



1. Project Data

Project ID
P098459

Project Name
MA-Oum Er Rbia Sanitation

Country
Morocco

Practice Area(Lead)
Water

L/C/TF Number(s)
IBRD-79250

Closing Date (Original)
31-Dec-2015

Total Project Cost (USD)
36,374,818.29

Bank Approval Date
15-Jun-2010

Closing Date (Actual)
31-May-2018

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	43,000,000.00	0.00
Revised Commitment	43,000,000.00	0.00
Actual	37,511,568.81	0.00

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2. Project Objectives and Components

a. Objectives

According to the Loan Agreement (Schedule 1), the Project Development Objectives (PDOs) were: (i) to increase access to sewerage services and reduce wastewater related pollution in selected small and medium towns in the project provinces; and (ii) to pilot non-conventional technologies for wastewater systems in selected locations. The Project Appraisal Document (PAD, page ii) identified the project provinces of Azilal, Benimellal, Khourigba, Safi, Yousoufia, and Settat.



Restructuring in 2014 revised the PDOs to (i) increase access to sanitation services; and (ii) reduce wastewater related pollution in selected small and medium towns in the project provinces which divided the first element of the original PDO into two parts. The piloting of non-conventional technologies for wastewater systems in selected locations was dropped to simplify the project and consolidate the infrastructure component following the recommendations of the 2014 Mid Term Review (MTR).

At the time of restructuring in June 2014, or four years into the project, only 5% of project funds were disbursed (Restructuring Paper, page 1). This review has assessed the achievement of the two revised objectives and the piloting of non-conventional technologies for wastewater systems until that objective was dropped at restructuring in June 2014. These three objectives were to:

- (i) Increase access to sanitation services in selected small and medium towns in the project provinces
- (ii) Reduce wastewater related pollution in selected small and medium towns in the project provinces
- (iii) Pilot non-conventional technologies for wastewater systems in selected locations

IEG concurred that a split evaluation of the project's achievements was necessary because the PDO was changed by reducing the scope of the project (removal of the piloting of non-conventional technologies for waste water systems in selected locations) while other project objectives remained the same.

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

13-Jun-2014

c. Will a split evaluation be undertaken?

Yes

d. Components

1. Wastewater Collection and Treatment: (US\$64.1 million at appraisal, revised to US\$66.8 million at restructuring, and US\$63.7 million actual). This component financed the rehabilitation and expansion of existing sewerage systems including collection network and treatment plants, equipment for the maintenance and operations of the systems for 11 selected small and medium towns in the six project provinces in the Oum Er Rbia river basin. The 2014 restructuring added the provision of odor-controlling technologies for these towns. These 11 towns included Afourer, Beni Ayat, Boujinaba, Boulanouare, Chemaia, Demnate, El Brouj, El Ksiba, Hattane, Ouauizeght, and Youssoufia. These towns were selected based on population, current impact of raw wastewater discharges on human health and the environment, availability of feasibility studies, and provision of potable water by the implementing agency.



2. Piloting Wastewater Technologies and Implementation Support: (US\$5.7 million at appraisal, revised to US\$4.0 million at restructuring, and US\$3.3 million actual). This component financed:

(i) strengthening the capacity of the implementing agency through a twinning arrangement to pilot low-cost, non-conventional technologies for wastewater treatment in small towns (US\$0.4 million at appraisal, removed at restructuring, US\$0 million actual). This subcomponent was supposed to finance a twinning partner selected under a South-South exchange to provide expertise in low-cost and non-conventional wastewater treatment technologies. The implementing agency would disseminate the knowledge through workshops and conferences. This sub component was dropped at the 2014 Restructuring.

(ii) piloting odor-control and methane-capture technology at two selected treatment plants (US\$1.8 million at appraisal, removed at restructuring, US\$0 million actual). This subcomponent was supposed to finance anaerobic ponds in two pilot cities to reduce odor and capture methane. This sub component was dropped at the 2014 Restructuring.

(iii) implementation support for project management (US\$3.5 million at appraisal, revised to US\$4 million at restructuring, US\$3.3 million actual). This component financed construction supervision, monitoring and reporting, monitoring of environmental management plans, community awareness campaigns, promotion of wastewater reuse, and a strategic plan for sanitation activities.

The 2014 Restructuring removed (i) and (ii) from this second component, adopted piloting as an implementation strategy in the first component, and changed "sewerage" to "sanitation" in line with Millennium Development Goals.

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

Project Cost: The total project cost, inclusive of borrower contribution (see below) reached US\$75.1 million but the actual total cost was US\$67.05 million.

Financing: The International Bank for Reconstruction and Development provided an Investment Project Financing for this project in the amount of US\$43 million. The amount actually used was US\$34.95 million. Unused funds were returned to the Bank.

Borrower Contribution: The Borrower committed and disbursed US\$32.1 million in counterpart financing.

Dates: The project became effective on February 15, 2011 and was completed by May 31, 2018 following two extensions that added 29 months to the project period. A Mid Term Review was conducted from January 27, 2014 to February 5, 2014, which led to one of four restructurings:



- On May 9, 2013, a level 2 restructuring acknowledged the government's reorganization of the sector and a change in implementing agency;
- On June 13, 2014, a level 1 restructuring revised the PDOs, results framework, components, costs, and reallocated funds among disbursement categories;
- On September 30, 2014, a level 2 restructuring extended the closing date for the first time from December 31, 2015 to June 30, 2017
- On May 23, 2017, a level 2 restructuring extended the closing date a second time to May 31, 2018, changed the implementation schedule, revised the results framework a second time, and reallocated resources between disbursement categories. The extension allowed the completion of the remaining contracted activities (completing the sewage collection and treatment works, and reducing the wastewater related pollution in 13 project towns).

3. Relevance of Objectives

Rationale

The PDOs remained relevant to the World Bank's Country Partnership Strategy (CPS, 2014-2017). The PDOs supported two of the three results areas in the strategy - building a green and resilient future, and strengthening governance and institutions for improved service delivery to all citizens. Under Results Area 2 - the first strategic outcome was to "strengthen management of soil, coastal and water resources", and the Bank's support served to expand access to improved sanitation, wastewater treatment, and reuse. Under Results Area 3 - Strengthening Governance and Institutions for Improved Service, the PDOs directly contributed to Strategic Outcome 3.4 Expand Access to Basic Services - such as sanitation (CPS, Figure 3, p. 19).

A new Country Partnership Framework (CPF 2019-2024) was under consultation when the project closed. The focus areas for the new CPF were: (i) Promoting Job Creation and Private Sector Growth; (ii) Transforming Human Capital; and (iii) Promoting Inclusive and Resilient Territorial Development. Governance and Citizen Engagement formed the foundation of the CPF, while Digital Economy and Gender were cross cutting themes. The PDOs would remain relevant and contribute to the third focus area - promoting inclusive and resilient territorial development - because this focus would increase access to basic sanitation services, water resources planning, and reliance on wastewater reuse.

The PDOs also remained relevant to the country's Programme National d'Assainissement (PNA or national sanitation program). The Government's PNA aimed to meet the sanitation needs of 80 percent of households and treat 60 percent of wastewater by 2020. This project was designed to finance PNA's planned activities in the project locations. The PDOs expanded the coverage area and volume of treated wastewater by adding new construction, and rehabilitating existing infrastructure. In addition, the project's use of innovative, low cost technologies in wastewater treatment increased treatment capacity, reached more households, and addressed the funding gap in implementing the PNA. Although the PDO was



amended to drop investigations into these pilot technologies, the project successfully piloted a limited number of these low cost technologies in seven beneficiary cities and towns.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

Objective 1 Objective

Increase access to sewerage services in selected small and medium towns in the project provinces.

Rationale

The theory of change for this objective was that expanding the access to sanitation services would lead to improved service delivery performance in the participating towns and provinces, and contribute to the government's objective under its National Sanitation Program (PNA). To increase access to sanitation services, a total of 11 towns were originally identified as part of the provinces surrounding the Oum Er Rbia river basin. During implementation, this target was revised to 14. Specific towns were changed due to difficulties in acquiring land in Afourer, Beni Ayat, and Boujniba and due to local opposition in Demnate. As a result, the following cities were added - Azilal, Zaouiet Cheikh, Aghbala, Oued Zem, Khouribga, Berrechid, and Boukaad.

OUTPUTS:

- Completed 10,239 new (original target 13,000, almost achieved)
- Completed 15 Environmental Impact Assessments (original target 10, exceeded)
- Signed delegated management conventions (original target, 8, revised to 10 contracts);
- Consultative meetings with stakeholders were carried out in 14 sub-projects (original target 9, revised to 10, hence target exceeded);

OUTCOMES:

- The new and rehabilitated sanitation (total of 23,973 connections achieving revised target) benefited 231,964 people (no original target, revised target 220,000, **exceeded**). This included 50.4% female beneficiaries **exceeding** the revised target of 50% (this target was added at restructuring) and 15% extremely poor beneficiaries, **achieving** the revised target (target added at restructuring). Documentary source was 2014 province and city level data (ICR, footnote 4).



- 144,000 urban residents were provided access to improved sanitation, **exceeding** the revised target of 130,000 (target added at restructuring).
- To save on cost, household surveys were conducted in only two cities - El Brouoj and Aghbala. Households were randomly selected, with quotas to ensure representation by all relevant quarters of the cities. 220 households were surveyed or 1,078 interviewees (ICR, footnote 6). 92% of the households surveyed were satisfied with the project vs. 3% before the project. None of the households surveyed at project end reported problems with management compared to 17% prior to the project. Households continued to report problems with grey water management, 33% reported new or ongoing issues down from 50% prior to the project (ICR, paragraph 38).

The project resulted in meeting the majority of original targets, resulting in **substantial** efficacy rating.

Rating

Substantial

Objective 1 Revision 1 Revised Objective

Increase access to sanitation services in selected small and medium towns in the project provinces.

Revised Rationale

The theory of change was the same as for the original objective. The 2014 Restructuring did not revise this objective but updated targets of the outcome indicators. In addition, "sewerage" was changed to "sanitation" to conform with the Millennium Development Goals' terminology. The full sanitation service chain covered household access, conveyance, treatment, and end use/safe disposal (ICR, footnote 2).

OUTPUTS:

- Completed 10,239 new (target reduced to 2,200, but later increased to 9,000, hence, the more recent target was **exceeded**) and 13,374 rehabilitated (target introduced at June 2014 restructuring to 20,000, but reduced to 13,000, hence the target was **exceeded**) sanitation connections or a total of 23,973 connections (revised target 23,973, **achieved**)
- Laid 385.5 km of sewer lines (target introduced at Restructuring was 400 km, revised down to 360 km, hence target **exceeded**)

OUTCOMES:



- The new and rehabilitated sanitation (total of 23,973 connections achieving revised target) benefited 231,964 people (no original target, revised target 220,000, **exceeded**). This included 50.4% female beneficiaries **exceeding** the revised target of 50% (this target was added at restructuring) and 15% extremely poor beneficiaries, **achieving** the revised target (target added at restructuring). Documentary source was 2014 province and city level data (ICR, footnote 4).
- 144,000 urban residents were provided access to improved sanitation, **exceeding** the revised target of 130,000 (target added at restructuring).
- To save on cost, household surveys were conducted in only two cities - El Brouj and Aghbala. Households were randomly selected, with quotas to ensure representation by all relevant quarters of the cities. 220 households were surveyed or 1,078 interviewees (ICR, footnote 6). 92% of the households surveyed were satisfied with the project vs. 3% before the project. None of the households surveyed at project end reported problems with management compared to 17% prior to the project. Households continued to report problems with grey water management, 33% reported new or ongoing issues down from 50% prior to the project (ICR, paragraph 38).

The project resulted in exceeding revised targets resulting in **high** efficacy rating.

Revised Rating
High

Objective 2

Objective

Reduce wastewater related pollution in selected small and medium towns in the project provinces.

Rationale

The theory of change for this objective was that adopting a few innovative wastewater technologies would reduce wastewater related pollution in the participant towns and provinces, improve sector performance and lead to cost effective service delivery.

OUTPUTS:

The following intermediate outcome indicators were proposed at appraisal, but were dropped during the 2014 Restructuring:

- Implementing agency operation teams equipped with adequate operation and maintenance (O&M); equipment: (target 10 teams);
- Odor control in existing wastewater treatment plants (WWTPs): (target 2 WWTPs, achieved).



The following outputs were achieved:

- Construction of 6 new WWTPs (original target 10 WWTPs revised target 12, further revised to 6 WWTPs to address only new constructions and not include 4 pre-existing WWTPs) (ICR, paragraph 43, and Annex 9).
- 5 of all WWTPs constructed under the project complied with national discharge standards (original target 0, revised target 12, **almost achieved**) (ICR, paragraph 43, and Annex 9)
- Established 74.2 percent average Biochemical Oxygen Demand (BOD) abatement rate from the 6 WWTPs constructed (target introduced at restructuring 75 percent, **achieved**) (ICR, paragraph 42, and Annex 9)
- 1,353 tons/year of BOD pollution was removed (original target 1,830 tons/year, revised to 800 tons/year, and hence target **exceeded** (ICR, paragraph 42, and Annex 9). There was no justification for the downward revision of the target (ICR, Table 1, footnote c).
- The implementing agency monitored the results of the 7 pilot technologies (original target 4, **exceeded**) to better understand which option to implement post project completion (ICR, paragraph 75).

OUTCOMES:

- Wastewater generated by 96.3 percent of households was collected and treated (original target 90 percent, **exceeded**). The Government's national target was 80 percent (ICR, paragraph 37).
- On average, 74.2% of effluent Biochemical Oxygen Demand (BOD) pollution loads were removed by the new treatment plants (original target 75%, **achieved**) (ICR, paragraph 41)
- Only one of the 6 new waste water treatment plants (original target 100%) complied with national standards at project closing, but it was likely that they would comply. The WWTPs needed to operate for 12 months to assess compliance with effluent (organic and suspended solids) concentration levels. The ICR projected that 3 other newly constructed WWTPs (or 4 out of 6 or 66.7% of target) should eventually comply with national discharge standards after a 12-month operation (ICR, paragraph 43). The ICR also noted that "five of the plants associated with the project (including plants that already existed and those constructed under the project) are currently compliant (of 12 total plants under the project). With the additional three plants becoming officially compliant in the coming months, a total of eight plants will be in compliance (66.7 percent achieved). Additionally, it is likely that the positive results from the pilots will help ONEE improve the overall performance of the WWTPs that are currently not in compliance" (ICR, paragraph 43).
- The waste water treatment plants constructed under the project resulted in an additional 115,891 population equivalents of treatment capacity exceeding the target of 115,000 (ICR, paragraph 43).
- In Boujaad and Oued Zem, plans were in place at closing to create small-scale treated wastewater irrigation schemes for use by local farmers. However, there were no agreements by the closing date due to lack of funding. In Khouribga, Youssoufia, and Boulanaouare, the former Office of Cherifien des Phosphates or OCP operated the WWTPs and used the treated wastewater for mining operations (ICR, paragraph 44).



- The implementing agency monitored the results of the 7 pilot waste water treatment technologies (original target 4, **exceeded**) to better understand which technologies to use after project completion (ICR, paragraph 75).

Rating

Substantial

Objective 2 Revision 1

Revised Objective

Reduce wastewater related pollution in selected small and medium towns in the project provinces.

Revised Rationale

The theory of change was the same as for the original objective. Outputs and outcomes were also basically the same as for the original objective. The 2014 Restructuring did not revise this objective but expanded its scope by including piloting of low cost, innovative non-conventional wastewater treatment technologies (odor control pilots) in seven beneficiary towns listed below and added relevant targets for outcome indicators.

- Piloted 7 non-conventional systems, **exceeding** target: (original target 2 pilots aimed at reducing odor and 2 other plants with non conventional wastewater technologies, or a total of 4 pilots) (ICR, paragraphs 47-49).
- In El Ksiba and Azilal, anaerobic ponds were covered with hexagonal plastic covers to reduce odor, **achieving** target for the pilot of technologies to reduce odor.
- In El Brouj, Zaouiet Cheikh, and Chemaia, floating baffles and mixing systems were piloted but effectiveness was reported mixed for both pilots.
- In Boujaad, one channel of anaerobic ponds was converted to aerated ponds which reduced the BOD to between 66% and 77% in total suspended solids (TSS)
- In Ouaouizeght a rock filter was piloted to remove algae, which reduced TSS by 68%

Revised Rating

Substantial

Objective 3

Objective

Pilot non-conventional technologies for wastewater systems in selected locations.



Rationale

The theory of change for this objective before the 2014 restructuring was that innovative and low cost technologies could be adapted for use in the participant towns and provinces to improve the cost effectiveness of delivering sanitation services. This objective was, however, dropped as a result of the recommendations in the context of the project's Mid Term Review (MTR). The original design called for a twinning arrangement to manage the adoption of low cost innovative technologies for wastewater treatment. However, the twinning arrangement did not materialize (ICR, paragraph 47) with no reason provided in the ICR. One twinning contract signed to implement the pilots for non-conventional technologies but the target was not achieved and the twinning contract was dropped at the 2014 restructuring.

The outcome of this objective was negligible before the 2014 restructuring.

Rating

Negligible

Objective 3 Revision 1

Revised Objective

Objective 3 was dropped

Revised Rationale

This objective was dropped as a discrete and separate objective. This outcome of this dropped objective was therefore not rated. Nevertheless the objective continued to be pursued under the project in Objective 2 as revised.

Revised Rating

Not Rated/Not Applicable

Rationale

The first of the original three PDOs achieved a "high" efficacy rating and the other a "substantial" rating at the end of the project. The third PDO was not rated when the project closed. The project's overall efficacy rating is therefore "substantial" because of sufficient evidence that the objectives were almost fully achieved and that outcomes were assessed as being attributable to the project.



Overall Efficacy Rating

Substantial

5. Efficiency

Ex Ante Economic Efficiency: At appraisal, the economic rate of return (ERR) was estimated at 11% with a Net Present Value of US\$4 million for the investment based on two benefit streams: (i) a producer surplus through a sewerage tariff; and (ii) a consumer surplus through estimated increases in property value because of new sewerage connections. For reference, this NPV calculation used a discount rate of 10% while at the time of appraisal the International Monetary Fund referred to a 14% global lending rate in its 2016 Morocco Financial System Stability Assessment report. Neither of these benefit streams materialized (ICR, Annex 4, paragraph 2) because (i) sewerage revenues did not cover costs of providing the sewerage service hence, there was no producer surplus; and (ii) there was only a modest increase in residential property values in nominal terms and a decrease in real terms. Real estate data gathered showed no indication that property values have increased more in towns with access to sewerage than those with less access.

Ex Post Economic Efficiency: The economic analysis at project completion in the ICR included a broader "range of benefits identified but not quantified at appraisal" including the direct costs of emptying septic tanks, wastewater reuse in agriculture, reduction in environmental pollution, and health benefits (ICR, paragraph 51). On the recommendation of one of the Bank's chief economists (see ICR, footnote 10) that for project analysis benefit streams be discounted at 6%, the present values of: (i) savings from emptying septic tanks; (ii) wastewater reuse in agriculture; (iii) reduced environmental pollutants; and (iv) health benefits were estimated in the ICR. Based on the costs of emptying household septic tanks, benefits from lower costs for services were estimated at about US\$200 per year per household, the present value of total savings of sewerage connections to households was estimated at US\$2.0 million. Benefits linked to wastewater reuse for agriculture, and reduced environmental pollution (including removal of BOD, nitrogen, and phosphorus) were estimated to be between US\$1.5 to US\$2.2 million per year, and US\$2.4 million per year, respectively. There were no health data collected at project sites, but estimates published in the literature indicate annual benefits of about US\$10 per person living in the project area, based on reductions in sanitation-related diseases (e.g. diarrheal diseases), equivalent to a total of about US\$2.1 million per year. These elements add up to an estimated US\$8.0 to US\$8.7 million per year to project benefits (ICR, Annex 4, paragraphs 4-8).

Using three scenarios post completion, with sanitation tariff rates at (a) existing rates, (b) at a rate indicated in the PAD, and (c) at US\$1 per cubic meter, the ICR estimated the ERRs for the project at 9.4%, 9.5%, and 15.7% respectively. The combined benefit streams over a 40-year project period, at the 6 percent discount rate resulted in an economic net present value (NPV) of US\$33.6 million. The combined ERR was estimated at 9.4 percent.

Financial Efficiency: The ICR stated that the implementing agency's operating cost coverage ratio for water and sewerage operations was above the regional average. The implementing agency generated a positive cash flow, reporting an operating cost coverage ratio of under 2 for the period 2010-2015. On the other hand,



under the existing tariff structure, since sanitation services have been cross subsidized by the implementing agency's other operations, the agency had a deficit of about US\$13 million in 2016. The cross subsidization needs of the sanitation sector were expected to increase over time with the expansion of coverage unless sewerage tariffs were increased. Debt relating to water and sanitation investments were reported to have doubled in 8 years and debt service was acknowledged to be unsustainable. Tariff rates and subsidy reforms would be required to solve these problems..

Operational and Administrative Efficiency: The project was designed to be implemented over 4 years. Delays in procurement caused disbursements to reach only 5% by the time of the MTR in early 2014. These early challenges led to a number of actions including a citizen engagement process such as action on land acquisition and grievance redress mechanisms and a more rapid rate of implementation as explained below. The 2014 restructuring removed one of the PDOs.

A Land Acquisition Focal Point was appointed. A Local Monitoring Committee was established. Consultations and public information campaigns on the project were held. A strong Grievance Redress Mechanism was established following local practice such as oral methods of grievance collection. The implemented Grievance Redress Mechanism was rated as one of the best regional practices and was adopted by the implementing agency for use in all its sanitation projects. The Mechanism contributed to improving the project's operational efficiency by helping reduce the social impacts of land acquisition, build local support for the project, and reduce the risk of opposition.

The project was extended twice for a total of 29 months to accommodate the adoption of the corrective measures reached at the 2014 MTR, such as reducing the original number of beneficiary towns from 11 to 7 but adding 7 more for a total of 14 beneficiary towns; piloting low cost technologies aimed at reducing odors implemented in El Ksiba and Azilal even though a level 1 restructuring dropped this objective (of conducting 4 pilots in low cost, non-conventional technologies for wastewater treatment) following the MTR.

Conclusion. The project's estimated EIRR at 9.4% was a modest result compared to 10% typically used as a benchmark in the Bank and well below the 14% cost of capital in global markets that the IMF cited applied to Morocco during the project's implementation period. This result, together with ONEE's financial inefficiency in the context of continued arguably low sanitation tariffs, indicate that the efficiency of this project was modest.

Efficiency Rating

Modest

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	✓	11.00	85.00 <input type="checkbox"/> Not Applicable



ICR Estimate	✓	9.40	95.00 <input type="checkbox"/> Not Applicable
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* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The relevance of objectives was substantial and efficiency was modest. There were moderate shortcomings in the project's achievement of its objectives. The efficacy of Objective 1 at the project's close was high and that of Objective 2 was substantial but that of Objective 3 was not rated since the original objective was not achieved and it was then dropped. All these considerations supported this review's conclusion that the project's overall outcome based on the achievements of both the original and revised objectives was moderately satisfactory as shown in the table below:

Assessment of Overall Outcome Rating

Item	Original Objective	Revised Objective (at the project's close)
Relevance of Objective	Substantial	Substantial
Efficacy		
Objective 1	Substantial	High
Objective 2	Substantial	Substantial
Objective 3	Negligible	Not rated
Overall Efficacy	Substantial	Substantial
Efficiency	Modest	Modest
Outcome Rating	Moderately Satisfactory	Moderately Satisfactory
Outcome Scores	4	4
Disbursed Percentage at Restructuring	5%	95%
Outcome Scores Weighted by Disbursement Percentage	0.2	3.8
Overall Outcome Score		4.0
Overall Outcome		Moderately Satisfactory

- a. **Outcome Rating**
Moderately Satisfactory

7. Risk to Development Outcome

Based on the information in the ICR, the following issues posed risks to development outcome:



- **Technical, Financial and Government Ownership.** The implementing agency (ONEE) is responsible for operations and maintenance (O&M) in each project municipality. Given its history in sanitation, the agency is well positioned to continue to provide O&M support for the constructed networks and treatment systems. However, its financial status poses risks in the long run since the sanitation sector is highly cross subsidized by revenues from its electricity and water supply activities. To mitigate these risks, ONEE expects to receive budgetary subsidies because of the externalities derived from the sector. The Government's current National Sanitation Program reflects a strong commitment to the sector aiming to achieve 80% household sanitation coverage and treat 60% treatment of wastewater by 2020 (ICR, paragraph 33).
- **Environmental Compliance.** The risk of non-compliance with established national standards of older WWTPs, especially those not built under the project continues. This risk is mitigated by the outcomes provided by the piloted non-conventional new technologies in wastewater treatment (e.g., anaerobic ponds covered with hexagonal plastic pieces to reduce odor, floating baffles, mixing systems, anaerobic ponds converted to aerated ponds, and a rock filter to remove algae, ICR, paragraphs 47-48) that the implementing agency is scaling up old, non-compliant plants. Additionally, the implementing agency continues to experiment with alternative treatment options – including its first Upflow Anaerobic Sludge Blanket (UASB) reactor and aerated lagoons, first encountered during the Brazil study visit and received as "just-in-time technical expertise" from the Bank (ICR, paragraph 94).
- **Social.** There is a risk that the consultative processes and community engagement introduced under the project may not be replicated after the project's completion. This risk is mitigated by a range of tools now in place including appointment of a Land Acquisition Focal Point, establishing Local Monitoring Committees, and a strong Grievance Redress Mechanism that allows for multiple channels of grievance collection following local practices (ICR, paragraphs 12 and 61).

8. Assessment of Bank Performance

a. Quality-at-Entry

At entry, the Bank designed the project to address a Government priority using lessons from international best practices and other similar operations. For example, an earlier European Investment Bank-funded Sebou River Basin Sanitation Project in Morocco found that only 40% of households were ready to pay for connection after project closing (PAD, paragraph 13). Based on this experience, project design included a needs assessment of end users and their willingness to pay for connections, communication campaigns to highlight the benefits of sanitation services, and improved communications between the implementing agency and beneficiaries. Other lessons included the need to shorten the period between project completion and start of fee collection; and the need for improved coordination and communication between the implementing agency and beneficiaries. At the technical level, the project looked to the Brazil condominium model and decentralized wastewater treatment as a practical and low cost approach.



Twinning efforts were included in design and experts from the implementing agency participated in a study tour to Brazil to pilot innovations learned from the Brazil operations (ICR, paragraph 94).

However, the project did not provide the implementing agency with support to determine a long-term strategy for financing the sector. The economic analysis at appraisal was not robust as evidenced by the lack of alternative scenarios or assumptions in calculating the benefit streams. The project piloted the Use of Country Systems (UCS) under a Bank project but did not consider the accompanying risk associated with an implementing agency unfamiliar with the process of adopting measures to address gaps in safeguards compliance. These issues could have been addressed by additional time during preparation to help the project proceed in a timely implementation (see Section 12, Lessons Learned). Land acquisition issues were not sufficiently appreciated during design and opposition to the project by beneficiaries in Demnate led to its being replaced in the list of participant towns (ICR, paragraph 22). These land related issues were not fully addressed until a few years into implementation indicating that local communities were not adequately consulted at design (ICR, paragraph 63).

Quality-at-Entry Rating Moderately Satisfactory

b. Quality of supervision

The ICR (paragraphs 87-90) stated that Bank project team was led by a series of five task team leaders (TTLs), marked by adequate hand overs. Supervisory missions were regularly conducted at least twice a year, and in some cases three. The first disbursement only occurred after nearly two years of loan effectiveness. Slow disbursements early on were due to land acquisition and procurement issues that could have been addressed during preparation (e.g., procuring the project implementation support Technical Assistance, incomplete design studies) and because of a lack of readiness to implement UCS for safeguards compliance. These candid observations were duly noted in the project Implementation Status and Results Reports (ISRs).

As mentioned already, an MTR was conducted in early 2014, three years after loan effectiveness. Implementation challenges were documented and addressed in a timely manner following the MTR. The Bank team effectively used the MTR to scale back and re-prioritize activities to ensure the likelihood of achieving the PDOs at project closing. This included mobilizing technical assistance in 2016 to develop the implementing agency's capacity to design, operate, and maintain innovative wastewater treatment technologies. Piloting the innovative technologies using a twinning arrangement was dropped as an objective in favor of its actual use in some of the more receptive participant cities, without the originally envisioned twinning arrangement. In response to the delays due to opposition in land acquisition and initial experience with use of country systems for safeguards compliance, the Bank team partnered with the implementing agency to focus on effective citizen engagement and a strong Grievance Redress Mechanism that became a model for future projects in the sector in the country.

The Bank's social safeguards consultants provided critical on-the-ground support to help ensure timely land acquisition following both Bank requirements and Moroccan law, and timely completion of construction



activities in line with the PDO. Through close monitoring and regular engagement with key stakeholders – especially local communities – implementation challenges were documented and addressed in a timely manner, especially following the MTR.

The Bank team mobilized private sector participation in Youssoufia and Boulanouare where the Office Cherifien des Phosphates (OCP) Group operated the wastewater treatment plants. The OCP Group funded both capital investments and O&M of the WTTs in these sites and co-funded operational expenditures in exchange for the unlimited use of treated wastewater for its mining operations.

Supervision focused on development impact, particularly following the MTR. Technical assistance needs for using the country systems, although belatedly recognized, were nevertheless implemented. Adequate supervision of inputs and processes was reflected in the candor and quality of performance reporting in the ISRs. A moderate shortcoming was reflected in the lack of a plan for an adequate transition after project completion nor a plan for reducing risks to project outcomes such as, for example, a roadmap for tariff and subsidy reform in the water and sanitation sector.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The implementing agency was originally the Office National de l'Eau Potable (National Potable Water Office or ONEP). The Government merged the original implementing agency with the Office National de l'Electricite (National Electricity Office or ONE) to create a new implementing agency, the Office National de l'Electricite et de l'Eau Potable (National Electricity and Potable Water Office or ONEE). This change was acknowledged in a loan assumption agreement. ONEE as implementing agency was responsible for project monitoring and evaluation (M&E).

There were no project baseline data. A baseline was created for two of the 14 beneficiary cities during implementation (see below). The M&E design was simple and was based on the output and outcome indicators in the Results Framework (RF) identified during appraisal. The outcome indicators in the original RF were mostly outputs and not outcomes. The original RF also did not include intermediate results indicators for the full range of planned activities but were adequately updated in two of the four restructurings to include specific, measurable and achievable intermediate indicators. The theory of change identified the two key components to achieve the PDO - increase access to sanitation services by rehabilitating and expanding sewerage systems in the beneficiary cities and reduce wastewater related pollution by piloting appropriate technologies.



b. M&E Implementation

The M&E embodied in the project's results framework (RF) was implemented with the support of a TA firm and the Bank team. However, ONEE's team relied on the TA firm and the associated indicators in the RF to measure project implementation, in addition to other M&E carried out by ONEE specifically for the pilots in seven beneficiary cities and towns (ICR, para 70).

Initial challenges of the project M&E were addressed during the MTR. The project refocused activities for the remaining years of the project and the RF regularly updated to reflect the changes in the project focus/scope as well as experiences using the RF in practice, using triangulation methods and where possible, updates reflected in the ISRs. For instance, intermediate results indicators were added to track construction progress of the sewer networks and new versus rehabilitated household connections. The implementing agency collected data beyond the scope of the RF – including a baseline and endline household survey in Aghbala and El Brouj, monitored the land acquisition processes, as well as the wastewater treatment technology pilots in the 7 towns (ICR, para 71).

One ISR (ISR4) noted poor M&E quality (poor quality of the progress report by the implementing entity), but subsequently reported as resolved. While the original RF did not include intermediate results indicators for the full range of planned activities, these were updated in two of the four restructurings to include specific, measurable and achievable intermediate indicators although the indicator on WWTP compliance with national standards required a 12 month performance beyond the project period and could not be achieved in time. There was also a reported lack of data on the WWTPs operated by the OCP Group.

The implementing agency's project management team coordinated closely with the local offices and communities in each project area. The project implementation support TA helped the different parts of the project management team (e.g., fiduciary, safeguards, technical) in this coordination and communication role. The project team was well equipped and staffed with high capacity individuals. Consequently, the team responded quickly to implementation challenges as they arose. Through close monitoring and regular engagement with key stakeholders – especially local communities – implementation challenges were documented and addressed in a timely manner, especially following the MTR.

c. M&E Utilization

The project RF was an effective basis for measuring the project's progress, particularly following the restructuring of the RF after the MTR. Project ratings were updated to reflect the results in the RF. For example, early in the project the Implementation Progress (IP) rating was kept at Moderately Unsatisfactory to reflect the lack of progress on household connections, which were being tracked separately from kilometers of network laid. The ability to separately track length of network and number of household



connections is particularly important given international experience with low household connection rates in other countries.

The M&E for the piloting of wastewater treatment technologies remained in use by ONEE to justify which interventions to scale up or use post project completion. Following the MTR, the project utilized the RF and related M&E activities to link the project activities to the PDO in line with all fiduciary, safeguards, and technical standards.

Minor shortcomings in the initial M&E design led to regularly updating or revising the RF (as evidenced by the restructurings in 2014 and 2017) and reflecting these changes in the ISRs. M&E results informed priority actions focused on achieving the PDOs. Following the MTR, land acquisition was carefully monitored and helped limit further project delays.

The M&E system as designed and implemented was generally sufficient to assess the achievement of the objectives and test the links in the results chain, but there were moderate weaknesses in a few areas, such as the acknowledged lack of reporting from WWTPs operated by OCP and proxy indicator for compliance with the government's own environmental standards.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

Environmental Safeguards: The project was a Category B and triggered the following safeguards: OP/BP 4.01 Environmental Assessment, OP/BP 4.11 Physical Cultural Resources, and OP/BP 4.12 Involuntary Resettlement. The ICR noted that the project complied with all applicable environmental and social safeguards (ICR, paragraph 77). This was the first project in Morocco to pilot the Use of Country Systems (UCS) for environmental and social safeguards complemented by the improvements recommended following environmental and social systems assessments.

Early delays were associated with low capacity and limited experience with UCS under a Bank project. The implementing entity (ONEE) carried out Environmental Impact Assessments for all 14 towns. The ICR mentioned some minor concerns regarding the quality of reporting, but the Bank team noted compliance with relevant workers health and safety issues, signage, waste concerns about groundwater table. Groundwater water table quality was found stable except for one station which was not yet operational, and two dry piezometers were noted. The project also resolved an issue with raw waste flowing into the environment by building a collection network and a pumping station, both completed and operational by October 2018.



OP/BP 4.11 was triggered after the 2014 Mid Term Review and included in the 2014 Restructuring but there were no antiquities found in the national heritage site of Old Medina in Boujaad. Protocols under the law established by the Government to address cultural heritage and historic conservation were therefore not triggered.

Under OP/BP 4.12 Involuntary Settlement, compliance was documented in the report "Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects." The March 2010 Diagnostic Safeguards Review noted that ONEE developed, implemented, and ensured a close follow-up on an action plan to assist beneficiary municipalities with land acquisition processes for each sub-project. All land acquisition protocols were developed under the project and are now in use for all sanitation projects of the implementing agency outside of Bank financing and were being considered for use in water supply projects as evidenced by training of water personnel in safeguards compliance (ICR, paragraph 80). Overall, the UCS succeeded although its use called for capacity building early in project implementation (ICR, paragraph 81, see also Section 12, Lessons Learned).

b. Fiduciary Compliance

Financial Management: The project generally complied with the Bank's financial management requirements. Commitments and payments were addressed favorably, particularly in the last two years of the project. Issues raised in Aide Memoires and ISRs were addressed as evidenced by a quick response to an overdue audit mentioned in an ISR and the subsequent meeting of deadlines for audit reports. The implementing agency complied with annual requirement for its debt ratio to remain below the 4.5 limit as evidenced by the 3.01 ratio reached in 2016.

Procurement: There were some procurement delays at the project's early stages due to internal disbursement processes of the implementing agency. Early contract management of the project was rated Moderately Unsatisfactory but this was addressed by strong senior management commitment. Consequently project procurement was rated Moderately Satisfactory to Satisfactory from 2014 until the project closed.

c. Unintended impacts (Positive or Negative)

d. Other

11. Ratings



Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		Substantial	---

12. Lessons

Five lessons from this project listed in the ICR (with some editing by IEG) may apply to similar operations (paragraphs 95-99):

- **A well-structured results framework (RF) that captures a project's results chain provides a framework for monitoring a project's achievements.** In this project's sanitation components, attention to household connections led to identifying intermediate outcome indicators that further refined and adjusted the RF to better document how to achieve the PDOs. This strategy used the restructuring mechanism to adjust the RF twice, redefine outcome indicators previously missed at appraisal and punctuated by implementation problems.
- **Piloting technologies calls for a robust M&E system that provides the evidence about new technologies to adopt in improving system performance.** Just in time training, study visits, and south-south knowledge exchanges as well as continuing innovations learned led this project to construct a first Upflow Anaerobic Sludge Blanket for domestic wastewater treatment.
- **The use of country systems, under OP/BP 4.00 "Piloting the Use of Borrower Systems to Address Environmental and Social Safeguards Issues in Bank-Supported Projects" for environmental and social safeguards can succeed with additional time and support during project preparation and implementation.** In this project, when gaps between World Bank requirements and the country systems were identified, mitigation measures were agreed during preparation, but sufficient understanding of what 'use of country systems' meant needed to be reinforced and given adequate time for counterpart participation.
- **Projects that require land acquisition can effectively recognize and resolve citizen concerns during preparation.** In this project addressing these concerns early through the adoption of local practices to resolve grievances resulted in an effective citizen engagement, allowed for smooth implementation, and avoided significant construction delays.
- **Coordination and constant communication among the various actors are key to trouble free project implementation.** The key stakeholders in this project - namely the implementing agency's project teams, communes in the 14 participant cities and towns, the technical assistance consultants, and the Bank's own



team – learned that a workable institutional framework that uses mutually agreed appropriate technically and financially sustainable solutions can lead to successful project implementation. .

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR provided a concise, detailed overview of the project following OPCS guidelines. The internally consistent narrative also provided candid and reinforcing evidence to support the ratings and results that contributed to achieving the project development objective. The theory of change was easy to follow although it could have highlighted that piloting wastewater treatment technologies was meant to strengthen the implementing agency with its newly acquired mandate of managing sewerage operations previously built and managed by municipalities. This rationale was included in Annex 4 of the ICR to highlight project efficiency. Analysis sufficiently linked findings and outcomes. For example, the piloting of waste water treatment technologies in receptive cities and towns served the implementing agency with the evidence to convince other towns of appropriate technology. Together with the annexes, the ICR provided evidence to support the outcomes reported. Annex 7, for example, provided a narrative on citizen engagement while using country systems. A number of sound lessons were based on evidence from the project.

a. Quality of ICR Rating

Substantial