PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: PIDA35322

Project Name	Senegal River Basin Integrated Water Resources Management Project (P153863)
Region	AFRICA
Country	Africa
Sector(s)	General water, sanitation and flood protection sector (45%), Public administration- Water, sanitation and flood protection (25%), He alth (20%), Irrigation and drainage (10%)
Theme(s)	Water resource management (40%), Environmental policies and institutions (25%), Other communicable diseases (20%), Regional integrat ion (15%)
Lending Instrument	Investment Project Financing
Project ID	P153863
Borrower(s)	OMVS - Organisation pour la Mise en Valeur du Fleuve Senegal
Implementing Agency	OMVS
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	18-Nov-2015
Date PID Approved/Disclosed	20-Nov-2015
Estimated Date of Appraisal Completion	
Estimated Date of First Grant Approval	14-Dec-2015
Appraisal Review Decision (from Decision Note)	

I. Project Context

Country Context

The Senegal River, which is 1,800 km long, originates in the Fouta Djallon Mountain highlands of Guinea and flows through Mali, before forming the boundary between Mauritania and Senegal to its estuary on the Atlantic Ocean. The, 300,000 km2, Senegal River Basin has three distinct parts: (i) the upper basin, which is mountainous, (ii) the valley and the delta which are sources of biological diversity and (iii) the wetlands. The average annual rainfall for the Basin is 550 mm/year, the southern Guinean part records close to 1,500 mm/year compared to 200–250 mm/year in the northernmost part of the Basin. Hence, each year, the river transfers billions of cubic meters of water from the upper basin's regions with plentiful rainfall to the dry Sahelian regions of the valley and delta.

The four riparian countries of the Senegal River Basin rank among the poorest countries in the

world with 42-53% of the population living below the poverty line and a GNI per capita as low as $430 in Guinea. The total riparian population is estimated at 35 million inhabitants, of which 12 million live in the Basin. They are mostly subsistence or smallholder farmers and are therefore among the most vulnerable groups in the region. The population growth rate is estimated at 2.7 percent and the population is expected to double every 25 years.

Water resources play a major role in the river's ecosystem and in the Basin area's economic development. About 85% the Basin's population relies on the watershed for their livelihoods while approximately 700,000 in riparian communities of the Middle Valley depend on the estuarine environment. The river's main economic functions are electricity generation, navigation, irrigation, fisheries, drinking water and social functions.

Two major factors have exerted pressure on the Basin's water environment in recent years: (a) climate variability and change; and (b) infrastructure development (dam construction). These factors have had significant consequences on the Basin's natural environment and have been further intensified by demographic growth, and by the expansion of farming practices. Deforestation and erosion (including riverbank erosion, are serious problems particularly in the Upper Basin). In the upper part, the valley and the delta, there is a decrease in the vegetation cover and a loss of soil fertility, often due to anthropogenic causes. The deforestation phenomenon is worsened by wind action, rainfall deficits, increases in salinity, and the lack of drainage in the irrigated perimeters.

Climate change threatens to put pressure on water resources due to a possible increase in the already high variability in rainfall and river flows and changes to the geographical distribution of water resources, some areas possibly becoming drier, whilst others becoming wetter. Adaptation is complicated by the trans-boundary nature of water resources in the Senegal basin.

Although agriculture is the main economic activity for the majority of the population, less than half of the irrigation potential for the Basin is currently developed. There is still much which remains to be done to increase food security in the region through irrigated agriculture. The increased regulation of the Senegal River and associated infrastructure help to provide a regular supply of water for irrigated agriculture but have also resulted in altered estuarine and freshwater system dynamics which have led to losses of flood-recession agriculture, reduced pasture lands, degradation of fish populations, changes in forests downstream of Diama dam and river bank erosion in the upper valley.

One of the Senegal River Basin's most serious problems relates to the massive presence of aquatic invasive species (particularly typha), which is linked to the construction of the Diama dam. The dam has created a permanent and fairly stable freshwater body whose shores have been invaded by a dense growth of unwelcomed aquatic plants. These species form extensive meadows covering entire water surfaces, preventing oxygen and light penetration, thus severely impacting native fish species, particularly in the submerged zones. They also affect the productive capacity of the land as farmers can no longer use the irrigation channels and river arms for irrigation, which threatens food security. In addition to their immediate and visible economic and social impacts, the invasive species affect the ecological stability of the Senegal River Basin as well as productive activities (agriculture, fishing and livestock farming).

Another of the invasive plants' effects is the habitat they create for vectors of waterborne diseases. An increase in mosquito and snail populations resulted in widespread malaria and schistosomiasis

in the Basin, which severely impeded the health of the local population. Also, growing urbanization combined with lack of sanitation facilities has increased water pollution. The practice of drawing water from the river has become increasingly hazardous, particularly in the dry season (there has been increased use of pesticides and fertilizers in irrigation schemes in the valley). Data and information as well as awareness related to national and trans-boundary impacts of this pollution are scarce.

The propos ed Dutch Trust Fund, which is parallel financing to the Senegal River Basin Multi-Purpose Water Resources Development (MWRD2), is intended to address some of the issues identified above (the proliferation of typha, which leads to the clogging of irrigation canals; upstream erosion; and waterborne disease transmission-particularly schistosomiasis). MWRD2 is the second phase of a 10-year Program. Phase 1 of the program (MWRD1) has positively impacted the Basin across the agriculture, health and fisheries sectors. MWRD2 is currently co-financed by two grants from the Global Environmental Facility (GEF), the Least Developed Countries Trust Fund for Climate Change. The new activities to be supported under this project will build upon previous Trust Funds and will be complementary to MWRD2 so as to mutually reinforce integrated water resources management and development to improve community livelihoods.

OMVS has previous experience working with the Dutch Government and has successfully implemented projects supported by two previous Dutch trust funds. The previous Trust Funds (TFs) provided institutional support at the regional, national and community levels and improved knowledge and monitoring and evaluation of water resources. The previous TF also supported: (i) the protection of public health through water supply reinforced livelihoods; (ii) capacity building for water user associations and irrigation cooperatives; and, (iii) river and irrigation channel clearance and slope stabilization.

The proposed project will expand the positive economic effects generated by MWRD2 and further contribute to poverty alleviation for local populations living along the Senegal River. Major benefits such as increased food security will continue to accrue from the development of hydro-agricultural activities. The project through the reduction of typha proliferation will result in increased cultivated area as well as increased crop productivity and the associated economic returns. In addition, crop diversification incorporating high value crops will lead to improved financial yield.

The indirect benefits of this Trust Fund are expected to be extensive. For example, typha management will lead to food security, as it will enable additional areas to be put into production for irrigated agriculture. Control of public health risks will improve productivity of the population; and, the erosion protection works will lead to the development of agroforestry activities driving the economic development of the region.

The overall zones of intervention for this project have been identified and prioritized to complement current activities in MWRD2 and have been developed to consolidate the achievements under the previous trust-funded projects

Sectoral and institutional Context

Sectoral context: In the Senegal River Basin sustainable development requires development in the

water and agriculture sectors while protecting local health and livelihoods. In addition, planning for development needs to be done including climate change scenarios. OMVS, which is one of the most advanced basin organizations in the region, fosters an environment conducive to investments and is well-positioned to undertake multi-sectoral investments, as those proposed in this Trust Fund. Within the Senegal River Basin, and beyond in the region, food insecurity is increasing in parallel with very sluggish development of the large potential irrigation development. The Basin has seen considerable migration of people due to worsening droughts and desertification since the early 1970s. Annual rainfall has a high variability between wet and dry seasons and also from year to year. Currently, irrigated farming remains limited to the middle and lower river valley between Mauritania and Senegal. Less than half of the irrigation potential for the Basin, estimated at 375,000 ha, is currently developed. Of the 130,000 ha to 140,000 ha that are developed, only 90,000 ha are really usable. Since 2007, the Dutch government has supported the OMVS to fight the aggressive invasive aquatic plants and to improve water resources management through training and supporting water user associations (WUAs) and irrigation cooperatives. Lost irrigated surfaces of land have been regained for agriculture, hence improving food security.

Continued support, through this project, will enable OMVS to consolidate its achievements to date as (financially and institutionally) sustainable local maintenance systems combined with regional monitoring and planning systems will be strengthened. . The 2nd Trust Fund developed a suite of methods for clearing typha and also investigated different options for minimizing the rate of typha reemergence. The post-project evaluation found that the cost per kilometer for typha clearing was too high. Considering the continuing severity of the infestation of aquatic invasive species, and the need to develop a cost-effective typha control system, the need to regularly update the remote sensing inventory of these species is urgent. Access to the latest advances in spatial information systems offers a sizable advantage to those who have it. The project will therefore support installation of a remote sensing system for local and regional planning and monitoring purposes. Water supply systems, installed under the previous Trust Fund, were chosen because of their potential efficiency, in the local context. A framework for establishing WUAs was also developed; WUAs were supported to put in place mechanisms for recovering capital and maintenance costs. The majority of WUAs formed and supported by the project have some level of functionality. Some WUAs are very active in channel/canal maintenance, managing water supplies and other development activities. However an evaluation in 2013 found that some WUAs are not effectively functioning as they suffer from internal conflict and are focused on internal politics rather than on the coordinated management of the hydraulic axes. The proposed Trust Fund will train WUAs on organizational management and on invasive aquatic species management.

Institutional Context: Organisation pour la Mise en Valeur du Fleuve Senegal (OMVS) has the mandate of securing countries' economies and reducing the vulnerability of peoples' livelihoods through coordinated water resources and energy development. OMVS was established in 1972 in the context of severe droughts, famine and degradation of the natural resource base. The current OMVS structure includes four countries: Guinea, Mali, Mauritania and Senegal. Guinea is a recent entrant since 2006. Following the Nouakchott Declaration of May 2003, which sets the strategic orientation for development of the Senegal River Basin, the OMVS vision for regional integration includes accelerating the development of multi-purpose water resources infrastructure to augment the availability of water and generate low cost hydroelectricity. OMVS is a strong, stable regional organization and critically important for regional integration in West Africa.

Since 1978, OMVS has formally adopted the principles of equality and equity, with the allocation

of benefits and costs based on the needs of the member states, their capacity to put to use the benefits provided by the river, and the actual uses derived from the river (Nguyen, 1982). Over this period OMVS has become a key river basin authority in the region, with influence beyond the Basin boundaries; for example it has hosted the African Network of Basin Organizations since its formation in 2002. As one of the most advanced basin organizations in the region, OMVS ensures an environment conducive to investments, particularly large water-related infrastructure. With a long-standing, established track record spanning more than 40 years, OMVS is well-positioned to undertake the multipurpose and multi-sectoral investments proposed in this program.

The inclusion of Guinea within OMVS in 2006 was a critical step for regional development and economic integration. This is only the second time the Bank has brokered such an agreement on international waters (the first time being the Indus Treaty). By joining OMVS, Guinea has benefited from the lifting of financial constraints to developing its significant hydropower potential, thereby strategically positioning itself in the West Africa Power Pool market. However the inclusion of Guinea also introduces a number of risks into the operations of OMVS due to the country's much lower capacity and critical position at the source of the Senegal River. Furthermore, the inclusion of Guinea provided an opportunity for OMVS to embark on a comprehensive program of legal and institutional reforms, incorporating environmental and social issues, among other aspects which were not fully considered at the initial establishment of the organization. The institutional reform of OMVS was completed with the implementation of a new organizational structure.

This new structure better positions the organization for the current and future challenges as well as strengthens the involvement of all stakeholders in the decision-making processes. This is important as other development issues come to the forefront of water resources management (e.g. health and climate change adaption) and more participation from civil society is demanded. The management and the development of water resources in the Basin are carried out within the framework of the OMVS. As previously mentioned, the proposed project is intended as co-financing to the second phase of the 10-year Senegal River Basin Multi-Purpose Water Resources Development (MWRD2) Project. MWRD1 positively impacted the Basin across the energy, environment, agriculture, health and fisheries sectors. There have also been important contributions at the regional level for improved water resources management and it is expected that MWRD2 and this proposed project will scale up these positive impacts

II. Proposed Development Objectives

The development objective of the Senegal River Basin Integrated Water Management Project is to strengthen the capacity of OMVS and local water user associations to improve the environmental and water quality conditions of the Senegal River’s water resources.

III. Project Description

Component Name

Upper Basin Sustainable Land Management

Comments (optional)

This component aims to address the challenge of degradation in the upper basin through 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 the sustainable reversal of the process of deforestation and erosion in the Térékolé/Kolimbine/Lac-Magui system (TKLM) north of Kayes. In addition, the river banks protecting Kayes will be restored, continuing work initiated in TF2. This first

component will support the following sub-components:
Sub-component 1.1: Diagnostic studies on deforestation, erosion and sedimentation in the upper basin (Guinea and Mali)
Sub-component 1.2: Implementation of effective soil and water resource protection strategies

Component Name
Management of Invasive Aquatic Plants in the Delta and the Operationalization of Water User Associations (WUAs)
Comments (optional)
This component aims to control and manage the proliferation of Typha to a level where it does not constitute a threat to the ecological balance and to economic activities in the basin. This component also aims to improve access to drinking water and to operationalize WUAs in continuity with the activities from TF1 and TF2. Specifically, this component will support the following sub-components:
Sub-component 2.1: Completion of a needs assessment on the control of invasive aquatic species in the Delta
Sub-component 2.2: Invasive aquatic plant management
Sub-component 2.3: Installation of potable water supply stations in project area villages
Sub-component 2.4: Training and support to existing WUAs

Component Name
Institutional Support for OMVS and National Agencies
Comments (optional)
This component aims to build the capacity and skills of OMVS and National Cellule staff through training and the exchange of lessons learned. The component will support the management and implementation of regional and state level activities. This will primarily target the OMVS bodies responsible for implementing the program. The component will also target national technical services to support the activities of the program based on areas of expertise relevant to this project: environment, forestry, water resource management, and public health. This component will support the following sub-components:
Sub-component 3.1: Strengthening of the capacity of OMVS and national agencies to lead invasive species management efforts in the region
Sub-component 3.2: Strategic management of TF3.

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IV. Financing *(in USD Million)*

Total Project Cost:	15.10	Total Bank Financing:	0.00
Financing Gap:	0.00		

For Loans/Credits/Others	**Amount**
Borrower	0.00
Free-standing TFs AFR COUNTRY DEPARTMENT, West 1	15.10
Total	15.10

V. Implementation
The project will be anchored at the regional level and implemented by OMVS. The Bank will enter into a project agreement with OMVS. The proceeds of the Dutch Trust Fund will be made available to OMVS under grant agreements between each of the countries and OMVS. A brief summary of the implementation arrangement is provided here. Further details are given in Annex 3, including

the legal and organizational framework of the institutions.

The High Commission is the executive branch of OMVS, reporting to the Council of Ministers, which has the mandate to regulate and monitor water-related development in the Senegal River Basin on behalf of the riparian states. At the national level, the OMVS constituency is based on the national cellules. Each national cellule assists in the implementation and monitoring of OMVS projects and the national cellule coordinator is a permanent member of the advisory body of OMVS.

OMVS will ensure the overall coordination and supervision of TF3 on behalf of the four riparian countries. A Regional Steering Committee, established by the Council of Ministers, will maintain oversight of all initiatives supported by the Dutch Trust Fund. National cellules will coordinate and supervise activities implemented at a national level. OMVS will continue to have full autonomy and responsibility to conduct the review of the quality of all procurement processes for works, goods and consulting services, irrespective of the cost estimate. OMVS will also continue to coordinate with executing agencies and will be responsible for overall fiduciary management.

The PCU established under MWRD1 will continue to support technical implementation, procurement, financial management, and administrative arrangements as well as convening implementing partners for meetings, evaluations and the exchange of ideas and lessons learned. The team previously responsible for the implementation of the Dutch Trust Fund will be merged with the PCU to ensure coherence between all the projects and to reduce overhead costs.

At the national level, a technical focal point has been appointed to each national cellule to improve accountability in the monitoring of the project implementation at the national level. The national cellules will also provide key input to the review process of activities undertaken at the regional level to ensure that national interests are being adequately taken into consideration.

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
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	×	
Indigenous Peoples OP/BP 4.10		×
Involuntary Resettlement OP/BP 4.12	×	
Safety of Dams OP/BP 4.37		×
Projects on International Waterways OP/BP 7.50	×	
Projects in Disputed Areas OP/BP 7.60		×

Comments (optional)

VII. Contact point

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