Report Number: ICRR0023062

1. Project Data

Project ID P153863	Project SRB Inte	Name grated WRM Project		
Country Western and Central Afric		Practice Area(Lead)		
L/C/TF Number(s) TF-A2254	Closing	Date (Original)	Total Project Cost (USD) 11,958,716.84	
Bank Approval Date 23-Jun-2016	Closing Date (Actual)			
	IBRD/ID	A (USD)	Grants (USD)	
Original Commitment		0.00	12,009,084.87	
Revised Commitment		0.00	11,173,447.34	
Actual		0.00	11,958,716.84	
			dinator Group	

2. Project Objectives and Components

a. Objectives

Original PDO: The objective of the Project, as stated in the Grant Agreement (p.5), was "to strengthen the capacity of the Recipient and local water user associations to improve the environmental and water quality conditions of the Senegal River Basin's water resources".

The project objective, as stated in the PAD (para 26), was similarly "to strengthen the capacity of OMVS (Senegal River Basin Organization) and local water user associations to improve the environmental and water quality conditions of the Senegal River".

Revised PDO: The revised PDO, post-restructuring in 2018, stated that the development objective of the project was "to strengthen the capacity of the OMVS and local user associations for reducing erosion in the Upper Basin and proliferation of typha in the lower Basin of the Senegal river".

The revision to the PDO represents a reduction in the ambition of the project, for the same level of costs, providing the basis for a split evaluation (Section 6).

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 24-Jul-2018

c. Will a split evaluation be undertaken?
Yes

d. Components

Component 1: Upper Basin Sustainable Land Management (allocation at appraisal: US\$3.67 million; actual at completion US\$3.67 million)

This component supported restoration of the main headwaters of the Senegal River, the banks of other rivers in the basin, and the deforested slopes in Guinea and Mali through reversal of the process of deforestation and erosion in the Térékolé/Kolimbine/Lac-Magui system (TKLM) north of Kayes. In addition, the riverbanks protecting Kayes would be restored, continuing work initiated under two earlier Dutch trustfunded projects.

Component 2: Management of Invasive Aquatic Plants in the Delta and the Operationalization of Water User Associations [WUAs] (allocation at appraisal: US\$4.21 million; actual at completion US\$5.49 million).

This component aimed to control and manage the proliferation of typha to a level at which it did not constitute a threat to the ecological balance and economic activities in the basin. It also aimed to improve access to drinking water and to operationalize WUAs in continuity of activities initiated under the earliermentioned trust funds.

Component 3: Institutional Support for OMVS and National Agencies (allocation at appraisal: US\$2.23 million; actual at completion US\$2.20 million).

This component aimed to build the capacity and skills of OMVS and national staff through training and the exchange of lessons learned. It also supported the management and implementation of regional and state-level activities, as well as national technical services to implement OMVS activities such as environment, forestry, water resource management and public health.

Component 4: Contingency (estimated at appraisal: US\$2.17 million; actual at completion US\$0.31 million).

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates
Project Cost: The original estimated project cost was US\$12,268,147 million. Actual cost at project completion was US\$11,690,000 million (ICR, Table 1, p.8).

Financing: The project's cost was financed entirely through a grant from the Dutch Trust Fund, administered by the World Bank. No Borrower contribution was envisaged or received.

Dates: The original closing date for the project was October 31, 2019. This was however extended by 26 months, until December 31, 2021 – initially, by 14 months to December 2020, to allow sufficient time for implementation of activities affected by the restructuring, then by another 9 months, on account of implementation delays arising from the Covid-19 pandemic and related restrictions, and finally by another 3 months, to give time to finalize several activities that had been delayed on account of Covid-19 restrictions in Mali and Guinea.

Restructurings: The project went through two restructurings, in 2018 and 2020. The PDO was changed during the initial restructuring as outlined in Section 2a. KPIs and related targets in the results framework were also changed, in keeping with changes to allocations and scope of individual project activities. Two intermediate indicators were removed and a new indicator introduced; and the four remaining indicators revised to better reflect the utilization of the project's outputs. According to the Project Restructuring Paper (Section 1B), the object was to "fix some minor inconsistencies" in the original design, including more closely aligning the PDO with project activities. The restructuring in 2020 similarly involved deletion of one intermediate indicator, which had already been changed in the 2018 restructuring.

3. Relevance of Objectives

Rationale

Regional and Sector Context:

The Senegal River, which is 1,800 km long, flows through Guinea and Mali before forming the boundary between Mauritania and Senegal, and emptying into its estuary on the Atlantic Ocean. The four riparian countries of the Senegal River Basin ranked among the poorest in the world, with around half of their populations living below the poverty line and a GNI per capita as low as US\$430 (Guinea). Water resources played a critical role in the river's ecosystem and in the economic development of the basin area, with around 85 percent of the basin's population relying on the watershed for their livelihoods.

At the time of appraisal in 2016, climate change and infrastructure development (mainly dam construction) had exerted pressure on the basin's water environment, leading to deforestation and erosion especially in the upper basin. Though agriculture was the main economic activity for the bulk of the area's population, less than half of the irrigation potential of the basin had been developed at the time. The most serious problem affecting the supply of water in the basin related to the presence of aquatic invasive species, particularly Typha, which was linked to the construction of the Diama dam. The proliferation of these invasive species constrained the irrigation channels and river arms from being used for irrigation, which threated food security in the region. In addition to their immediate economic and social impacts, the invasive species affected the ecological stability of the basin, as well as creating a habitat for vectors of waterborne diseases, manifested through an increase especially in the mosquito population, leading to widespread incidence of malaria and schistosomiasis.

Alignment with Strategy and Country Priorities:

The project's objectives were, and continue to be, substantially aligned with the World Bank Group's (WBG's) Country Partnership Frameworks (CPFs) for the four riparian countries, and the regional integration strategy at the time of project closing. They also were aligned to development plans of the four riparian countries, in the context of rural development, environmental management and cooperative management of the Senegal River Basin's water reso1urces.

<u>Guinea</u>: The project remained substantially relevant to the FY18-23 CPF for Guinea, especially to objectives 2 and 6 (improved management of mining, natural resources and biodiversity; and increased agricultural productivity and access to markets, respectively). The CPF recognized the importance of ensuring the sustainable use of natural resources and the environment to increase agricultural productivity.

Additionally, the country's 2016-20 National Plan for Economic and Social Development (PNDES) identified sustainable management of natural capital as a key pillar for the country's development. The PDO was also highly relevant to Guinea's Nationally Determined Contribution (NDC), which included commitments to preserve the quality & quantity of water resources for the benefit of the population, and to put into place measures necessary to protect, conserve and manage ecosystems.

<u>Mali</u>: The project was relevant to Mali's CPF for FY16-19 (which was extended to be effective through FY22). Through its focus on improving environmental quality, reducing risk of natural resource degradation, and strengthening capacity to implement water resources management, the project supported the CPF Objective 2.1 (improving productive capacity of farmers) and Objective 3.2 (reducing vulnerability to adapting to climate shocks).

Additionally, the project was consistent with the country's priorities, with particular emphasis on Mali's objectives of nutritional and food security, natural resource management and environmental protection, as reflected in its Agricultural Development Policy and National Agriculture Sector Investment Plan. It was consistent with the aims of Mali's NDC of reducing emissions from land use change and deforestation by 39 percent by 2030.

<u>Mauritania</u>: The project was substantially relevant to Mauritania's CPF for FY18-23, notably Objective 1.2, on increasing agriculture and livestock production in the face of climate change. Expected outcomes included land area under (a) new and improved irrigation, and (b) sustainable land management practices.

The project's objectives were consistent with Mauritania's 'Strategy for Shared Prosperity and Accelerated Growth (2016-30)', especially strategic area 8.1: "Preservation and stewardship of natural resources". It was also aligned with the country's mitigation and adaptation priorities as expressed in its NDC.

<u>Senegal</u>: The project's development objective was generally consistent with the CPF for the country for FY20-24, especially Objective 3.1 – on promoting and protecting resilient households, ecosystems and infrastructures in the face of climate change; and the importance of leveraging regional approaches and resources to support economic development.

The PDO was consistent with Senegal's National Development Plan, currently in its second implementation phase, especially under the second pillar of promoting environmentally sustainable developmet, including confronting the degradation of the country's land and water resources. Senegal's NDC aimed to build resilience of ecosystems and productive activities such as agriculture to climate shocks.

Regional Integration: The project's development objective was aligned with the WBG's Regional Integration and Cooperation Assistance Strategy (Update for FY21-23). Especially relevant was Focus Area 4 (transboundary water and natural resources management) under Strategic Pillar 4: Reinforcing Resilience.

Based on the above, the relevance of objectives is rated Substantial.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

"To strengthen the capacity of OMVS (Senegal River Basin Organization) and local water user associations to improve the environmental and water quality conditions of the Senegal River"

Rationale

Theory of Change:

The ICR presents (p.7) a diagrammatic visualization of the theory of change (TOC), depicting the causal links between the various activities supported by the project, the intermediate results and ultimate outcomes. The activities included: (a) Restoration of the main headwaters of the Senegal river and protection of river banks, (b) Control and management of the proliferation of typha, along with improving access to drinking water and strengthening of water user associations (WUAs), (c) strengthening the capacity of OMVS and national agencies to lead management of invasive species in the region. It was expected that these efforts would result in (i) the implementation of soil and water resource protection approaches, as well as the development of diagnostic studies; (ii) the removal of typha from infested areas, installation of a number of potable water stations, and training of WUAs in aquatic invasive species management; (iii) Strengthening of capacity and

information base to manage invasive aquatic species. These intermediate outcomes could be expected in turn to lead to (a) Strengthened capacity of OMVS and local WUAs to improve environmental quality (Note: This was later modified at restructuring to reducing erosion in the Upper Basin); and (b) Strengthened capacity of OMVS and local WUAs to improve water quality (later modified at restructuring to reducing proliferation of typha in the Lower Basin). The longer-term higher level outcomes of this were expected to be: The sustainable use of land and water resources; enhanced agricultural productivity and income; improved ecosystem conditions, and improved water sector capacity and culture to manage environmental threats.

While the activities appear appropriate to achieving the desired outcomes, it should be noted that the theory of change (TOC) discussion in the ICR does not specifically analyze whether they were of adequate scale to create a critical mass for change. The results framework initially appeared to reflect the results chain and was appropriate to measure the outcomes being sought. Modifications were introduced during restructuring, intended to better align the key performance indicators (KPIs) with the revised PDO. One indicator that was dropped at restructuring however related to the number of operational water user associations created or strengthened – which appeared to undermine the linkage between the role of OMVS and the WUAs and the end results in terms of improved environmental quality and/or soil erosion.

Outputs: The project achieved the following outputs:

- 1. 2,750 meters of river banks were restored from erosion by project closing, in excess of the target of 1,000 meters.
- 2. 24 operational water user organizations were created/strengthened, against a target number of 50.
- 3. 8 drinking water supply equipment installed, achieving a pre-restructuring target of 8.

Outcomes:

The project partially achieved its objective of improving environmental conditions in the river basin. strengthening the institutional framework for regional cooperation in the Niger River Basin.

- a) 1,989 hectares of land area were stabilized through agro-forestry development and reforestation, against a pre-restructuring target of 2,800 hectares.
- b) 2,600 hectares of land were brought under improved irrigation and drainage services due to typha removal, against a pre-restructuring target 15,000 hectares.
- c) There were 91,569 direct project beneficiaries at closing (46 percent female), against a pre-restructuring target of 40,000 (51 percent female). These were primarily beneficiaries of agro-forestry activities.

Based on this, efficacy, pre-restructuring, is rated Modest.

Rating Modest

OBJECTIVE 1 REVISION 1

Revised Objective

"To strengthen the capacity of the OMVS and local user associations for reducing erosion in the Upper Basin and proliferation of typha in the lower Basin of the Senegal river"

Revised Rationale

The original KPIs were changed twice during the project period to better align the results that could realistically be achieved by the closing date. This was partly reflected by the fact that the project design was found to be overly ambitious, making some of the targets unavailable in the time frame of the operation, and Covid-19-related delays. In this way, several indicator targets were revised downwards, especially after the second restructuring, to make them more easily attainable.

Outputs: The project achieved the following outputs:

- 1. 2 Typha assessments were completed by closing (being completed and delivered in 2019 and 2021), achieving the target set in 2018.
- 2. Typha Spatial Distribution reports produced annually, using remote sensing data.
- 3. 8 committees for drinking water supply point management established, with the following number of people in neighboring countries benefiting from drinking water supply points: 2,539 in Guinea, 6,865 in Mali, 8,200 in Senegal, and 3,526 in Mauritania.
- 4. 24 functional entities were in charge of typha management in the delta way short of the original target of 50, but in excess of the revised (2018) target of 10.

Outcomes:

- a. An area of 2,600 hectares with improved irrigation and drainage services due to typha removal was achieved much lower than the original target of 15,000 hectares but equal to the revised target (June, 2020) of 2,600 hectares. While these typha removal activities were achieved at a much smaller scale than originally envisaged, the ICR argues (p.13) that they were expected to provide more sustainable and effective solutions to typha infestation, on account of a change in approach to canal resizing so as to increase flow velocities.
- b. 1,989 hectares of land area were stabilized through agro-forestry development and reforestation, against a revised (June, 2020) target of 1,100 hectares.
- c. There were 91,569 direct project beneficiaries at closing (46 percent female), against a post second-restructuring target of 40,000 (45 percent female). As well as of agro-forestry activities, these were beneficiaries of the drinking water initiatives.

Post-restructuring, the project's efficacy is rated substantial after the first restructuring in 2018, and High after the second restructuring in June, 2020. Overall, the operation succeeded in creating the foundations for more technically and financially sustainable typha management through implementation of a more novel (though more expensive) technical approach based on canal resizing; capacity building for typha monitoring and

management at the regional (OMVS) and local entity levels; and development of a road map for strengthening institutional coordination around typha management, including development of a financing plan for managing typha.

Revised Rating Substantial

OVERALL EFFICACY

Rationale

The project modestly achieved its objectives prior to restructuring, and substantially achieved them after restructuring. Disbursements were 21 percent pre-restructuring and 51 percent and 28 percent respectively, post-restructuring (2018 and 2020). On this basis, overall efficacy is rated Substantial.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic and Financial Efficiency

Economic benefits arising from the project (in terms of typha removal and sustainable land management practices) were smaller than anticipated at appraisal, on account of the fact that the total area benefiting from project interventions was reduced during the two restructurings. That said, actual economic benefits assessed at appraisal were probably underestimated to some extent, as they did not take into account the benefits arising from irrigated agriculture after typha removal, from water source protection arising from more sustainable land management, and the larger-than-expected number of beneficiaries from the drinking water supply initiatives.

On this basis, the ICR estimated economic benefits for Component 1 by the same methodology of the PAD; however, for Component 2, benefits arising from sale of agroforestry products in the upper catchment, from improved access to irrigation and drainage services owing to typha-free canals, and from access to drinking water supply points, were taken into account. The economic internal rate of return (EIRR), which was estimated at 18 percent at appraisal, was estimated by the ICR at 17 percent. The net present value (NPV) at appraisal was estimated at \$2.12 million at a discount rate of 12 percent, while at closing was estimated at a much lower \$6,099. The ICR mentions (p.15) that the project very possibly generated additional economic benefits in the form of carbon sequestration from sustainable land management, improved ecosystem health, enhanced job opportunities from agroforestry and improved land management practices. However, these were not taken into account.

Administrative and Operational Efficiency

Final project costs were in line with the original estimates. However, as mentioned above, the area benefiting from project interventions turned out to be much lower than planned at appraisal. The project's implementation period was also extended by 27 months, though this was in part on account of Covid-related delays.

Based on the above, the project's efficiency is rated 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	✓	18.00	0 ☑ Not Applicable
ICR Estimate	✓	17.00	0 ☑ Not Applicable

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

6. Outcome

The project's objectives were Substantially relevant to the World Bank Group's Country Partnership Frameworks for the four riparian countries and the regional integration strategy. Overall efficacy was Modest prior to restructuring (disbursement 21 percent), Substantial after the first restructuring (disbursement 51 percent) and High after the second restructuring (28 percent). The project was found to be Modestly efficient. A split evaluation is applied to the assessment of overall project outcome, prorated by the shares of disbursement. Rating the achievement of outcome as 2 (on a six-point scale) pre-restructuring, and 4 in each of the two subsequent periods, overall efficacy works out to $(2 \times 0.21 + 4 \times 0.51 + 4 \times 0.28 = 3.58$, rounded out to 4, or Moderately Satisfactory.

a. Outcome Rating
Moderately Satisfactory

7. Risk to Development Outcome

Since OMVS depends, from a financing perspective, on external contributions from donors to support its activities, its ability to continue maintaining the project's key activities remains unclear after project

closing. OMVS is however taking steps to incentivize member countries to regularly contribute to its operations and tap into new sources of funding (ICR, p.23).

At the institutional level, some risks pertain to the sustainability of community-based functional entities in charge of developing and implementing typha management plans. The sustainability of these entities depends upon such factors as the acceptance and engagement of farmers to their perceived effectiveness and overall increases in yields among members.

From a social and environmental perspective, some risks could emanate from the breakdown of community interest and ownership of results, particularly for sustainable land management in the upper catchment, and subsequent environmental degradation. The strong support so far seen from beneficiaries suggests that this risk might however be low (ICR, p.24).

8. Assessment of Bank Performance

a. Quality-at-Entry

According to the ICR (p.22), the Bank team incorporated relevant lessons from previous operations in the design of the project. This included measures to address environmental, social and fiduciary aspects, and the putting in place of M&E arrangements. The World Bank's long experience working with OMVS also meant that policy and institutional aspects were given due consideration during project preparation.

That said, the ICR (pgs. 22-23) did however identify shortcomings in design and appraisal of the operation. For one thing, the timeline and design of the project were too ambitious and did not fully take into account the recommendations of preparatory studies on the duration and effectiveness of proposed activities. Secondly, the wording of the PDO was felt to be too vague, ultimately resulting in its change via restructuring. Thirdly, the expected stream of benefits in the economic analysis was based on relatively optimistic assumptions relating to turning typha into dried biomass/charcoal, and did not take sufficient account of the project's potential benefits of securing irrigated agricultural production.

Quality-at-Entry Rating Moderately Satisfactory

b. Quality of supervision

According to the ICR (p.23), the Bank team provided high quality implementation support, especially on technical, safeguards and fiduciary issues. The team was able to adapt the design of the operation and the Results Framework based on new evidence when it materialized during implementation and in light of changes in external conditions. In this way, the course corrections made by the team helped ensure a more logical connection between activities and results. The team worked with the implementing agency to refocus project activities and ensure their effective implementation.

That said, the ICR notes (p.23) that the first restructuring could have been more strategic in identifying project bottlenecks and issues with the Results Framework's ambiguous and ill-defined indicators.

Quality of Supervision Rating Moderately Satisfactory

Overall Bank Performance Rating Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The design of the M&E system and the results framework was adequate to monitor and evaluate the performance of the project's activities. The experience of the implementing agency meant that overall methodology for data collection and verification was sound. This was reinforced by internal audits and reports, which helped the team course-correct during implementation. However, according to the ICR (p.21), the results framework could have been better defined. Some of the PDO indicators and targets could have been framed more clearly to avoid ambiguities: for instance, two intermediate indicators ("Remote sensing system for typha management are put in place" and "Mapping, modelling and other analytical tools invasive aquatic species are developed" ended up tracking the same results. Also, some indicators were felt to have needed better definition, as in the case of "operational" WUAs. The fact that the M&E design lacked specificity was also noted in the 2018 Restructuring Paper.

b. M&E Implementation

M&E data were collected and analyzed in a generally sound manner, as noted in various ISRs. Functioning mechanisms – including remote monitoring - were in place to ensure data flow between OMVS and the NGOs supporting implementation of Component 1. The ICR notes (para 59) some shortcomings however in the availability of data collected, with some not yet being available in the public domain (e.g. satellite images of areas targeted for typha monitoring) and the absence of a household survey at completion. No indicator was created (and hence no data collected) on the project's activities in developing community governance mechanisms to manage and operate the drinking water points installed under the project.

c. M&E Utilization

Although the two restructurings allowed for some shortcomings in the results framework to be addressed, according to the ICR (para 60) some inconsistencies remained. Some targets were lowered by a significant degree, allowing them to be overachieved, suggesting that there were some shortcomings in M&E utilization.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

Since the operation was intended to improve environmental impacts in the project area, the project was classified as Environmental Category B, with limited adverse environmental impacts – mainly during the construction mechanical removal phase. Six environmental safeguards policies were triggered: Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Forests (OP/BP 4.36), Pest Management (OP 4.09), Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.12). During preparation, the Environmental & Social Impact Assessment, the Resettlement Policy Framework, and the Pest and Pesticide Management Plan were developed and consulted upon. During implementation, project compliance with the Bank's environmental safeguards policies was satisfactory and no major environmental and social issues arose. No resettlement took place due to the project. Though OP 7.50 (International Waterways) was triggered, the appropriate notification procedures were followed, and no objections were received from the riparian countries.

b. Fiduciary Compliance

Financial Management (FM): The ICR (Para 62) does not provide any details of the project's financial management arrangements, other than noting that they were compliant, highlighting the capacity of the implementing agency. The ICR does not specify whether audits were completed on timely basis, or whether external auditors' opinions were qualified or not.

Procurement: The ICR similarly (para 62) notes that OMVS played an important role in ensuring that procurement complied with the provisions of the Grant Agreement and was found to be satisfactory.

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	Modest	Modest
Quality of ICR		Substantial

12. Lessons

IEG derives the following lessons drawn from the ICR:

- 1. Long term support to regional organizations is key to advancing water security: Long term support to regional organizations is key to implementing integrated water resources management measures (e.g. introduction of sustainable land management), which can help mitigate and adapt to climate change. Because the impact of such measures is basin-wide, regional organizations are well placed to coordinate their implementation, so as to maximize benefits for all riparian countries involved, and to avoid some of the effects of political instability that might otherwise prevail.
- 2. Control of invasive aquatic species necessitates going beyond mechanical removal: The persistent challenge posed by invasive aquatic species calls for a sequenced approach, from needs assessment to implementation, supported by monitoring frameworks, in lieu of ad hoc approaches based on mechanical removal. Use of comprehensive and innovative approaches to prevention and eradication, e.g. through changes in irrigation and drainage infrastructure design, including resizing of canals to increase flow velocities, can be more effective in the long run.
- 3. Institutional strengthening activities for water resources and typha management need to capitalize on existing governance arrangements. The project promoted community-level engagement and participation, to ensure the long-term sustainability of measures for removal of typha, and to build awareness of risks associated with invasive aquatic species and required responses. WUAs are not present in all riparian countries for instance Mauritania, where agricultural cooperatives were tasked with canal operation and maintenance. The initial focus of the project being on WUAs, meant that Mauritania's cooperatives were not identified as key actors involved in the management of typha something that was addressed only after the 2018 restructuring, which recognized the diversity of existing governance arrangements.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is clearly written, concise and consistent with guidelines. It provides adequate details of the project's activities and results. Its analysis is broadly evidence-based. A minor shortcoming however is that the ICR did

not adequate provide clarification on whether procurement arrangements complied with Bank policies and whether financial audits were completed on timely basis and were unqualified or not.

a. Quality of ICR Rating Substantial