



1. Project Data

Project ID

P095925

Project Name

EG:GEF Alexandria CZM /Lake Mariout

Country

Egypt, Arab Republic of

Practice Area(Lead)

Environment & Natural Resources

L/C/TF Number(s)

TF-96365

Closing Date (Original)

30-Jun-2015

Total Project Cost (USD)

654,153,293.00

Bank Approval Date

29-Apr-2010

Closing Date (Actual)

28-Feb-2017

IBRD/IDA (USD)
Grants (USD)

Original Commitment

7,150,000.00

7,150,000.00

Revised Commitment

7,150,000.00

6,951,450.45

Actual

6,951,450.45

6,951,450.45

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2. Project Objectives and Components

a. Objectives

The project was financed by Global Environment Facility. The global environment objectives stated in the Grant Agreement (p. 5) and Project Appraisal Document (p.11) are the same:

"to improve the institutional mechanisms for sustainable coastal zone management in Alexandria, in particular to reduce land-based pollution to the Mediterranean Sea."



b. Were the project objectives/key associated outcome targets revised during implementation?
No

c. Will a split evaluation be undertaken?
No

d. Components

The project had three components:

1. Planning, Institutional Capacity and Monitoring Strengthening (*Appraisal Estimate: US\$ 1.98 million, Actual: US\$ 1.95 million*).

The component aimed to support the institutional capacity of the relevant agencies involved in the management of Lake Mariout, in particular, and Alexandria's coastal zone, in general. This included a legal and regulatory framework analysis and a master plan for the management of the coastal zones of Alexandria, including Lake Mariout (the Alexandria Coastal Zone Management Plan). The component also supported the development of an integrated water quality monitoring network for Lake Mariout and the Mediterranean Sea, including a modeling activity for El-Mex Bay, which can be used to estimate the overall impact of the project on the Mediterranean Sea.

2. Pollution Reduction (*Appraisal Estimate: US\$ 4.63 million, Actual: US\$ 4.62 million*).

The component aimed to reduce the land-based source of pollution entering Lake Mariout, and subsequently the Mediterranean Sea, through pilot pollution reduction measures. This included in-stream treatment and a set of aerators in the El Qalaa drains as well as a small-scale engineered in-lake wetland located at the outfall of the El Qalaa drain, and also reed removal to improve water circulation and the self-cleaning capacity of the lake.

3. Project Management and Monitoring and Evaluation (*Appraisal Estimate: \$US 0.54 million, Actual: US\$ 0.38 million*).

The Project Management Unit established under Egypt Pollution Abatement Project II (EPAP II) was supported with funds to carry out various project implementation activities including: a project monitoring system with measurable indicators that comply with the GEF International Waters Tracking Tool; and documentation of the project's progress and results, dissemination of lessons learned, and adoption of a replication strategy in conformity with the GEF International Waters Learning Exchange and Resources Network.

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

Project Cost: Total project cost at appraisal was estimated at US\$ 7.15 million, the actual costs were slightly lower with US\$ 6.95 million, or 97.2 % of the appraisal estimate.



Financing: The GEF Grant of US\$ 7.15 million disbursed US\$ 6.95 million.

Borrower Contribution: At appraisal, the Borrower planned to contribute US\$ 2.45 million partially in-kind amount from the Alexandria Drainage and Sanitation Company; but the actual contribution was only US\$ 0.3 million. The allocation did not materialize fully due to political events and budget constraints in Egypt.

Dates: The closing date of the operation was extended for 20 months to end-February 2017 via a Level II restructuring in April 2015. This extension was necessary to enable the completion of some of the delayed activities.

Restructuring: The project went through two Level 2 structurings. The first restructuring done on September 26, 2011 allocated US\$200,000 to a new category entitled 'Operational Expenses' to finance operating costs. With the second restructuring in April 2015, the project closing date was extended for 20 months from the estimate at appraisal, and indicators were modified to improve their quality and precision during the Level 2 restructuring: (i) The first GEO indicator was not clear enough, with the entity adopting the ICZM not properly defined, so the key indicator was reworded as "Alexandria Integrated CZM adopted by the Alexandria Governorate". (ii) The second GEO indicator was imprecise and was revised to clarify both the specific location of the monitoring points and the type of pollutants. (iii) Two GEO-level indicators were added, one of which was to measure the project beneficiaries as newly required by the World Bank, and the other to measure the financial sustainability of interventions.

Although outcome indicators were revised they were introduced to improve the quality and precision, therefore no split rating was conducted

3. Relevance of Objectives & Design

a. Relevance of Objectives

The project development objectives were highly relevant to the country, region and sector strategies and needs. The focus of project activities, Lake Mariout is one of the major sources of conveyance of land-based pollution to the El-Mex Bay in Egypt. The lake has no direct connection to the sea, and its surface is maintained at 2.8 m below mean sea level by pumping water from the lake to the Mediterranean Sea at El-Mex Bay. Lake Mariout receives polluted water daily from three major sources: industrial, domestic, and drainage water from agriculture, which was a persistent threat to public health and the livelihoods of local communities. The continuous pollution of the lake has had a critical impact on fish production over time. Despite the severe decline in fish catch, fishing activities remain a significant source of income for the fishermen and their families. At the time of appraisal, these increasing pressures on fragile ecosystems were exacerbated by the lack of integrated conservation and development planning along the Alexandria coast, coupled with poor management of resources in the face of increased pressures. To address these challenges, integrated planning was deemed necessary to ensure the sustainability of coastal development. The PDO was relevant to the National Environment Action Plan (NEAP developed in 1992 and updated in 2002 via UNDP support), which was the first public document that articulated Egypt's environmental issues and provided a series of policy, institutional, and investment actions to help resolve them. An Environment



Protection Law was enacted in 1994, and a Minister of State for Environmental Affairs was appointed in 1997. The Egyptian Environmental Affairs Agency (EEAA) gradually expanded its functions and responsibilities in all fields of environmental management, and was given responsibility to initiate and coordinate the national Integrated Coastal Zone Management (ICZM) activities. As a result, the 'Framework Program for the Development of a National ICZM Plan for Egypt' was prepared in 1996 by the National Committee for Integrated Coastal Zone Management (NCICZM).

The project objective was relevant to World Bank strategies at entry and at exit as well as GEF priorities. At the time of appraisal (2009), no Country Partnership Framework (CPF) between Egypt and the World Bank was in place for the period. However, the proposed project was fully consistent with the World Bank's Country Assistance Strategy for Egypt (2005), which called for supporting the GOE's environmental strategy to be able to address the environmental risks that could accompany economic growth. One long-term goal was to 'improve air and water quality and reduce water loss'. The most recent CPF for Egypt (2015–2019) confirms the World Bank's support of environment and natural resource management, to help ensure environmental sustainability (paragraph 45, page 13). The CPF was committed to prioritize interventions to improve urban planning and reduce urban encroachment and agricultural pollution. The project's activities are still fully consistent with the GEF Operational Program 2 for Coastal, Marine, and Freshwater Ecosystems.

Rating

High

b. Relevance of Design

The project activities were in general aligned with the global environment objective "to improve the institutional mechanisms for sustainable coastal zone management in Alexandria, in particular to reduce land-based pollution to the Mediterranean Sea". The project was to complement other ongoing projects, each addressing a different source of pollution in the Mediterranean Sea. In particular, the project was a pilot for innovative and low-cost technologies for the reduction of pollution originating from agricultural drainage water and rural domestic wastewater, which were partially responsible for the severe eutrophication problem in the lake basins. Component 2 activities included these pilot technologies, specifically: in-stream treatment and a set of aerators in the El Qalaa drains as well as a small-scale engineered in-lake wetland located at the outfall of the El Qalaa drain, and also reed removal to improve water circulation and the self-cleaning capacity of the lake.

Component 1 on the other hand focused on institutional capacity building for the sustainable coastal zone management part of the objective. The component supported master plan development for coastal zone management in Lake Mariout and also development of an integrated water quality monitoring network for Lake Mariout and the Mediterranean Sea. The activities gave adequate weight to the legal and institutional framework, stakeholder participation, and capacity building. In order to ensure that social impacts, especially on marginalized groups, stemming from the plan's implementation, were minimized. The project included the following: (a) The National Coastal Zone Management (CZM) Committee had representatives from



nongovernmental organizations; (b) The Project Steering Committee (PSC) included a representative from the Lake Mariout Development Committee, which represents the interests of the local communities, in particular the fishing community and civil society during project implementation; (c) Component 1 included 'public consultation workshops and master plan dissemination', which ensured that the views and interests of the civil society agencies were well represented.

Although, the GEO could be considered rather ambitious given the scale of the project and with what could also be considered a longer-term objective beyond the scope of the project, through revision of some outcome indicators (see Section 2d), the GEO was described/defined better.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

Objectives:

"To improve the institutional mechanisms for sustainable coastal zone management in Alexandria, in particular to reduce land-based pollution to the Mediterranean Sea".

Based on this statement, this Review considers two objectives (i) "improve the institutional mechanisms for sustainable coastal zone management in Alexandria (ii) reduce land-based pollution to the Mediterranean Sea.

(i) Improve the institutional mechanisms for sustainable coastal zone management in Alexandria .

Rationale

Outputs:

- Construction of pollution reduction measures at the W-WWTP were completed and test operations begun. The pollution reduction measures consisted of a combination of SAF (Submerged Aerated Fixed) media biofilm system that treats 50,000 m³ per day of the W-WWTP and an engineered wetland consisting of two basins treating 25,000 m³ per day of the water from the biofilm system.
- Two mechanical reed harvesters were purchased and started operating in the lake. The reed removal will help with the aeration and circulation of oxygen inside the lake to allow nutrient removal and increase fish production.
- In response to the excess sludge generated at the treatment plant during the "9N" landfill closure, excess project funds (from currency depreciation) were used to purchase a thermal dryer for the W-WWTP. The thermal dryer helped reduce sludge from 45 tons per day to 7 tons per day, which allowed the plant



operators to treat more effluent and reduce sludge production.

- A water quality monitoring system was put in place to measure pollution levels in the lake and at the outflow to the Mediterranean Sea. The PMU hired an individual consultant to assess the capacity of each partner to conduct sampling and analysis of water quality parameters and to determine the water quality training modules necessary for all project partners to implement water quality monitoring programs according to international standards. Accordingly, a monitoring program that specified the locations that best monitor the sources of pollution and water quality status in El-Mex Bay, Lake Mariout, and the outfalls of canals, drains, and W-WWTP was prepared.
- Water quality equipment was procured and 10 water quality training modules were provided for 150 trainees from different partners to learn about water quality standard processes.
- A water quality model was instrumental in leading the identification of pollution reduction interventions. The model included different scenarios for interventions in Lake Mariout, including models with reed removal, different water input locations into the main basin, and the likely impact of the identified project investment in low-cost treatment on the grounds of the W-WWTP. The water quality model was transferred to the relevant organizations and training was provided.
- To ensure sustainability of the project's pollution reduction, interventions (biofilm unit and engineered wetland), an MOU was signed in April 2015 with the PMU and the W-WWTP to allocate their own land for project interventions and to make a commitment to be responsible for O&M costs after the project ends. The Alexandria Drainage and Sanitation Company took over the responsibility for O&M.

Outcomes:

The achievement of the objective is **substantial**. The water quality results at the time of ICR shows that the pollution loads reduced at El-Mex; the GEO indicator target result of 47.25 mg/L of BOD (Biological Oxygen Demand) concentration was almost achieved with a 48 mg/L measured in October 2017.

(However, at project closing, due to the unavoidable (force majeure) 9N landfill closure, full treatment was not provided, and therefore this impacted water quality results and the BOD concentration at El-Mex further increased from 75 mg/L in November 2016 to 121 mg/L in February 2017. During the ICR period (in May 2017) the landfill was reopened. Therefore, the ICR deadline was extended to allow the team to capture the correct impacts of the interventions of the water quality at El-Mex Bay).

The population residing in or living off coastal ecosystems - approximately 66,613 people in targeted areas- primarily coastal communities engaged in sustainable use activities (e.g. fishing, tourism) are therefore benefitting from the project and in the long term further pollution reduction as well as restoration of wetland and biodiversity conservation will allow the fishermen to catch less-contaminated, better-quality fish. Safeguarding healthy ecosystems and promoting sustainable use of natural resources will ensure that these populations are able to continue to enjoy their benefits in future.

Rating

Substantial



Objective 2

Objective

ii) Reduce land-based pollution to the Mediterranean Sea.

Rationale

Outputs:

- Construction of pollution reduction measures at the W-WWTP has been completed and test operations began. The pollution reduction measures consisted of a combination of SAF media biofilm system that treats 50,000 m³ per day of the W-WWTP and an engineered wetland consisting of two basins treating 25,000 m³ per day of the water from the biofilm system.
- Two mechanical reed harvesters were purchased and started operating in the lake. The reed removal will help with the aeration and circulation of oxygen inside the lake to allow nutrient removal and increase fish production.
- In response to the excess sludge generated at the treatment plant, during the 9N landfill closure, excess project funds (from currency depreciation) were used to purchase a thermal dryer for the W-WWTP. The thermal dryer helped reduce sludge from 45 tons per day to 7 tons per day, which allowed the plant operators to treat more effluent and reduce sludge production.
- A water quality monitoring system was put in place to measure pollution levels in the lake and at the outflow to the Mediterranean Sea. The PMU hired an individual consultant to assess the capacity of each partner to conduct sampling and analysis of water quality parameters and to determine the water quality training modules necessary for all project partners to implement water quality monitoring programs according to international standards. Accordingly, a monitoring program that specified the locations that best monitor the sources of pollution and water quality status in El-Mex Bay, Lake Mariout, and the outfalls of canals, drains, and W-WWTP was prepared.
- Water quality equipment were procured and 10 water quality training modules were provided for 150 trainees from different partners to learn about water quality standard processes.
- A water quality model was instrumental in leading the identification of pollution reduction interventions. The model included different scenarios for interventions in Lake Mariout, including models with reed removal, different water input locations into the main basin, and the likely impact of the identified project investment in low-cost treatment on the grounds of the W-WWTP. The water quality model was transferred to the relevant organizations and training was provided.
- To ensure sustainability of the project's pollution reduction interventions (biofilm unit and engineered wetland), an MOU was signed in April 2015 with the PMU and the WWTP to allocate their own land for project interventions and to make a commitment to be responsible for O&M costs after the project ends. The Alexandria Drainage and Sanitation Company have taken over the responsibility of the O&M.

Outcomes:

The achievement of the objective is **substantial**. The water quality results at the time of ICR shows that the pollution loads reduced at El-Mex; the GEO indicator target result of 47.25 mg/L of BOD concentration was almost achieved with a 48 mg/L measured in October 2017.

(However, at project closing, due to the 9N landfill closure (a force majeure situation), full treatment was not



provided, and therefore this impacted water quality results and the BOD concentration at El-Mex further increased from 75 mg/L in November 2016 to 121 mg/L in February 2017. During the ICR period (in May 2017) the landfill was reopened. Therefore, the ICR deadline was extended to allow the team to capture the correct impacts of the

interventions of the water quality at El-Mex Bay).

The population residing in or living off coastal ecosystems - approximately 66,613 people in targeted areas-primarily coastal communities engaged in sustainable use activities (e.g. fishing, tourism) are therefore benefitting from the project and in the long term further pollution reduction as well as restoration of wetland and biodiversity conservation will allow the fishermen to catch less-contaminated, better-quality fish. Safeguarding healthy ecosystems and promoting sustainable use of natural resources will ensure that these populations are able to continue to enjoy their benefits in future.

Rating

Substantial

5. Efficiency

Economic and Financial Efficiency:

The project did not prepare an economic or a financial analysis. An incremental cost analysis was prepared ex-ante.

Ex-post analysis included cost and unit cost comparisons:

- A cost comparison of the treatment facility with a conventional secondary treatment showed that the biofilm and wetland cost was almost one-third of the cost of conventional secondary treatment for wastewater treatment plants in Egypt.
- SAF-wetland interventions are more cost-effective than conventional secondary wastewater treatment (with a cost of effluent treatment of US\$0.02 per m3 per year versus US\$0.07 per m3 per year).
- The unit cost per ton of nutrients removed was about US\$137 per ton, which falls well within the range of similar World Bank projects in Hungary (US\$ 288).

In addition, the project used the savings made (mainly due to currency depreciation), to purchase a thermal drier for sludge, an additional reed removal machine, and the initiation of discussions as to the selling of sludge to cement companies to potentially generate revenue that could be used to cover operation and management costs. The thermal dryer is expected to help reduce sludge from 45 tons per day to 7 tons per day. Therefore, by saving 38 tons per day of sludge, the plant could potentially save US\$117,200 per year, money that could be used to pay the O&M costs.

Operational/Administrative Efficiency:

The project managed to complete all activities despite initial delays, but with a 20-month extension. However, the delays were not due to operational administrative inefficiencies but rather exogenous factors of political events and landfill closure. Political changes and deteriorating security conditions in some parts of the



country during the initial stages of project implementation, created delays. The Government declared a state of emergency in mid-2013, thereby limiting working hours and movement in project areas.

Project efficiency is rated **Substantial**.

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		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate		0	0 <input type="checkbox"/> Not Applicable

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

6. Outcome

The relevance of objectives is rated High due to relevance of the project objectives to country and Bank strategies and plans. The relevance of design is rated Substantial as project activities are causally linked to achieve the objective. The achievement of the objectives is rated Substantial, as the project completed all planned activities and substantial achievements were presented on improved institutional mechanisms for sustainable coastal zone management in Alexandria, and reduced land-based pollution to the Mediterranean Sea. Efficiency is rated Substantial due to cost effective achievement of the objective, although there were some delays in implementation but mainly due to exogenous factors. The combined outcome rating is **Satisfactory**.

a. Outcome Rating

Satisfactory

7. Rationale for Risk to Development Outcome Rating

The risk to sustainability of project investments is substantial.

Institutional Risk. The ICZM Plan was handed over to the Governor for its implementation, and a decree to



form the ICZM Committee in Alexandria was approved in July 2017. The risk to long-term development outcome is mainly due to the pace of its implementation and additional delays that might jeopardize the transition and the financing of the committee, which is critical to the sustainability of project outcomes. In addition, the 9N landfill needs to stay open as it is critical to ensure the efficacy of the interventions (biofilm and wetland).

Political Risk: Additionally, the Alexandria coastal zone is under considerable development pressure from encroachment and its continued sustainable management will require significant engagement from the different levels of government. World Bank and other development partners need to provide support in the future that this commitment continues.

Financial Risk: Concerning the pollution reduction outcome, some risk remains that there may not be enough resources to continue and maintain some of the capacity building work, particularly the laboratory equipment, water quality models and training conducted for the PMU. In addition, there is still some risk that O&M may not be handled adequately, although an MOU signed and the Alexandria Drainage and Sanitation Company took over O&M.

a. Risk to Development Outcome Rating

Substantial

8. Assessment of Bank Performance

a. Quality-at-Entry

The Quality of entry was satisfactory.

- Appraisal lessons from prior World Bank engagement in the region were taken into consideration during project design. In the prior projects supported by the World Bank, the importance of capacity building, strong government commitment, and coordinated support were emphasized as key, and these elements were evident in the design of the project.
- The key risks and mitigation measures were in general sufficiently identified. For example, the main risk to the project objective was the slow implementation pace due to complex institutional processes and lack of capacity at different levels. This was mitigated by an extensive consultation process, and regularly monitoring and closing capacity gaps.
- Implementation arrangements adequately built on existing EPAP institutional arrangements, through reinforcing them with additional staff and incorporating interagency agreements between the EEAA and MWRI as well as the MALR in the design of the project.
- M&E design and implementation was sound in general, although some indicators had to be revised to make them more precise and relevant through restructuring.



Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

The Bank conducted 13 missions in total (about two per year), which comprised operational and technical meetings with a variety of national and local stakeholders, field visits, strategic consultations with technical and financial partners, and high-level discussions with government officials as needed. In addition, the World Bank team provided useful training on all fiduciary aspects to the PMU. Two task team leaders succeeded each other, both teams reportedly were timely in their responses to client requests and to the changing needs and opportunities. The team was adaptive to changes, as shown by quick resolution when the location for the pollution reduction interventions was moved. The quality of reporting in the Implementation Status and Results Reports (ISRs) and Aide Memoires and other related project documents had sufficient details, as well as their frank evaluation of weaknesses and shortcomings and concrete action plans. However, the team could have used the opportunity presented by the MTR to discuss and agree with the PMU on further rationalizing the monitoring indicators. In addition, even though the closing of the 9N landfill was not part of the project, the event impacted project results negatively at the time and the team could have downgraded the ISR ratings sooner.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

The government's commitment to the project remained consistent over the project lifetime. During project preparation, the government provided necessary support for the preparatory phase; estimating the investment needs; and drawing on previous experience with Bank operations to recognize institutional weaknesses that could hinder implementation. The GOE demonstrated its commitment during the midterm review by agreeing on the six-month action plan and the restructuring to put the project back on track. The GOE's performance was particularly effective in resolving differences between local stakeholders (diversion from El Qalaa drain), which led to the intervention to be moved. The government helped in the preparation of consultations with the stakeholders and building consensus among the different participants. The setting up a high-level Inter-Ministerial committee in December 2014 to help resolve the issue of the 9N landfill closing was also important.

Balanced by this, political events and high turnover of leadership and personnel in agencies resulted in uncertainties and delays. These instabilities reflected the relatively standard difficulties in advancing cross-sectoral, and decision-making processes. The 9N landfill remained closed and was reopened after 2 years



despite the commitments by all decision makers to reach an agreement with the settlements and reopen the landfill much earlier. In addition, the Alexandria Governorate ICZM Committee was formed five months after the close of the project.

Government Performance Rating

Moderately Satisfactory

b. Implementing Agency Performance

The PMU played a key function in coordinating the numerous preparatory studies and organizing extensive stakeholder consultations for the ICZM. However, it faced difficulties during the first years of implementation, some of which were due to the political events and to the novelty of the World Bank procurement processes. The complete replacement of the Project implementation team during the political events resulted in delays at the beginning of the project and delayed the hiring of specialists and individual consultants who were necessary to implement the six-month action plan. The situation improved after the midterm review, with the progressive building of its capacity. The Procurement and Financial Management processes were sound and in compliance with Bank procedures. Sufficient M&E capacities in terms of staff, laboratory equipment, and logistics were made available. In the last two years of the project, the PMU and the Ministry of Environment displayed good ownership of the project objectives, activities, and efficiency in coordinating its implementation.

Implementing Agency Performance Rating

Satisfactory

Overall Borrower Performance Rating

Moderately Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

The initial Results Framework was broadly formulated, comprised of two GEO-level results indicators and nine intermediate results indicators. Baseline data and target values were to be established after the feasibility studies were done. In the initial Results Framework in the PAD, there was a lack of alignment between intermediate indicators in the table on key indicators and the results matrix; this was addressed with the restructuring. The restructuring in 2015 was used to clarify and simplify the Results Framework, resulting in five clear GEO-level results indicators directly measuring the achievement of the GEO and limiting the intermediate results indicators to six.

Initial M&E arrangements, as designed in the PAD, intended to have an M&E specialist at the PMU, however, due to delays during project implementation because of a reshuffling of the EEAA, a consultant was hired to design the M&E, then the head of the PMU became responsible for M&E.



b. M&E Implementation

A continuous monitoring station was set up at El-Mex Bay to measure temperature, turbidity, dissolved oxygen, total dissolved solids (TDS), TSS, and pH. Ten specific locations for sampling were identified, which allowed the measurement of the project's impact on water quality. Water quality samples were collected from these locations, then samples were analyzed following international standard practices. The lab at the Alexandria RBO oversaw the sample analysis and was certified for quality assurance and quality control of the data generated.

The reporting of results and indicators data was regularly documented in the Aide Memoires. The idea of developing a Geographic Information System (GIS) application, including a database application, and related information technology (IT) hardware was dropped because it was deemed too expensive. The M&E system complied with the GEF International Waters Tracking Tool.

c. M&E Utilization

The M&E data on project progress were used to identify delays in the implementation of activities, especially pollution reduction (BOD in mg/L). The data were used to help set up the baseline (55.59 mg/L) and target value (47.25 mg/L) for the BOD concentration during the restructuring. M&E data from the pilot wastewater treatment technologies were used as inputs for the 'Report on Lake Mariout: Results and Lessons Learned'. The water quality program was implemented, and the Ministry of Environment used the reports to evaluate the status of the lake. Water quality monitoring data was to be made publicly available so that it could be used by the local stakeholders (such as fishing community) and researchers.

M&E Quality Rating

Substantial

11. Other Issues

a. Safeguards

The project was classified as Category B (site-specific, reversible potential impacts) at appraisal regarding environmental safeguards. The initial design triggered Operational Policy/Bank Policy (OP/BP) 4.01 on Environmental Assessment, as there were no associated significant, sensitive, diverse, unprecedented or irreversible impacts. Overall, the project activities complied with all applicable Bank policies. An Environmental and Social Management Plan (ESMP) was adopted before appraisal to address, among others, the potential environmental issues that had been identified during preparation. Before the political events, at the beginning of the project, two environmental specialists were assigned to carry out the monitoring of the Environmental Management Plan. Then, a newly appointed environmental specialist



monitored the safeguards requirements of the project and offered training to stakeholders. A social expert was also assigned to communicate with key project stakeholders, including fishing communities, and help with discussions on the change of the project intervention from El Qalaa drain to the W-WWTP. The supervision of the Grievance Redress Mechanism (GRM) was set up to provide the communities with the means to convey their concerns and allowed the PMU to address issues raised by the fishing communities.

During a supervision mission in December 2015, the team learned that the secondary treatment at the E (East)-WWTP and the primary at the W-WWTP were stopped when the sludge disposal site of the 9N landfill was closed. (9N landfill issue is not part of the project). Informal settlers who settled during the political events near the landfill, prevented access to the site, claiming that it was negatively affecting them. The random urban expansion after the political events may have resulted in increased proximity between the settlements and the landfill. The World Bank stressed the importance of raising community awareness about the steps being taken to address the concerns of the communities and ensuring the safe operation of the site.

b. Fiduciary Compliance

Financial Management. The implementing agency maintained adequate financial management arrangements, and there were no major financial management issues. The PMU was adequately staffed for carrying out the financial management functions at all times and used a strong Financial Management Information System (FMIS). This FMIS greatly contributed to improving efficiency and transparency in the execution of financial transactions, as well as to

building the capacity of project staff in financial management. The interim financial reports submitted to and reviewed by the World Bank during implementation were found satisfactory in a format acceptable to the World Bank, and with minor issues identified. A minor issue occurred in November 2016, when the contract with the project financial management consultant was not renewed and no proper handover was made to the new financial officer (who had been seconded from the EEAA). This resulted in incomplete records, but the issue was resolved quickly by the PMU after follow-up by the World Bank's team. Thereafter, acceptable annual audit reports were received on time and no major internal control weaknesses were reported.

Procurement. The consultant's packages for the development of the GIS application and database license package, including IT hardware equipment and software, were delayed throughout the life of the project; at the end of the project, the procurement of GIS-related material was dropped. Specific training and technical assistance from the World Bank team helped resolve the delay following the change in the PMU and the instability under the political events in Egypt, and no major procurement issues were noted later during the implementation period of the project. The procurement of works, goods, and consulting services was carried out in accordance with the World Bank Procurement Guidelines.

c. Unintended impacts (Positive or Negative)



No unintended impacts were reported by the ICR.

d. Other

12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development Outcome	Substantial	Substantial	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR provided comprehensive lessons. The most important follows with some modification of language:

- **Public consultation and engagement are essential to building trust and sustaining an ICZM.** The project demonstrated some key aspects of an effective ICZM and pilot water treatment interventions in Egypt: (a) continuous transparency and extensive stakeholder consultations; (b) a design that allowed for an iterative, flexible, and adaptable process; (c) special attention to strong institutional arrangements and high-level commitment; (d) a mix of top-down and bottom-up approaches to coastal management; (e) an emphasis on capacity building and awareness raising; and (f) solution-driven implementation and quick wins (sludge drier and potential reuse by cement factories) instead of the conventional approach of treatment and dumping of waste (sludge).

- **ICZM adoption and implementation, as well as water treatment facilities, require time to yield results.** The experience from the project showed that it requires changing the mindsets of populations (fishermen of Lake Mariout and diversion of the El Qalaa drain), decision makers, and institutions, which itself requires evidence gathering, capacity building, awareness raising, and advocacy. It also involves policy formulation, extensive consultations, and political endorsement, which are time-consuming and dependent upon many



external factors. Allocating sufficient time to project design and starting these processes as early as possible will avoid having to extend the project (given that an unforeseen exogenous event does not occur).

- **Well-defined and quantitative monitoring indicators are important to guide implementation for ICZM projects, when pollution reduction is the objective.** A more systematic approach in designing and monitoring outcome indicators could further enhance project outcomes. A preliminary hydrodynamic and water quality model can be very useful and could have helped quantify the effects on water quality at the outflow of the intervention (to measure the actual efficiency of the biofilm and wetland) instead of only the discharge point to the Mediterranean Sea. In this case an intermediate indicator could have measured the pollution reduction after the intervention at the discharge point of the biofilm and wetland. In addition, since BOD measurements in mg/L are difficult to conduct in the field and results can fluctuate at the lake-sea interface (after rain events or prolonged dry periods), it is recommended to reframe the indicator in relative terms (such as the 5% reduction of BOD) rather than setting a target in absolute values.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

The ICR was quite comprehensive and clear with candid articulation of implementation challenges as well as good formulation of lessons. Although the ICR would benefit from a simple economic analysis for the analysis of the efficiency section, the efficacy analysis was supported with robust evidence. No important issue was found with the quality of the ICR.

a. Quality of ICR Rating

Substantial