Ricardo Energy & Environment

The State of Palestine's Nationally Determined Contribution (NDC) implementation plans: Water – Improving water sources infrastructure

Report for Palestine's Environment Quality Authority and the Islamic Development Bank under the NDC Partnership's Climate Action Enhancement Package

NDC PARTNERSHIP
ACCELERATING CLIMATE AND DEVELOPMENT ACTION

Environment Quality Authority

IsDB البنك الإسلامي للتنمية Islamic Development Bank

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List of abbreviations

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AECID	Agencia Española de Cooperación Internacional para el Desarrollo
AFD	French Development Agency (Agence Francaise de Developpment)
BMZ	Ministry for Economic Cooperation and Development (Germany)
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EQA	Environment Quality Authority
EU	European Union
GCF	Green Climate Fund
GIZ	German Development Cooperation
IKI	International Klimaschutzinitiative
JICA	The Japan International Cooperation Agency
KfW	KfW Development Bank
MoA	Ministry of Agriculture
MoWA	Ministry of Women's Affairs
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NRO	Netherlands Representative Office
PV	Photo voltaic
PWA	Palestinian Water Authority
SCADA	Remote sensing for monitoring systems
UK	United Kingdom
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WB	World Bank

1 Introduction

1.1 Overview

This plan for "**Improving water sources infrastructure**" 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 lays out steps to deliver the following NDC action that is conditional on being able to secure international funding:

- Rehabilitate water sources: wells, canals and springs.

The activities outlined in this plan will improve water supply and efficiency by rehabilitating existing water sources. Across Palestine, canals are only used in certain areas of Jericho and do not need rehabilitation; hence, the plan will focus on wells and springs. The springs that are the focus of this plan are used for water consumption in the agriculture sector, and the wells are groundwater wells used for drinking.

Water supply and efficiency will be addressed by replacing ageing infrastructure associated with water sources[1]. This is to be achieved through completion of six activities, each contributing to the following target that aligns with the NDC action:

- 100% of identified wells and springs are rehabilitated by 2030

The indicative total cost of achieving this target is 25 million USD. Taking national contributions into account, there is a total funding gap of 25 million USD. Achieving the target will provide considerable adaptation benefits for Palestine by increasing the amount of water available for consumption, thereby improving access to water and preventing health impacts. There is strong government support to undertake this plan's activities, which feature in national and sectoral strategies.

1.2 Geographical scope

Activities in this NDC implementation action plan are an equal priority for the whole of the Occupied Palestinian Territory, i.e. the West Bank, including East Jerusalem, and the Gaza Strip. However, the consequences of Israel's military actions during May 2021 have major implications for the water sector, related infrastructure and the capacity of the Palestinian Water Authority (PWA) to provide services to the Palestinian people living in Gaza. As this plan was developed in the months immediately prior to Israel's military actions, there is an urgent need to re-assess the water sector's needs for rehabilitation before implementing specific activities in Gaza. The World Bank and the French Development Agency are also currently working with the Palestinian Water Authority (PWA) to upgrade the water supply system in the Gaza Strip. Hence, the activities laid out in this plan focus on the West Bank.

[1] While this plan focuses on springs and canals as water sources infrastructure, another NDC implementation plan focuses on the rehabilitation of water networks infrastructure, including pipes and drainage systems.

2 Relevance to GCF Country Programme

The Green Climate Fund (GCF) Country Programme includes a priority project for *"Addressing climate-related water scarcity through the enhancement of water resources"* [2].

This proposal seeks to balance supply of water with demand, including by improving water collection, which is supported by the rehabilitation of wells, canals and springs that are the focus of this NDC implementation action plan.

3 Reasons for prioritisation of the NDC action

National stakeholders scored the relevance and feasibility of this plan's focal NDC action based on: the extent to which the Government's existing national and sectoral policies, strategies and plans already acknowledge its importance (High = 10, 5, 0 = Low); its adaptation and mitigation benefits (Very positive = 10, 5, 0, -5, -10 = Very negative) and the capacity and technology available to achieve it (High = 5, 2.5, 0 = Low).

The capacity scores reflect that the activities in this plan are not currently being implemented, although this plan aims to increase the capacity available, as necessary, to address constraints. The results are shown in Table 1.

Table 1 Priority scores for NDC action

NDC action	Government support	Adaptation benefits	Mitigation benefits	Capacity available	Technology available	**Total**
Rehabilitate water sources: wells and springs in West Bank	10	10	0	5	5	**30**

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

3.1 Government support

According to stakeholders consulted, the NDC action has strong government support. Wells and springs are a priority concern for the Palestinian Government.

The NDC action is recognised in the National Policy Agenda 2017–2022[3], which identifies water as one of the key climate-vulnerable sectors and encourages planning and investment in strategic infrastructure, including water. Palestine's National Water Policy 2013 – 2022 also proposes the rehabilitation and completion of groundwater wells and springs as a priority measure[4].

[2] *Climate Resilient Transformation with the Green Climate Fund* (2019), p.97. Accessible here.
[3] State of Palestine, *National Policy Agenda 2017-2022* (2016). Accessible here.
[4] Palestinian Water Authority, *National Water Policy and Strategy* (2013), p.14. Accessible here.

3.2 Benefits for adaptation to climate change

Future climate scenarios for Palestine project an increase in temperature and a decrease in average annual rainfall, translating into an increase in the risk of drought. The wettest days may also become more frequent, leading to an increased risk of flood.[5]

These events and slow-onset changes are expected to cause a decrease in the availability of water resources, while simultaneously leading to an increase in the demand. Efforts to meet this demand may lead to a reduction in groundwater quantity, which would damage ecosystems and soil health. On the other hand, not meeting the demand may lead to significant health impacts on the population, including dehydration and heat stress. The quality of water resources may also reduce as a result of runoff following heavy rainfall events and floods. This may lead to contamination of water and food resources, leading to health impacts.

Rehabilitating wells and springs will increase the amount of water available for consumption, thereby improving access to water and preventing impacts to health. Improved infrastructure may also increase the capacity of water sources to retain water despite increasing temperatures. Thus, this NDC action has a high adaptation benefit.

3.3 Benefits for mitigating climate change

The NDC action does not directly provide mitigation benefits. However, there is potential for converting current pumping systems running on fuel to greener systems running on solar photo voltaics (PV) or on electricity. This upgrade is not included in this plan but may be subsequently considered by PWA and the Palestinian Energy and Natural Resources Authority.

3.4 Capacity available

Local consulting engineers and construction companies in Palestine have the necessary knowledge and skills to design rehabilitation schemes and undertake subsequent construction. Some capacity building may be needed to rehabilitate wells to increase the number of skilled technicians, but the procurement of international expertise should not be required.

3.5 Technology available

Water sources, such as wells and springs, can be rehabilitated using existing technologies in Palestine. Several wells have already been rehabilitated in the last five years with material sourced locally.

4 Gender mainstreaming

4.1 Rationale for mainstreaming gender in this plan

The impacts of climate change are not gender neutral[6]. Globally, women and girls are disproportionately affected by the impacts of the climate crisis, as existing vulnerabilities are

[5] State of Palestine Environment Quality Authority (2016). National Adaptation Plan p.109-110. Accessible here.
[6] Toolkit for a Gender-Responsive Process to Formulate and Implement National Adaptation Plans (NAPs) (2019), p.2. Accessible here.

intensified and intersect with a range of social, economic and political inequalities[7]. A business-as-usual approach is likely to exacerbate existing inequalities and limit the opportunities for gender-sensitive and, where appropriate, gender-responsive adaptation actions that may improve gender equality.

At the UNFCCC's 25th Conference of the Parties in 2019 the Enhanced Lima Work Programme on Gender and its gender action plan acknowledged the need for gender mainstreaming through all relevant targets and goals. It noted that gender-responsive implementation of climate policy and action can raise ambition, enhance gender equality, and promote a just transition of the workforce[8]. Integrating gender equality into development leads to better outcomes in terms of economic efficiency, productivity and policy choices[9]. Gender responsive solutions can help to tackle poverty and inequality while providing better community representation and technical solutions[10].

4.2 Gender mainstreaming in this plan

All activities and targets under this plan have been reviewed by a team of gender experts, including a representative of the MoWA. Activities identified as "gender-relevant" were devised to ensure that they are at least gender-sensitive[11] and at best gender-transformative[12]. More specifically, this implementation plan addresses gender equality issues in the water sector in the following way:

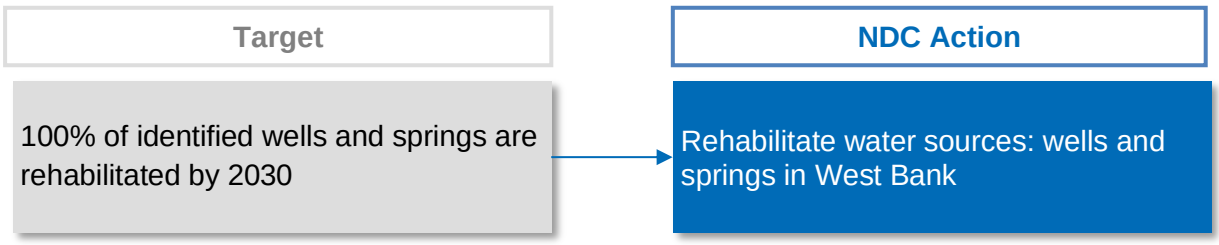
- Making a conscious effort to consult with both men and women during the planning processes. This will be achieved through using gender-inclusive participatory tools designed to engage both grassroots women and men in capacity-building, training and preliminary studies
- Supporting gender-balance in the teams managing water sources that are involved in this plan. This will ensure that the different constraints faced by men and women are recognized

5 Activities

One target was set by national stakeholders to facilitate implementation of this plan and achieve its focal NDC action, as outlined in Figure 1.

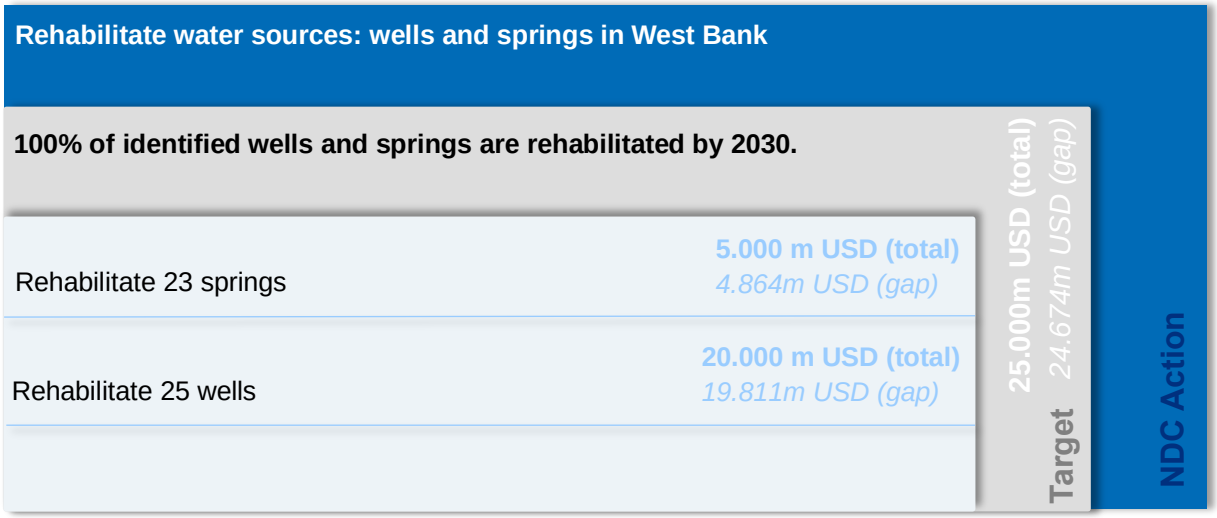
[7] Climate change, agriculture and gender in Gaza: Assessing the implications of the climate crisis for smallholder farming and gender within olive and grape value chains in Gaza (2020), p.5. Accessible here.
[8] Report of the Conference of the Parties on its twenty-fifth session, held in Madrid from 2 to 15 December 2019 (2019), p.6-15. Accessible here.
[9] World Development Report 2012: Gender Equality and Development (2012). p.3-6. Accessible here.
[10] Implementation of gender-responsive climate action in the context of sustainable development (2016). Accessible here.
[11] Gender-sensitive programmes and policies are Level 3 in the WHO Gender Responsive Assessment Scale and is defined as "Considers gender norms, roles and relations; Does not address inequality generated by unequal norms, roles or relations; Indicates gender awareness, although often no remedial action is developed". Accessible here.
[12] Gender-transformative programmes and policies are Level 5 in the WHO Gender Responsive Assessment Scale and is defined as "Considers gender norms, roles and relations for women and men and that these affect access to and control over resources; Considers women's and men's specific needs; Addresses the causes of gender-based health inequities; Includes ways to transform harmful gender norms, roles and relations; The objective is often to promote gender equality; Includes strategies to foster progressive changes in power relationships between women and men" Accessible here.

Figure 1 Targets for improving water sources infrastructure



Two activities were identified to achieve these targets, which are listed in Figure 2. Further details are provided in the subsequent sections.

Figure 2 Summary of activities to "Rehabilitate water sources: wells and springs in West Bank"



5.1 Activities to rehabilitate wells and springs

National stakeholders have identified the specific activities that need to be undertaken to achieve the target *"100% of identified wells and springs are rehabilitated by 2030*". These activities are listed below.

1. **Rehabilitating springs**

   23 springs have been identified by PWA and the relevant municipalities or villages as requiring rehabilitation. Rehabilitation of these springs requires the following steps:

a. Preliminary studies

During the preliminary studies, experts will assess the existing status of each spring and identify the type and extent of interventions required. The studies will investigate:

- The scope and scale of the rehabilitation needed, based on each spring's current status, in order to support the design and preparation of tender documents
- The level of access to the springs in order to ensure that they remain accessible during drought periods (e.g. in relation to their proximity to agricultural land), including by women
- The technical and financial barriers experienced by women to access springs.

b. Rehabilitation works

The scope of rehabilitation activities required will be specific to the condition of the infrastructure associated with each spring but will include:

- Clearing accumulated sediment/soil and excess vegetation (e.g. weeds) from the surrounding ca. 500m^2 of land
- Constructing a water tank of relevant capacity (according to the discharge of the spring)
- Installing a chlorination system (if used for domestic purposes) and a booster pump to aid delivery to high altitude areas.

c. Capacity building and training

Remote-sensing techniques will be used to monitor the performance of springs and plan maintenance routines. This will require delivering training of PWA's and the Ministry of Local Government's staff on the use of remote sensing for monitoring systems (SCADA) to identify potential malfunctions and on early-warning systems.

The training will be provided as a four-day theoretical and practical course by consultants to ensure the proper operation of the monitoring and the SCADA system. The Union of Palestinian Water Service Providers will be involved in the training to ensure the private sector also contributes to the sustainable use of water resources.

d. Monitoring and maintenance

The springs will need to be maintained and monitored to prevent water contamination. PWA will be responsible for the quantitative and qualitative monitoring of springs, and will coordinate the maintenance activities with the beneficiaries depending on the location of the springs. PWA will seek assistance from the Water Sector Regulatory Council, the Ministry of Health and the Environment Quality Authority to advise on the scheduling of monitoring and maintenance work and ensure that the water quality of each spring is in line with Palestine's regulations.

2. Rehabilitating water wells

A total of 25 existing water wells will be identified by PWA to be rehabilitated within the West Bank. Rehabilitation is expected to increase the pumping rate of each well and enhance the efficiency of the wells. These wells are groundwater wells used for drinking. Their rehabilitation requires:

a. Preliminary studies

Experts will assess the existing status of each well and identify the type and extent of interventions required. The studies will investigate:

- The scope and scale of the rehabilitation needed based on each well's current status, in order to support the design and preparation of tender documents
- The level of access to the wells, in order to ensure that they remain accessible during drought periods, including by women
- The technical and financial barriers experienced by women to access wells.

b. Rehabilitation works

The activities required to rehabilitate each well will depend on the findings of the preliminary studies (Activity 2a). These activities may include but are not limited to:

- Replacing equipment/pumps
- Pump maintenance
- Acidification, air lifting
- Change of screens or casing
- Installation of SCADA
- Deepening well depth.

c. Capacity building and training

Remote-sensing techniques will be used to monitor the performance of wells plan maintenance routines. This will require delivering training to relevant staff on the use of SCADA to identify potential malfunctions and on early-warning systems.

The training will be provided, as a 4-day theoretical and practical course by private consultants, to ensure the proper operation of the monitoring and the SCADA system. The Union of Palestinian Water Service Providers will be involved in the training to ensure the private sector also contributes to the sustainable use of water resources.

d. Monitoring and maintenance

The wells will need to be maintained and monitored to prevent water contamination. PWA will conduct the monitoring for all wells, and the maintenance activities will be delivered by relevant staff depending on the location and type of activities needed. PWA will ensure that the water quality of each well is in line with Palestine's regulations.

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

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

- The indicative implementation period
- Indicative costs
- National contributions, where relevant
- Existing international funding, where specifically relevant
- Any remaining funding gap, and
- Potential international public funding sources that were preliminarily identified as potential support to address the funding gap. Note that international funders' priorities are subject to change and negotiation.

7 Institutional arrangements

Figure 3 sets out the institutional arrangements for implementing the "Water treatment and conservation plan." It identifies PWA as the lead organisation of a cross-ministerial Project Steering Committee, as well as project delivery partners and other project stakeholders. Delivery partners will be specific to the activities. They will be identified according to their interests and expertise, and may change depending on the location of the activities. PWA is intended to be the main point of contact for project partners and stakeholders, including

international public funders. The committee should also aim for equal gender representation in order to encourage gender mainstreaming throughout plans and activities.

It will be of key importance for PWA to allocate appropriate financial and administrative resources and clearly secure internal ownership of each activity in the implementation plan. In this way, PWA can ensure that the implementation plan is delivered and the Project Steering Committee is functional, delivering the activities to achieve the targets of the plan while adhering to timescales.

8 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 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 target, and no existing policies and/or incentives contradict its achievement. PWA already provides incentives to municipalities, such as deducting their debts in return for rehabilitating the water distribution networks. Additional incentives identified that will be given further consideration include:

- Ensuring that (private) water services providers' plans include targets that are relevant to maintaining wells and springs. These may be implemented through the Union of Palestinian Water Services Providers.

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 legislation, regulation, statutory guidance, policies, strategies or incentives that are relevant to this plan.
- **Developing regulations for employers** to ensure that 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 Cabinet approval.
- **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. The MoWA can be responsible for taking forward this recommendation and securing formal approval from the Council of Ministers.
- **Developing a policy that enables and facilitates public-private partnerships** for the delivery of programmes that provide public benefits. In the case of this plan, this could enable wider involvement of the Union of Palestinian Water Services Providers in maintenance activities. The Ministry of Welfare can be responsible for taking

forward this recommendation and securing formal approval from the Council of Ministers.

9 Challenges for implementation

Israeli control over Palestinian territories is no impediment to the implementation of this plan. Palestine's unique geo-political situation since 1995 means that the PWA and its delivery partners have adapted to the requirements and restrictions enforced by Israel's various levels of control and occupation across the West Bank and the Gaza Strip. Efficient decision-making and implementing structures have been developed to circumvent restrictions, including by communicating with the Israeli authorities.

Over the years, the PWA has worked with a range of international development partners, including the French Development Agency, KfW, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNWRA), the Islamic Development Bank and others. In doing so, it has assisted them in navigating the administrative procedures required to ensure that programmes can be successfully implemented.

Regarding this plan for **improving water sources infrastructure,** constraints arising from Israel's occupation could include **delays in approval processes for building works**. These challenges have been considered when developing this plan with PWA, which has been responsible for managing water resources in Palestine under Israeli restrictions since 1995. Its Project Coordination Unit has implemented multi-million-dollar projects successfully in the past, securing approval from the Israelis where required. PWA also sits on the Joint Water Committee and has experience of successfully securing approvals. The same governance structures will be in place to deliver this plan's activities. The costs and timescales of the activities presented in Table 3 also take account of the potential delays that may be incurred to obtain approvals. In addition, the materials required are expected to be available locally, further reducing the need for permits and risk of delays.

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

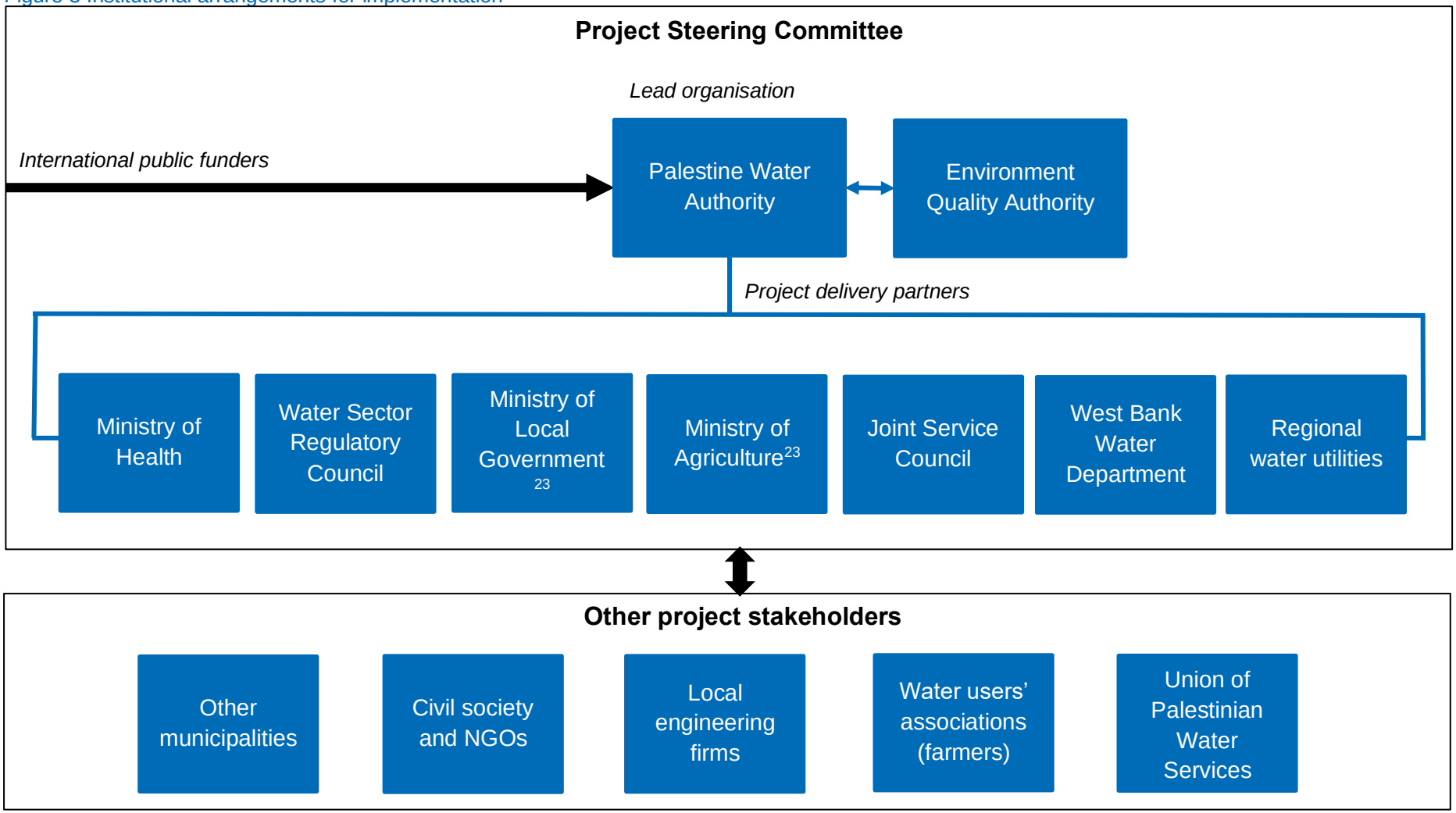
Activity	2020 - 2025	2026 - 2030	2031 - 2040	Unit cost	No. units	Unit type	Total cost	National contribution	International funding	Funding gap	Indicative options to secure international public funding to address funding gaps
1a				0.012[13]	23	Springs	0.276	0.007[14]	0.000	0.269	**AECID; AFD; BMZ; EBRD; EIB; GiZ; IKI; JICA; KfW; NRO; UK; UNDP; USAID; WB**
1b				0.177[15]	23	Springs	4.063	0.007[19]	0.000	4.056	
1c				0.015[16]	23	Springs	0.340	0.007[19]	0.000	0.333	
1d				0.014[17]	23	Springs	0.321	0.115[18]	0.000	0.206	
2a				0.209[19]	25	Wells	5.236	0.007[19]	0.000	5.229	
2b				0.556[20]	25	Wells	13.910	0.000	0.000	13.91	
2c				0.015[21]	25	Wells	0.367	0.007[19]	0.000	0.36	
2d				0.019[25]	25	Wells	0.487	0.175	0.000	0.312	

[13] Assessment of the existing status of the springs and the required intervention.
[14] Office space and catering.
[15] Rehabilitation activities for each spring - cleaning the spring site from the accumulated dirt and weeds, construct or rehabilitation of water tank, installation of chlorination system for disinfection and booster pump to deliver water to high altitude areas, installation of water distribution system and water meters for farmers, installation of protection fence with a gate.
[16] Training course to be conducted on the 23 identified springs sites for rehabilitation and installation of SCADA systems. Training will include theoretical part (2 days), and practical on-the job training (2 days).
[17] Maintenance activities estimated from 2025 to 2040 for the springs including cleaning, chlorine cost, preventive maintenance for the pump and the water network.
[18] Springs are owned by the local municipalities who are responsible for their operation and maintenance. As water providers, these costs are included as part of their distribution service.
[19] Assessment of the existing status of the wells (Domestic & Agriculture) and the required intervention.
[20] The cost of rehabilitation may vary between wells as some sites may only require a certain activity to reach a “rehabilitated” status. Movement of materials into certain areas may also be necessary and incur additional costs. The rehabilitation activities for each well may include deepening the depth of well, changing of equipment/pumps, acidification.
[21] Training course to be conducted on the 25 identified well sites for rehabilitation and installation of SCADA systems. Training will include theoretical part (2 days), and practical on-the job training (2 days).
[25] Maintenance activities estimated from 2025 to 2040 for the wells.

Activity	2020 - 2025	2026 - 2030	2031 - 2040	Unit cost	No. units	Unit type	Total cost	National contribution	International funding	Funding gap	Indicative options to secure international public funding to address funding gaps
TOTAL							**25.000**	**0.326**	0.000	**24.674**[22]	

[22] Total funding gap is subject to rounding errors.

Figure 3 Institutional arrangements for implementation[23]



[23]There are wells that belong to the Ministry of Agriculture and some that belong to the municipalities. Responsibility for rehabilitating them belongs to these authorities, rather than PWA.

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دولـــة فلسطيـــن
سلطة المياه
مكتب الوزير

2021/08/25

معالي الأخ / م. جميل مطور حفظه الله

رئيس سلطة جودة البيئة

الموضوع:- اعتماد خطط العمل لتنفيذ المساهمات المحددة وطنياً في قطاع المياه

تحية طيبة وبعد،

بالإشارة إلى الموضوع أعلاه وبناء على طلبكم نود إعلامكم بأن سلطة المياه **تؤيد وتدعم خطط العمل لتنفيذ المساهمات المحددة وطنياً** والتي تم اعدادها بالتنسيق والتعاون مع اللجنة الوطنية لتغير المناخ والشركاء ذوي العلاقة وذلك ضمن نشاطات المشروع المنفذ من قبل سلطة جودة البيئة وشراكة المساهمات المحددة وطنياً وبدعم من البنك الاسلامي للتنمية.

وفيما يلي قائمة بأسماء الخطط والكلفة الاجمالية لها:-

1. خطة معالجة المياه والمحافظة عليها وكلفتها الاجمالية **198 مليون دولار**.
2. خطة البنية التحتية لشبكات المياه وكلفتها الاجمالية **71 مليون دولار**.
3. خطة البنية التحتية لمصادر المياه وكلفتها الاجمالية **25 مليون دولار**.

علماً بأن هذه الخطط تأتي انسجاماً مع توجيهات مجلس الوزراء وبما يتوافق مع الأولويات الوطنية والاستراتيجية الوطنية لقطاع المياه.

مع فائق الاحترام والتقدير،

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