

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



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Introduction

Egypt has successfully managed to secure electricity supply to 99.03 % of its population. The electrical peak demand increased by an average of 7% over the last decade, it increased by more than 12% in the year 2007/2008. The peak demand has reached 23 000 MW in September 2009. To meet the increase in demand an average annual expansion in generation and transmission as well as distribution of 2000 MW is needed over the next 20 years.

After Egypt's production peak of over 900,000 bbl/d in the 1990's, output began to increasingly decline as oil fields matured. However, on-going successful exploration has led to new production from smaller fields, and enhanced oil recovery (EOR) techniques in existing fields have eased the decline at aging fields. In addition, output of NGLs and lease condensate has increased as a result of expanding natural gas production and has offset some of the other declines in liquids production.

One of Egypt's challenges is to satisfy increasing domestic demand for oil in the midst of falling domestic production. Domestic oil consumption has grown by over 30 % over the last decade, from 550,000 bbl/d in 2000 to 815,000 bbl/d in 2011.

The Egyptian energy strategy from 1979 is focusing on energy efficiency. It does not impose any constraints on energy supply. It integrates with the economic and social development plans of Egypt

The potential of adding more hydro-generation is limited. In 2008/2009 installed renewable sources (mainly wind) has reached 430 MW representing only 2% of the installed capacity and generated energy from these sources represents only 1% of the electrical energy generated. Electricity purchased from self-generation and cogeneration units in industry in 2008/2009 represents only 0.07% of the total electrical energy generated. In 2007-2008 subsidy of 5.5 Billion LE was offered mainly to the residential sector; however one Billion L.E. is recovered due to the cross subsidy policy leading to a net annual subsidy, not including the fuel subsidy, at 4.5 Billion L.E.

Egypt is one of the Sunbelt countries that enjoy one of the largest potentials of solar energy. The solar Atlas was issued in 1991, the results of Atlas shows that the average direct normal solar radiation is 2000 – 3200 kWh/m²/year The sunshine duration ranges between 9 – 11 h day from North to South with very few cloudy days.

Until 2012, renewable energy generation facilities with concessional financing from donors, which include 550 MW of wind power plants.

Electricity generation from solar thermal system is Kuraymat 140 MW Integrated Combined Cycle Power Plant. The plant is based on CSP technology which used parabolic trough technology integrated with combined cycle power plant and uses natural gas as a fuel. The capacity of the project is 140 MW which includes 20 MW as the solar share.

The total installed capacity of PV systems in Egypt is around 10 MW for lighting, water pumping, wireless communications, cooling and commercial advertisements on highways.

Local companies for manufacturing solar water heaters reached 12 companies with installed capacity in Egypt until now about 350 thousand solar heaters (700,000M²).

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

The electricity generation expansion plan for Egypt includes achieving a total solar capacity of 150 MW by 2017. Some of the world's best wind power resources are in Egypt, especially in the areas of the Gulf of Suez, where at least 7200 MW could be potentially developed by 2020.

1.2 Institutional organization of the solar sector in EGYPT

The Ministry of Electricity and Energy (MoEE) is the principal policy agency in the electricity and energy sector, including Egyptian Electricity Holding Company (EEHC), **New and Renewable Energy Authority (NREA)**, Rural Electrification Authority, Hydropower Projects Authority, and Nuclear Energy Agencies. The solar sector in Egypt is under duty of **New and Renewable Energy Authority (NREA) and NREA is involved in SHAAMS project.**

1.3 The energy/solar strategy in Egypt

The Supreme Council for Energy, established in 2006. The council deals with strategic issues in the energy sector, including major policy initiatives, investment programs, and energy pricing. Egypt's energy strategy has to face the challenge to meet the increasing demand for energy for Egypt's growing economy and population. The strategy which was approved in February 2008 aims to:

- Contribution by renewable energies reaches 20% of the total electricity generation by 2020.
- The share contribution of the grid connected wind power will be 12% of the total electricity generation, i.e., reaching more than 7200 MW grid-connected wind farms while the remaining will be from mainly hydro (8%) and solar energy (2%).
- In July 2012, an Egyptian Solar Plan has been approved by the Cabinet which targeting to install about 3500 MW by 2027 (2800 MW CSP + 700 MW PV) with private investment share of 67% including enhancement of relevant local industry.

The following aspects are considered in the strategy:

- Diversifying the energy supply resources by increasing the renewable energy (RE) sources such as solar, wind and biomass.
- Maximizing the share of (RE) in the energy mix.
- Gradual reduction of subsidizing energy end-use prices.
- Raising awareness of end-users on the benefits of renewable energy.
- Planned future mix of renewable and fossil fuels. Satisfy 20% of the generated electricity by renewable energies by 2020, including 12% from wind energy, i.e., reaching more than 7200 MW grid-connected wind farms (about 600 MW wind farms annually).
- Increasing the contribution of renewable energy in the electric energy mix to meet the growing demand.
- Saving the fossil fuels for export and for future generations' needs.
- Exporting clean energy generated from Wind and Solar to Europe via regional interconnection links



- Trading the emission reductions.
- Enhancing the local industrial capabilities through technology transfer.
- Creating national and regional market for RE equipment
- Creating new job opportunities.

1.4 Egypt and the MED Solar Plan

The Mediterranean Solar Plan (MSP) was launched by the Heads of State and Governments of the 27 EU Member States and 16 Southern and Eastern Mediterranean Countries (SEMC) as one of the priority projects of the Union for the Mediterranean (UfM) at the Founding Summit of July 2008. The MSP is mainly concerned with perspectives for electricity production from renewable sources (RES-E) as well as with a decrease of energy intensity via an increase of energy efficiency (EE); perspectives for heat production from renewable sources (RES-H) as well as for fuel production from renewable sources (RES-F) shall at this stage play only a minor role, as to the former, and no role, as to the latter. Three main options are currently considered: onshore wind power; photovoltaic power (PV, incl. CPV); and concentrating solar power (CSP). Solar thermal heat will be subsumed under energy efficiency.

The main goals of the Mediterranean Solar Plan are to facilitate

- develop 20 GW of new renewable generation capacity on the southern and eastern shore of the Mediterranean by 2020, along with the necessary electricity transmission capacity;
- supply the local market with most of the additional electricity produced while exporting part of it to other countries, in the region and beyond;
- improve energy efficiency and rationalize energy consumption in the Mediterranean;
- create new green jobs and industrial capacities in SEMC;
- foster regional energy market integration and regional integration more generally.

Egypt RES National Targets: It is envisaged that 20% of total electricity generated shall be from RES in Egypt by 2020. These targets were approved, supported and mandated by the Supreme Energy Council of Egypt (SEC)

In July 2012, the Egyptian Solar Plan has been approved by the Cabinet, which targeting to install about 3500 MMW by 2027 of combined capacity (2800 MW CSP + 700 MW PV) with private investment share of 67% including enhancement of relevant local industry.

Specific targets have been established for solar and wind. In this respect the following electricity generation targets are envisaged: 12% of total generation from wind farms while the remaining will be from mainly hydro (8%) and solar energy (2%).

Specific Support Schemes for solar and wind projects are carried out:

- The wind and solar atlases were prepared for the electricity and are made available at a low price for (100 US \$each)
- Eligibility for CDM financing.
- Third Party Access code was prepared by the regulatory agency, subject to approval if its board of directors
- A grid code is being developed to include the integration of large wind energy parks to the system.
- An extra high Voltage (500 kV) 280 km double circuits transmission line to accommodate the large wind parks which are about to be developed.



- It is being proposed by the electric regulatory agency to exempt RE projects from wheeling charges.

RES Tariff Support Schemes (e.g.) Feed in Tariffs and/or Premiums): FITs are presently envisaged for RES installations with a maximum of up to 50MW, however, presently they have not yet been adopted as – following a period of thorough analysis and consultation by ERA; Egyptian Regulatory Agency- a political decision to adopt them is presently still pending. Premiums are not foreseen. It is envisaged that they will be applied in parallel with the first 250 MW BOO competitive bidding project taking its tariff as a guidance. The first 250 MW BOO project is expected to be finalized around 2013/2014.

A master study plan for renewable energy in Egypt that is prepared and it covers till 2025 and concentrates in the first phase on wind and solar energy only. The second phase covers the remaining RES resources (Biomass–Biofuels–Geothermal energy).

The scope of this study plan includes the following:

- Assessment of economic possibilities for wind & solar energy and the most important challenges that face the deployment of renewable energy on a large scale (technical, financial, and legislative challenges etc...)
- The integration of solar and wind forms with national grid.
- Policies and procedures of technology transfer in order to support the local manufacturing of renewable energy equipment (the private sector role in technology transfer – setting some targets & trying to achieve it).
- Support of institutional framework for wind & solar energy.

Egypt Ministry of Electricity submitted 3 projects proposals to the secretariat of the Mediterranean Union to be implemented through the plan, as follows: -

- 1) Contribution in the financing of power plant project with capacity about 220 MW in Kom Ombo ((Kom Ombo PV1).
- 2) Financing a feasibility study for 200 MW wind power plant in West Nile (West Nile Wind Farm II)
- 3) Finance a feasibility study for 500 MW solar thermal power plants in Kom Ombo ((Kom Ombo CSP2).



1.5 Questionnaire Results

To which of these geographical areas does your Administration belong?	%
MED AREA	67
ENPI CBC MED	33

What is your role within the Administration?	%
Political and institutional area	33
Professional areas (officers, directors, technicians, etc.)	67

Do you think that the information on renewable energy is adequately conveyed in your country?	%
Yes	33
No	67

To what stakeholders is your Administration's strategy for sustainable energy development addressed?	%
Non-profit organizations	
Local enterprises	44
Associations and professional bodies	33
Citizens	23

Is your Administration already engaged in the development of specific actions for the support and promotion of sustainable energy?	%
No	
Yes; it has recently started working on this field	44
Yes; however the results are still not sufficient	56
Yes, it has reached a satisfactory level and it progresses appropriately	

Your Administration's strategy on sustainable energy is mainly linked/coordinated by: (max. two answers)	%
State/provincial government	
National government/federal government	89



Supranational institution	11
In your country, are there economic incentives for the installation of solar energy systems?	%
No	
Yes, only for photovoltaic systems	56
Yes, only for solar thermal systems	22
Yes, both for photovoltaic and solar thermal systems	22
If yes, please provide a list of the those incentives	
In your country, are there rules or general requirements in the building regulations concerned with renewable energy?	%
No, there are no rules or general requirements	22
Yes, there are rules addressing energy efficiency	78
Yes, there are rules on the use and dissemination of renewable energy sources (particularly solar energy)	78
Building regulations and territorial planning include obligations aimed at accelerating energy saving and/or the development of renewable sources?	%
No	
Yes	100
Have solar cooling systems been installed by your Administration? (each air-conditioning system – cooling – that uses solar energy)	%
Yes	
No	100
Has your Administration ever (or sub-contracted the installation) installed photovoltaic systems on public buildings?	%
No	
Yes	100
(indicate how many kW) about 1000	
Has your Administration ever (or sub-contracted the installation) installed solar thermal systems on public buildings?	%



No	100
Yes	
(indicate how many mq)	

There exist in your Administration the figure of Energy Manager? (professional agent whose job is to analyze and optimize the energy consumptions of the companies, both public and private)	%
Yes	67
No	33

On which kind of energy sources will your country mainly focus in the next five years? (max two answers)	%
Hydroelectric	
Geothermal	
Wind energy	78
Solar energy	11
Nuclear energy	11
Fossil fuels	

What is your opinion regarding the feasibility of in the territory covered by your Administration to switch to solar energy in: (max two answers)	%
Bureaucratically difficult	16
Technically complex	28
Economically wasteful	56
Environmentally convenient	
Economically convenient	

Which are the main barriers to promote solar energy in the territory covered by your Administration: (max two answers)	%
Lack of the technical staff	11
Funding to implement actions	67
Decision-making power	22
Establish a dialogue with the national government	
Administrative procedures	

1.6 SWOT analysis and results

	HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	<p>STRENGTHS</p> <ul style="list-style-type: none"> • The solar atlas is prepared for the electricity and are made available at a low price for (100 US \$each) • Eligibility for CDM financing. • Third Party Access code was prepared by the regulatory agency, subject to approval if its board of directors • It is being proposed by the electric regulatory agency to exempt RE projects from wheeling charges 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • In 2020, only solar energy contribution to the 20% RE is 11.6% . It means about 2.32% of the total power generated. • No clear statement for solar cooling systems are planned to be runs by 2020. • Lack of funding
EXTERNAL ORIGIN	<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Diversifying the energy supply resources by increasing the renewable energy (RE) sources such as solar, wind and biomass. • Maximizing the share of (RE) in the energy mix. • Gradual reduction of subsidizing energy end-use prices. • Raising awareness of end-users on the benefits of renewable energy. • Planned future mix of renewable and fossil fuels. Satisfy 20% of the generated electricity by renewable energies by 2020, including 12% from wind energy, i.e., reaching more than 7200 MW grid-connected wind farms (about 600 MW wind farms annually). • Increasing the contribution of renewable energy in the electric energy mix to meet the growing demand. • Saving the fossil fuels for export and for future generations' needs. • Exporting clean energy generated from Wind and Solar to Europe via regional interconnection links • Trading the emission reductions. 	<p>THREATS</p> <ul style="list-style-type: none"> • The wind energy has the highest priority for 2020 as the resources are exists in Egypt. Instead of Egypt is one of the sunbelt countries that enjoys one of the largest potentials of solar energy applications the solar energy utilization is ranked number 2 in the national priority of RE utilization.

1.7 Global conclusions for the policy accelerator in Egypt.

From the SOWA analysis the solar sector point in Egypt strengths are:

The solar atlas is prepared for the electricity and are made available, Eligibility for CDM financing. Third Party Access code was prepared by the regulatory agency, subject to approval if its board of directors. It is being proposed by the electric regulatory agency to exempt RE projects from wheeling charges. The citizens are NREA main stakeholders, feed-in Tariffs are under preparation, no internal tax benefits are provided to RE projects and Land for large-scale solar projects is allocated for private development. While the Weaknesses are: In 2020, only solar energy contribution to the 20% RE is 11.6%. It means about 2.32% of the total power generated. No clear statement for solar cooling systems are planned to be runs by 2020.

2. The SHAAMS ENTERPRISE RESEARCH ACCELERATOR in Egypt

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

In Egypt there are Many National Research Labs working with R&D for solar energy utilization sector. There are many expertise and specialist on the field of R&D for solar energy systems. Also, R&D Organization defined the technology needs to work under Egypt conditions. The common solar energy equipment in Egypt market is the Solar Thermal Water Heaters. The total installed area in Egypt is about 750 thousand m². There are about 20 Egyptian companies working in the field of manufacturing, importing, distribution and installation of solar water heaters. Currently, there is a trend for cooperation with the tourism sector to explore the possibility of spreading the use of Renewable Energy applications in tourist cities, including increase the use of solar heaters in Hotels and Tourist Villages.

Disseminating Solar Water Heaters Project in Hotels located in Red Sea and South Sinai Governorates. The project is implemented in co-operation between Egyptian Government, Italian Government and the United Nations Environment Program (UNEP). The project aims to implement a mechanism that support financing the dissemination of solar water heaters in hotels & resorts in Red Sea and Sinai Governorates with total cost of 500,000 US Dollar.

2.2 Economic, market and financial barriers and facilitators to the strategy implementation

Due to shortage in energy generated from fossil fuels (the demand higher the production), therefore, for large scale solar energy utilization projects, some provide sectors show there interest in investments in solar power generation, however, the produced power until now cannot be connected to the national grid. While, for public market still the Capital cost is high compared by Cost Efficiency, therefore there are limited markets for manufacturing. Also, Egypt Ministry of Housing issued new regulation concerning mandatory of utilization of DWH systems in new buildings.

2.3 Questionnaire Results

1- Are you aware of your country's policy/legislation on solar energy systems?

- | | |
|--------|-----|
| a. Yes | 30% |
| b. No | 70% |

2- What type of solar energy systems you know about

- | | |
|---------------|-----|
| Photovoltaic | 42% |
| Passive heat | 16% |
| Solar thermal | 42% |

3- What type of solar energy subjects you are interested in?

- | | |
|---------------------------------|-----|
| a. R&D in solar energy | 46% |
| b. Promotion of solar energy | 31% |
| c. Trading solar energy systems | 23% |

4- Do you have links to solar energy Labs?

- | | |
|--------|--|
| a. Yes | |
|--------|--|



- i. In-house 46%
- ii. Outsourced 15%
- b. No 39%

5- Have you adopted or used solar energy systems in your organization?

- a. Yes 31%
- b. No 69%

6- Have you implemented or been part of a solar energy subsidized/grant program? (international donors or government)

- a. Yes 23%
- b. No 77%

7- Do you have the intention to invest in a solar energy project/program/system or upgrade an already existing one?

- a. Yes 15%
- b. No 85%

8- Please define the two main difficulties in implementing solar energy system in your organization

- a. Legislation
- b. Lack of Capital 30%
- c. Cost Efficiency 26%
- d. Lack staff expertise 26%
- e. Availability of Labs equipment 18%
- f. Lack of Technology
- g. Lack of knowledge

9- Do you work with experts or specialists outside your organization on Solar system?

- a. Yes 31%
- b. No 69%

10-How many among your organization's staff are specialized on solar systems?

11-What is your initial amount you invested to implement solar energy system in your organization?

- a. Yes
- b. No 100%

12-What is the source of funding of your organization's solar energy system?

- a. Capital
- b. Loan
- c. Grant 39%
- d. National support scheme 53%
- e. Other 8%

13-Does your organization have any link or cooperation with public institutions or governmental agencies on the subject of solar energy?

- a. Yes 31%
- b. No 69%



14-Is there any national or EU based support institutions on solar energy subject?

- a. Yes 46%
- b. No 54%

15-Do you have any future plans on implementing solar energy solutions?

- a. Yes 31%
- b. No 69%

16- What kind of private/public initiative do you think can be relevant to cover your organisation' needs?

- 1) Technology transfer event 31%
- 2) Scouting of technology 31%
- 3) Be to be event
- 4) Training initiatives 23%
- 5) Market place 15%

22- How does the organisation organize the commercialization process with respect to:

- a) Licensing: _____
- b) Start-up or spin-off: _____
- c) There is not a commercialization process identified 100%

Is there in your organisation an office/person actively involved in facilitating technical, entrepreneurial and financial support?

- a) yes 31%
- b) no 69%

2.4 SWOT Analysis

	HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	<ul style="list-style-type: none"> • There are many national expertise and specialist on solar energy utilization systems • R&D Organization define the technology needs to work under Egypt conditions • Many National Research Labs working with R&D in solar energy utilization sector • Existence of the institute of priority right and innovation technology 	<ul style="list-style-type: none"> • Lack of funding for R&D solar system sustainability after the main found is over. • The solar energy research sector is only supported by the founding authorities in form of research grant to encourage the development of solar energy systems
EXTERNAL ORIGIN	<ul style="list-style-type: none"> • Due to shortage in energy generated from fossil fuels (the demand higher than the production), therefore, for large scale solar energy utilization projects, some provide sectors show there willing investments in solar power generation, however, the produced power until now cannot be connected to the national grid. • Egypt Ministry of Housing issued new regulation concerning mandatory of utilization of DWH systems in new buildings. 	<ul style="list-style-type: none"> - For public market still the Capital cost is high compared by Cost Efficiency, therefore there are limited markets for manufacturing.

2.5 Regional Conclusions

From the SOWA analysis for situation of the R&D and solar market in Egypt strengths are: There are many national expertise and specialist on solar energy systems. R&D Organization defined the technology needs to work under Egypt conditions. Many National Research Labs working with R&D in solar energy utilization sector. Existence of the institute of priority right and innovation technology

While the Weaknesses are: Lack of funding for R&D solar system sustainability after the main found is over. The solar energy research sector is only supported by the founding authorities in form of research grant to encourage the development of solar energy systems.

Opportunities Egypt Ministry of Housing issued new regulation concerning mandatory of utilization of DWH systems in new buildings. Shortage in the energy generated from fossil fuels (the demand higher the production)

Threats are: For public market still the Capital cost is high compared by Cost Efficiency, therefore there are limited markets for manufacturing.



3. The SHAAMS SOCIAL ACCELERATOR in Egypt

3.1 Public awareness on the solar sector in Egypt

Cooperation between Ministry of Electricity and Energy and Ministry of Housing is prepared for developing the regulation for the disseminating installation of solar water heaters in new buildings.

Bibliotheca of Alexandria launches in the period from 17 February to 24 March 2013 series of educational seminars under the title "New trends in nuclear and renewable energy, and its applications in Egypt." These seminars aim to spread public awareness of the importance of finding alternative sources of energy, not only for the purpose of confronting the current energy sources, but also for the purpose of devising modern methods non-polluting. These lectures by elite of Egyptian scientists in the field of new and renewable energy and SHAAMS –Egypt project manager are one of lecturers in this series.

On the demand side, there is a lack of awareness among the general public coupled with lack of any market incentive programs for potential consumers. This, in addition to the subsidized conventional sources of energy, is limiting significantly the competitiveness of solar energy utilization equipment in the market.

Public awareness about renewable energy is necessary and the sector would benefit from an independent energy advisory board, a fully independent renewable energy authority and specialized energy study institutes.

3.2 Barriers and Facilitators for the social apprehension of solar sector solutions

The facilitators for the social apprehension of solar sector solutions are: The governments of Egypt have taken step to reduce energy poverty over the last year, mainly focusing on the decrease of subsidies for liquid petroleum gas LPG and home electrical consumption.

The barriers for the social apprehension of solar sector solutions are:

1 - Financial and economic barriers

One of the biggest barriers is subsidizes to other energy sources from fossil fuels including petroleum products and natural gas used in electricity generation as well as the electricity subsidy itself.

To illustrate this point, we will show, for example solar water heaters the support for the natural gas have a direct negative impact as most of the residential units in Egypt major cities connected to natural gas network, which is expanding rapidly. In addition to the fact that the investment cost of renewable energy systems are high compared with other energy systems. This pairing rise at a low cost for the operating expenses for fuel is not used, but because of low fuel prices due to fade subsidies. Also, at the level of low-income consumers they prefer to pay low initial cost of either gas or electric water heaters because of its offset low running cost due to subsidies rather than the long term to buy solar water heaters. This process is still in the under growth in Egypt.

2- Technical barriers

The standards are not applied, for example, traded solar energy systems for home use with low quality and not providing after-sales services and regular maintenance services lead to discredit renewable energy systems as a whole.

3- Barriers in the market

This type of barriers was appeared in 2006, as before 2006 there was a consistent pattern of lower prices of solar energy systems in the market, which reduces their investment cost. This was accompanied by an increase in these systems productivity, which led to a decrease in the cost of the kilowatt-hour generated from solar energy sources throughout their working life. In 2006, prices of solar energy equipment started to increase and reached to 60%. The reasons behind this increase is not known it's likely that the sudden increase in oil prices led to an increase in global demand for solar energy systems followed by raising their prices. However, this phenomenon did not continue as the price of solar energy technologies in a steady decline in the previous period as well as the increase in their efficiencies.

4- Barriers to awareness and dissemination of information

The limited awareness programs and training prepared by the New and Renewable Energy Agency in Egypt as well as the feasibility studies for solar energy systems has significant impact to raise awareness and to increase the use of solar energy resources. This is not at the wider public level and there is still much room for expansion in this effort to reach a larger number of people spreading the use of solar energy.

Questionnaire Results

1. Regarding the country you are living in : what do you think is the actual percentage of renewable energy of the total energy production

- o Less than 10 % 72%
- o Between 10 and 40 % 28%
- o Between 40 and 70 % 0%
- o Between 70 and 100 %

2. Regarding the country you are living in: what do you think is the actual percentage of solar energy of the total renewable energy production?

- o Less than 10 % 60%
- o Between 10 and 40 % 28%
- o Between 40 and 70 % 12%
- o Between 70 and 100 %

3. When talking about solar energy we have to distinguish between three main types described below. Which of these types you think should be given priority. Please rate from 1 (not important) to 3 (very important):

	1	2	3
o Photovoltaic energy (PV): Uses energy from the sun to create electricity to run appliances and lighting. A photovoltaic system requires only daylight – not direct sunlight – to generate electricity.	20.8%	25%	54.2%
o Passive heat: This is heat which we receive from the sun naturally. This can be taken into account in the design of buildings so that less additional heating is required.	40%	20%	40%
o Solar thermal: Uses the sun's heat to provide hot water for homes or swimming pools (also heating systems).	32%	48%	20%



4. Regarding the country you are living in: what kind of energy mix would you like to see in twenty years?

- 100% renewable energy 48%
- 75% renewable energy 32%
- 50% renewable energy 12%
- 25% renewable energy 8%
- Less than 25% renewable energy

5. Regarding the situation in your country: what would you say are the main barriers which hamper a further development of renewable energy solutions? Please rate from 1 (not important) to 5 (very important):

	1	2	3	4	5
<input type="radio"/> Lack of information of civil society	22.7%	13.6%	22.7%	13.6%	27.3%
<input type="radio"/> Lack of pressure from civil society to further develop renewable energies	5%	15%	10%	40%	30%
<input type="radio"/> Lack of political will of decision makers	8.7%	26.1%	13%	4.3%	47.8%
<input type="radio"/> Lack of willingness of business sector	4.3%	17.4%	39.1%	21.7%	17.4%
<input type="radio"/> Lack of foreign investment	18.2%	27.3%	13.6%	22.7%	18.2%
<input type="radio"/> Lack of sufficient renewable energy sources	84.6%	0%	0%	0%	15.4%

6. Do you think that the production of renewable energy is in general more expensive than the production of energy based on fossil or nuclear sources?

- Yes 56%
- No 28%
- Don't know 16%

7. Do you think that you have enough knowledge and information about how to save energy at home or at your working place?

- Yes 60%
- No 40%

8. Climate Change is considered one of the greatest environmental and economic challenges of the 21th century. Regarding your country, do you think that this threat is taken seriously into consideration when decision makers decide about the best energy solutions for the country?

- Yes 16%
- No 68%
- Don't know 16%

9. What do you think you could do to influence the discussion and decision making process regarding the future energy policy in your country? You may choose more than one option.

- Participate in public hearings and roundtables on energy issues 40%
- Participate in campaigns or education activities 28%
- Collaborate with a political party 20%
- Collaborate with a NGO 12%
- Others: _____

10. Did you ever heard of Earth Hour or any other campaign dealing with Climate Change and/or renewable energies

- Yes, I have heard about the Earth Hour Campaign 52%

- o No, but I have heard about other campaigns (please specify if possible): 0%
- o No 48%

3.3 SWOT Analysis

The barriers and facilitators identified in the previous chapter can be simplified in the following SWOT table

	HELPFUL (To achieving the objective)	HARMFUL (To achieving the objective)
INTERNAL ORIGIN	<ul style="list-style-type: none"> • Willing of the public to have higher percentage of RE sharing in power production. • Willing of the public to have higher percentage of solar energy share in RE in power production. • 	<ul style="list-style-type: none"> • There are very limited awareness programs and training among the general public coupled with lack of any market incentive programs for potential consumers
EXTERNAL ORIGIN	<ul style="list-style-type: none"> • Feasibility studies announced for public for solar energy systems can have significant impact on raising the awareness and to increase the use of solar energy resources 	<ul style="list-style-type: none"> • The capital cost of renewable energy systems are high compared with other energy fossil systems

3.4 Regional conclusions

From the SOWA analysis for situation of social accelerator in Egypt strengths are: The willing of the public to have higher percentage of RE sharing in power production, moreover, willing to have higher percentage of solar energy share in RE power production.

While the Weaknesses are: The capital cost of renewable energy systems are high compared with other energy fossil systems

Opportunities: The governments of Egypt have taken step to reduce energy poverty over the last year, mainly focusing on the decrease of subsidies for liquid petroleum gas LPG and home electrical consumption

Threats are: Very limited awareness programs and training among the general public coupled with lack of any market incentive programs for potential consumers.

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: Egypt – Source:								
1-N° of solar systems in Egypt	Solar thermal power		1	1				
	Solar thermal application in hot water, space heating, drying, solar cooling		2	2				
	Solar PV systems		1	2				
	Installed power per capita		Not available	Not available				
2-Total investments in solar energy in Egypt	Grant schemes to support private investments		Not available	Not available				
	No of solar systems in public buildings		Not available	Not available				
	Money invested on raising awareness (training, communication)		Not available	Not available				
	Which technology does the state support?		PV and Solar thermal	PV and Solar thermal				
3 – Total solar energy production in Egypt	Total energy generated from the solar energy		Not available	Not available				