

# Marketing Model for Solar Energy in Thailand

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## ABSTRACT

This paper is aimed for the marketing study and comparison of the actual solar energy products in Thailand. The solar energy application in Thailand can be divided into two systems called Grid Connected System and Stand Alone System. There are many points of difference between these systems indicating that Stand Alone System is the most suitable system for the Thai market. The dominant points are: 1) Cheaper price structure than Grid Connected System, 2) Easier for after sale service, 3) Convenience for product reach, and 4) Easier for product understanding. Under the similar environment from government promotion to both systems, the marketing model has been stress to the Stand Alone System (SAS) that more suitable for Thai market. Marketing planners should pay more attention and focus their marketing models for the products under this form (SAS).

**Keywords:** *Marketing model, Solar energy, Grid connected system, Stand Alone System.*

## 1. CURRENT SITUATION OF SOLAR ENERGY IN THAILAND

Recent high fuel oil crisis has brought closer attention to Thai authority for all possible alternative energy sources. It has been set as a *National Agenda* for the action plan in promoting renewable energy. And solar energy is one of the major sources of energy that has been mentioned in the strategic development plan year 2003 as a sustainable renewable energy.

One big project called “Solar home System” had been launched through the Provincial Electricity Authority (PEA). The Thai government had invested more than 7.6 billion baht to provide electricity for 290,000 home use units in rural area, where the utility grid could not be accessible, nationwide. [1] So far about 200,000 units have been installed ( In a unit of solar equipment – each home will have one photovoltaic(PV) module for 120 watt, one set of 125 AH battery, one set of inverter, 2 sets of 10 watt fluorescent lamp.) The system is also good enough to supply enough electricity for a 14 inch television in four hours a day. This project has made the big move, ever before, to solar energy market in Thailand.

The above project led by the government resulted in the establishment of about five solar module manufacturers in Thailand [2]. This project also created interest and better understanding about solar energy and its benefits to both government sector and private sector. Solar energy has been known as the sustainable& renewable energy, the clean energy with no pollution, no single moving part and no noise. At present, acknowledgement has been used as the basic market introduction and presentation for all solar panel manufacturers and their contractors.

Table 1 List of Solar PV Manufacturers in Thailand.

Company Name	Product	Production (MW/yr)		Start Year
		Cells	Modules	
1. Solartron Co. Ltd.	Silicon Modules		30	2004
	Silicon Cells	25		2006
	Amorphous	5	5	2004
2. Bangkok Solar Co. Ltd.	Silicon Cells Amorphous (Cells & Modules)	10	10	2006
3. Sharp Thepnakon Co. Ltd.	Silicon Modules		7	2005
4. Thai Agency Engineering Co. Ltd.	Amorphous Silicon Modules		10	2005
5. Akekarat Solar Co. Ltd.	Silicon Modules		15	2005
	Silicon Cells	25		2006
TOTAL		65	77	

Most of the solar energy projects in Thailand are done by government (via local government's demands) because the government has her responsibility to take care of social security and their livings. Privates are not much interest in the solar energy products because it is of high investment and has slow pay back period.

By government agencies, the application of solar system for rural school has been organized by the Department of Alternative Energy Development and Efficiency (DEDE). The installation of solar street light by supported budget from the Department of Local Administration in rural area reply directly to the demand in social security for life and property of up-country citizen, PV water pump by the Tambon Administration Organization (TOA) can help farmers or villagers in rural area to improve their productivity and standard of livings. These applications have created good market opportunity for Stand Alone System (SAS) besides the initial solar home system project by PEA.

Moreover, the government has also tried to give a big push to the Grid Connected System (GCS), because the system can be linked from solar panel to send electricity to the main line. The use of solar energy can increase nation power's security. Many measurements have been issued to support this push.

VSPP (Very small power provider or any provider who can provide electricity 1-10 KW) is allowed to sell their electricity to government at an attractive rate, but this project has not yet 100 % accomplished as there are still some technical problems and the complication of the application in project itself.

## 2. SOLAR ENERGY PRODUCTS AND THE PRESENT MARKETING MODEL

There are two major applications of solar energy in Thailand, Stand Alone System (SAS) and Grid Connected System (GCS) [3]. For the SAS, the electricity (DC current) produced from the solar panel can be used directly by the electrical instruments or charged to the battery for future use. There are many electrical instruments that can use with DC current such as PV water pump and PV street lighting. SAS is easy to use and requires lower investment so it has more flexibility for those organizations which have limited budget, buyers can choose and split their purchase to fit with their budgets. In the GCS, the solar panel will be linked to many equipment such as charger controller battery and safety devices to transform DC current to AC current and send it to an equipment called Grid Connecting Inverter to pass electricity to the grid line[4 ]. At present, the government has tried to promote

the VSPP by offering very attractive purchasing rate per unit, however since the GCS is quite new and there are still many existing chronic technical problems so the responses to this promotion are not strong.

Table 2 Comparison of the present factors between SAS and GCS.

System	Price/Cost	After sales service	Convenience to reach	Product understanding	Governmental support
SAS	Medium	Easy	Easy	Easy	Medium
GCS	High	Difficult	Difficult	Difficult	Medium

From the study, the marketing model has been set under the followings environments.

### **Price (cost)**

The SAS has much lower cost structure than GCS because of the flexibility of the equipment used in the system. All SAS will be composed of many small finished units connected together, for example, a set of solar street light is composed of a solar panel, a battery, a charger controller and a street lamp. We can buy a set of solar street light at only few ten thousand baht. The GCS is much bigger and requires more equipment to make a complete set for operation and all components of GCS are quite expensive, for example a small Grid Connected Inverter that must have in every Grid Connected system will cost over a hundred thousand baht per unit. Marketing planners has designed each product to be in line with the budget frame of the local government

### **After sales service**

Since the SAS is actually an applied system and is composed of many finished equipment, so it is much easier for the sellers to handle it. The sellers can easily give full services starting from application design, installation, commissioning and product maintenance. As previously mentioned that the GCS has many problems due to its operational environments, these problems are very hard to avoid such as the stability of inverter or digital meter or even the difficulty in working steps in the grid connection itself. Marketing planners has planned and set up warranty and maintenance system so the buyers can have fully trust in the products

### **Convenience to approach (reach)**

At present, there are many suppliers of SAS products in the market, so it is very easy for users to reach the product. Most of suppliers of SAS get their products from the module manufacturers in Thailand. Any way there are another group of suppliers who are acting as integrated distributors, these suppliers sell the solar energy applications, such as Saengmitr Electric Co. Ltd., Bangkok Lighting Center Co. Ltd., Leonics Co. Ltd., Heritage International Development Co. Ltd. and etc. [5] and they also offer the same to general market, so customer can easily find and buy SAS solar energy products from regular electrical market. This situation is much difference for the GCS which it is more expensive and there are only few suppliers in the market. Today each of PV water pump system and the Solar Street Light have been installed over 1,000 systems/sets in rural Thailand [6]. Marketing planners have tried their best to let the buyers to have a chance to familiarize with the products.

## **Product understanding**

The SAS has few main equipment and they are very simple, most of them are basic equipment such as water pump, street light or telephone. The GCS uses many complicated equipment that only the well trained staffs can handle them. Many types of specific education and presentation have been made to certain group of potential buyers so buyers will have better understanding about the products

## **Governmental support**

In general, there are similar supports from the government for both systems but since the SAS is easier to approach by users and can fit mostly with their limited budgets, thus the SAS is much easier to get the budget from the government (indirectly support via the rural demand nationwide) than the GCS [7]. Marketing planners have designed several finished products to get attention of users

## **3. FUTURE SOLAR ENERGY PRODUCTS AND FUTURE MARKETING MODEL**

Good marketing planners can set up the good and proper marketing model for any product should they have the complete information about that product. For the future solar energy products, who should look into the following. It is the fact that the present market demand for solar energy has initially created by the government and the solar energy products are considered “new” to Thai market. Any how all the local solar panel manufactures, with their high intention, have still continuously tried to build the new market, tried to get more market share and tried to penetrate the existing potential market. It is also the fact that the government is actually the biggest buyer of the solar energy products in Thailand [8]. The Government seems to give the continuous support by setting up the target to have 250 MW of electricity from solar energy in the next 5 years (At present, 5 solar panel manufacturers have total production capacity at 77 MW per year) [9]. The total expected market value of the target is not small, it will cost more than 40 billion baht.(if the cost of solar panel is about baht 160 per watt) [10].

## **Product or customer solution**

The customer's needs are very important for marketing, market planners must find out what really are the customer's needs [13]. The solar energy products should be created as products that do not only give convenience to users but they should also be the problems solvers, for example solar street light should not be only a service device of lighting for public but it should be a problem solver for the social security of life and property, PV water pump should not be only a service device for supplying of water, it should be the problem solver for the demand for water consumption in rural area or for agriculture. Market planners should create several demonstrative projects for schools and universities to educate students about the solar energy and its benefits in term of another prospective future source of good clean energy for man kind.



Fig.1 Marketing model for solar energy in Thailand.

The solar home required the solar panels to be installed on the roof of houses. The roofs both in town and up country are quite suitable for the set up, during the day, electricity from solar energy in the electrical service area can be used direct from the panels. The users can save their electricity bill at the end of the month. In other hand for those who live outside the electrical service area, besides using them during the day time, the electricity from the solar energy can also be charged and stored into the battery for using at night. Such Flexibility of the products is so unique that it is hard to find in other alternative energy. Another type of solar energy product that is also marketable if we focus only for the area that the utility grid is not accessible but has demand for electricity , the cellular base station is a good example , the station must be set in several areas that do not have electricity facility to get the complete coverage of communication signal , the introduction of solar cell in such project is really a worth investment , easy to install, fast, need no maintenance need no raw material to feed in for making energy. The system needs only daily sunlight. Successful market planners must search for marketing opportunity and must accomplish to find it, so they can design product applications to fit with unlimited customer's demands. There are several applications that can be applied to use with solar energy. So there still be many new solar energy products waiting to be created for the customer unlimited needs.

### Price or customer value

The focus of solar energy products as SAS which is normally sold by unit (which is much cheaper than the GCS) will enable customer to make their decision to buy or repeat order. The market planners must convince customer to see the benefits which are worth for investment when comparing with the security in life and property or opportunity for better

standard of living. The solar energy products are the products with positive images for most customer but these images are hidden images and are reflected as the hidden esteem needs in most buyers. Any market planners who can stimulate these needs can easily achieve their marketing plan.

### **Place or access**

The focus of solar energy products as SAS will make it easier for sellers to find proper distribution channel. With such specific scope, the sellers can easily do the market coverage and can evenly reach all small communities especially in the rural area where the buyers/customers might live in small villages and really have demand for solar energy products. Villagers can group up together to buy SAS for the benefits of themselves. To be able to get such cooperation, the market planners must have good sales management and good sales representatives who have good product knowledge and can give good explanation and have very good customer relationship management (CRM), they will get good trust from customer and can easily get repeat order or continuous support for new products, which means the well success of marketing.

### **Promotion or communication**

Type of promotion is very essential for solar energy products [14]. The solar energy products are quite new products for most people. Customer needs to be educated and get product data. Capable market planners can design good communication pattern, it will be very important for sales because only a short clients' comment about the prices can kill the sales. If the market planners can design the product strategy that can fully respond or stimulate the customer's demand, such strategy can easily create new market. Campaign or activity to convince customer to buy at different purposes such as for operation, for education, to reduce pollution or to create better image for users, etc are also important. Other promotional ideas are:

- Solar energy products for luxurious houses.
- Solar energy village for high end customer.
- Solar energy for factory that manufacture the products that are highly effect to environment.
- Solar energy for organization that would like to promote the good image for society.
- Each project might not have high watt, but when we put them together it must be a good attractive sales volume.

Good market planners should concentrate to build customer satisfaction by communication to give product knowledge and how to maintain their equipment to customer. Because the solar energy products are quite new, thus it is quite important for market planners to have their customer learned by using, customer will have more understanding of the products and have better satisfaction in using the products. Products satisfaction will also create good image of products, so good communication is also a heart of the sales for this products.

### **Financial support**

This is a very successful type of sales support especially for expensive products. Financial support can be arranged for individual or for a group. Sellers should arrange the facility for buyers with bank or any financial institute. This type of support should be good for rural villages which do not have lighting facility or want the PV water pump and do not

want to wait for governmental budget. Members of a village can share their money for example baht 100 for 20 houses or baht 2,000 per month to hire purchase a solar street light with fluorescent lamp 36 watt at baht 50,000 per set. They can finish the install payment within 25 months. From that purchase, the villagers will be able to enjoy over 20 years of lighting for the sake of better security for life and property.

### **Government roles in solar energy market**

Why the government should promote the solar energy? For the security of the country's energy, each country has to be able to rely on their own source of energy. In Thailand, solar energy is abundantly available, but we have not yet utilized it to our full availability, so promotion of solar energy should be one correct alternative for the government. The government should have a good energy plan or the whole country will be trapped again in the next energy crisis. There are many ways for the government to help in promoting solar energy [12].

1. Since the solar energy equipment is now having the standard measurement RPS (Renewable Portfolio Standard). The government can help enforcing all new power plants that they must produce 5 % of their electricity from renewable energy.
2. The government can set up clearer tangible operation to stimulate the solar energy market such as giving tax incentive or feed in tariff for solar energy equipment
3. Another governmental policy that can stimulate the market is the use of subsidization policy, for example, by offering 30 – 50 % subsidy from the total price of solar energy equipment to users.

In some countries such as Japan or Germany, market stimulation and subsidization had been firstly led by the government. The supports had been done until there were firm demands, sellers were able to offer cheaper products, the market was able to move continuously by itself and there were products familiarization and all solar energy products were able to move by the market mechanism liked other electrical appliances.

### **Export market**

There is an increasing demand of world market for solar panel at average of about 30% per year, so it will be a great promising demand for export.

### **Political policy**

The marketing model of the solar panel manufactures might be focus more in export market in the next 5 years if there is no firm commitment from the government regarding the budget (support) for her target. Hence, the political policy is also a factor that we have to consider when talking about the future market. To day the support (indirect) from the government is a major demand of solar energy products in Thailand.

### **Clean world**

It is known that the consumption of fossil fuel has created bad impacts toward the environment, the world society have astonished these negative impacts such as ecosystem destruction especially the global warning resulted from the green house effect [11]. Campaign period for alternative sources of energy will also be a good push for marketing of solar energy products.

## **Fuel oil crisis**

It is not an avoidable matter in very near future, so it is likely that the support of government in this project will be continued, but there must be a sign of fully support or an established long term policy about it.

## **Competitors**

Introduction of other cheap alternative renewable energy sources from bio-wastes and from other hydrocarbon sources such as bio-diesel from vegetable oils. This is perhaps the only group of direct competitors and it is unavoidable external factor. One weak point for most alternative renewable energy is that they will be handled economically only under the form of GCS. There should be only the proton membrane (The membrane that can separate oxygen and hydrogen from water) that might have a change to operate in form of SAS but so far this product is still under period of research, study and development to lower the production cost down for general commercial. Again, we cannot ignore it. So far, for near future there will not easily be a dominant competitor and there is plenty of time for solar energy to develop to get better yield and cheaper.

## **New technology**

Recent discover of promising new technology in many fields such as how to make better and longer life energy storage, how to make new solar panel with better efficiency and yield and how to make better stability and cheaper inverter. Once these technologies can be applied for commercial level, they will help lowering the present rather high cost of solar energy products and the cost of electricity from solar energy. By that time, solar energy products should be the affordable products for most people and the GCS should be very attractive to invest.

## **Good source of energy**

The solar energy itself is the best source of energy with unlimited supply. It is waiting for human to develop and utilize it. So even it will take time but the product it self has very prosperous future. The good marketing model for solar energy product in Thailand will require the proper match of time and the other above factors.

## **4. CONCLUSION**

This article presents the marketing models for the coming up of new solar energy products. Marketing opportunity for future Solar Energy products should be in form of stand alone system which has it's flexibility to fit well with the application of various types of small size electrical devices but they can be sold in big quantity and can create big market value, for example up to today both solar street light and PV Water pumps have been sold and installed over 1,000 units each. In rural area where there are demands for better quality of living, the government has to support for the basic infrastructure. Good and successful market planners should be able to foresee additional demands of customer and can design new marketing strategies for any new innovative solar energy products that can reply to the need of customer.



## References

- [1] Provincial Electricity Authority (Online) [www.pea.co.th](http://www.pea.co.th).
- [2] Thanarak, P. (2006). *Economic evaluation of photovoltaic systems for rural electrification in Thailand*. IIRE, Vol.1(2), 53.
- [3] Rudeephiphphatthanapong, A. (2005). *Study on the strategy and solar business operation of Bangkok lighting center Co. Ltd.* An Independent Study, SERT, Thailand.
- [4] Chokmaviroj, S (2006). *Evaluation of optimal plant system of grid–support photovoltaic : Case study of the PV plant At Mae Hong Son Province*, Ph.D Thesis, SERT, Thailand, pp.32-36.
- [5] <http://www.yellowpages.co.th>.
- [6] Khunchrnyakong, W. (2001). *How to market promote and distribute the PV water pumping system to Tumbon Council or Tombon Administration Organization of Thailand*, A special problem, SERT, Thailand.
- [7] Department of Local Administration. (1999). *Staff of Tumbon manual*.
- [8] Thongsatit, A (2005). *Development & promotion plan for solar cell industries for using and research to 250 MW*. In: Direction of solar energy in Thailand, July 2005, The standing committee on energy, Thailand.
- [9] Department of Alternative Energy Development and Efficiency. (2006). *Thailand energy statistics*.
- [10] Eakarat Solar Company [Online] [www.eakarat-solar.com](http://www.eakarat-solar.com).
- [11] Sadehakulnukit, B. (2005). *Guidelines for new power plants to underline with RPS*. In: *Direction of solar energy in Thailand*, July 2005, The standing committee on energy, Thailand.
- [12] Kruangam, D. (2005). *The promotion of solar cell use for the countries*. In: *Direction of solar energy in Thailand*, July 2005, The standing committee on energy, Thailand.
- [13] Kotler, P. (2000). *Marketing management*. USA: Prentice-Hall.
- [14] George E, & Michael A. (2004). *Advertising and promotion*. NY: McGraw-Hill.