
1 PROJECT OVERVIEW

1.1 RATIONALE

Solar Thermal energy (ST) is the simplest and most efficient form of renewable energy available today. When solar energy is used for on-site heat generation, the system efficiency is much greater than converting solar energy into electricity and then delivering through the power grid for the same end-use heating applications. Situated in a tropical zone, Thailand has favorable conditions and significant potential for utilizing solar water heating (SWH) compared with many other regions. Based on past studies, annual mean daily global solar radiation in Thailand is between 4.5 kWh/m²/day in winter and 4.7 kWh/m²/day in summer. Despite the significant potential, the overall SWH market size is still small and underdeveloped due to different obstacles and Thailand has not been able to capitalize this cost-efficient and reliable solar energy source, particularly in the commercial and industrial sector.

In recognition of the existing market potential, the Market Development Solar Thermal Applications in Thailand project (Soltherm Thailand) was initiated to identify all related technical and non-technical barriers prohibiting the effective development of the SWH market in Thailand through detailed situation analysis. Soltherm Thailand is funded by the EU-Thailand Economic Cooperation Small Project Facility (EU-SPF) and jointly implemented by the Joint Graduate School of Energy and Environment (JGSEE), the International Institute for Energy Conservation (IIEC), and the Fraunhofer Institute for Solar Energy Systems (ISE).

The project aims at developing a set of solutions, guidelines, measures and recommendations for related government agencies and industry stakeholders. Moreover the project also directly enhance a mutual market access for existing European, Thai and EU-Thai joint-venture ST companies as well as stimulate and facilitate more EU-Thai partnerships and investments in ST technologies in Thailand. Additional benefits resulting from the project actions include establishment of appropriate supporting schemes for the Thai SWH market, such as *SWH Industry Association* and *National SWH standards* for equipments, designs, installations and services. All these project outputs will essentially and eventually facilitate bi-lateral trades between EU and Thailand.

1.2 PROJECT TASKS AND ACTIVITIES

With the overall objective to remove informational and other unidentified barriers that are inhibiting the effective development of solar thermal market in Thailand, the specific objectives of the project actions are:

- To identify related technical and non-technical barriers to the development of the industrial solar thermal technology market in Thailand and to illustrate potential solutions to the barriers.
- To determine potential technical, economic and environmental gains from commercial and industrial solar thermal technologies

- To analyze the technical and economical feasibility of solar energy in selected commercial applications and in certain industrial processes
- To develop a list of possible demonstration sites for future activities
- To assess the market size of solar thermal technologies in the Thai industrial and commercial sector
- To learn from successful European experiences to introduce solar thermal systems in the commercial and the industrial sector
- To develop a set of solutions, guidelines, measures and recommendations for policy-makers, regulators and businesses which would lead to future appropriate supporting scheme, regulatory frameworks and standards for the Thai market
- To facilitate an initial dialogue on problems and solutions among key stakeholders
- To create awareness and introduce solar thermal energy to stakeholders through workshops with potential customers and solar system providers (manufacturers) and independent solar experts
- To strengthen and reinforce ties between stakeholders in the solar thermal industry in Thailand
- To build a network between European and Thai Solar Thermal Industries

To meet the project overall and specific objectives, the project team implemented different project tasks and activities in four phases within the proposed one-year implementation timetable (April 2006 to March 2007) as follows:

1.2.1 Phase I: Seeking Stakeholder Support

The first phase aims to inform the existing market players about the project actions and to assure that all project activities will be in a complementary manner to the overall development of the new market segment of the domestic solar thermal industry. The project task in this phase includes:

- ***Task 1: Inception Meeting and Establishment of the Project Advisory Committee***

Through this task, the project team has informed relevant government agencies and industry stakeholders about the project actions, and established the project advisory committee whose members will provide opinions and comments to improve project methodologies and activities as necessary.

1.2.2 Phase II: Assessing Market Potential

The second phase provides an estimate of the size of the potential market for industrial and commercial solar thermal technologies and will determine potential demonstration sites where technical and economical aspects are feasible. The project tasks in this phase consist on Task 2 and 3 as follows:

- ***Task 2: Review of Existing Reports/Project activities and European Experience in Developing Industrial Solar Thermal Market***

The EU-Thai project team thoroughly reviewed existing reports produced by government and private sector in promoting industrial and commercial solar thermal applications in both Europe and Thailand. Experiences and lessons learned were utilized by the project team throughout the project implementation period.

- ***Task 3: Industry and Commercial Sub-Sector Review***

Through semi-structured questionnaires, the project team conducted interviews selected commercial and industrial end-users as well as government agencies to assess the potential market size and future growth.

1.2.3 Phase III: Understanding Market Characteristics

The third phase will provide understanding of supply chain and decision-making process which is important to policy makers and industry on how to enhance the industrial solar thermal market. The project tasks in this phase consist on Task 4 and 5 as follows:

- ***Task 4: Review of Supply Chain and Regulatory Frameworks***

The project team utilized personal meeting, focus groups and round table meeting technique to gather information on supply chain and regulatory frameworks. The team organized such activities for two target groups: one for government agencies and authorities, and one for the solar thermal industry.

- ***Task 5: Market Survey and Site Visits***

The project team performed site visits to twenty (20) commercial and industrial facilities in 7 large provinces throughout the country. Findings from the site visits help verify outcomes of Task 2, 3 and 4 and essentially serve as the main inputs for preparation of the final report.

1.2.4 Phase IV: Information Analysis and Dissemination

The final phase will utilize project findings to stimulate dialogue between key stakeholders as well as encourage better industry and public-private coordination. The project tasks in this phase are captured below:

- ***Task 6: Detailed Analysis and Report Preparation***

The outcomes and findings from the previous tasks were consolidated together for the preparation phase of the final report.

- ***Task 7: Information Outreach and Training***

The project team regularly informs the related government agencies and industry stakeholders the progress and outcomes of the project implementation. The outreach activities have been undertaken through the Internet-based Solar Thermal Information Clearinghouse for Thailand, www.soltherm-thailand.net as well as training and information dissemination workshops and meetings. The

project team organized a total of 6 meetings/workshops during the one-year project implementation period.

1.3 FOLLOW-ON ACTIVITIES AFTER PROJECT COMPLETION

Following the completion of project activities in March 2007, the SWH suppliers in Thailand agreed in principle to pursue the initiative on establishment of the Thai Solar Thermal Association to continue the future SWH promotional activities and maintain the momentum established by the project. In addition, the Department of Alternative Energy Development and Efficiency, DEDE, under the Ministry of Energy, Thailand is planning to establish ten (10) demonstration project to substantiate the technical and economic feasibility and to stimulate replication of SWH applications in the hotel sector in Thailand.