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ENHANCED CROSSBOUNDARY WATER RESOURCE MANAGEMENT IN THE SENEGAL RIVER BASIN

September 2019

SDGs:



Countries:

Guinea, Mali, Mauritania, Senegal

Project Codes:

TCP/INT/3602

FAO Contribution:

USD 500 000

Duration:

14 July 2016 – 31 December 2018

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Implementing Partner

Senegal River Basin Development Authority (OMVS).

Beneficiaries

Farming and fishing communities whose livelihoods depend upon agriculture and water, as well as OMVS staff and the governments of its member states.

Country Programming Framework

The CPF results are outlined below.

Guinea: CPF 2013-2017 Priority Area 1 – Strengthening food security and nutrition.

Senegal: CPF 2013-2017 Priority Area 1 – Strengthening capacities for improved food security governance and improved agricultural productivity and competitiveness.

Mali: CPF 2013-2017 Priority Area 2 – Sustainable natural resources management and improvement of the environment.

Mauritania: CPF 2013-2016 Priority Area 1 – Promoting rural and peri-urban economies that are socio-economically profitable, diversified and adapted to climate change.

Project activities also fell within the following regional initiatives:

RI 2: Sustainable development of the strengthening of production and of the value chain in Africa.

RI 3: Water Security Initiative in the Middle East and North Africa (WSI).



BACKGROUND

Livelihoods across a large portion of sub-Saharan Africa are dependent upon rainfed agriculture, with only a small percentage of arable land benefiting from irrigation. Agricultural growth has been constrained by the pressures placed on land through rapid population growth, migration, displacement caused by localized conflict, price volatility, desertification and flooding, among other factors. With land and water resources dwindling through erosion and rising demand for food, forage, timber and water, poverty has become generalized, in particular in rural areas.

The Senegal River Basin represents Guinea, Mali, Mauritania and Senegal. Poverty in this region remains high, with the quality of life among the lowest on the continent. The Human Development Index (HDI) scores for each of the four countries put them in the bottom 25 percent of global rankings.

The initiatives carried out by the Economic Community of West African States (ECOWAS) at national and regional levels, together with the river basin-level activities conducted by the OMVS, helped to strengthen resilience to drought and climate uncertainty among the population living in the Senegal River Basin, as well as improving livelihoods. The OMVS provides a positive example of the equitable sharing of water resources, through the development and management activities carried out by countries forming part of a cross-border river basin. The aim of the present project was to strengthen these efforts.

The water in the Senegal River Basin is divided among the sectors linked to livelihoods in the region, namely farming and agropastoral areas, fishing areas, water provision for local authorities and hydroelectricity. In the countries located along the basin, water shortages are largely the result of a lack of infrastructure and the inability to access a large proportion of the water available, as opposed to material shortages. With the level of water use along the Senegal River relatively weak, the development of water infrastructure was expected to facilitate greater use of the available water resources and help to reduce shortages.

As a result of the previous projects and programmes implemented in the Basin, progress has been made in cross-border water management and infrastructure development. More recently, in the framework of the Integrated Water Resources Management Programme (PGIRE), support has been provided towards the improvement of multisectoral planning (in particular in the fields of agriculture, fishing and hydroelectricity). One of the outputs of this programme was the Master Plan for Water Resources Management on the Senegal River (SDAGE), which aims to enhance water resource development, while mitigating the negative effects of socio-economic development. Despite this, a number of SDAGE priority areas were still to be implemented, given the wide scope of the programme and the need for technical support and capacity-building within the OMVS. In this context, the present project aimed to strengthen the technical capacities needed to improve cross-border management of water resources in the Senegal River Basin. This was to be achieved through (i) tools to improve the multipurpose management of water resources (in particular hydro-agricultural and fishing areas), (ii) the establishment of hydro-economic modelling for the Senegal River Basin and its sub-basins, as well as enhanced understanding of the advantages of joint water resource management, (iii) the identification of cross-border investments to improve cooperative and shared management of water resources, and (iv) the evaluation of trade-offs between the use of water for energy production, on the one hand, and for the development of agriculture and fisheries, on the other.

IMPACT

The expected impact of the project was to contribute to improved agricultural development and food security along the Senegal River Basin.

ACHIEVEMENT OF RESULTS

The project outcome, namely enhanced cross-boundary water resources management in the Senegal River Basin, was achieved and implemented according to the targets indicated. Specifically, the capacities of the OMVS and its member countries were effectively enhanced through a number of dedicated training workshops addressed to professionals at basin and country level. In addition, the project introduced a number of initiatives to the region, including hydro-economic modelling, trade offs between water for energy production and water for agriculture/fisheries development and the diagnosis of investment at both basin and country levels.

The project outputs, meanwhile, were all achieved as planned.

IMPLEMENTATION OF WORK PLAN

Project activities were generally implemented on time. However, national consultants experienced some difficulties in the collection of data, resulting in a number of delays. These, in turn, were remedied through the extension of the project period.

The total project budget of USD 500 000 was allocated by FAO.

No environmental or social risks threatened to materialize as a result of the project's activities. The risk of a lack of engagement on the part of national institutions was mitigated through the active involvement of their members in project activities.

FOLLOW-UP FOR GOVERNMENT ATTENTION

A regular update of the Basin's geo-referenced database is needed. OMVS is the organization to carry out this update regularly.

It is suggested that the Diagnostic Tool for Investment (DTI) be further exploited, incorporating the possibility to compute and compare data, not only at national level, but also at regional/basin level, supporting policy processes by providing comprehensive analysis at different scales.

Efforts are recommended to build on the project's experience in order to strengthen participatory processes in support of effective decision-making, thereby engaging the relevant stakeholders at national, regional and basin level.

SUSTAINABILITY

1. Capacity development

The policies and legislation currently in place in the Basin countries proved effective in supporting the project's sustainability in the medium to long term. It is advisable, however, to draw on the current project to further support water resource management at basin level, thereby strengthening the capacities of regional organizations in this area. Although the Senegal River Basin is not in a conflict situation in terms of its resource management, careful attention should be given to its future planning to ensure that no such conflict occurs.

The project proved highly effective in establishing a fruitful partnership with the OMVS, the organization in charge of water resource management. This will strengthen the long-term sustainability of the project.

The capacity developed, the new knowledge introduced in terms of planning and the excellent partnership established with the OMVS all point to a solid and sustainable exit strategy for the project.

2. Gender equality

Project activities met the needs identified at the design stage for both men and women, as shown, in particular, in the equal participation in the project's training/dialogue activities.

The results achieved equally benefited men and women and responded specifically to FAO's Gender Equality Objective 1, "Women participate equally with men as decision-makers in rural institutions and in shaping laws, policies, and programmes".

3. Environmental sustainability

Environmental sustainability was effectively addressed throughout all project activities, which enhanced the opportunity to mainstream the issue within the countries' organizations, as well as within the regional institution.

4. Technological sustainability

The different training workshops conducted within the framework of the project provided the professional communities of the OMVS and the Senegal River Basin countries with dedicated knowledge that proved particularly relevant to their needs.

These technological capacities could be complemented through further assistance, which could come in the form of online/digital tools that might enlarge the number of beneficiaries within the OMVS and the River Basin countries.

5. Economic sustainability

The products and services developed by the project, such as the river basin hydro-economic model and the geo-referenced database, are freeware systems that, as such, will not require financial resources for direct beneficiaries and/or the organizations addressed.



DOCUMENTS AND OUTREACH PRODUCTS

- ❑ Hydro-economic modelling for basin management of the Senegal River. M. Salman, C. Casarotto, A. Tilmant and J.F. Piña. Rome. 2018. 12 pp.
- ❑ Trading-off food production, hydropower and navigation in the Senegal River Basin. A. Tilmant, J.F. Piña, C. Casarotto, E. Pek, A.L. Ndiaye and M. Salman. Rome. 2018. 23 pp.
- ❑ Senegal River Basin Investment Profile. E. Pek, B.A. Ould Ahmed, D.A. Yagouba, F. Dieng, D. Coulibaly and M. Salman. Rome. 2018. 214 pp.
- ❑ The following dedicated presentations were illustrated during the International Conference on Irrigation and Drainage (Saskatoon, Canada – 15 August 2018):
 - ❑ Hydro-economic modelling for transboundary river basin management.
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/1-Senegal_ICID_Intro-Salman.pdf
 - ❑ Decision making at the river basin level: OMVS.
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/2-Senegal_ICID_OMVSLamine.pdf
 - ❑ Setting the scene: How can hydro-economic models help policy making?
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/3-Senegal_ICID_HEMsClaudia.pdf
 - ❑ Overcoming barriers between hydro-economic models and policy applications.
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/4-Senegal_ICID_Ward.pdf
 - ❑ Trade-off assessment in the Senegal River Basin.
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/5-Senegal_ICID_SRBAMAury.pdf
 - ❑ HEM for identifying water resources vulnerabilities in data-scarce basins: The case of the Tigris Euphrates River Basin.
http://www.fao.org/fileadmin/user_upload/faowater/docs/saskatoon/6-Senegal_ICID_TCHARles.pdf



ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Contribute to improved agricultural development and food security		
Outcome	Enhanced cross-boundary water resources management in the Senegal River Basin		
	Improved capacities for OMVS and countries in multi-objective water resources management		
	Indicators	Target	Achieved
Output 1	<ul style="list-style-type: none"> – Number of policy meetings organized and led by FAO. – Number of technical meetings organized and led by FAO. 	<ul style="list-style-type: none"> – 1 round table, establishing a platform for dialogue between decision-makers on future cross-boundary water resources management, and formulating an agreed OMVS updated work plan, in close collaboration with project partners. – 2 training workshops on geo-referenced database management (25 participants) and on cross-boundary water management (20 participants) with participants from the river basin countries. – Basin geo-referenced database established. 	Yes
Baseline	0		
Comments	<p>One round table held with OMVS decision-makers and technical/financial partners on future cross-boundary resources management.</p> <p>One training workshop on cross-boundary water management with participants from river basin countries.</p> <p>One training workshop on geo-referenced database management and indications on future actions for database update and management.</p>		
	Update of the GIS database		
Activity 1.1	Achieved	Yes	
	Comments	A follow-up action, in the form of regular update of the basin geo-referenced database, is needed. OMVS is the organization to carry out this update regularly.	
	Training on GIS database maintenance		
Activity 1.2	Achieved	Yes	
	Comments	A regional training workshop on GIS systems was held in Conakry, Guinea from 9 to 12 April 2018, addressing OMVS professional and database management experts from the basin countries and at regional level.	
	Training on the management of transboundary water resources		
Activity 1.3	Achieved	Yes	
	Comments	A regional training workshop on the management of cross-boundary resources was held from 3 to 5 October 2018 in Dakar, Senegal, addressing OMVS experts, decision-makers at ministry level and researchers from national institutes.	
	OMVS-AgWA round table		
Activity 1.4	Achieved	Yes	
	Comments	A round table between FAO/Partnership for Agricultural Water for Africa (AgWA) and OMVS was convened on 6-7 December 2016 to discuss the management of transboundary water resources at basin level and to elaborate a detailed work plan in the framework of the project.	

Output 2	Hydro-economic model for the Senegal Basin established and increased understanding of benefits of joint water resources management		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> – Number of hydro-economic models developed to adopt practices that increase and improve provision of goods and services in the agricultural sector. – Number of databases related to water resources management multi-objectives and multi-users as a basis for assumptions for hydro-economic modelling in Guinea, Mali, Mauritania and Senegal. 	<ul style="list-style-type: none"> – One hydro-economic model elaborated. – Four databases related to water resources management multi-objectives and multi-users developed. 	Yes
Baseline	0		
Comments	A hydro-economic model was developed to present different scenarios for the optimal water allocation at basin level and thus support decision-makers.		
Activity 2.1	Collection, assessment and preparation of data for the modelling exercise		
	Achieved	Yes	
Activity 2.2	Formulation of the model and calibration		
	Achieved	Yes	
Activity 2.3	Preparation of an optimization plan for water resources management		
	Achieved	Yes	
	Comments	A number of scenarios for the management of transboundary water resources were developed, which are the foundation for an optimization plan, informing allocation policies at national and basin levels.	

Output 3	Cross-boundary investment areas identified		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> – Number of technical meetings organized and led by FAO. – Conclusions and recommendations on the regulations revision/analysis. – Analysis of the regulatory framework conducted with the support of the project. – Number of river basin profiles produced. 	<ul style="list-style-type: none"> – Two-day training on the DTI in agriculture and its application in the basin countries (20 participants). – One institutional, policy and financial diagnosis through the DTI to reflect the institutional, legal and policy harmonization of riparian countries. – One institutional, policy and financial diagnosis through the DTI to provide an approach to institutional, legal and policy harmonization and project-based estimation and prioritization of investments. – One river basin context profile. 	Yes
Baseline	0		
Comments	<p>A regional training workshop on the DTI was carried out from 1 to 2 October 2018 to introduce the tool and present the results stemming from its application to relevant actors from national institutions and OMVS. In addition, four National Investment Profiles and one Regional Investment Profile were developed, containing the institutional, policy and financial diagnosis of riparian countries as well as the project-based estimation.</p> <p>As a follow-up action, it is suggested that the DTI tool be further exploited to include the possibility to compute and compare data, not only at national level, but also at regional/basin level, supporting policy processes by providing comprehensive analysis at different scales.</p>		
Activity 3.1	Application of the context tools		
	Achieved	Yes	
Activity 3.2	Application of the institutional/policy tool		
	Achieved	Yes	
Activity 3.3	Application of the investment tool		
	Achieved	Yes	
Activity 3.4	Training on the DTI		
	Achieved	Yes	
	Comments	Following the collection activity at country level, data was reproduced in an Excel document, along with DTI input data files, and subsequently included in the elaborated National Investment Profile.	
	Comments	Difficulties were experienced in accessing national databases to collect the relevant information for this component.	
	Comments	Following the collection activity at country level, data was computed online through the DTI and related reports were produced.	
	Comments	A regional training session was organized to introduce the DTI tool and present national reports on relevant components.	

Output 4	Trade-offs between water for energy production and water for agriculture/fisheries development		
	Indicators	Target	Achieved
	Number of technical meetings organized and led by FAO.	One regional stakeholders' workshop to present trade-off assessment and project results.	Yes
Baseline	0		
Comments	<p>On the occasion of the International Conference on Irrigation and Drainage (ICID) in Canada (August 2018), dedicated sessions were organized to present trade-off assessments, as well as to discuss project results with the relevant stakeholders.</p> <p>As a follow-up action, it is advisable to build on the project's experience and participatory processes in support of effective decision-making, thereby engaging relevant stakeholders at national, regional and basin level.</p>		
Activity 4.1	Consultation on the assumptions and parameters of the trade-off analysis		
	Achieved	Yes	
Activity 4.2	Comments	Along with the preparation of the trade-off analysis, consultations with relevant authorities were held, thereby informing the final evaluation.	
	Evaluation of the trade-off analysis		
Activity 4.3	Achieved	Yes	
	Comments	A trade-off assessment at basin level was prepared and presented during the ICID Conference in Canada (15 August 2018).	
Activity 4.3	Stakeholders' consultation workshop		
	Achieved	Yes	
Activity 4.3	Comments	A stakeholders' consultation workshop took place during the ICID Conference in Saskatoon, Canada, in the presence of relevant actors and decision-makers.	

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