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The State of Palestine's Nationally Determined Contribution (NDC) implementation plans for the energy sector

Renewable energy production

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List of abbreviations

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AFD	French Development Agency (Agence Francaise de Developpment)
EQA	Environment Quality Authority
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GIZ	German Development Cooperation
GCF	Green Climate Fund
INCR	Initial National Communication Report
JICA	Japan International Cooperation Agency
MoNE	Ministry of National Economy
MoT	Ministry of Transport
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
PEC	Palestinian Energy and Environment Research Centre
PENRA	Palestinian Energy and Natural Resources Authority
PERC	Palestinian Electricity Regulatory Council
PETL	Palestinian Electricity Transmission Company Limited
PV	Solar photovoltaic
UNDP	United Nations Development Programme
WB	World Bank

1 Introduction

This plan for **renewable energy production** is intended to enhance Palestine’s opportunities to access climate finance and thereby facilitate successful implementation and delivery of Palestine’s Nationally Determined Contribution (NDC). Details of the methodology used to develop this plan are provided in Annex 1.

The plan addresses the following conditional NDC actions:

- Solar photovoltaic (PV)
- Use of renewable energy, such as solar, to reduce imported energy (West Bank)
- Use of renewable energy, such as solar, to reduce imported energy (Gaza Strip)
- Generation of solar electricity for medium-large scale commercial and industrial application (West Bank)
- Generate 5% of the total electric energy consumed by utilising renewable energy technologies by the year 2020
- Increase use of solar thermal energy, including solar water heaters, solar heating, solar fruit driers.

2 Relevance to GCF Country Programme

The Green Climate Fund (GCF) Country Programme includes the following funding proposal, which is relevant to this NDC implementation plan:

Scaling up renewable energy programme for the commercial, industrial and domestic sectors to enhance energy security and to reduce GHG emissions.

“The programme objectives will be achieved through:

- Solar PV 100 MW – to co-finance existing proposal (USD 100 million)
- Concentrated solar power and wind (USD 250 million)
- Solar water heater programme (USD 50 million).”

3 Reasons for prioritisation of NDC actions

The six NDC actions under this plan for renewable energy production were scored particularly highly by national stakeholders (Table 1).

Table 1 Priority scores for NDC actions

NDC action	Government support	Adaptation benefits	Mitigation benefits	Capacity available	Technology available	Total
Solar photovoltaic (T2M1)	10	10	10	2.5	5	37.5
Use of renewable energy such as solar to reduce imported energy (T9A21, West Bank)	10	10	10	2.5	5	37.5

NDC action	Government support	Adaptation benefits	Mitigation benefits	Capacity available	Technology available	Total
Generation of solar electricity for medium-large scale commercial and industrial application (T9A20, West Bank)	10	10	10	2.5	5	37.5
Use of renewable energy such as solar to reduce imported energy (T9A28, Gaza Strip)	10	10	10	2.5	5	37.5
Generate 5% of the total electric energy consumed by utilising renewable energy technologies by the year 2020 (T8M3)	10	10	10	2.5	2.5	35
Increase use of solar thermal energy including solar water heaters, solar heating, solar fruit driers (T8M5)	10	10	10	5	5	40

These scores drew upon and are justified by information in the following sub-sections that address each of the priority criteria.

3.1 Government support

At present, 42MW of PV have been installed and generate about 0.8% of the consumed electricity. Projects in the pipeline are expected to generate about 159MW, exceeding the target in the Renewable Energy Strategy of 130MW by 2020. Utility-scale projects above 1 MW receive the following government incentives: 0% income tax for the first 7 years, then 5% income tax for 5 years, and, finally, 10% income tax for three years. Those with net metering less than 1 MW receive additional assistance based on the generation capacity. Banks' and financial institutions' finance of renewable electricity receives the same treatment as the finance of SMEs in relation to the income tax law and regulation.¹

With respect to support in policy documents, the NDC action "Solar photovoltaic" is featured in the Energy Sector Strategy (2017-2022)², Energy Sector Strategy for Palestine (2015-2020)³, the Renewable Energy Strategy⁴ and the Decree of Law (2015) On Renewable Energy and Energy Efficiency⁵. The NDC action "Generation of solar electricity for medium-

¹ <https://www.pipa.ps/files/file/Value%20Proposition/EN/PIPA-%20Renewable%20Energy%20Sector%20VP%20Booklet-%20English.pdf>

² Text reads: "Solar power plants with a maximum capacity of 130 megawatts" the target by 2020 according to overall renewable energy strategy 2015-2020.

³ Text reads: "A number of photovoltaic installations have been constructed over the last years reaching a total of 3MWp installed by the end of 2014 in the West Bank. These systems include small off-grid installations, larger installations (like the 300kW project funded by JICA in Jericho which is in operation since 2013) and roof PV systems. The Palestinian Solar Initiative led to the installation of around 220 roof top systems of 1-5kWp each. There are plans to expand existing PV installations (like the 120kWp plant built by Czech funds)"

⁴ Implementing a total of 25 MW of renewable energy systems between 2012-2015 and additional 105 MW 2016-2020: On Ground PV Rooftops PV (Palestinian Solar Initiative), Concentrated solar power plants, biogas from landfills, biogas from animal waste, Small-scale wind farms"

⁵ Text reads: "The following mechanisms shall be adopted to implement renewable energy projects:1. The Palestinian Solar Energy Initiative related to household sector for powers up to (5) kilowatt or less per system

large scale commercial and industrial application” (West Bank) is supported in the National Energy Efficiency Action Plan⁶ and the Decree of Law (2015) On Renewable Energy and Energy Efficiency⁷.

The NDC action “Use of renewable energy such as solar to reduce imported energy (West Bank)” is supported in the Energy Sector Strategy for Palestine (2015-2020)³ and the Renewable Energy Strategy⁸. The NDC action “Use of renewable energy such as solar to reduce imported energy (Gaza Strip)” is supported in the National Energy Efficiency Action Plan⁶ and also in the Decree of Law (2015) On Renewable Energy and Energy Efficiency⁹.

The NDC action to “Generate 5% of the total electric energy consumed by utilising renewable energy technologies by the year 2020” is supported in Energy Sector Strategy (2017-2022)¹⁰, Energy Sector Strategy for Palestine (2015-2020)¹¹, Renewable Energy

which is subject to the distinct tariff that the Council recommends and periodically reviews.;1. The authorities issuing licenses, the engineers union, the public and private engineering offices for designing and constructing buildings shall implement and strengthen the renewable energy methods and optimal use of energy as well as ways of saving it within the conditions and drawings of design, in cooperation with the relevant authorities according to the technical specifications approved in energy efficient building code. 2. The net metering system for projects of high powers up to (5) kilowatt in all sectors provided that it shall not increase above a certain percent identified under the renewable energy strategy. 3. Tendering on competitive basis according to the laws in force in relation to establishing energy generation station for the purpose of sale”

⁶ Text reads: “Installing approx. 1000sqm of concentrated solar heaters for industrial application (2012-14). Installing approx. 1000sqm of concentrated solar heaters for commercial application (2012-14). Installing approx. 2000sqm of concentrated solar heaters in ministries and general entities (2012-14)”

⁷ Text reads: “1. The authorities issuing licenses, the engineers union, the public and private engineering offices for designing and constructing buildings shall implement and strengthen the renewable energy methods and optimal use of energy as well as ways of saving it within the conditions and drawings of design, in cooperation with the relevant authorities according to the technical specifications approved in energy efficient building code

⁸ Text reads: “The first phase will include an unprecedented initiative to spread the concepts of solar energy which is called the Palestinian Solar Initiative (PSI). This initiative consists of three phases over a period of three years from the mid-2012 until mid-2015. This initiative aims to set up small businesses with a capacity up to 5 kW for each project to be installed on the roofs of homes to achieve 1/2 MW from the 100 homes in first half and expand the project up to generate one and a half MW during the following year. In the last year of the project it will generate 3 MW extra to reach a total of 5 MW at the end of three years. Nearly 1,000 homes, distributed 30%, 40% and 30% in northern, central, and southern West Bank, respectively, in addition to 400 homes in the Gaza Strip when it is possible.”

⁹ The Decree is aimed at 1. Encouraging the utilization and development of renewable energy resources and benefiting from its applications to increase its contribution ratio in total energy sum of energy balance and to achieve the safe supply in line with the renewable energy strategy. All systems, devices, spare parts and equipment of renewable energy resources and energy conservation are exempted from customs fees. The State encourages the establishment of unions, societies and professional syndicates specialized in the field of energy industry and services, for the purpose of activating and developing investment in the renewable energy sector and energy efficiency improving in Palestine, in coordination with PENRA according to the laws and systems in force.2. Facilities of generating electricity from renewable energy are granted privileges and exemptions under the Palestinian Investment Promotion Law No. (1), Issued in 1998, and its amendment.;

¹⁰ Text reads; “This renewable energy in 2020 constitutes 10% of the total domestic electricity produced and renewable energy sources are linked to the public electricity grid”

¹¹ Text reads as follows: “In the case of the Palestinian situation, which is characterized by the scarcity of domestic energy sources, a small market, and occupation obstructions, the concept of Energy Security focusses on diversifying the import sources (therefore reducing the excessive dependency on Israel as the sole source for energy, both electricity and oil products), in addition to increasing the utilization of local resources with a strong focus on renewable energy. The only indigenous energy source that is securely supplied is renewable energy. It represented 16% of the final energy consumption in 2012 and is mainly utilized as solar energy and biomass for thermal uses. However, the utilization of the renewable energy potential is studied extensively and is one of the

Strategy⁴, the National Energy Efficiency Action Plan⁶ and the Decree of Law (2015) On Renewable Energy and Energy Efficiency⁵. Finally, the NDC action to “Increase use of solar thermal energy including solar water heaters, solar heating, solar fruit driers” is supported in the Energy Sector Strategy for Palestine (2015-2020)¹¹, the Renewable Energy Strategy¹² and the National Energy Efficiency Action Plan⁸.

3.2 Adaptation benefits

All three climate scenarios on which the NAP is based suggest temperature will increase with warmer periods becoming more prominent in time. This will increase demand for energy, e.g. for air conditioning¹³. Domestic electricity production currently fulfils only 7% of consumption. All of the NDC actions have high adaptation co-benefits by improving security of energy supply and air quality, which will be beneficial to many sectors e.g. industry, water, agriculture etc.¹³. The State of Energy Sector Strategy for Palestine (2015-2020) included a target for 10% of energy to be produced locally from renewables by 2020. However, generation of solar electricity is currently at an early stage (small-scale or donor-drive, so it will take time to gear up. With Palestine's temperatures projected to increase by 1-1.5 degrees C by 2025 there is an urgent need to do more to promote renewable energy production.

3.3 Mitigation benefits

The energy sector represents the largest source of GHG emissions in the State of Palestine (62% of overall emissions), with energy generation contributing 20% of these emissions in the energy sector¹⁴. Using renewable energy, whether for electricity or thermal applications, will reduce emissions by replacing fossil fuels. Hence, the NDC actions for renewable energy production are associated with high mitigation benefits¹⁴. For instance, the NDC action Mitigation benefits of the NDC action to “Generate 5% of the total electric energy consumed by utilising renewable energy technologies by the year 2020” are also significant. If the State of Palestine generated 20% of its electricity from renewables by 2030 it is estimated that it would reduce emissions by 635,000 tonnes CO₂ eq. per year by 2040¹⁴.

3.4 Capacity available

With respect to the overall available capacity for renewable energy, PENRA advises that capacity exists for design, tendering, installation and commissioning of small projects up to 1 MW, and that currently 42 MW of solar PV are installed. There is a further potential for PV systems installations.

Specific examples of developing capacity in Palestine of relevance to the NDC action “*Solar photovoltaic*” include the Dead Sea Photovoltaic Generating Plant, which has a current capacity of 710 kW and is planned to increase in capacity to 1.5 MW¹⁴.

priorities of PEA. The current Renewable Energy Action Plan foresees the generation of 240GWh annually from renewable energy sources by 2020 mainly from PVs (expected to reach 45MWp by 2020), and wind installations (expected to reach 44MW by 2020). Concentrated solar power plants with a capacity of 20MW and biogas plants with a capacity of 21MW by 2020 complete the plan for generation expansion of renewable energy technologies.”

¹² Text reads: “Plans to increase solar power plants”

¹³ NAP prioritisation

¹⁴ INCR

3.5 Technology available

Overall, solar PV is a growing market in Palestine¹⁴. New companies are already being established focused on solar electricity projects using PV technology. With respect to the NDC action “Increase use of solar thermal energy including solar water heaters, solar heating, solar fruit driers”, various examples exist of relevant technologies being used in Palestine (e.g. solar water heating using flat plate and evacuated tubes collectors).

4 Activities

Target established by national stakeholders for this implementation plan:

20-33% of electricity to be generated from renewable energy by 2040, primarily from solar PV (560MW)

National stakeholders have identified the following specific activities for implementing the NDC:

1. **Assessing:**
 - a. **Electricity that can be generated at different locations on the grid.** A study of the capability of the grid to be connected to electricity generated by PV for both West Bank and Gaza, which will explain technical aspects, and how much PV can be connected where, taking land availability into account
 - b. **Technical and financial market capability and readiness.** A study of local market capability and readiness (technical and financial) to accommodate PV electricity: availability of expertise and equipment, and availability of investors or funding
 - c. **Capability to install PV, given constraints:** A study concerning the constraints and limitations on installing the proposed PV capacity, which will address identified challenges for implementation (see Section 0)
2. **Reviewing and updating the Renewable Energy Strategy (2012-2020) to 2030** taking into consideration the changing social, economic and political situation and advances in energy technologies.
3. **Capacity building**
 - a. **Training engineers in system design and sizing and training for technicians on installing, and repair of PV systems.** There are insufficient installers for small-scale installation, and existing installers lack experience and expertise for designing, specifying and commissioning installation of large PV systems (>1MW)
 - b. **Training for commissioning and quality assurance (PENRA, PETL, PERC),** including monitoring during installation, testing and verifications
4. **Promoting the programme through an awareness campaign and engaging with stakeholders.** Building public and customer awareness concerning the importance and benefits of PV installation, including political and financial benefits. Various promotion tools could be used based on the targeted group.
5. **Enhancing the existing enabling environment (which is based on a range of incentives with increasing scale related to feed-in tariffs, net metering and competitive bidding/individual negotiation):**

- a. Setting standards to control quality of imported components and establishing associated testing facilities.** The following PV specifications already exist:
- PS-2683-2017 0 Photovoltaic (PV) systems - Characteristics of the utility interface
 - PS-2686-2017 0 Crystalline silicon photovoltaic (PV) array - On-site measurement of I-V characteristics
 - PS-2687-2017 0 Solar photovoltaic energy systems - Terms, definitions and symbols
 - PS-2688-2017 0 Photovoltaic (PV) module performance testing and energy rating - Part 1: Irradiance and temperature performance measurements and power rating
 - PS-2689-2017 0 Balance-of-system components for photovoltaic systems - Design qualification natural environments
 - PS-2690-2017 0 Concentrator photovoltaic (CPV) modules and assemblies - Design qualification and type approval
 - PS-2691-1-2017 1 Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
 - PS-2691-2-2017 2 Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters.
- b. Fiscal mechanisms** (based on a range of incentives with increasing scale related to feed-in tariffs, net metering and competitive bidding/individual negotiation)
- 6. Implementing solar PV:**
- a. West Bank.** By 2030, the Strategy calls for 350MW in Area C (i.e. where Israel maintains exclusive control) in the West Bank
 - b. Gaza Strip:** By 2030, the Strategy calls for 150MW in the Gaza Strip
 - c. Residential unit:** Small home units each 5kW to be installed and connected to the grid
 - d. Mini grid 121kW systems.**

5 Timeframes, indicative costs, existing funding and likely sources of funding

For each of the activities, (Table 2 below) identifies:

- The implementation period
- Indicative costs
- National contributions (help-in-kind)
- Existing international funding
- Any remaining funding gap, and
- International public funding sources that represent options for addressing the funding gaps. Note that international funder priorities are subject to change and negotiation.

6 Institutional arrangements

Figure 1 sets out the institutional arrangements for implementing this plan for renewable energy production, identifying PENRA as the lead organisation for a cross-ministerial project steering committee (and intended to be the main counterpart with international public funders), as well as project stakeholders and project delivery partners. To ensure the implementation plan is delivered and the Project Steering Committee is functional, it will be of key importance for PENRA to allocate appropriate resources and clearly designate internal ownership for each activity in the implementation plan.

7 Recommendations for an enabling environment

The successful delivery of this plan will be ensured by developing a supportive enabling environment where it does not yet exist. This may include updating or developing related legislation, regulations, statutory guidance (and standards), national or sectoral policies and strategies, and incentives (including fiscal measures) that would contribute to ensure the successful implementation of the activities or remove potential barriers to implementation.

Overall, the policies in place are sufficient to support the targets, and no existing policies and/or incentives contradict its achievement. Other cross-sectoral recommendations for development of the enabling environment to support the implementation of this plan identified by national stakeholders that will be given further consideration include:

- **Palestine's Environment Law Amendment** that is yet to be enacted **should be used as an enabling context** for the development of the legislations, regulations, statutory guidance, policies, strategies or incentives that are relevant to this plan
- **Developing regulations for employers** to ensure that awareness-raising and training activities are included within the terms of their employment, so that individuals are paid to attend during working hours. This will improve women's access to such activities by addressing the time and economic constraints that they face. Implementing this recommendation requires securing formal approval from the Council of Ministers.
- **Developing regulations and statutory guidelines to enforce gender budgeting**, i.e. analysing all budget lines and financial instruments for climate change adaptation and mitigation from a gender-perspective, to ensure gender-sensitive or gender-responsive investments in relevant programmes (e.g. addressing technology transfer and capacity building), such as this plan.
- **Developing a policy that enables and facilitates public-private partnerships** for the delivery of programmes that provide public benefits. The Ministry of National Economy can be responsible for taking forward this recommendation and securing formal approval from the Council of Ministers.

8 Challenges for implementation

The State of Palestine constitutes the Occupied Palestinian Territory, which is made up of the West Bank (including East Jerusalem) and the Gaza Strip, based on the borders of June 1967 and are separated by Israel, the occupying power. Neighbouring countries include Jordan to the east and Egypt to the south. The Oslo II Accord, formally entitled the 'Interim

Agreement on the West Bank and the Gaza Strip of 1995', created three territorial zones in The West Bank: Area A, where the Palestinian Government has responsibility for public order and internal security; Area B, where the Palestinian Government assumes responsibility for public order for Palestinians, while Israel controls internal security; and Area C, where Israel maintains exclusive control⁶.

Various challenges for implementation have been identified by national stakeholders with respect to each NDC action, which are summarised below. Implementation of the plan for energy distribution is the absolute priority, as it will enable subsequent use of renewable energy produced.

Generation of solar electricity for medium-large scale commercial and industrial application (West Bank)¹⁵.

- Renewable energy components must be imported through Israeli agents and companies, leading to delays and additional costs because of security, customs, standards and quality checking.

Use of renewable energy such as solar to reduce imported energy (Gaza Strip)¹⁵:

- Israel restricts the diversity of the imported energy from several sources
- Most energy is imported and, hence, subject to strict regulation and obstacles from Israel
- Israel do not allow the opening of the seaport to facilitate necessary imports
- It is not possible to feed electricity into the grid during electricity blackouts, which occur up to 50% of the time
- Inability to import renewable energy systems due to the siege of the Gaza Strip
- Limitations on available land for PV installation.

¹⁵ NAP vulnerability assessment

Table 2 Timeframes, indicative costs, existing funding (USD million) and likely sources of funding

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
1a				0.150	2	Assessments	0.30 ¹⁷	0.015	5% ¹⁸	0	0.285	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • UNDP (Renewables is a high priority in both West Bank and Gaza) • EU (Energy is a priority in general) • Belgium (Energy may be a future priority)
1b				0.100	2	Assessments	0.20 ¹⁹	0.01	5%	0	0.190	
1c				0.100	2	Assessments	0.20 ²⁰	0.01	5% ²¹	0	0.190	
2				0.100	1	Review	0.10 ²²	0.005	5%	0	0.095	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • UNDP (Renewables is a high priority in both West Bank and Gaza)

¹⁶ Staff time, local transportation, logistic support during study as arranging meetings and workshops

¹⁷ Provided by national stakeholders on the basis of studies for West Bank and Gaza strip.

¹⁸ PENRA staff time, local transportation, logistic support during study

¹⁹ Provided by national stakeholders on the basis of market readiness assessment.

²⁰ Information provided by national stakeholders

²¹ Staff time, local transportation, logistic support during training as arranging venues and participants, distributing training materials

²² Provided by national stakeholders. Assumes the development of national strategy similar to the previous one which could be conducted by an international or national consultant.

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
3a				0.030	15	Training sessions	0.45 ²³	0.023	5% ²⁰	0	0.428	<ul style="list-style-type: none"> • EU (Energy is a priority in general) • Belgium (Energy may be a future priority)
3b				0.030	15	Training sessions	0.45 ²⁰	0.023	5% ²⁰	0	0.428	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • UNDP (Renewables is a high priority in both West Bank and Gaza) • EU (Energy is a priority in general) • Belgium (Energy may be a future priority)
4				0.050	10	Awareness raising campaigns	0.50 ²⁴	0.035	7% ²⁵	0	0.465	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • UNDP (Renewables is a high priority in both West Bank and Gaza)

²³ Information provided by national stakeholders. It is assumed that each training course will involve 10 trainees, and that there will be 15 training courses.

²⁴ Information provided by national stakeholders. The estimate is based on the promotion type and media (TV, radio, printed material, social media) to be used and workshops to be conducted. It is assumed that the cost of one campaign is USD 0.05m and 10 campaigns are carried out.

²⁵ Staff time, providing material for awareness, providing PERNRA communication channels and means. Logistic for meetings and workshops

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
5a				0.350	1	Review	0.35 ²⁶	0.018	5% ²⁷	0	0.333	<ul style="list-style-type: none"> • EU (Energy is a priority in general) • Belgium (Energy may be a future priority)
5b				0.010	1	Fiscal mechanism	0.07 ²⁸	0.070	10% ²⁹	0	0	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • UNDP (Renewables is a high priority in both West Bank and Gaza) • EU (Energy is a priority in general) • Belgium (Energy may be a future priority)

²⁶ Provided by national stakeholders. Includes testing labs (USD 0.3m) and standards development (USD 0.05m).

²⁷ Building facility, working staff, electricity bills

²⁸ Provided by national stakeholders on the assumption of regulations review and revision.

²⁹ Staff time, logistics venues, meetings

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
6a				1 per MW	350 MW	MW of solar PV	350.00	116.667 ³⁰	0	80 ^{31,32}	153.333 ³³	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • AFD (Renewable energy supported via SUNREF programme in West Bank and Gaza for small industry, which is already contributing to funding Activity 6a) • UNDP (Renewables is a high priority in both West Bank and Gaza) • EU (Energy is a priority in general) Belgium (Energy may be a future priority)

³⁰ Anticipated from private investors

³¹ USD 25 m awarded since 2017: SUNREF - Includes both energy efficiency and renewable energy, Funder: AFD green finance through local banks with 20% grant at end of project, Implementor: PENRA;

USD 80m proposed funding 75MW PV for refugee camps (Phase 1) - same concept is included under adaptation below, Funder: Intended for GCF, Implementor: To be prepared by PENRA

³² USD 55m awarded since 2017: Install PV systems (30MW) for Bani-Noem, near Hebron and surrounding villages. Expected to generate 51GWh per year (may be completed by end of 2020), Funder: China, Implementor: PENRA

³³ Anticipated that it will be fully funded by international private sector funding, subject to the market being suitably enabled

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
6b				2 per MW ³⁴	150 MW	MW of solar PV	300.00 ³⁵	100.000 ³⁶	0	0	200.000 ³⁷	<ul style="list-style-type: none"> • WB (PV is a priority in both West Bank and Gaza) • AFD (Renewable energy supported via SUNREF programme in West Bank and Gaza for small industry, and is already contributing funding to activity 6a) • UNDP (Renewables is a high priority in both West Bank and Gaza) • GIZ (Renewables is a priority in Gaza) • FAO (Main focus is off-grid PV in Gaza for agro-food supply chain including irrigation, drying,

³⁴ The unit cost for Gaza Strip is double the West Bank, as lack of a grid demands provision of battery storage. NB costs do not include recycling of batteries. Currently, the only option is disposal at sea, which poses a substantial environmental hazard.

³⁵ Provided by national stakeholders.

³⁶ Anticipated from private investors

³⁷ Anticipated that it will be fully funded by international private sector funding, subject to the market being suitably enabled

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
6c				0.007	1000	Residential units	6.50 ³⁸	0	0	0	6.500	processing and storage) • EU (Energy is a priority in general) • Belgium (Energy may be a future priority) • China (since it has already funded Activity 6b in Gaza) JICA (PV in Gaza could be an interest) • WB (PV is a priority in both West Bank and Gaza) • AFD (Renewable energy supported via SUNREF programme in West Bank and Gaza for small industry, and is already contributing funding to Activity 6a) • UNDP (Renewables is a high priority in

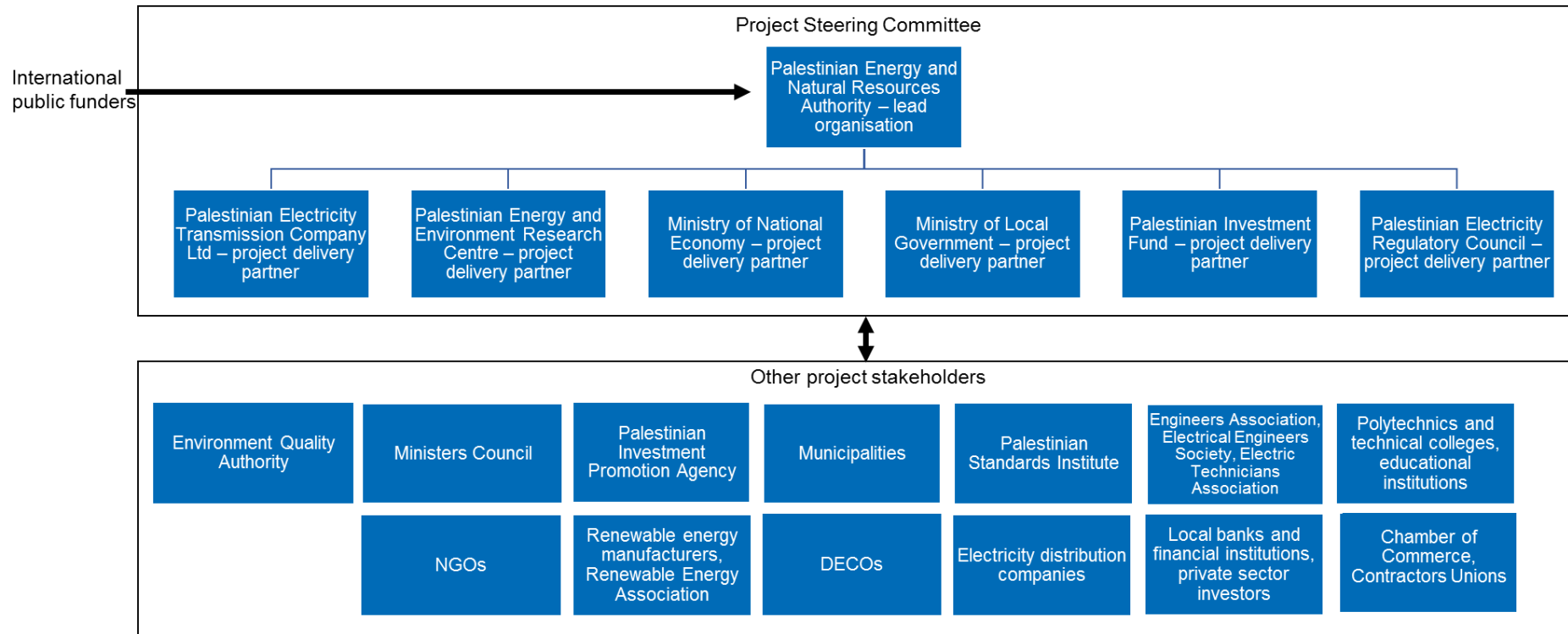
³⁸ Provided by national stakeholders. Relates to PV grid 5kW home units.

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
6d				0.121	30 ³⁹	Micro grid systems	3.63 ³⁹	0	0	0	3.630	both West Bank and Gaza) • EU (Energy is a priority in general) Belgium (Energy may be a future priority) • WB (PV is a priority in both West Bank and Gaza) • AFD (Renewable energy supported via SUNREF programme in West Bank and Gaza for small industry, and is already contributing funding to Activity 6a) • UNDP (Renewables is a high priority in both West Bank and Gaza) • GIZ (Renewables is a priority in Gaza) • EU (Energy is a priority in general)

³⁹ Microgrid solar systems 121kWp (NAP prioritisation)

Activity	2020-2025	2026-2030	2031-2040	Unit cost	No. units	Unit type	Total cost	National contrib'n	National help-in-kind ¹⁶	Internat'l funding	Funding gap	Indicative options to secure international public funding to address funding gaps
												Belgium (Energy may be a future priority)
TOTAL							662.75	216.874		80	365.876	

Figure 1 Institutional arrangements for implementation





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Date:24/08/2021

Excellency Mr. Jameel Mtour

Chairman of Environment Quality Authority

Subject: Endorsement of the NDC Implementation Plans for the Energy Sector

The Palestinian Energy and Natural Resources Authority (PENRA) sends you best regards and wishes you good health in these difficult days of COVID 19, and would like to thank you for your extended and continued efforts to protect the Palestinian Environment.

Reference is made to the subject and to your kind request for an endorsement letter, and in my capacity as Chairman of PENRA, this is to confirm that the Palestinian Energy and Natural Resources Authority fully endorse the NDC Implementation Plans for Energy Sector, that was jointly prepared with PENRA, National Committee for Climate Change and key stakeholders as part of the project implemented by Environment Quality Authority and NDC Partnership and funded by the Islamic Development Banks.

List of Plans and estimated budget:

1. Upgrading Electrical Power Supply System (198.73 MUSD)
2. Improving Energy Efficiency (253.3 MUSD)
3. Increasing Electrical Energy Production from Renewable Energy Resources (662.75 MUSD)

I would like to reiterate that these plan is in conformity with the National Priorities and relevant Sectoral Strategies as well as the guidance of the Palestinian Council of Ministers.

Sincerely Yours

Eng. Zafer Milhem

PENRA Chairman



سلطة الطاقة الفلسطينية	الرقم	554.8.2021
التاريخ	24.8.2021	



التاريخ: 2021/8/24

معالي الاخ / أ.جميل مطور حفظه الله
رئيس سلطة جودة البيئة

تحية طيبة وبعد،،،

الموضوع: اعتماد خطط العمل لتنفيذ المساهمات المحددة وطنيا في قطاع الطاقة

Subject: Endorsement of NDC Implementation Plans in Energy Sector

تهديكم سلطة الطاقة والموارد الطبيعية أطيب التحيات وتتمنى لكم موفور الصحة والعافية وتتقدم لكم بجزيل الشكر على جهودكم الموصولة والهادفة لحماية البيئة الفلسطينية، بالإشارة إلى الموضوع أعلاه وبناء على طلبكم يرجى العلم بأن سلطة الطاقة والموارد الطبيعية تؤيد وتدعم خطط العمل لتنفيذ المساهمات المحددة وطنيا والتي تم اعدادها بالتنسيق والتعاون مع مؤسستنا وأعضاء اللجنة الوطنية لتغير المناخ والشركاء ذوي العلاقة وذلك ضمن نشاطات المشروع المنفذ من قبل سلطة جودة البيئة وشراكة المساهمات المحددة وطنيا وبدعم من البنك الاسلامي للتنمية.

قائمة بأسماء الخطط والكلفة الاجمالية المقدره وفقا للرسالة الواردة من مؤسستكم الموقرة والدراسات ذات الصلة:

1. Upgrading Electrical Power Supply System (198.73 MUSD)
2. Improving Energy Efficiency (253.3 MUSD)
3. Increasing Electrical Energy Production from Renewable Energy Resources (662.75 MUSD)

مع العلم بأن هذه الخطط تأتي انسجاما مع توجيهات مجلس الوزراء وبما يتوافق مع الاولويات الوطنية والاستراتيجية الوطنية لقطاع الطاقة.

وتقبلوا فائق التقدير والاحترام،،،

المهندس ظافر ملحم

رئيس سلطة الطاقة والموارد الطبيعية

