

Case Study:

"Renewable Energy in the Gaza Strip: Short, Mid, and Long Term Concepts"

Prepared by:
PalThink for Strategic Studies
Friedrich-Ebert-Stiftung

October 2014
Gaza - Palestine

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Preface

This case study presents obstacles, challenges and recommendations provided by key participants of the six workshops and round table discussions organized by PalThink for Strategic Studies and Friedrich-Ebert-Stiftung for the project: "Renewable Energy as a Sustainable Solution to the Electricity Crisis in Gaza Strip".

Recommendations and approaches have been organized as short, medium and long-term concepts for their appropriate adoption by individuals at different levels of the decision-making process.

In this capacity, PalThink for Strategic Studies and Friedrich-Ebert-Stiftung would like to thank Dr. Mustafa El-Hawi, who developed this paper. We would also like to thank the project team, researchers, academics and the private sector. Finally we would like to thank Mr. Haitham Ghanim, Director of Sunshine4palestine.

A special acknowledgment goes to the governmental officials and ministers from the Energy Authority, Ministry of National Economy, Ministry of Public Works and the Ministry of Local Government and Universities.

PalThink for Strategic Studies and Friedrich-Ebert-Stiftung would highly appreciate your feedback and comments as a way of enriching this report and putting it into action and operation.

Mr. Omar Shaban

Director

PalThink for Strategic Studies

Dr. Usama Antar

Program Manager in Gaza Strip

Friedrich-Ebert-Stiftung

Contents:

Background	3
1. Situation Analysis on the Energy Problems in the Gaza Strip	3
2. Methodology Applied	4
3. Results & Overviews of Targeted Participants	5
4. Obstacles and Problems Encountered by the Private Sector, Government Officials, Academia and the Local Community on Renewable Energy	12
4.1 On the private sector level:	12
4.2 On the National and Academia levels:	12
4.3 On the community and NGO levels:.....	13
5. Recommendations for Further Action	13
5.1 On the short term	13
5.2 On the medium term	14
5.3 On the long term:	14
6. Summary of Workshops & Conference:	16
1 st Session: "The Importance of Renewable Energy":.....	16
2 nd Session: "Renewable Energy in the Gaza Strip: Previous Theoretical and Practical Experiences"	17
3 rd Session: "Local Business Initiatives on Renewable Energy"	18
4 th Session: "The Role of Government in Encouraging Investments in Renewable Energy"	19
5 th Session: "Enhancing Investments in Renewable Energy Projects"	20
Conferences: "Strategic Solution of the Electricity Crisis in the Gaza Strip"	21
Conferences: "Renewable Energy in the Gaza Strip: Short, Mid, and Long-Term Strategies"	22

Background:

For some years, Gaza has been suffering from a chronic crisis of electricity supply as part of a plethora of issues and crises that have affected this Palestinian territory since 2007. Aspects of this crisis vary due to the multiplicity of sources that supply electricity to the Gaza Strip. Gaza is supplied by three primary sources, namely, Israel (120MW), Egypt (37MW) and the Palestine Electric Company (PEC), and the said quantity depends on the amount of fuel available for the production of electricity. On average, the PEC provides approximately 80 MW or more than 50% of its full capacity of 120 MW.

The total supply of electric power in the Gaza Strip from all the aforementioned sources is approximately 237 MW. On the other hand, Gaza's electricity needs vary seasonally. During the summer and winter months it requires 440 MW. During the rest of the year it requires 380 MW. Then, irrespective of the seasonal needs, there is a significant deficit of approximately 150 MW through the course of the year, and this deficit causes recurring interruption of electrical supply to homes and economic and service facilities.

In this way, the electricity crisis in Gaza has become one of the outstanding problems that affect various aspects of the lives of the Palestinian citizens. This crisis is also considered as particularly acute due to its impact on the economic and social welfare in the Gaza Strip.

1. Situation Analysis on the Energy Problems in the Gaza Strip

Over the last 7 years and since Hamas won the election, the Gaza Strip has been suffering from a chronic crisis in the electricity sector. There are multiple sources of electric energy that provide Gaza with electricity. The need of the Gaza Strip's electricity is between 380 and 440 MW and is expected to rise up to 600 MW, if the Israeli siege is lifted. There are three primary sources of electricity: the Israeli electricity company that supplies 120 MW via ten electric lines; the power station in Gaza that in principal is capable of producing 120 MW but in actuality produces only 80 MW due to its dependency on the amount of fuel available for the production of electricity; and the Egyptian electricity grid that supplies Gaza with approximately 37 MW through two main electric lines.

This means that the total electricity available from the three sources is 237 MW, while the electricity needs of Gaza - with a seasonal variation in the summer and winter months - reach 440 MW. Accordingly, this shows a large deficit up to more than 150 MW or 35% to 40% of the total needs of electricity.

The commitment of donors in providing assistance to Palestinians seeking to rebuild their economy and society has been genuine. The importance of the international community's solidarity and assistance, both official and non-governmental, in

facilitating this process of reconstruction cannot be overstated. The technical expertise and development vision has been a key part of this assistance, including its focus on community development. In the short-term, most of the assistance has been focused on humanitarian and emergency needs the empowerment of the civil society and on rebuilding of the economy through job creation and investment opportunities. Additionally, the focus has also been on creating a conducive political and economic climate that is necessary for future progress and for sustaining the ongoing peace process. In this way, providing sustainable and alternative sources of energy to the Gaza Strip was not at the top priority on the donor agenda.

Solar energy has become an important component in the portfolio of global power generation. It is seen as a cheaper source of energy when compared to traditional fossil fuels and immune to fluctuations in global fuel prices. For this reason, solar energy is now considered to be an economically reliable solution in Palestine where the sun's rays are the most abundant and readily accessible energy source for supporting the needs of Palestine in general, and the Gaza Strip in particular.

While the provision of a sustainable and an alternative source of energy for the Gaza Strip has not been a priority for any of the donors or successive Palestinian governments, here are some of the important projects that have been implemented by Arab countries that serve as examples for future developments in the Gaza Strip:

- World Bank project for the extraction of solar thermal energy in electricity production at Ouarzazate in southern Morocco in order to create a new electric solar power plant of 350 MW at a cost of \$519 million. The World Bank provides \$400 million, and the remaining \$119 million were financed by the Clean Technology Fund and managed by the World Bank.
- "Oonnera" Company Project systems for new and renewable energy production recently completed the establishment of two solar rooftops on the two Egyptian companies premises of Petrochemicals Holding Inc. and Midtab company. The total capacity is 51 megawatt hours per year, which is the equivalent of 1,260 megawatt hours over a period of 25 years.
- Solar plant project worth \$28 million on behalf of the Kuwait Oil Company. The plant will generate 10 MW over 32 thousand units and 12 conversion centers, with an estimated annual electricity production of 17,600 MW/h, and will reduce 9100 tons of carbon dioxide emissions in the air.
- The Construction of the first plant for generating electricity from wind energy in the Harweel area in Dhofar Governorate in the Sultanate of Oman.

2. Methodology Applied

An open ended, participatory, research approach was adopted at the inception of the project. When a certain level of understanding of the subject was developed, some structured techniques were used such as surveys, questionnaires, semi-structured

interviews, non-participatory observations, rapid appraisals, case studies from previous renewable energy projects and finally, different techniques were combined for organizing the overall strategy for adopting short, medium and long-term solutions for the renewable energy suitable for the Gaza Strip. Such an approach was useful since the basic knowledge about the topic was not available. The methodology applied for this project reflects the various techniques of data collection, which were combined as appropriate while conducting a field study in the Gaza Strip.

A well-structured open-ended questionnaire was developed and distributed to cover all cities and geographical areas of the Gaza Strip. Two types of questionnaires were developed and distributed to tackle and cover two targeted categories as follows:

- A Special questionnaire distributed to the private sector including local companies working in the design and implementation of renewable energy projects (10 copies).
- B Questionnaire distributed to the local communities and NGOs (350 copies).

The results of the questionnaire were analyzed through quantitative and qualitative methods and presented at the six workshops organized by Palthink and Friedrich-Ebert-Stiftung. Feedback, comments and recommendations of participants were documented and discussed during the workshops.

3. Results & Overviews of Targeted Participants

These results and feedback are the outcomes of six workshops organized by PalThink and Friedrich-Ebert-Stiftung.

3.1 10 copies of the questionnaire were distributed to ten companies in the private sector and the answers to the questions can be summarized as follows:

Q1 What proportion of your company's employees work in the renewable energy section? Do you keep up with recent technological developments in renewal energy?

Ans. The majority of companies do have qualified employees that follow the latest development in renewable energy.

Q2 How would you evaluate the opportunities available for investing in renewable energy in the Gaza Strip?

Ans. Most companies believe that there are significant opportunities for investment, especially considering the significant problems in the energy sector in the Gaza Strip. However, some companies were critical of the cooperation efforts and the unclear policies of the government. Nevertheless, companies hope for facilitation and incentives for the private sector for bigger investment in this sector such as tax and customs exemption for components and infrastructural needs for the establishment of renewable energy systems.

Q3 How would you assess the quality of projects that your company has implemented in renewable energy? What are some of the caveats to future projects? (Success and/or failures)

Ans. The majority of companies is proud of their implemented projects despite the difficulties with the entry of goods into the Gaza Strip. These projects are critical for encouraging other companies to invest in renewable energy. Generally speaking, results of the evaluation of implemented projects are very much satisfactory and well received by the technical committees according to the standard specifications, while some local companies do count on the specifications of the system' origin country because there is no Palestinian specifications and specified technical standards they can count on, although some delays were reported following the frequent border closures.

Q4 What are the biggest difficulties and obstacles your company has faced in the renewable energy sector? How did you overcome them?

Ans. The majority of companies believe that the main problem they face is the entry of goods such as batteries, solar panels and other accessories. Also, there is a lack of citizens' awareness on key issues of the energy sector, especially the quality of used materials. Additionally, some companies face problems and obstacles in the beginning of the project because of their unfamiliarity with the technical specifications and the concerned agencies and international traders involved in this sector. Currently, and in light of their accumulative experience from previous projects, companies claim to be fully aware of precise specifications of project details and were, therefore able to implement successful projects such as the Al-Naser and Jenin hospitals, the community college, mosques and schools despite the reluctance of Palestinian citizens in using renewable energy because of the high price of \$3000 per kilowatt.

Q5 How would you describe the nature of the relationship between your company and the relevant authorities (Energy Authority, Ministry of National Economy, Electricity Company, and the Ministry of Local Government) in advancing the exploitation of renewable energy?

Ans. The majority of companies believe that, the type of relation they have with concerned authorities like Energy Authority, Ministry of National Economy, Electrical Company and Ministry of Local Government fairly not as it should be with some gaps still there. These companies aim at tax exception for energy goods and accessories, facilitate goods on borders, policy, bylaws formulation to encourage companies invest in the sector and to for the public to install such solar system in their houses as an efficient way to overcome the frequent of electricity cut.

Q6. What is your vision of future developments in the field of renewable energy?

Ans. All interviewed companies hope for a real support from the PA in the form of a clear strategy encouraging private sector investments in the renewable energy sector. They envision an integrated relationship based on comprehensive developments of this sector including the formulation of bylaws, tax exemption, and the facilitation of goods at the borders.

Q7. How would you evaluate the channels of scientific and technical cooperation with other companies, academic and research institutes in the Gaza Strip?

Ans. The majority of companies believe that technical, scientific and research cooperation with partner companies and academic institutions across the Gaza Strip is minimal. There is a gap for a channel connecting concerned companies on key issues linked to renewable energy, which is the reason behind the distortion of efforts.

Q8. What are your company's preparations and strategies in dealing with renewable energy issues during times of economic, political and security hardships in the Gaza Strip?

Ans. The majority of companies does not have a clear strategy on how to proceed with renewable energy generation when the security, political and economic situation deteriorates. This situation refers to the lack of confidence in the PA's performance, movements of goods across the borders and the current political situation.

Q9. From your point of view, how can you ease the burden of high costs of renewable energy services for the families and citizens in Gaza?

Ans. Most of the interviewed representatives of companies believe that the PA should bear the main responsibility in providing facilitation, incentives, and legislation aimed at encouraging companies to develop and invest in the renewable energy sector, which includes tax exemption, guidance for companies on technical specifications and physical addresses of active companies in the renewable energy sector. They emphasize that there are immense possibilities of implementing an accumulative project in the Gaza strip during the next 5 years. There are great possibilities of funding this kind of project through international funding organizations and to regularly get the fees from users of the benefitted citizens.

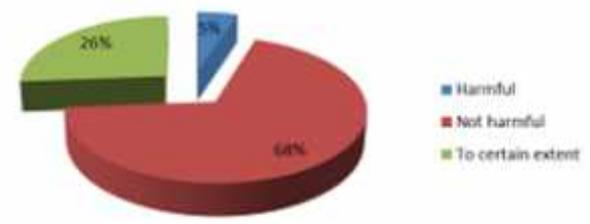
Q10. Does your company have payment installment programs or options for families in Gaza?

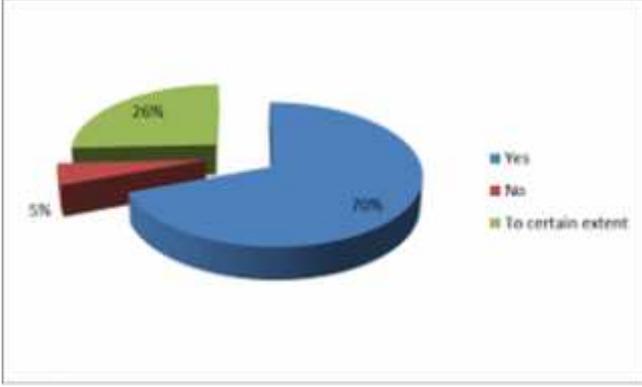
Ans. Some companies adopt installment payment procedures with local community through local banks working in the Gaza Strip. However, there is no practical channels of installment payments that could encourage the public to proceed with utilization of renewable energy. Installment payments are limited only to some companies work directly with the public or civil society organizations.

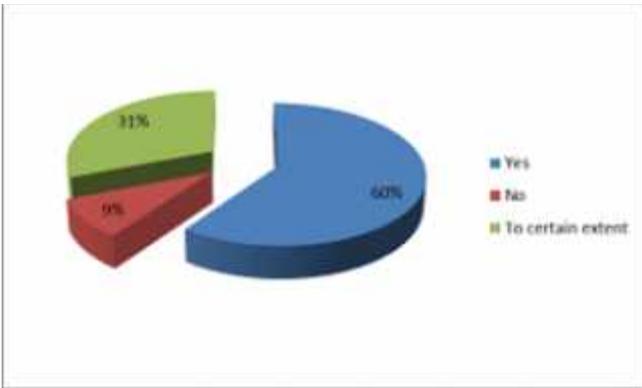
Q11. Do you have any additional suggestions or comments for us?

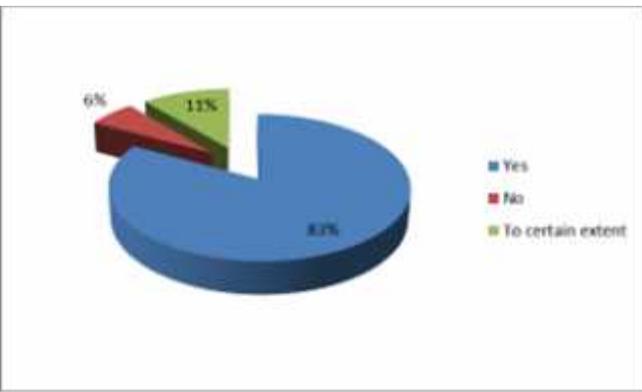
Ans. Some companies recommend bringing the issue of renewable energy to the attention of schools, colleges and universities for the purpose of disseminating awareness among students on the importance of adopting renewable energy as a sustainable and safe energy. Moreover, it is essential to organize training and capacity building programs for company cadres aiming at familiarizing them with the technical specifications and quality of renewable energy resources. Finally, initiate new roles and legislations by concerned authorities to proceed with adopting renewable energy sources in ministries and governmental institutions.

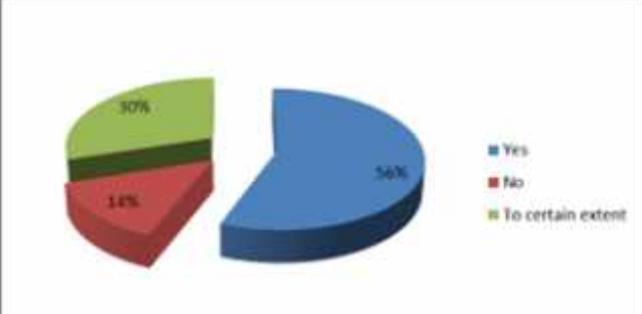
3.2 350 copies of the questionnaire were distributed to local NGOs, experts and community leaders. The quantitative results and answers of the questions were the following:

<p>Q1 Have you ever heard of renewable energy?</p>	 <table border="1"> <caption>Awareness of Renewable Energy</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>75%</td> </tr> <tr> <td>No</td> <td>19%</td> </tr> <tr> <td>To certain extent</td> <td>6%</td> </tr> </tbody> </table>	Response	Percentage	Yes	75%	No	19%	To certain extent	6%
Response	Percentage								
Yes	75%								
No	19%								
To certain extent	6%								
<p>Ans. 75% of the respondents demonstrated some knowledge on renewable energy.</p>									
<p>Q2 Do you believe in renewable energy?</p>	 <table border="1"> <caption>Beliefs about Renewable Energy</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Not harmful</td> <td>68%</td> </tr> <tr> <td>To certain extent</td> <td>26%</td> </tr> <tr> <td>Harmful</td> <td>6%</td> </tr> </tbody> </table>	Response	Percentage	Not harmful	68%	To certain extent	26%	Harmful	6%
Response	Percentage								
Not harmful	68%								
To certain extent	26%								
Harmful	6%								
<p>Ans. 68% of the respondents believed that the application and use of renewable energy had no harmful effects. 26% believed that the use of renewable energy could be harmful.</p>									
<p>Q3 Are you ready and willing to be familiarized with renewable energy and its utilities?</p>	 <table border="1"> <caption>Willingness to be familiarized with Renewable Energy</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>92%</td> </tr> <tr> <td>To certain extent</td> <td>5%</td> </tr> <tr> <td>No</td> <td>3%</td> </tr> </tbody> </table>	Response	Percentage	Yes	92%	To certain extent	5%	No	3%
Response	Percentage								
Yes	92%								
To certain extent	5%								
No	3%								
<p>Ans. 92% of the interviewees were willing to be familiarized with the use and application of renewable energy.</p>									

<p>Q4 Do you believe that the application of renewable energy could reduce the current suffering due to the frequent cuts in the supply of electricity?</p>	 <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>70%</td> </tr> <tr> <td>No</td> <td>5%</td> </tr> <tr> <td>To certain extent</td> <td>25%</td> </tr> </tbody> </table>	Response	Percentage	Yes	70%	No	5%	To certain extent	25%
Response	Percentage								
Yes	70%								
No	5%								
To certain extent	25%								
<p>Ans. 70% of the respondents saw renewable energy as a means of alleviating the current electricity shortages in the Gaza Strip.</p>									

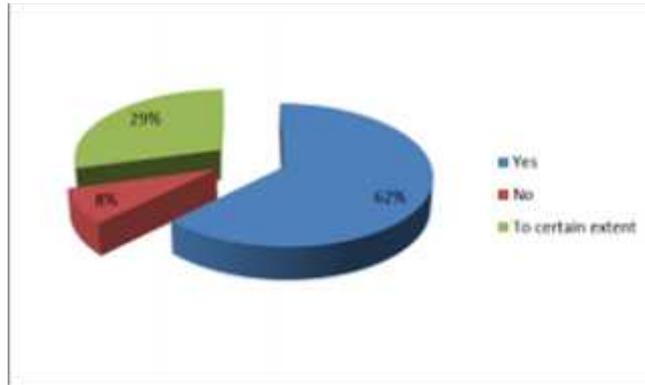
<p>Q5 Do you think that the use of renewable energy at your home or organization will give you some sort of security and stability?</p>	 <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>60%</td> </tr> <tr> <td>No</td> <td>9%</td> </tr> <tr> <td>To certain extent</td> <td>31%</td> </tr> </tbody> </table>	Response	Percentage	Yes	60%	No	9%	To certain extent	31%
Response	Percentage								
Yes	60%								
No	9%								
To certain extent	31%								
<p>Ans. 60% of the respondents saw renewable energy systems as a means of ensuring security and stability.</p>									

<p>Q6 Do you support efforts to lay the foundation of renewable energy facilities in newly constructed buildings?</p>	 <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>83%</td> </tr> <tr> <td>No</td> <td>6%</td> </tr> <tr> <td>To certain extent</td> <td>11%</td> </tr> </tbody> </table>	Response	Percentage	Yes	83%	No	6%	To certain extent	11%
Response	Percentage								
Yes	83%								
No	6%								
To certain extent	11%								
<p>Ans. 83% of interviewees supported the establishment of renewable energy facilities in new buildings as a strategy for future policy. They also supported the establishment of solar energy systems during the reconstruction of buildings that were recently destroyed.</p>									

<p>Q7 Do you think that investing in renewable energy is feasible?</p>	 <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>56%</td> </tr> <tr> <td>No</td> <td>14%</td> </tr> <tr> <td>To certain extent</td> <td>30%</td> </tr> </tbody> </table>	Response	Percentage	Yes	56%	No	14%	To certain extent	30%
Response	Percentage								
Yes	56%								
No	14%								
To certain extent	30%								
<p>Ans. 56% of the respondents answered that, in the long run, investments in renewable energy were feasible.</p>									

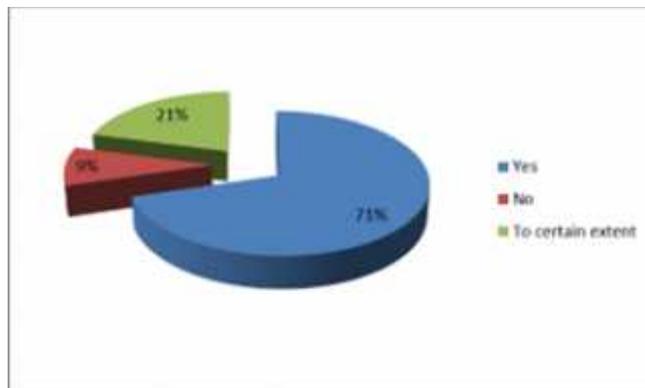
Q8 Do you think that the use of renewable energy contributes to reduced costs at home or your place of employment?

Ans. 62% of the respondents believed that the use of renewable energy could lead to a reduction in costs.



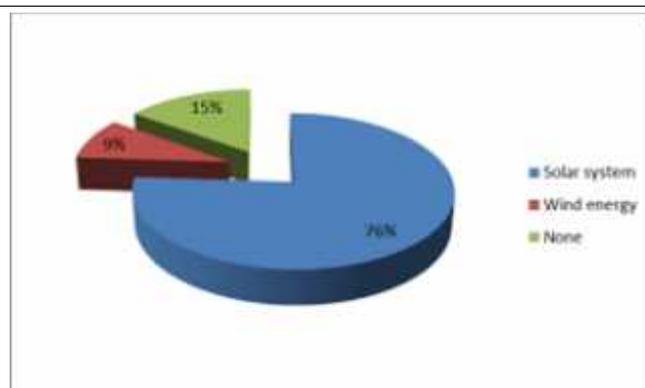
Q9 Do you think that monthly electrical bills are costly and is this why you would use renewable energy as an alternative?

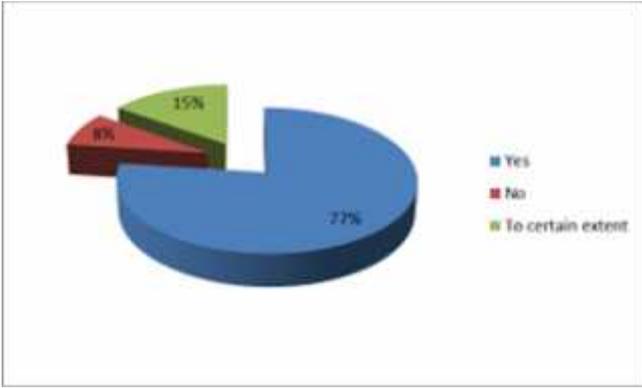
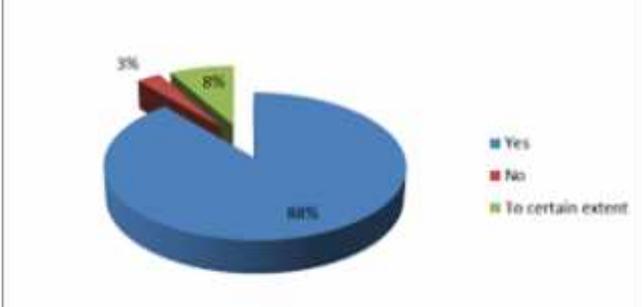
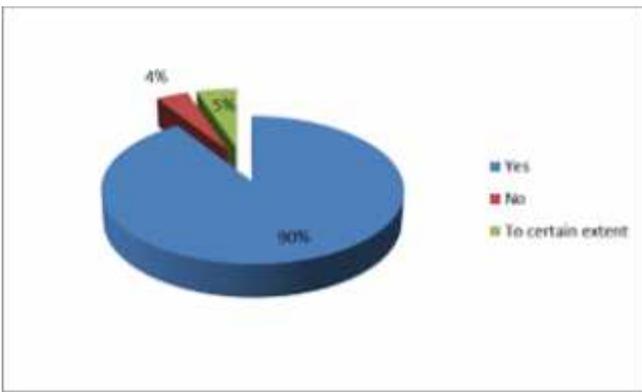
Ans. 71% of the respondents believed that the optimal utilization of renewable energy would significantly reduce the cost of monthly household bills.

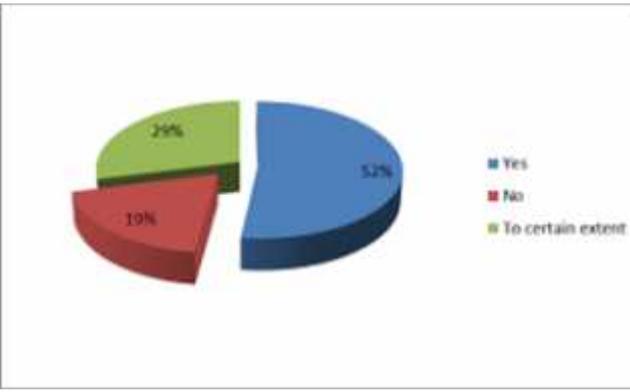


Q10 What type of renewable energy would you like to use at your home or organization?

Ans. 76% of the respondents said that they would be willing to use solar energy systems.



<p>Q11 Are you ready and willing to install solar energy systems to generate enough electricity for your home or organization but your financial capabilities do not allow you to do so?</p>	 <table border="1"> <caption>Data for Q11</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>77%</td> </tr> <tr> <td>No</td> <td>8%</td> </tr> <tr> <td>To certain extent</td> <td>15%</td> </tr> </tbody> </table>	Response	Percentage	Yes	77%	No	8%	To certain extent	15%
Response	Percentage								
Yes	77%								
No	8%								
To certain extent	15%								
<p>Ans. The majority of interviewees (77%) stressed the issue that financial constraints are the main obstacles preventing people from installing solar systems at their homes and institutions, although they are quite convinced that this system is a cheap and sustainable source of energy.</p>									
<p>Q12 Do you think that companies providing renewable energy should agree on payment installments?</p>	 <table border="1"> <caption>Data for Q12</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>88%</td> </tr> <tr> <td>No</td> <td>3%</td> </tr> <tr> <td>To certain extent</td> <td>8%</td> </tr> </tbody> </table>	Response	Percentage	Yes	88%	No	3%	To certain extent	8%
Response	Percentage								
Yes	88%								
No	3%								
To certain extent	8%								
<p>Ans. 88% of the interviewees believed it was necessary that private companies have payment installment programs in order to encourage its clientele to opt for renewable energy sources.</p>									
<p>Q13 Do you think that the government should have a clear policy for tax exemption and customs on certain equipment's and tools for personal use?</p>	 <table border="1"> <caption>Data for Q13</caption> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>90%</td> </tr> <tr> <td>No</td> <td>4%</td> </tr> <tr> <td>To certain extent</td> <td>5%</td> </tr> </tbody> </table>	Response	Percentage	Yes	90%	No	4%	To certain extent	5%
Response	Percentage								
Yes	90%								
No	4%								
To certain extent	5%								
<p>Ans. 90% of the interviewees supported clear policies and strategies of the PA.</p>									

Q14 Are you ready to cover a portion of the total cost of establishing renewable energy operations at your home or organization?	 <p>A 3D pie chart illustrating the responses to Q14. The chart is divided into three segments: a large blue segment representing 'Yes' at 52%, a red segment representing 'No' at 19%, and a green segment representing 'To certain extent' at 29%. A legend to the right of the chart identifies the colors: blue for 'Yes', red for 'No', and green for 'To certain extent'.</p> <table border="1"><thead><tr><th>Response</th><th>Percentage</th></tr></thead><tbody><tr><td>Yes</td><td>52%</td></tr><tr><td>No</td><td>19%</td></tr><tr><td>To certain extent</td><td>29%</td></tr></tbody></table>	Response	Percentage	Yes	52%	No	19%	To certain extent	29%
Response		Percentage							
Yes	52%								
No	19%								
To certain extent	29%								
Ans. 52% of the interviewees showed readiness and willingness to cover a part of the cost of renewable energy operations at their home or organization.									

4. Obstacles and Problems:

According to the results of the questionnaire and discussions with the target groups, the following problems and obstacles were addressed:

4.1 Private Sector:

- The entry of goods related to renewable systems like batteries, solar panels and other accessories. Additionally, the lack of awareness on key issues of the energy sector, especially with regards to the quality of materials used. The unfamiliarity with technical specifications as well as traders make them unqualified to deal with latest techniques and tender documents.
- The relation with the Energy Authority, the Ministry of National Economy, the electricity company and the Ministry of Local Government is not as it should be.
- Tax exception for energy goods and accessories are not available, neither are the simplifications of the import of goods nor policies or bylaws encouraging companies to invest in the sector and encouraging the public to install such solar systems in their houses.
- Communication and cooperation with academic and research institutions is not pursued.
- Long and short-term policy and strategy to adopt renewable energy is still unavailable.

4.2 On the National and Academia levels:

- The Palestinian Authority represented by the Energy Authority, the Ministry of National Economy, the electricity company and the Ministry of Local Government have no clear policy to adopt renewable energy as a sustainable option to deal with the electricity crisis in the Gaza Strip.
- A taxation policy on renewable energy is still unavailable.

- Partnership mechanisms and channels between governmental and private sector are still lacking.
- Governmental incentives and encouraging procedures to adopt renewable energy are still lacking.
- Budgets or financial resources to encourage private sector and academia research centers are still lacking.

4.3 On the community and NGO levels:

- Financial incentives to encourage communities and NGOs to adopt or invest in renewable energy and create an alternative for regular energy as an environmentally sound option for Gaza during the current crisis is still lacking.
- There is a lack of community awareness on operating and maintenance of a renewable system.
- Capacities of local NGO staff on the renewable energy are not yet built.
- Cooperation and coordination between communities, NGOs and research institutions in the field of renewable energy is still lacking.
- Information dissemination on the availability of funding sources that give loans to green projects including renewable energy is still lacking.

5. Recommendations for further action:

Based on the above data, the following are our recommendations:

5.1 In the Short-Term

- The Palestinian Authority should invest in renewable energy projects. The private sector should be encouraged to implement solar energy projects incentivized by the PA through tax exemptions.
- Soft loans and funding channels supporting NGOs and the local community with investments into renewable energy should be enhanced and encouraged.
- Capacity building programs for research centers, universities, colleges and local NGOs on the various applications of renewable energy should be established.
- Networking channels between scientific research (academia) and the private sector in the field of renewable energy should be enhanced.
- Building the capacity of citizens in the effective utilization of renewable energy.
- Solar power generating systems should be installed in all new buildings and housing projects. At least the facilities needed to be fully ready for future installments should be put in place.

- Participants stressed the necessity of a sustainable utilization of renewable energy as an environmentally friendly option for Gaza during the current crisis.
- It is necessary to share successful stories, accumulative experience and previous solar projects implemented by local and international organizations.
- Support from the PA to encourage private sector investments in renewable energy and incentives for NGOs.

5.2 In the Medium-Term

- It is important for the PA to adopt a special policy to encourage local organizations to invest in renewable energy and create an alternative for regular energy as an environmentally sound option for Gaza during the current crisis.
- Establish cooperation programs with donor organizations in order to fund renewable energy projects with local NGOs.
- Lessons learned and successful stories should be shared with academic institutions, the private sector, donors and local NGOs.
- Need to speak about what has been achieved so far in the field of renewable energy.
- As part of encouraging the private sector to invest in renewable energy some serious procedures and actions like tax exemption on fittings and accessories for solar panels have to be implemented by the PA in order to overcome the current energy crisis in the Gaza Strip.
- The Government should be first in implementing the use of solar power for its facilities, as a way of encouraging the public to follow suit.
- Serious progress should be made towards the implementation of projects that have been on halt. The majority of participants stressed that goods and accessories for renewable energy projects should be exempted from the tax.
- The Gaza electrical power station should be supplied with natural gas as a substitute to the regular fuel in order to bridge the current gap.

5.3 In the Long-Term:

- Renewable energy should be adopted as a sustainable alternative that could be implemented on large, medium and small-scale levels.
- The solar plant to be built is a wind and solar hybrid island system with state-of-the-art components and an expected life span of at least 15 years.
- The establishment of a small system that will provide each household or public facility with approximately 2.5 - 3.5 kWh daily.

- Start capacity building programs with local NGOs on techniques and technical specifications of the system to enable local communities to build the system by themselves.
- Information on renewable energy, associated projects, and lessons learnt and successful stories should be shared with academic institutions, experts, private sector, donors and local NGOs.
- Build on what has been achieved so far in the field of renewable energy.
- Improve the cooperation level between organizations from the private sector and government ministries in order to better invest in all business related to renewable energy.
- Enact renewable resource laws designed to promote private sector development.
- The PA should adopt special policies to encourage business people, companies and local organizations to invest in renewable energy and create an alternative to regular energy as an environmentally sound option for Gaza during the current crisis.
- Cooperation and coordination with donor organizations and investors to fund renewable energy projects with local NGOs.
- Gaza should be connected with the regional electricity network with Israel, Jordan and Egypt.
- The energy quantity supplied from Israel should be increased and the network rehabilitated.

6. Summary of Workshops & Conference:

1st Session: "The Importance of Renewable Energy":

Date: March 10th, 2014

Pictures:



2nd Session: "Renewable Energy in the Gaza Strip: Previous Theoretical and Practical Experiences"

Date: March 25th, 2014

Pictures:



3rd Session: "Local Business Initiatives on Renewable Energy"

Date: April 13th, 2014

Pictures:



4th Session: "The Role of the Government in Encouraging Investments in Renewable Energy"

Date: April 29th, 2014

Pictures:



5th Session: "Enhancing Investments in Renewable Energy Projects"

Date: May 12th, 2014

Pictures:



Conferences: "Strategic Solution of the Electricity Crisis in the Gaza Strip"

Date: Sep 24th, 2014

Pictures:



Conferences: "Renewable Energy in the Gaza Strip: Short, Mid, and Long-Term Strategies"

Date: Oct 22nd, 2014

Pictures:

