New regulations promoting the use of solar energy in different sectors (domestic, industry, tourism etc)
- c) Demonstration applications of solar technologies in public buildings
- d) Improvement of the existing infrastructure to facilitate the use of solar energy for power generation

ENTERPRISES AND RESEARCH

- a) Promotion of R&D in solar energy technologies by increasing financing of solar energy R+D projects from EU or National funds.

- b) Promotion of clustering among higher education and research Institutes and SMEs in the field of solar energy technologies
- c) Support of investments and creation of new enterprises in the field of solar energy technologies
- d) Support the expansion of solar energy SMEs abroad (subsidize exhibitions costs, organize trade missions etc)

SOCIAL SECTOR

- a) Install demonstration solar technology systems in public sector buildings, so that both local authorities and the general public will realize the benefits of different types of solar energy technologies.
- b) Increase political pressure (political activities, lobbying to politicians), both to the central government and to local authorities, to take measures towards the support of solar energy.
- c) Awareness-raising actions addressing different target groups (students, professionals, the general public) on the advantages of solar energy.
- d) Organizing seminars and vocational training courses for specific target groups (engineers, PV installers, students of related fields etc) concerning solar energy technologies.

4. SHAAMS common indicators for the sectors analysis.

Indicator	Category	Exists by end of 2011	Exists by end of 2012	Exists by end of 2013	Exists by end of 2014	Exists by end of the project	Notes
Region of reference: Crete							
1 - N° of solar systems in the region	Solar thermal power	0	0	0	0	0 or 1	One investment is in the stage of licence approval
	Solar thermal application in hot water, space heating, drying, solar cooling	151MW	153MW	155MW	158 MW	160 MW	Mainly DHW systems
	Solar PV systems	40MW	92MW	120MW	140MW	150MW	
	Installed power per capita	0,32KW	0,41KW	0,46KW	0,50KW	0,52KW	
2 -Total investments in solar energy in your region	Grant schemes to support private investments	YES	YES	YES	YES	YES	a)EU structural funds b) National development law for promotion of investments
	No of solar systems in public buildings	12	18	26	38	52	Mainly in schools
	Money invested on raising awareness (training, communication)	80.000 Euro	74.000	90.000	85.000		Money spent each year mainly for training
	Which technology does the state support?	PV	PV	PV	PV	PV	Mainly PV and in a small extend DHW systems
3 – Total solar energy production in your region	Total energy generated from the solar energy	188GWH	268GWH	312GWH	346GWH	363GWH	
	Total energy generated by solar energy per capita	0,31MWH	0,45MWH	0,52MWH	0,58MWH	0,60MWH	