Water in Africa:
Hydro-Pessimism or Hydro-Optimism?

Água em África:
Hidro-pessimismo ou Hidro-optimismo

Centro de Estudos Africanos da Universidade do Porto

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Integrated water resources management in Senegal river Basin

Senegal river basin:

- 1,800 km lifeline for a multi-ethnic, multicultural population

- Runs through sub-Saharan Africa in a mostly desert region Characterized by water scarcity and subsistence economies

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The Organization for the Development of the Senegal River (OMVS) was created in 1972 with a mandate to ensure food Security and harmony among all riparian users

Main strategy:

- Construction of two main dams
- Energy
- Irrigated agriculture
- Year-round navigation
- Original concept of "optimal distribution among users" rather than volumetric water withdrawals

River basin seen as an appropriate unit for management
And development of water resources, especially in shared
Watercourses

Water resources seen as an opportunity for cooperation and peace rather than cause for conflict

River basin approach adopted as an implementation mechanism for regional projects

Source: Prepared for the World Water Assessment Programme (WWAP) by AFDEC, 2002.

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	Senegal River basin	Mali	Mauritania	Senegal
Population (million inhabitants)	3.5	11	3	10
Annual growth rate (%)	3	2.97	2.9	2.8
Urbanization rate (%)	NA	41	58	51
Farm land (ha)	323,000	NA	NA	NA
Irrigated land (ha) – national total	NA	78,530	49,200	71,400
Part in basin		4,000	44,449	67,800
Cattle (x1,000 units)	2,700	6,427	1,394	2,927
Sheep and goats (x1,000 units)	4,500	15,385	10,350	6,330
Fish catch (t/year)	25,000 to 47,000	100,000	620,000	335,000

Population figures have been updated, based on growth rates in each country. Irrigation is the motor of development of the basin, especially in the valley and the delta and has become a high-value activity. After agriculture, fishing is the second largest economic activity of the basin.

A difficult context

Before the dams were filled in the mid-1980s, activities of the local inhabitants depended directly on rainfall (rain crops) or on floods (flood recession crops), in particular in the upper basin in Guinea (Fouta Djallon Mountains). But the dramatic and continuous drop in rainfall during the 1960s and 1970s led to the degradation of almost the entire base of natural resources (soil erosion, disappearance of vegetation, drying up of surface water, salinity 200 km upstream from the mouth of the river, drop in the groundwater level, degradation and disappearance of pasture land). Under these conditions, the local inhabitants could not produce enough to survive and the only alternative was emigration. Each year, a large percentage of the population, in particular young people, left the valley and the delta for capital cities in the subregion (Abidjan, Bamako, Dakar, Libreville, Nouakchott) or Europe (usually France or Italy).

Legal and regulatory framework and governance

The first institutions to develop the Senegal River valley were created during the colonial period. On 25 July 1963, very soon after independence, Guinea, Mali, Mauritania and Senegal signed the Bamako Convention for the Development of the Senegal River Basin. This convention declared the Senegal River to be an 'International River' and created an 'Interstate Committee' to oversee its development. The Bamako Convention was supplemented by the Dakar Convention, signed on 7 February 1964, concerning the status of the Senegal River. The Interstate Committee laid the foundation for subregional cooperation in development of the Senegal River basin. On 26 May 1968, the Labé Convention created the Organization of Boundary States of the Senegal River (OERS, Organisation des Etats Riverains du Sénégal) to replace the Interstate Committee, broadening the field of subregional cooperation. Indeed, OERS objectives were not limited to the valorization of the basin but aimed at the economic and political integration of its four member states. After Guinea withdrew from the OERS, Mali, Mauritania and Senegal decided, in 1972, to set up the OMVS, which pursues the same objectives.

The OMVS has since created a flexible and functional legal framework enabling collaboration and a co management of the basin. The principal legal texts governing OMVS are:

- the Convention concerning the status of the Senegal River (Convention relative au statut du fleuve Sénégal), 11 March 1972. By this convention, the Senegal River and its tributaries were declared an 'International Watercourse', guaranteeing freedom of navigation and the equal treatment of users;

- the Convention creating the OMVS (Convention portant création de l'Organisation pour la Mise en Valeur du Fleuve Sénégal), 11 March 1972;

- the Convention concerning the Legal Status of Jointly-owned Structures (Convention relative au statut juridique des ouvrages communs), 12 December 1978, supplemented by the Convention concerning the Financing of Jointly Owned Structures (Convention relative aux financements des ouvrages communs), 12 March 1982. These declare that:

- all structures are the joint and indivisible property of the member states;

- each co-owner state has an individual right to an indivisible share and a collective right to the use and administration of the joint property;

- the investment costs and operating expenses are distributed between the co-owner states on the basis of benefits each co-owner state draws from the exploitation of structures. This distribution can be revised on a regular basis, depending on profits;

- each co-owner state guarantees the repayment of loans extended to the OMVS for the construction of structures;

- two entities manage the jointly-owned structures for the OMVS: one dedicated to the management and development of the Diama dam (SOGED, Société de gestion et d'exploitation du barrage de Diama), the other to the Manantali dam (SOGEM, Société de gestion de l'énergie de Manantali), both created in 1997.

- the Senegal River Water Charter, May 2002 (Charte des Eaux du Fleuve Sénégal) whose purpose is to:

- set the principles and procedures for allocating water between the various use sectors;
- define procedures for the examination and acceptance of new water use projects;
- determine regulations for environmental preservation and protection; and
- define the framework and procedures for water user participation in resource management decision-making processes.

The OMVS functions with the following management bodies:

- Permanent bodies;
- Conference of Heads of State and Government (CCEG, Conférence des Chefs d'Etat et du Gouvernement);
- Council of Ministers (CM, Conseil des Ministres);
- High Commission (HC, Haut Commissariat), executive body;
- Permanent Water Commission (CPE, Commission Permanente des Eaux) made up of representatives of the organization's member states, and which defines the principles of and procedures for the allotment of Senegal River water between member states and use sectors. The CPE advises the Council of Ministers;

- The work of the Permanent Water Commission and the criteria used by the ministers for decision-making are based on the following general principles:

  reasonable and fair use of the river water;

  - obligation to preserve the basin's environment;
  - obligation to negotiate in cases of water use disagreement/conflict; and
  - obligation of each riparian state to inform the others before undertaking any action or project that could affect water availability.

The objective of the OMVS method of water allocation is to ensure that local populations benefit fully from the resource, while ensuring the safety of people and structures, respecting the fundamental human right to clean water and working towards the sustainable development of the Senegal River basin.

- Non-permanent bodies;
- An OMVS national coordination committee in each member state;
- Local coordination committees;
- Regional Planning Committees (CRP, Comités Régionaux de Planification);
- Consultative Committee (CC, Comité Consultatif).

Principal positive effects

- Year-round availability of freshwater in sufficient quantities (for agriculture, domestic uses, agro industry, groundwater recharge), accompanied by reverse immigration of people who had left to find employment in the cities;
- development of irrigated agriculture in the valley (with double cropping);
- partial opening up and stimulation of exchanges between areas where dams have been built and the rest of the subregion due to road construction;
- access to healthcare for several villages near the dams with the construction of dispensaries and health clinics;
- access to drinking water installations for populations living near the dams;
- development of fishing activities for populations living near the Manantali dam;
- reappearance of local fauna and regeneration of vegetation
- flow regulation to decrease or eliminate flooding;
- cheaper electricity in the three member states thanks to the Manantali power plant.

- the electrification of villages near the dams (a study has been completed and funding obtained for the first phase); and
- navigation on the river between Saint Louis and Kayes (a study is underway).

Principal negative effects

- Displacement of populations living in the areas where the dams were built;
- proliferation of water-borne diseases (bilharzia [schistosomiasis], malaria, diarrhoea) due to changes in ecological conditions as a result of the blocking of seawater intrusion, with the Diama dam;
- water pollution caused by the development of irrigated agriculture and the agro industry (CSS, SAED in Senegal, SONADER in Mauritania);
- proliferation of water weeds in the valley and delta, clogging water courses and contributing substantially to making the ecosystem more uniform;
- degradation of the fish population available for independent fishermen (quantity and quality);
- reduction of pasture land;
- riverbank erosion, especially in the upper basin where the topography is much more rugged;

- degradation of cultivated land;
- modification of the hydrodynamic characteristics of the estuary with the reduction of the 'flushing' phenomenon; and
- disappearance of wetland areas.

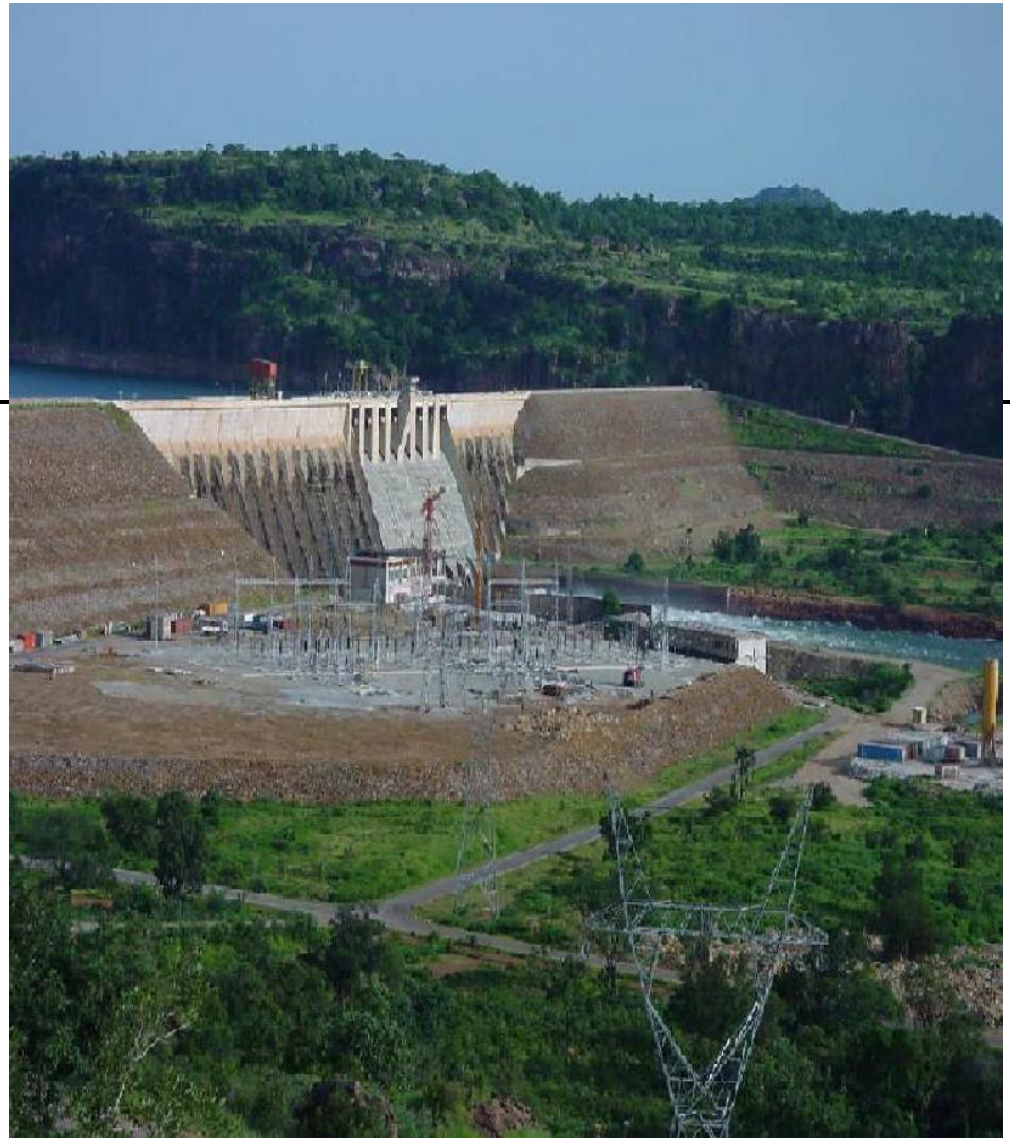
The installation of the dams has been accomplished without taking due account of other important aspects of planning.

- Top-down planning has occurred without relationship to the local needs of the beneficiaries.
- The large schemes for groundnuts, cotton and irrigation have been less than successful due to application of inappropriate technologies, lack of markets or access to markets, and lack of local capacity.

Aid for the resolution of these negative impacts of the whole program

Creation of an Environmental Observatory

(focal point for all scientific and technical information on the Senegal river basin environmental situation and problems, aid for sound decision process)



A côté de tous ces impacts positifs, il y a aussi des impacts négatifs liés à la mise en eau des Barrages

Prolifération des Typha Australis dans le Delta du fleuve Sénégal

20/09/2008 Ibrahima Anne

thank you