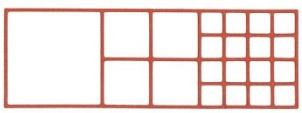
"TRANSAQUA"



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ROMA - APRILE 1984

«TRANSAQUA» — ZAIRE

Zaire's priority and essential role

1. There is no doubt that, if the TRANSAQUA Project is accepted and supported by the countries directly concerned (Zaire, the Central African Republic, Chad and Niger), the Partner among these countries which emerges to the greatest extent in the framework of international aid from future donors of funds will be the one supplying the project almost all of the water, namely Zaire.

Zaire, indeed, would supply the project about 90% of the water intended to feed the Sahel regions, while the remaining part would be taken from the navigable canal in Central African territory.

It is foreseen that the water will be obtained by offtakes from the water courses in the extreme eastern belt of the Haut-Zaïre and Kivu regions, in climatic areas where the average annual rainfall is around 1,800-2,000 mm and where the surface runoff feeds the four hydrographic systems of the OUBANGUI, the ARUWIMI, the LINDI and the LOWA, which in their turn are tributaries of the Zaire.

The numerous tributaries of the four abovementioned catchment areas could be intercepted in their upper basins by means of barrages which — guaranteeing continuity to the big navigable canal — would at the same time create large artificial reservoirs which would deliver part of their waters to the courses of the dammed rivers, thereby regulating their flow regime downstream of the barrages, especially during the peak flood periods.

Numerous alluvial valleys will become available along the courses of the rivers intercepted, upstream of the individual dams, and the reservoirs created by these structures could form lake areas ideal to accommodate a whole series of river ports, regular commercial «terminals» serving the new development areas for the export of agricultural products and for the supply of the necessary means of production, with the low costs of transport characteristic of river routes.

At least 10 areas seem suitable for integrated agricultural and stockraising development already from this first «project idea»: those corresponding to the flood valleys of the rivers DUNGU, NZORO, ITURI and EPULU, and the upper basins of the rivers UERE, BOMOKANDI, NEPOKO, LINDI, OSO and LOWA. Surface offtakes from these upper catchment areas would have no appreciable practical consequences in terms of discharges at the level of the four hydrographic systems mentioned; on the contrary, there would be certain advantages deriving from their partial control.

Some technical considerations

2. The canal in the TRANSAQUA Project will run through Zaire territory for a length of approximately 1600 km, along the western side of the divide between the Zaire basin and the great lakes region, at elevations of not more than 900-950 metres above sea level.

It will drain the upper basins of the right bank tributaries of the Lualaba and the Oubangui for a total surface area of about 220,000 km², about 140,000 km² of which in Zaire (Fig. 1).

Proceeding from south to north:

— the southernmost stretch of the canal (running from the Kivu region towards Haut Zaïre) will be fed by the upper basins of the LOWA and the LINDI.
Both of these basins are situated in areas with rainfall of over 1800 mm/year and a large part of them have rainfall of more than 2200 mm/year. The runoff coefficients are always high, greater than 40% taking almost the whole of the upland contributions from the middle and lower courses of these rivers will not lead to any negative effects, considering that the availability in these areas is overabundant, and that the rainfall/evapotranspiration balance is amply positive in every month of the year.
On the contrary, abstracting the contributions of the upper mountain basins by means of the canal will have a regulating action on the flood flows of the individual tributaries of the Lowa and of the Lindi.
The upper catchments of these two important right bank tributaries of the middle course of the Zaire will, according to calculations, supply some 30 billion cubic metres a year, equal to an aggregate discharge of about 950 m^3/s. At Kisangani therefore the average discharge of the Zaire river will be less than about 12,5% of the 7,500 m^3/s that is the present discharge.
— the intermediate stretch of the canal, flowing through the Haut Zaïre region in a S-N direction, will be fed by the upper Aruwini basin, with offtake works on the main tributaries, the LENDA, IBINA, EPULU, NDUYE and NEPOKO.
These basins, too, as the ones above, are characterized by considerable rainfall (averaging around 1800 mm/year) and high runoff coefficients, and therefore, also in this stretch, removing flows from the upper mountain basins from the Aruwimi hydrological system will have no other consequence than that of regulating the discharges of the river system downstream of the canal during the periods of maximum rainfall.
The upper catchment of the Aruwimi will contribute about 35 billion cubic metres a year to the canal, equal to a discharge of about 1,100 m^3/s. Downstream the confluence, at Basoko, the Zaire river will therefore have a decrease of about 20% in respect of the estimated average discharge of 10,500 $^3/s$.
— the most northerly stretch of the canal, running almost parallel to the Zaire-Sudan border and the Central African-Sudan border, will intercept the tributaries of the Obangui, namely the UELE and its tributaries the BOMOKANDI, NZORO, DUNGU, DURU, GARAMBA and the UERE.
The basins of these rivers receive rainfall of between 1,800 and 1,500 mm/year and their slopes gradually decrease towards the northwest. The runoff coefficients also tend to decrease in the same direction and average about 30-20%.
A portion of the upper catchment of the Obangui in Central African territory, where the upper basins of the MBOMOU, the QUARRA, the NGOANGOA, the VOVODO, the CHINKO, the KOTTO and the BOUNGOU also share in supplying the canal with water.
On the whole, the upper Obangui basin will contribute about 35 billion more cu-

bic metres of water to the canal, equal to an aggregate discharge removed from the Obangui of some 1,100 m^3/s equal to 18% in respect of average discharge of 6,000 m^3/s.

Of this discharge, it is estimated that about 1/3 will be taken off in Central African territory and about 2/3 in Zaire.

Due to this third decrease and to those made upstream the medium average discharge of the Zaire river, downstream the confluence of the Oubangui river near Irebu, will have an estimated total decrease of about 15%.

This corresponds to a decrease from 21,450 to 18,300 m^3/s (equal to 680 billions m^3/s and 575 billions m^3/s respectively.

The total of these three losses represents about 8% of the total discharge of the river Zaire, considered at its mouth (Fig. 2).

Foreseeable environmental impact

3. From the hydrological standpoint, the removal of even considerable flows from the watercourses intercepted by the southern stretch of the canal cannot have any negative effect on the flows downstream of the canal, in view of the high rainfall regime and the distribution of the rains, spread over almost the whole of the year.

On the contrary, the reservoirs that will be created along the course of the canal at each water course intercepted will act as precious water «fly wheels» which will function effectively in routing flood discharges and for the possible regulation of flows in the water courses intercepted by the most northerly stretch of the canal.

In fact, the catchments of these rivers are subject to a rainfall regime — and therefore to hydrological behaviour — of a more differentiated nature (spring minimum and autumn maximum), and therefore the canal and the linked reservoirs can help to regulate their flows on an all year basis, diminishing the flood discharges.

The possibility will also be studied of increasing the low-period flows of these rivers with waters from the more southerly basins, conveyed in the canal, using to advantage the fact that the relevant hydrographs are not in phase.

The tributaries of the bang especially will be able to benefit from the canal as a means to regulate both floods and low flows.

Lastly, the regulation of the flood discharges of the rivers Lowa, Lindi and Aruwimi, diminishing the flows in the middle course of the Zaire, will mean a decrease in the swampy areas of the «cuvette».

From the climatological point of view, no appreciable consequences of any type are foreseen, in view of the fact that the canal does not create — as, on the contrary, is the case with large artificial lakes — sizable areas of water concentrated over a given stretch of territory.

The ecological effects will be the same as those caused by the construction of a large highway through an almost virgin area. In view of the great abundance of ecological themes present throughout the area, the canal will produce only negligible consequences from this point of view.

«Zaire 2000»: political and economic prospects

4. Zaire's support of the TRANSAQUA Project, apart from giving the country international prestige that would derive from being the promotor and sponsor of a continental-scale project, able to make a truly resolutive contribution to a vast area of the Sahel, would bring a series of direct and indirect benefits to the country which it is difficult to identify in their totality.

Certainly the most evident direct advantages, apart from those of political prestige, are the following:

- a massive influx of international capital, without precedent in African territory
- very large investments in the country following measures by large-scale international enterprises, continuing for about twenty years and therefore capable of permanently involving the professional activity of managerial, middle and worker levels for a whole generation of Zaire citizens
- the productive recovery of a region of some 200,000 km^2 today lacking in road connections with African centres of consumption and supply, which would be linked with an Inter-African Polyfunctional Trading Area (IPTA) provided with a free port, and, via the IPTA container port, with Lagos and Mombasa by means of the Trans-African Highway at present already at an advanced stage of construction
- the integrated intensive development of numerous areas having high agricultural and stock-rainsing potential connected with the IPTA by a navigation canal, and complete electrification of all the development areas using hydroelectric energy
- commercial openings for agricultural and livestock products of the new areas of intensive development in eight African countries
- Possible transition of commercial traffic to and from Burundi and Rwanda.

While it is true that the essential basis of the «Transaqua» Project is the water of the river Zaire, it is no less true that the donor country of this water will be the one that will receive perhaps the major economic benefits, not only in the long term but also over the short and medium term.

In fact, the working hypothesis is, obviously, to start construction of the canal from its northern end and then gradually to make extensions southwards until it is completed. Therefore Zaire will be able, together with the Central African Republic, to make use of the economic, commercial and social advantages stemming from the project right from its very earliest phases of implementation.

With the help of TRANSAQUA, «ZAIRE 2000» will be able to contribute significantly to the image of Africa at the dawn of the coming century.

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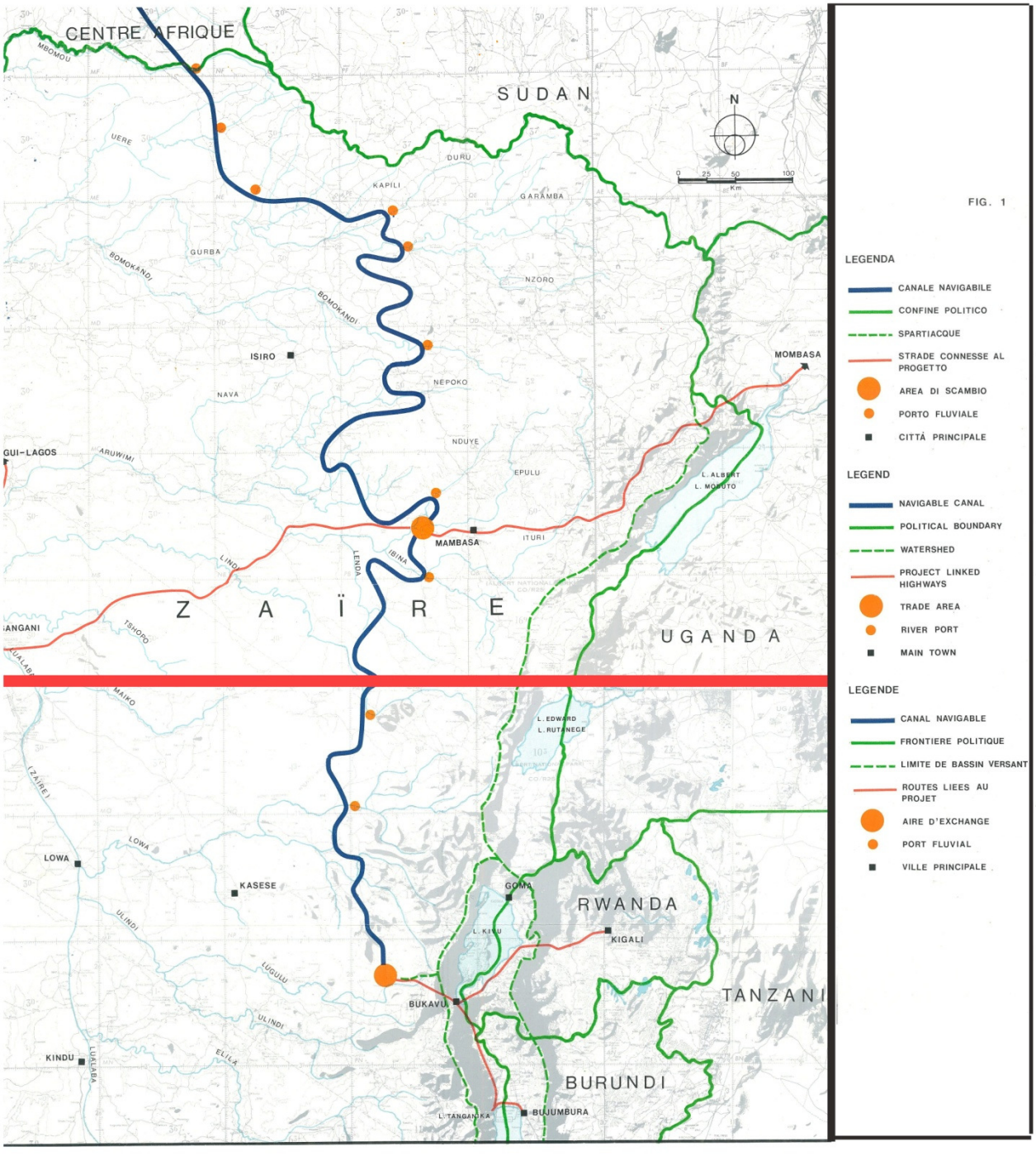
CENTRE AFRIQUE
SUDAN
UGANDA
RWANDA
BURUNDI
TANZANI
ZAÏRE
MBOMOU
UERE
DURU
KAPILI
GARAMBA
GURBA
BOMOKANDI
NZORO
ISIRO
NAVA
NEPOKO
NDUYE
EPULU
ARUWIMI
MOMBASA
L. ALBERT
L. MOBUTO
MAMBASA
ITURI
IBINA
LENDA
LINDI
TSHOPO
MAIKO
L. EDWARD
L. RUTANEGE
LOWA
KASESE
GOMA
L. KIVU
KIGALI
BUKAVU
ULINDI
LUGULU
KINDU
LUALABA
ELILA
L. TANGANIKA
BUJUMBURA
N
0 25 50 100
Km
FIG. 1
LEGENDA
CANALE NAVIGABILE
CONFINE POLITICO
SPARTIACQUE
STRADE CONNESSE AL PROGETTO
AREA DI SCAMBIO
PORTO FLUVIALE
CITTÁ PRINCIPALE
LEGEND
NAVIGABLE CANAL
POLITICAL BOUNDARY
WATERSHED
PROJECT LINKED HIGHWAYS
TRADE AREA
RIVER PORT
MAIN TOWN
LEGENDE
CANAL NAVIGABLE
FRONTIERE POLITIQUE
LIMITE DE BASSIN VERSANT
ROUTES LIEES AU PROJET
AIRE D'EXCHANGE
PORT FLUVIAL
VILLE PRINCIPALE