Report Number : ICRR0021297

1. Project Data

Project ID	Project Name	
P101289	Water Supply & Sewage System Improvement	
Country	**Practice Area(Lead)**	**Additional Financing**
West Bank and Gaza	Water	P151032,P151032
L/C/TF Number(s)	**Closing Date (Original)**	**Total Project Cost (USD)**
TF-13564,TF-18248,TF-18268	31-Dec-2017	17,540,000.00
Bank Approval Date	**Closing Date (Actual)**	
27-Nov-2012	31-Dec-2017	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	21,400,000.00	21,400,000.00
Revised Commitment	20,410,529.09	20,410,529.09
Actual	16,079,865.92	16,079,865.92

Prepared by	Reviewed by	ICR Review Coordinator	Group
Richard W. Pollard	J. W. van Holst Pellekaan	Christopher David Nelson	IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

The original PDO was to improve the quality and efficiency of water supply and wastewater service provision in Gaza (Trust Fund Grant Agreement - TFGA, Page 6).

In October, 2014 the PDO was revised to include emergency rehabilitation of water supply and wastewater services following damage to those services during the conflict in Gaza in mid-2014. The revised PDO was: To improve the quality and efficiency of water supply and wastewater service provision in Gaza and assist in restoration of basic water supply and wastewater services (Ref. Additional Financing, TFGA).

b. Were the project objectives/key associated outcome targets revised during implementation?
Yes

Did the Board approve the revised objectives/key associated outcome targets?
Yes

Date of Board Approval
17-Oct-2014

c. Will a split evaluation be undertaken?
No

d. Components

Component 1: Improving Water Supply and Wastewater Facilities. *(Appraisal cost: US$22.34 million. Actual cost: US$15.78 million)*

Subcomponent 1.1: Water Supply Network Rehabilitation and Reconfiguration. This subcomponent financed: (a) the construction and installation of three concrete water tanks, associated booster pumping stations and transmission lines to connect to the water supply distribution networks. The water tanks were to be added to the network at three predetermined locations according to the water supply master plan. The water tanks were to be connected to the major well fields supplying the Middle Area and Southern Governorates. They were to be used to blend the water supply from different supply sources to improve the water quality and the performance of the networks and help the utility cope with demand fluctuations; (b) the rehabilitation and reconfiguration of water mains and water distribution networks in Rafah, Deir El-Balah, Bani Suhaila, and Beit Lahia.

Subcomponent 1.2: Rehabilitation of water wells. This subcomponent financed the upgrading of 30 water wells, the maintaining of 160 wells for unexpected breakdowns, and the relocation of five wells in the Middle Area and Southern governorates to improve yields, reduce energy demands and unit production costs, and reduce the stress on the aquifer. Rehabilitation works included upgrading of the electro-mechanical systems, the stand-by electrical generators, water pumps for wells in Rafah, Bani Suhaila, Deir El-Balah, and other municipalities in the Gaza Strip.

Subcomponent 1.3: Service water meter replacement and installation of district meters. This subcomponent financed the supply and installation of about 12,000 water meters. 10,000 meters were to be financed by IsDB, and the remaining 2,000 meters were to be financed by the World Bank, which included bulk meters and pressure gauges for selected areas in the network. This component was to improve utility billing, reduce system losses, and improve collection.

Subcomponent 1.4: Upgrading and maintenance of wastewater pumping stations. This subcomponent financed additional pumping capacity at five pumping stations, maintenance of 26 existing pumps to improve the screening facilities, security and safety measures, and upgrading of electro-mechanical systems to improve efficiency and safety in the pumping stations, and to handle the increase in demand.

Additional Financing provided funds for the following activities under Component 1:

- Drilling and construction of two wells to replace completely damaged wells at Abu Hamam and Abu Naser, Repair and rehabilitation of eight wells, and electromechanical rehabilitation of the Al Salam desalination plant at Rafah;
- Reconstruction of two groundwater reservoirs of 1,500 M3 capacity each with booster stations at Khan Younis, structural rehabilitation of three groundwater reservoirs at Al Musader (350 M3), Wadi Al Salqa (350 M3), and Al Moghrakah (3000 M3), electromechanical rehabilitation and repair of Al Rahma water booster station at the existing Rahma reservoir in Khan Younis;
- Rehabilitation and reconstruction of water mains, distribution network, and house connections, and assessment of damages through a leak detection program and procurement of two leakage detection vehicles;
- Rehabilitation and reconstruction of wastewater treatment plants in Rafah, Khan Younis, and North Gaza;
- Procurement of two loaders, two backhoes, one excavator, two trucks, and five maintenance vehicles, as well as comprehensive repair of 10 damaged vehicles;

Component 2: Coastal Municipalities Water Utility (CMWU) Capacity Building and Operational Support. *(Appraisal cost: US$ 5.55 million. Actual cost: US$6.36 million)*
Subcomponent 2.1: Construction of utility central facilities. This component covered the cost of constructing, furnishing, and equipping the utility warehouse, central workshop, and central water and wastewater lab. (The IsDB financed the construction of these facilities and the TFGWB financed the equipment).
Subcomponent 2.2: Technical Assistance for CMWU. This subcomponent included the provision of technical assistance to improve CMWU's management systems as a tool for planning and enhancing customer services, update the tariff regulation, conducting a customer outreach and public awareness campaign to introduce new activities and to improve collections fees, cater to design needs for new water supply and wastewater facilities, and assist with identifying and preparing new water supply and wastewater projects.
Subcomponent 2.3: Operational Assistance for the CMWU. This component supported the operations of CMWU by financing the purchase of chemicals, chlorine, regents, and fuel to run the water and wastewater facilities. These goods were used by the CMWU in fulfilling its operations to continue to provide water and wastewater services for the citizens of the Gaza Strip.
Additional financing provided funds for the following activities under Component 2:

- Environmental mitigation measures and monitoring to enhance the CMWU environmental monitoring programs for both water supply and wastewater services, along with procurement of laboratory equipment and kits and establishment of a water quality monitoring program at household water points;
- Rehabilitation of the administration and operational buildings of the CMWU;
- Repair or replacement of damaged information technology equipment;
- Purchase of chlorine, other chemicals , and fuel for water supply and sanitation systems.

Component 3: Project Management, Monitoring, and Evaluation *(Appraisal cost: US$ 4.65 million. Actual cost: US$4.67 million)*

The Palestinian Water Authority (PWA) established a Project Management Unit (PMU) responsible for the day-to-day implementation of the project, including procurement, project management, and CMWU water and wastewater facilities operations.This component supported the PMU's project management by financing: (a) an external monitoring and evaluation expert, (b) an external audit, and (c) the PMU's incremental operating costs. The incremental costs included 37 staff members in the Project Management Unit of the World Bank-financed Gaza Emergency Water project (GEWP), within the Coastal Municipalities Water Utility. The PWA rehired these staff members and assigned them to the PMU. The PMU in consultation with relevant CMWU departments managed service delivery operation, and maintenance of the facilities.
Additional financing provided funds for the following activities under Component 3 (US$1.55 million):

- Additional contributions to finance Project Management Unit and CMWU recurrent costs and monitoring/evaluation from October 2014 through December 2017.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The original estimated project cost was US$17.54 million. The cost was increased in 2014 by US$15 million, bringing the total estimated cost to US$32.54 million. Actual cost at completion was US$26.81 million (about 82 percent of the total estimated cost including the additional financing)
Financing: Grant financing from the Trust Fund for Gaza and the West Bank (TFGWB) at the time of appraisal was US$6.40 million. Parallel financing from the Islamic Development Bank amounted to US$11.14 million. The project was formally restructured and US$15 million additional financing was provided from TFGWB in October, 2014. At that time, US$3.86 million of the original World Bank grant financing had been disbursed, about 60 percent of the original grant.
Dates: The project closing date was originally 30 June, 2016. It was extended once, by eighteen months, to 31 December, 2017 as a part of the additional financing and restructuring immediately following the 2014 conflict in Gaza.
Restructuring: The restructuring and additional financing increased the funds available for all three project components, but primarily increased the financing for Component 1 (Improving Water Supply and Wastewater Facilities), which was almost doubled from US$11.29 million (including parallel financing from IsDB) at appraisal to US$22.34 million in order to finance repair and rehabilitation of war-damaged water and sanitation infrastructure.

3. Relevance of Objectives

Rationale

At closing, the project's development objectives remained strongly aligned with the Government of Palestine's goals and strategies. The medium term Strategic Development Plan (2017 - 2022) instituted by the Palestinian Water Authority (PWA) focuses on improving water security by enhancing water and wastewater services delivery. It also supported the continuation of the reform process by strengthening and maintaining sustainable and financially viable water and wastewater service delivery institutions. The project formed an Integral component of the PWA's rolling program to improve water supply in Gaza. The program had two main components: (a) slowing the deterioration of the groundwater aquifer with small interventions, and (b) increasing supply through larger interventions such as large-scale desalination and additional import of water from Israel. The project focused on the first component in that it aimed to improve the efficiency of the water utility and optimize the use of available resources by upgrading and rehabilitating the networks and reconfiguring the distribution system to manage additional supplies of water (Ref. ICR Para. 6).
The project was also aligned closely with the current World Bank Assistance Strategy for the West Bank and Gaza covering the period FY18 - FY21, which states that inadequate resources such as water and power supply and deficiencies in the institutional framework are holding back economic development. In particular, the project was aligned with Pillar 3 of the Strategy, which is to address the needs of the vulnerable and strengthen institutions for improved citizen-centered service delivery.
The revised PDO, which was approved in response to the damage caused by the 2014 conflict in Gaza, was directly relevant to the Palestinian Authority's call for assistance to repair and rehabilitate damaged infrastructure, the PWA's damage assessment and immediate response plan, and the World Bank's strategy for responding to the emergency.
The relevance of the PDO at closing is assessed to be high.

Rating
High

4. Achievement of Objectives (Efficacy)

Objective 1

Objective
The project had a single development objective, which was to improve the quality and efficiency of water supply and wastewater service provision in Gaza. For the purpose of this assessment, discussion of the achievement of the PDO is disaggregated in three parts - improvement in the quality of services; improvement in the efficiency of services; and restoration of services following the 2014 conflict. The final section addresses the aspects of the project that were introduced with restructuring and additional financing in October, 2014.

Improvement in the quality of water supply and wastewater services.

Rationale

The project's theory of change postulated that investments in key water and sanitation infrastructure rehabilitation and expansion, along with institutional support to maintain the existing water disinfection program, would lead to improvements in the quality of water and wastewater services.

Outputs: The outputs defined in the project design were largely achieved. Four of the five planned water tanks were installed at the required capacity, and the fifth water reservoir was rehabilitated, but at a reduced capacity. Small scale seawater and brackish water desalination plants were rehabilitated and expanded. 72 kilometers of water distribution networks were repaired, compared to the formally revised target of 36 Km. Supply of chlorine for water treatment was maintained. For wastewater, additional capacity was added at five pumping stations, and 26 existing stations were rehabilitated.

Outcomes: The target of maintaining disinfected water supplies for 1.85 million people was achieved [JWVHP1]. Piped water service was expanded to an additional 19,396 new customers. About 150,000 people directly benefited from improved water services as a result of better reliability and marginally improved water quality. Some reduction in Total Dissolved Solids (TDS, a measure of salinity) was achieved through blending of increased supplies of fresh water with brackish groundwater. At Deir Al Balah, desalination was increased by 2,000 cubic meters/day, which is blended with brackish groundwater to ensure water provided to customers does not exceed 600mg/l TDS. This is a substantial improvement over the baseline salinity of 2000 mg/l TDS, according to the CMWU. In other municipalities desalination was also increased through rehabilitation of existing plants and blending with brackish groundwater, but the CMWU was not able to provide baseline and end of project data for these locations.

In this project context "safe" was defined as bacteriologically disinfected water supplies, which is a necessary but insufficient standard for adequate water quality. In fact, much of the water provided by the water utility is unsafe or unpalatable to drink due to high salinity, and in some areas nitrate contamination. Investments were made to relocate wells and increase blending of desalinated water with brackish groundwater supplies, and this has had some positive impact, but at the end of the project almost all Gazans continued to obtain desalinated drinking water from trucks, bottled water, home desalination facilities, or other sources pending the availability of increased supplies of fresh water from proposed large-scale desalination and increased supplies from the Israeli national water supplier Mekorot. Thus, while the bacteriological quality of the water provided by the utility was maintained at a high standard, overall water quality did not improve to the point where customers did not need to rely on alternative sources for drinking and other uses requiring low-salinity water (Ref. ICR, Para. 24). In other words, the quality of water delivered by water supply services improved only marginally.

For wastewater services, the principal measures of achievement were the number of people provided with access to improved sanitation services and the percentage of reduction of Biological Oxygen Demand (BOD). Through a combination of rehabilitation and expansion of infrastructure, the project was able to fully achieve its target of reaching 100,000 people with access to improved sanitation services. Wastewater pumping capacity increased by 22,500 cubic meters/day. Progress toward achieving the BOD reduction target of 80 percent was being made until the onset of hostilities in 2014 and subsequent economic decline. Consequently, in the final year of the project, BOD reduction averaged about 75 percent primarily due to power shortages and lack of chemical supplies. However, infrastructure improvements have allowed for a substantial increase in the volume of wastewater treated, so the total amount of BOD removed at the end of the project was 10,319 tons/year, significantly exceeding the target of 8,500 tons/year.

Overall the quality of waste water services improved while the quality of water delivered by water supply services improved only marginally.

Rating
Modest

Objective 2
Objective
Improvement in the efficiency of water supply and wastewater services.

Rationale
The rationale for improving the efficiency of services was that rehabilitating water and wastewater network infrastructure along with capacity-building investments in the CMWU and improved billing systems would lead to reduced non-revenue water (NRW) delivered through the system, lower energy consumption, and improved bill collection rates, thereby lowering CMWU costs and increasing its revenues.
Outputs: Investments in network rehabilitation and maintenance along with improved metering and management and reduction of illegal connections led to the efficiency targets being achieved. All of the wells in the project area have had their efficiency improved through electro-mechanical upgrades and pump replacements. The ICR noted that the target for water supply energy efficiency was slightly exceeded, with energy consumption dropping to 0.395 kWh/cubic meter of water pumped (versus a target of 0.4 kWh). Similarly, 26 wastewater pumping stations were rehabilitated as previously noted under objective 1 and thereby made more efficient, and electro-mechanical systems were updated.
Outcomes: Bill collection rates for water services were expected to rise from a baseline of 49 percent to 57 percent. Although improved collection rates were being achieved in the first two years of the project, the 2014 conflict led to a decline to 25 percent in 2014 in at least one municipality since many house connections were destroyed. As a result, collection efficiency only reached 36 percent by the end of the project, well below the revised target of 55 percent (ICR, Para. 29). NRW dropped from the baseline of 42 percent to 34 percent in the three municipalities that were fully integrated with the CMWU
According to the ICR, capacity building initiatives within the CMWU, such as improving the tariff management system, professional training for staff, institutional reforms, and customer outreach campaigns were effective in improving the institutional efficiency of the CMWU. The CMWU has reported that their staffing ratio (number of staff per 1,000 connections) dropped from eight in 2012 to four in 2017, a marked improvement in one measure of institutional efficiency (ICR, Table 4.1).

Rating
Substantial

Objective 3

Objective

Restoration of water supply and wastewater services following the 2014 conflict.

Rationale

The Israeli-Palestinian conflict in mid-2014 resulted in widespread damage to Gaza's critical infrastructure. Additional financing and restructuring was provided to allow the CMWU to assess damages and then carry out repairs and rehabilitation to quickly restore efficient services. The CMWU response team was highly effective in carrying out a rapid assessment of damages and then implementing a plan for rehabilitation to restore services to 1.9 million Gazans. Assessment was carried out as the conflict took place, allowing for compilation of a comprehensive damage and needs assessment in a very short time. The Bank was also able to respond rapidly, coordinating financial support from several donors through the infrastructure MDTF.

Outputs: All planned infrastructure rehabilitation and service restoration were completed as planned. Five water tanks were reconstructed and about 46 Km of water networks were repaired. Eight wells and a desalination plant in Rafah were repaired and rehabilitated. Wastewater sludge disposal and sea outfalls were also repaired and upgraded. Capacity building initiatives in the CMWU were introduced that focused on "management in crisis". Other capacity-building activities contributed to the CMWU's ability to adapt and respond rapidly during and after the crisis.

Outcomes: Water supply and wastewater services were restored for 1.9 million Gazans. The CMWU was able to remain operational throughout the war, was able to mobilize rehabilitation efforts shortly after the cessation of hostilities, and effectively used donor funding from a variety of sources using financial systems that were strengthened through the Project (Ref. ICR, Para. 34)

Rating

Substantial

Rationale

In summary, the project was successful in achieving almost all of its planned objectives. Project investments led to increased coverage of water supply services, and the maintenance of disinfection rates (in itself an impressive achievement in the restrictive and unstable context of Gaza) was monitored and achieved. In addition, wastewater services were substantially improved through an increase in the volume of wastewater treated. There were, however, only marginal improvements in the quality of water supplied by the CMWU. The rapid achievement of the recovery and rehabilitation targets that were added at the time of additional financing and restructuring in response to the 2014 conflict were particularly impressive.

Overall Efficacy Rating

Substantial

5. Efficiency

At project closure an economic and financial cost benefit analysis was carried out largely based on the methods and key assumptions used at appraisal. The project went through restructuring and additional financing in 2014 in response to significant damages to water supply and sanitation infrastructure caused by conflicts. However, no economic or financial analysis was done to assess the benefits and costs of the additional financing.

The financial analysis was done from the perspective of the Coastal Municipalities Water Utility (the implementing agency) to assess financial returns to the specific components of the project and the overall project without considering the methods of financing. Each activity was assessed measuring its costs and benefits at market prices. The financial benefits were estimated as (a) increase in revenues from higher volume of water billed due to the incorporation of illegal connections and more accurate reading of meters, and (b) operating cost savings.

The economic analysis was carried out from the perspective of Gazan society broadly. Each activity was evaluated using shadow prices to reflect the social opportunity cost of goods and services instead of prices observed in the market. The key economic benefits were assessed to include (a) reduced dependence on costly sources of supply such as desalinated water, imported water, bottled water, and tanker trucks, (b) energy savings due to improvements in the efficiency of operations, (c) reductions in non-revenue water and augmenting groundwater resources, and (d) improvements in water quality. Economic benefits such as groundwater augmentation and water quality improvements were not, however, fully captured in the analysis. It is known that dependence on groundwater in the Gaza Strip has resulted in serious over-abstraction of the resource, resulting in a rapid decline of the groundwater quality due to seawater intrusion. Pollution of recharge sources was and still is also a serious problem. No data were available in the ICR on externalities linked with using groundwater, but improvements in water quality are likely to affect public health, as the saline water poses health risks and it also reduces the economic lifespan of appliances that use water and therefore will require more maintenance. The benefit of reducing health risks was approximated by the cost saved for a part of the population that uses bottled water to cope with increasingly saline drinking water (Ref. ICR, Annex 4, Para. 10). However, the ICR provides inconsistent data concerning the number of water supply beneficiaries, and the assertion that the project outputs allowed for a reduction in the use of alternative sources of drinking water was based on anecdotal evidence. No surveys or other evaluations were done to provide reliable data to support this conclusion.

At appraisal, the project was not projected to be financially viable, except for the energy cost savings in the water supply rehabilitation program and the reduction of non-revenue water through a reduction of illegal connections. The financial internal rate of return at appraisal was estimated to be 4%. The project was expected to be economically viable at appraisal, except for wastewater pumping. At appraisal the economic rate of return was projected to be 33 percent.

At completion, the project was found to be financially viable, primarily due to significant improvement in the operational efficiency of the Coastal Municipalities Water Utility. Inter alia, as mentioned earlier, the number of staff per thousand connections had declined from eight in 2012 to four in 2017. The project's estimated economic rate of return at completion was 94 percent.

A discount rate of 10 percent was used for the estimates of the project's net present value at appraisal and for the ICR (Ref. ICR, Annex 4, Table 4.1).
The results of the financial and economic analysis are summarized in the following tables:

Summary of the Financial Cost-Benefit Analysis (Ref. ICR, Annex 4, Table 4.3)

Components	At Appraisal		At ICR	
	NPV (ILS)	IRR (%)	NPV (US$, millions)	IRR (%)
Water supply network rehabilitation and reconfiguration	(18,393)	Negative	(2.1)	11%
Rehabilitation of Water Wells	5,689	27%	3.8	42%
Service water meter replacement and installation of district meters	(78)	9%	(0.09)	23%
Upgrading and maintenance of wastewater pumping stations	5,356	84%	(13.6)	n.a.
Component 2.2 and 2.3: Technical and Operational Assistance	(4,558)	Negative	79.9	136%
Overall Project	(11,989)	4%	8.6	22%

Note: IRR = Internal rate of return; NPV = Net present value.

Summary of Economic Cost-Benefit Analysis (Ref. ICR, Table 4.3 with amendments to correct apparent errors (see comments in Section 14 on the quality of the ICR)

Components	At Appraisal		At ICR	
	NPV (ILS)	IRR (%)	NPV (US$, millions)	IRR (%)
Water supply network rehabilitation and reconfiguration	43,586	34%	165.2	146%
Rehabilitation of Water Wells	7,492	32%	4.6	47%
Service water meter replacement and installation of district meters	2,028	27%	(0.08)	8%
Reduction in non-revenue water by reducing illegal connections	10,428	166%	112.8	157%
Upgrading and maintenance of wastewater pumping stations	(1209)	6%	(19.7)	Negative
Overall Project	64,743	33%	179.3	94%

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	33.00	100.00 ☐Not Applicable
ICR Estimate	✓	94.00	100.00 ☐Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The project contributed substantively to achieving the Palestinian Water Authority's Medium-Term Strategic Development Plan, and it was instrumental in providing the financial resources required to allow the CMWU to continue functioning and improve its overall institutional performance. The project's objectives continue to be highly relevant to Palestinian priorities in the water and sanitation sector. The overall efficacy of the extent to which the project's three sub-objectives were achieved is assessed as substantial. Similarly, the project's economic efficiency and financial efficiency were found to be substantial.
The overall outcome rating of this project is therefore satisfactory.

a. Outcome Rating
Satisfactory

7. Risk to Development Outcome

As is the case with virtually all development initiatives in Gaza currently, the risk to development outcomes is very high. Gaza remains politically unstable, resource-constrained, and severely restricted economically and militarily by it's neighbors. The continued functioning of the CMWU remains critically dependent on external financing. Indeed, it is understood that investments that would allow the CMWU to improve the quality of water supplies (and thereby increase the willingness if not the ability of their customers to pay for services) have been delayed or canceled.

8. Assessment of Bank Performance

a. Quality-at-Entry
Relevance of Project Design: The project was designed in the extremely challenging conditions extant in Gaza. At the time of appraisal, the Palestinian Water Authority (PWA) had established a rolling program to improve water supply in Gaza. The program had two components: (a) slowing the deterioration of the groundwater aquifer with small interventions, and (b) increasing supply and water

quality through larger interventions, such as large-scale desalination and additional import of water from Israel. This project focused on the first component - improving the efficiency of the water utility and optimizing the use of available resources by upgrading and rehabilitating the networks and reconfiguring the distribution system to manage additional supplies of water that were anticipated from proposed new, parallel and future initiatives (Ref. ICR, Para. 6). Therefore, the project did not aim to substantially improve water quality *per se*, but to improve service quality by increasing the reliability of supplies and maintaining already high levels of disinfection through chlorination.

The strategic relevance of the project was well-articulated at entry, and it built on earlier World Bank engagement in the sector. The project aligned well with the interests of the client, and the Bank team effectively engaged with donor partners to line up parallel investments from the Islamic Development Bank and joint financing through the Partnership for Infrastructure Development Multi-donor Trust Fund.

The revisions to the project design at the time of restructuring were put in place to respond to war damages to water and sanitation infrastructure. the design modifications were appropriate to the scale of response required, and proved to be particularly effective. The rapid assessment of damages allowed the CMWU to quickly prepare and cost the recovery and rehabilitation actions and mobilize the resources to rehabilitate key infrastructure in a matter of months.

One aspect of design that, in hindsight, could have been given greater attention was the need for careful World Bank fiduciary oversight and mechanisms for executing it with the travel restrictions in place for entry to Gaza by some Bank staff. The team could also have given greater attention to developing indicators that more comprehensively reflect improvements to water service quality rather than maintenance of an already high level for a single parameter (disinfection rate).

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision
The World Bank team was responsive to the changing circumstances during implementation and managed to remain engaged in a complex and fragile setting. The project was supervised by a Jerusalem-based team, which allowed for relatively frequent and responsive communications. Supervision missions were carried out on roughly a quarterly basis, except when conflict or other security issues prevented entry into Gaza. Access restrictions particularly affected fiduciary staff with Jerusalem identification papers, which restricted their ability to review and support the Project Management Unit's fiduciary management in Gaza. As a result, most fiduciary reviews were desk-based, although one field review was completed. In addition, from the outset of the project an audit firm was contracted by the Ministry of Finance to carry out financial and technical audits. The technical auditor was required to carry out monthly field visits to verify physical progress. At the Project Management Unit level, supervising engineers verified bills of quantities and completion of work as the basis for payments to contractors.

Despite the supervision arrangements described above, misprocurement by the CMWU was identified in early 2017. Although the issue was swiftly and satisfactorily addressed, some of the issues could have been recognized earlier if fiduciary risks were fully assessed and accommodated in the design of fiduciary oversight arrangements.

Quality of Supervision Rating
Moderately Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design
The M&E design included a comprehensive set of indicators for measuring the physical progress in infrastructure improvements and technical performance. At the appraisal stage the Results Framework had baselines established for most indicators, clearly defined data sources, methodology, reporting frequency, and responsible agencies for each indicator.
On the other hand there were shortcomings in monitoring water quality and end-user service outcomes. Water quality monitoring was limited to assessing disinfection rates, an insufficient indicator of water quality, particularly in Gaza, where salinity, nitrate pollution, and other factors are important. The project essentially monitored the maintenance of a single indicator rather than comprehensive improvements to water quality or provision of potable water supplies. Monitoring of increased access to "improved water sources" was added at Restructuring, but it is not clear how this was measured. The focus appears to have been on the number of people benefiting from service restoration following the 2014 conflict. Access to improved sanitation facilities was construed to be existing sewerage connections benefiting from rehabilitated wastewater treatment plants. Monitoring of CMWU capacity enhancement was also weak, limited to confirming whether tariff adjustment systems were being used and cost recovery instruments developed.

b. M&E Implementation
Implementation of the M&E system was done cooperatively at all levels from the PWA/CPMU to the municipal water supply networks, wastewater pumping stations, warehouses, and laboratories. Municipal water authorities and wastewater pumping stations reported to the CMWU on the agreed indicators on a daily basis. Laboratory analysis provided results on the quality of water and wastewater. The CMWU based its reports on tariff collection rates and beneficiaries on municipalities' statistical reports. The CMWU also hired consultants to consolidate monitoring data. However, funding constraints following project closure present critical risks to the continued operation of the M&E system.

c. M&E Utilization

M&E data were used by the CMWU to allocate resources for operation and maintenance of infrastructure to maintain services. Also, the M&E system and data were used to rapidly evaluate damage to water supply and wastewater services and infrastructure after the 2014 war and to formulate an additional financing request. The M&E system was particularly robust and effective for monitoring infrastructure condition and performance, which was critical in the immediate post-conflict period. CMWU used the M&E data to assess the impact of a drop in the electricity supply and the economic deterioration during 2017 on water supply and sanitation services, which helped the CMWU to optimize efficiency in wastewater treatment and water fee collection under those constraints.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was Category "B" and triggered OP 4.01 on Environmental Assessment. During the course of project implementation, overall safeguards performance ratings as well as compliance with OP 4.01 were reported to be satisfactory. The safeguards risks were rated Low in Implementation Supervision Reports (ISRs) during implementation, except for the last ISR, when the risk was raised to Substantial due to late preparation of an Environmental and Social Management Plan and not including it in the bidding documents for an activity that was added to the project in the final two months of implementation.
No Social Safeguards were triggered by the project.

b. Fiduciary Compliance

Financial Management: The project closed with a financial management rating of Moderately Satisfactory. There were regular supervision missions throughout the project, although fiduciary supervision was hampered by restrictions on entry to Gaza for Bank fiduciary staff with Jerusalem identification papers. There were desk reviews of all payments made after the suspension was lifted. Throughout the project, Interim Financial Reports (IFRs) and audit reports were timely, except for the 2016 technical audit, which was delayed after misprocurement was identified (see below). All audit reports and IFRs were reviewed by the World Bank and comments were provided to the Government.
Procurement: Several misprocurement incidents were identified in early 2017. Subsequent investigations led to a suspension of disbursements that took effect of March 2, 2017 and remained in place for seven months. Remedial actions to ensure adequate fiduciary controls and monitoring were developed, agreed with the Client, and implemented. The suspension was lifted in September, 2017 after US$885,566 was reimbursed to the World Bank for ineligible expenditures and key fiduciary recommendations were

implemented. An additional US$236,549 was reimbursed in April, 2018. After the suspension was lifted, all payment requests went to the Palestinian Water Authority for approval. The PMU Accountant and Director signed off on all requests (Ref ICR, Paras. 56 - 60).

c. Unintended impacts (Positive or Negative)

No significant unintended impacts were identified.

d. Other

No other issues were identified.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Satisfactory	The project achieved or modestly exceeded most of its targets in extremely challenging economic, political, and security circumstances. Relevance, efficacy and efficiency were all rated substantial by this Review.
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		Modest	The ICR could have more comprehensively documented project achievements against indicators in a tabular format. There are several substantive errors in the ICR. They are summarized in Section 14 (Comments on the quality of the ICR)

12. Lessons

The ICR lists five lessons related to project implementation (ref. ICR, Paras. 76-80). As presented, all five are generic and they draw unevenly on specific experience from within the project itself. That being said, they

provide some valid observations that are applicable to projects in fragile or conflict-affected states. These include:

1. **In fragile and conflict-affected states, effective institutions and qualified, high-performing staff are limited commodities, and they can be quickly over-burdened with multiple projects and donor-mandated rules.** In the case of the CMWU and the PWA, the complex financial management and procurement requirements put in place due to the political situation in Gaza led to high risks of conflicts of interest and overlapping responsibilities among the individuals and institutions involved. Mitigating this risk required very careful oversight by the Bank's supervision team that was compromised by travel restrictions on Bank staff that were imposed due to the political situation in Gaza. The lack of oversight created the conditions for the misprocurement that was identified in the final year of the project.
2. **In fragile and conflict-affected situations, capacity building, emergency preparedness, flexibility, and active engagement are imperative.** The project was planned in a fragile setting with close attention to capacity building of staff responsible for implementation of a project in the aftermath of an earlier conflict in Gaza during the period 2008–2009. The capacity building and prior experience resulted in the CMWU's preparedness to respond quite quickly with a damage and needs assessment immediately following the 2014 conflict. Close monitoring of the situation in Gaza was also required for the World Bank team working on the project to make sure the CMWU was able to implement the project. Among other factors, this necessitated coordination with the Government of Israel to push for more easy entry of construction material to Gaza. This active engagement has been noted by the client (ref. client ICR, 2018). Following the 2014 conflict, the flexibility and rapid response of both the Bank and the Client allowed for close to real-time damage assessment, quick preparation and release of additional financing, and rapid rehabilitation and recovery of services.
3. **Close coordination with other donor partners from project inception is key to success.** The World Bank used two mechanisms to leverage and coordinate donor partner financing for this project - parallel financing from the IsDB, and the Bank-executed Partnership for Infrastructure Development Multi-Donor Trust Fund (MDTF). The MDTF allowed the World Bank to manage financial contributions from Croatia, Denmark, Finland, France, the Netherlands, Noway, Portugal, and Sweden for a broad array of infrastructure development initiatives in the West Bank and Gaza. MDTFs have an uneven reputation globally, but in the case of this project specifically, and the West Bank and Gaza more generally, the MDTF has proven to be an effective mechanism to allow relatively rapid mobilization of resources for emergencies as well as for coordinated infrastructure financing. The MDTF also streamlined transactions costs for the Palestinian Government and the donors by providing and common reporting framework. The principal reasons for the MDTF's effectiveness appear to have been a broad agreement on a World Bank-led development strategy among the bilateral donors, and close and transparent communications among the MDTF partners. It is understood that the strength of the donor partnership and the level of World Bank oversight of the project were important factors in IsDB 's decision to provide parallel co-financing for the project.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR was well-written, with a logical outline that provided a clear assessment of project performance and outcomes. The report effectively used data available from the M&E system to establish the basis for a performance assessment. That being said, the presentation of the data to support the assessment was weak. The efficacy section would have benefited from inclusion of tables or graphics to summarize the achievement of the project's monitoring indicators. Only a selection of these were embedded in the text, making it difficult to acquire a comprehensive picture of what was achieved. The ICR did not explain how some of the performance indicators were calculated. For example, the number of people provided with access to improved water sources was reported to be 1.9 million. What was this indicator and how was it measured? Were these the beneficiaries of new connections, or the total number of people benefiting from the restoration of services following the 2014 conflict?
There were numerous inconsistencies or omissions in figures and data in the report. Some of these are listed below:

- Key dates - the original closing date was incorrect. It should have been 30 June, 2016. The closing date was extended by 18 months with the AF and restructuring.
- The financing table on page 2 was confusing. It would have helped to clarify that TF13564 was the original grant, and TFs 18248 and 18268 were additional financing. The IsDB contribution was not fully disbursed. This should have been reflected in the revised and actual columns.
- The "economic internal rate of return" shown in Para. 39 in the Efficiency section (53.4 percent) differed from the economic IRR portrayed in Annex 4, Table 4.4 (94 percent).
- Table 4.4 in Annex 4 also had errors in component labeling and the presentation of figures. Reduction of non-revenue water (NRW) originally had a projected IRR of 166%, not wastewater pump upgrading. Presumably the estimated IRR at ICR for NRW was 157%. The table needed corrections.
- Some of the data provided in Table 4.1 in Annex 4 (Key Assumptions) were difficult to reconcile with data elsewhere in the report. For example, the total number of people benefiting from restored or new capacity was 1,060,815 in this table. However, Annex 1 (Results Framework), stated that 1.9 million people benefited from access to improved water sources, constituting a net gain of 300,000 over the baseline. This annex also states that there was a net increase of 150,000 people with access to improved water supplies (Oct. 2017 figures minus baseline for rural and urban figures). Although Table 4.1 referred to people benefiting from new water supply capacity, the total amount of water supplied per day appears to have declined from 268,060 cubic meters/day to 254,811 cubic meters/day over the life of the project.
- Annex 3 (Project Cost by Component) summarized the financing but provided no information on costs. In particular, the revised cost column, which should have been labeled Final Actual Cost, shows only the total financing.

a. Quality of ICR Rating
Modest