~ Project ~

Tech4CDM

Solar Thermal Energy

In MEXICO

Project financed by

SIXTH FRAMEWORK PROGRAMME

The TECH4CDM project, developed over 2008 and 2009, and financed by the European Union under the Sixth Framework Programme of R&D, has as its primary goal, the promotion of renewable and efficient energy technologies, paying special attention to overcoming technological barriers, as well as the analysis of the Clean Development Mechanisms (CDM) of the Kyoto Protocol that may assist in projects based on wind energy, cogeneration, solar thermal and rural electrification through renewable energies.

Both European and Latin American institutions participate in the project, which is coordinated by the Spanish Institute for Energy Diversification and Saving (IDAE). The technological partners participating in the project include: the European Photovoltaic Industry Association (EPIA), the Spanish Wind Energy Association (AEE) and the Solar Thermal Industry Association (ASIT). In the case of cogeneration, the participation of COGEN Spain is essential, as well as that of the Spanish Office for Climate Change (OECC) for the part related to the CDM.

The 5 countries where the project activities are being carried out are Argentina, Chile, Ecuador, Mexico and Peru, and in each of these, local partners contribute, assuring the maximum use of these collaborating forces. Participating entities include: the Secretariat of Energy and the Industrial Union of Argentina, the National Energy Commission (CNE) of Chile, the Ministry of Electricity and Renewable Energy (MEER) of Ecuador, the National Commission for the Efficient Use of Energy (CONUEE) of Mexico and the Centre for Energy Conservation and Environment (CENERGIA) of Peru.

Project activities include the completion of a series of studies of the technologies situation in each country. This document summarizes the main features.

More information at www.tech4cdm.com

Contents

1. MEXICO

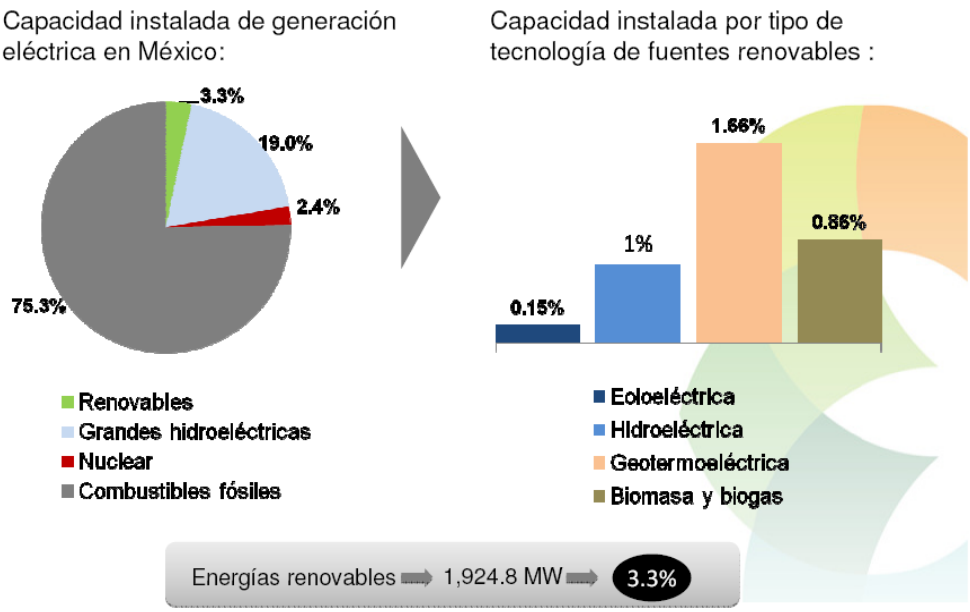
Most relevant information of Mexico is shown on the next table:

MEXICO	2000	2005	2007	2008
General Data				
Population, total (millions)	97,97	103,09	105,28	106,35
Population growth (annual %)	1,4	1,0	1,0	1,0
Surface area (sq. km) (thousands)	1.964,4	1.964,4	1.964,4	1.964,4
Energy and Environment				
Energy use (kg of oil equivalent per capita)	1.533	1.713	..	..
CO2 emissions (metric tons per capita)	3,9	4,1	..	..
Electric power consumption (kWh per capita)	1.794	1.968	..	..
Economy				
GDP (current US$) (billions)	581,43	846,99	1.022,82	1.085,95
Agriculture, value added (% of GDP)	4	4	4	4
Industry, value added (% of GDP)	28	34	36	37
Services, etc., value added (% of GDP)	68	62	60	59
GDP growth (annual %)	6,6	3,2	3,2	1,8
Inflation, GDP deflator (annual %)	12,1	4,4	4,7	6,5
Exports of goods and services (% of GDP)	31	27	28	28
Imports of goods and services (% of GDP)	33	29	30	30
Foreign direct investment, net inflows (BoP, current US$) (millions)	17.942	20.945	24.686	..

Mexican information (Source: World Bank).

2. MEXICAN ENERGY CONTEXT

By the end of 2008, the installed capacity of renewable energy sources totalled nearly 2,000 MW of power. This includes wind, small scale (less than 30 MW) hydroelectric, geothermal, biomass and biogas energies. Renewable sources represented 3.3% share of the total Mexican energy matrix. The greatest share belonged to fossil fuels — at 75.3% — followed by large-scale hydroelectric power generation, with 19%. The energy matrix is strongly dependent on fossil fuels:



Mexican energy matrix (Source: SENER)

Relevant Agents in the Mexican Energy Sector

Ministry of Energy (Spanish acronym SENER):

SENER's mission is to direct the country's energy policy within the constitutional framework in effect, in order to ensure the competitive, sufficient, high quality, economically viable and environmentally sustainable supply of energy services required for the country's development. In order to fulfil these aims, the National

Commission for Efficient Energy Use and the Energy Regulatory Commission — among other decentralised institutions – form part of its organisational structure.

The National Commission for Efficient Energy Use (Spanish acronym CONUEE):

The National Commission for Efficient Energy Use is a technically and operationally independent decentralised administrative agency of the Ministry of Energy. Its purpose is energy savings and efficient use, as well as promoting the use of renewable energies; it serves as a technical agency in the area of the sustainable energy use.

Energy Regulatory Commission (Spanish acronym CRE):

The transparent, impartial and efficient regulation of the gas, refined hydrocarbon products and electrical industries, creating a feeling of confidence that encourages investment in production, promoting healthy competition, fostering adequate coverage and satisfying the need for reliability, quality and safety in the supply and provision of services, at competitive prices, in the interest of the users.

Federal Electricity Commission (Spanish acronym CFE):

The Federal Electricity Commission is a company owned by the Mexican government that generates, transmits, distributes and sells electrical energy to nearly 27.1 million customers — nearly 80 million inhabitants — adding more than one million new clients a year.

Electrical Research Institute (Spanish acronym IIE):

The IIE's objective is to be a reference institute for innovation at the national level with scientists and technologist of recognised prestige, whose results promote the sustainable development of the country.

The Mexican Energy Policy

The main factor in the Mexican national policy is humane sustainable development, which undertakes that "the goal of the development consists of creating an atmosphere in which everyone can increase his or her capacity and which will make it possible to increase opportunities for this and future generations".

Following up on this basic idea, and with the aim of achieving the overall development of the country, with respect to energy, the established goal is to ensure a reliable, quality and competitively priced supply of the energy services demanded by consumers. To do this, the proposal is to promote efficient energy use, as well as the use of technologies that allow the environmental impact generated by traditional fossil fuels to be reduced. Thus, the plan is to reconcile society's energy consumption needs with caring for natural resources.

In response to the threats from climate change and to energy security, the Mexican government has made a commitment to a transition of the energy in the energy matrix.

This energy transition consists of a change in the energy sector's focus. This process will lead to a better use of fossil fuels and the development and promotion of renewable energies. Its aim is to diversify primary energy sources and mitigate the impact on the environment as the result of the reduction in greenhouse gases caused by the use of fossil fuels which, currently, are the main energy source at the international level.

These ideas are the general guidelines governing the National Development Plan (Spanish acronym PND) and they, along with the Energy Sector Programme, establish the basic objectives in the matter of the energy efficiency and renewable energy policies. The most relevant aspects are mentioned below.

The National Development Plan is based on the Planning Law and on Vision Mexico 2030 and establishes the national objectives, strategies and priorities that

should guide the government's actions during the current term. To do this, the Plan is structured around five guiding principals, each one having its own objectives and strategies, and assumes as its basic premise the search for humane sustainable development. The five guiding principals upon which the PND is based cover economic, social, political and environmental spheres.

The strategies be followed with respect to renewable energies included in the PND propose promoting the efficient use of energy, as well as the use of technologies that allow the environmental impact caused by traditional fossil fuels to be reduced by taking advantage of the great potential Mexico has in the area of renewable energies. These strategies are:

- To promote the efficient use of energy so that the country develops in a sustainable fashion by adopting technologies that offer greater energy efficiency and savings to consumers.
- To encourage the use of renewable energy sources and biofuels, creating a legal framework that establishes the state's capacity to determine its lines of action and encouraging investments that promote the potential the country has in this area.
- To intensify energy saving programmes, including taking advantage of cogeneration capacities.
- To take advantage of research activities in the energy sector, strengthening the sector's research institutes, guiding their programmes, among others, towards the development of renewable sources and energy efficiency.
- To strengthen the authority of the sector's regulatory institutions.
- To promote efficiency and clean technologies (including renewable energy) for power generation.

On the other hand, the Energy Sector Programme 2007-2012, which was created based on the PND, is essentially based on three points: to ensure the supply of the energy services required by the economy; to strengthen the sector's publicly-

owned companies in order to improve the opportunity for and quality of the supply; and to intensively promote energy efficiency and renewable energies with the aim of reducing the environmental impact caused by the use of fossil fuels.

In addition, Mexico has specific strategies and programmes for the renewable energies sector and the energy transition.

Special Programme for Using Renewable Energies:

The objectives to be achieved by 2012 in the area of renewable energy are established in the "Special Programme for Using Renewable Energies", defined in the Law on the Use of Renewable Energies and the Financing of the Energy Transition and its Regulations (Spanish acronym LAERFTE), and prepared and coordinated by the Ministry of Energy:

INDICADORES DE LOS OBJETIVOS ESPECÍFICOS

OBJETIVO	INDICADOR	UNIDAD DE MEDIDA	SITUACIÓN INICIAL (2008)	DESGLOSE	META	DESGLOSE
a. Impulsar el desarrollo de la industria de energías renovables en México.	Porcentaje de la Capacidad Instalada mediante fuentes de energía renovable.	%	3.3	Energía Eólica 0.15% Energía Minihidráulica 0.65% Energía Geotérmica 1.66% Biomasa y Biogás 0.86%	7.6[22] (al 2012)	Energía Eólica 4.34% Energía Minihidráulica 0.77% Energía Geotérmica 1.65% Biomasa y Biogás 0.85%
b. Ampliar el portafolio energético del país.	Porcentaje de Generación eléctrica mediante fuentes de energía renovable.	%	3.9	Energía Eólica 0.09% Energía Minihidráulica 0.64% Energía Geotérmica 2.86% Biomasa y Biogás 0.33%	4.5 - 6.6[23] (al 2012)	Energía Eólica: (1.74 - 2.91) Energía Minihidráulica: (0.36 - 0.61) Energía Geotérmica: (2.19 - 2.74) Biomasa y Biogás: (0.19 - 0.32)
c. Ampliar la cobertura del servicio eléctrico en comunidades rurales utilizando energías renovables.	Comunidades electrificadas mediante fuentes de energía renovable	Número de comunidades	0		2,500[24]	

Specific objectives of the Special Programme for Using Renewable Energies

The following specific objectives are set forth in this Programme:

- To promote the development of the renewable energies industry in Mexico.
- To broaden the country's energy portfolio, promoting greater energy security as a result of not depending on a single energy source.

- To broaden the coverage of the electrical service in rural communities using renewable energies for those cases in which connecting to the grid is not technically or economically feasible.

National Strategy for Energy Transition and Sustainable Energy Use:

As part of the Law on the Use of Renewable Energies and the Financing of the Energy Transition and its Regulation, the "National Strategy for Energy Transition and Sustainable Energy Use" is established as the mechanism through which the Mexican government will promote the policies, programmes, actions and projects aimed at achieving an increased use of renewable energy sources and clean technologies, and encourage energy sustainability and efficiency as well as the reduction of Mexico's dependence on hydrocarbons as the primary source of energy. In this way, the Strategy will allow for an ongoing comprehensive approach to the development of energy transition related public policies.

The fundamental objective of the Strategy is to promote the use and development of and investment in renewable energies and energy efficiency.

Each year, the Ministry of Energy must update the Strategy and, in addition, present a formal report of the progress achieved in the energy transition and sustainable use of renewable energies.

National Programme for Sustainable Energy Use:

The Programme is the instrument through which the federal executive branch will, in accordance with the Planning Law, establish strategies, objectives, actions and goals that will allow an optimum use of energy to be attained in all processes and activities involving its exploitation, production, transformation, distribution and consumption; in terms of the Planning Law, it will be a special programme.

The Ministry of Energy, via the National Commission for Efficient Energy Use (CONUEE) will draft the Programme.

Other support programmes implemented by the federal government are:

- "Comprehensive Energy Services Project": its purpose is to bring electricity to approximately 2,500 rural communities
- "Large Scale Renewable Energies Project": it seeks to support Mexico in its development of an interconnected 100 MW renewable energy project based on business criteria.
- "Cross-cutting Sustainable Housing Programme" it provides for the incorporation of renewable energies and strategies for a rational use of resources to promote sustainable housing.
- "Green mortgage" this is a loan that includes an amount for purchasing ecological housing.

Regulatory and Legislative Framework

The current Mexican legislative framework is a good reflection of the changes that are taking place in the renewable energies and energy efficiency sectors. Two important laws in this area were published in November of 2008:

- The Law on the Use of Renewable Energies and the Financing of the Energy Transition and its Regulations (LAERFTE)
- Law on Sustainable Energy Use (LASE)

The main characteristics of these two laws are summarised below:

Law on the Use of Renewable Energies and the Financing of the Energy Transition and its Regulations (LAERFTE):

The objective of the Law on the Use of Renewable Energies and the Financing of the Energy Transition and its Regulations (LAERFTE), published 28 November 2008, is to regulate the use of renewable energy sources and clean technologies for generating power for purposes other than providing electricity for public service, as well as to establish the national strategy and instruments for financing the energy transition.

With the aim of strengthening the sector's regulatory institutions — this being one of the strategies provided for in the PND — the law broadens and complements the authority given to the Ministry of Energy and the Energy Regulatory Commission.

Other provisions of the law include the drafting of the Special Programme for Using Renewable Energies, which establishes the specific goals and objectives to be achieved in the area of renewable energy by 2012; the establishment of the National Strategy for the Energy Transition and Sustainable Energy Use, both of which are mentioned in the section above; the National Inventory of Renewable Energies, and the creation of a Energy Transition and Sustainable Energy Use Fund, among others.

Law on Sustainable Energy Use (LASE):

The aim of both the law and the regulations is to bring about sustainable energy use through the optimum use of energy in all its processes and activities, from its exploitation to its consumption. The most relevant aspects of the law are listed below:

- The drafting of the National Programme for Sustainable Energy Use (Spanish acronym PRONASE).
- The creation of the National Commission for Efficient Energy Use.
- The creation of the Advisory Council for Sustainable Energy Use, whose purpose is to assess compliance with the objectives, strategies, actions and goals established in the PRONASE.
- The implementation and updating of the National Information Subsystem for Energy Use whose purpose, among others, is to register, organise, update and share information about energy consumption, its final uses and the factors leading to those final uses, and the energy efficiency indicators in different sectors and subsectors.

- The development of a programme for certifying processes, products and services in terms of the level of incorporation of energy efficiency, of compliance with applicable regulations and of international parameters and standards.

- A Registry of Funds and Trust Funds that were created by the federal government receive federal resources or are guaranteed by the federal government and whose purpose is to support sustainable energy use.

- The definition of criteria for identifying users with a high energy consumption pattern.

- The creation and publication of a list of the equipment and devices requiring energy to operate that contains technical information about their energy consumption.

- The development of methodologies to quantify GEG emissions resulting from the exploitation, production, transformation, distribution and consumption of energy, as well as to quantify the use of energy services, determine the economic value of both the consumption and the processes avoided as a result of the sustainable use of energy.

- The inclusion of short messages promoting efficient energy use on bills and invoices from energy sector companies and institutions.

Public Electricity Service Law (Spanish acronym LSPEE):

Public Electricity Service Law (Spanish acronym LSPEE). This law dates from 1975, and underwent a significant reform in 1992 allowing for six types of private investment: self-sufficient, cogeneration, independent power producer (IPP), exportations, importations for self-consumption and small scale production.

There are also fiscal advantages such as no tariffs on equipment that prevents pollution and for technological research and development, and accelerated depreciation for infrastructure projects using renewable energy sources.

3. ANALYSIS OF THE SOLAR THERMAL ENERGY SECTOR

Solar thermal energy in the world and in Europe

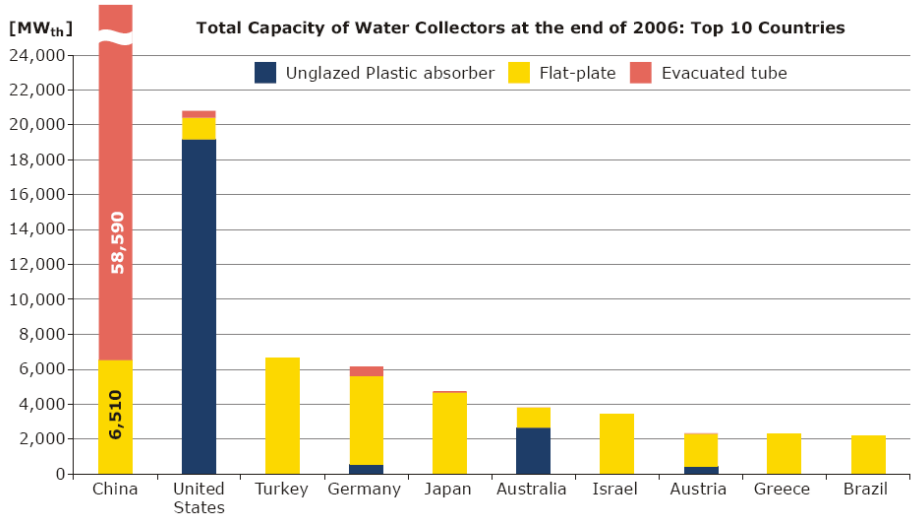
The exploitation of the sun's energy can be achieved in two ways: without the intervention of mechanical elements, that is, in a passive way, or with the intervention of the former, that is, in an active way.

Active solar energy, in turn, can be low-, mid- and high-temperature, depending on whether collection can be direct, with a low or a high concentration grade.

Low-temperature applications, made with glazed flat collectors, the so-called solar panels, are the most common from a commercial point of view. The most interesting applications are:

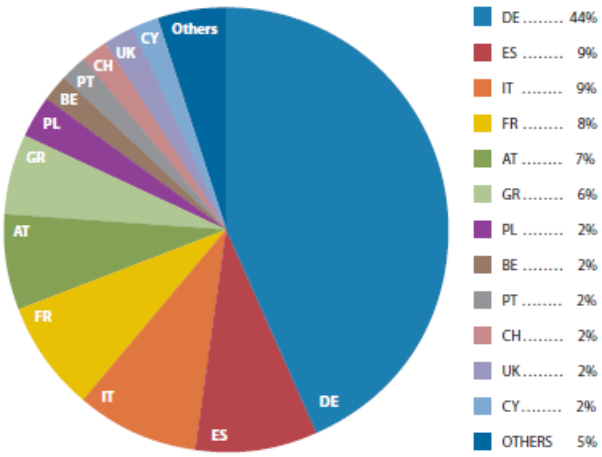
- **In buildings.** To get sanitary hot water, swimming-pool heating and heating.
- **In industrial facilities.** Also to get sanitary hot water and water parcelization for processes.
- **In farming facilities.** As a heating system in greenhouses, hot water in fish farms, etc.
- **Solar cooling.** In places with cold water or cooling requirements, by taking advantage of heat in an absorption process.

At world level, it is estimated than in 2006, the capacity of low-temperature solar thermal installations reached 127.8 GW, coming from a 128.5 million m^2 collector surface. Flat collectors and heat pipes are meant for SHW and heating. This technology is basically used in China, Europe, Australia and New Zealand. Plastic collectors, whose wider use is found in the USA and Canada, are meant for heating swimming pools. Comparing the use of this technology by countries, China is the one with the largest installed capacity (64% of the whole) and also with a difference with respect to the rest of the countries:



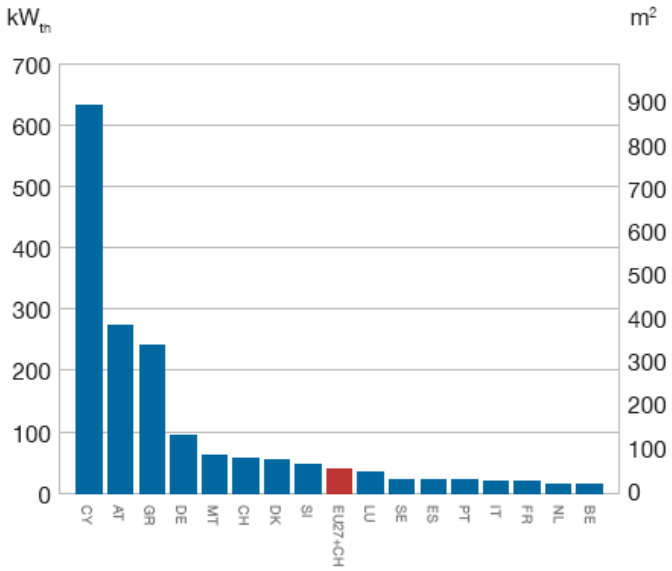
World installed capacity in 10 leading countries for low-temperature solar thermal systems (Source: ESTIF).

In 2008, the entire European market reached an installed capacity of 19 GW, coming from 27 million m^2. Germany, which contributed with 2.1 million m^2, is the country with the largest number of collectors installed in 2008, followed by Spain, Italy and France:



Distribution of the European market, 2008 (Source: ESTIF).

Even if it is true that Germany, with 44% of the whole, is the country with the largest amount of systems, Cyprus is the one with the largest penetration of the market (whole operational capacity per 1000 inhabitants), followed by Austria and Greece:



Operational solar thermal energy capacity per 1000 inhabitants, 2008 (Source: ESTIF).

Europe is one of the most sophisticated markets in terms of use of the various thermal applications of these systems. There are applications for SHW, single family dwelling, block of flats and hotels, district heating, apart from industrial applications and solar cold.

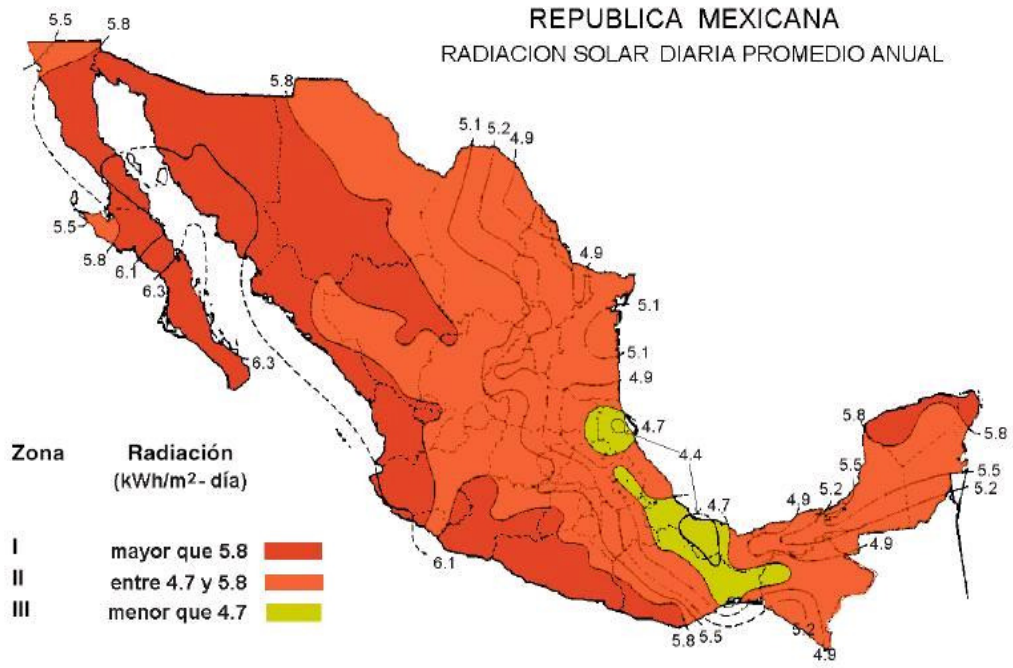
The most common incentives that the various European countries adopt to support the use of this technology are allowances; such is the case of Germany, or tax credits, which are applied in countries as France and Italy. In an odd case, such as Spain's, the use of this technology is compulsory in newly-built dwellings.

Solar thermal energy in México

- **Current Situation:**

Mexico is geographically located in one of the areas with the greatest amount of solar radiation in the world. This factor works in Mexico's favour when taking advantage of solar thermal power. Nevertheless, the legacy of abundant local hydrocarbons and the low price of gas during recent decades have led to gas heaters being practically the only technology used for heating water. A consequence of this energy consumption pattern has been that Mexico is the world's greatest consumer of liquefied gases. The current panorama of a tendency to rapidly increases in the price of hydrocarbons — including natural gas — have caused Mexico to centre its efforts on urgently seeking out other energy sources to cover this demand.

The development of solar energy in Mexico has a basic tool: the ability to quantify the resource at the national level via the solar radiation map created by the Electrical Research Institute (*Instituto de Investigaciones Eléctricas*). Solar resources in Mexico are estimated to reach daily radiation values of 4,4 kWh/m^2 to 6,3 kWh/m^2.



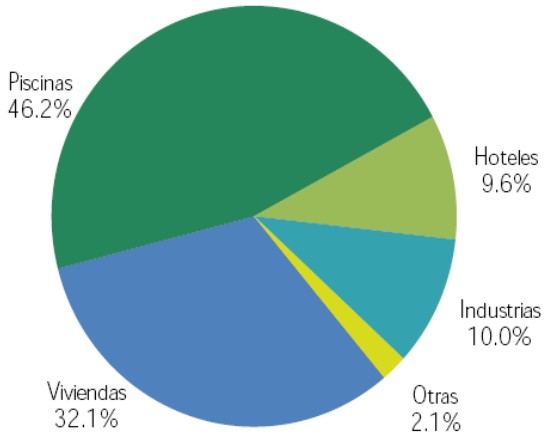
Map of solar radiation in Mexico (Source: IIE)

According to data from the Energy Ministry, the surface area used for collecting solar radiation was nearly one million m² of collectors and generates some 4.5 PJ per year:

Características	2005	2006	2007	2008	Variación porcentual (%) 2008/2007
Calentadores solares planos					
Instalados en dicho año (m²):	100,348	96,694	154,267	165,633	7.4
Total instalados (m²):	742,992	839,686	993,953	1,159,586	16.7
Eficiencia promedio:	50%	50%	50%	50%	-
Radiación solar promedio (kJ/m²-día):	18,841	18,841	18,841	18,841	-
Disponibilidad de calor solar primario (PJ):	5.11	5.775	6.836	7.974	16.6
Generación (PJ):	3.507	3.913	4.525	5.584	23.4

Annual evolution of solar thermal power (Source: SENER)

The main use of solar thermal power in 2008 was for heating swimming pools, followed by the housing sector for heating the domestic water supply.



Surface area with installed solar collectors in 2008, by applications (Source: National Association for Solar Power (*Asociación Nacional de Energía Solar* (Spanish acronym ANES))

The first conclusion these data lead to is that — bearing in mind Mexico's high solar potential — this abundant and reliable resource is not fully taken advantage of.

The economic and legal instruments to develop this sector are being created at this time. Specifically, under the auspices of the implementation of the PROCALSOL programme, – whose "Green Mortgages" initiative should be mentioned – which consists of including the cost for installing solar equipment in the mortgages for newly built housing. The success of this programme has allowed the surface area with solar collectors used for heating the domestic water supply to surpass the surface area used for heating swimming pools in 2009, with the latter being the most extended use of solar thermal power in 2007 having totalled 75% of the surface area of solar collectors. The most immediate goal of the PROCALSOL programme is to attain a surface area of solar heaters of 1,800,000 m^2 in 2012.

Private and public organisations from sectors related to energy, environment, water, regulations, standards and manufacturing have participated in developing the programme.

- ## Regulatory framework for the sector

The regulatory framework affecting solar thermal power facilities — in addition to the provisions in the general section of the regulatory framework and previous legislation – is defined by the following documents:

Mexican Standards and Quality Control Systems:

- NMX-ES-001-NORMEX-2005: Solar Thermal Power Performance and Functionality of Solar Collectors for Heating Water — Testing Methods and Labelling (Partially equivalent to International Standard ISO 9806-1:1994) VOLUNTARY
- NMX-ES-002-NORMEX-2007: Solar Energy — Definitions and Terminology (Partially equivalent to International Standard ISO 31-6:1992 and ISO-9488-1999) VOLUNTARY

- NMX-ES-003—NORMEX-2008: Solar Energy — Minimum Requirements for the Installation of Solar Water Heaters. (No equivalent international regulations) VOLUNTARY

- PROY-NMX-ES-004-NORMEX-2009 (Proposed standard): Solar Energy — Thermal performance evaluation of solar water heaters — Testing method (test) VOLUNTARY

- NADF-008-AMBT-2005: establishing the technical specifications for the use of solar energy in swimming pools, diving pools, irrigation systems, hand basins, kitchen uses, laundries and dry cleaners'. COMPULSORY

Work is being done on drafting a standard (Technical Standard for Professional Competence) so that a training and qualification system can be implemented for the technicians in charge of installing and maintaining solar thermal power equipment.

There is also the FIDE quality stamp, which indicates the standards met by the equipment.

· Technological barriers:

Technological barriers:

The low-temperature solar thermal system technologies are ripe technologies and have been well-known for years, especially in the most developed countries, where the market has reached a given maturity. But in the case of Mexico, the solar thermal sector has started to show a given growth. The main technological barriers that have been spotted are those inherent to little-developed markets:

- **Lack of qualified project planners, installers and maintenance personnel:**

Due to the low demand for solar thermal systems, the sector has not developed to the point that would allow for there to be appropriate professionals, and this can affect the quality of the equipment: errors in the control systems, deficient maintenance, incorrect calculation of the demand for solar hot water, incorrect

sizing and systems installed that were different than those in the project, among others.

- **Lack of technical documentation:**

There is a lack of technical documentation for designing the equipment (guides, calculation programs, etc.) in addition to a low level of availability of the already existing material.

Other Barriers:

The technological barriers are not the only barriers preventing the development of a massive use of solar thermal systems. The main non-technological barriers affecting the sector are listed below:

- **Economic:**

The initial high costs of solar thermal systems, the lengthy amortisation periods, as well as the low cost of conventional fuels are a significant barrier to the development of this market. It is necessary to create financial mechanisms that incentivise users to install these systems.

- **Regulatory:**

The lack of an appropriate regulatory framework guaranteeing that the systems comply with the technical requirements that ensure that the equipment works properly is another barrier to be taken into account. It is necessary to provide the market with a certification system that assesses the solar thermal system's main components in addition to a monitoring system that allows for verifying that the equipment is working properly.

In addition, the certification and monitoring systems allow for increasing the entrance and exit barriers for the different agents in the sector. Without these measures, they could leave the market without fulfilling their obligations, and thus contribute to increasing the distrust of the users towards this technology.

- **Educational and informational:**

The lack of knowledge about the technology by the users decreases the demand for using these systems. At other times, potential users are aware that the technology exists but don't have complete information, thus leading to a lack of trust regarding the use of this technology. If the goal is to develop the market, it is necessary that the technology be well known.

4. RESULTS

Proposed Measures

- **Lack of qualified project planners, installers and maintenance personnel:**

Strengthen technical training for the agents in the sector by means of training courses. With respect to this, it is very useful to be able to take advantage of the experience of European countries, where the sector has reached a certain level of maturity. This is especially true because the lessons learned from errors can be taught, always keeping in mind the particularities of each country.

To have a qualification system for the installers, maintenance personnel and engineers would also guarantee the quality of the solar thermal equipment.

In any event, the Mexican government has taken this barrier into account and is working on publishing the technical standard on professional competence. Its objective is to implement a training and qualification system for the technicians in charge of installing and maintaining solar thermal power equipment.

- **Lack of technical documentation:**

The creation of design guides and calculation programs recognised by the different Mexican standards.

- **Economic:**

It is necessary for there to be an appropriate financial mechanism that encourages the use of solar energy, such as the case of the "green mortgages".

- **Regulatory:**

Mexico is working on drafting a standard so that a training and qualification system can be implemented for the technicians in charge of installing and maintaining solar

thermal power equipment. And although not all the standards regarding the SST are obliged, the country provides a specific normative framework on the facilities.

- **Educational and informational:**

Design informational programmes about the operation, maintenance and benefits of this technology that are specially aimed at users.

Another activity that can make the solar thermal systems better known is carrying out demonstration projects.

5. REFERENCES

- *"Estrategia Nacional para la Transición Energética y aprovechamiento Sustentable de la Energía"*. SENER. Year 2009.
- *"Balance Nacional de Energía"*. SENER. Year 2008.
- *"Energías Renovables para el Desarrollo Sustentable en México"*. SENER and GTZ. Año 2009
- *"Políticas y Medidas para Fomentar la Integración Nacional de Equipos y Componentes para el Aprovechamiento de las Energías Renovables y el Uso Sustentable de la Energía"*. SENER. Year 2009.
- *"Programa Especial para el Aprovechamiento de Energías Renovables"*. SENER. Year 2009.
- *"Potential of Solar Thermal in Europe"*. Institute for Sustainable Technologies y Vienna University of Technology Energy Economics.
- *"Solar Thermal Market in Europe. Trends and Market Statistics 2008"* European Solar Thermal Industry Federation (ESTIF). Año 2009.