



Mauritania Water Sector M&E Rapid Assessment Report



MEWINA

مشروع المراقبة والتقييم لقطاع المياه بدول شمال أفريقيا
Monitoring and Evaluation for Water In North Africa



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Executive Summary

a. M&E assessment Summary

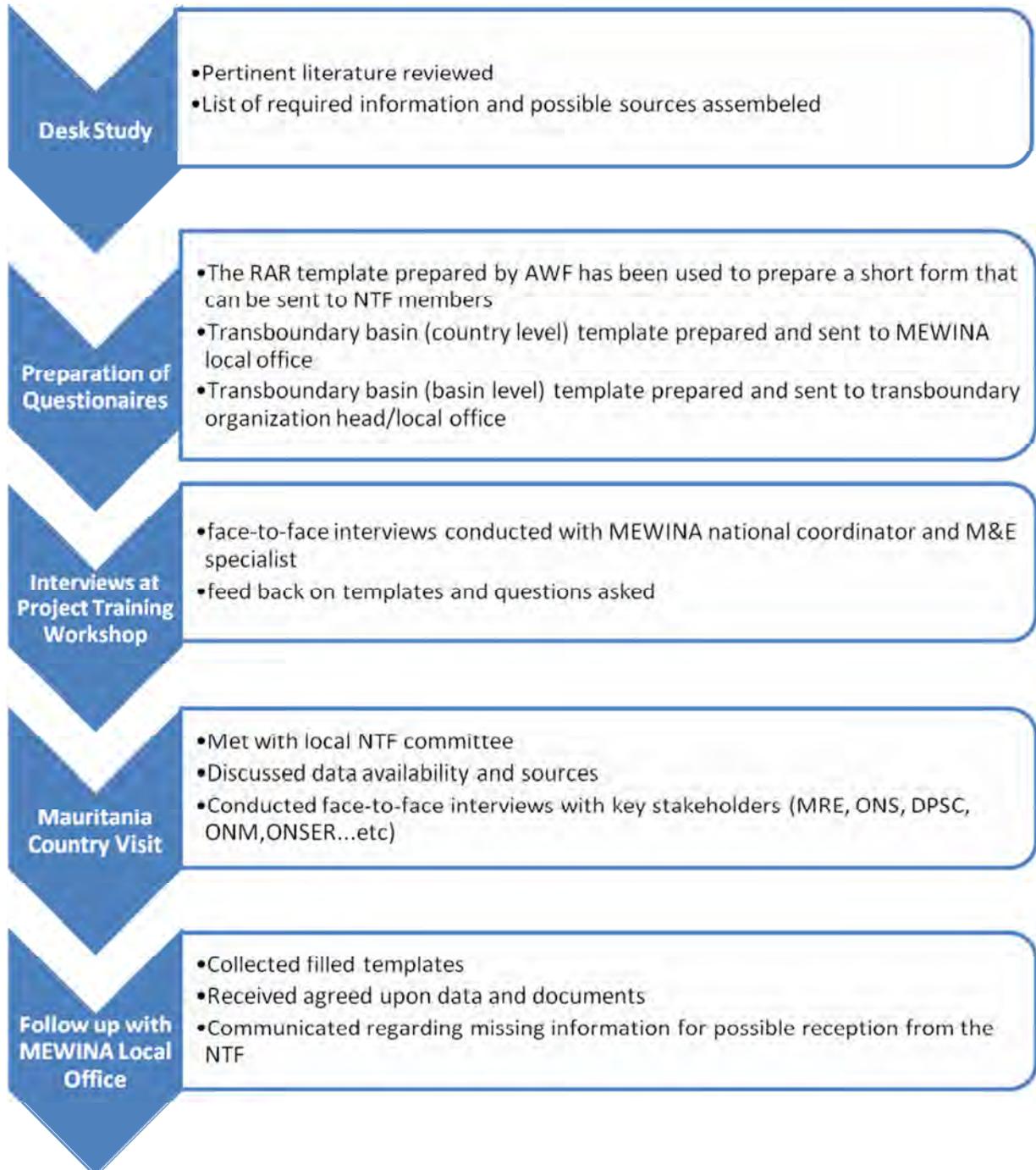
The Islamic Republic of Mauritania, in the north-western Africa. The country covers an area of 1,030,700Km² and most of the northern half of the country is desert and sparsely populated. The estimated population in 2011 stood at 3.43million inhabitants, 37 percent of rural areas. Density reported as 3.2inhabitants/km². Mauritania has one of the lowest GDP rates in Africa, despite being rich in natural resources. The water and sanitation sector in Mauritania is governed by a legal and organizational framework that arose out of the reform process which was embarked on at the beginning of the 2000s. This is leading to the final Law 2005-030 containing the Water Code was adopted on 2 February 2005 and since then has constituted the framework which defines, among other things, the legal arrangements applicable to water, places emphasis on the protection of water resources, and sets out the arrangements for delegation and contracting. The government is adopting the African Water Vision 2025 and MDGs as targets for the above policies and strategies influencing Monitoring and Evaluation of water sector. The water and sanitation sector in Mauritania has undergone restructuring which led to the creation of an institutional framework in line with the recommendations of the sector development strategy adopted in 2009 and the guidelines of the 2006-2010 PRSP (Poverty Reduction Strategy Framework) Plan. Water resources in Mauritania are divided between groundwater and surface water. There are significant groundwater resources in terms of quantity and quality, however, characterized by large geographical disparities. Most of Mauritania receives very little rainfall at any time of year, but the very southern edge reaches the semi-arid band called the Sahel and has a wet season between July and September when up to 200mm of rain fall per month. Main water supply system is found in the capital city Nouakchott, while other urban and rural areas have smaller dispersed water supply networks, most of which have been built in the last 10-20 years through international donors. The rate of drinking water coverage reached 52% in 2010 at the national level. The sewer system is embryonic and not always functional. In Nouakchott, two sewer systems are present: an operational network and non-network operational. The rate of sanitation coverage is 46% in 2010 at the national level. In Mauritania, there is an OMVS National Unit, which is the instrument through which the OMVS supervising Ministry of Water & Sanitation in Mauritania ensures the follow-up of the organization's activities.

Structured M&E framework: In the year 2009, the Ministry of Water & Sanitation funded the Directorate of Planning and Monitoring and Cooperation to (DSPC) to start formulating a framework for Monitoring & Evaluation (M&E) for the rural water supply sector (Attached in the appendix the final technical report). While this framework has not yet been set in action and stopped in 2011 due to lack of funding, it is very promising and is a good start point for establishing a national M&E system. In 2010, the Joint Poverty & Environmental Program in Mauritania specified the indicators that reflect the state or the evolution of an environmental resource through a dual approach. These indicators are intended to be used for monitoring policies and environmental resources of Mauritania. While these indicators are not an end in themselves; they must be used in given institutional context to support decision-making to improve the sustainable and efficient management of the water resources. According to the study of the environmental profile of Mauritania (2007), "The existing water resources information systems are scattered in the different structures and lack of harmonized standards. This prevents monitoring the state of the environment at the national level. "In many cases, existing systems are the result of poorly integrated projects still at the institution concerned. Despite a slow process of institutional integration of environment into development policy, some steps have been taken and important achievements can be

noted. A Catalogue of EIS in Mauritania (2005) has been completed and the Ministry of the Environment has initiated feasibility studies for a future environmental information system centralized with a documentation center and a system geographic Information environment (EMIS). Some of the existing IS use the same software ArcGIS, ArcView and MapInfo, which are powerful tools in a user-friendly, easily controllable and able to support many data formats. CNRE-SIPPE2: The center hosts an in-house SIPPE2 access database system that is used in storing all information related to groundwater using readings taken from wells from across the country. The SIPPE2 is linked to a geographical information system. While, the SIPPE2 cannot be described as an Information System, yet, it can form the nucleus of a very successful one if directed towards the right track with sustainable funding and a supportive wide monitoring network. The database of the Department of Rural Development (focal point of the Environmental Observatory/ OMVS) provides information on dams and their watersheds (surface water) and collects data on surface water. DPSC Information System: Lately the Ministry of Water & Sanitation launched an implementation program for an information system in rural & urban water supply and sanitation. Due to insufficient funds, the program is not yet implemented and generalized throughout water sector institutions, but simple infrastructure for the system are available at the Department of Planning Monitoring & Evaluation. The Information System is written in MySQL programming language with ability to be linked with SIPPE of the CNRE and ability to be fed by the monitoring key indicators. The following main issues confronting the development of effective water sector M&E systems can be stated as; Lack of strategy monitoring of natural resources; Lack of human resources for the management of some specialized areas of the WSS especially information management; The lack of financial resources allocated to the operation of structures for information systems such as GIS; No mechanisms for ensuring good governance, transparency and reporting of rural WSS projects. In terms of the rapid assessment undergone for the Mauritanian M&E in Water Sector; the following recommendations can be stated; A set of Indicators for monitoring water supply and sanitation have to be agreed upon and harmonized within the institutional framework of water sector; Harmonize methodologies of defining water and sanitation indicators with JMP; Implement a sector wide M&E plan with respect to water supply & Sanitation; Allocate financial resources for supporting existing databases such as DPSC MySQL database and SIPPE2 access database to be the initial step towards a single integrated Management Information System in water sector; Promote information sharing on status of water and sanitation for the GLASS (Global Annual Assessment of Sanitation & Drinking Water); Facilitate transparency in the communication and sharing of water and sanitation information amongst related institutions; Engage in regional & global monitoring initiatives and Develop and implement an efficient Information System with efficient ways of information dissemination in water and sanitation issues.

b. Methodology for Collecting Data

The time frame of the project is very limited for collecting all required data. As such, in order to speed up the data collection phase, Misr Consult has adopted the following methodology for data collection:



c. List of People & Organizations Interviewed

The following is a list of people and organizations interviewed during Mauritania country trip;

Organization	Key Persons	Title
Directorate of Hydraulics	Eng. Mohamed El Mokhtar mtarm2002@yahoo.com	General Director
	Eng. Mohamed Mahmoud	Head of Urban Water Sector
Directorate of Planning Monitoring & Evaluation	Eng. Ahmed Baba Ahh_28@yahoo.fr	Senior Water Engineer
	Eng Abdallah Fal dahivall@yahoo.fr	Information System Engineer
Directorate of Sanitation	Wedadi Ould ouldboililw@gmail.com	Adjoint Director
National Office for Water Services in Rural Areas, ONSER	Eng. Mohamed Leyraiwa mohamedvraiwe@yahoo.fr	Head of Information Sector
	Ibrahim Ould Hmayada onser@hydraulique.gov.mr	General Director
Societe Nationale de l'eau, SNDE	Eng. Bavall Ould bavallbavall@yahoo.fr	Head of Projects
National Office of Statistics	Mr. Ba Oumar Kalidou Ba.oumarkalidou@yahoo.fr	Director of Economic Statistics
Direction de l'Amenagement Rural	Eng. Djri ISarr	Surface Water Engineer
Ministry of Rural Development	Eng Ismail Ahmed	Head of Project Follow up and Evaluation
National Water Resources Center, CNRE	Eng. Saadu Ebih saaduebih@yahoo.fr	Director of Center
	Mr. Wage Oumarou	GIS Chief

d. Data Assessment

Providing this RAR will help raise awareness on the importance of data collection, annual estimation of performance indicators and their use in formulating strategic plans, policies, and action plans. Collected data can be categorized as follows:

- Governance information, including organograms, strategies, policies, action plans, memoranda of understanding, etc...
- Data on budgets, financial plans, and infrastructure financing, etc...
- Data on water resources (withdrawals and sectorial water use)
- Water supply and sanitation coverage
- Water quality information
- Census and demographics data
- Meteorological data, e.g. rainfall

Mauritania water sector has an advantage of having a small hierarchy for organization roles in data collection. This leads to having definite governmental bodies collecting data. Moreover, the agreement on the definition of indicators is not obvious amongst all water sector organizations. Most of the data for preparing the RAR were easily collected during the country visit and interview with related organizations. This was only possible by the sincere help and project endorsement by the Ministry of Water & Sanitation. The following data has been collected during country visit;

Organization	Document	Format	Language	Comments
Directorate of Hydraulics	Code de l'eau	Softcopy	French	Not fully enforced
	Rapport 2010 sur le progress vers l'atteinte des OMD			
	Strategie de Developpement du Secteur de l'Eau et de l'Assainissement			
Directorate of Planning Monitoring & Evaluation	Système d'information DPSC/MHA	Softcopy	French	Not yet implemented
	Status of 2012 water plan	Softcopy	Arabic	
Directorate of Sanitation	Politique Nationale d'Assainissement Liquide	Softcopy	French	
	Programme National d'Assainissement Rural 2005-2015	Softcopy	French	
National Office for Water Services in rural areas, ONSER	Rapport Activities 2011	Softcopy	French	
	Letters and communication reports	hardcopy	Arabic	
Societe Nationale de l'eau, SNDE				
National Office of Statistics	Annuaire Statistique			No actual statistics for

Organization	Document	Format	Language	Comments
	2011			population since 2005
Direction de l'Aménagement Rural				
Ministry of Rural Development				Promised to send us GIS maps for agricultural water fed areas but never did
National Water Resources Center, CNRE	SIPPE2 information system Guide	Softcopy	French	
	Database of groundwater wells in Mauritania	Softcopy	French	No quality checks, no frequent updates, no verification of available data

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1. Acronyms

ADB	African Development Bank;
ANEP	Agence Nationale de l'Eau potable et de l'Assainissement;
AMEXTIPE	Agence Mauritanienne d'Exécution des Travaux d'Intérêt Public et pour l'Emploi;
APAUS	Stratégie d'Accès Universel aux services régulés et au Plan d'Action;
BDD	Base de Données;
CNRE	Centre National des Ressources en Eau;
CLTS	Community-Led total sanitation;
CSLP	Cadre stratégique de lutte contre la pauvreté
DA	Department of Sanitation; Direction de l'Agriculture;
DH	Department of Hydraulics;
DHB	Department of Hydrology and Dams;
DHS	Household surveys;
DMG	Department of Mines and Geology;
DPSC	Direction des Politiques, de la Coopération et du Suivi Evaluation;
Drha	Regional Directorates of Water and Sanitation;
EES	Evaluation Environnementale Strategique;
EMIS	Management Information System;
ESRO	United States along the Senegal River;
GLAAS	Global Annual Assessment of Sanitation and Drinking-Water;
IWRM	Integrated Water Resources Management;
INRSP	National Institute of Public Health Research;
JMP	Joint Monitoring Program;
MDG	Millennium Development Goal;
MHA	Ministry of Water and Sanitation;
MICS	Multi Indicator Cluster Surveys;
MRO	Mauritanian Ouguiya;
MWRD	River Basin Multi-Purpose Water Resources Development Project;
NFPS	National Company of Drilling and Well;

NWRC	Department of Agriculture and Centre of Natural Water Resource;
OMVS	Organisation pour la Mise en Valeur du Fleuve Sénégal;
ODF	Open defecation-free;
ONAS	National Sanitation Office;
ONSER	National Rural Water Services;
PANA-RIM	Program of Action on Climate Change;
PASIE	Plan d'Atténuation et de Suivi des Impacts sur l'Environnement;
PDU	Projet de Développement Urbain;
PNAR	National rural sanitation programme;
PND	Parc National du Diawling;
PNS	National solidarity programme;
PRSP	Poverty Reduction Strategy Framework;
RBO	River Basin Organizations;
SIPPE2	Base de données points d'eau de la CNRE;
SNA	Stratégie Nationale d'Assainissement;
SNDE	Société Nationale de Distribution de l'Eau;
SOGEM	l'Agence de Gestion de l'Energie de Manantali;
SOGED	l'Agence de Gestion et d'Exploitation de DIAMA;
SONADER	Société Nationale pour le Développement Rural;
SWAPs	Sector Wide Approaches;

3. National Water Development Strategies and Policies

The water and sanitation sector in Mauritania is governed by a legal and organizational framework that arose out of the reform process which was embarked on at the beginning of the 2000s. This is leading to the final Law 2005-030 containing the Water Code was adopted on 2 February 2005 and since then has constituted the framework which defines, among other things, the legal arrangements applicable to water, places emphasis on the protection of water resources, and sets out the arrangements for delegation and contracting (Presidence de la Republique, 2005. Loi 2005-030 portant Code de l'eau. Republique Islamique de Mauritanie). The legislation governing the water sector in Mauritania can be summarized as;

- The Water Code (Ordinance n ° 85-144 of 4 July 1986) which defines the responsibility of the operator of irrigated areas regarding the rational use of water;
- Ordinance No. 87-289 of 20 October 1986, which establishes the new powers of the municipality, including the management of water infrastructure;
- Decree 93-124 of 21 December 1993 laying down the conditions for the management and exploitation concession equipment drinking water;
- Law No. 98-016 of 09 July 1998 on the participatory management of oases;
- 047-2002/PM Decree of 11 March 2002 laying down the duties of the MHE and the organization of the central administration of the department;
- Decree 2002-19 of 31 March 2002 on the recognition of the utility of AWSA and fixing its tax and customs;
- Decree 2002-20 of 31 March 2020 establishing water abstraction charges.
- Water Code No. 2005-030 of 2 February 2005 aiming to establish the legal form of water sector with respect to surface and ground water including the regulatory issues for water plan and conservation.
- 2007-009/Portant Decree establishing the National Council for Water and determining its modes of organization and operation .
- Statement of policy development in the water sector .
- Decree 2007-096/ criterion for domestic usage of water.
- Decree 2007-107/ the threshold condition and the delegation of public service water
- Decree 2007-047/Required conditions for creating conservation areas of strategic water resources.
- Decree 2007-008/conditions of implementation of mitigation measures for water usage
- Decree No. 2008-070 / the delegation of the public water supply to the Company National Drinking Water
- Water and Sanitation Strategy, 21 May, 2012 establishing the overall country strategy for water and sanitation sector

The government is adopting the African Water Vision 2025 and MDGs as targets for the above policies and strategies influencing Monitoring and Evaluation of water sector. According to the Statement of Mauritania (2012), the objectives of the sector-wide strategy are geared towards achieving the MDGs locally accepting the MDGs & JMP indicators for water supply (rate of access to drinking water) and sanitation (coverage rates and access to improved and unimproved latrines), (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Rapport 2010 sur les progress vers l'atteinte des OMD. SNU Mauritanie). The water and sanitation sector in Mauritania has undergone restructuring which led to the creation of

an institutional framework in line with the recommendations of the sector development strategy adopted in 2009 and the guidelines of the 2006-2010 PRSP (Poverty Reduction Strategy Framework) Plan. The chief objective of the national policy on water supply and sanitation during the implementation phases of the PRSP is now worded as follows: “improve access to water and sanitation both quantitatively and qualitatively, at affordable prices for all and in a sustainable manner.” (Poverty Reduction Action Plan 2006-2010, International Monetary Fund January 2007) While not being clearly integrated in the policies, Mauritania has made a fair progress in with regard to gender equality, women's empowerment, latitude to organize and manage irrigation, or engage in other activities such as marketing and processing of their products. They also have access to land which they can acquire through all available means (purchase, allotment by the government or local communities, inheritance, etc...) (Statement of Mauritania, Ministry of Water & Sanitation, High Level meeting, Washington DC 20 April 2012).

4. Water Sector Overview

a. Water Resources

Water resources in Mauritania are divided between groundwater and surface water. There are significant groundwater resource sin terms of quantity and quality, however, characterized by large geographical disparities. The main continuous sheets are located in the coastal sedimentary basin (Trarza Bennisab and Boulenoir) and in the southern part of the basin Taoudenni (water Dhar). The underground renewable water resources are estimated at 0.3billion m³. Most of Mauritania receives very little rainfall at any time of year, but the very southern edge reaches the semi-arid band called the Sahel and has a wet season between July and September when up to 200mm of rain fall per month. The surface water resources (Transboundary water resources) are estimated to total renewable 11.1billion m³/year, consisting essentially of the Senegal River, which forms the border between Mauritania and Senegal, and its tributaries, and dam reservoirs scattered throughout the southern parts and central planning. Of the total 11.1billion m³/year, only 0.1billion m³ is generated internally. The total capacity of dams is estimated at about 0.9billion m³, of which 0.5billion m³ for the dam Fom Gleita. The Organization for the Development of the Senegal River (OMVS), which includes Mali, Mauritania and Senegal, was founded in 1972 and follows the Inter-State Committee for the Development of the Senegal River Basin (1963-1968) and then to the United States along the Senegal River (ESRO) from 1968 to 1972. Its mandate is to contribute to the economic development of the Member States for the purposes of exploitation of the resources of the Senegal River Basin. In 2000, water withdrawals were estimated at 1.698 billion m³, of which 1.5 billion for agriculture (88 percent), 150 million for domestic use (9 percent) and 48 million for industry (3 percent). Surface water is mainly used for irrigation; navigation, drinking and hydro power generation (African Development Bank Group, 2012. National Integrated Rural Water Sector Project PNISER, Project Appraisal report, October 2012).

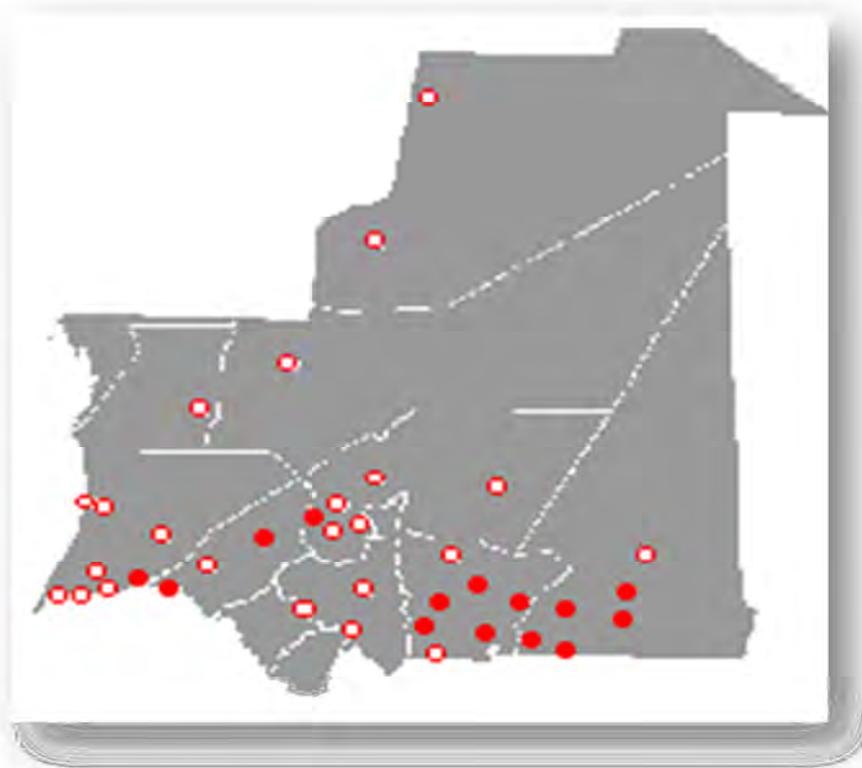


Figure 2. Rainfall at meteorological stations in Mauritania during August, white dots (25-100mm) and red dots (>100mm)

Figure ٢ . Rainfall at meteorological stations in Mauritania during August

b. Water Supply

Main water supply system is found in the capital city Nouakchott, while other urban and rural areas have smaller dispersed water supply networks, most of which have been built in the last 10-20 years through international donors. Water supply systems are usually composed of a water treatment plant, pumping stations, elevated tanks and underground piping. Water network for the capital is designed to solve the water supply problem until 2030.

According to the Water Strategy set by the Ministry of Water and Sanitation in May 2012, the rate of drinking water coverage reached 52% in 2010 at the national level (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Ministère de l'Hydraulique et de l'Assainissement, 2012. Strategie de Developpement du Secteur de l'Eau et de l'Assainissement). In 2010, urban areas (cities with more than 5000 inhabitants), the rate of access to private connections is 35% and varies significantly) The scope of National Water Company, Société Nationale d'Eau SNDE increased to 23 centers; b) In Nouakchott, nearly 30% of households have access to safe drinking water by private connections; c) other cities perimeter SNDE record higher rates with 46% of households connected to private connections; d) in the communities managed by Office National des Services d'Eau en Milieu Rural, ONSER, the rate of households connected to private connections is 50%. In 2010 in rural areas, 60% of households have access to safe drinking water and nearly one third of centers with more than 500 people remain fit in drinking water (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Ministère de l'Hydraulique et de l'Assainissement, 2012. Strategie de Developpement du Secteur de l'Eau et de l'Assainissement).

In urban areas, the rates applied to households with private connection entail three domestic rates, one industrial rate and a standpipe rate: (i) a social consumption bracket below 10 m³/month that benefits from a subsidized rate of MRO 99/m³ (the subsidy covers about 60% of the average price of water, which is MRO 283/m³; (ii) an average domestic bracket of between 10 and 20m³/month that is charged MRO 185/m³ (that is a 20% subsidy); (iii) a higher domestic bracket for over 20m³/month consumption at MRO 373/m³; (iv) a single industrial bracket of MRO 194/m³; and (v) a standpipe rate of MRO 86/m³. In this section, coverage is computed as the number of households connected/number of households in city or town or wilaya or moughataa & 1\$US=290.50 Mauritanian Oguiya (African Development Fund. 2006. Rural Water Supply & Sanitation Project in the Southern Area, Project Appraisal report submitted to Ministry of Water and Sanitation, Mauritania).

In the rural areas, the operating cost of drinking water supply is shared between the State (costs relating to the renewal of boreholes, reservoirs or water towers and laying of mains) and the users (costs of fuel and lubricants, staff, maintenance, servicing and repair of equipment, renewal of the pumping system, service pipes and distribution points). The vast majority of motorized DWS stations and networks (365 out of an estimated pool of 390 solar and thermal DWS) are managed by private managers called "concessionaires". The National Drinking Water Supply and Sanitation Agency (ANEPA), acting on behalf of the Government signs management contracts (or "agreements") of a three-year duration with these private operators who sell water by the volume. The water rate paid by users varies from locality to locality, but falls within a relatively narrow range. In 80% of the localities, the rate varies between MRO 120 and 160/m³, for agreements signed between 2002 and 2004 (African Development Fund. 2006. Rural Water Supply & Sanitation Project in the Southern Area, Project Appraisal report submitted to Ministry of Water and Sanitation, Mauritania). For agreements signed since 2005, water rates have been adjusted upwards steadily to reflect the rising cost of inputs, notably fuel. To carry out maintenance and guarantee the renewal of public infrastructure it has provided, the ANEPA charges the operators with which it has signed a contract a fee. The fee is based on the volumes produced, as measured by a production meter¹ and calculated at the signing of the agreement. This method of private management carried out in the rural areas has helped achieve the following results: (i) the majority of the "private concessionaires" have helped intensify the development of DWS networks (the average extension representing 150% of the initial length of these networks), without using public funds; and (ii) the concessionaires have also promoted the establishment of over 32,000 private connections (the coverage rate exceeding 100 connections per thousand inhabitants in 30% of the localities concerned).

The water sector in Mauritania has undergone restructuring which led to the creation of an institutional framework in line with the recommendations of the sector development strategy adopted in 2009 and the guidelines of the 2006-2010 PRSP (Poverty Reduction Strategy Plan). The water sector in Mauritania is governed by a legal and organizational framework that arose out of the reform process which was embarked on at the beginning of the 2000s. The objectives of the sector-wide strategy are geared towards achieving the Millennium Development Goals (MDGs). Currently no sector reform or SWAPs are being undertaken in the water sector. Nevertheless, Mauritania government, in March 2012 committed to revising the Water Sector development strategy. This Strategy structures government activity in the Water sector into strategic themes in accordance with an action plan that will be implemented. It focuses on improved governance of the sector, the development of Integrated Water Resources Management, and access to drinking water. Revising the sector strategy included the following national development programs that are underway;

- consolidating the policy of targeting the most disadvantaged sections of society through ensuring equitable access to drinking water by creating water supply;
- making use of surface water by launching key projects (supplying 450 localities with drinking water from the Fom Gleita dam; creating retention ponds) for drinking water supply or agricultural purposes;
- submitting essential information on the status of water programmers for the GLAAS (Global Annual Assessment of Sanitation and Drinking-Water) report of the WHO and UNICEF;
- improving monitoring and transparency in the technical and financial implementation of water programmers;
- monitoring the management and maintenance of drinking water supply systems in rural and semi-urban areas through the creation of the Office national des services d'eau en milieu rural (ONSER, National Office for Water Services in Rural Areas);
- implementing a rural water and sanitation database system.
- establish clear criteria for the targeting of resources at national level, including indicators that will make it possible to monitor outcomes and regulatory mechanisms;
- to create mechanisms for inter-sectoral coordination between the health, education and water and sanitation sectors;
- release matching funds from the national budget in order to implement the national action plan;
- build capacities for the implementation of existing plans in terms of human resources, financing and clearly-defined institutional roles;
- monitor the implementation of existing agreements and declarations;
- create official mechanisms to communicate information concerning outcomes in the sector to all stakeholders concerned;
- publish annual reports with figures on results in the sector which will be accessible to the general public;
- to provide the funds and staff necessary for the adjustment and sustained use of effective information and data management systems to facilitate policy-making, planning, monitoring and evaluation;

With respect to current water supply coverage rate, Mauritania has neither met the MDGs or the African Vision 2050. MDG targets are likely to be achieved through the project Aftout Essahli and starting similar important projects. However, during the high level meeting in Washington D.C. in 2012, the Ministry of Finance and Ministry of Water and Sanitation (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Rapport 2010 sur les progress vers l'atteinte des OMD. SNU Mauritanie) agreed to set the national target of Mauritania to increase the national coverage rate from 52% in 2010 to 68% in 2015. For urban water services, the target is to raise the rate of access to drinking water from 35% in 2010 to 65% in 2015. For rural water services, the target is to raise the rate of access to drinking water from 60% in 2010 to 74% in 2015.

c. Sanitation

Individual wastewater systems encountered in Mauritania are of three types:

The traditional latrine, mainly in rural areas, VIP latrine pit unique in rural and urban areas, Septic tank and coupled to an infiltration wells, mainly in urban areas. Public sanitation is only present in three cities: Nouakchott, Nouadhibou and Zouerate. In all three cases, the sewer system is embryonic and not always functional. In Nouakchott, two sewer systems are present: an operational network and non-network operational. Operational network has 3 pumping stations and covers only 4% of the population, essentially Moughaata Tevragh Zeina. It has about 1200 connections to Presidency, Ministries, staffs, hotels, embassies, some petrol stations. The water collected by the network join the single wastewater treatment plant (capacity of 1800m³/day) for the city that is designed to purify and send them to the perimeter adjacent vegetable for reuse in agriculture. Industrial wastewater are discharged raw consistent directly into the environment. Storm water drainage works are not present in Mauritania.

According to the Water Strategy set by the Ministry of Water and Sanitation in May 2012, The rate of sanitation coverage is 46% in 2010 at the national level. Access to sanitation in rural and urban areas appears as follows: a) 40% of households have access to sanitation rural sanitation by autonomous, and b) 60% of households have autonomous systems of urban sanitation. In this section, coverage is computed as the number of households connected/number of households in city or town or wilaya or moughataa.

For finance mechanism, in the urban areas, only 3% of the sanitation services are provided through the sewerage system (only in Nouakchott). In view of the low level of this type of service and the lack of maintenance of the existing network, connections to the latter are not subject to the payment of a user fee. In the rural areas, there is no such user fee as there is no sewerage system.

The sanitation sector in Mauritania has undergone restructuring which led to the creation of an institutional framework in line with the recommendations of the sector development strategy adopted in 2009 and the guidelines of the 2006-2010 PRSP, Poverty Reduction Strategy Plan (International Monetary Fund, 2011. Poverty Reduction Strategy Paper, Volume I: PRSP2006-2010, Post Implementation Review). The sanitation sector in Mauritania is governed by a legal and organizational framework that arose out of the reform process which was embarked on at the beginning of the 2000s. The objectives of the sector-wide strategy are geared towards achieving the Millennium Development Goals (MDGs). Currently no sector reform or

SWAPs are being undertaken in the sanitation sector. Nevertheless, Mauritania government, in March 2012 committed to revising the Sanitation Sector development strategy (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012). This Strategy structures government activity in the Sanitation sector into strategic themes in accordance with an action plan that will be implemented. It focuses on improved governance of the sector, and access to sanitation. Revising the sector strategy included the following national programs that are underway;

- consolidating the policy of targeting the most disadvantaged sections of society through ensuring equitable access to sanitation by implementing an independent and collective sanitation strategy;

- promoting sanitation nationwide through awareness-raising and rollout, in particular by means of the CLTS approach, which has made it possible to declare more than 750 villages with a total of 550,000 inhabitants open defecation-free (ODF);
- consolidating the work of the Office national de l'assainissement (ONAS, National Sanitation Office), which was created in April 2009 and is responsible for setting up and managing individual and collective sanitation systems;
- submitting essential information on the status of sanitation programmers for the GLAAS (Global Annual Assessment of Sanitation and Drinking-Water) report of the WHO and UNICEF;
- improving monitoring and transparency in the technical and financial implementation of sanitation programmers;
- increasing budgetary allocations targeted at rural sanitation;
- implementing a rural sanitation database system.
- to promote sanitation at the national level by means of awareness-raising and rollout, in particular through community responsibility (CLTS approach);
- establish clear criteria for the targeting of resources at national level, including indicators that will make it possible to monitor outcomes and regulatory mechanisms;
- to create mechanisms for inter-sectoral coordination between the health, education and sanitation sectors;
- take measures to facilitate transparency in the communication of information;
- publish annual reports with figures on results in the sector which will be accessible to the general public;

With respect to current sanitation coverage, Mauritania has not yet met the MDGs and African Vision 2050. However, during the high level meeting in Washington D.C. in 2012, the Ministry of Finance and Ministry of Water and Sanitation (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Rapport 2010 sur les progress vers l'atteinte des OMD. SNU Mauritanie) agreed to set the national target of the Stratégie Nationale d'Assainissement (SNA 2011, National Sanitation Strategy) to go from 32% in 2012 to 42% in 2015. In urban areas, the individual sanitation coverage rate will rise from 55% to 65% in 2015. In rural areas, the proportion of villages that have improved latrines will rise from 21% in 2012 to 52% in 2015 and 94% in 2020 (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Ministère de l'Hydraulique et de l'Assainissement, 2012. Strategie de Developpement du Secteur de l'Eau et de l'Assainissement).

d. Principal Issues in Water Sector

Mauritania is 159th out of 187 countries on the UN Development Programme's 2011 Human Development Index. The country was badly hit by dearer food staples and the government introduced a national solidarity programme (PNS) to reduce its effects. Lack of rainfall was expected to trigger a severe food crisis in 2012, a serious threat to livestock and thus deepening rural poverty. There are several constraints and shortcomings in all country sectors including water sector. Those related to water sector can be stated as (Ministry of Finance & Ministry of Water & Sanitation, 2012. Statement of Mauritania, Report Presented at High Level Meeting In Washington 20th April 2012 & Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique);

- The implementation of the reform has not been completed, particularly in terms of the coordination and planning of the sector as well as the application of regulations and implementation of support measures. Several water programmes have been designed and carried out by structures external to the Ministry of Water Supply, sometimes without consulting the latter
- Weak capacities of technical services that hamper the development of the sector. This constraint is manifested by a lack of qualified staff, and more widely insufficient training of the major stakeholders of sector (public sector, private sector and NGOs). This justifies the need to build the capacities of local structures of the sector as part of the successive interventions of various donors
- The growth of the urban population, particularly in Nouakchott, has impeded the rate of coverage and, consequently, access by the people to water. This has resulted in a growing demand for water leading to equally significant increases in the volume of financing to be mobilized
- The actions at the central and decentralized level have limited impacts as a result of regulatory deficiencies and an inadequate decentralization
- Financial balance of the sector advocated in the 1998 declaration has not yet been attained:(a) in the urban areas, the incidence of the separation of water and electricity activities, increase in intermediate costs, notably energy costs since 2004 and freezing of rates since 2001 have contributed to deepening the deficit of SNDE; similarly, (b) in the rural and semiurban areas, increased costs of energy and other intermediate inputs, and the lack of regular updating of rates or revision of those indicated in the triennial agreements of ANEPA, perpetuating the sector's dependency on Government subsidies
- The promotion of the private sector has been sufficiently implemented as testified by the delay in the rural areas in setting up the delegation process through competitive bidding
- Broadening of the mandate of the Multisectoral Regulatory Authority was not accompanied by the much-needed strengthening of the latter to enable it carry out its mandate effectively
- Very few instruments regulate the sanitation sub-sector in Mauritania. The Hygiene Code promulgated in 1986 was never implemented and has since become obsolete. The Water Code, promulgated in 2005, devotes Chapter V to sanitation and specifies that rural localities must cover their needs through autonomous sanitation facilities. This framework should therefore be improved and the institution building dimension incorporated into the national rural sanitation programme (PNAR), (Ministere de l'Hydraulique 2005. Programme National d'Assainissement Rural 2005-2015).
- The existence of numerous institutions operating in sanitation (DA, the communes, Ministry of Health and Ministry of Education), without a clear definition of roles and responsibilities of each one; and lastly
- Lack of regulatory framework and weak coordination between different stakeholders. Several stakeholders beyond the control of the administration. Major water programs are designed and implemented by structures external to the Ministry of Water and Sanitation without consulting: a)
- The Ministry of Rural Development achieves dams and implements specific projects that perform hydraulic, b) The Commissioner for Human Rights, Humanitarian Action and Relations with Civil Society, which funds and runs some water infrastructure projects; c) The Office of Food Safety, which operates through the implementation of water points and bunds; d) The Ministry of Economic Affairs and Development, which supervises the APAUS and PDU programs running water and sanitation; e) The Ministry of Housing, Urban and Spatial Planning, which operates through various projects; f) The Ministry of Interior and Decentralization through the program of ANAIR in hydraulics; g) The interventions of national and international NGOs in the sector.

- The exists lots of financial problems equilibrium in the sector as follows: a) It is precarious in urban areas due to the low yield and high losses in the networks and the high cost of energy; b) In rural and semi urban, urban master plans do not exist, are poorly sized networks, pricing is not homogeneous, the recovery rate is low and the cost of operation and maintenance are not well understood.
- Several major cities face, repeatedly, to severe flooding due to lack of sanitation infrastructure storm.

e. Water Sector Institutional Framework

i. Water Resources

The water sector and sanitation has undergone a restructuring that led to the establishment of an institutional framework in accordance with the recommendations of the sector development strategy adopted in 2009 and orientations Plan of the 2006-2010 PRSP (International Monetary Fund, 2011. Poverty Reduction Strategy Paper, Volume I: PRSP 2006-2010, Post Implementation Review). Several development partners have accompanied sector reform by providing funding to conduct studies to support sector reform and capacity building. A new regulatory framework, legal and financial support has been implemented. The Water Code (Presidence de la Republique, 2005. Loi 2005-030 potant Code de l'eau. Republique Islamique de Mauritanie), adopted in 2005, sets out the powers of the Minister for Water, insists on saving water resources, defines the modes of delegations and responsibilities for project management. Skills Multisectoral Regulatory Authority is extended to the water sector. The de-concentration of budget has been implemented since January 2005 and an MTEF has been prepared for the period 2007-2010.

Mainly, the institutional relation is advisory only between the ministry and its directorate and lacks information sharing linkage amongst directorates. The Ministry of Water and Sanitation (MHA) and its institutions under the supervision include:

- a) The Directorate of Planning, Monitoring and Cooperation (DPSC) is responsible for including in the areas of water and sanitation, to develop sectoral development plans, perform evaluation studies sector and promote cooperation;
- b) The Department of Hydraulics (DH) whose missions were focused on the strategic aspects, was responsible for developing and implementing the strategy and sectoral policies in the water sector. As such, it develops development plans and monitors the execution of programs. It ensures the water police, coordinates and monitors the activities of companies and establishments in the water sector;
- c) The Department of Sanitation (DA) whose role is to develop and implement policies and strategies of the State in the field of sanitation. As such, it develops plans for development of the sub sector and monitors the implementation of programs;
- d) The Department of Hydrology and Dams (DHB) which contributes to the development and implementation of policies and strategies of the State in terms of mobilization of surface water resources and monitoring of the weather cycle and hydrology. As such, it develops plans for development of the sub sector and monitors the implementation of programs;
- e) The Regional Directorates of Water and Sanitation (Drha) loaded in wilayas, planning and coordination of activities related to water and sanitation;

- f) The National Centre for Water Resources (CNRE), created by Decree No. 2001-077 of 12 July 2001 which is a public administrative (EPA) is responsible for the exploration, evaluation, monitoring and protection of water resources;
- g) The Société Nationale de L'Eau (SNDE), established by Decree No. 2001-88 of 29 July 2001 on the former SONELEC split into two companies, is responsible for the generation, transmission, distribution of water drinking in urban areas;
- h) The National Office of Sanitation (ONAS) is responsible for the implementation and management of sewerage, storm water and wastewater, including sewage treatment plants across the country;
- i) The National Rural Water Services (ONSER) is responsible for the production, transport and distribution of drinking water in rural areas;
- j) The National Company of Drilling and Well (NFPS) contributes to improve the capacity of national execution of boreholes and wells and boreholes regulate prices on the market at a national level.

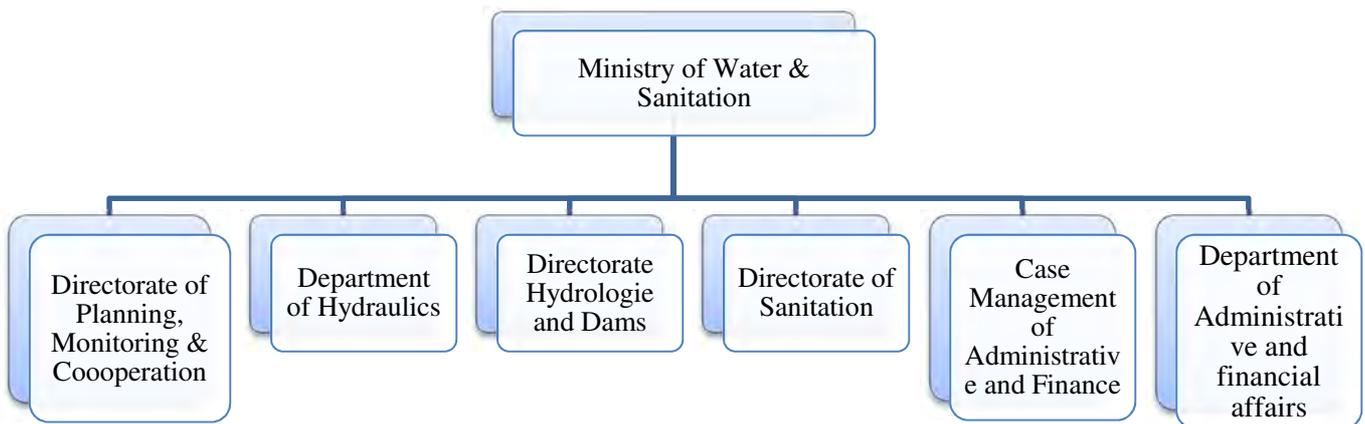


Figure 3 . Institutional Framework for Water Sector (Directorate Level)

IWRM: Mauritania has adopted Integrated Water Resources Management, IWRM as a useful framework for management of water resources and included it as a pivot concept. This has been initiated in the year of 1998 where the Ministry of Water, Energy and Environment issued the National Development Policy for Water & Energy, followed by the National Water Act by the Government of Mauritania in the year 2005. (International Monetary Fund, 2011. Poverty Reduction Strategy Paper, Volume I: PRSP2006-2010, Post Implementation Review & Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique). Afterwards, an IWRM action plan has been set in the year 2007 by the National Council of Water. Most recently, in 2010, the final report of the Evaluation Environnementale Strategique du secteur de l'Hydraulique stated that the Integrated Water Resources Management, IWRM is an approach that would be able to offer viable solutions for better coordination of sectoral programs in Mauritania. The aimed management scheme has been summarized in the following figure. The report also stated the principles that would be implemented by the Ministry of Hydraulics in the course of reaching to an optimum IWRM framework as;

- Manage samples and integrate the protection of the resource in the long term.

- Promote the efficient use of resource and demand management to minimize new catchments.
- Encourage and facilitate opportunities for multiple uses of the resource.
- Encourage public consultation and allow stakeholders to participate in decision-making.
- Consider fragile groups at all stages of programs related to water.
- Adopt a deterrent pricing system in order to develop best practices for controlled use and preservation of resources.

Multiple-use resource management: The Mauritanian Ministry of Water & Sanitation participated together with the Senegal River Basin countries through the OMVS in a Senegal River Basin Multi-Purpose Water Resources Development Project, MWRD APL. The MRWD, due to its multi-purpose scope, address a much broader range of issues, in particular a focus on substantial investments in livelihood needs in the region, such as hydraulic and irrigation infrastructure, fisheries management, and reduction of waterborne diseases. The MWRD APL provides the regional information & knowledge platform and data system, supported under the GEF, a sustained support.

Source of funding of IWRM: Main sources of funding for the IWRM plans are the Government spending, international donors for new investments, and to some extent, the public-private partnerships. International donors' aid reached 28% of the National income of Mauritania in 2002. According to the MCPS for Mauritania 2011-2015 (Ministere de l'Hydraulique et de l'Assainissement, 2012.Strategie de Developpement du Secteur de l'Eau et de l'Assainissement), the national income comes from Agriculture (3-5% of GDP), manufacturing (7% of GDP), industry (48% of GDP) and services (42% of GDP). Mauritania has a low saving rate and almost all investment is financed from abroad. The increase in investment between 2003 and 2007 was not followed by an increase in saving, this rate was even negative (-15% of GDP) in 2005. Since 2006, the impact of oil revenues on investment has been visible with a pick of 18.76% of GDP reached in 2006. There is a large funding gap for implementing many of the plans related to IWRM. The Government only has resources to fund less than half of the financing requirement. It is unclear how the large resource gap is to be covered. The Government is looking to public-private partnerships to help close this gap. However, given the status and rate of private sector development in Mauritania, the prospects of the private sector providing such large amount of funding pose serious challenges. With the bad economic condition of the country, low saving rate, low GDP and low public-private partnership, the sustainability of funding for the plans of integrated water resources management seems of doubt. An example for Mauritania Budget plan for 2008 is attached in the appendix.



Figure 4. Framework for Integrated Water Resources Management in Mauritania to be implemented

ii. Water Resources Related Organizations

For the water sector in Mauritania, stakeholders are;

Ministry of Water & Sanitation: Lead organization in water sector. It is responsible for coordination and evaluation of policies and strategies and plans for integrated water resources management, IWRM. It is responsible for all aspects of surface and ground water resources. The Ministry promotes and implements the development plans for various public and private sectors working in water resources management. It is responsible for securing water for multiple uses. It is also responsible for organization and cooperation with Senegal River Basin Organization, OMVS.

Ministry of Rural Development & Environment: In general, it is in charge of the implementation, monitoring and evaluation of rural development policies and environment protection, and all issues related to agricultural and the protection of nature and of Environment and rural reclamation. Through the directorate of Environmental and Rural Reclamation, the Ministry controls the flow of surface water in the national water network and is responsible for imaging and controlling of dams and other protective barriers related to surface flowing water in its goal for natural resources development. The directorate is responsible for the environmental impact studies related to all related water projects including environmental assessment project and standards and compliance control projects.

Ministry of Health & Social Affairs: This Ministry through its department of Health Protection is concerned with monitoring and handling Epidemiological issues including those arising from deterioration of surface water quality and/or groundwater quality, which are considered the main sources of drinking water in Mauritania. The Ministry is responsible for issuance of licenses for groundwater wells and national water companies working in distributing water to consumers. Through the Regional Bureau for planning, programming and budgeting, the ministry is responsible for studying water resources and requirements for infrastructure projects and the application of health legislation including those of clean water supply and safe sanitation.

Ministry of Economic Affairs and Development: Through its National Office of Statistics, this Ministry plays an important role in the water sector in Mauritania. This office is responsible for the preparation of all required reports regarding demography and population distribution/projection in Mauritania districts. This data is crucial for the water sector institutions since it is used in planning for water resources usage and implementation of Ministry of Water and Sanitation strategic water resources management plans and various water related projects.

Ministry of Transport: National Office of Meteorology plays quite an important role as a stakeholder in the water sector as it is the main source for information regarding rainfall distribution throughout the country in form of intensity and number of rainy days per year. This information is used by the Ministry of Water and Sanitation in preparing for water resources management plans despite having the rainfall a minor contributor to water resources in Mauritania. The office of Meteorology also provides the Ministry with all required data on change in temperature to be used in the country action plan towards climate change, which is not yet in full implementation. (Attached is the Mauritania Statistics Book 2011 produced by the National Office of Meteorology)

Ministry of Finance: As mentioned before, and due to the weak economic situation of the Mauritanian Government, the Ministry of Finance sometimes covers small projects related to integrated water resources management, however, most of the finance is from international donors.

*Other Ministries: Ministry of Petroleum, Energy and Mines.
National office of meteorology.*

Universities: Established in 1981, the only University in Mauritania is the University of Nouakchott. It does not have a specialized department in water resources and sanitation and thus the participation in the water sector as a stakeholder is not yet evident.

NGOs: Mainly, the NGOs have a very important role in Mauritania and it is focused on promoting sustainable development and environmental protection by establishing sanitation systems and facilitating access to water, which helps to control the demand for surface and groundwater and thus decrease the depletion in water resources. Many have an objective to create a sense of ownership among rural populations by explaining to them why it is necessary to establish rules and procedures that will help improve water management. They organize market gardening cooperatives and testing different watering techniques in order to streamline the use of water resources while increasing revenue for farmers. They conduct field surveys and gather data to analyze the situation in order to develop projects geared toward better water resource management in the respective villages of Mauritania. Some conduct dissemination workshops to ensure that concepts relating to water resource management are simple and clear to all participants. And some frequently engage in discussions with people to explain these concepts and ensure that they fully comprehend the long-term issues pertaining to water management. E.g.; Arbre, ALKHAYR for Development in Mauritania, H2O Africa Foundation, EDEN, AFE. (Attached is the data about some of these NGOs in Mauritania). These NGOs work together at many projects with the 7 UN agencies active in Mauritania (UNESCO, UNICEF, UNDP, WHO, UNEP, WFP, and FAO).

Media: The Media (Television, Radio, web-based, paper-based journals, web blogs and web forums) in Mauritania represents a very important platform for knowledge exchange among members of the public about all news related to country water resources. It allows the public to learn, know, share experience and sometimes find solutions. Media in Mauritania always addresses the challenges encountered by the country with respect to water scarcity and concentrates more on all related political decisions and movements with this regard. Online journals and blogs recently announced the meeting between President and Minister of Water and Sanitation and how it led to cancellation of travel of latter to Senegal to participate in OMVS minister meeting in Senegal.

Inter institutional relationships amongst stakeholders: As observed from the following figure showing main stakeholders in the water sector, there are clear relations amongst all of these stakeholders and the lead ministry, Ministry of Water & Sanitation but there seems to be no form relation or exchange of information among these stakeholders.

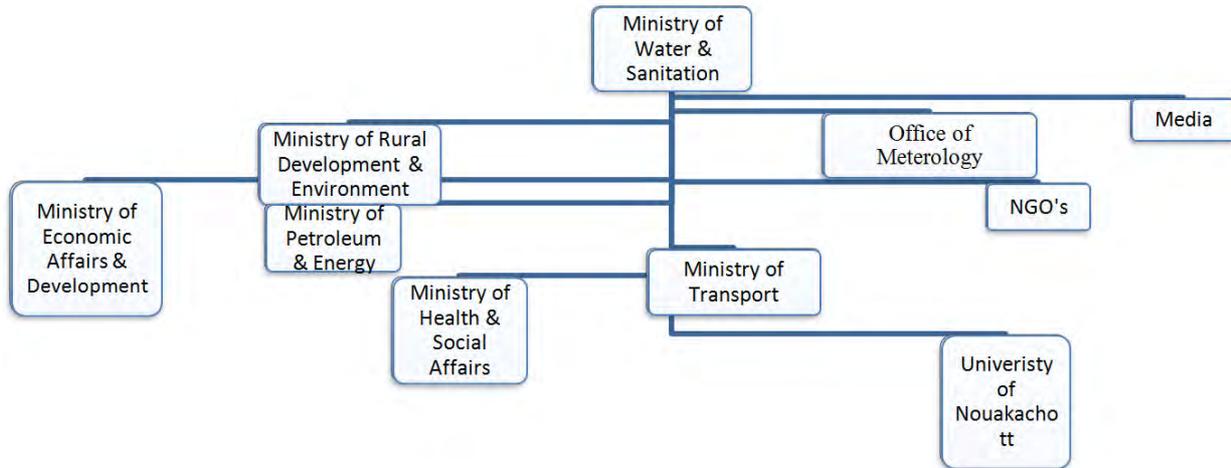


Figure 5. Organization chart for stakeholders in water sector

iii. Rural Water Supply & Sanitation (RWSS)

In Mauritania, the following are the organization working in the field of Rural Water Supply & Sanitation (shown in following figure);

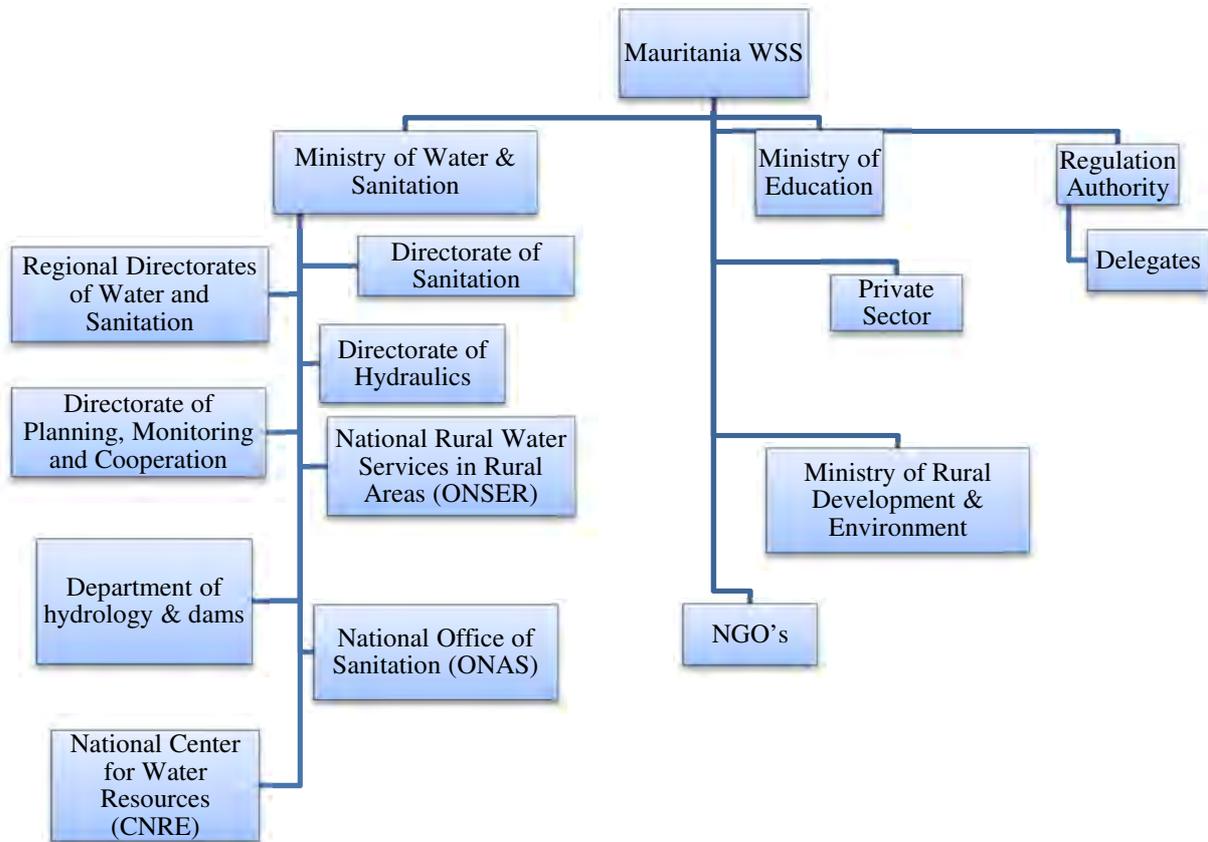


Figure ٦. Organization chart for stakeholders in rural & urban water supply & sanitation

- *Ministry of Water & Sanitation*: Lead organization in Rural Water Supply & Sanitation. Its main role is the implementation of the national policies set by the government in fields of Rural Water Supply & sanitation. It is responsible for laying down the infrastructure for supply of Rural water and collection and disposal of Rural sanitary water. Promoting the decentralization and private public sector partnership for development of Rural Water Supply & Sanitation sector.
- *Directorate of Hydraulics*: Being one of the Directorates of the Ministry of Water & Sanitation, it has a rural water supply & sanitation sector that is responsible for developing policies and country strategies in water sector in rural areas. It is responsible for preparation of technical studies and pre-project reports and tendering process for water projects in rural areas. The directorate organizes between various rural water supply and sanitation project stakeholders. It follows the utilization of the investment plans in rural water sector. It also provides technical advices for companies of the ministry working in rural water supply and sanitation program. Moreover, it follows the execution of rural water and sanitation projects at their various stages.
- *Directorate of Sanitation*: Within the Ministry, this directorate is responsible for developing polices and strategies of sanitation and storm water collection in rural areas. It prepares the technical specifications and studies and pre-project details and provides item quantities and surveying for rural water supply, sanitation, and storm water projects. It supervises the work of various regional bodies and rural water

related organizations working in the field. It supervises the execution of rural water supply and sanitation-including on site sanitation- projects. The directorate promotes usage of various technologies for treatment of rural waste water and technologies that could help reduce costs. Responsibilities of the directorate include training of technicians and operators on various related works to rural sanitation. Operation of Nouakchott waste water treatment plants is under the supervision of the directorate of sanitation.

- *The Directorate of Planning, Monitoring and Cooperation:* The department is responsible for; conducting studies for evaluation and forecasting the impacts of the rural water and sanitation networks proposed; providing support to decentralized rural WSS services; promoting the cooperation & coordination of all rural WSS activities amongst various stakeholders. Provides programs and plans for development of rural WSS.
- *Regional Directorates of Water and Sanitation (Drha):* It is the representation of the Ministry of Water and Sanitation at the regional level. It is responsible for monitoring the performance of rural WSS programs; providing advisory support to local authorities and communities; providing technical support to private operators working in the field of rural WSS for successful completion of the works; and coordination of regional services in rural WSS provided by the Department of Hydraulics.
- *The National Rural Water Services (ONSER):* ONSER is responsible for the production, transport and distribution of drinking water in rural areas.
- *The National Office of Sanitation (ONAS):* ONAS is created by Decree No. 122-2009 of 14 April 2009. It operates on the full extent of country and is responsible for: the implementation and management of collection of rural sewerage and storm water; and the implementation and management of treatment plants for rural WSS.
- *Ministry of Health & Social Affairs:* through its directorate for Fight against Disease, it is responsible for; developing regulations controlling rural sanitation relating to the fight against diseases, implementing health policy; implementing the international health regulations on rural WSS. Alongside this direction, there is the National Institute of Public Health Research (INRSP); the center's main purpose is to make scientific research. Its activities revolve around hygiene related to rural sanitation amongst other issues.
- *Ministry of Education:* It operates in the sub-sector consolidation by implementing programs to build latrines in schools in rural areas. It also ensures taking appropriate measures for the maintenance of these structures in rural areas.
- *Ministry of Rural Development & Environment:* It has a department in charge of sanitation in rural areas. It integrated the ministry overall mission to ensure sustainable development and management of natural resources with sanitation issues.
- *Ministry of Transport:*
- *NGO's:* Play an important role in the development of the rural WSS sectors by directly funding or participating with other NGO's and development partners. The involvement of these NGO's is oriented more towards the sub-sector of rural drinking water rather than of sanitation. Examples of major donor NGOs in field of rural WSS are; UNDP, UNICEF, ADB and AFD.CREPA, specialized in research and training

for promotion of technology appropriate for rural WSS strategies, in collaboration with the Ministry of Water & Sanitation, develops latrine promotion programs in rural area, training of craftsmen in the field.

- *Private sector:* Private actors are more working in rural WSS, they are requested by the State for pumping rainwater at the time of flooding. Private actors include formally constituted companies and individual traders.

Strengths of RWSS institutions:

- The institutional framework already includes many actors with capabilities and on which it will be possible to rely on.
- The private sector is already active in several activities such as studies and work, as well as emptying the pits.
- Real political will to initiate the development of the rural WSS sector.
- A good institutional organization with the existence of dedicated departments to rural WSS.
- Creation of public offices responsible for rural WSS.
- Many ongoing projects for enhancement of water supply and sanitation in rural areas.
- Big potentiality for donors to support the rural WSS sector once clarified the strategy intervention.

Weakness of RWSS institutions:

- Embryonic regulatory framework for rural WSS.
- Non-enforcement of existing laws.
- Ministry of Water & Sanitation and Ministry of Health do not have organized coordination.
- The community responsibility (CLTS approach) is not implemented to promote awareness of rural WSS.
- No clear criteria are established for targeting rural WSS sector performance.
- No mechanism for inter-sectorial coordination between various involved institutions in rural WSS.
- No transparency in communication of information of rural WSS.
- Weak capacities to implementation of existing plans in rural WSS in term of financing.
- Health and environmental situation is degrading in rural areas.
- Low demand for rural sanitation.
- Confusion between the DA and AMEXTIP for support sanitation urban storm water.
- Weakness of some parts of existing structures especially in terms of organization and resources.
- Lack of human resources for the management of some specialized areas of the WSS especially information management.
- Weakness in the mechanism of coordination and cooperation between the different actors.
- The uncertainties on the feasibility of certain solutions that could be expensive (collective sanitation when the context requires).
- Risk of marginalization of sanitation to the priority given to the water supply.
- No mechanisms for ensuring good governance, transparency and reporting of rural WSS projects.

iv. Urban Water Supply & Sanitation

Similarly, the following are the organization working in the field of urban Water Supply & Sanitation (as shown in previous figure);

- *Ministry of Water & Sanitation*: Lead organization in urban Water Supply & Sanitation. Its main role is the implementation of the national policies set by the government in fields of urban Water Supply & sanitation. It is responsible for laying down the infrastructure for supply of urban water and collection and disposal of urban sanitary water. Promoting the decentralization and private public sector partnership for development of Rural Water Supply & Sanitation sector.
- *Directorate of Hydraulics*: Being one of the Directorates of the Ministry of Water & Sanitation, it has an urban water supply & sanitation sector that is responsible for developing policies and country strategies in water sector in urban areas. It is responsible for preparation of technical studies and pre-project reports and tendering process for water projects in urban areas. The directorate organizes between various urban water supply and sanitation project stakeholders. It follows the utilization of the investment plans in urban water sector. It also provides technical advices for companies of the ministry working in urban water supply and sanitation program.
- Moreover, it follows the execution of urban water and sanitation projects at their various stages.
- *Directorate of Sanitation*: Within the Ministry, this directorate is responsible for developing policies and strategies of sanitation and storm water collection in urban areas. It prepares the technical specifications and studies and pre-project details and provides item quantities and surveying for urban water supply, sanitation, and storm water projects. It supervises the work of various regional bodies and urban water related organizations working in the field. It supervises the execution of urban water supply and sanitation-including on site sanitation- projects. The directorate promotes usage of various technologies for treatment of urban waste water and technologies that could help reduce costs. Responsibilities of the directorate include training of technicians and operators on various related works to urban sanitation. Operation of Nouakchott waste water treatment plants is under the supervision of the directorate of sanitation.
- *The Directorate of Planning, Monitoring and Cooperation*: The department is responsible for; conducting studies for evaluation and forecasting the impacts of the urban water and sanitation networks proposed; providing support to decentralized urban WSS services; promoting the cooperation & coordination of all urban WSS activities amongst various stakeholders. Provides programs and plans for development of urban WSS.
- *Regional Directorates of Water and Sanitation (Drha)*: It is the representation of the Ministry of Water and Sanitation at the regional level. It is responsible for monitoring the performance of urban WSS programs; providing advisory support to local authorities and communities; providing technical support to private operators working in the field of urban WSS for successful completion of the works; and coordination of regional services in urban WSS provided by the Department of Hydraulics.
- *Société Nationale de L'Eau (SNDE)*: It is responsible for the production, transport and distribution of drinking water in urban areas. It ensures the collection of fees that sanitation must transfer to the ONAS for tasks operating system of collective sanitation in Nouakchott.
- *The National Office of Sanitation (ONAS)*: ONAS is created by Decree No. 122-2009 of 14 April 2009. It operates on the full extent of country and is responsible for: the implementation and management of

collection of urban sewerage and storm water; and the implementation and management of treatment plants for urban WSS.

- *Ministry of Health & Social Affairs:* Through its directorate for Fight against Disease, it is responsible for; developing regulations controlling urban sanitation relating to the fight against diseases, implementing health policy; implementing the international health regulations on urban WSS. Alongside this direction, there is the National Institute of Public Health Research (INRSP), the center's main purpose is to make scientific research. Its activities revolve around hygiene related to urban sanitation amongst other issues.
- *Ministry of Education:* It operates in the sub-sector consolidation by implementing programs to build latrines in schools in urban areas. It also ensures taking appropriate measures for the maintenance of these structures in urban areas.
- *Ministry of Rural Development & Environment:* It has a department in charge of sanitation in rural areas. It integrated the ministry overall mission to ensure sustainable development and management of natural resources with sanitation issues.
- *NGO's:* Play an important role in the development of the urban WSS sectors by directly funding or participating with other NGO's and development partners. The involvement of these NGO's is oriented more towards the sub-sector of urban drinking water rather than of sanitation. Examples of major donor NGOs in field of urban WSS are; UNDP, UNICEF, ADB and AFD. CREPA, specialized in research and training for promotion of technology appropriate for urban WSS strategies, in collaboration with the Ministry of Water & Sanitation, develops latrine promotion programs in urban area, training of craftsmen in the field. A Chinese company "China Gezhouba Group International Corporation" has started in implementing a remediation plan for urban WSS in the city of Nouakchott.
- *Private sector:* Private actors are more working in urban WSS, they are requested by the State for pumping rainwater at the time of flooding. Private actors include formally constituted companies and individual traders.

Strengths of urban WSS institutions:

- The institutional framework already includes many actors with capabilities and on which it will be possible to rely on.
- The private sector is already active in several activities such as studies and work, as well as emptying the pits.
- Real political will to initiate the development of the urban WSS sector.
- A good institutional organization with the existence of dedicated departments to urban WSS.
- Creation of public offices responsible for urban WSS.
- Many ongoing projects for enhancement of water supply and sanitation in urban areas.
- Big potentiality for donors to support the urban WSS sector once clarified the strategy intervention.

Weakness of urban WSS institutions:

- Embryonic regulatory framework for urban WSS.
- Non-enforcement of existing laws.
- Ministry of Water & Sanitation and Ministry of Health do not have organized coordination.

- The community responsibility (CLTS approach) is not implemented to promote awareness of urban WSS.
- No clear criteria are established for targeting urban WSS sector performance.
- No mechanism for inter-sectorial coordination between various involved institutions in urban WSS.
- No transparency in communication of information of urban WSS.
- Weak capacities to implementation of existing plans in urban WSS in term of human resources, financing and clearly-defined institutional roles.
- Very limited financial resources dedicated to urban WSS.
- Health and environmental situation is degrading in urban areas.
- The uncertainties on the feasibility of certain solutions that could be expensive (collective sanitation when the context requires).
- No mechanisms for ensuring good governance, transparency and reporting of urban WSS projects.

5. IWRM M&E

a. Institutions and Framework

Global M&E Organizations: While some global organizations such as Joint Monitoring Program, JMP and FAO-AQUASTAT publish some information regarding water resources in Mauritania; however, they are not really active in M&E of country water resources and depend on weak surveys and sometimes on pre-published old data. In Mauritania, several water sectors officials have serious reservations on these published figures.

Sub-Regional Basin Organizations-OMVS (Organisation pour la Mise en Valeur du Fleuve Sénégal): In 1972, Mali, Mauritania and Senegal established the Senegal River Development Organization (OMVS), with the main objectives of contributing to the three countries development through sub-regional co-operation and ensuring ecological equilibrium in the basin. In Mauritania, there is an OMVS National Unit, which is the instrument through which the OMVS supervising Ministry of Water & Sanitation in Mauritania ensures the follow-up of the organization's activities. The National Units Missions are:

- Follow-up the OMVS activities related to water resources on behalf of the Ministry of Water & Sanitation;
- Monitor the impacts on water resources and advise the Ministry of Water & Sanitation with the impacts induced by dams and hydro-agriculture projects in the River Basin through the Observatory of the Environment;
- Monitoring and evaluating water resources related environmental issues in Senegal River basing with the Directorate of planning, monitoring & cooperation in Ministry of Water & Sanitation in Mauritania;
- Co-ordinate OMVS activities in managing and monitoring water resources in Mauritania, through high commission, SOGED and SOGEM;
- Ensures transmission or dissemination of information within the observatory's network in Mauritania;
- Play a role of catalyst in the relationships between the OMVS and the national structures of the water sector in Mauritania;
- Participate in the implementation of the OMVS water resources management program in Mauritania.

IWRM M&E Framework: The IWRM framework does not exist in a structured clear form in Mauritania; the country action plan was launched in the year 2007 and in 2010, the Ministry of Water & Sanitation announced a management scheme that would be implemented by the ministry. Moreover, the M&E for the IWRM framework almost does not exist.

The following figure shows the primitive institutional framework for M&E in water resources management in Mauritania.

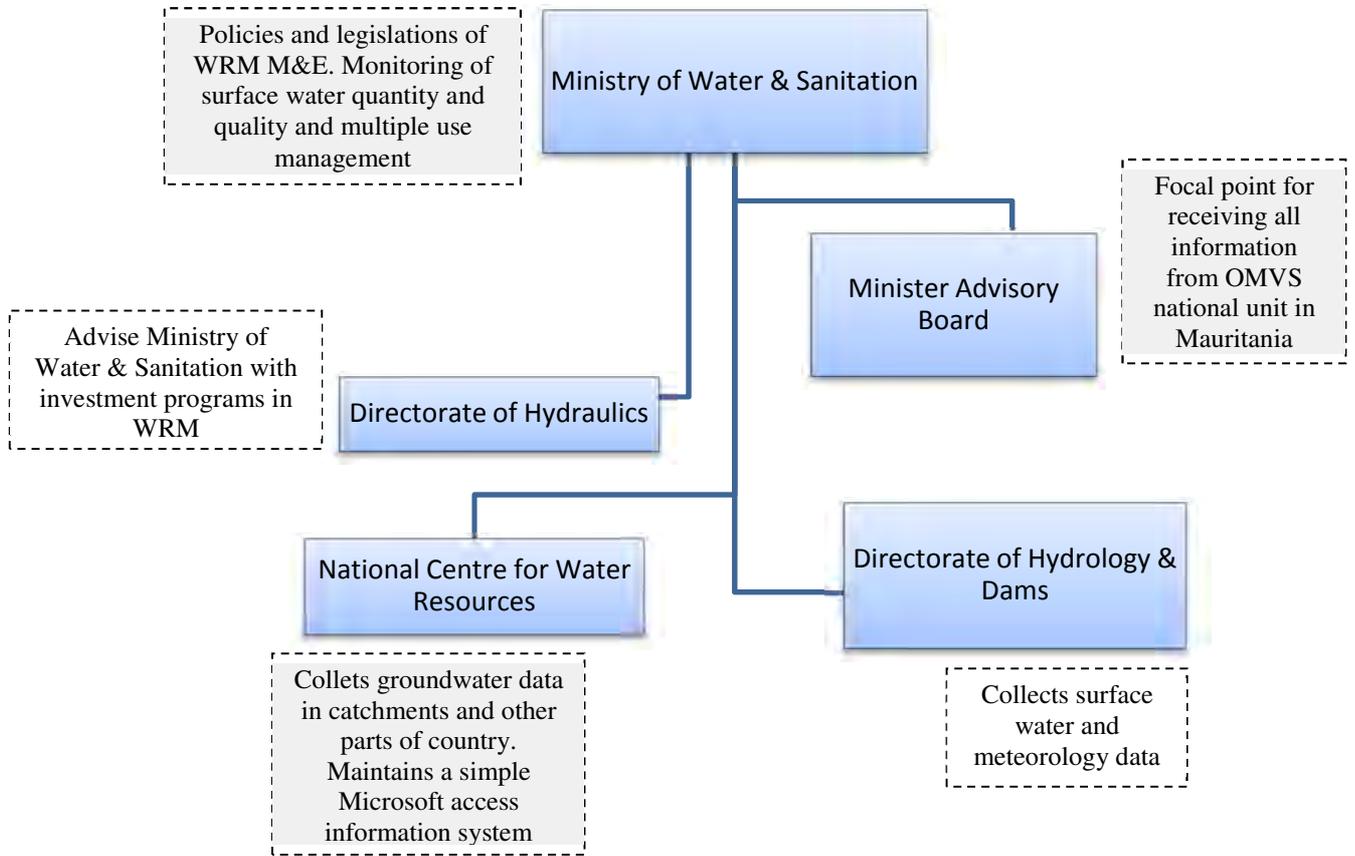


Figure 9. M&E institutional framework in water resources management in Mauritania

b. Basic Monitoring Networks

The following table shows the resources, facilities and capabilities of national and transboundary RBOs.

Table 2. Monitoring Network & their status

	Type of station					Remarks & Recommendations
	River Gauging	Rainfall	Meteorology	Water Quality	Groundwater	
Senegal River Basin (OMVS data)	30	NA	NA	22	20	CNRE does not maintain surface water. The directorate of rural development does monitor with OMVS
Other parts in Mauritania (CNRE data)	NA	70	13	NA	14,000	None is used in M&E and cover only 5% of country in case of rainfall 14,000 stations are water points

OMVS Principle strengths: The OMVS is an experienced RBO, which is functioning from more than 35 years. Several reforms and re-structuring have been implemented giving it strengths in managing Senegal River basin.

Principal strengths are; clear mandate with innovative tools; decentralized at national levels; associated with technical bodies (permanent water commission, regional steering committee and Environment Observatory); coupled with autonomous management entities; familiar with private sector involvement; and opened to stakeholders participation (Ousmane Dione, 2000. Thirty Years of Cooperation in the Senegal River Basin. A Success Story in Cooperative River Basin Management, The World Bank).

OMVS Principle challenges: while the OMVS is a strong organization, the following can be considered as limitations or challenges that might hinder its optimum performance; sometimes unreliable water resource data and information; financial crisis impact and availability of funds to draw upon; water pricing and energy cost recovery may become more difficult, thus, hindering OMVS's financial sustainability; mainstreaming climate change impacts in new infrastructure designs will certainly be required; presence of some unreliable measuring stations, absence of basin-wide forecasting system for of extreme weather events (flood or drought); and outdated and out of repair gauging stations, how to adjust the current cost and benefit sharing agreement so that Guinea will perceive a clear motivation and interest in remaining part of OMVS and finally, the negotiations on water sharing, which are often complex, and every new initiative need to ensure equity in access to benefits to be generated. In some occasions, tensions and even disputes occur, as was the case between Senegal and Mauritania in 1989.

CNRE Principle strengths: The National Center for Water Resources collects data on groundwater as a main natural resource for drinking in Mauritania. More than 1,000 well data are collected and stored in the center. The strengths can be summarized as; good institutional organization with clear roles; real political will to enhance development of center and help function in a better way; the center already includes an in-house information database that stores all data collected from wells across Mauritania; therefore, there is a big potentiality for government and donors to support the center efforts and generalize it amongst other players in water sector field.

CNRE Principle weakness: Absence of country wide data collection network; lack of human resources (only 2 are managing the access information database); lack of cooperation for country wide information sharing; absence of country data collection procedures; absence of reliable measuring stations; lack of water availability and demand data; absence of country-wide forecasting system for of extreme weather events (flood or drought); no integration of available software and GIS for data and information collection & management; outdated and out of repair gauging stations; lack of financial means for sustainable data and information collection; and lack of attention on the centrality of data and information sharing.

Multiple uses of water resources in Senegal River Basin: Water resources in Mauritania include mainly surface water in Senegal River and groundwater all across the country. The groundwater is only used for drinking and the surface water has a multi-use framework explained in the following table.

Table 3. Multiple use of surface water in Senegal River Basin

	Water use %		
	Irrigation	Energy Production	Navigation
Mauritania	31	15	12
Mali	11	52	82
Senegal	58	33	6

M&E and Multiple-Use Conflict: To resolve the conflicts between power generation and the other uses of the Senegal river's water, the three governments through OMVS have embarked on the implementation of a program PASIE, Plan d'Atténuation et de Suivi des Impacts sur l'Environnement (World Bank. 2009. Regional Project: Senegal River Basin Water and Environmental Management, Implementation Completion and Results Report TF-52900). The PASIE is an environmental program specifically designed to address, monitor and mitigate the environmental issues raised by, and related to, the development and distribution of power from the Manantali generating station. Although quite specific and narrow in purpose it is broad in concept and approach, recognizing as it does the need for a comprehensive approach to environment management and monitoring of water resources. The OMVS has also set up the environment monitoring program (l'Observatoire) which will play a central role in knowledge and data management within the three member countries. On the other hand, since CNRE collects data on groundwater and it is only used for drinking, no conflicts have risen due to multiple used of groundwater in Mauritania.

c. Data Analysis, Storage and dissemination

Indicators: In 2010, the Joint Poverty & Environmental Program in Mauritania (International Monetary Fund, 2011. Poverty Reduction Strategy Paper, Volume I: PRSP2006-2010) specified the indicators that reflect the state or the evolution of an environmental resource through a dual approach. The dual approach depends on identifying the indicator through (i) the study of national environmental policy documents (NSDS, NCA, Environmental Profile of Mauritania, PAN/LCD, etc...) and reports of international institutions (FAO, UNICEF, WB, MDGs, etc...) and (ii) the analysis of sectoral policies including environmental objectives by the strategies implemented. The "Articulation Pauvrete Environnement" project, Evaluation Environnementale Strategique (EES), and Du Secteur de l'Hydraulique have undergone evaluation against existing data sources for choice of key indicators. These indicators are intended to be used for monitoring policies and environmental resources of Mauritania. While these indicators are not an end in themselves; they must be used in a given institutional context to support decision-making to improve the sustainable and efficient management of the water resources. A special attention has been paid to cross-cutting issues management (institutional cooperation, information for participatory management, financing, etc...) which are in fact central to the process of implementation and monitoring of the system.

Depending on their nature, environmental indicators identified are classified into three types;

1. Status indicator (e) measuring the environmental situation;
2. Pressure indicator (P), measuring the changing actors of the environment;
3. Response indicator(R), measuring the effectiveness of corrective actions resulting from the policies.

Where pressure and state indicators are monitoring natural resources; while response indicators for monitoring global environmental and sectoral policies.

The following table shows the key indicators (Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique & Ministere Deleegue Charge de l'Environnement. 2007. Indicateurs Environnement Aux de Suivi des Politiques et des Ressources Environnementales. Rapport Final Provisoire de Project d'Articulation Entre Pauvrete et Environnement) of water resources used in Mauritania. They are coping with the Objectives of the PANE (8.7: Fight against chemical releases that may endanger groundwater and surface water; 8.8. Improve the maintenance of hydraulic equipment in urban areas 8.9: Monitor the quality and safety of water); and those of the PRSP (3.5.1 Increase access to safe drinking water in a sustainable way in urban & rural 3.5.1.1 Protect Water Resources). The "Relevance" is the "degree of correlation with the objectives of national strategies (SNDD, PANE, PAN / LCD PRSP)", where +++ are the most relevant, ++ relevant, and + less relevant.

Table 4. List of indicators for water resources in Mauritania

Theme	Monitoring Indicator	Type	Relevance
Water Resources	Volume of surface water available	E	+
	Volume of groundwater available	E	+
	Heights and flow aquifers (piezometric measurements)	E	+
Water Quality	Index of overall water quality (composite index calculated from): - BOD (Biochemical Oxygen Demand) in rivers: River and tributaries - Concentrations of persistent organic pollutants (POPs) in streams: pesticides, organochlorines, dioxins, etc.. - Annual average concentrations of total phosphorus (river and tributaries) - Annual average concentrations of total nitrogen (rivers and tributaries) - Changes in concentrations of O2 - Concentration of E. Coli and fecal streptococci (drinking water) - Balance sheet total ionic (drinking water) - Salinity (water + water river) - Rate of siltation of dams	E	+++

According to the study of the environmental profile of Mauritania (2007), "The existing water resources information systems are scattered in the different structures and lack of harmonized standards. This prevents monitoring the state of the environment at the national level. "In many cases, existing systems are the result of poorly integrated projects still at the institution concerned. Despite a slow process of institutional integration of environment into development policy, some steps have been taken and important achievements can be noted. A Catalogue of EIS in Mauritania (2005) has been completed and the Ministry of the Environment has initiated feasibility studies for a future environmental information system centralized with a documentation center and a system geographic Information environment (EMIS). Some of the existing IS use the same software ArcGIS, ArcView and MapInfo, which are powerful tools in a user-friendly, easily controllable and able to support many data formats. This should facilitate the exchange of such data. Despite the gains related to existing IS; many weaknesses are identified.

At the institutional level:

- Lack of strategy monitoring of natural resources at the institutional level;

- The information is not collected and treated to facilitate use by different actors (they often correspond to the specific needs of supervisory structures);
- The dispersion of information amongst various institutions, e.g. volume of surface water in ministry of water & sanitation is different from that used by national agriculture offices where they obtain their data from the OMVS;
- Overlapping responsibilities in the collection of certain data, e.g. volume of surface water, storage behind small dams and water used for agriculture;

At the human level:

- Skills underdeveloped management databases (DB) in the new technologies of information and communication and monitoring and evaluation;
- A culture of inter-institutional water information sharing is minimum

In terms of the quality of the information:

- There is no clear procedure for verification of collected data;
- No updates are made for collected data;
- Data collection is not done regularly Technical and financial sustainability;
- The lack of financial resources allocated to the operation of structures for information systems such as GIS;

Data Management: Based upon the previous figure showing the M&E institutional framework in Mauritania water resources sector, the following table explains the data management matrix within and across these institutions as per the country visits and exploration.

Table 5. Water Resources-Data Management Matrix

Level	National Centre for Water Resources (CNRE)	Directorate of Hydrology & Dams	Directorate of Hydraulics	Ministry of Water & Sanitation
Method of collection	The data is collected by government employees during well drilling and by private sector employees drilling wells.	Site surveys. There used to be very few gauges at some dam locations but most of them are not working anymore	Reports sent from CNRE and DHD	Reports sent from Directorate of Hydraulics and National OMVS unit
Information collected	Piezometer level, well coordinates, population in well served area, well depth, well discharge at time of drilling and sometimes some water quality data.	Some surface water data and some meteorological data	When needed, the directorate collects population data from internet, surface water data and sometimes meteorological data, especially when it is planning for future water projects	Only general information about water resources availability and quality
Storage	Data is stored on an access database user-friendly computer program SIPPE2	Scarce data available are stored on paper and sometimes excel sheets	Information and data are stored on word documents and on papers	NA
Analyses & Verification	NO analyses and NO verification is made on the data			

Level	National Centre for Water Resources (CNRE)	Directorate of Hydrology & Dams	Directorate of Hydraulics	Ministry of Water & Sanitation
Dissemination	While important information is collected on groundwater in Mauritania, however it does not reach most of the other institutions that are interested in. The system is an in-house system with no network connectivity and used to print reports that are occasionally are sent to the Ministry Advisory Board	Data is not disseminated to any other institution	Important information regarding water supply & sanitation projects are reported to the Ministry of Water & Sanitation	Information in terms of country strategic plans are disseminated to public through media and internet
Recommendations	Make use of this very important work and enhance it within a complete network of monitoring for water resources in Mauritania	Tasks performed by this directorate need to be incorporated with other institutions within a solid M&E system	The Directorate of Hydraulics should implement a good M&E strategy and closely follow up all related information sources including the OMVS national unit	Establish a central M&E unit that prepares and follows up the M&E general strategy and be responsible for the coordination amongst all involved institutions

CNRE-SIPPE2: The center hosts an in-house SIPPE2 access database system that is used in storing all information related to groundwater using readings taken from wells from across the country; it is sometimes used also for monitoring purposes. The SIPPE2 is linked to a geographical information system. While, the SIPPE2 cannot be described as an Information System, yet, it can form the nucleus of a very successful one if directed towards the right track with sustainable funding and a supportive wide monitoring network. It is a database inventory system of well water points with more than 14,000 data points starting from the 1980 till now. It generates a list of points (wells and boreholes) by wilaya and municipalities, as well as their geographical location (maps). It monitors piezometric groundwater used (water catchment areas and Trarza). Data is stored in Microsoft database and are only processed occasionally for specific needs (demand). Data is not verified and no quality control is available. It is not used for monitoring but rather for storage at this stage. It is operated by 3-4 center personnel and installed on 3 desktop computers in the center information unit. Most of the data stored is outdated and only taken the first time the well is drilled and never updated. The data for groundwater levels are not used for evaluation of ground water resources in Mauritania. While, it contains some info about population, the records go back to the year 2004. It is to be noted that there is a lack in the number of piezometers for recording groundwater table. The data available does not provide complete coverage for the whole country and there are no clarifications for the roles of both DAR and CNRE with respect to monitoring of surface water. The following figures show the program structure in addition to screen captures of the SIPPE2 at the CNRE. Attached in the appendix is the complete description of the program (Burgeap, 2005. Services d'Assistance Technique pour le Développement des Connaissances Hydrogéologiques de la Mauritanie, Rapport R2 & R3, Notice d'Utilisation de La Base de Données, Second Project de Renforcement Institutionnel du Secteur Minier (PRISM II), Submitted to Ministère des Mines et de l'Industrie).

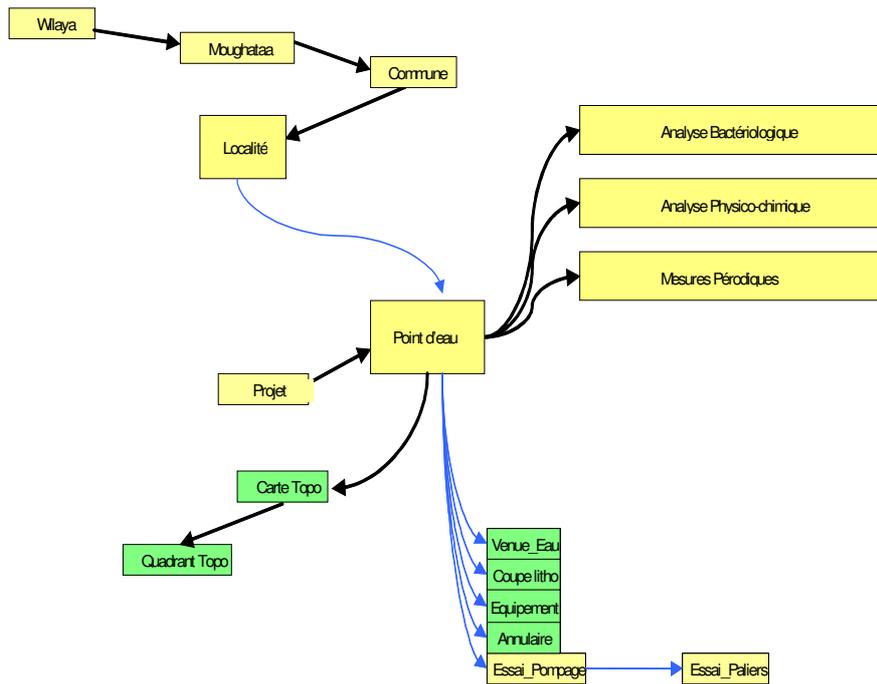


Figure 8. Program structure of SIPPE2 access database at the CNRE

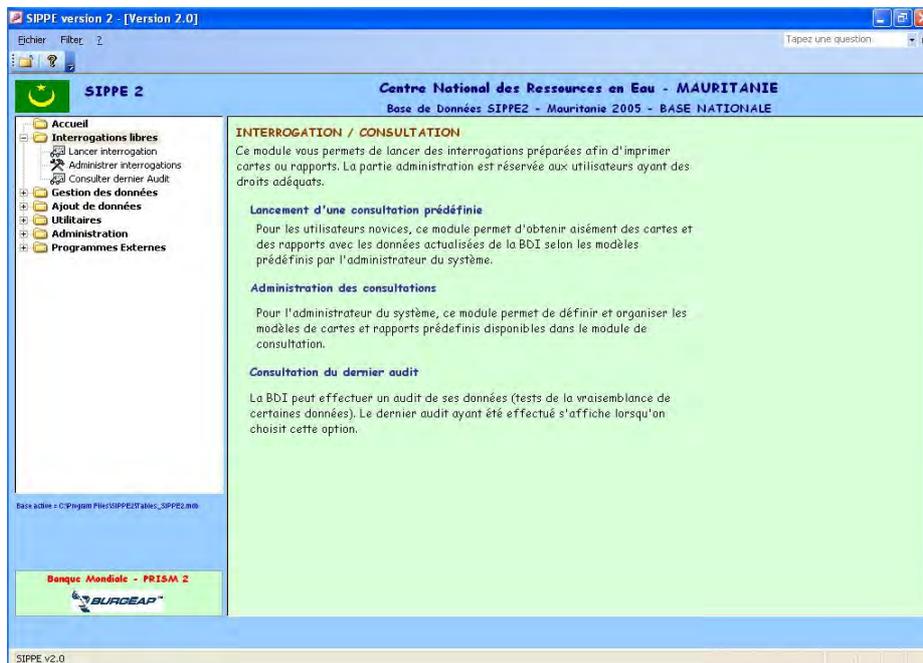


Figure 9. Windows graphical interface for SIPPE2 access database at the CNRE

OMVS- Environmental Observatory Unit: The database of the Department of Rural Development (focal point of the Environmental Observatory/ OMVS) provides information on dams and their watersheds (surface water) and collects data on surface water. It has an inventory and characteristics of dams

(creation date, basin area, volume, rivers...), hydrometric data; thematic maps by wilaya; IGN maps geo-referenced to 1/200 000; satellite images are interpreted and analyzed (United Nations Development Programme, 2007. Senegal River Basin Water & Environmental Management Project Report).

BDD & PND: They provide some interesting but localized hydrological data. It has a set of records giving information about localities, fishing sites, occupation of Typha, water systems...). Also it gives water surface data and quality of surface water. BDD meteorological service of the department of Agriculture provides data on 30 parameters related to temperature, humidity and rainfall. It has database of satellite images that provide vegetation indices from 1884 stored in digital format.

IMROP: It provides hydrographic services and hydrological data.

EMIS Environmental Affairs Service of the Department of Mines and Geology (DMG): provides data still partial, which include: Water points, map of aquifers, Streams and lakes, Atmospheric data, Deposits and mining indices, Inventory of species of flora and fauna and some regulations on the environment.

Table 6. Water Resources-Data Management info

Theme	Data Sources	Measurable	Available	Accessible	Reliable
Water Resources	DAR, PND, CNRE	Yes	Yes	Yes	No
Index overall quality of water (composite index)	DAR, CNRE	Yes	Yes	Yes	No
Water use and overexploitation of groundwater	CNRE (SIPPE), OMVS (SIGM)	Yes	No	Yes	No
Climatology	Service Agro-météo/ MDR	Yes	Yes	Yes	Yes
Water Quality	CNRE, OMVS (SIGM, SONADER)	Yes	Yes	Yes	No

Table 7. Water Resources-Information Dissemination (Ministere de l'Hydraulique et de l'Assainissement, 2012. Strategie de Developpement du Secteur de l'Eau et de l'Assainissement & Saadu Ebih, 2013. Mauritania Pan African Template, National Water Resources Center, Nouakchott, Mauritania)

Table 7. Water Resources-Information

Target Groups	Method	Frequency	Responsibility of
Environment (Pollution control)	Reports, Written Case Studies, Briefings, Presentations	Rare	CNRE, BDD & OMVS National Unit
Local governments	Reports, Briefings, Letters, Presentations, institutional committees	Monthly and semi-annually	CNRE, Directorate of Hydrology & Dams
Ministry of Water & Sanitation	Reports, Letters, webpages, , internet	Weekly & monthly and event-based	Directorate of Hydraulics, OMVS National Unit

Target Groups	Method	Frequency	Responsibility of
Transboundary offices	Reports, Briefings, Letters, Presentations, institutional committees, , internet	Monthly	OMVS National Unit
Tourism	NA	NA	NA
Agriculture	Informal meetings, letters, reports	Random, when needed and where info is available	CNRE
Hydropower	Briefings, Letters	Random, when needed and where info is available	Directorate of Hydraulics, OMVS National Unit
Industry & Commerce	Briefings, Letters	Random, when needed and where info is available	Directorate of Hydraulics, OMVS National Unit
Water Supply & Sewerage (Directorate of Hydraulics)	Informal meetings, Letters, Reports, internet	Random, when needed and where info is available	SNDE, ONAS, ONSER
Transport/Navigat ion	Briefings, Letters	Random, when needed and where info is available	OMVS National Unit
National Planning	Written project case studies, letters, reports	Semi- and annual	Directorate of Hydraulics, OMVS National Unit
Media/Civil society	Conferences, Journalists, Internet	Very frequent and can be daily or weekly	Ministry of Water & Sanitation

6. Water Supply & Sanitation M&E

a. Rural Water Supply M&E

i. Institutions and Monitoring Networks

Institutions collecting data: The only institutions collecting data on rural water supply in Mauritania are National Agency for Water & Sanitation (ANEPA) and National Company for Rural Water Services (ONSER). On the other hand, the Joint Monitoring Program (JMP) is also collecting information about rural water supply on an independent basis. The JMP have implemented household surveys (DHS) and Multi Indicator Cluster Surveys (MICS) for estimating broad coverage to determine progress towards the MDGs. Under normal circumstances, however, the JMP has had to adapt and interpret the information before using it in inter-country comparisons. Assessment of JMP data Mauritania country basis is not being done on a sufficient level to identify, describe and assess the data relevance and reliability. These institutions are collecting data for their own use and in most cases not for monitoring of performance of service supply, but the monitoring is intended to be from the Directorate of Planning and Monitoring & Cooperation (DSPC).

Structured M&E framework: In the year 2009, the Ministry of Water & Sanitation funded the Directorate of Planning and Monitoring and Cooperation to (DSPC) to start formulating a framework for Monitoring & Evaluation (M&E) for the rural water supply sector (Attached in the appendix the final technical report). While this framework has not yet been set in action and stopped in 2011 due to lack of funding, it is very promising and is a good start point for establishing a national M&E system in Mauritania. The following figure shows the M&E general framework in rural water supply.

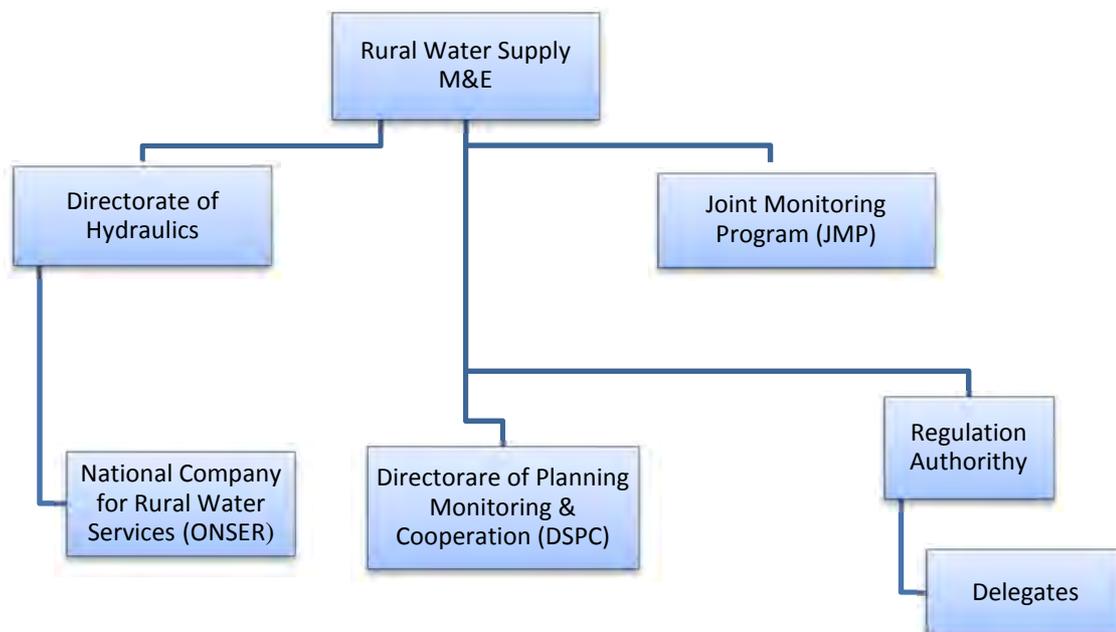


Figure 10. Organization chart for institutions collecting info in rural water supply

ii. Indicators & Sampling for Data Collection

M&E Data Collection Approaches: As shown in the previous figure, only water companies, ANEPA & ONSER collect data regarding rural water supply. A rural area in Mauritania is defined as the area populated by less than 5,000 individuals. These water companies own operate and maintain water networks in many places in rural areas in the country. At every network, the water company has an operator who is responsible for supervising networks, collecting water supply data and reporting operation problems to company. These operators are the main source of data used by the water companies in determining the water service coverage percentages and status. This data is used by the water companies for pricing and collecting revenue from network operation. There is a big advantage of having an operator 24hours beside the network taking data and supervising the network since this gives water companies the flow of required information regarding their networks and water supply in rural areas in the country. The following table has been used during Mauritania country visit and gives an overview on the data collection.

Table 8. Indicators & Sampling for rural water supply Data Collection

Question	Response	Comments
For what purpose is the data being collected?	Data is collected for purpose of water company use; e.g. checking networks working, checking number of users, checking quality of water and calculating revenues and	This data should be regularly fed to the DSPC for M&E
Is the data being collected by direct observation (such as through household surveys) or through knowledge of delivery of services by projects (supply side)?	Most of the data is collected through water company networks operators in every populated area and on every network. Collection of data of water supply by project is not performed.	A point of strength that ensures good representation of service to reality
Which indicators are being used? How do they compare to the indicators used by the JMP to measure progress towards the MDG?	Find below information about national indicators used and JMP indicators	National indicators have to be harmonized with the JMP indicators
What are the geographic area and/or population being surveyed?	Rural areas are defined in Mauritania as those having less than 5,000 inhabitants. Surveys are being performed on a country basis covering most of the populated areas, some surveys are made in project areas, hand pumps are included in surveys. The population is estimated periodically as part of the General Census of Population and Housing (RGPH) conducted by the National Statistics Office ONS. For years when the RGPH is not done, we can use the estimate produced by the NSO annual rate of change of the population. These data are available for each locality, municipality, moughataa, wilaya and national level.	Surveys are not frequently made by rural water companies and thus some of the information might be outdated
Comment on the survey design and the sample and its representativeness.	No design for surveys are made since water companies do not depend on surveys for data collection, on the other hand, there is some doubt that water companies has operators all across the country for all operating network for convey of collected data	It is not clear whether water companies are able to collect data from operators on all operating networks frequently
Are there quality checks on the data collection? Is the data verified?	No quality checks are made and data is not verified. There might be some instances where network operators shall report data that is not actually collected.	Quality checks are needed maybe through using data of JMP and other companies providing water service

Question	Response	Comments
Is the local definition of coverage the same as that of the MDGs.	NO	Harmonization is needed for coverage rates
Are the coverage rates based on area, or population? If based on area, do they accurately reflect population? If based on population, is the total population up-to-date and accurate or have interpretations been made which are of doubtful quality?	For accessibility of water, the coverage is computed as the number of households connected/number of households in city or town or wilaya or moughataa in rural areas. For consumption, the coverage is computed as the total volume of water consumed /population in rural area.	Revising coverage rates for accessibility of water is needed according to JMP
Is water quality tested and do the sample collection, indicators and water analysis give a realistic/accurate determination of water safety?	Every water company has a central lab for performing quality analysis tests on samples obtained from various parts of water networks. Samples are taken by laboratory technicians visiting water networks. Water quality tests includes tests for temperature, coliform, pH, TDS, Salinity, NO ₂ , NO ₃ , Ca, Mg, SO ₄ , NH ₄ , Fe, KMnO ₄ , and Cl. Local standards of water quality are adopted from European standards. Analyses lab staff are trained for sample analyses and result reporting. Equipment are new and in good condition and have been supplied by foreign funds. Water quality analysis is documented on reports and stored in excel files.	While lab was clean and equipment were organized and new, only one lab technician was working there with only one engineer responsible for lab
Data segregated by gender	NO	NA

Indicators used: As discussed before, the Joint Poverty & Environmental Program in Mauritania 2010 specified the indicators that reflect the state or the evolution of an environmental resource through a dual approach. The following are those key indicators adopted by Mauritania water institutions for rural water supply (Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique & Ministere Delegue Charge de l'Environnement, 2007. Indicateurs Environnement Aux de Suivi des Politiques et des Ressources Environnementales. Rapport Final Provisoire de Project d'Articulation Entre Pauvrete et Environnement). They are coping with the Objectives of the CSLP (3.5.1 Increase access to safe drinking water in a sustainable way in rural areas) and targeting the indicators listed in the Declaration on the Millennium Development Goals (MDGs), and again in the second PRSP action plan covering the period 2006-2010.

Table 9. List of indicators for Rural Water Supply in Mauritania

Theme	Monitoring Indicator	Type	Relevance
Accessibility of water	% Population with sustainable access to safe drinking water	R	++
	% Of population connected to the public distribution network	R	++
	% Of non-functional water infrastructure	R	++
Water use and overexploitation of groundwater	Per capita consumption mobilized (per year)	P	+
	% Domestic consumption	P	+
	% Industrial consumption	P	+
	Annual water consumption of mining sites	P	+
	% Agricultural use (irrigation)	P	+

The following table shows the indicators for water supply in rural areas and how they are calculated and where these indicators are supposed to go.

Table 10. Definition of key indicators for rural water supply in Mauritania

Theme	Definition	Frequency	Institution
Accessibility to drinking water in rural areas	Number of households connected to water / total number of households in rural areas of moughataa, wilaya. Connection to water is mainly defined by connection to a water network.	Annually	ANEPA, ONSER, ONS
Per Capita water consumption in rural areas	Volume of water consumed / population of rural areas in moughataa, wilaya	Annually	ANEPA, ONSER, ONS

Joint Monitoring Program (JMP): The JMP does not collect primary data itself, but depends on the data from primary source in Mauritania, which is censuses and household survey. Lately in 2012, the JMP issued an update for indicator values used for water supply in rural areas in Mauritania using the data from the Mauritania National Office for Statistics (ONS) amongst other international sources (Conseil National de la Statistique. 2012. Strategie Nationale de Developpement de la Statistique, Mauritanie). However, the indicators published by the JMP are different than those adopted nationally in Mauritania mainly because using different definition for indicators and using estimates or old records for population. The JMP uses the proportion of population using improved drinking water source in rural areas with a detailed definition for “improved” available on JMP website. This is shown clearly in the following table.

Table 11. Rural Water Supply coverage as calculated by ANEPA, ONSER& JMP for Mauritania (Joint Monitoring Program, JMP. 2012. Estimates for the use of Improved Drinking Water Sources, Mauritania)

Table 11. Rural Water Supply coverage as calculated by ANEPA, ONSER& JMP

Institution measuring indicator	Connection rate to drinking water networks	2011	Comments
ONSER	Number of households connected to water / total number of households	64%	
Joint Monitoring Program, JMP	Number of people having piped water into dwelling, into yard, public tap or standpipe, tubewell or borehole, dug well, protected spring & rainwater / total number of people	48% (improved), 46% (unimproved)	JMP update 2012 is for 2010 coverage rates

iii. Data Storage & Analysis

The following table shows a brief overview of data storage and analysis methods related to rural water supply.

Table 12. Data storage & analysis for rural water supply in Mauritania

Data collected	Method of collection	Frequency of collection	Institution	Quality checks	Storage
Volume of water pumped, condition of pumps, condition of network, number of clients, households accessible to water supply. water quality	Operator collects data and sends to technical office in water company	Annually	ONSER, ANEPA	General simple checks in company technical office	Excel files and sometimes access database

Data Management Chain: Monitoring can be considered as a chain of activities in an information system and with the chain closed with the management and control action of the decision maker. Building an accountable information system requires the activities in the chain shown in the following figure and they are designed sequentially starting from the specified information needs. An “x” is shown beside links that are not found in the water supply data chain in Mauritania. Main problem in water supply data management chain is that; the chain is not a closed loop, the chain is not continuous but interrupted at some locations, information handling is in form of excel data sheets.

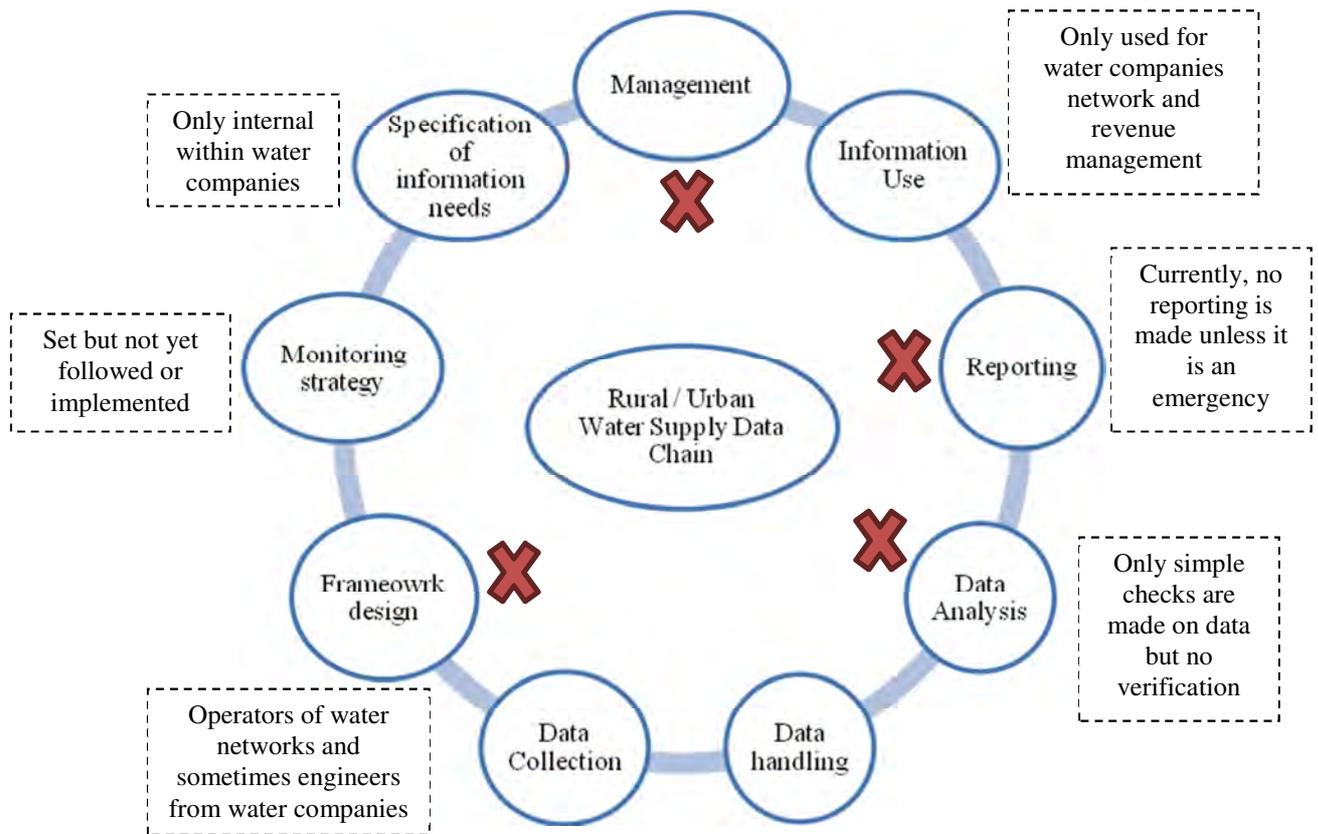


Figure 11 . Data management chain of activities for urban & rural water supply in Mauritania

DPSC Information System: Lately the Ministry of Water & Sanitation launched an implementation program for an information system in rural & urban water supply and sanitation. Due to insufficient funds, the program is not yet implemented and generalized throughout water sector institutions, but simple infrastructure for the system are available at the Department of Planning Monitoring & Evaluation. The Information System is written in MySQL programming language with ability to be linked with SIPPE of the CNRE and ability to be fed by the monitoring key indicators. It is designed as a tool for data management and decision support for planners. It has an enhanced reporting tool that allows organization of information in a summary relevant to facilitate data analysis. The system relies on a two-time reporting; executive summary quarterly and annual report. These summaries are intended to present a decision support and monitoring for institutional performance, will demonstrate, beyond the simple observation, the weaknesses related to institutional and remedial measures to be adopted and annual monitoring of the pace of progress in the implementation of the MDGs. The following figures show the structure of the DSPC information system and a sample structure for the executive summary report (Department of Planning Monitoring & Evaluation.2010. Systeme d'Information DPSC/MHA).

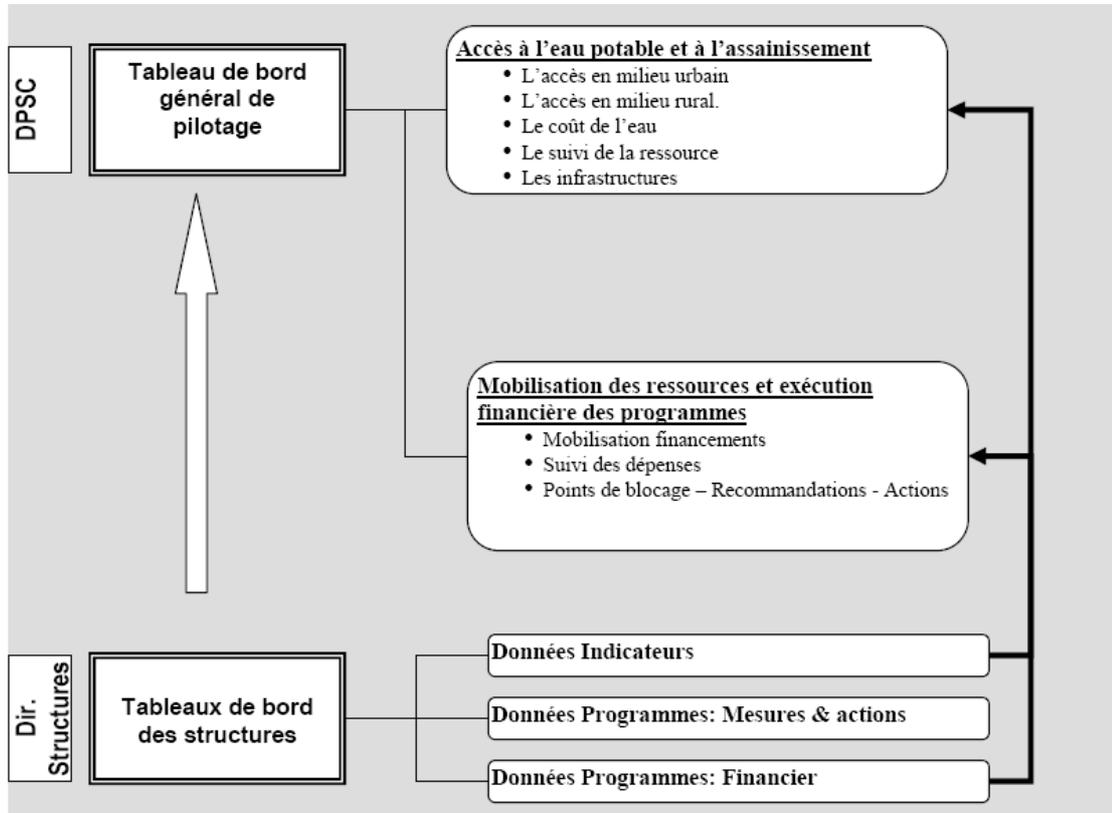


Figure 12. Schematic of DSPC Information System of urban/rural water supply and sanitation

1 REALISATIONS / PROGRAMMATIONS ACTUALISEES Trimestre ... - Date MAJ : 08/02/09		
RESULTATS ATTENDUS POUR LE TRIMESTRE	ETAT D'AVANCEMENT ACTUALISE FIN DU TRIMESTRE	ACTIONS A ENGAGER AU TRIMESTRE SUIVANT / RECOMMANDATIONS
STRUCTURE - ???		
Projet 1 : ...		
• Activité	
• ...		
Projet 2 : ...		
• Activité ...		
• ...		
STRUCTURE - ???		
Projet 1 : ...		
• Activité	
• ...		
Projet 2 : ...		
• Activité ...		
STRUCTURE - ???		
Projet 1 : ...		
• Activité	
• ...		
Projet 2 : ...		
• Activité ...		
• ...		

Figure 13. Sample output report for the DSPC information system of urban/rural water supply and sanitation

SYGAEP ONSER Database System: The ONSER has a database SYGAEP "Management System Drinking water" to follow the networks managed by ONSER in an evaluation concern to integrate new locations and new materials. SYGAEP handles two types of information related to Administrative Information of the country and Information networks. Each network feeds one or several villages in the administrative list. A network is described by its infrastructure (pumping system, water supply point, distribution points, reservoirs ...), in addition, SYGAEP records the history of interventions and the bibliography devoted to each network. SYGAEP allows for queries in Access format. The query results can be viewed in MS Word, MS Excel or MapInfo.

iv. Information Dissemination & use

Information & regional/global organizations: Rural water supply data produced in the country of Mauritania are not used by global organizations, which produce monitoring indicators for rural water supply such as JMP. Sometimes, this rural water supply data is used by global donors when planning for a development project in rural water sector. The following table shows the rural water supply information dissemination.

Information flow: There is no two-way flow of information between Directorate of Hydraulics and water companies except in some rare incidents.

Table 13. Urban & Rural Water Supply-Information Dissemination

Target Groups	Method	Frequency	Responsibility of	For what purpose
Directorate of Hydraulics	Reports, Briefings, Letters, Presentations, institutional committees	Random, when needed and where info is available	ANEPA, ONSR, ONS	Management and assessing sector performance
Directorate of Planning Monitoring & Evaluation	Informal meetings, Letters, Reports	NA	ANEPA, ONSR	Monitoring & evaluation for progress towards goals
Ministry of Water & Sanitation	Informal meetings, Letters, Reports	Weekly & monthly and event-based	Directorate of Hydraulics	Planning & Development
Media/Civil society	Conferences, Journalists, Internet	Very frequent and can be daily or weekly	Ministry of Water & Sanitation	

b. Rural Sanitation M&E

No data collection, Monitoring or Evaluation efforts are being currently conducted in rural areas for Sanitations, only in Nouakchott.

7. Urban Water Supply & Sanitation M&E

a. Urban Water Supply M&E

i. Institutions and Monitoring Networks

Institutions collecting data: The only institutions collecting data on urban water supply in Mauritania are National Agency for Water & Sanitation (ANEPA) and National Society of Water (SNDE). On the other hand, the Joint Monitoring Program (JMP) is also collecting information about urban water supply on an independent basis. The JMP have implemented household surveys (DHS) and Multi Indicator Cluster Surveys (MICS) for estimating broad coverage to determine progress towards the MDGs. Under normal circumstances, however, the JMP has had to adapt and interpret the information before using it in inter-country comparisons. Assessment of JMP data Mauritania country basis is not being done on a sufficient level to identify, describe and assess the data relevance and reliability. These institutions are collecting data for their own use and in most cases not for monitoring of performance of service supply, but the monitoring is intended to be from the Directorate of Planning and Monitoring & Cooperation, DSPC (Department of Planning Monitoring & Evaluation. 2010. Systeme d'Information DPSC/MHA).

Structured M&E framework: In the year 2009, the Ministry of Water & Sanitation funded the Directorate of Planning and Monitoring and Cooperation to (DSPC) to start formulating a framework for Monitoring & Evaluation (M&E) for the urban water supply sector (Attached in the appendix the final technical report). While this framework has not yet been set in action and stopped in 2011 due to lack of funding, it is very promising and is a good start point for establishing a national M&E system in Mauritania. The following figure shows the M&E general framework in urban water supply.

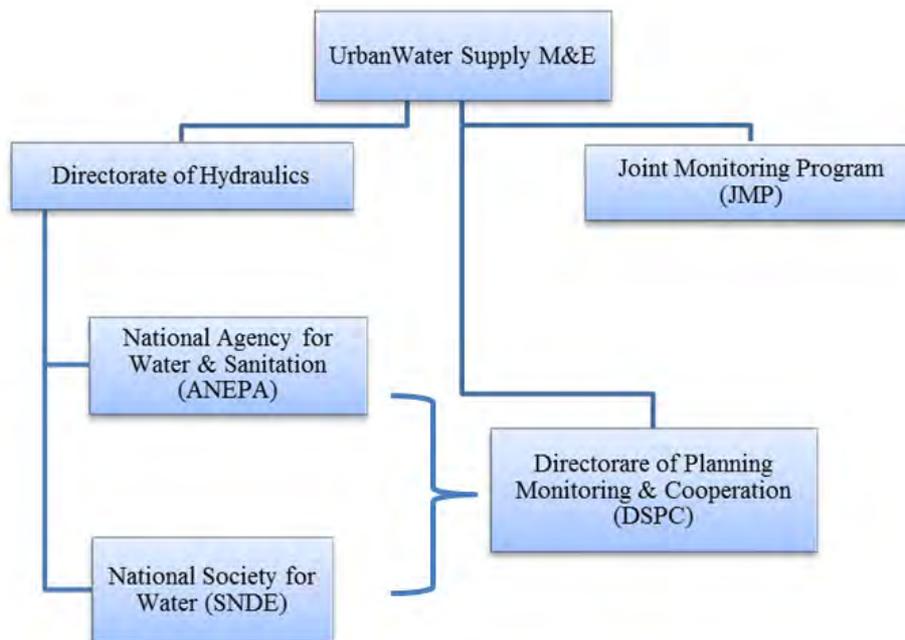


Figure 14. Organization chart for institutions collecting info in urban water supply

ii. Indicators & Sampling for Data Collection

M&E Data Collection Approaches: As shown in the previous figure, only water companies, ANEPA & SNDE collect data regarding urban water supply. An urban area in Mauritania is defined as the area populated by more than 5,000 individuals. These water companies own operate and maintain water networks in many places in urban areas in the country. At every network, the water company has an operator who is responsible for supervising networks, collecting water supply data and reporting operation problems to company. These operators are the main source of data used by the water companies in determining the water service coverage percentages and status. This data is used by the water companies for pricing and collecting revenue from network operation. There is a big advantage of having an operator 24 hours beside the network taking data and supervising the network since this gives water companies the flow of required information regarding their networks and water supply in urban areas in the country. The following table has been used during Mauritania country visit and gives an overview on the data collection.

Table 14. Indicators & Sampling for urban water supply Data Collection

Question	Response	Comments
For what purpose is the data being collected?	Data is collected for purpose of water company use; e.g. checking networks working, checking number of users, checking quality of water and calculating revenues and	This data should be regularly fed to the DSPC for M&E
Is the data being collected by direct observation (such as through household surveys) or through knowledge of delivery of services by projects (supply side)?	Most of the data is collected through water company networks operators in every populated area and on every network. Collection of data of water supply by project is not performed.	A point of strength that ensures good representation of service to reality
Which indicators are being used? How do they compare to the indicators used by the JMP to measure progress towards the MDG?	Find below information about national indicators used and JMP indicators	National indicators have to be harmonized with the JMP indicators
What are the geographic area and/or population being surveyed?	Urban areas are defined in Mauritania as those having more than 5,000 inhabitants. Surveys are being performed on a country basis covering most of the populated areas, some surveys are made in project areas, hand pumps are included in surveys. The population is estimated periodically as part of the General Census of Population and Housing (RGPH) conducted by the National Statistics Office ONS. For years when the RGPH is not done, we can use the estimate produced by the NSO annual rate of change of the population. These data are available for each locality, municipality, moughataa, wilaya and national level.	Surveys are not frequently made by urban water companies and thus some of the information might be outdated
Comment on the survey design and the sample and its representativeness.	No design for surveys are made since water companies do not depend on surveys for data collection, on the other hand, there is some doubt that water companies has operators all across the country for all operating network for convey of collected data	It is not clear whether water companies are able to collect data from operators on all operating networks frequently

Question	Response	Comments
Are there quality checks on the data collection? Is the data verified?	No quality checks are made and data is not verified. There might be some instances where network operators shall report data that is not actually collected.	Quality checks are needed maybe through using data of JMP and other companies providing water service
Is the local definition of coverage the same as that of the MDGs.	NO	Harmonization is needed for coverage rates
Are the coverage rates based on area, or population? If based on area, do they accurately reflect population? If based on population, is the total population up-to-date and accurate or have interpretations been made which are of doubtful quality?	For accessibility of water, the coverage is computed as the number of households connected/number of households in city or town or wilaya or moughataa in urban areas. For consumption, the coverage is computed as the total volume of water consumed /population in urban area.	Revising coverage rates for accessibility of water is needed according to JMP
Is water quality tested and do the sample collection, indicators and water analysis give a realistic/accurate determination of water safety?	Every water company has a central lab for performing quality analysis tests on samples obtained from various parts of water networks. Samples are taken by laboratory technicians visiting water networks. Water quality tests includes tests for temperature, coliform, pH, TDS, Salinity, NO ₂ , NO ₃ , Ca, Mg, SO ₄ , NH ₄ , Fe, KMnO ₄ , and Cl. Local standards of water quality are adopted from European standards. Analyses lab staff are trained for sample analyses and result reporting. Equipment are new and in good condition and have been supplied by foreign funds. Water quality analysis is documented on reports and stored in excel files.	While lab was clean and equipment were organized and new, only one lab technician was working there with only one engineer responsible for lab
Data segregated by gender	NO	NA

Indicators used: As discussed before, the Joint Poverty & Environmental Program in Mauritania 2010 specified the indicators that reflect the state or the evolution of an environmental resource through a dual approach. The following are those key indicators adopted by Mauritania water institutions for urban water supply (Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique & Ministere Delegue Charge de l'Environnement. 2007. Indicateurs Environnement Aux de Suivi des Politiques et des Ressources Environnementales. Rapport Final Provisoire de Project d'Articulation Entre Pauvrete et Environnement). They are coping with the Objectives of the CSLP (3.5.1 Increase access to safe drinking water in a sustainable way in urban areas) and targeting the indicators listed in the Declaration on the Millennium Development Goals (MDGs), and again in the second PRSP action plan covering the period 2006-2010.

Table 15. List of indicators for urban Water Supply in Mauritania

Theme	Monitoring Indicator	Type	Relevance
Accessibility of water	% Population with sustainable access to safe drinking water	R	++
	% Of population connected to the public distribution network	R	++
	% Of non-functional water infrastructure	R	++
Water use and overexploitation of groundwater	Per capita consumption mobilized (per year)	P	+
	% Domestic consumption	P	+
	% Industrial consumption	P	+
	Annual water consumption of mining sites	P	+
	% Agricultural use (irrigation)	P	+

The following table shows the indicators for water supply in urban areas and how they are calculated and where these indicators are supposed to go.

Table 16. Definition of key indicators for urban water supply in Mauritania

Theme	Definition	Frequency	Institution
Accessibility to drinking water in urban areas	Number of households connected to water / total number of households in urban areas of city, town, moughataa, wilaya. Connection to water is mainly defined by connection to a water network.	Annually	ANEPA, SNDE, ONS
Per Capita water consumption in urban areas	Volume of water consumed / population of urban areas in city, town, moughataa, wilaya	Annually	ANEPA, SNDE, ONS

Joint Monitoring Program (JMP): The JMP does not collect primary data itself, but depends on the data from primary source in Mauritania, which is censuses and household survey. Lately in 2012, the JMP issued an update for indicator values used for water supply in urban areas in Mauritania using the data from the Mauritania National Office for Statistics (ONS) amongst other international sources (attached in Appendices). However, the indicators published by the JMP are different than those adopted nationally in Mauritania mainly because using different definition for indicators and using estimates or old records for population. The JMP uses the proportion of population using improved drinking water source in urban areas with a detailed definition for “improved” available on JMP website.

Table17. Urban Water Supply coverage as calculated by ANEPA, ONSER& JMP for Mauritania (Joint Monitoring Program, JMP. 2012. Estimates for the use of Improved Drinking Water Sources, Mauritania)

Table 17. Urban Water Supply coverage as calculated by ANEPA, ONSER& JMP

Institution measuring indicator	Connection rate to drinking water networks	2011	Comments
ONSER	Number of households connected to water / total number of households	50%	
Joint Monitoring Program, JMP	Number of people having piped water into dwelling, into yard, public tap or standpipe, tube well or borehole, dug well, protected spring & rainwater / total number of people	52% (improved), 48% (unimproved)	JMP update 2012 is for 2010 coverage rates

iii. Data Storage & Analysis

The following table shows a brief overview of data storage and analysis methods related to urban water supply.

Table 18. Data storage & analysis for urban water supply in Mauritania

Data collected	Method of collection	Frequency of collection	Institution	Quality checks	Storage
Volume of water pumped, condition of pumps, condition of network, number of clients, households accessible to water supply. water quality	Operator collects data and sends to technical office in water company	Annually	SNDE, ANEPA	General simple checks in company technical office	Excel files and sometimes access database

Data Management Chain: Refer to Figure 9, which shows the data management chain for urban and rural water supply in Mauritania.

DPSC Information System: The DPSC Information System is also used for urban water supply monitoring and evaluation. Refer to previous description or detailed description in Appendices.

iv. Information Dissemination & use

Information & regional/global organizations: urban water supply data produced in the country of Mauritania are not used by global organizations, which produce monitoring indicators for urban water supply such as JMP. Sometimes, this urban water supply data is used by global donors when planning for a development project in urban areas. Refer to previous table for urban water supply information dissemination.

Information flow: There is no two-way flow of information between Directorate of Hydraulics and water companies except in some rare incidents.

b. Urban Sanitation M&E

i. Institutions and Monitoring Networks

Institutions collecting data: The only institution collecting data on urban sanitation in Mauritania is the National Office for Sanitation (ONS) On the other hand; the Joint Monitoring Program (JMP) is also collecting information about urban sanitation on an independent basis. The JMP have implemented household surveys (DHS) and Multi Indicator Cluster Surveys (MICS) for estimating broad coverage to determine progress towards the MDGs. Under normal circumstances, however, the JMP has had to adapt and interpret the information before using it in inter-country comparisons. Assessment of JMP data Mauritania country basis is not being done on a sufficient level to identify, describe and assess the data relevance and reliability. These institutions are collecting data for their own use and in most cases not for monitoring of performance of service, but the monitoring is intended to be from the Directorate of Planning and Monitoring & Cooperation (DPSC).

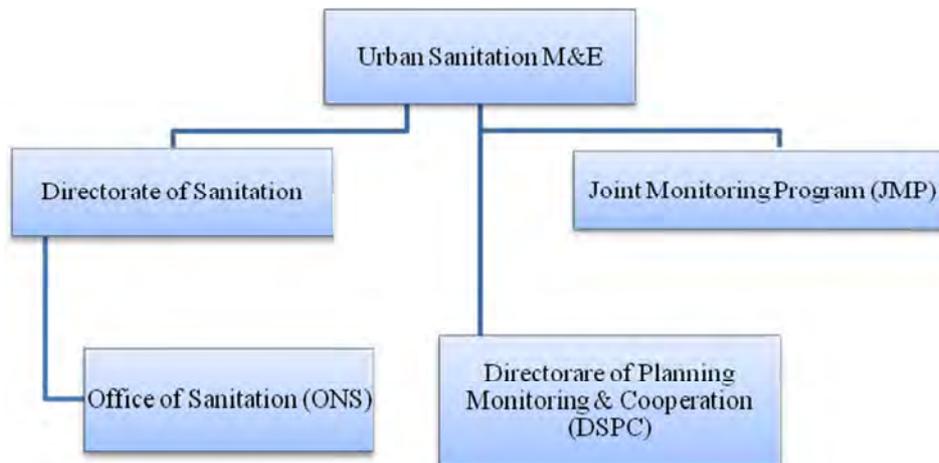


Figure ١٩. Organization chart for institutions collecting info in urban sanitation

Structured M&E framework: In the year 2009, the Ministry of Water & Sanitation funded the Directorate of Planning and Monitoring and Cooperation to (DSPC) to start formulating a framework for Monitoring & Evaluation (M&E) for the urban sanitation sector (Attached in the appendix the final technical report). While this framework has not yet been set in action and stopped in 2011 due to lack of funding, it is very promising and is a good start point for establishing a national M&E system in Mauritania. The following figure shows the M&E general framework in urban sanitation.

ii. Indicators & Sampling for Data Collection

Indicators used: As discussed before, the Joint Poverty & Environmental Program in Mauritania 2010 specified the indicators that reflect the state or the evolution of an environmental resource through a dual approach. The following are those key indicators adopted by Mauritania water institutions for urban sanitation. They are coping with the Objectives of the CSLP (3.5.2 Increase access to sanitation), and SNDD (3 Improve wastewater treatment), and those of PANE (9.1 Improving urban sanitation).

Table 19. List of indicators for Urban Sanitation in Mauritania

Theme	Monitoring Indicator	Type	Relevance
Sewerage and wastewater treatment	Volume of wastewater (domestic and industrial)	E	+
	Length of Sanitation networks in Km	E	+
	Volume and% wastewater (domestic and industrial) collected in a sewer collective (and / or average amount spilled per household septic tanks)	R	+++
	% Population with access to sewerage network (urban / rural)	R	+++
	% Population with individual sanitation (latrines, septic tanks)	R	+++
	Volume and% wastewater (domestic and industrial) recycled	R	+++

The following table shows the indicators for sanitation in urban areas (only Nouakchott) and how they are calculated and where these indicators are supposed to go.

Table 20. Definition of key indicators for urban sanitation in Mauritania

Theme	Definition	Frequency	Institution
Accessibility rate to sanitation	Number of households connected to sanitation / total number of households in urban areas of city, town, moughataa, wilaya. Connection to sanitation is defined by connection to a sewer network or a septic tank	Annually	ONAS, ONS

Joint Monitoring Program (JMP): The JMP does not collect primary data itself, but depends on the data from primary source in Mauritania, which is censuses and household survey. Lately in 2012, the JMP issued an update for indicator values used for sanitation in urban areas in Mauritania using the data from the Mauritania National Office for Statistics (ONS) amongst other international sources (attached in Appendices). However, the indicators published by the JMP are different than those adopted nationally in Mauritania mainly because using different definition for indicators and using estimates or old records for population. The JMP uses the proportion of population using improved sanitation facilities in urban areas with a detailed definition for “improved” available on JMP website.

Table 21. Urban Sanitation coverage as calculated by ONAS& JMP for Mauritania (Joint Monitoring Program, JMP. 2012. Estimates for the use of Improved Drinking Water Sources, Mauritania)

Table 21. Urban Sanitation coverage as calculated by ONAS& JMP

Institution measuring indicator	Connection rate to sanitation networks	2011	Comments
ONAS	Number of households connected to sanitation / total number of households in urban areas of city, town, moughataa, wilaya	61%	
Joint Monitoring Program, JMP	Number of people having flush toilet, piped sewer system, flush to pit latrine, ventilated improved pit latrine, pit latrine with slab & composting toilet / total number of people	51% (improved), 16% (unimproved)	JMP update 2012 is for 2010 coverage rates

iii. Data Storage & Analysis

The following table shows a brief overview of data storage and analysis methods related to urban sanitation.

Table 22. Data storage & analysis for urban sanitation in Mauritania

Data collected	Method of collection	Frequency of collection	Institution	Quality checks	Storage
Volume of wastewater produced, condition of treatment plants, condition of network, number of clients, households accessible to sanitation	NA	NA	ONS	NA	NA

Data Management Chain: Monitoring can be considered as a chain of activities in an information system and with the chain closed with the management and control action of the decision maker. Building an accountable information system requires the activities in the chain shown in the following figure and they are designed sequentially starting from the specified information needs. An “x” is shown beside links that are not found in the urban sanitation data chain in Mauritania. With these problems, it can be clearly seen that there is NO urban sanitation data management chain.



Figure ١٦ . Data management chain of activities for urban & rural water supply in Mauritania

DPSC Information System: The DPSC Information System is also used for urban sanitation monitoring and evaluation. Refer to previous description or detailed description in Appendices. (Department of Planning Monitoring & Evaluation. 2010. Systemed'Information DPSC/MHA).

iv. Information Dissemination & use

NA

8. M&E Subsystems

a. Environment

As explained before, the Joint Poverty & Environmental Program plays an important role in Mauritania water sector M&E (Project Articulation Pauvrete Environnement, 2010. Evaluation Environnementale Strategique, EES, Du Secteur de l'Hydraulique & Ministere Delegee Charge de l'Environnement. 2007. Indicateurs Environnement Aux de Suivi des Politiques et des Ressources Environnementales. Rapport Final Provisoire de Project d'Articulation Entre Pauvrete et Environnement) as it identified in 2010 key monitoring indicators that will be used for natural resources, water & Sanitation, water pollution and deforestation. This constituted the first organized work in M&E framework for water sector in Mauritania. It is not clear whether the Environmental Program in Mauritania will contribute by its resources to M&E for water sector. Moreover, the potential for sharing M&E data concerning pollution control & deforestation is not also clear and could not be identified during country visit especially that the monitoring network is not yet in place in Mauritania but rather on reports and studies.

b. Physical Surveys

Physical surveys in Mauritania are only done by the National Office for Statistics for the purpose of collecting data on population in different areas of the countries and this data is very useful for use in water sector as it is used in calculating main indicators for water supply and sanitation coverage as explained before. It is not an M&E data but rather counts of population every 10 years.

c. Census & Socio-economic Surveys

ONS & Census & Soci-economic surveys: The National Office of Statistics (ONS) is responsible for collecting and publishing census and socio-economic data in Mauritania (National Office of Statistics, 2011. Annuaire Statistique 2011, Ministry of Economic Affairs & Development, Mauritania). All data is published online and it is the responsibility of every institution to take what it needs from the online database. While census data are used extensively in water and sanitation sector, this data is only published every 10 years depending on physical surveys for population, it was published 2000 and 2012. For census data in any other year, the office provides a projection method that is developed by the US National Census Office for Demographic Analysis, Population Analysis System Using Excel. Therefore, the timeline for the census is not the same as that for water and sanitation monitoring and planning. It is reported that these interpretations might lead to inaccurate figures. One more weakness is that the household surveys performed by the ONS for purpose of population surveying, do not include sufficient questions in relation to accessibility of water and connection to sanitation services. Since the M&E framework in Mauritania water and sanitation sector is not yet developed and/or implemented, there is no harmonization for the boundaries used in census and that required to calculate important related water indicators.

d. Meteorological Surveys

The system of meteorological observation and telecommunications consists of 13 synoptic stations and 70 rainfall stations and means of telecommunication (BLU and others) associated with each station. The stations cover only 5% of the national territory and are mainly installed in the regional capitals (except Aleg and Selibaby) and two moughataas (Boutilimit and BirMoghrein). Climate data is still on paper media. The lack of personnel and equipment to prevent the launch activities climatology; the work done so far is limited to the correction and input in Excel and CLICOM climate data. Agro meteorology and some rainfall stations have always been managed by the Ministry of Rural Development and the

collection of data from these stations is provided by the Ministry of the Interior. Such data is not used in the water sector. While no problems are raised about the technical performance of stations, several issues raised about the lack of human resources for operation of station and the inadequacy of these stations coverage across the nation. Given the difficulties and problems encountered in the management of meteorological activity by different structures and the occurrence of extreme weather events and the need to develop a tool for monitoring and prevention of these phenomena, the State established in 2006 a public administrative character called "National Office of Meteorology" (Decree 140-2006 of 14 December 2006). The objectives of this structure is to consolidate all meteorological activities at the national level and provide user-friendly products to end users and help mitigate the adverse effects of disasters origins weather and climate(www.onm.mr).

e. Agriculture

Agriculture in Mauritania is managed by the Ministry of Rural Development, Directorate of Cooperation, Monitoring and Evaluation and department (DPCSE) and the Directorate of Rural Reclamation. DPCSE conducts annual surveys on cultivated lands and state of dams and collects information on small dams in country (technical state, storage volume) in context of annual survey EMEA, which is financed by the World Bank. Currently, the Ministry of Rural Development has no monitoring stations and obtains its only data about surface water from the OMVS national Unit.

Rain-fed Agriculture: Mauritania has reveal plans to increase its arable land by more than 100% in a drive towards satisfying almost 40% of the country's cereal needs. This ambition is detailed in its 2013-2014 agriculture program, which was presented at the Council of Ministers by the Minister of Rural Development Brahim Ould Mohamed Ould EIM'Bareck Mukhtar. The 2013-2014 agricultural program aims at "cultivating 200,000 hectares" which is an equivalent of 110% increase. The Rural Development Minister underlined that irrigation practice has been very positive in Mauritania, as it continues to boost farm produce. According to him, the ministry has registered "a substantial increase since the cultivated area increased from 15,000 to 39,000 hectares". The ministry is planning to cultivate 40,000 hectares in an irrigated sector and 173,000 hectares in the rain-fed agriculture.

Mauritania relies on importation to satisfy its cereal needs. Two years ago, it experienced an acute rainfall which heavily affected the country's agricultural sector and livestock. The government continues to implement a subsidy program for basic commodities in favor of the most vulnerable sector of the population. The country is heavily dominated by the Sahara desert, which accounts for more than 80% of country's territory. It is also one the poorest countries in the Maghreb and in the world.

The following figure shows the change in the area of irrigated lands and crop yield in tonnage from 1999 to 2012. And the table shows the change in the crop yield in ton/ha for various irrigated crops.

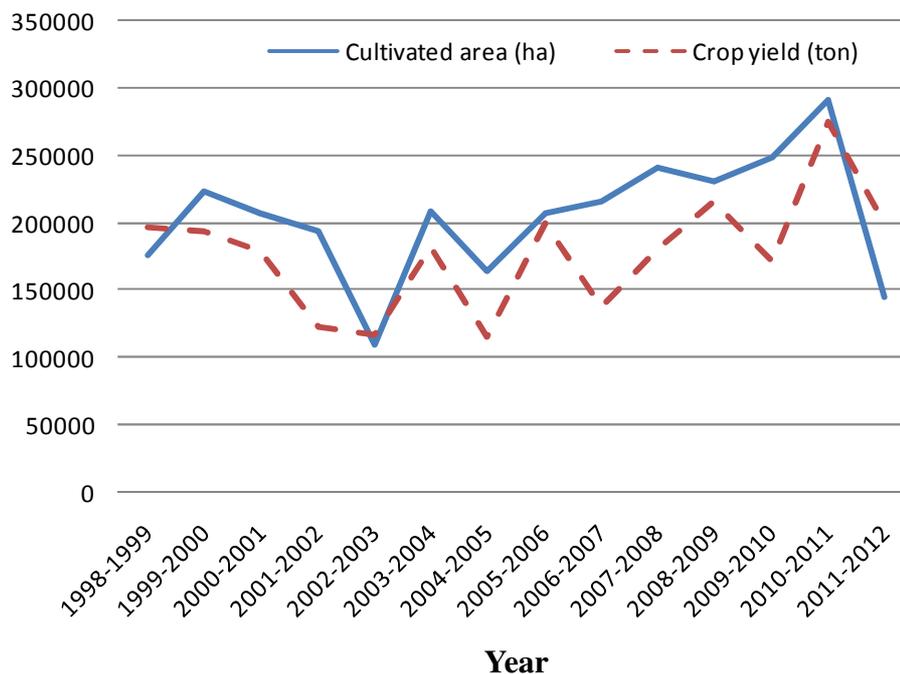


Figure 17 . Evolution of irrigated land and crop yield in Mauritania

Table 23. Evolution of crop yields (ton/ha) for different types of crops

Années	Diéri			Bas-Fonds			Walo		Decrue SONADER		Irrigué/hivernage		
	Sorgho	Mil	Mais	Sorgho	Mais	Blé/orge	Sorgho	Mais	Sorgho	Mais	Sorgho	Mais	Riz
1983/1984	0.40	0.35	0.32	0.53	0.48		0.59	0.59	0.68	1.15	0.76	1.35	5.00
1984/1985	0.73	0.49	0.48	0.97	0.72		1.07	0.89	1.24	1.71	1.40	2.00	4.50
1985/1986	0.69	0.66		0.91	0.35		0.73	0.39			1.00		4.87
1986/1987	0.91	0.70		0.80	0.33		0.70	0.50			1.75	2.46	5.00
1987/1988	0.90	0.58	0.45	1.00			0.70	0.45	0.36		1.62	2.51	4.51
1988/1989	0.56	0.50	0.60	0.68	0.50		0.95	0.70	1.48		2.00	2.50	4.16
1989/1990	0.70	0.50	0.60	0.72	0.44		0.85	0.33	0.66	4.20	0.98	2.56	4.03
1990/1991	0.43	0.28	0.30	0.48			0.80		0.54		2.03	2.50	3.33
1991/1992	0.37	0.27	0.29	0.47	0.51		0.70	0.80	0.93				2.81
1992/1993	0.43	0.26		0.54	0.37		0.78	1.96	1.64	9.41	1.25	3.07	3.99
1993/1994	0.56	0.26	0.40	0.52	0.51		0.77	0.69	0.42	0.26	1.00	1.25	3.29
1994/1995	0.60	0.69	0.60	0.71			0.79		1.21	0.11	1.00		3.00
1995/1996	0.50	0.62		0.73			1.09		0.83		1.49		4.33
1996/1997	0.27	0.20	0.30	0.29	0.35		0.35	0.30	0.70		1.50	1.32	3.83
1997/1998	0.24	0.10		0.74	1.26		1.30	0.90	0.46	0.83	1.08	1.13	3.72
1998/1999	0.44	0.95		0.83	0.93		0.53	1.77	1.00		1.10	1.13	4.06
1999/2000	0.51	0.35	0.52	0.67	0.63		0.33	0.80	1.03		1.50	1.62	4.02
2000/2001	0.50	0.30	0.60	0.66	0.65		0.36	0.80		1.50	1.50	1.76	4.49
2001/2002	0.30	0.32	0.28	0.39	1.26		0.30	0.61	0.68	0.60	1.20	1.37	4.67
2002/2003	0.25	0.11	0.40	0.56	0.38		0.19	0.20	0.90	0.90	0.74	0.69	4.77
2003/2004	0.55	0.39	0.89	0.46	0.59	2.49	0.27	0.80	0.76	0.90	1.03	1.00	4.70
2004/2005	0.10	0.07	0.32	0.41	0.36	2.00	0.20	0.30	0.09		1.41	1.34	3.63

Années	Diéri			Bas-Fonds			Walo		Decrue SONADER		Irrigué hivernage		
	Sorgho	Mil	Mais	Sorgho	Mais	Blé/orge	Sorgho	Mais	Sorgho	Mais	Sorgho	Mais	Riz
2005/2006	0.59	0.40	0.68	0.51	0.62	2.10	0.37	0.55	0.89	0.53	2.00	2.00	5.17
2006/2007	0.42	0.26	0.65	0.49	0.53		0.43	0.54	0.60	0.80	1.50		3.09
2007/2008	0.37	0.10	0.72	0.56	0.69		0.51	0.80	0.69	0.76			4.54
2008/2009	0.48	0.20	0.50	0.60	0.68	2.00	0.22	0.88	0.71	0.80			4.65
2009/2010	0.55	0.40	0.33	0.38	0.53	1.98	0.05	0.42	0.69	0.76			3.93
2010/2011	0.49	0.30	0.77	0.57	0.89	2.50	0.29	0.71	0.70	0.80			5.01
2011/2012	0.14	0.11	0.44	0.56	0.65	1.77	0.20		0.70	0.80			5.02

f. Universities & Research Institutions

Research Institutions working in water sector: While the only university in Mauritania, the University of Nouakchott; it does not have a water specialization. The only center that is related to water resources research and funded by the World Bank is the National Center for Water Resources (CNRE). As discussed before, CNRE host the SIPPE2 access database, which is only used for storing data rather than monitoring data and evaluating water resources. This access database is an excellent data storage and analysis tool that can be integrated with DPSC information system and can be updated regularly with data.

g. Transboundary Water

OMVS National Unit in Mauritania: The OMVS regional organizational Structure is supplemented at the level of each member state by an OMVS National Unit which is the instrument through which the OMVS competent or Ministry of Water & Sanitation ensures the follow-up of the organization's activities. The National Unit in Mauritania coordinates the OMVS activities (High commission SOGED and SOGEM) and is a permanent Member of the High Commission's Advisory Committees (CRP, CPE, etc) (United Nations Development Programme. 2007. Senegal River Basin Water & Environmental Management Project Report).

OMVS & Monitoring Program PASIE: In the framework of the Senegal River Basin water resources management, PASIE is a program of action which defines a whole set of measures designed to correct, optimize and monitor the environmental impacts of the So-called first generation structures (Dama and Manantali dams as well as their ancillary structures). The program also includes coordination, communication and follow-up arrangements for the projected activities under a participative approach involving all the actors concerned. This is mainly achieved through the Observatory for Environment, which objective is to monitor the evolution of the of the environment in the Senegal River delta and valley so as to provide the OMVS and the three riparian member states with the necessary information to measure or assess the environmental impacts induced by the dams and the hydro-agricultural projects sited in the River Basin, their management systems and the induced effects as a result of modifications brought to the hydrologic regime of the river and the sanitary conditions thereof.

Information shared through PASIE: This observatory publishes on an annual basis "A state of the environment in the basin" including hydraulic & hydrologic data in the valley. Some data like water level at locations around the two dams are in real time and other information might not be the same. The information supplied to Mauritania through the OMVS can be very useful if used within a framework of M&E when implemented. However, currently there is no clear implemented IWRM plan in Mauritania and thus the info obtained from OMVS is not utilized as it should be.

h. Climate change

Rainfall observations in recent decades and expected trends for the West African region through simplified models suggest the following changes in rainfall at the national level: (i) greater rainfall variability and reduced rainfall varying from 0.5 to 40% in the sub-region, with an average of 10 to 20% expected by 2025, (ii) continued shift in isohyets to the south: this trend which had already begun since the late 60s will continue in relation to the decline in rainfall, and (iii) increased frequency of episodes of heavy rains and droughts, but with uncertainties on the affected areas and periods. Future impacts of climate change on surface water resources stem from expected rainfall upsets: (i) the observed decline in the Senegal River flows will continue. However, local floods are likely to increase, as has been the case in recent years, (ii) the rise in water temperature and lower flow are expected to reduce surface water quality, (iii) movement of the hydrological regime of the Senegal River and its main tributaries may continue; (iv) evaporation will increase in line with rises in temperature, which could reduce shallow waters even where rainfall increases or changes very little. Based on the impacts of climate change on rainfall and run-off, the likely impacts on groundwater are: (i) the decrease in groundwater recharge and their piezometric levels, especially in the Taoudéni-Tanezrouk and Senegal-Mauritanian basins and their respective aquifer systems. This vulnerability is exacerbated by anthropogenic pressure due to extraction, (ii) deterioration of water quality related to the increase or decrease in groundwater recharge.

The Mauritanian government, through Ministry of rural development and Environment and Climate Change project unit in the Ministry of Environment, has launched an Adaptation Program of Action on Climate Change (PANA-RIM) in the year 2004 (Direction de l'Environnement. 2004. Programme d'Action National d'Adaptation aux Changements Climatiques, PANA-RIM. Ministère du Développement Rural et de l'Environnement). In accordance with the Adaptation Program of Action on Climate Change (PANA-RIM), future adaptation options regarding water resources are aimed at continuing the implementation of national agriculture, livestock and ecosystem protection strategies mainly. More specifically, the following actions have been incorporated into this project: (i) Improvement in the monitoring of piezometric groundwater networks and water quality, (ii) Improvement of water resources management, (iii) establishment of a balance between the availability of water resources and water needs for irrigation and consumption for the population and livestock and (iv) support to the dissemination of water saving technologies for irrigation. In the Climate Change action plan, the Climate change Project Unit in the Ministry of urban development is responsible for initiating and coordinating any related project under the technical supervision of the Ministry of Hydraulics and Water (MHE) in addition to private sectors and donors. The department of Agriculture and Centre of Natural Water Resources (NWRC) are also involved in case of ground water projects. However, as of 2012, there seems to be minimum achievement with respect to the climate adaptation and monitoring plan with scarce fragmented efforts in individual directories. Examples are found in the Center for Natural Water Resources (NWRC), which database has occasional records for scattered observations of piezometric levels in some groundwater wells with various temporal scales but not being used for real evaluation and action taking. Flood hazard maps have been developed for Mauritania based on historical cases and climate scenarios, by the Emergency & Humanitarian Action in the African Region (United Nations, 2010). The following map shows the flood hazard index as calculated for Mauritania based on the number of recorded flood events.

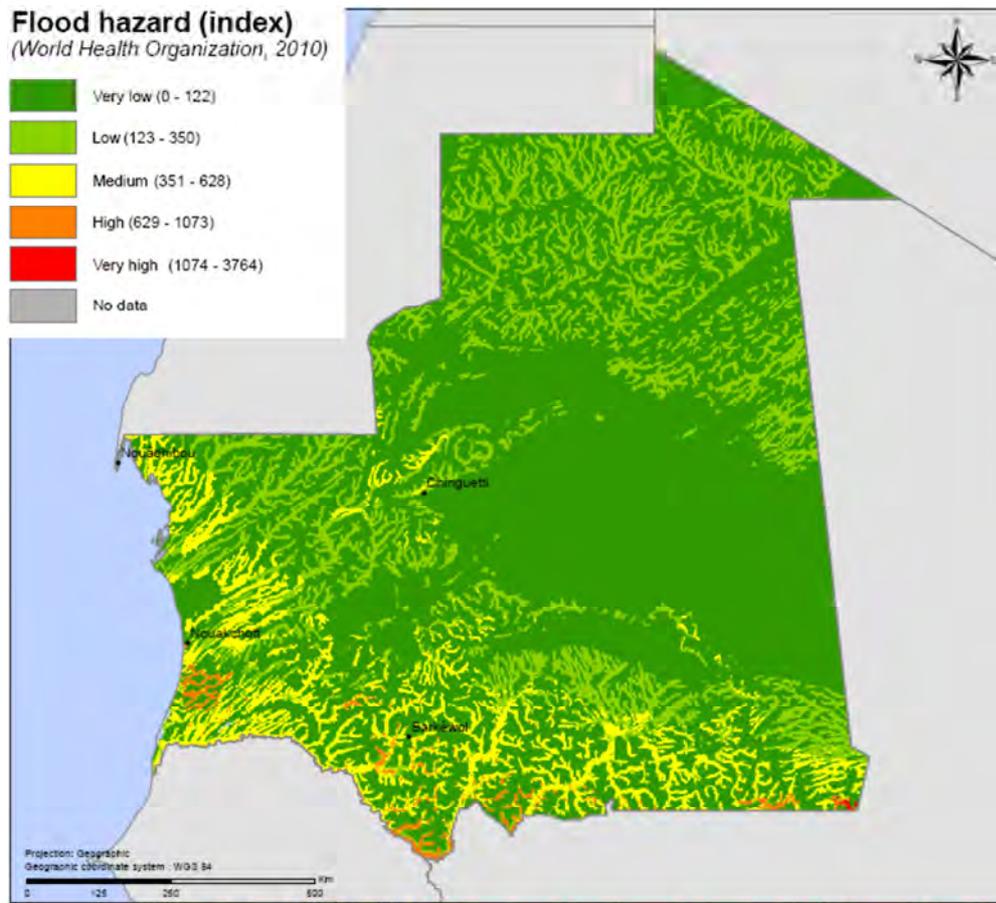


Figure 18. Flood hazard index for Mauritania M&E

9. Issues and Recommendations

i. Issues

The main issues confronting the development of effective water sector M&E systems can be stated as;

- Lack of strategy monitoring of natural resources;
- The information is not collected and treated to facilitate use by different actors (they often correspond to the specific needs of supervisory structures);
- The dispersion of information within a single institution;
- Overlapping responsibilities in the collection of certain data;
- Underdeveloped management databases (DB) in monitoring and evaluation;
- Weakness of some parts of existing structures especially in terms of organization and resources;
- Lack of human resources for the management of some specialized areas of the WSS especially information management;
- Weak capacities to implementation of existing plans in term of financing;
- Health and environmental situation is degrading in rural areas;
- Low demand for rural sanitation;
- The lack of financial resources allocated to the operation of structures for information systems such as GIS;
- No mechanisms for ensuring good governance, transparency and reporting of rural WSS projects;
- No clear criteria are established for targeting urban WSS sector performance.

ii. Recommendations

In terms of the rapid assessment undergone for the Mauritanian M&E in Water Sector; the following recommendations can be stated;

- A set of Indicators for monitoring water supply and sanitation have to be agreed upon and harmonized within the institutional framework of water sector;
- Harmonize methodologies of defining water and sanitation indicators with JMP;
- Provide funds and institutional resources for implementing and enforcing the policy of integrated water resources management including M&E;
- Implement a sector wide M&E plan with respect to water supply & Sanitation;
- Training programs should be envisaged for executives in water sector to lead M&E programs
- Mobilization of funds for implementation of borehole studies project for better understanding the hydraulic characteristics of aquifers of Boulenoir, Bennichabm Trarza, and Dhar Nema)
- Government should ensure adequate funds are released to water & sanitation sector M&E plans;
- Data disaggregation for urban and rural has to be harmonized with the JPM definitions;
- Allocate financial resources for supporting existing databases such as DPSC MySQL database and SIPPE2 access database to be the initial step towards a single integrated Management Information System in water sector;
- Launch monitoring projects for surface water and agriculture to make good use of the available resources;
- Implement M&E framework for national sanitation;

- Promote information sharing on status of water and sanitation for the GLASS (Global Annual Assessment of Sanitation & Drinking Water);
- Increase budgetary allocations for monitoring programs especially in rural areas;
- Implement a national rural water and sanitation database system hosted in the Ministry of Water & Sanitation;
- Promote inter-sectoral coordination between Ministry of Health and Ministry of Water & Sanitation
- Facilitate transparency in the communication and sharing of water and sanitation information amongst related institutions;
- Build capacity for implementation of existing plans in terms of water resources and financing
- Put the Climate Action plan into work;
- Engage in regional & global monitoring initiatives;
- Develop and implement an efficient Information System with efficient ways of information dissemination in water and sanitation issues.

Table 24. Categorized indicators for Mauritania

UN Task Force Indicators	MEWINA SOW indicators Report	Indicators Currently used in Mauritania
Context Indicators	Water & Availability	Volume of surface water available, Volume of groundwater available, Heights and flow aquifers
	Water and Land use change	NA
	Water and Population	Population with sustainable access to safe drinking water, population connected to the public distribution network,
	Water and Finance	NA
Function indicators	Water and Consumption	Per capita consumption mobilized, Domestic consumption, Industrial consumption, Agricultural use
	Water and Health	Population with access to sewerage network, Population with individual sanitation, Volume of wastewater (domestic and industrial)
	Water and Climate	NA
	Water and Socio-economics	NA
	Water and Politics	NA
	Water and Trade	NA
Performance Indicators	Water and Services	NA
	Water and Quality	NA
Governance Indicators	Water and Governance	NA

10. Appendices

Fiche d'Information de base du Pays

Nom du Pays: **MAURITANIE**

Intitulé

Information

1. Tendances de la population pour les 4 dernières années, et PIB	Année	2000	2008	2009	2010	2011
	Pop. urbaine	Pop. urbaine	954 385	997018	1044399	1093690
	Pop. Rurale	Pop. Rurale	1 553 774	2065748	2094857	2123693
	Total pop.	Total pop.	2 508 159	3062766	3139255	3217383
	PIB (10⁹ USD)	PIB (10⁹ USD)	1,29	4,01	4,00	4,95
2. Les bases de l'actuelle Politique de l'Eau / Reformes et cibles potentiels	<p><i>Les questions importantes traitées dans la Réforme existante du Secteur de l'Eau?</i></p> <ul style="list-style-type: none"> a) Le renforcement des capacités des structures b) L'élaboration de cahiers des charges précis et incluant des performances à réaliser (branchements privés, extensions) pour les opérateurs privés. Les nouvelles formes de contractualisation seront testées dans quelques centres et les leçons en milieu rural et semi urbain seront diffusées c) La mise en place d'une programmation transparente et concertée (publication du programme annuel de réalisations physiques) des investissements d) L'identification d'indicateurs de performance pour le suivi des exploitants e) La mise en œuvre d'actions de formation pour renforcer la professionnalisation du secteur f) la mise en place de moyens permettant aux Directions centrales du Ministère de l'Hydraulique et de l'Assainissement et aux communes d'assurer leur rôle de maîtrise d'ouvrage g) la réalisation d'infrastructures suffisantes au niveau central et déconcentré pour accueillir les services du Ministère h) le renforcement des services déconcentrés en personnel qualifié i) l'assainissement de la situation du personnel pléthorique et non qualifié existant dans les différentes structures du Ministère de l'Hydraulique et de l'Assainissement j) le développement du rôle d'appui conseil des services régionaux renforcés auprès des communes pour l'exécution des projets 					

	<ul style="list-style-type: none"> k) l'appui par les services déconcentrés aux communes qui sont maître d'ouvrage pour mettre en place une gestion durable des adductions d'eau potable l) le renforcement de la capacité nationale en matière de réalisation de puits m) le renforcement des capacités sur les aspects de traitement des eaux (incluant le dessalement) n) le renforcement des capacités de maîtrise des eaux de surface (fleuve Sénégal, lac de barrage, mares et lacs permanents, oasis) en vue d'une meilleure alimentation en eau des populations partout où cela est possible o) le renforcement des capacités pour la promotion et la construction des ouvrages d'assainissement autonome
<p>3. Connaissance de cibles internationales et africaines dans le secteur de l'eau et l'assainissement</p>	<p><i>Lesquelles sont mieux connues et appliquées dans le pays? Spécifier comment elles sont appliquées.</i></p> <ol style="list-style-type: none"> 1. - En 2000, la République Islamique de Mauritanie a adopté « la Déclaration du Millénaire » et s'est engagée à « réduire de moitié d'ici 2015 la proportion de la population privée d'un accès régulier à l'eau potable et à l'assainissement ». 2. - En 2001, un Cadre Stratégique de Lutte contre la Pauvreté (CSLP) est élaboré et sert de référence pour les orientations stratégiques des différents secteurs dont le secteur de l'eau avec l'adoption d'une stratégie d'accès universel multisectoriel aux services de base visant la mise en œuvre de nouveaux mécanismes pour assurer une meilleure efficacité de la contribution de l'Etat à l'investissement. Ce cadre stratégique a été actualisé pour les périodes 2006-2010 et 2011-2015. 3. Depuis 2005, une concertation avec les différents acteurs impliqués dans le secteur de l'eau a été engagée afin d'assurer une meilleure visibilité du secteur et renforcer la coordination. Une revue sectorielle du secteur en milieu rural a été organisée en juin 2005 suivie d'une Table Ronde des bailleurs de fonds en 2006 en vue de mobiliser les ressources financières pour l'atteinte des Objectifs de Développement du Millénaire (ODM). En 2007, une revue des dépenses publiques du secteur a été organisée et un Conseil National de l'Eau, constitué conformément au Code de l'eau, a tenu sa première session en 2009. 4. L'évolution du secteur et les engagements du Gouvernement ont rendu nécessaire la révision de la « Stratégie de Développement du Secteur de l'Eau et de l'Assainissement » adoptée en 2009. La présente Stratégie oriente l'action du gouvernement dans le secteur de l'Eau et de l'Assainissement suivant ses axes stratégiques et selon le plan d'action qui sera mis en oeuvre. Elle porte sur l'amélioration de la gouvernance du secteur, le développement de la Gestion Intégrée des Ressources en Eau et l'accès à l'eau potable et à l'assainissement.

<p>4. Tendances des 3 dernières mises à jour dans les politiques et réformes nationales de l'eau</p>	<table border="1"> <thead> <tr> <th>Années</th> <th>Année 1</th> <th>Année 2</th> <th>Année 3</th> </tr> </thead> <tbody> <tr> <td colspan="4">Motifs de la mise à jour</td> </tr> <tr> <td colspan="4">Effectivité des impacts ciblés</td> </tr> </tbody> </table>	Années	Année 1	Année 2	Année 3	Motifs de la mise à jour				Effectivité des impacts ciblés			
Années	Année 1	Année 2	Année 3										
Motifs de la mise à jour													
Effectivité des impacts ciblés													
<p>5. Commentaires sur le secteur de l'Eau au niveau national au regard des forces, faiblesses, opportunités, menaces, et difficultés majeures</p>	<p>5. Les points forts</p> <p>Les points forts du secteur se résument comme suit :</p> <p>5.1 Un cadre réglementaire et institutionnel avec la définition des rôles et missions des différents intervenants publics et privés et la création de cadre de concertation aux niveaux central et régional ;</p> <p>5.2 Une meilleure prise en charge de l'assainissement et des eaux de surface dans l'action sectorielle ;</p> <p>5.3 Un système de gestion déléguée des réseaux en milieu rural et semi urbain d'envergure nationale, intégrant le recouvrement des charges récurrentes.</p> <p>6. Les contraintes</p> <p>Plusieurs contraintes restent à lever malgré les efforts entrepris :</p> <p>6.1 Manque d'application du cadre réglementaire et faiblesse de coordination entre les différents intervenants du secteur. Plusieurs intervenants échappent au contrôle de l'administration. D'importants programmes d'hydraulique sont conçus et réalisés par des structures externes au Ministère de l'Hydraulique et de l'Assainissement sans concertation avec celui-ci:</p> <ul style="list-style-type: none"> a) Le Ministère du Développement Rural réalise les barrages et met en œuvre certains projets qui exécutent des ouvrages hydrauliques b) Le Commissariat chargé des Droits de l'Homme, de l'Action Humanitaire et des Relations avec la Société Civile qui finance et exécute certains projets d'infrastructures hydrauliques ; c) Le Commissariat à la Sécurité Alimentaire qui intervient par la réalisation de points d'eau et de diguettes ; d) Le Ministère des Affaires Economiques et du Développement qui assure la tutelle de l'APAUS et le PDU 												

qui exécutent des programmes hydrauliques et d'assainissement ;

- e) Le Ministère de l'Habitat, de l'Urbanisme et de l'Aménagement du Territoire qui intervient à travers différents projets ;
- f) Le Ministère de l'Intérieur et de la Décentralisation à travers l'exécution du programme de l'ANAIR en matière d'hydraulique ;
- g) Les interventions des ONGs nationales et internationales dans le secteur.

6.2 La faiblesse des capacités des services est une des principales contraintes du développement du secteur de l'eau et de l'assainissement. Cette contrainte se manifeste par un manque de personnel qualifié, une insuffisance de formation pour tous les principaux acteurs du secteur (secteur public, secteur privé, ONG..).

6.3 Faiblesse de la capacité nationale du secteur privé en matière d'études, de travaux et de maintenance;

6.4 L'équilibre financier du secteur se présente comme suit:

- a) Il est précaire en milieu urbain en raison du faible rendement et du taux élevé des pertes dans les réseaux et du coût élevé de l'énergie ;
- b) En milieu rural et semi urbain, les schémas directeurs d'aménagement urbain n'existent pas, les réseaux sont mal dimensionnés, la tarification n'est pas homogène, le taux de recouvrement reste faible et les coûts d'exploitation et de maintenance ne sont pas bien cernés.

6.5 Plusieurs grandes villes du pays font face, de façon récurrente, à des inondations graves en raison du manque d'infrastructures d'assainissement pluvial.

Country Water and Sanitation Performances Evaluation Sheet

Country Name: **Mauritania**

Performance Category

Country Information

<p>6. Population trends for the past 4 years, and GDP</p>	<table border="1"> <thead> <tr> <th>Year</th> <th></th> <th>2009</th> <th>2010</th> <th>2011</th> <th>2012</th> </tr> </thead> <tbody> <tr> <td>2Urban Pop.</td> <td></td> <td>997018</td> <td>1044399</td> <td>1093690</td> <td>1710103</td> </tr> <tr> <td>Rural Pop.</td> <td></td> <td>2065748</td> <td>2094857</td> <td>2123693</td> <td>1760937</td> </tr> <tr> <td>Total pop.</td> <td>Total pop.</td> <td>2508159</td> <td>3062766</td> <td>3139255</td> <td>3217383</td> </tr> <tr> <td>GDP (10⁹ USD)</td> <td>GDP (10⁹ USD)</td> <td>1,29</td> <td>4,01</td> <td>4,00</td> <td>4,95</td> </tr> </tbody> </table>	Year		2009	2010	2011	2012	2Urban Pop.		997018	1044399	1093690	1710103	Rural Pop.		2065748	2094857	2123693	1760937	Total pop.	Total pop.	2508159	3062766	3139255	3217383	GDP (10⁹ USD)	GDP (10⁹ USD)	1,29	4,01	4,00	4,95
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Total pop.	Total pop.	2508159	3062766	3139255	3217383																										
GDP (10⁹ USD)	GDP (10⁹ USD)	1,29	4,01	4,00	4,95																										
<p>2. The foundations of the current Water Policy / The potential targets and reforms</p>	<p>Important issues addressed in the existing reform of the water Sector?</p> <ul style="list-style-type: none"> p) The strengthening of the entities' capacities q) Elaboration of precise specifications charges including performance to be achieved (private connections, extensions) to private operators. New forms of contracts will be tested in several centers and lessons in rural and semi-urban areas will be released r) The establishment of a transparent and collaborative programming of investments(publication of the annual program of physical implementation) s) Identification of performance indicators for monitoring operators t) The implementation of training actions to enhance professionalism in the sector u) The introduction of means for central departments of the Ministry of Water and Sanitation and municipalities to fulfill their role of project management v) Implementation of adequate infrastructure at central and decentralized levels to accommodate departmental services h) Strengthening the decentralized services through a qualified personnel i) The improvement of overstaffing and unqualification situation existing in the different structures of the Ministry of Water and Sanitation j) The development of the role of regional support and advice services to municipalities to enhance project execution k) Support for decentralized services that are intended to enable the municipalities to implement sustainable management of drinking water supply l) Strengthening the national capacity for producing wells m) Strengthening the capacity of water treatment (including desalination) n) The capacity to control surface water (Senegal River, reservoir, permanent ponds and lakes, oasis) for better water supply for populations wherever possible o) Strengthening of capacities for the development and construction of autonomous sanitation facilities 																														
<p>3. Knowledge of international and African targets in the area of water and sanitation</p>	<p>Which are better known and applied in the country? Specify how they are applied.</p> <ul style="list-style-type: none"> 7. - In 2000, the Islamic Republic of Mauritania has adopted the "Millennium Declaration" and pledged to reduce at its half, "by 2015", the proportion of people without sustainable access to safe drinking water including sanitation. 8. - In 2001, a Strategic Framework for the Fight against Poverty (CSLP) is developed and used as a reference for the strategic directions of the sectors including the water sector with the adoption of a multi-sectoral universal access policy to the basic services for the implementation of new mechanisms to ensure greater efficiency of State contribution to the investment. This strategic framework has 																														

	<p>been updated for the 2006-2010 and 2011-2015 periods.</p> <p>9. Since 2005, a consultation with the various actors involved in the water sector has been initiated to ensure better visibility of the sector and strengthen coordination. A sectorial review of the rural sector was organized in June 2005 followed by a round table of donors in 2006 to mobilize financial resources for the achievement of the Millennium Development Goals (MDGs). In 2007, a review of public sector spending was organized and a National Water Council, established under the Water Code, held its first session in 2009.</p> <p>10. The evolution of the sector and the commitments of the Government has made it necessary to revise the "Strategy for Development of the Water Sector and Sanitation" adopted in 2009. This strategy guides the action of the government in Water Sector and Sanitation according to its strategic axis and to the action plan to be implemented. It focuses on improving sector governance, the development of the Integrated Management of Water Resources and access to drinking water and sanitation.</p>									
<p>4. Trends of the last 3 updates in policies and national water reform</p>	<table border="1"> <thead> <tr> <th>Years</th> <th>Year 11</th> <th>Year 12</th> </tr> </thead> <tbody> <tr> <td>Reasons for the update</td> <td>Updating of the Strategic Framework of the Action against Poverty (PRSP) from 2006 to 2010 to better adapt it to the new context of the sector.</td> <td>Development Strategy of Water and Sanitation Sector of May 21, 2012.</td> </tr> <tr> <td>Effectiveness of targeted impacts</td> <td>New mechanisms to provide better efficiency of the contribution of the State to investment.</td> <td>Improving the access rate to water for people, Improvement of knowledge of water resources, Increasing funding of the water sector.</td> </tr> </tbody> </table>	Years	Year 11	Year 12	Reasons for the update	Updating of the Strategic Framework of the Action against Poverty (PRSP) from 2006 to 2010 to better adapt it to the new context of the sector.	Development Strategy of Water and Sanitation Sector of May 21, 2012.	Effectiveness of targeted impacts	New mechanisms to provide better efficiency of the contribution of the State to investment.	Improving the access rate to water for people, Improvement of knowledge of water resources, Increasing funding of the water sector.
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<p>5. Comments on the water sector at the national level in terms of strengths, weaknesses opportunities, threats, and major difficulties</p>	<p>5. The strengths The strengths of the sector are as follows:</p> <p>5.1 A regulatory and institutional framework with the roles and missions of the various public and private stakeholders and the creation of a framework for cooperation at central and regional levels;</p> <p>5.2 Better support for sanitation and surface waters in the sector action;</p> <p>5.3 A system of delegated management of networks in rural and semi-urban areas nationwide, including the recovery of recurrent costs.</p> <p>6. The constraints Several constraints remain to be overcome despite efforts undertaken:</p> <p>6.1 Lack of implementation of the regulatory framework and poor coordination among different players in the sector. Many stakeholders are outside the control of the administration. Major water programs are designed and made by external structures of the Ministry of Water and Sanitation without consulting it:</p> <p>a) The Ministry of Rural Development conducts dams and implements projects that perform hydraulic works</p> <p>b) The Commissioner for Human Rights, Humanitarian Action and Relations with Civil Society, which funds and runs some water infrastructure projects;</p> <p>c) The Office of Food Security, which operates through the implementation of water points and bunds;</p> <p>d) The Ministry of Economic Affairs and Development, which supervises the APAUS and PDU running hydraulic and sanitation programs;</p> <p>e) The Ministry of Housing, Urban and Spatial Planning which intervenes through various projects;</p> <p>f) The Ministry of Interior and Decentralization through the implementation of the program ANAIR in hydraulics;</p>									

g) The interventions of national and international NGOs in the sector.

6.2 The weak capacity of services is a major constraint to development of the sector of water and sanitation. This constraint is manifested by a lack of qualified staff, lack of training for all key stakeholders (public sector, private sector, NGOs ..).

6.3 Weak national capacity of the private sector in terms of education, work and maintenance;

6.4 The financial equilibrium of the sector is as follows:

a) It is tight in urban areas due to the low efficiency and high losses in networks and the high cost of energy;

b) In rural and semi urban areas, urban development master plans do not exist, are poorly sized networks, pricing is not homogeneous, the recovery rate is low and the costs of operation and maintenance are not well performed.

6.5 Several major cities face, repeatedly, severe flooding due to the lack of Rainwater treatment infrastructure.

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