
Zaire River Diversion Project

A plan that can unify Africa and introduce limitless growth potential

by Nicholas F. Benton

The following proposal has been prepared for consideration by member-nations attending the special meeting of the Organization of African Unity Nov. 30.

Development of a plan over the next few years to divert water from the upper Zaire River into the Lake Chad basin for purposes of irrigating the arable agricultural lands of the Sahel, can unify the interests of every nation of sub-Saharan Africa around a concrete project of mutual benefit to all. It takes man's indispensable natural resource—water—and puts it where it can do the most good: in an abundant, well-managed flow onto arable land, enabling exponential increases in agricultural production.

Regional, cultural, and ideological differences are overcome by the pursuit of a common benefit. This primary infrastructural improvement creates the preconditions for long-term, limitless economic expansion through augmentation of the agricultural, transportation, and energy infrastructure of the continent.

This Zaire River diversion is readily feasible from an engineering standpoint, although a detailed study has yet to be done to establish the optimal set of alternative plans to achieve it, the cost factors, and its precise impact on the regions involved. It is proposed that a regional authority of cooperating African nations be constituted to obtain funding for, conduct, and routinely evaluate such a detailed study, to be completed with specific recommendations for approval by all relevant parties within the shortest feasible time period, not more than three years.

An overview of the project

Taken as a whole, the continent of Africa has a greater abundance of natural resources than any other. This includes the prerequisites for agricultural abundance. The continent has more unused arable land than any other continent, as well as seven of the world's largest fresh-water river systems. Therefore, it is a doubly painful irony that Africa is suffering ever-worsening famine. It is truly the result, not of natural conditions, but of the failure to put the natural conditions that exist on the continent to the service of man's needs.

This is a failure that can be remedied with the aid of a

broad vision for the potentials of the continent and an optimism about the ability of nations to work together in harmony when their objective is a common good.

What must be achieved is fundamental: to bring the abundant water resources and the abundant arable land together.

Looking over a map of Africa, we see the following components for achieving this:

■ **The Zaire River.** The Zaire River is among the world's most powerful. Its flow is so intense that it retains fully 19% of the world's hydroelectric power generation potential. This is fresh water which can be harnessed for use in irrigating arable land.

■ **The Sahel.** The Sahel, extending almost 3,000 miles from Dakar to Djibouti is the largest unbroken region of arable land in the world.

■ **Lake Chad.** Positioned directly in the center of the Sahel, today's Lake Chad is a tiny remnant of what was once a much larger lake, and sits in a geological formation capable of holding a volume of water many times greater than that currently in Lake Chad.

The task is to bring the waters of the Zaire River across the land which separates it from the Sahel, and into the Lake Chad basin, where it can be held, before being disbursed in an orderly, useful form through a network of irrigation canals across the Sahel. Dams on both the Zaire River and Lake Chad would manage the water flow for optimum effect, also exploiting the hydroelectric power generation of the moving water.

The introduction of hundreds of millions of acre-feet of water into the Sahel region would alter the climate of northern Africa as a whole. As arable land became irrigated to optimize crop production, the massive increase in vegetation would stimulate a "respiratory" interaction with the atmosphere, whose net effect would be to cool the atmosphere, and introduce a significant increase in natural rainfall.

This would not only stop the advance of the Sahara Desert, but would cause it to recede dramatically. Within an astonishingly short time, entire regions of the present Sahara could be reclaimed for development, as aquifers and dry lakebeds and rivers would be refilled, many perhaps for the first time in a millennium or more, through the increased

natural rainfall across the entire region.

Once the region achieves the capacity to realize its limitless agricultural growth potential, then the introduction of transportation and energy infrastructures will become self-evident. This would include transcontinental high-speed railroads, criss-crossing the continent east to west and north to south. It would include efficient, centralized electrical power grids which would support rapid growth of numerous population centers that would concentrate industrial, commercial, cultural, educational, and health facilities.

The historical analogy to the development of the North American continent is important. The United States became the most powerful economic force in the world not simply as a result of exploiting abundant resources. The development of the industrial heartland of the nation was impractical until some indispensable large-scale infrastructural improvements occurred first.

The most important was the Erie Canal, which provided a transportation link between the Great Lakes and the interior of the continent, and the Eastern Seaboard. Without that link, the potential of the interior would never have been fully exploited. Additional links, such as a canal linking the Great Lakes with the Mississippi River, were also critical preconditions for realizing the full potential of the interior. In the West, large-scale water projects which brought water out of the Sierra Mountains and the Rocky Mountains (via the Colorado River), by way of numerous systems of dams and canals, made possible the growth of California, turning it from a virtual desert into the U.S.A.'s most populous and economically prosperous state. In short, large-scale infrastructure projects have always been the precondition for any real, sustained economic growth.

Cost factors

The most common argument against investing in a large-scale project such as the proposed Zaire River Diversion is its high cost. This factor, many will say at the outset, categorically rules out such an idea. But this is nonsense. Financial interests preoccupied with means to optimize profits from an underdeveloped region will always argue against the feasibility of major projects which improve the potentials for real economic growth, independence, and expectations of those regions. Africa has remained underdeveloped for so long because of the force of such exploitation, which continues today in the form of those who preach conservation, population control, and small-scale, decentralized programs, and attack the kinds of large-scale programs that will transform the face of the entire continent.

In reality, the cost of any project must be viewed as a function of its total economy, or value. That is, it is not the nominal cost which is important, but the ratio between the cost and the yield of an investment. Spending \$50 million on a decentralized, local project which conserves use of a diminishing resource, for example, or even stabilizes the pro-

duction of a product at a fixed level, realizes far less in yield than spending the same \$50 million to build a section of a larger master-plan for a massive increase in yield. The latter investment is, obviously, better spent than the former.

In the case of the Zaire River Diversion, the investment in its planning and construction will be infinitely dwarfed by the yields it will produce. To cite a historical precedent, the Erie Canal proved so valuable to the flow of commerce in the United States, that the entire cost of its construction was paid for in only 11 years—less than the time it took to build it. Everything gained from that point on was pure profit, and the benefit to the total economy was epic. No matter what the cost of the Zaire River Diversion, as a whole, it will yield in profits more than any combination of decentralized projects.

Once the political will exists to build the Zaire River Diversion, the question will become: Who can afford *not* to invest in its development?

The cost-feasibility of the project, then, is primarily a political, rather than economic, matter. If sufficient resolve is demonstrated to achieve an objective that will unlock an unlimited growth potential, then cost is no longer important when measured against the yield. It is only important as long as it remains a deterrent to political will.

If the political leader begins by asking, "Can we afford it?" and awaits an answer to that before making a decision, then he will always be told, "No." If, however, the political leader says, "This is the right thing to do; we must and we will do it; regardless of the cost, we will find a way," and then asks various parties if they are interested in participating, he will be told, "yes."

True, he may have to do some convincing and searching to get the "yes" answer he seeks, but, again, the main component of this is the degree of determination behind the effort. With the amount of resources for investment that exist in the world today, there is no shortage of potential investors who will see the advantages to be gained from cooperating with the leaders determined to build this project (advantages of both a political and economic nature). Once interest begins to be shown, a stampede of investors will follow.

How to proceed

Two elements are required to launch the Zaire River Diversion: consensus among nations affected by the project and a detailed feasibility study. The two can proceed simultaneously and, in fact, be directly interrelated.

One understanding must lie behind both efforts, however: a commitment to the feasibility of the project. In other words, it must be clearly resolved from the outset that the study being conducted is not aimed at answering the question, "Can it be done?" For reasons already given, even an engineering firm can come back with a "no" answer, if that is the question. The study must be conducted from the standpoint of providing the necessary detail, as well as alternative routes, locations for dams, cost estimates, etc., which actually make it

possible for the project to get underway.

The study should be carried out by a commission made up of appointees from all African nations committed to the realization of the project. This "Zaire River-Sahel Water Diversion Project Commission," composed of appointees who will report back routinely to their respective governments, will amass a fund to finance the study. The study will require hiring experienced engineering experts comfortable with utilizing the problem-solving approach who will draw up three alternative routes for the water to flow from the Zaire River into the Lake Chad basin. It will also require hiring analysts who provide cost, regional impact, and other estimates in some detail.

(In the United States, a similar method was undertaken to study the feasibility of diverting water to the High Plains region, where water for irrigation was tapped from the Ogallala Aquifer and was found to be diminishing rapidly. The U.S. Congress funded a \$5 million project in 1976 to produce a study of detailed options within a five-year period. A "High Plains Study Council" was created, composed of two individuals appointed by the governors of each of the five states involved, which oversaw the study in a manner similar to what is being proposed here. In this case, however, the study was doomed to failure from the outset, because the mandate was flawed. Had there been no constraints on their efforts to find new water, they would have looked to the northward-flowing rivers of Alaska, with their massive volumes of fresh water, and the feasibility of diverting them, southward and downhill, onto the High Plains. Instead, they were prohibited, for parochial political reasons, from looking outside the immediate area of the High Plains for new water, and thus, the study was destined to fail.)

The commission would meet on a regular basis to hear reports on the progress of the study and make ongoing evaluations and any decisions as needed about changes in the way the study is being undertaken. Commission members would then report back to their respective governments, and to meetings of larger regional bodies as requested. The commission would have the primary responsibility for assuring the best possible detailed and comprehensive study emerges from their work within a reasonable period of time, which should not exceed three years.

Once the study is completed, the commission makes its recommendations on which of the three alternative routes it considers the best, and passes the study on to be approved by all the affected and cooperating nations, who would then act with a consensus to seek bids on the beginning of construction of the various components of the project. Also, the cooperating nations could form a cooperation which would seek investment in the project, and subcontract the construction. With the aid of the most modern construction methods, yields from the project could come within the first years after startup, beginning with hydroelectric surplus, and then, the water itself.

Space budget cuts protests in British

by Mark Burdman

A British government commitment to place strict limits on state funding of space research, while phasing out British participation in the European Space Agency, has provoked both angry protests and an impassioned defense of the importance of space exploration from influentials in Britain's political and defense establishment. The unusually vociferous rallying behind scientific-technological progress may be read as a signal that powerful factions in the British establishment are trying to foster a shift away from the destructive, mystical cult of "privatization" and the "post-industrial services economy," which has so damaged Great Britain over past years. It also signals concern about the increasingly dangerous challenge to the West posed by the Soviet space program and the past years' disarray in the American space program.

Speaking at a conference on space industrialization in Brighton during the week of Oct. 12, John Butcher, the British minister responsible for information technology, announced that Britain, at a critical meeting of the European Space Agency (ESA) in The Hague, Netherlands on Nov. 9-10, would insist on a cutback in the European space program. In the course of his remarks, he made clear that the government's policy was to view space as a purely "economic" matter, in the way a "free enterprise" quack views economics. Said Butcher: "The time has come for Europe to take stock and review its space activity against the likely future demands of the market."

British Minister of Trade and Industry Kenneth Clarke had earlier denounced the entire array of European aerospace manufacturing companies, as an "expensive club" that would drain necessary resources from other areas of the economy.

Such attitudes drew an immediate protest from Jack Leeming, recently appointed head of the British National Space Centre. On Oct. 19, he briefed a subcommittee on space created by Britain's Advisory Council on Science and Technology (ACOST), a group of scientists, industrialists, and representatives of government departments headed by Rolls Royce chairman Sir Francis Tombs. Leeming insisted on the necessity of Britain boosting government funding for space research, from the present annual level of £100 million up to the £300 million range.