



Ref: PAL10-00109381

Date: 02 August 2019

Subject: Renewable Energy for All: Photo Voltaic Cells for Gaza Hospitals Completion Report

Your Excellency,

Reference is made to the contribution agreement between the Government of Japan and UNDP's Programme of Assistance to the Palestinian People for the Renewable Energy for All: Photo Voltaic Cells for Gaza Hospitals project, effective 18 March 2018.

I am pleased to submit herewith the fourth Completion Report for the abovementioned project. The report summarizes the progress of the project during the period from April 2018 to March 2019. It also provides an overview of the achievements, challenges, lessons learned, financial status and way forward.

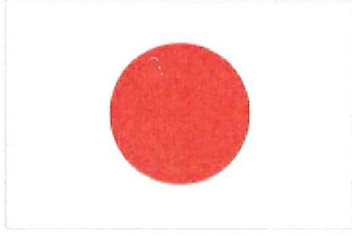
The project holds the unused balance of USD 4,412.77. As per the agreement with the Government of Japan, the balance will be refunded through Permanent Mission of Japan to the United Nations and UNDP HQ.

I thank the Government of Japan for its contributions through UNDP and look forward to strengthening our partnership in support of the Palestinian People.

Sincerely yours,

Roberto Valent
Special Representative of the
Administrator
UNDP/PAPP

H.E. Takeshi Okubo
Ambassador for the Palestinian Affairs
Representative of Japan to Palestine
Ramallah



من الشعب الياباني
From the People of Japan



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**United Nations Development Programme
Programme of Assistance to the Palestinian People**

Country: occupied Palestinian territory

Donor: Government of Japan

Project: Renewable Energy for All: Photo Voltaic Cells for Gaza Hospitals

PAL10-00109381

Project Completion Report

May 2019

UNDP Japan-funded Project Completion Report

1. Introduction

- 1) Title of the Project: Renewable Energy for All: Photo Voltaic Cells for Gaza Hospitals
- 2) Approval Date of Funding: March 2018
- 3) Amount of the Approved Grant: USD 500,000
- 4) Scheme of the Grant: Supplementary Fund
- 5) Expected Period of the Project: 01 April 2018 to 31 March 2019
- 6) Palestinian Authority Responsible to the Project: Ministry of Health (MoH), Palestinian Energy and Natural Resources Authority (PENRA) and Japan International Cooperation Agency (JICA)
- 7) Date of the report: 29 May 2019

2. Description of the Project

(1) Introduction and Background

The health sector has been severely affected during the 2014 hostilities on Gaza. Damages of medical facilities, along with shortages of medicine, equipment and power supplies, caused the near collapse of the health sector. During the hostilities, nearly half of all health facilities were unable to provide services due to damage or danger, leaving functioning facilities overwhelmed by increased demand and inadequate resources. These hospitals serve around 500,000 people in the Middle Area and Rafah communities.

For over a decade, the Gaza Strip has suffered from a chronic electricity deficit that has undermined its already fragile living conditions. The electricity deficit required a rationing system entailing regular rolling blackouts of 12-16 hours per day, occasionally increasing to up to 22 hours. The long blackouts have a pervasive impact on all aspects of life, undermining basic services and generating serious public health concerns. Hospitals are postponing elective surgeries, discharging patients prematurely, and undermining hygiene of medical facilities. In 2018, funding to United Nations-assisted emergency fuel distributions was exhausted, which put the provision of life-saving health services at risk. According to OCHA, between 2013 and 2018, Gaza health facilities, including UNRWA and government facilities, received 20.24 million litres of fuel, with a total fund of US\$ 25 million.

According to the energy sector strategy, by 2020 the Palestinian state must cover at least 50% of power demand with national production. This power capacity growth will be achieved by diversifying the generation mix, aiming, by 2020 to reach 10% of locally generated renewable energy source.

In early 2019, UNDP and WHO carried out an assessment of solar electrification for the health system in the Gaza Strip to identify the renewable energy needs for public hospitals and clinics. Initial findings indicate that the potential for solar electrification was estimated to be 3.41 Mega Wats power (MWp), with 70% of the potential capacity existing in three major hospitals. The anticipated size of solar PV systems ranges from 600-1300 Kilo Wats peak (kWp). The accumulated potential PV capacity for the remaining 11 hospitals was estimated to be 30%, with system capacity ranging from 30 kWp to 100 kWp. When considering solar electrification alone, the savings are expected to be US\$ 2.45 million annually at an investment of PV systems at US\$14 million. For energy efficiency, it is estimated that the primary energy efficiency (EE) retrofit would cost around US\$3.1 million for hospitals, while the secondary one would cost around US\$880,000. The savings expected from the EE retrofit is around US\$ 606,002 annually.

This project corresponds to National Priority 10 "Resilient Communities" of the National Policy Agenda (2017–2022). The project contributes to meeting the basic needs of the Palestinian community through expanding community access to clean energy. It is also aligned with the UNDAF Outcome 3.3: Palestine's infrastructure, and natural and cultural resources are more sustainably used and managed; and UNDP's Palestine Programme Framework Output 3.3.2 - installation of solar panels and mainstreaming solar energy supported.

(2) Objectives

Increased resilience and improved wellbeing of the Palestinian citizens through providing renewable source of energy for vital health service units to ensure equitable access to adequate health services in the Gaza Strip hospitals.

The project will address the needs of the energy sector in the Gaza Strip through the utilization of solar energy as a sustainable solution to the current energy crisis, and particularly to enable

the provision of life-saving health services, especially during emergencies.

The project targets four hospitals in the Gaza Strip namely, Beit Hanoun hospital in North Gaza, Al-Aqsa hospital in Middle area, Najjar hospital and Emirati RC maternity hospital in South area.

(3) Activities and Expected Output

Outcome: Increased resilience and improved wellbeing of Palestinian citizens through the provision of a renewable source of energy for vital healthcare units to ensure equitable access to adequate health services in the Gaza Strip hospitals.

This intervention will increase the health service providers access to renewable energy in the four targeted public hospitals. This will be reflected positively on the quality of health service provided to the Palestinian people benefiting from these hospitals.

The following actions are implemented to achieve the project outputs:

Output 1: Provision of 85 KWp of sustainable electricity supply through the installation of photovoltaic systems that serve four health care units (laboratories) in four hospitals across the Gaza Strip.

1. Activity 1.1: Providing detailed design of the targeted hospitals in cooperation with MoH and PENRA.
2. Activity 1.2: Construction of battery rooms on top of targeted hospitals for solar system.
3. Activity 1.3: Supply and installation of PV panels, batteries, inverters, cables and circuit breakers.
4. Activity 1.4: Commissioning and operation of the solar system.

Output 2: Saving 50% of energy consumption through applying energy efficiency for the lighting and air-condition loads in the targeted units, within the targeted hospitals.

1. Activity 2.1: Carry out the required lighting lux level survey to determine the required quality of lighting.
2. Activity 2.2: Install new LED lamps instead of the existing fluorescent lamps.

(4) Budget Line:

| Budget items | Amount (USD) |
|--|--------------|
| Providing detailed designs | 5,000.00 |
| Installing photovoltaic systems serving four laboratory units in four hospitals across the Gaza Strip covering health services | 335,750.00 |
| Applying energy efficiency for the essential loads in the targeted units within targeted hospitals | 22,590.00 |
| Workshop and media | 5,000.00 |
| Communication | 5,000.00 |
| Advocacy and Visibility | 5,000.00 |
| UNDP Direct Implementation Cost | 67,523.00 |
| Audit | 5,000.00 |
| General Operation Expenses | 12,100.00 |
| Sub-total | 462,963.00 |
| GMS (8%) | 37,037.00 |
| Total | 500,000.00 |

3. Implementation Process and Results

(1) Implementation Process

With generous support from the Government of Japan, the “Renewable Energy for All: Photo Voltaic Cells for Gaza Hospitals” project aims to protect public health and improve the wellbeing of the Palestinian population in the Gaza Strip.

Upon signing the project agreement, UNDP prepared the necessary designs and tender package which was floated at UNDP procurement website. The procurement process was completed, and the contract was signed with M/S Electro Company in October 2018.

Tender Documents available at:

http://procurement-notices.undp.org/view_file.cfm?doc_id=146512

Invitation to Bid No: 0000049519 - Construction of Solar Panels to Operate Four Vital Healthcare Units, available online at:

http://procurement-notices.undp.org/view_notice.cfm?notice_id=47554

Bill of Quantities available online at:

http://procurement-notice.undp.org/view_file.cfm?doc_id=146514

(2) Results of the Activities (Outputs of the Project)

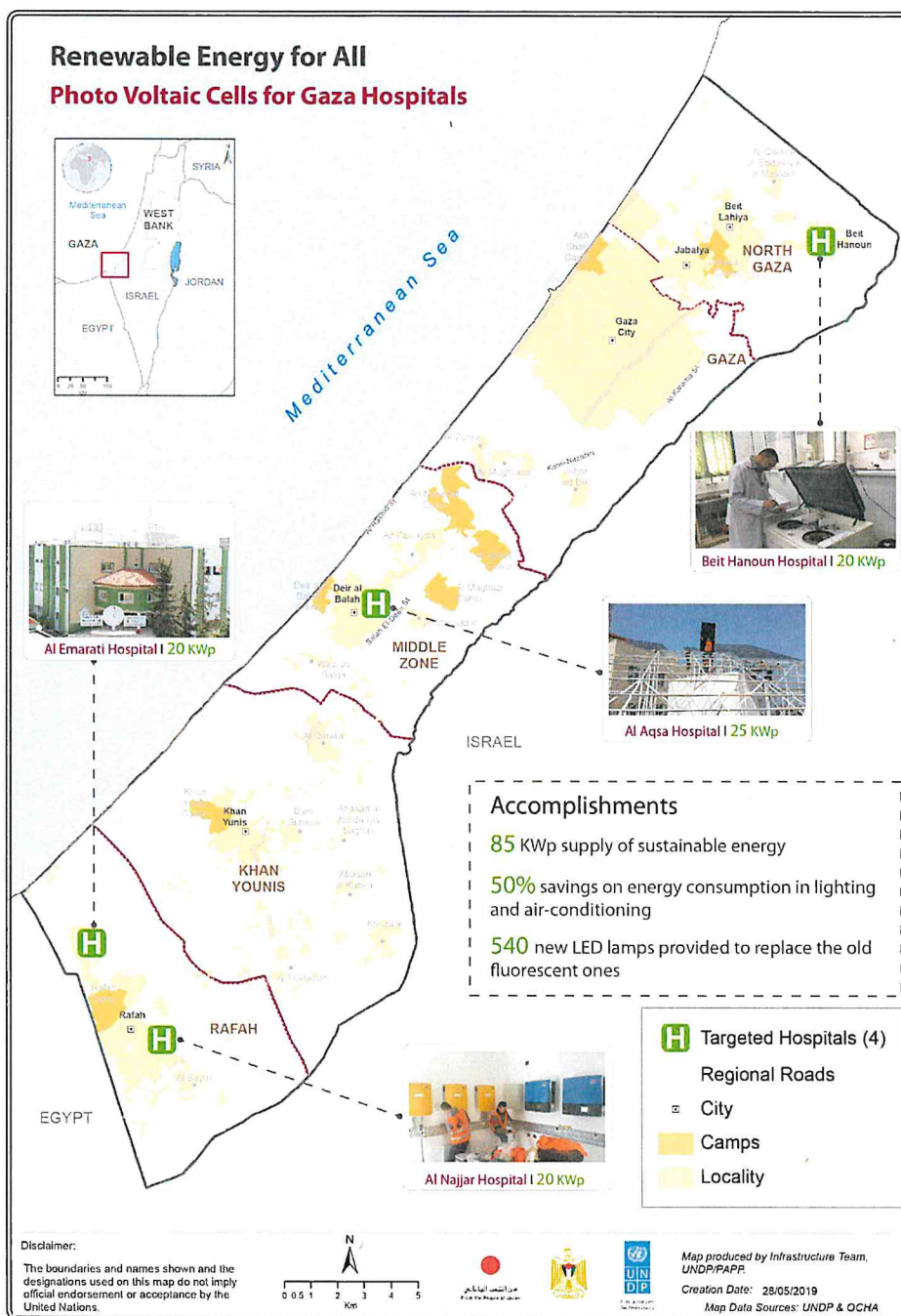
The following results have been achieved:

- I. 85 KWp of sustainable source of energy, utilizing a photovoltaic solar system, were supplied in four vital healthcare units across the Gaza Strip.

The targeted four hospitals were:

- Beit Hanoun hospital laboratory with 20 KWp
- Al-Aqsa hospital laboratory with 25 KWp
- Najjar hospital laboratory with 20 KWp
- Emirati RC Maternity hospital laboratory with 20 KWp

- II. 50% savings on energy consumption in lighting and air-conditioning loads within the targeted units.
- III. 540 new LED lamps provided to replace the old fluorescent ones across the four targeted hospitals.



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| Indicated output | Activities | Timeframe | | | Schedule | | Activities done in the reporting period | Remaining Work | Tasks & Measures |
|---|---|-----------|----|----|----------|-----------|---|----------------|------------------|
| | | 2018 | | 19 | Status | | | | |
| | | Q1 | Q3 | Q4 | Q1 | | | | |
| OUTPUT 1: Provision of sustainable electricity supply through the installation of photovoltaic systems serving four laboratory units in four hospitals across the Gaza Strip. | <ul style="list-style-type: none"> ➤ Providing detailed design of the targeted hospitals in cooperation with MoH and PENRA. ➤ Construction of battery rooms on top of targeted hospitals for solar system. ➤ Supply and installation of PV panels, batteries, inverters, cables and circuit breakers. ➤ Commissioning and operating the solar system. | √ | √ | √ | √ | Completed | The priority needs of solar at public hospitals based on JICA's assessment was revised in coordination with MoH, JICA and PENRA and four labs in four hospitals were agreed to be targeted through this project. UNDP, in cooperation with PENRA and MoH, developed the detailed designs and produced detailed BoQ. The PV modules and inverters were delivered into Gaza through coordination by UNDP Access Coordination Unit and were installed at the four targeted hospitals. The civil works for battery rooms were completed. Upon complete installation, the PV systems at the four hospitals were commissioned and handed over to MoH. | None | Completed |

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| | | | | | | | |
|---|---|----------|----------|------------------|---|-------------|------------------|
| <p>Output 2: Applying energy efficiency for the essential loads in the targeted units within targeted hospitals.</p> | <p>➤ Carrying out the required lighting lux level survey to determine the required quality of lighting. ➤ Installing new LED lamps instead of the existing fluorescent lamps.</p> | <p>√</p> | <p>√</p> | <p>Completed</p> | <p>An assessment of the lighting system in the targeted units was carried out to determine the needs of energy efficiency appliances. 540 new LED lamps provided to replace the old fluorescent ones across the four targeted hospitals.</p> | <p>None</p> | <p>Completed</p> |
|---|---|----------|----------|------------------|---|-------------|------------------|

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(3) Remarks

- Total of 85 KW of green energy was produced through implementing a new renewable energy system for the four laboratories within the targeted hospitals.
- The new renewable energy system will save 50% of the lighting amount of energy within the targeted laboratories.
- The laboratories must have a continuous power supply to provide the required medical testing for patients within the targeted four hospitals in order to secure the flow of health services provided within these hospitals.
- The targeted hospitals are distributed along the Gaza Strip, where each hospital is in a different Governorate. This will have a positive impact on patients during receiving health services during normal and crises periods.
- The project is of crucial importance to ensure efficient operation of the Palestinian health sector facilities and sustainability of the health services delivery. The project remains highly relevant within phasing out of the humanitarian aid to supply fuel for critical services.

4. Financial Report

| Budget items | A. Original budget (USD) | B. Disbursement (USD) | C. Balance (A-B) | D. Rate of disbursement (%) (B/A*100) |
|--|--------------------------|-----------------------|------------------|---------------------------------------|
| | | (USD) | (A-B) | |
| Providing detailed designs | 5,000.00 | 5,000.00 | - | 100.00% |
| Installing photovoltaic systems serving four laboratory units in four hospitals across the Gaza Strip covering health services | 335,750.00 | 331,552.06 | 4,197.94 | 98.75% |
| Applying energy efficiency for the essential loads in the targeted units within targeted hospitals | 22,590.00 | 22,590.00 | - | 100.00% |
| Workshop and media | 5,000.00 | 5,000.00 | - | 100.00% |
| Communication | 5,000.00 | 5,000.00 | - | 100.00% |
| Advocacy and Visibility | 5,000.00 | 5,000.00 | - | 100.00% |
| UNDP Direct Implementation Cost | 67,523.00 | 67,633.92 | (110.92) | 100.16% |
| Audit | 5,000.00 | 5,000.00 | - | 100.00% |
| General Operation Expenses | 12,100.00 | 12,100.00 | - | 100.00% |
| Sub-total | 462,963.00 | 458,875.98 | 4,087.02 | 99.12% |
| GMS (8%) | 37,037.00 | 36,710.08 | 326.92 | 99.12% |
| Gain & Loss | - | 1.15 | (1.15) | |
| *Cumulative differential on GMS ^b | | 0.02 | (0.02) | |
| Grand Total | 500,000.00 | 495,587.23 | 4,412.77 | 99.12% |

*. Note: The Cumulative differential on GMS^b amount resulted from method of calculations. Our System calculated and collected GMS on monthly basis with a total amount of USD 36,710.10, while in our financial report we calculate the GMS as a total amount of USD 36,710.08 based on the total expenditure for a cumulative project period by the end of the project.

5. Publicity of the Project

- All project documents, tenders, site plans and site signboards carried the Japanese flag

and indicated that all components of the project are funded by the Government of Japan.

- A closing ceremony was held in the presence of the representatives of the Japanese Government, JICA, UNDP, MoH, PENRA and the press to cover the event.

6. Pictures



PV Cells - Beit Hanoun Hospital



PV Cells - Al-Aqsa Hospital



PV Cells - Emirati RC Hospital



PV Cells – Al Najjar Hospital

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Installation of Inverters



Installation of Batteries



Operating the Blood Storage Refrigerator



Operating the Laboratories Instruments




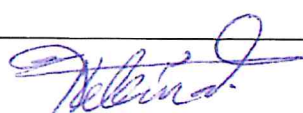

Curtain opening during Inauguration of the project



Inauguration for the project

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7. Names of UNDP Officer in charge and Project Manager

| | |
|--|---|
| Reporting person, title and belongings: Alaa Al Shalaby, Electrical Engineer, Jawwal: 059-2625-628 |  |
| Date of submission: 29 May 2019 | |
| Supervisor staff with his/her signature: Hekmat El Khairy, Programme Analyst, Jawwal:059-9606-791 |  |
| Supervisor staff with his/her signature: Iman Al Hussein, Assistant Special Representative, Jawwal:059-960-6775 |  |
| Approved by: Mrs. Chitose Noguchi, Head of UNDP Gaza Office | |