



من الشعب الياباني  
From the People of Japan



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

**Country:** occupied Palestinian territory

**Donor:** Government of Japan

**Project:** Construction of Sewage Treatment Plant and Main Pressure Line in Khan Younis  
(Construction of Khan Waste Water Treatment Plant)

PAL10-00047395



**Project Completion Report**

**February 2022**



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### Acronyms and Abbreviations

A	Ampere
ACP	Advisory Committee for Procurement
ACSR	Aluminium Conductor Steel Reinforced
BOQ	Bill of Quantities
CLA	Coordination and Liaison Administration
CMWU	Coastal Municipalities Water Utility
COGAT	Coordination of Government Activities in the Territories
EOI	Expression of Interest
IBs	Infiltration basins
IsDB	Islamic Development Bank
ITB	Invitation to Bid
GEDCO	Gaza Electrical Distribution Corporation
GoJ	Government of Japan
GRAMMS	Gaza Reconstruction and Material Monitoring System
GRP	Glass Reinforced Plastic
HQ	Headquarters
KF	Kuwait Fund for Arab Economic Development
KV	Kilovolt
KVA	Kilovolt-ampere
KY WWTP	Khan Younis Waste Water Treatment Plant project
LM	Length metre
m	Metre
m <sup>2</sup>	Square metres
m <sup>3</sup>	Cubic metres
mg/l	Milligram per litre
mm	Millimetre
mm <sup>2</sup>	Square Millimetres
MT	Medium Tension
MVA	Megavolt-ampere
ND	Nominal Diameter
PS	Pumping Station
PWA	Palestinian Water Authority
RFQ	Request for Proposal
UPVC	Unplasticized Polyvinyl Chloride
UNDP	United Nations Development Programme
UNDP/PAPP	UNDP/Programme of Assistance to the Palestinian People
UNGM	United Nations Global Marketplace
UNRWA	United Nations Relief and Works Agency
V	Volt
VA	Volt-ampere
WHO	World Health Organization



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## Project Completion Report

### 1. Introduction

- (1) Title of the Project:** Construction of Sewage Treatment Plant and Main Pressure Line in Khan Younis (Construction of Khan Waste Water Treatment Plant)
- (2) Approval Date of Funding:** January 2006
- (3) Amount of the Approved Grant:** US\$ 14,829,549
- (4) Scheme of the Grant:** Emergency Grant
- (5) Expected Period of the Project:** January 2006 - September 2021
- (6) Palestinian Authority Responsible to the Project:**

Mr Sami Hamdan, Director of Wastewater Planning Dept., Palestinian Water Authority, mobile: 059-9417130, e-mail: dr.samihamdan@yahoo.com

Mr Monther Shoblak, Director General, Coastal Municipalities Water Utility, mobile: 059-9267108, e-mail: monthersh@cmwu.ps

Mr Hatem Tayef, Director of Water and Waste Water Department, Municipality of Khan Younis, mobile: 059-9349866, e-mail: hatem.tayef@gmail.com
- (7) Date of the report:** December 2021

### 2. Description of the Project:

#### (1) Introduction and Background:

Khan Younis city is the second largest city in the Gaza Strip with a total administrative area of 59 square kilometres and inhabited by about 275,000 residents. The city has a rapidly growing population with an annual growth rate of 3.3%. It has sustained for a long time an absolute absence of a public sewage collection system and a functional wastewater treatment plant. Raw sewage has been disposed of into the environment without treatment through more than 30,000 cesspits and ad-hoc lagoons.

To overcome the deteriorating sanitary and hygienic conditions in the crowded areas, Khan Younis municipality has been able to serve a part of the population through a public sewage collection system that has been gradually established since 2004. However, due to the absence of a wastewater treatment plant, the collected wastewater was pumped without treatment to the existing main storm water box culvert to flow out by gravity to a storm water infiltration pond, located in the north-western side of Khan Younis city.

In 2008, the collected wastewater was diverted to other six ad-hoc collection lagoons established temporarily in the western side of Khan Younis city. Up to September 2019, about 60% of the population was served by the sewage collection system, and more than 15,000 cubic metres of partially treated wastewater were discharged through these lagoons to the Mediterranean Sea.



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The wastewater generated from unserved areas is evacuated by vacuum trucks and disposed of in the environment without any treatment.

This situation has posed serious risks to the public health of Khan Younis residents, in addition to polluting the aquifer, sea water and marine life. The Nitrate concentrations in some of the water wells in Khan Younis reached around 458 mg/l, which is nearly nine times the World Health Organization (WHO) recommended level of 50 mg/l. The presence of Nitrate in water has been associated with methemoglobinemia (or blue baby Syndrome), especially in bottle-fed infants<sup>1</sup>.

Therefore, the construction of the Khan Younis Waste Water Treatment Plant project (KY WWTP) came as an emergency response to the vital hygienic and environmental needs of Khan Younis residents. The primary beneficiaries of the project are the 266,000 residents of Khan Younis city. Other beneficiaries include:

- The Khan Younis Municipality, the Coastal Municipalities Water Utility (CMWU) and the Palestinian Government, as the project will contribute to enhancing the management of water and wastewater services.
- Families of unemployed workers who will have the opportunity to work on the project.
- The local contracting sector through gaining additional experience in implementing similar large-scale wastewater treatment projects.

The Government of Japan (GoJ) has entrusted UNDP with a grant total of US\$ 14,829,549 for the construction of sewage treatment plant and main pressure line in Khan Younis to solve the sanitary and environmental problems of Khan Younis residents. The Permanent Mission of Japan to the United Nations in New York informed UNDP of the contribution of the Government of Japan through the Note Verbal SC/05/485 sent to UNDP on 28 December 2005. The UNDP presented its compliments to the Permanent Mission of Japan to the United Nations and confirmed its acceptance to the Japanese contribution on 04 January 2006.

### **Additional Funding:**

UNDP completed the detailed design for the construction of KY WWTP and its effluent and infiltration schemes in December 2010. Based on the detailed design report, the total project cost was estimated in the order of US\$ 58,004,549 needed to implement and construct the first phase of KY WWTP complete with its effluent and infiltration schemes and operating it for one year after commissioning to be a comprehensive, functional, and operational treatment plant. The total financing gap was amounting to US\$ 43.175 million.

The significant funding from the Government of Japan paved the way to secure additional resources for a full-scale construction, fully meeting the objectives of the project.

The Kuwait Fund for Arab Economic Development (KF) and the Islamic Development Bank (IsDB) expressed their interest in addressing the sanitary and environmental problems of Khan Younis residents. In 2011, the Kuwait Fund committed to cover the financing gap through the IsDB for the implementation and construction of the KY WWTP and its effluent and infiltration schemes. In

<sup>1</sup> Guidelines for Drinking-water Quality, Third Edition, Volume 1, Recommendations, WHO, Geneva, 2004



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September 2013, UNDP and the IsDB signed an agreement for the implementation of the project with a total additional financing of US\$ 42 million from the Kuwait Fund and US\$ 1.175 million from UNDP, in addition to the available funding from the Government of Japan. The agreement between UNDP and the IsDB for the implementation of the project was extended to 30 June 2022.

Taking into account the essential funding from the Government of Japan, and the mobilised additional resources, the project comprises the construction of the first phase of KY WWTP at a flow capacity of 26,600 cubic metres per day, its effluent and emergency pressure pipeline, infiltration basins and electrical power supply line, in addition to undertaking a one-year operation after commissioning of the plant.

## (2) Objectives

The project sought to construct a comprehensive, functional and operational wastewater treatment plant, at a flow capacity of 26,600 cubic metres per day, in accordance with international standards. It aims at protecting public health, water resources and the environment of Khan Younis residents, while contributing to developing public and social infrastructure in the Gaza Strip.

## (3) Activities and Expected Output

### 3.1 UNDAF Outcome(s)

By 2016, Palestinian institutions more effectively manage and regulate urban development and natural resources to ensure the equitable provision of sustainable infrastructure and to safeguard cultural heritage

### 3.2 Expected CP Outcome(s):

Natural resources and environment protected.

Public and social infrastructure developed.

### 3.3 Expected Output(s):

- Khan Younis waste water treatment plant of a capacity of 26,600 cubic metres per day constructed, and operated for one year after commissioning.
- Effluent and emergency pressure pipeline of 18.6 kilometres length constructed.
- Al Fukhari infiltration basins of 97 dunums area to recharge treated wastewater into aquifer constructed.
- Main electrical power supply line of around 3,000 metre length to operate KY WWTP constructed.
- Design review, pre-contract services and construction supervision for the construction of KY WWTP performed.
- The implementation and operational capacity of the Coastal Municipalities Water Utility enhanced.



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### 3.4 Project Key Activities

The project outcomes and outputs will be achieved through performing the below mentioned activities/ components:

#### 3.4.1 Constructing the Main Steel Pressure Pipeline from Existing Terminal PS # 8 to KY WWTP

In November 2006, and through the contribution of the Government of Japan, UNDP implemented the construction of around one kilometre of the main steel pressure pipeline from the constructed terminal pumping station, PS No. 08, towards KY WWTP site. Khan Younis municipality implemented another one kilometre of it. A grant was secured by UNRWA to implement with CMWU the remaining 2.7 kilometres of it, however, this segment was not fully implemented in 2015 due to Israeli authorities' refusal to allow the access of the required steel pipes into Gaza. Glass Reinforced Plastic (GRP) pipes were used instead. The remaining 1.3 kilometres of this main influent pressure pipeline were implemented by UNDP using ductile iron pipes and from the contribution of the Kuwait Fund in February 2020.

#### 3.4.2 Providing the Detailed Design for the Construction of KY WWTP, Phase I

Through the contribution of the Government of Japan, UNDP launched an expression of interest and Request for Proposal to solicit a joint venture of international and local consultancy firms to carry out and provide the detailed design for the construction of KY WWTP. The contract was signed between UNDP and the joint venture consortium; SOGREAH Consultants and Universal Group for Engineering and Consulting, in October 2008. The detailed design assignment was completed in December 2010.

The documents governing the pre-qualification of contractors and the tender documents for the construction works to launch the construction stage of KY WWTP and its effluent and infiltration schemes were ready, however, the design and tender documents shall be reviewed and vetted ahead the construction stage.

#### 3.4.3 Constructing KY WWTP, Phase I, and carrying out one year operation after commissioning

The first phase of Khan Younis waste water treatment plant shall be implemented according to international practice, complete with all required structural, mechanical and electrical works to be a functional and operational treatment plant based on a flow capacity of 26,600 cubic metres per day and load estimates to directly serve 217,000 residents. The KY WWTP site is located at the south eastern side of Khan Younis. The plant will be constructed on a long strip of land (171 m x 680 m) with a total area of about 115 dunums (11.5 hectares). It is about 450 metres away from the eastern border in its southern corner and about 700 metres in its northern corner. The land is already owned by Khan Younis Municipality and allocated to the project.

In order to achieve wastewater treatment objectives, the following processes are necessary:

- Pre-treatment including screening and de-greasing/de-gritting.
- Secondary treatment including nitrogen removal.
- Tertiary treatment.





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UNDP has decided to choose the option of secondary treatment by activated sludge process. The KY WWTP includes the following treatment steps:

**Effluent treatment:**

- Pre-treatment including fine screening as well as grit and grease removal.
- Aeration tanks and clarification tanks.
- Tertiary treatment including sand filtration and Ultraviolet (UV) disinfection.
- Treated effluent outlet pumping station.

**Sludge treatment:**

- Gravity thickening.
- Sludge drying on open drying beds.
- Sludge composting.

The KY WWTP includes also:

- Pre-treatment building.
- Blower building for biological treatment.
- Tertiary treatment building.
- Administration building, including laboratory, control room, etc.
- Workshop.
- Electrical substations and generators.
- Piping and connection systems.
- Internal roads and site access.
- Architectural and landscaping integration of works.

After constructing and commissioning the treatment plant, one year of operation of KY WWTP shall be carried out by the same international contractor that will be responsible for the construction and commissioning of the plant.

Aiming at exchanging knowledge and proper codes of practice with CMWU, as service provider and final operator of KY WWTP, this activity should be undertaken with full CMWU's participation, support and cooperation, in order to equip CMWU with the necessary experience required to properly operate the treatment plant and to ensure the project's long-term sustainability.

**3.4.4 Constructing the Effluent and Emergency Pressure Pipelines to Infiltration Basins and Sea Outfall**

In order to ensure proper and environmentally sound disposal of treated wastewater, an effluent and emergency steel pressure pipeline will be constructed. The dual use will ensure the ability to pump treated effluent from the effluent pumping station located at KY WWTP site to Al Fuhhari infiltration basins or to the sea in emergency cases, with a total length of around 18.6 kilometres.

The effluent and emergency pressure pipeline will be operated in the following operation modes:

**A. Normal Mode:**

Normally, the effluent pressure pipeline will transfer the treated effluent to the infiltration basins at Al Fuhhari area, where the treated effluent will infiltrate into the aquifer to eventually save a new non-conventional water resource for agricultural purposes.



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## B. Emergency Mode:

The effluent pressure pipeline will transfer the effluent to the sea outfall in the emergency operation modes in following cases only:

- Maintenance works in the treatment plant leading to lower water quality that is not adequate for infiltration, so the partially treated effluent will be pumped directly to the sea.
- Emergency cases in the plant or maintenance and/or emergency cases in the infiltration basins.

The selected diameters for the different sections of the steel pressure pipeline are ranging between 920-1030 mm.

UNDP shall implement 30% of the effluent and emergency pressure pipeline at a total length of 5.6 kilometres from the KY WWTP site to the infiltration basins.

Within the overall project's work plan and allocated budget, and under UNDP's full coordination and supervision of the overall project, the CMWU shall implement 70% of the effluent and emergency pressure pipeline at total length of 13 kilometres from Sofa and Saleh Eldeen streets' junction to the seashore.

### 3.4.5 Constructing the Infiltration Basins

Infiltration basins (IBs) are permeable earthen basins, designed and operated to treat and disperse treated wastewater. IBs are typically operated in conjunction with municipal wastewater treatment systems/plants. In order to benefit from the treated wastewater, the infiltration system would be constructed to infiltrate the treated wastewater of KY WWTP into the aquifer for ultimate reuse for agricultural purposes.

Results of successive geotechnical investigations implemented in different areas in Khan Younis showed that the Khuz'aa /Al Fuhari site is the best area for the infiltration purposes, thus, it was chosen for constructing the project's infiltrations basins.

The site is located in agricultural land in Al Fuhari area in the south-eastern part of Khan Younis Governorate. The site has available top area of around 97 dunums with a trapezoidal shape.

The topsoil consists of sandy silty clayey layer with thickness between 01 to 06 metres above clay layer with thickness between 04 to 06 metres. Thus, infiltration basins can't be constructed directly on the ground. The clay layer has to be excavated and removed from site; then the basins have to be backfilled with suitable soil with high hydraulic conductivity until reaching the level foreseen by the design.

The site has been divided into 6 basins each with bottom area of 11,200 square metre. The influent flow rate that will be received by the infiltration basins was considered as the average flow for KY WWTP phase I, i.e. 26,600 cubic metres per day.

The rapid infiltration of treated wastewater based on a relatively high rate of infiltration into soil followed by rapid percolation, either vertically or laterally away, was considered in the design. The infiltration basin system is managed by repetitive cycles of flooding, infiltration and drying.





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After construction, the operation and maintenance phase activities will control the hydraulic loading cycle, where a regular drying period is necessary for the system performance. To maximize infiltration, the drying periods should be long enough to re-aerate the soil, to dry and oxidize the filtered solids. The loading cycle system is to operate 02 days for flooding and 04 days for drying.

The infiltration basins shall be established and equipped by the required facilities of access roads, chamber valve rooms, administration building, in addition to the required landscaping and lightning.

Within the overall project's work plan and allocated budget and under the UNDP's full coordination and supervision of the overall project, the CMWU shall implement the infiltration basins.

#### **3.4.6 Constructing the Main Electrical Power Supply Line to KY WWTP, Phase I**

KY WWTP shall be provided with the required electricity through the main electrical medium tension line MT/(22 KV), passing parallel to Salah Eden street.

The main electrical power supply line shall be constructed with all required wires, columns, transformers, accessories, etc. with a total length of around 3,000 metres between the existing main electrical line MT/(22KV) and KY WWTP site.

Gaza Electrical Distribution Corporation (GEDCO) issued a commitment letter addressed to Khan Younis Municipality on 05 July 2011 to do its utmost efforts to supply the electrical power of 04 MVA, required to operate and maintain the treatment plant.

#### **3.4.7 Carrying out the Design Review, Pre-Contract Services and Construction Supervision for the Construction of KY WWTP, Phase I**

Ahead of the tendering stage, a design review should be carried out by a professional consultancy firm to vet the tender documents, to correct conflicts and inconsistencies and make certain that they are coordinated and work requirements are clear to result in minimized disputes and claims during the construction phase and reduced impacts to the project. The construction of such large-scale wastewater treatment plant, involving sophisticated technology, along with its effluent and infiltration schemes, is complex and requires that many international and local contracting firms will be working at the same time to construct the different components of KY WWTP project.

Therefore, in order to ensure proper selection of contractors, smooth implementation of construction works and intact compliance with international standards in terms of quality and meeting the required treatment outputs, a joint venture consultant of specialized and experienced international and local consultancy firms (to transfer knowledge to local professionals as well) shall be contracted by UNDP to support performing the tendering and evaluation processes through the pre-contract stage and performing the construction supervision and commissioning of all construction components of KY WWTP project. The joint venture consultant should be accountable to UNDP for the specified quality of the constructed and operating treatment plant and its effluent and infiltration schemes.



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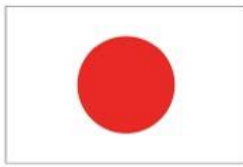


#### (4) Budget Line

##### 4.1 Project Components (GoJ Contribution):

Component	Budget US\$	Revised Budget US\$ *	Project Site
<b>a.</b> Constructing main steel pressure pipeline from pump station No. 8 to KY WWTP	1,000,000	527,303	Khan Younis / Eastern side
<b>b.</b> Providing the detailed design for the construction of KY WWTP	1,100,000	946,804	Khan Younis WWTP sites
<b>c.</b> Constructing KY WWTP, Phase I, including one-year operation after commissioning	11,450,000	11,274,745	Khan Younis WWTP site (East of Khan Younis)
<b>d.</b> Carrying out the design review, pre-contract and construction supervision services	0	795,255	Khan Younis WWTP sites

\* Revised based on the letter of approval from the Government of Japan to reallocate budget lines dated 10 September 2015.

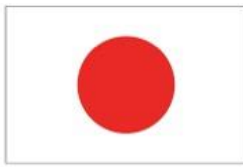


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#### 4.2 Project Components/Revised Budget (GoJ Contribution):

No	Project Activities/Components	Budget – US\$			
		Original Budget according to Note Verbale 2005	Revised Budget July 2007	Revised Budget as per UNDP/ IsDB agreement September 2013	Revised/Real located Budget September 2015
1	Constructing main steel pressure pipeline from Pump Station No. 8 to KY WWTP	1,000,000	1,000,000	527,303	527,303
2	Providing the detailed design for the construction of KY WWTP	0	1,100,000	946,804	946,804
3	Constructing KY WWTP, Phase I, including one-year operation after commissioning	12,550,000	11,450,000	11,700,000	11,274,745
4	Carrying out the design review, pre-contract and construction supervision services for the construction of KY WWTP	0	0	370,000	795,255
5	UNDP Direct Implementation Cost	150,000	150,000	150,629	150,629
<b>6</b>	<b>Sub-total 1</b>	<b>13,700,000</b>	<b>13,700,000</b>	<b>13,694,736</b>	<b>13,694,736</b>
7	Contingencies and Miscellaneous	31,064	31,064	36,328	36,328
<b>8</b>	<b>Sub-total 2</b>	<b>13,731,064</b>	<b>13,731,064</b>	<b>13,731,064</b>	<b>13,731,064</b>
9	Total GMS (GoJ 8%)	1,098,485	1,098,485	1,098,485	1,098,485
<b>10</b>	<b>Grand Total</b>	<b>14,829,549</b>	<b>14,829,549</b>	<b>14,829,549</b>	<b>14,829,549</b>



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### 4.3 Project Overall Co-financed Budget/Reallocated Budget

No	Project Activities	Total US\$	Kuwait Fund/IsDB Contribution	GoJ Contribution US\$	UNDP Contribution
1	Constructing Main Steel Pressure Pipeline from Pumping Station No. 8 to KY WWTP	527,303	0	527,303	0
2	Providing the Detailed Design for the Construction of KY WWTP	946,804	0	946,804	0
3	Constructing KY WWTP, Phase I, Part of the Effluent and Emergency Pressure Pipeline with 5.6 Kilometres Length and Electrical Power Supply Line with One Year Operation	30,487,903	19,213,158	11,274,745	0
4	Constructing the Effluent and Emergency Pressure Pipeline with Total Length of 13 Kilometres (CMWU Implementation)	5,792,912	5,792,912	0	0
5	Constructing the Infiltration Basins (CMWU Implementation)	7,144,591	7,144,591	0	0
6	Consultancy Services for the Construction Supervision, Design Review and Preparation of Tender Documents of KY WWTP (Carrying out the Design Review, Pre-contract and Construction Supervision Services)	2,944,594	2,149,339	795,255	0
7	CMWU Direct Implementation Cost	517,500	517,500	0	0
8	UNDP Direct Implementation Cost	1,203,629	0	150,629	1,053,000
9	Miscellaneous (GoJ)	36,328	0	36,328	0
<b>10</b>	<b>Sub-Total 1</b>	<b>49,601,564</b>	<b>34,817,500</b>	<b>13,731,064</b>	<b>1,053,000</b>
11	UNDP GMS (8% GOJ & 7% Kuwait Fund/IsDB)	3,535,710	2,437,225	1,098,485	0
<b>12</b>	<b>Sub -Total 2</b>	<b>53,137,274</b>	<b>37,254,725</b>	<b>14,829,549</b>	<b>1,053,000</b>
13	Contingencies	4,867,275	4,745,275	0	122,000
<b>14</b>	<b>Grand Total</b>	<b>58,004,549</b>	<b>42,000,000</b>	<b>14,829,549</b>	<b>1,175,000</b>



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### 3. Implementation Process and Results

#### (1) Implementation Process

UNDP/PAPP delivered the project through a Direct Implementation Modality (DIM). It takes into account the institutional capacities, the legal setting and evolving situational context, and has been effective in addressing the socio-economic needs of the Palestinian people, which is UNDP/PAPP's primary mandate, as stipulated by the UN General Assembly.

UNDP/PAPP is the Executing Entity of the entire project, responsible and accountable for managing and implementing the project, including the monitoring and evaluation of project interventions and achieving project outputs.

The project was directly executed by UNDP in coordination with the project partners: the Palestinian Water Authority (PWA) as sector regulator; the Coastal Municipalities Water Utility (CMWU) as service provider and final operator of the project, and the Municipality of Khan Younis as a direct beneficiary.

According to the agreement between UNDP and the IsDB, and with an aim to enhance the implementation capacity of national partners, the CMWU was set to implement two components of the project, namely the construction of 70% of effluent and emergency pressure pipeline and the construction of infiltration basins under UNDP's full coordination and supervision of the project.

UNDP provided the detailed design and tender documents for the different components of KY WWTP in close cooperation with partners in December 2010. After securing the additional fund from the Kuwait Fund/IsDB, to implement the different components of the project, UNDP completed the design review stage with Artelia and Universal Group consultant, partners and legal department of UNDP HQ, in May 2016.

Through the design review stage, UNDP posted the pre-qualification documents to pre-qualify international contractors for the construction of KY WWTP and buildings on UNDP, UNDP/PAPP and UNGM sites, in November 2015. After completing the prequalification processes in March 2016, UNDP sent the final tender documents to the prequalified bidders in June 2016 and received the bids/offers from the prequalified bidders in October 2016. UNDP finalized the technical and financial evaluation and signed the contract for the construction of KY WWTP and buildings with an international contractor, Metito (Overseas) LTD in December 2016. Construction works commenced in January 2017. In parallel, UNDP and CMWU launched the prequalification and tendering processes for the complementary components of the project.

By completing the construction works and dry testing of KY WWTP and the complementary components, UNDP successfully introduced the wastewater to the plant, on 09 September 2019. After achieving and exceeding the quality parameters of the treated effluent, as required by the design, the commissioning stage ended on 07 November 2019. The one-year operation after commissioning started on 08 November 2019 and successfully completed on 08 November 2020. KY WWTP continued to perform with the high-quality parameters during the one-year operation stage. UNDP formally handed over the management and operation of the KY WWTP to the final operator, the Coastal Municipalities Water Utility, on 11 November 2020.



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## (2) Results of the Activities (Output of the Project)

The following results have been achieved:

- **Main Steel Pressure Pipeline from Existing Terminal PS # 8 to KY WWTP Constructed**
  - The main influent pressure pipeline from existing terminal pumping station, PS No. 8, to KY WWTP with a total length of 4.7 kilometres, diameter 24 inch for the steel pipe segment and 700 mm for the ductile iron segment, fully supplied and installed. Through this pipeline, all the raw sewage collected from the city of Khan Younis is transferred to KY WWTP for appropriate treatment.
- **Detailed Design for the Construction of KY WWTP, Phase I Provided**
  - The detailed design, tender documents, prequalification documents for bidders and cost estimates for the construction of KY WWTP, Phase I, with a capacity of 26,600 cubic metres per day, and its effluent and infiltration schemes were provided in December 2010. The availability of the design and tender documents paved the way for securing the required additional funding and ensuring the construction of the plant.
- **KY WWTP, with a capacity of 26,600 cubic metres per day constructed and operated for one year after commissioning**
  - KY WWTP, Phase I, with a capacity of 26,600 cubic metres per day was fully constructed with all required structural, mechanical and electrical works and the raw sewage was introduced to the plant in September 2019.
  - KY WWTP, with high quality parameters of treated effluent that exceeded the design requirements, was commissioned in November 2019.
  - The one-year operation after commissioning was carried out and successfully completed in November 2020. KY WWTP continued to perform with the high-quality parameters during the one-year operation stage.
  - UNDP formally handed over the management and operation of the KY WWTP to the final operator, the Coastal Municipalities Water Utility, on 11 November 2020.
  - Since November 2019 till December 2021, about 09 million cubic metres of raw sewage have been treated in KY WWTP with high quality parameters of treated effluent that exceeded the design requirements.
- **Effluent and emergency pressure pipeline of 18.6 kilometres length constructed**
  - The effluent and emergency pressure pipelines from KY WWTP to the infiltration basins and sea outfall, with a total length of 18.6 kilometres, ductile iron pipes with diameters of 900 mm and 1000 mm, fully supplied and installed. Since November 2019 till December 2021, about 08 million cubic metres of high-quality treated effluent have been pumped through this pipeline from KY WWTP to the infiltration basins. At early stages of operation, about 0.3 million cubic metres of high-quality treated effluent have been pumped from KY WWTP to the sea for flushing purposes and for hydraulic testing of the pumps and the pipeline itself.





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- **Al Fukhari infiltration basins of 97 dunums area to recharge treated wastewater into aquifer constructed**
  - The infiltration basins with all excavation, soil replacement, civil, mechanical and electrical works were fully constructed in April 2019 in an area of about 100 dunums in Al Fukhari area east of Khan Younis, to infiltrate the treated effluent of KY WWTP into the aquifer for ultimate reuse for agricultural purposes. Since November 2019 till December 2021, about 08 million cubic metres of high-quality treated effluent have been pumped from KY WWTP to the infiltration basins and infiltrated into the aquifer in Al Fukhari area.
- **Main electrical power supply line of around 3,000 metre length to operate KY WWTP constructed**
  - The main medium tension electrical power supply line with all required wires, columns, transformers and accessories with a total length of about 3,600 metres was fully constructed from GEDCO main grid in Salah Eden street to KY WWTP in July 2019.
  - The electrical power required to operate the plant was successfully supplied in May 2019, from GEDCO main grid. During the commissioning and operation stages of the KY WWTP, from September 2019 until December 2021, the supply of electrical power form GEDCO main grid to the plant has continued through this line.
- **Design review, pre-contract services and construction supervision for the construction of KY WWTP performed**
  - The design review, pre-contract and construction supervision services contract between UNDP and Artelia and Universal Group consultant was signed on 30 July 2015 and activities commenced on 10 August 2015.
  - After completing the design review and procurement processes for the main components of the project, the consultant continued to provide the on-site and home-based construction supervision services for the various components of the project from the start of construction works until completion and handover.
  - All tasks and activities required for the design review, pre-contract and construction supervision services for KY WWTP were completed by the consultant in accordance with the contract on 10 February 2021.
- **The implementation and operational capacity of the Coastal Municipalities Water Utility enhanced**
  - The CMWU's implementation capacity enhanced through implementing 70% of the effluent and emergency pressure pipeline and the infiltration basins. The CMWU's implementation capacity was developed during the handing over of the management and operation of the KY WWTP to CMWU from 11 November 2020 until December 2021. During this period, KY WWTP continued to ensure the high-quality parameters of treated effluent that exceeded the design requirements.

The following table provides a summary of the specific outputs, activities and achievement of the components contributed to by the Government of Japan:



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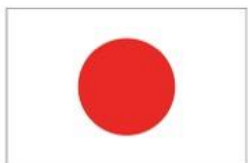
Indicated output	Activities	Timeframe (2005- 2021)																		Schedule Status	Activities Done and Achievements	Remaining Work	Tasks and Measures
		05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21					
Output 1: Main pressure line supplied and installed.	Installing 996.3 metres of steel pressure pipes of 24 inches diameter, 1,070.4 metres of reinforced concrete pipes of 1,000 mm diameter and constructing 15 reinforced concrete manholes of 1.5mx1.5m and 2mx2m dimensions.	x	x																	Completed	UNDP signed the contract for the construction of the main pressure line with the contractor, El Khaesi Contracting and General Trade Co., on 20 December 2005. The site was handed over to the contractor on 22 December 2005. The following main activities/works had been completed on site and handed over in November 2006: <ul style="list-style-type: none"> <li>➤ Installation of 996.3 LM of steel pressure pipes of diameter 24 inches.</li> <li>➤ Installation of 1070.4 LM of concrete pipes of diameter 1000 mm.</li> <li>➤ Construction of 15 reinforced concrete manholes of 1.5 mx1.5 m and 2 mx2 m dimensions.</li> </ul>	None	Completed
Output 2: Detailed design and tender documents for the construction of KY WWTP	Carrying out procurement processes to solicit a joint venture of international and local consultants to provide the detailed design.		x	x	x	x														Completed	An Expression of Interest (EOI) to prequalify consultants for the detailed design assignment was posted in December 2007 and the evaluation process was completed in February 2008.  Request for Proposal (RFP) was posted for the shortlisted consultants in April 2008 and the evaluation process was completed in July 2008.  UNDP signed the contract of the detailed design	None	Completed



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provided.	Providing the detailed design and tender documents for the construction of KY WWTP.																			<p>assignment with the consultant Sogreah &amp; Universal Group, at a total contract price of US\$ 946,804, in October 2008.</p> <p>The different activities of the detailed design assignment were performed, and the final detailed design report and tender documents were provided in December 2010.</p>		
Output 3: KY WWTP of a capacity of 26,600 cubic metres per day constructed and operated for one year after commissioning.	Constructing KY WWTP, Phase I									x	x	x	x	x	x	x	x	x	Completed	<p>UNDP/PAPP posted the prequalification document PQ 2015-001 to prequalify international contractors for the construction of KY WWTP and buildings on 12 November 2015 at the UNDP, UNDP/PAPP and UNGM sites. The evaluation process was concluded in March 2016 by prequalifying/ shortlisting four international contractors to submit their bids/offers through Invitation to Bid. The legal department of UNDP HQ revised and cleared the contract documents on 26 May 2016.</p> <p>UNDP launched the tendering process and sent the ITB-2016-158 to the four pre-qualified contractors on 30 June 2016. UNDP received four bids/ offers from the four prequalified bidders on 06 October 2016, and the bids were opened at the same day on 06 October 2016. The evaluation committee finalized the technical and financial evaluation on 15 November 2016 and recommended awarding the</p>	None	Completed



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															<p>contract to the lowest priced bidder, Metito (Overseas) LTD, after negotiating them to mitigate the effects of potential risks of some issues of concern seen in their bid. After concluding the negotiations between UNDP and Metito, the UNDP Headquarters' Advisory Committee for Procurement (ACP) reviewed the case and the negotiations outputs and issued its final approval to award the contract to Metito in the total amount of US\$ 18,935,575.73 on 09 December 2016.</p> <p>The IsDB issued their no objection to award the contract to Metito in the total amount of US\$ 18,935,575.73 on 12 December 2016. UNDP sent the Letter of Acceptance to Metito on 13 December 2016.</p> <p>UNDP signed the contract ITB-2016-158, Construction of Khan Younis Waste Water Treatment Plant and Buildings, with the contractor, Metito (Overseas) LTD, at a total contract price of US\$ 18,935,575.73 on 14 December 2016. The contract price was increased to US\$ 21,700,133.66, after adopting and approving the variation order no.1 for changing the stainless steel for major equipment from SS 304 to SS 316, variation order no.2 for the additional quantities in the BOQs and variation order</p>		
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															<p>no.3 for the items of change for civil, mechanical and electrical works. The IsDB approved the variation order no.4 (additional items of change for civil, mechanical and electrical works required for durable operation of KY WWTP) with an additional total amount of US\$ 77,163.25 on 28 July 2020. The IsDB also approved the variation order no.5 (proposed change for the one-year operation and maintenance services) on 28 July 2020 with a total saving of US\$ 72,377.12 of the contractual price for the one-year operation and maintenance services. By adopting variation orders no.4 and 5, and based on the updated forecast shared with the IsDB consultant on 26 July 2020, the amended contract price remained unchanged at US\$ 21,700,133.66.</p> <p>The site was handed over to the contractor on 18 January 2017 and the construction activities commenced on 22 January 2017.</p> <p>UNDP completed the civil, mechanical and electrical works on site, and finalized the dry tests for the equipment on 08 August 2019.</p> <p>UNDP successfully introduced the wastewater to the plant on 09 September 2019 and started the 45 days commissioning stage on 25 September 2019.</p> <p>After achieving the quality parameters of the treated</p>		
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															<p>effluent as required by the design, even exceeding them, the commissioning stage ended on 07 November 2019. The Taking-Over certificate was issued on 17 November 2019.</p> <p>The following main construction works have been accomplished for different structural components of the administrative building, workshop, pre-treatment building, aeration tank, clarifiers, thickeners, sand filter, drying beds, composting area, manholes and distributors, blowers and generators' rooms and for roads with updated quantities as finally measured on site as follows:</p> <ul style="list-style-type: none"> <li>➤ Stripping of soil: 84,986.44 m<sup>2</sup></li> <li>➤ Excavation exceeding 5.0 m depth: 132,572.07 m<sup>3</sup></li> <li>➤ Backfilling with selected excavated material: 58,359 m<sup>3</sup></li> <li>➤ Backfilling with clean sand (kurkar): 25,167.96 m<sup>3</sup></li> <li>➤ Casting blinding concrete class D: 13,594.02 m<sup>2</sup></li> <li>➤ Casting reinforced concrete class B in base slabs, aprons, ground beams: 10,427.23 m<sup>3</sup></li> <li>➤ Casting reinforced concrete class B in base</li> </ul>		
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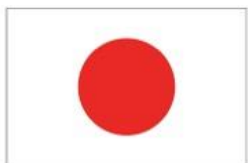




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																			<p>slabs, aprons, ground beams, foundation for electrical generators: 40.90 m<sup>3</sup></p> <ul style="list-style-type: none"> <li>➤ Casting reinforced concrete class A in walls and columns: 6,189.03 m<sup>3</sup></li> <li>➤ Precast concrete class A: 33.5 m<sup>3</sup></li> <li>➤ Casting reinforced concrete class B in other structures, stairs, weirs, blocks, balconies, shafts, channel, culverts: 1,293.89 m<sup>3</sup></li> <li>➤ Casting reinforced concrete class B in solid slabs: 576.61 m<sup>3</sup></li> <li>➤ Casting reinforced concrete class B in ribbed slabs: 777.67 m<sup>3</sup></li> <li>➤ Casting mass concrete class C in all positions: 56.04 m<sup>3</sup></li> <li>➤ Constructing concrete blocks 20 cm for the administrative building, workshop, pre-treatment building, aeration tank and thickeners: 1,950.83 m<sup>2</sup></li> <li>➤ Constructing concrete blocks 10 cm for the administrative building and miscellaneous: 769.59 m<sup>2</sup></li> <li>➤ Executing internal plastering for walls and ceilings for the administrative building, workshop, pre-treatment building, aeration</li> </ul>		
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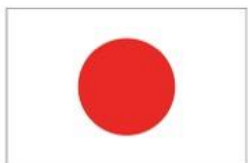
																			<p>tank, thickeners and sand filters: 8,461.49 m<sup>2</sup></p> <ul style="list-style-type: none"> <li>➤ Executing external plastering for the administrative building, workshop, pre-treatment building, thickeners and sand filters: 3,852.83 m<sup>2</sup></li> <li>➤ Backfilling of clay, sand and gravel layers for drying beds: 18,451.08 m<sup>3</sup></li> <li>➤ Installing PVC perforated pipes for the drying beds: 4,934.4 m</li> <li>➤ Installing aluminium hand railing: 1,573.69 m</li> <li>➤ Installing galvanized steel fence: 1,528.07 m</li> <li>➤ Laying kurkar as subbase layer for carriage ways: 9,248.43 m<sup>2</sup></li> <li>➤ Laying a basecourse layer for the carriage ways: 8,519.77 m<sup>2</sup></li> <li>➤ Laying a pre- cast concrete interlock 6 cm thick: 2,295.65 m<sup>2</sup></li> <li>➤ Laying asphalt layer for the carriage ways: 7,815 m<sup>2</sup></li> <li>➤ Planting natural lawn: 15,938.54 m<sup>2</sup></li> <li>➤ The required mechanical and electrical equipment has been delivered and installed on site. More than 3,000 m of ductile iron, steel, stainless steel and high-density polyethylene</li> </ul>		
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														<p>pipes, 42 pumps, 3 industrial pumps, 195 valves, 16 mixers, 05 air blowers, 06 jet aerators, 4,056 air diffusers, 13,100 filter nozzles, 10 sluice gates, 20 stop logs, 04 fine and coarse screens, 02 conveyor, 01 grit classifier, 02 grit and grease scraper bridges, 04 suction scraper bridges, 02 surge skirt, 12 cranes, 10 flowmeters, 03 main diesel generators, 02 fuel tanks, 01 surge tank, 01 biofilter system, PV system 18 KW, 01 vacuum truck, 02 front loaders, workshop equipment, lab instruments and main electrical panels, equipment fittings, sensors and cables have been supplied and installed on site for different structural components, in addition to supplying the needed spare parts for different equipment.</p> <p>Aiming at sharing knowledge and best practice with the local operator, the one-year operation, after commissioning, started on 08 November 2019 and successfully completed on 08 November 2020.</p> <p>The KY WWTP continued to abide by the high-quality parameters during the one-year operation stage.</p> <p>UNDP has formally handed over the management and operation of the KY WWTP to the final operator, the Coastal Municipalities Water Utility, on 11</p>		
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															<p>November 2020.</p> <p>In November and December 2020, the Coastal Municipalities Water Utility and Khan Younis Municipality provided 19 staff for the permanent operation and maintenance of the plant.</p> <p>The overall percentage of achievement of this package is 100%.</p> <p>After remedying the defects of works that were notified to the contractor at the end of the defect notification period of one year, the Performance Certificate was issued to the contractor on 02 February 2021.</p> <p>Since 08 November 2019 until now, the electrical power needed to operate the plant was continuously supplied from GEDCO's main grid, and KY WWTP was operating on site without major interruption.</p> <p>Since November 2019 till December 2021, about 09 million cubic metres of raw sewage were treated in KY WWTP with high quality parameters, and about 08 million cubic metres of treated effluent were recharged into the ground water aquifer through the infiltration basins to ultimately be used for agricultural purposes.</p> <p>During the May 2021 hostilities in Gaza, the operators of KY WWTP were not granted access to</p>		
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															<p>supervision services with Artelia and Universal Group (Artelia&amp;UG) consultant in the total amount of US\$ 2,944,594 on 30 July 2015.</p> <p>The work activities commenced on 10 August 2015. The consultant finalized the design review and submitted the tender documents in February 2016. The legal department of UNDP NY revised and cleared the contract documents on 26 May 2016.</p> <p>UNDP started launching the tendering processes for the construction works by sending the tender documents for the construction of KY WWTP to the pre-qualified contractors on 30 June 2016. UNDP and CMWU continued the tendering processes for the construction works of the other complementary components as detailed hereinafter.</p> <p>After finalizing the design review and procurement processes for the project's main packages, the following millstones were achieved:</p> <ul style="list-style-type: none"> <li>➤ UNDP completed the construction, commissioning and operation works of the KY WWTP in November 2020, under the contract ITB-2016-158, Construction of KY WWTP and Buildings, as briefed in the above section of output 3.</li> <li>➤ UNDP signed the contract ITB 2016-219-UNDP, Construction of Main Pressure Lines to the Sea and</li> </ul>		
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																				<p>to the Infiltration Basins for KY WWTP, Lot #2 Ductile Iron Pipe (UNDP package with around 5.6-kilometre length) with the contractor, Handala Company for Engineering Contracting &amp; General Trade, at a total contract price of US\$ 1,757,992 on 14 December 2016. The contract price was increased to read US\$ 2,089,626.68 after adopting and approving the variation order no.1 concerning the price adjustment of the unit rates of the ductile iron pipes.</p> <p>The work activities commenced on 22 January 2017.</p> <p>All installation and construction works for this package were finalized and completed on site on 21 November 2019. 5,544.8 m of ductile iron pipes and 02 gate valves (with a diameter of 900 mm), 04 air release valves and 06 drain gate valves with a diameter of 12 inch were installed and tested on site. 09 reinforced concrete manholes were constructed for the different valves. 2,423 m of the excavated trenches in the asphalt roads were reinstated.</p> <p>The first Taking-Over session was organized on 26 December 2019 and the Taking-Over certificate was issued on 21 January 2020. The overall</p>		
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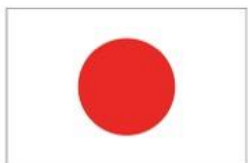
															<p>percentage of achievement of this package is 100%.</p> <p>➤ CMWU signed the contract ITB 2016-219-CMWU, Construction of Main Pressure Lines to the Sea and to the Infiltration Basins for KY WWTP, Lot #2 Ductile Iron Pipe (CMWU package with around 13.0-kilometre length) with the contractor, Handala Company for Engineering Contracting &amp; General Trade, at a total contract price of US\$ 3,821,020 on 08 February 2017.</p> <p>The contract price was increased to read US\$ 4,680,393.45 after the IsDB adopted and approved the variation order no.1 concerning the price adjustment of the unit rates of the ductile iron pipes and the variation order no.2 (additional works based on site conditions/ measurements and for proper operation of the pressure line).</p> <p>The work activities commenced on 23 February 2017.</p> <p>All installation and construction works for this package were finalized and completed on site on 08 June 2020. 8,383 m of pipes (with a diameter of 900 mm) and 4,742 m of pipes (with a diameter of 1000 mm) have been installed and hydraulically tested on site. 55.65 m of pipes (with a diameter of</p>		
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															<p>900 mm) and 34.2 m of pipes (with a diameter of 1000 mm) have been installed and hydraulically tested on site.</p> <p>04 air release valves with a 200 mm diameter, and 08 drain gate valves with a diameter of 12 inch were installed on site. 08 reinforced concrete manholes were constructed for these valves, in addition to 13 drop manholes and 03 energy breakers. 638.3 metre length of asphalt and 84.7 metre length of interlock were reinstated. 50.2 m<sup>3</sup> of reinforced concrete B300 for thrust blocks and 30.9 m<sup>3</sup> of reinforced concrete B300 for pipes encasement were casted on site. The sea outfall for the emergency pressure line, constructed from reinforced concrete B300, was completed on site at the seashore at the south-western side of Khan Younis. To protect the sea outfall from the direct impacts of the sea waves, large units of interlocking blocks tetrapod shape (equivalent to 75.3 units specified in the BOQ), were constructed from reinforced concrete B300 and installed around the sea outfall at the seashore.</p> <p>Taking-Over certificate was issued on 21 July 2020. The overall percentage of achievement of this package is 100%.</p>		
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															<p>➤ CMWU signed the contract ITB 2016-220-CMWU, Construction of the Infiltration Basins in Al Fukhari for KY WWTP, with the contractor, Abu Shammala &amp; Abu Dan Co. General Trade &amp; Contracting LTD, at a total contract price of US\$ 5,636,000 on 08 February 2017.</p> <p>The work activities commenced on 23 February 2017.</p> <p>The construction works of the infiltration basins have been completed on site and preliminarily handed over on 16 April 2019. The following main works have been accomplished:</p> <ul style="list-style-type: none"> <li>➤ Levelling the site area to reach the approved design levels: 99,464.44 m<sup>2</sup></li> <li>➤ Excavation of soil not exceeding 5.0 m depth: 382,610.12 m<sup>3</sup></li> <li>➤ Excavation of soil exceeding 5.0 m depth to 9.0 m depth: 186,476.60 m<sup>3</sup></li> <li>➤ Excavation of soil exceeding 9.0 m depth to 12.0 m depth: 34,952.97 m<sup>3</sup></li> <li>➤ Disposal of surplus excavated unsuitable material to dumping sites: 592,406.19 m<sup>3</sup></li> <li>➤ Backfilling with suitable clean sand (from outside the site): 363,515.64 m<sup>3</sup></li> </ul>		
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															<ul style="list-style-type: none"> <li>➤ Installing lighting poles of 06 m length with their electrical networks: 07</li> <li>➤ Installing prime diesel generator with a capacity of 50 KVA: 01</li> <li>➤ Digging investigation wells in the basins: 06</li> <li>➤ Digging infiltration wells with stainless steel screens in the basins: 06</li> <li>➤ Digging observation boreholes around the basins: 04</li> <li>➤ The infiltration basins were hit by an Israeli Air Force missile on the night of 11 November 2018 at around 21:20. The aerial strike impacted the internal road, which has a closed end inside the basins, causing damages for this newly constructed asphalt road, curb stones, sidewalk, shoulder of basins No.3, and electrical cables for the external lighting and the main water pipe. The cost for repairing the damages was US\$ 42,918.4. These damages have been repaired in February and March 2019 by the same contractor, as a variation order, after getting the IsDB's approval.</li> </ul> <p>The overall percentage of achievement of this component is 100%.</p>		
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															<p>➤ Complimenting the infiltration basins, CMWU signed the contract ITB-2019-001, Construction of the Boundary Wall for the Infiltration Basins in Al Fukhari with the contractor, Golden Steps Co., at a total contract price of US\$ 184,300.</p> <p>The site was handed over to the contractor on 15 July 2019.</p> <p>The construction works of 1,470 metres length and 2.2 metres height of concrete solid blocks for the boundary wall were completed. The first Taking-Over session was organized on 17 December 2019. The Taking-Over certificate was issued on 15 January 2020. The overall percentage of achievement of this component is 100%</p> <p>➤ UNDP signed the contract (ITB-PAL-0000046488) Construction of Main Electrical Power Supply Line for KY WWTP with the contractor, Saqqa and Khoudary Co. Ltd, at a total contract price of US\$ 841,250 on 02 October 2018.</p> <p>The work activities commenced on 07 October 2018.</p> <p>The following main construction works have been accomplished:</p> <p>➤ Installing hot galvanized lattice steel poles with</p>		
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															<p>their related concrete foundations, arms and fittings: 34</p> <ul style="list-style-type: none"> <li>➤ Installing complete 22/0.4 KV low losses, 3 phases, indoor Distribution Transformer 630 KVA: 01</li> <li>➤ Installing complete 22/0.4 KV low losses, 3 phases, indoor Distribution Transformer 1,600 KVA: 02</li> <li>➤ Installing complete 24 KV, 630 A switchgear: 02</li> <li>➤ Installing complete 24 KV pole mounted, 3 phases, vacuum interruption auto-recloser: 02</li> <li>➤ Installing ACSR wire ((3x150/25) + (1*50/8)) mm2: 2,483 m</li> <li>➤ Installing underground 12/20 KV 3-single core cable 3*(1x630/35) mm2: 378 m</li> <li>➤ Installing underground 12/20 KV 3-single core cable 3*(1x240/25) m m2: 758 m</li> <li>➤ Installing 0.6/1 KV single core cable 1x240 mm2: 739 m</li> <li>➤ Installing galvanized steel wire mesh 50x50x2.5 mm for fence: 2,802 m</li> <li>➤ The electrical power from GEDCO main grid successfully entered the plant for testing on 29 May 2019.</li> </ul>		
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													<ul style="list-style-type: none"> <li>➤ After completing the main/essential works of the electrical power supply line, and conducting the required tests by GEDCO, the completed works were partially handed over on 18 July 2019.</li> <li>➤ The remaining/ postponed portion of the works (the asphalt work for road no. 14 in Al Fukhari) was accomplished on 07 December 2019 by spreading and compacting more than 14,179 m2 of a new layer of asphalt on the road, marking the finalization and completion of works in this package.</li> <li>➤ The first Taking-Over session was organized on 24 December 2019. The Taking-Over certificate was issued on 19 January 2020 and sent to contractor on 21 January 2020.</li> </ul> <p>The overall percentage of achievement of this package is 100%.</p> <ul style="list-style-type: none"> <li>➤ UNDP signed the contract (ITB-PAL-0000058252) Construction of Main Influent Pressure Line from Existing GRP Pipe to KY WWTP with the contractor, El Khaesie Co. Ltd, at a total contract price of US\$ 438,900 on 08 April 2019.</li> </ul> <p>The work activities commenced on 11 April 2019.</p>		
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															<p>1,220.47 m of pipes (with a diameter of 700 mm) and 45.6 m of pipes (with a diameter of 900 mm) were installed on site, marking the finalization and completion of the works of this package. 02 gate valves with a diameter of 28-inch, 01 air release with a diameter of 6 inch and 02 sluice gates were installed on site. 75.79 m<sup>3</sup> of reinforced concrete B300 were casted on site for manhole and thrust blocks.</p> <p>The Taking-Over certificate was issued on 13 February 2020. The overall percentage of achievement of this package is 100%.</p> <p>➤ UNDP signed the contract (PAL-0000070882) Temporary Construction Works for Influent Pressure Line for the commissioning of KY WWTP with the contractor, Mushtaha Co., at a total contract price of US\$ 84,400 on 26 May 2019.</p> <p>The work activities commenced on 26 May 2019.</p> <p>The required 1,227 m of UPVC pipes were supplied, installed and tested on site. Cleaning the existing main sewer pipes was also accomplished as scheduled.</p> <p>The temporary influent pressure line for the commissioning of KY WWTP was completed and</p>		
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															<p>handed over on 23 July 2019.</p> <p>The overall percentage of achievement of this package is 100%.</p> <p>The completion of this package has enabled introducing the wastewater from pumping station no. 8 to the plant on 09 September 2019 to start the commissioning stage of KY WWTP without delay.</p> <p>Pumping wastewater from pumping station no. 8 to KY WWTP continued through this temporary line since the commissioning stage on 09 September 2019 up to January 2020; when it was phased out after installing the permanent ductile iron pipe in January 2020.</p> <p>➤ UNDP signed the contract (ITB-PAL-0000089780) Rehabilitation of Pumping Stations No. 08, 03 and 02 in Khan Younis for KY WWTP with the contractor, Skills and Quality Construction Co., at a total contract price of US\$ 1,119,629 on 04 May 2020.</p> <p>The work activities commenced on 07 May 2020.</p> <p>UNDP uploaded the initial list of materials on the CLA system on 05 March 2020. UNDP uploaded the additional list of materials on the CLA system on 22</p>		
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															<p>June 2020. UNDP received the Israeli approval for the ABC materials (cement, aggregate and steel reinforcement) on 16 April 2020. UNDP received the Israeli approval for part of the items of the initial list and the additional list of materials on 14 and 15 July 2020. However, the Israeli CLA did not approve accessing the 810 KVA prime diesel generator and requested to replace the stainless-steel pipes and fittings with plastic pipes. UNDP sent a justification letter to the CLA clarifying the usage and the urgent need for the stainless-steel pipes and fittings and the diesel generator on 27 July 2020. UNDP kept following up with the CLA to get the required approvals for these materials, but they requested stronger justifications on 04 October 2020. UNDP intensified communications at higher levels. The CLA issued their approval for the stainless-steel pipes and fittings on 16 February 2021.</p> <p>The request for approval for the donation number 01, required to ship and facilitate accessing the required pumps and the diesel generator through the Israeli harbour without paying taxes, was sent to the Israeli authorities on 20 July 2020. The request for approval for the donation number 02,</p>		
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															<p>required for the other materials of the project, was sent to the Israeli authorities on 27 September 2020. The Israeli authorities issued their approval for the donation number 01 on 15 October 2020 and for the donation number 02 on 07 March 2021.</p> <p>The contractor put their order to manufacture the KSB pumps on 16 June 2020. The pumps were shipped in November 2020 and entered Gaza on 30 December 2020.</p> <p>The contractor put their order to manufacture the Caterpillar prime diesel generator on 16 June 2020. The generator was dispatched/shipped to Ashdod harbour on 12 October 2020. After the delayed CLA's approval, the generator entered Gaza on 28 October 2021.</p> <p>The following main works have been accomplished in pumping station No. 08:</p> <ul style="list-style-type: none"> <li>➤ Casting reinforced concrete B300 for the foundations, beams, columns for boundary walls: 06 m3</li> <li>➤ Building solid concrete blocks (40x20x15 cm) for boundary walls: 120 m2</li> <li>➤ Executing plastering for walls: 250 m2</li> <li>➤ Installing galvanized steel fence above the</li> </ul>		
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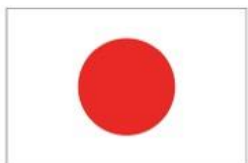


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															<p>boundary walls: 120 m</p> <ul style="list-style-type: none"> <li>➤ Dismantling the existing interlock, supplying and installing new interlock with same shape: 850 m<sup>2</sup></li> <li>➤ Installing concrete B300 precast rectangular stormwater chambers: 02</li> <li>➤ Installing concrete manhole B300, 80 cm diameter, 02 m depth: 01</li> <li>➤ Installing UPVC pipes, SN8, DN 10 inch, for rainwater: 20 m</li> <li>➤ Installing UPVC pipes, SN8, DN 6 inch, for electrical conduits: 35 m</li> <li>➤ Installing UPVC pipes, SN8, DN 4 inch, for electrical conduits: 25 m</li> <li>➤ Installing electrical concrete manhole, 80 cm diameter, 25-ton iron cover: 03</li> <li>➤ Installing control cable 24X2.5 mm<sup>2</sup> for switchboard and sensors: 45 m</li> <li>➤ Installing control cable 3X2.5 mm<sup>2</sup>: 45 m</li> <li>➤ Installing KSB pumps with a capacity of 1,100 m<sup>3</sup>/hr: 02</li> <li>➤ The following main works have been accomplished in pumping station No. 03 and</li> </ul>		
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															<p>02:</p> <ul style="list-style-type: none"> <li>➤ Casting reinforced concrete B300 for the beams and columns of the hoist and I beam foundations: 13 m3,</li> <li>➤ Installing UPVC pipes, DN 14 inch, PN12: 40 m</li> <li>➤ Installing UPVC pipes, DN 6 inch, for electrical conduits: 60 m</li> <li>➤ Installing electrical concrete manhole, 80 cm diameter, 25-ton iron cover: 03</li> <li>➤ Installing control cable 12X1.5 mm2 for switchboard and sensors: 50 m</li> <li>➤ Installing control cable 3X2.5 mm2: 50 m</li> <li>➤ Erecting the required electrical and control components in the different electrical and control panels.</li> <li>➤ In addition to installing KSB pumps with a capacity of 800 m3/hr in pumping station 02: 01</li> <li>➤ Installing KSB pumps with a capacity of 600 m3/hr in pumping station 03: 01</li> <li>➤ Installing PLC, and XLPE copper cable (12x1.5 mm2) in the infiltration basins: 1,500 m.</li> </ul> <p>The delay of the Israeli authorities to issue approval for the entry of stainless-steel pipes and generator into Gaza and their delay in issuing the</p>		
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															<p>donation numbers have exposed the project operations and the on-site progress of work to serious delays.</p> <p>The overall percentage of achievement of this package is around 85%.</p> <p>Due to the May 2021 hostilities in Gaza and the subsequent refusal by Israel to allow the construction materials and equipment to enter Gaza, along with the financial difficulties of the contractor due to his legal issues with the Bank of Palestine, the progress of work and the completion of this project could be subjected to further delays.</p> <p>➤ The IsDB issued their no objection on 23 January 2020 to allocate US\$ 90,000 to cover the cost of diesel fuel required to operate the generators of KY WWTP for one year in case of electricity cuts.</p> <p>To reduce costs, UNDP agreed with the IsDB in March 2020 to purchase the diesel fuel for the KY WWTP through UNRWA, based on the agreement signed between UNDP and UNRWA in May 2019 for the provision of fuel for UNDP.</p> <p>UNDP provided, through UNRWA, 37,900 litres of diesel fuel for the diesel generators at KY WWTP site in March 2020, 48,000 litres on 07 and 08</p>		
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															<p>September 2020, and 55,000 litres on 03 June 2021.</p> <p>The IsDB issued their no objection to allocate additional US\$ 200,000 to cover the cost of diesel fuel to operate the generators of KY WWTP in emergency cases on 08 July 2021.</p> <p>➤ UNDP signed the contract (PAL-00000124206) to supply and install furniture, IT equipment and kitchen tools for admin building for KY WWTP with the contractor, Saqqa and Khoudary Co. Ltd, at a total contract price of US\$ 34,577 on 01 August 2021.</p> <p>The work activities commenced on 01 August 2021.</p> <p>All required furniture and equipment Have been supplied and installed in the admin building for KY WWTP and handed over on 14 November 2021.</p> <p>The overall percentage of achievement of this package is 100%.</p> <p>Since the commencement of the construction works until the taking over of these works, the consultant continued to provide construction supervision services on site and home-based for the different components of KY WWTP, in accordance with the</p>		
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																				<p>contract, as planned. The overall period of the implementation and completion of the consultancy contract was amended, at no extra cost, on 10 February 2020 by an additional 12 months and finalized on 10 February 2021 with the consultant completing all tasks and activities required for the design review, pre-contract and construction supervision services for KY WWTP in accordance with the contract. After fulfilling all outstanding issues, the final payment was issued to the consultant in June 2021.</p>		
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**Project Completion Date: 30 September 2021**



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### (3) Remarks

#### 3.1 The cost estimate for the construction of KY WWTP, phase I, significantly increased due to the following reasons:

- The planned capacity of WWTP, Phase I, was increased by 10,000 cubic metres per day (cm/d), based on the recommendations of the preliminary design, carried out by the Palestinian Water Authority (PWA). The preliminary scope of work was to design an extendable wastewater treatment plant to be implemented in two phases, with an inflow capacity of 16,100 cm/d and load estimates for 2018. In parallel, it was proposed to construct temporary treatment lagoons before the construction of the permanent wastewater treatment plant, to handle 10,000 cm/d of the collected wastewater during an emergency. However, these temporary treatment lagoons have not been constructed and, accordingly, the scope of work was modified to design and construct an extendable WWTP to treat the 26,100 cubic metres per day. (The final detailed design's capacity for KY WWTP, Phase I, is 26,600 cubic metres per day).
- The project's scope of work was also modified to ensure an environmentally sound disposal of the treated wastewater. The ToR of the detailed design was developed accordingly and approved by the project counterparts. The infiltration scheme (that includes the infiltration basins and emergency outflow) was added to the project components to ensure optimum utilization of the treated wastewater as an alternative non-conventional water source. By that, the treated wastewater will be recharged into the aquifer to ultimately be used for irrigation purposes and to release the pressure on the water aquifer. Thus, the detailed design assignment included components of the ultimate disposal facilities (the infiltration basins and the effluent and emergency pressure pipelines); while no funding was allocated in the original project document for the construction of these additional components.
- The cost for the provision of pre-contract and construction supervision by an international consultancy firm, as well as the cost for the one-year operation after commissioning of the treatment plant were also not included in the original project document, in addition to the cost of the design review for the existing design and tender documents of KY WWTP.

#### 3.2 Revised cost estimate for the construction of KY WWTP, phase I, and additional funding required

According to the detailed design cost estimates, it was evident that the available funding of US\$ 11.45 million would neither be enough to construct phase I of KY WWTP nor to construct the necessary complementary components of the project (infiltration basins, effluents and emergency pressure pipelines). To ensure the successful implementation and operation of the project, the following activities and their corresponding budget lines were identified for additional funding:

- Constructing KY WWTP, Phase I; including carrying out the one-year operation after commissioning of the plant to share knowledge and build the capacity of CMWU, as the ultimate facility operator.



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- Constructing the effluent and emergency pressure pipelines to the infiltration basins and to the seashore outfall, with a total length of around 18.6 Km.
- Constructing infiltration basins to recharge the treated wastewater effluent into the water aquifer to ultimately be used for irrigation purposes.
- Constructing the main electrical power supply line to KY WWTP.
- Carrying out the design review, the pre-contract and construction supervision services for the construction of KY WWTP, Phase I.

Based on the final detailed design report, UNDP revised and developed the overall cost estimate required to implement KY WWTP, Phase I; with its necessary and complementary components, to be a comprehensive, functional and operational project. UNDP mobilised resources to secure the required additional fund. The Kuwait Fund for Arab Economic Development committed in February 2011 to secure the required total additional fund amounting US\$ 43 million for the construction of KY WWTP, Phase I, through the Islamic Development Bank (IsDB).

UNDP engaged with the IsDB, PWA and CMWU about the management arrangements and the cost estimates, which ended in signing the total additional funding agreement between UNDP and the IsDB on 05 September 2013.

By signing this agreement, the overall project budget was co-financed by the Government of Japan with a total amount of US\$ 14,829,549, by the Kuwait Fund, through the IsDB, with a total amount of US\$ 42 million, and by UNDP with a total amount of US\$ 1.175 million.

### **3.3 Completion of the detailed design and the request for a Constructability Review /Overall Design Review**

The detailed design assignment was completed by providing the final detailed design report and tender documents in December 2010. By that, the project was ready to launch the construction stage upon the availability of the required additional funding.

During the negotiations about the additional funding, IsDB requested UNDP, in October 2012, to carry out a Constructability Review for the available design and tender documents for KY WWTP.

After signing the project agreement between UNDP and the IsDB, UNDP started activities to ensure a Constructability Review is prepared and issued the relevant request for proposal in December 2013. The technical and financial evaluation of the three submitted offers was completed on 26 February 2014. However, the IsDB and counterparts requested, in April 2014, to cancel the Constructability Review and to go, instead, for an in-depth design review to be done by the construction supervision consultant.

Following this request, in June 2014 UNDP shared for ISDB's approval the new ToR of the design review, pre-contract and construction supervision services, but the approval and activities were delayed due to the July-August 2014 hostilities.

On 03 September 2014, the IsDB requested again to change the scope of the design review from an in-depth design review to an overall design review. UNDP managed this last request



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for change and proceeded with the provision of the design review, pre-contract and construction supervision in October 2014.

UNDP highlighted to the donor that the repeated requests of changing the scope of the design review has seriously delayed the launch of the project's activities and impacted the overall progress.

### **3.4 Approval to facilitate the entry of construction materials into Gaza**

The main list and quantities of needed construction materials were prepared as part of the detailed design stage and submitted to the Israeli authorities. An Israeli approval regarding the implementation of KY WWTP and facilitating entry of materials for this project was granted on 11 July 2010.

UNDP uploaded the initial list of materials for the treatment plant and the main pressure line to the CLA system in August and September 2016 respectively. CMWU uploaded the initial list of materials for the infiltration basins and the main pressure line (CMWU packages) on the GRAMMS system in December 2016 and January 2017 respectively. UNDP sent the contractors' final list of materials to the CLA on 11 March 2017, to ensure the approval of construction materials' access into Gaza Strip.

The Israeli authorities' approval for the ABC materials for the plant was issued on 19 April 2017. It was followed by issuing an approval for 192 items (out of 1,000 items) required for the first construction stage on 07 August 2017, for 420 items required for the second construction stage on 09 January 2018, updated approval for 351 items required for the third construction stage on 26 September 2018, and for 200 items required for the fourth construction stage on 03 and 19 December 2018. UNDP intensified efforts to get the approval for the rejected electrical/control cables. The electrical panels and the control cables were approved on 27 February 2019 and 10 March 2019.

The Israeli approval for the entry of ductile iron pipes for the effluent pressure line was delayed for more than 12 months. The Israeli approval for the entry of only 818 metres of ductile iron pipes for the pressure line (CMWU package) was issued on 18 October 2017. The Israeli approval for only 1,000 metres of ductile iron pipes for the pressure line was issued on 28 November 2017. The Israeli approval for all pipes for UNDP package was obtained on 09 January 2018, and for all pipes for CMWU package on 13 February 2018.

The Israeli approval for the donation number was issued on 08 September 2019. This was required to ship and access the pipes, valves and fittings for the remaining part of the influent pressure line from pumping station no. 08 to KY WWTP.

The Israeli approval for the donation number required to ship and access the spare parts for KY WWTP was issued on 09 September 2020.

Israeli authorities did not approve the entry of the chemicals required for the internal laboratory of KY WWTP. They also delayed the approval for the entry of the stainless steel pipes and the 810 KVA prime diesel generator required for the rehabilitation of pumping stations No. 08, 03 and 02 in Khan Younis for KY WWTP for more than nine months.



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### **3.5 Utilizing the saved amounts, allocated for developing a detailed design, to cover the provision of the design review, pre-contract and construction supervision services.**

Since 2006 to date, the UNDP Project Manager has been managing the project's different tasks and activities, and the total amount of US\$ 150,000, allocated for project engineers' salaries (24 months), has been totally disbursed by the end of December 2011.

During the negotiations with the IsDB, related to the additional funding, and aiming at bridging the financial gap in terms of UNDP's direct implementation costs, UNDP approached the Government of Japan, to agree on a revision of the budget and allocation of US\$ 300,000 to cover UNDP's related costs. The Government of Japan approved the budget revision on 30 April 2013. Ultimately, the revision was approved at the level of US\$ 370,000, allocated for the provision of the design review, pre-contract and construction supervision services for KY WWTP, as per the agreement signed between UNDP and the IsDB on 05 September 2013.

After evaluating the submitted proposals for the provision of design review, pre-contract and construction supervision services for the construction of KY WWTP under RFP 2014-287, it has been identified that Artelia&UG consultancy, which attained the highest technical scores, had the lowest financial offer, at US\$ 3,067,285. The initially allocated amount for this component was US\$ 1.37 million, while available contingency costs, approved by the Kuwait Fund for Arab Economic Development amounted to US\$ 4,725,480. Therefore, UNDP approached the IsDB, to approve the reallocation of contingency costs to covering the deficit in the budget line related to the design review. On 26 February 2015, the IsDB issued a non-objection to cover the deficit amount. The negotiation was concluded on 27 May 2015 by scaling down the consultant's financial offer from US\$ 3,067,285 to US\$ 2,944,594.

UNDP received the initial clearance from the IsDB's consultant (EMCC) on budget reallocation on 11 July 2015. The Government of Japan confirmed its agreement to utilize US\$ 425,255, from their contribution allocated for the construction works, to cover a part of the deficit amount for this component. The Government of Japan issued their official approval on 10 September 2015. The IsDB issued their written no objection on the budget reallocation on 29 September 2015.

### **3.6 Impact of COVID-19 pandemic**

Maintaining the operation of wastewater treatment plants is an important public health protection element contributing to alleviating the impact of the COVID-19 pandemic.

As of December 2021, the operation and performance of KY WWTP was successfully maintained without any interruption, and the quality standards for treated wastewater were met as required by the design. Disinfection measures against COVID-19 within the KY WWTP premises were fully ensured.

Nevertheless, the COVID-19 restrictions have delayed the manufacturing and shipping of the KSB pumps, required for the rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis, for more than two months. This further affected and delayed manufacturing, shipping, issuing the Israeli approvals and accessing the other construction materials and





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equipment, required for these pumping stations.

### 3.7 Main Challenges and completion date of the project

With regard to the original / initial completion date of the project, the corresponding UNDP Project Document had an estimated start date of August 2005 and duration of 24 months.

However, it was not possible to immediately commence the project activities, due to the political and security impediments, affecting the operational environment in Gaza between 2006 and 2007. Moreover, additional funding was required for a detailed design (which was initially planned to be financed and provided by the Palestinian Authority), and for the comprehensive construction works of the treatment plant and its complementary components, such as the pressure lines and the infiltration basins.

Upon securing the additional funding from the Kuwait Fund for Arab Economic Development (KF) through the Islamic Development Bank (IsDB), UNDP signed the agreement with the IsDB on 05 September 2013, with a completion duration of 54 months and possibility of extension. Accordingly, UNDP updated the Project Document for the entire project, including the co-financing of the Government of Japan and the KF.

After commencing the construction works in January 2017, the physical implementation of the project was delayed due to the volatile political situation in the Middle East and the delay in coordinating the import of some materials from Israel. In addition to some contractual obligations to be completed, the following challenges affected the timely implementation of some activities, leading to the closure of the project by end-2020:

1. Israeli authorities delayed for more than nine months the issuance of approvals for the entry of the stainless-steel pipes into Gaza, as well as the diesel generator required for the project's component "Rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis for KY WWTP".
2. The ceasing of coordination between the Government of Palestine and Israel, between May and November 2020, resulted in delays in issuing the donation numbers that are required for importing materials and equipment from abroad, without paying taxes/VAT for the project's component "Rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis for KY WWTP", as well as some spare parts for the KY WWTP itself.
3. The COVID-19 pandemic and related restrictions resulted in delays in manufacturing, shipping and importing construction materials and equipment to Gaza, as well as the implementation of the construction works on site for the project's component "Rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis for KY WWTP".
4. The contract "RFP 2014-287-provision of design review, pre-contract and construction supervision services for the construction of KY WWTP" between UNDP and Artelia and Universal Group consultant was finalized by 10 February 2021. Following the acceptance of all works and fulfilling all outstanding issues, the final payment was issued to the consultant in June 2021.



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In light of the above-mentioned challenges, the Representative Office of Japan and the IsDB have approved the UNDP request for a no-cost extension of the project until 30 September 2021.

After formally handing over the management and operation of the KY WWTP to CMWU in November 2020, UNDP continued its efforts to complete the remaining project activities. This included the consultancy services provided by the Artelia and Universal Group consultant, the rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis, the supply of furniture and IT equipment for the KY WWTP administration building, and the provision of additional quantities of diesel fuel to operate the KY WWTP generators in emergency cases as approved by the IsDB on 08 July 2021.

UNDP completed the contract "RFP 2014-287-provision of design review, pre-contract and construction supervision services for the construction of KY WWTP" with Artelia and Universal Group consultant and issued the related final payment in June 2021.

However, the emerging challenges including the restrictions imposed by Israel on the entry of construction materials and equipment into Gaza after the May 2021 hostilities, have affected the completion of some of these activities by the end of September 2021, especially the rehabilitation of pumping stations no. 08, 03 and 02 in Khan Younis. Therefore, UNDP requested from the IsDB to extend the implementation period of the project until 30 June 2022 to be able to complete these remaining activities. The IsDB approved on 30 September 2021 the UNDP request for the extension of the project until 30 June 2022.

UNDP completed the supply of furniture and IT equipment for the administration building in November 2021, and work is currently underway for the provision of fuel for the plant's generators.

### 3.8 Lessons Learned

- Taking into account the electricity shortage in Gaza, an agreement to provide electrical power on a continuous basis, for the operation of such a large-scale project, should be secured at the start-up phase of the intervention.
- The agreement to cover the operational costs of such a large facility should be secured between the governmental authorities and the operator at the outset of the project.
- The plots of land needed to construct/build the related infrastructure should be agreed and allocated at the launching stage of the initiative.
- A clear agreement should be reached between the implementing entity and the Israeli authorities prior to starting the project, to allow the importation of required construction materials and equipment without delays and related operational, contractual, and financial consequences.
- The implementation through a joint venture or association between international and local consultants and contractors, should be promoted with a view to sharing knowledge and best practices, developing the local capacity for further follow-up.



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#### 4. Financial Report

Budget items (according to the proposal)	A. Original Budget - Note Verbale US\$	B.1 Revised Budget 1 US\$ <sup>2</sup>	B. Revised Budget 3 US\$ <sup>3</sup>	C. Disbursement US\$ <sup>4</sup>	D. Balance (B-C) US\$	E. Rate of disbursement (%) (C/B*100)
Constructing Main Steel Pressure Pipeline from Pump Station No. 8 to KY WWTP <sup>5</sup>	1,000,000	1,000,000	527,303	527,303.15	- 0.15	100.0%
Providing the Detailed Design for the Construction of KY WWTP <sup>6</sup>	0	1,100,000	946,804	946,804	0.00	100.0%
Construction of KY WWTP, Phase I, including One-year Operation After Commissioning	12,550,000	11,450,000	11,274,745	11,140,922.27	133,822.73	98.8%
Carrying out the Design Review, Pre-Contract and Construction Supervision	0	0	795,255	795,255.00	0.00	100.0%
UNDP Direct Implementation Cost	150,000	150,000	150,629	150,629.19	-0.19	100.0%
Contingencies and Miscellaneous	31,064	31,064	36,328	30,203.35	6,124.65	83.1%
<b>Sub-total</b>	<b>13,731,064</b>	<b>13,731,064</b>	<b>13,731,064</b>	<b>13,591,116.96</b>	<b>139,947.04</b>	<b>99.0%</b>
GMS (8%)	1,098,485	1,098,485	1,098,485	1,087,289.37	11,195.63	99.0%
Realized Loss and Gain <sup>7</sup>	0	0	0	-12.31	12.31	
<b>Total</b>	<b>14,829,549</b>	<b>14,829,549</b>	<b>14,829,549</b>	<b>14,678,394.02</b>	<b>151,154.98</b>	<b>99.0%</b>

2 Project Budget was revised based on letter of clearance from the Government of Japan dated 24 July 2007.

3 Project Budget revised based on the letter of approval from the Government of Japan to reallocate budget lines dated 10 September 2015.

4 It is important to highlight that the financial data in this report are provisional figures and may be corrected at a later stage due to exchange rate fluctuations, realized gain/loss or any other possible corrections. UNDP/PAPP's financial system operates in such a manner that the financial system closes in early December of each year and that final expenditure reports reflecting the disbursements and GMS of the previous year are only published in March of the following year.

5 US\$ 1,000,000 was originally allocated for the implementation of main inlet steel pressure pipeline. 996.3 metres of steel pressure pipes of 24-inch diameter and 1070.4 metres of reinforced concrete pipes of 1,000 mm diameter were installed at a total contractual cost of US\$ 527,303.15 paid to the contractor. The remaining balance is utilized to cover the implementation of the treatment plant component as distributed in budget lines in the agreement signed between UNDP and IsDB on 05 September 2013 and reallocated on 10 September 2015. The remaining part of the pressure pipeline to the treatment plant site should be implemented by UNRWA and CMWU through a committed Italian fund and around one kilometre is still not implemented.

6 Based on the revised budget on July 2007, US\$ 1,100,000 was allocated for carrying out and providing the detailed design. The contract was signed between UNDP and the joint venture consultant; Sogreah Consultants & Universal Group, at a total amount of US\$ 946,804. The detailed design assignment was successfully completed without change orders or financial claims at the same contractual amount. The remaining balance of this component amounting US\$ 153,196 is utilized to cover the implementation of project components as distributed in budget lines in the agreement signed between UNDP and IDB on 05 September 2013 and reallocated on 10 September 2015.

7 Total US\$ 12.31 is realized as loss and gain in our Financial System (ATLAS) without collecting GMS for this amount.



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### **Savings/remaining amount of the GoJ contribution**

As described above (pages 18-19, under output 3), the final total price for the contract ITB-2016-158, Construction of Khan Younis Waste Water Treatment Plant and Buildings was US\$ 21,700,133.66. The budget of this component is co-financed by the Government of Japan and the Kuwait Fund/IsDB, as outlined in table 4.3 on page 12. The GoJ's contribution to this component is US\$ 11,274,745.

After the completion of all construction, commissioning and operation works under this contract, the final total cost of actual works, executed and certified on site, was US\$ 21,337,380.85, with a total saving of US\$ 362,752.81. The savings under GoJ's contribution amounted to US\$ 133,822.73, as outlined in the financial report above (page 51).

In addition to a saving of US\$ 6,124.65 from the contingencies and miscellaneous budget line and the corresponding uncollected GMS, as shown in the financial report, the total net savings under the GoJ contribution is US\$ 151,154.98.

UNDP will return this amount (US\$ 151,154.98) plus US\$ 85,431.67 in bank interest to the Japanese national treasury.

## **5. Publicity of the Project**

Throughout the project life cycle, UNDP highlighted the role of the Government of Japan and ensured that the Government of Japan logo appears in relevant project signs, documents, publications, meetings, workshops, advertisements, etc.

UNDP conducted an official ceremony on 10 February 2015 with the presence of the representatives of the Government of Japan, representatives of PWA, CMWU, Khan Younis Governorate, Khan Younis Municipality and community leaders, through which the role and contributions of the Government of Japan in support of the Palestinian people, including the GoJ's contribution for KY WWTP, were prominently highlighted.

UNDP acknowledged the importance of Government of Japan's funding, as it paved the way towards securing additional resources and allowing for a full-scale implementation of the project.

UNDP ensured the visibility of Japan through news items, press releases, and social media postings:

- Links to YouTube videos:

<https://www.youtube.com/watch?v=9agy5tRhpzM>

[https://www.youtube.com/watch?v=yuMCw\\_oF6RY](https://www.youtube.com/watch?v=yuMCw_oF6RY)

<https://www.youtube.com/watch?v=ROPbm0adkUY&t=44s>

- Links to social media posts:

**Facebook posts:**



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Post on corner stone:

<https://www.facebook.com/photo/?fbid=10155159113220153&set=a.10152230183555153>

Post on the plant operation:

<https://fb.watch/9UewEuUxx4/>

Post on the awareness campaign:

<https://www.facebook.com/UNDPPalestinian/posts/3925298637492386>

Post on medium story:

<https://www.facebook.com/UNDPPalestinian/posts/1807156395973298>

### **Tweets:**

Tweet on Ms Yvonne Helle, UNDP Special Representative, visit to the plant:

<https://twitter.com/UNDPPalestinian/status/1354447730807107586?s=20>

Tweet on Ms Sara Poole, Deputy Regional Director of UNDP, visit to the plant:

<https://twitter.com/UNDPPalestinian/status/1461075755744563207?s=20>

Tweet on Laying Corner Stone:

<https://twitter.com/UNDPPalestinian/status/564853383857975296?s=20>

Tweet on plant operation:

<https://twitter.com/UNDPPalestinian/status/1171808693475827713?s=20>

Tweet on Mr Nickolay Mladenov, UN Special Coordinator for the Middle East Peace Process, visit to the plant:

<https://twitter.com/UNDPPalestinian/status/1202259219904380928?s=20>

### ➤ Links to press releases:

<https://www.ps.undp.org/content/papp/en/home/presscenter/pressreleases/2014/02/25/undp-to-build-usd-58-million-waste-water-treatment-plant-in-gaza-with-japan-and-kuwait-funding-through-islamic-development-bank.html>

<https://www.ps.undp.org/content/papp/en/home/presscenter/pressreleases/2015/02/10/under-the-auspices-of-h-e-prime-minister-al-hamdallah-cornerstone-laying-for-khan-younis-waste-water-treatment-plant-in-gaza.html>

### ➤ Local media - Laying Corner Stone:

<https://www.watania.net/news/6695-%D9%88%D8%B6%D8%B9-%D8%AD%D8%AC%D8%B1-%D8%A7%D9%84%D8%A3%D8%B3%D8%A7%D8%B3-%D9%84%D9%85>



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[%D8%B4%D8%B1%D9%88%D8%B9-%D8%A7%D9%84%D8%B5%D8%B1%D9%81-%D8%A7%D9%84%D8%B5%D8%AD%D9%8A-%D8%B4%D8%B1%D9%82](https://www.alwasattoday.com/site-sections/34486.html)

<https://www.alwasattoday.com/site-sections/34486.html>

<https://bit.ly/33iYCCS>

<http://www.alwatanvoice.com/arabic/news/2015/02/10/660387.html>

- Palestine official TV Documentary on KY WWTP:  
<https://www.youtube.com/embed/FLRkYQnRNM0?feature=oembed>





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## 6. Pictures



**Starting Excavation Works at KY WWTP Site on 13 and 18 April 2017**



**Starting Casting Reinforced Concrete for Admin Building and Plain Concrete for Aeration Tank on 17 May 2017**



**Casting Reinforced Concrete for the Foundation of the Aeration Tank on 20 June 2017**



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**General Overview for KY WWTP Filled after Being Filled with Wastewater in September 2019**



**Wastewater Introduced to the Plant from the Inlet Pipe at the Pre-Treatment Building on 09 September 2019**





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**The Pre-Treatment Building Under Operation up to December 2021**



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**The Aeration Tank Under Operation up to December 2021**





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**Clarifiers Under Operation up to December 2021**



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**Sand Filter Under Operation up to December 2021**





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**Bio-filter for Odour Treatment Under Operation up to December 2021**



**Thickener Under Operation up to December 2021**



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**Drying Beds Cleaned from Dried Sludge in December 2021**



**Pumping Station Under Operation up to December 2021**



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**Treated Effluent Pumped to the Infiltration Basins up to December 2021**





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**Ductile Iron Pipes Entered Gaza and Installed on Site for the Effluent Pressure Lines (CMWU Package) up to Completion in June 2020**





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**Installation of HDPE Pipes and Interlocking Blocks Tetrapod Shape for Sea Outfall for the Effluent Pressure Lines (CMWU Package) up to Completion in June 2020**



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**Boundary Wall for the Infiltration Basins up to Completion in January 2020**



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**Installed Electrical Poles, Cables and Transformers of the Main Electrical Line for KY WWTP**



**Asphalt Work in Road No.14 in Al Fukhari in December 2019 up to completion in January 2020**





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**Laying the Cornerstone for KY WWTP at site with the presence of H.E. Mr. Junya Matsuura; the Ambassador of the Palestinian Affairs and the Representative of Japan to the Palestinian Authority, on 10 February 2015**





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**Site Visit of H.E. Mr. Takeshi OKUBO; the Ambassador of the Palestinian Affairs and the Representative of Japan to the Palestinian Authority, to KY WWTP on 08 August 2017**



**Site Visit of H.E. Takeshi OKUBO; the Ambassador of the Palestinian Affairs and the Representative of Japan to the Palestinian Authority, to KY WWTP on 13 March 2018**





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From the People of Japan



**Site Visit of H.E. Mr. Takeshi OKUBO; the Ambassador of the Palestinian Affairs and the Representative of Japan to the Palestinian Authority, to KY WWTP on 04 September 2019**



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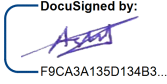
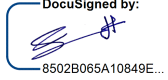
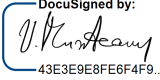
**Site Visit of H.E. Mr. MAGOSHI Masayuki; the Ambassador for the Palestinian Affairs and the Representative of Japan to Palestine, to KY WWTP on 10 December 2019**



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### 7. Names of UNDP Officer in charge and Project Manager

Reporting person and title: Ashraf Abu Shamala, Programme Manager	
Reviewed by: Iman Al Hussein, Assistant Special Representative, Deputy Head of Gaza Office	
Supervisor's name and signature: Victor Munteanu, Head of UNDP Gaza Office	
Date of submission: 10 February 2022	