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INFORMATION PAPER ON THE ORGANIZATION FOR THE
HARNESSING OF THE RIVER SENEGAL (OMVS) */

Prepared by the
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I. INTRODUCTION

OMVS (Organisation pour la mise en valeur du fleuve Sénégal - Organization for the Harnessing of the River Senegal) is an organization whose members are: Senegal, Mali and Mauritania. These are three countries with a total area of about 3 million square kilometres. The River Senegal, 1,700 kilometres long, unites them more than it separates them. A natural frontier of Mauritania in the South, and crossing part of Mali near Bafoulabé, the River Senegal has its source in the Fouta Djallon in Guinea. The development possibilities that the river can offer the three countries are immense. That is what prompted the Minister for Industry of Mali to say that "the OMVS projects will be the linchpin of the development of the region, the Ruhr of Africa" because of its immense possibilities for mining development (Senegal and Mali) and agro-industrial and hydro-electric development (all three countries).

1. Background of the project

The need for an integrated development of the River Senegal basin was clear to men of vision as early as 1816. A certain Colonel Schultz was the first to give thought to the problem of regulating the flooding of the river as a means of improving existing crops and developing new ones. It was to that end that the Mission d'Amenagement du Sénégal (MAS) was set up in Saint-Louis well before independence.

The second phase was the creation in 1963, on the basis of earlier experience, of the Inter-State Committee for the Development of the River Senegal, with four countries as members at that time: Guinea, Mali, Mauritania and Senegal. After five years of feasibility studies that made it possible to draw up an inventory of the many agricultural and energy resources of the region, the four countries decided to move on to the next phase: the harmonization of economic, social and cultural policies.

On 25 March 1968, at Labe in Guinea, they therefore created a subregional economic body, the Organization of States Bordering on the River Senegal (OERS). The organization was to last for two years, with political structures linked to the economic, social and cultural structures.

On 11 March 1972, at Nouakchott in Mauritania, the heads of State of Mali, Mauritania and Senegal, after the withdrawal of Guinea from OERS, decided to create OMVS (Organization for the Harnessing of the River Senegal) whose structures, however, were more operational and technical than political, since, after the terrible drought of 1972-1974, there was an urgent need to harness the immense natural resources of the river. It was at that point that the idea was born of making the River Senegal a growth pole where irrigated agriculture and industrial units would integrate harmoniously, while stimulating the expansion of transport.

2. Development objectives and strategies

As the inventories stand at present, the river and its valley represent 1 billion hectares of irrigable land, 6 billion kWh of hydro-electric energy, and important mineral deposits (iron, copper, bauxite, phosphates, and others).

Spread over 40 years, the development programme included plans for capital investment in four sectors: energy, agriculture, industry, and transport. The task is, first and foremost, to bring progressively under control the waters of the River Senegal and its tributaries so as to achieve two objectives:

1. The first objective, whose human consequences are more important, is to regulate, at first partially and later increasingly, the flow of the river, while preventing salt sea water from advancing upstream. As a result of that regulation, it will be possible to cultivate, with high and regular yields, about 450,000 hectares of land by removing the uncertainties due to irregular rainfall. In addition, the river will become navigable at all seasons between Kayes in Mali and the maritime port of Saint-Louis in Senegal, and this will permit cheap and reliable transport.

2. The second objective is to produce cheap energy, the absence of which in the past prevented the exploitation of the large mineral resources of the basin.

3. The multiplier effects

The economic and social benefits that all the OMVS member States will derive from the development and harnessing of the River Senegal will depend on the action and decisions taken in two separate areas:

- (a) The rate of hydro-agricultural development and its consequences for the end-date of the provisional phase of operation of the Manantali dam;

- (b) The participation by the national enterprises and industries of the member States in the construction and subsequent maintenance and renovation of the infrastructural works that are planned.

UNIDO experts are of the opinion that the decisions taken in these two areas will have a profound impact on the possible programme for the industrialization of the Senegal valley.

II. THE HARNESSING OF THE RIVER SENEGAL

1. The dams: possibility of hydro-electric development.

Three types of dam are envisaged: for regulating irrigation, for energy production, and for navigation.

The justification for the choice of the two dams planned for the first phase of development from among the 12 sites studied by Senegal Consult (an association of the Société Générale pour l'Industrie of Geneva, Electro-Watt Consulting Engineers of Zurich, Motor Columbus Consulting Engineers of Baden, and Zinder International Ltd. of New York) concerns, for the hydro-electric regulator dam, the six sites selected after an initial comparison (Manantali, Goubassi and Galongo; for regulation and energy production, Petit Gouina, Félou; Boureya for the production of energy only).

The choice of the hydro-electric regulator dam at Manantali was imposed by technical considerations (important land development, the maintenance of subsidence crops pending the progressive conversion of traditional agriculture. uninterrupted navigation on the river between the mouth and Kayes, guaranteed energy), economic considerations (cost), and political considerations (beneficial effects for each of the three countries).

(a) The Gourbassi dam on the Falémé, 240 km above the junction with the Senegal, would permit, with a reservoir of only 2 billion m³, a regulation of 100 m³ at Bakel (300 m³/sec needed) and the development of a small area of the land downstream (maximum 100,000 ha downstream from Bakel).

Since the dam would not solve the problems of Mali's land-locked situation or ensure the agricultural development of the Malian region of Kayes, it does not meet the condition of multi-purpose integrated development.

The energy guaranteed would in any case be only 104 GWh.

(b) The Galougo dam on the Senegal, between Bafoulabé and Diamou, would make it possible, with a reservoir of more than 30 billion m³, to obtain a flow of 500 m³/sec at Bakel and even to regulate the supply throughout the year. The location of the dam on the main waterway above Kayes (the only important tributary downstream is the Falémé) would require the production of too high an artificial rise, particularly for the maintenance of the subsidence crops decided on for the first development phase because of their great importance in livestock production.

The guaranteed energy would be very considerable (1,520 GWh), but the cost would be very high (about CFAF 45 billion with the plant, compared with CFAF 30 billion for Manantali and CFAF 11 billion for Gourbassi).

Its construction would also require the immediate re-routing of the Dakar-Bamako railway, the construction of a new line 132 km long, with a 450 m tunnel near Galouga, and the crossing of the Bafing and two tributaries of the Bakoye by bridges.

(c) The Manantali dam, on the Bafing before its junction with the Bakoye (usable reserves 10 billion m³) will make it possible to satisfy the chief requirements established for the first phase of the OMVS programme:

- Annual regulation of the river with a guaranteed flow of 300 m³/sec at Bakel;
- Irrigation of 400,000 ha, including 45,000 ha in Mali (Kayes region);
- All-year-round navigation from Saint-Louis to Kayes (170 days only with Gourbassi);
- Energy production of 800 million kWh, which would satisfy at least part of the demands of mining and industry;
- The possibility of an artificial rise of 2,500 m³/sec for a month to maintain about 100,000 ha of subsidence crops, the management of which will be made more flexible by the natural rise downstream from the Bakoye and the Falémé (50 per cent of the flow);
- The Manantali dam also offers, because of the regulation of the river by its reservoir, the possibility of constructing works to regulate the current of the Félou and the Petit Gouina, which between them will increase energy production by 700 GWh.

(d) The Delta dam. The choice of this dam depends primarily on the need to prevent the advance upstream, from December onwards, of salt seawater for a distance of almost 200 km (without a dam, this would have meant using at least 100 m³/sec of the Manantali flow to counter the salt tongue). This inflow will be augmented by about 50 per cent (and will be carried about 300 km) by the creation of a port at Saint-Louis and the piercing of the Langue de Barbarie.

(e) The functions of the Diama dam other than its anti-salt role, which make it an essential complement to the Manantali dam for the first phase, relate to:

- The irrigation, with two crops a year, of 30,000 ha (at level 1.5 m), and 60,000 ha in the second phase (at level 2.5 m);
- The supply of fresh water to Saint-Louis, Rosso, Richard and Toll;
- Better replenishment of the reserves of the lakes of Guiers and R'Kiz and the Aftout es Sahel (particularly at level 2.5 m).

(f) The possibility of building other dams for irrigation was examined by the former Inter-State Committee with a view, in particular, to changing the guaranteed flow of water of 300 m³/sec into a water plane dominating the irrigable land (with the possibility of irrigation by gravity), and to adjusting the water plane so as to guarantee a sufficient draft on all the sills, which would make preparation work on the sills unnecessary.

The building of other dams for irrigation alone cannot be envisaged in the first phase (slopes too gentle for irrigation by gravity: inconvenience for navigation, mainly because of the need for locks).

2. Exploitation of mineral resources

Because the irregular nature of the sources of finance is holding up the start of operations, this study will concentrate on the structures of the various types of development and on the search for guidelines. Since industrialization is bound up with the rate of agricultural and mining development, the study will need to be up-dated in accordance with the progress of the actual projects. Industrial promotion structures can be decided on only in the light of hydro-electric and hydro-agricultural development and following the introduction of cheap energy.

However, an inventory of the principal mineral resources of the River Senegal basin has been drawn up and their exploitation planned:

- Iron: deposit in eastern Senegal and the nearby Djibian-Kéniéba deposit in Mali;
- Bauxite: Falea-Sitadina and Balea deposits in Mali, near the iron deposit of Bale;

- Copper: Diagouli deposit in Mauritania;
- Phosphates: indications in the river valley between Matam and Boghé.

Other prospective industries to be noted are the wheat- and maize-processing industries.

III. THE SECTORAL PROGRAMMES OF THE STATES

1. Agro-industrial development in Mali

It is planned to increase the area under irrigation from 100 ha at present to 500 ha before the construction of the Manantali dam in 1985, and then to 8,400 ha in the following years.

Other development would be possible in the region, including the 5,700 ha bordering on the river, irrigated by flooding, and 24,700 ha in the gently sloping tabular zone, which could be irrigated by spraying, or by rainfall in years of high precipitation in Mali.

The objectives are: crop diversification, and the sedentarization of livestock farming in association with the catchment areas.

Social aspects: creation of new jobs so as to stop the massive emigration of workers from the region.

2. Agro-industrial development in Mauritania

Irrigated areas will be increased to 8,000 ha in 1980, to 22,000 ha in 1985 - an increase of 3,000 ha a year - and thereafter to 45,000 ha towards 1990. Schemes are also planned on the tributaries of the river, including 5,500 ha in the Gorgol.

The objectives are the diversification of cereal cultures, rice, large quantities of fodder for the herds, industrial sugar and tomato crops, fruit and market-garden produce to supply the towns.

There is another very precise programme for the sedentarization of livestock, for intensive production of meat and milk to complement the extensive livestock farming, and for the creation of pasture-land ranches. An over-all aim of the projects is the establishment of a system of cereal and fodder production in the catchment areas.

3. Agro-industrial development in Senegal

The objective of the Senegalese programme is (a) to exploit the natural potential of the region through agriculture and livestock farming, and (b) to promote activities complementary to those of the primary sector - agro-industrial and associated activities, repair services, banking services, and assistance, distribution and transport services.

The area currently in use is about 11,000 ha, including 6,000 ha under industrial sugar and 450 ha under tomatoes. Future schemes will bring 22,000 ha under irrigation in 1980, 46,000 ha in 1985, and 68,500 in 1990 - an annual increase of about 5,000 ha. The rotation of crops planned seems to indicate a predominance of rice on heavy soils, proportions of 80 to 90 per cent cereals and 10 to 20 per cent fodder on light soils, and, on intermediate soils, 10 to 15 per cent market-garden crops and 10 to 20 per cent fodder. The method of exploitation in Senegal will be mixed: small catchment areas and large polders.

ANNEX

INVESTMENT, FINANCING AND BUDGETS: 1977-1978

1. Investment (Source of information: OMVS documents, June 1976)

Investment in the first phase of the regional infrastructure programme was estimated to be CFAF 78.8 billion, including CFAF 74.8 billion for works and CFAF 4.26 billion for studies (CFAF 2 billion for Manantali, CFAF 1.5 billion for navigation and port projects, CFAF 500 million for Diama, and CFAF 260 million for the energy transport network).

(a) The Manantali dam and power station (excluding transport lines) account for 63.4 per cent of investments at CFAF 50 billion, including CFAF 38 billion for the dam and ancillary works, CFAF 8 billion for the hydro-electric plant, and CFAF 2 billion for the access road. Other investments (including studies) are CFAF 11 billion for the Diama dam, CFAF 2.86 billion for the energy transport network, CFAF 10.8 billion for ports and landing places (CFAF 6.8 billion for work on the port of Saint-Louis, CFAF 1.6 billion for work on the port at Kayes, CFAF 1.4 billion for landing places, CFAF 1 billion for studies), and CFAF 4.2 billion for the waterway and river transport (CFAF 1.5 billion for preparation of the fairway, CFAF 1.3 billion for the fleet, CFAF 400 million for buoying, CFAF 500 million for studies).

(b) The provisional schedule of expenditure, which starts in 1978 for the major works (apart from CFAF 100 million in 1977 for buoying) and lasts until 1984, provides for expenditure of CFAF 1.29 billion in 1976, CFAF 1.76 billion in 1977, CFAF 4.65 billion in 1978, CFAF 7.31 billion in 1979, CFAF 14.8 billion in 1980, CFAF 15.1 billion in 1981, CFAF 15.45 billion in 1982, CFAF 12.5 billion in 1983, and CFAF 6 billion in 1984. The expenditure relates to Diama from 1978 to 1981, the Manantali dam from 1980 to 1984, Manantali power station from 1982 to 1984, the port of Saint-Louis from 1979 to 1982, and the port of Kayes from 1979 to 1981 (the provisional schedule of financing commitments ends in 1979 with CFAF 11.8 billion for the waterways). The

commissioning of the Manantali dam is scheduled for the end of 1982, the completion of the Diama dam for the end of 1981, the completion of the ports and landing places for June 1982, and the completion of the preparation of the waterway for the end of 1982.

2. Financing (pledges)

At present, pledges amount to CFAF 42,484 million, or 53.8 per cent of the total cost of infrastructures, including CFAF 11,120 million from the African Development Bank group (40 million Units of Account), 10 million dinars from Kuwait, CFAF 8,084 million from the Federal Republic of Germany (DM 80 million for the construction of works and a DM 6 million subsidy for the Manantali study), CFAF 7,300 million (\$US 33 million) from Saudi Arabia, CFAF 4,520 million from France (CFAF 4 billion for the construction of works and a CFAF 520 million subsidy mainly for the Diama study), a CFAF 1,200 million subsidy from Canada (5 million Canadian dollars for the port and landing places study), and CFAF 1 billion from Iran. Most of those who have already pledged a specific amount are prepared, if necessary, to increase their participation.

(a) Negotiations are also under way with the European Development Fund (participation certain), IBRD (possible participation) and the United States (declaration of interest). The amounts it is hoped to raise represent a total of about CFAF 30 billion as the negotiations stand at present.

(b) There are also prospects of participation by the Arab Bank for Economic Development in Africa (ABEDIA), the Islamic Bank, Libya, Abu Dhabi and the other Emirates, and Canada (additional assistance for participation in the works).

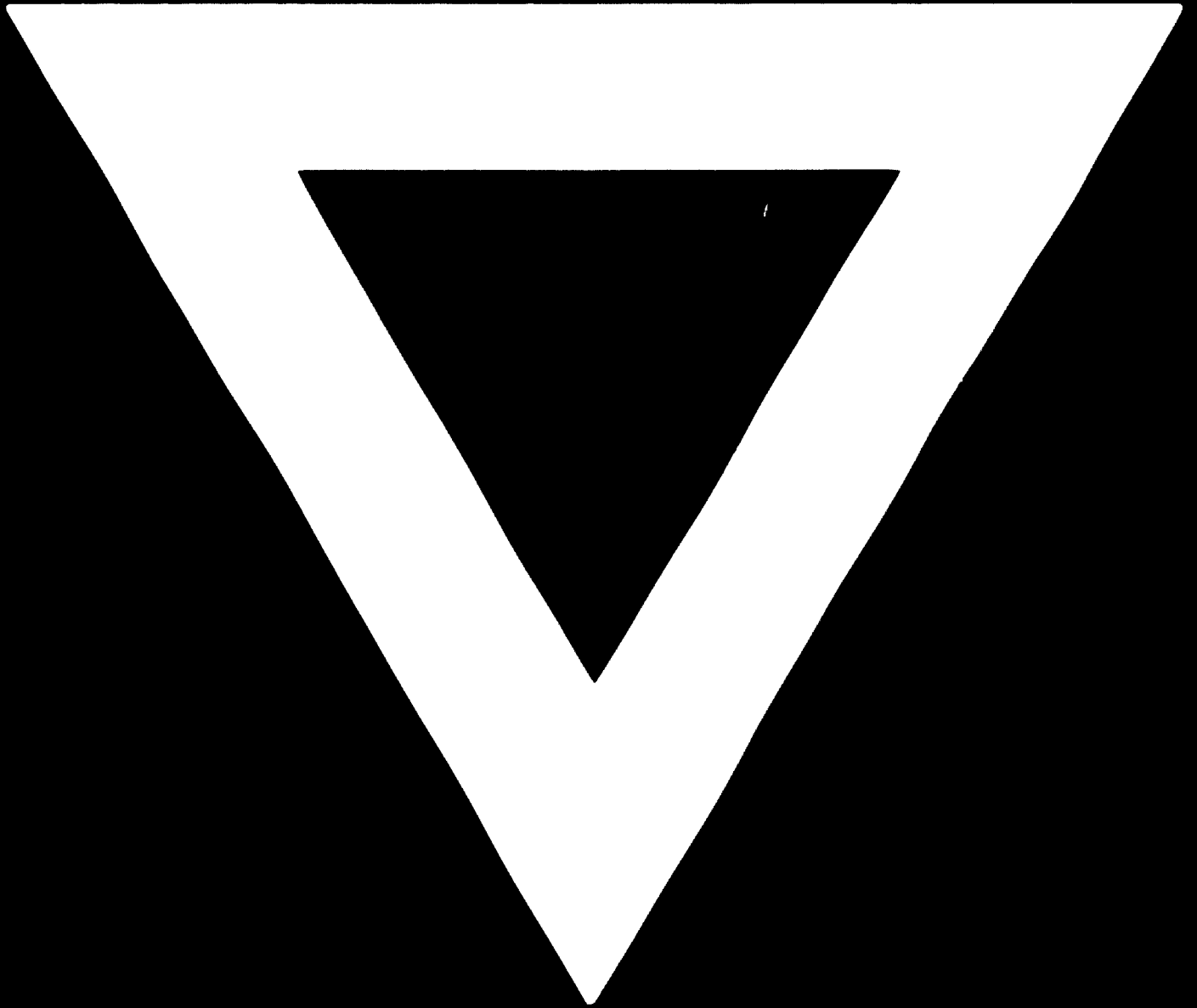
3. Budget

The last session of the Council of Ministers of OMVS had approved the 1977 budget of CFAF 415 million, or a little more than 12 per cent above the 1976 budget.

On 4 January 1978, the eighth session of the Council of Ministers, held at Nouakchott, adopted the regular budget of the organization in the sum of CFAF 419.9 million.



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