EIR Feature

Large-scale water projects for a thirsty world

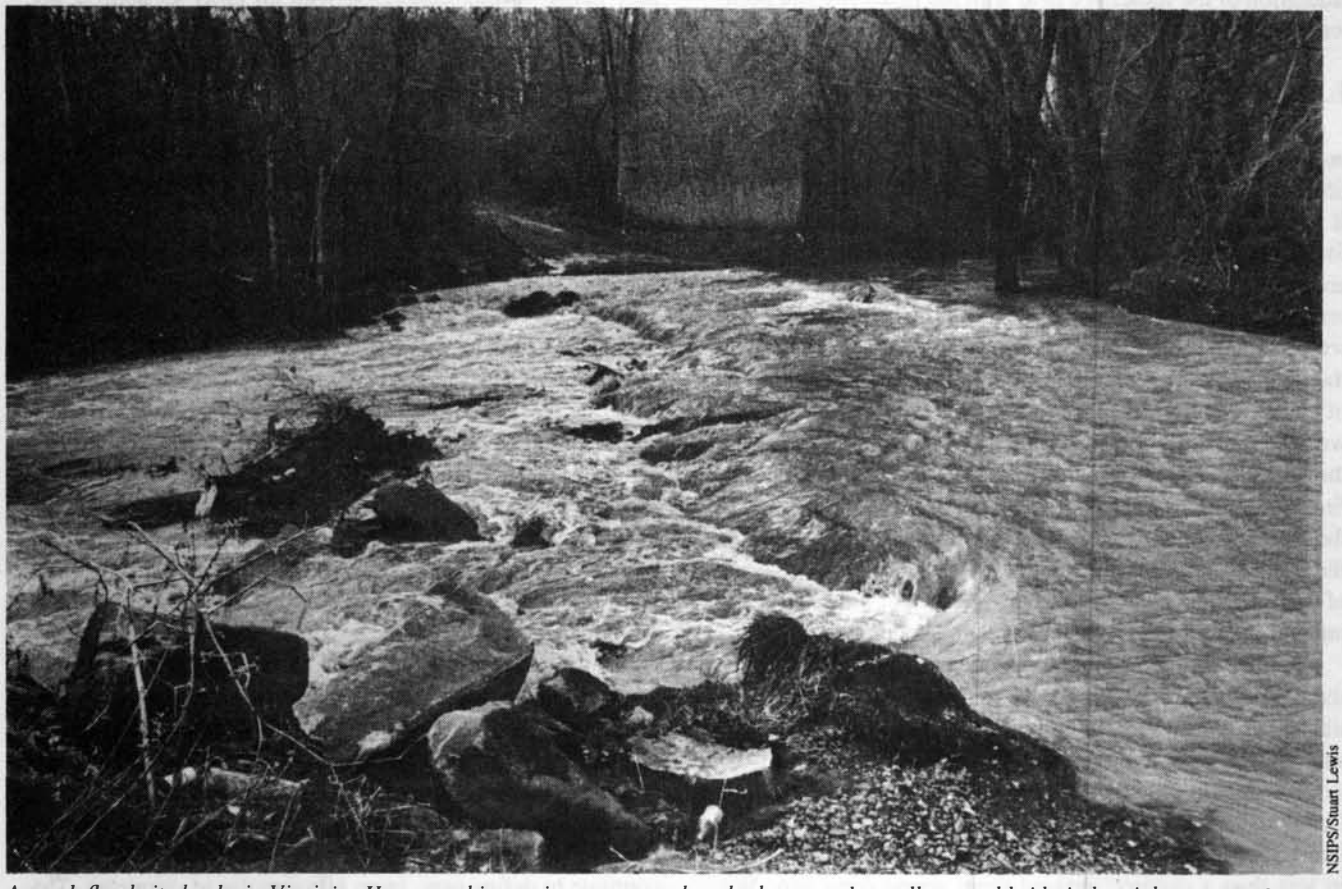
by Nicholas F. Benton

The approach required to avert the catastrophic consequences of a global monetary collapse is that of the capital-intensive, large-scale development project. Credit and development policies modeled on the 1939-43 U.S. experience, empirical proof of the effectiveness of this method for pulling a nation out of depression, need to be applied to the peacetime objective of employing advanced industrial capabilities and millions in manpower, in completing major projects that will result in a qualitative transformation of the tangible wealth-producing capabilities both in the United States and abroad. For the United States, recovery would require involvement in such projects on top of efforts to overcome the over $3 trillion deficit in existing national infrastructure that has developed since 1970.

It is devastating proof of the treachery of the dominant international monetary institutions of our era, that well into the second half of the United Nations' "International Drinking Water Supply and Sanitation Decade" of the 1980s, deliberate inaction on water development strategies has not only contributed to bringing the world to the brink of monetary collapse, but has extended conditions of mass famine on almost every continent of the globe.

It is not as if the urgent need for boldly addressing this indispensable resource—fresh water—hasn't been appreciated. That is why the U.N. devoted the 1980s to the theme of addressing the shortage crisis of this precious commodity. However, as has become clear, to date the U.N. has done nothing but act as the right arm of the International Monetary Fund and its cynical counterparts in the East bloc, to help convince the thirsty nations of the world to accommodate to, rather than cure, their problems.

The U.N., in fact, has taken it upon itself to persuade the drought-stricken nations of the Sudano-Sahel region of Africa that drought is a permanent condition of their climate, and that overuse of the land by man—in the form of growing populations denuding the woodlands—rather than underdevelopment, is the bane of existence there. This is the conclusion reached in a "Strategy for Survival" publication put out by the U.N. last year, which offers only population control and more efficient use of hearth stoves as solutions to the drought and desertification



NSIPS/Stuart Lewis

A creek floods its banks in Virginia. How can this precious resource best be harnessed, to allow worldwide industrial expansion?

conditions of sub-Saharan Africa. The document quotes freely from Lester Brown's genocidal Worldwatch Institute, which, in its policy papers on water, including "Water: Rethinking Management in an Age of Scarcity," condemns every form of large-scale water diversion technology as unworkable, from either a financial or ecological standpoint.

These arguments are frauds, thinly veiled malthusian excuses for the genocidal consequences of International Monetary Fund looting, which, under the Gramm-Rudman budget-balancing law, has extended from the undeveloped sector to include the United States, as well.

In reality, there is not a famine- or drought-stricken region of the world today where there do not exist blueprints for large-scale water diversion projects that could transform these regions. In many cases, these plans have existed for decades, and involve technologies not much more sophisticated than what it took to build the Erie Canal in the United States, over 150 years ago. As one example: Using state-of-the-art construction methods, diversion of the powerful Zaire River northward into the Lake Chad basin could be achieved within a decade, and could turn the region the U.N. has condemned to permanent desertification, into one of the most fertile regions of irrigated farmland in the world.

Similar "Great Enterprises" for water development exist for North and South America and Asia, as well as Africa. The Soviets launched such a program of their own, diverting the massive northern-flowing Ob River southward into the rich agricultural regions east of the Caspian Sea, and the People's Republic of China is renovating the ancient north-to-south canal system in that country.

The main projects of focus in this report are: 1) the Zaire River diversion in Africa; 2) the Brahmaputra-Ganges River canal in India; and 3) the North American Water and Power Alliance (NAWAPA) in North America. These three demonstrate the fundamental principles which apply to many other, similar Great Projects which can transform the economic potentials of whole regions of the globe.

In these projects, the issue of engineering feasibility is straightforward. By maximizing use of such modern construction technologies as PNEs ("peaceful nuclear explosives"), construction time can be vastly sped up. Questions pertaining to financing and political cooperation require more attention. Fundamental to approaching these matters, however, is the perception of the need to realize these potentials. Once that is understood, financial and political questions become matters for deliberative problem solving, rather than "insurmountable obstacles" which preclude any serious con-

sideration of the topic. We deal with the financing and political questions first, and the projects themselves last.

I. Financing large-scale development

Historically, water projects, famous as "internal improvements" in the history of the development of the United States, were financed through predominantly public means. It has been demonstrated by the experience of the United States, in particular, that the most efficient way to finance and rapidly complete such a project is through dirigist government financing. When completed swiftly and efficiently, well-planned projects pay for themselves quickly, and qualitatively transform the economic wealth-generating potential of an entire region. A prime example is the Erie Canal. Built with federal funds, it paid for itself in 11 short years, and was the critical transportation link between the developed Eastern Seaboard port cities of the United States and the interior of the North American continent—providing a transport link to the Great Lakes, resulting in the virtually limitless expansion of the American heartland, in the creation of great cities and industrial/agricultural hubs like Chicago and Detroit.

To the "free market" ideologues and colonial looters of the International Monetary Fund today, who use instruments like the Gramm-Rudman law in the United States to rule out such investments in development, such an approach is heresy. But history, including the material results of the Erie Canal and scores of projects like it, which transformed the United States into the greatest economic power in the world in less than a century, proved them wrong long ago. We, who are not such ideologues or evil men, have simply forgotten that lesson.

If credit's genuine purpose is to distribute and reinvest wealth, then it can be called into existence upon the guarantee of the existence of such wealth, even if that wealth is in the future, as long as there is confidence that that wealth will be realized. Technically, instruments of credit dedicated to the completion of specific, wealth-generating projects can be created *de novo,* out of thin air as it were, and yet are more solid than if they were backed by gold, if the purpose for which they are created is realized; and they will have a long-term deflationary effect, since they will allow improvements in productivity, through improvements in technology—thus lowering the unit cost of production. And they will create more wealth and jobs, thus overcoming any initial deficits. The conditions are that the credit must be in the form of long-term, low-interest notes, so that the pay-back is derived from the yield of the completed enterprise.

Such long-term, low-interest instruments of credit must be shielded from secular inflationary tendencies, which are not caused by the increase of the money supply per se, but by the increase of "fictitious capital"; that is, demand on the money supply from non-productive, non-wealth-generating activity (such as speculation and black-market activity like drug trafficking). Therefore, putting the dollar back on the pre-1971 gold reserve system, in collaboration with our allies, helps—when combined with an array of appropriate disincentives—to remove the inflationary element of speculation, which, combined with tough measures against drug-money laundering and related capital flights into "offshore havens," makes the generation of the right kind of credit for large-scale development possible. Few people, except those who think they make the rules of the monetary games to ultimately profit the most, will complain about converting highly volatile high-interest, short-term credit into more secure long-term, low-interest, gold-backed credit—especially if the move serves to stabilize a global monetary system otherwise on the verge of an uncontrolled collapse.

These are "ABCs" of what was known in 19th-century America as the "American System" school of economics, which counted among its practitioners Alexander Hamilton, Mathew and Henry Carey, Friedrich List, and Abraham Lincoln. It is a science of economics, in stark contrast to the epistemologically-flawed British "utilitarian" school, out of which various breeds of monetarist "free trade" advocates have arisen. And the best proof of the superiority of the American System school, lies in the interrelationship between the development of the individual, through education and institutions of political freedom and morality; technological innovation; improvement of the land and instruments of production; population growth and increase of standard of living per capita—all as evidenced by the experience of the United States during most of the 19th century. There is no limit to this kind of growth, as long as new technologies continue to define new, more efficient use of resources. The present-day potential to break through to the "plasma age"—making full use of the technologies which will bring us the Strategic Defense Initiative and nuclear fusion energy—dwarfs anything achieved to date, in terms of our potential for future growth on this planet, and beyond.

There are a number of forms in which the generation of long-term, low-interest credit can be achieved, earmarked for specific large-scale projects. American System economist Lyndon LaRouche has proposed a number of approaches, both internal and external to the United States, such as his 1975 International Development Bank proposal, and his 1982 "Operation Juárez" proposal, which continue to receive close attention from Ibero-American governments looking for alternatives to the destructive influences of both the IMF and Moscow.

LaRouche has written extensively on emergency measures that can be taken domestically to turn the economy around. Another proposal comes from Masaki Nakajima, founding chairman of the Japanese-based Mitsubishi Research Institute. He has proposed a 20-year, $500 billion global development proposal called the "Global Infrastructure Fund," which would be used to construct a specific target list of projects including: the Zaire river diversion project; the Brahmaputra-Ganges Canal; a canal across the Kra Peninsula in Thailand; a barrier across the Bering Straits to keep the Arctic Sea waters from flowing into the northern Pacific;

A commentary by the Hon. Sen. Frank Moss

The author is the former U.S. Senator from Utah.

As a Democrat, and having served eighteen years in the United States Senate, I have been concerned with the need to protect, conserve and utilize our planet's marvelous supply of pure water. The absolute *sine qua non* on this globe is *water*. In a speech on the Senate floor, Sen. Bob Kerr of Oklahoma once said that the time would come when a barrel of pure water would be of more value than a barrel of oil. (Imagine that from an oil tycoon like Kerr.) Even then, 20 years ago, Senator Kerr foresaw an expanding population and the continuing degradation and loss of our supply of pure water. The world could be on a collision course to disaster.

Is it possible that any substance as universal as water (H_2O) could be in such short supply as to threaten famine and disease? The sad answer is "yes." A vast supply of this renewable resource is stored in ice caps or is flowing into salty oceans in many places, while enormous areas of our planet are desert, dry and inhospitable to life, human or mammal.

My home state of Utah has turned much of our landscape into beautiful homes and farms by diverting water from our mountains to our barren valleys. We started a hundred years ago. But we still need more fresh water.

My political efforts within my party and in the Senate have pressed for water conservation, diversion and use. The Democrats have a proud record in this effort. But it is not enough! We must raise our eyes and expand our scope.

My advice is: "Make no little plans."

With world population at approximately 5 billion people and with demographic projections of 10 billion people by the turn of the century and;

Plagued already with water shortages, spreading water pollution, desertification of vast areas of our planet—the only home on which homo sapiens can rely; and

With world hunger and overcrowding confronting us in several areas;

We must do something while there is time.

One course of action is to limit procreation. This is being done in some areas, but with limited to no success.

Another way is to improve food production with better seed, fertilizers and pest control. But this, too, makes for only limited relief in selected places.

Perhaps a third way is to abandon humanitarian and scientific efforts to terminate medical efforts to fight disease. Thus, we could invite back the diseases which in past ages swept away our children and whole areas of population. Thus, we might keep our world population to around 3 billion people. Of course, no sane human being should subscribe to this "solution."

The only reasonable and humane planning and action in the next decade is to conquer our desert wastelands, expand our areas of habitation, and expand our food production. This, we know how to do. Immense areas of our planet, now barren and desolate, will become habitable and productive *when we add water*.

Nicholas F. Benton has presented three vast water salvation and diversion projects. Any of these projects would demand our efforts for generations and change the lifestyle of millions of people yet unborn.

What is the cost to build these projects: *enormous!*

What is the cost *not* to build these and other water projects: *ghastly, unthinkable!*

We can and should explore other planets. But more urgently, we must conquer drought, desert, hunger, overcrowding and despair of our fellow human beings *on this planet*.

Our time is running out. We should begin at once.

Benton sets forward an agenda for the rest of this decade and several following decades.

When a person sets forth ideas and plans for water conservation, diversion and use, I give my support. NAWAPA was one of the proposals on which I held public hearings in the 1960s. But no concrete action was taken. International vision was too limited. Later, however, the Canadians did build part of this overall NAWAPA plan with the James Bay project, impounding and using waters flowing toward salty Hudson's Bay.

International cooperation must come to Benton's gigantic proposal if we are to prolong and make better human life on earth.

a second Panama Canal, and so forth. Israeli Prime Minister Shimon Peres's recently proposed "Middle East Marshall Plan," calling for a $25 billion regional development fund—bearing remarkable similarities to LaRouche's 1975 IDB proposal for that region—is another example of this approach. As expressed by Israeli Economics and Planning Minister Ga'ad Ya'acobi, the sum is $25 billion over 10 years, involving participation of 18-20 countries for an "overall, regional economic development program," including a nuclear plant in the Sinai to be shared by Israel and Egypt, a coastline railway from Turkey to Eqypt, and joint agriculture projects.

The final, not insignificant point identified at the outset of this report, is that measures required to finance large-scale development projects, worked in combination with debt reorganization and related policies, represent the only way out of the impending world financial collapse. Thus, the argument must be that, not only can this method work, it is the only one which can. Rather than being a net expense, or overhead cost, upon a national economy, such large-scale infrastructure projects massively increase the overall productivity of an economy. An *Executive Intelligence Review* team demonstrated the positive relationship between the reproductive ratio of an economy (S/C + V) and the infrastructure investment of the previous year in the U.S. economy in an article by Sylvia Brewda (*EIR*, April 6, 1982). The study showed that a crash infrastructure development investment could result in a doubling of the size of the overall national economy in 8 to 10 years.

II. The politics of large-scale development

The strongest political opposition to large-scale development projects comes from monetarist interests who covet the ability to "buy low and sell high," and are therefore interested in controlling supplies of natural resources—a control which is achieved through financial cartels, cheap labor resources, and malleable political conditions to optimize their power. They are not interested in producing wealth in the form of net increases of tangible product, but in wealth in the form of the margin of difference between their cost of obtaining something, and what they can sell it for, or get back in return.

This means they profoundly oppose the universal application of scientific and technological progress for the purpose of making cheap and plentiful basic commodities readily available to autonomous populations.

It was opposition by George III to just such progress that provoked the American Revolution. Because of that experience, whereas such interests had historically normally resorted to simple force to impose their will (and usually still do), they also take care to assert that the law of plunder (which they call the "free market") is a "natural law" which, if violated by sovereign nations seeking to protect themselves from plunder, will result in disastrous consequences.

They have constructed a whole school of phony monetarist economics around this notion, based on what they call the "hedonistic calculus" of the "marginal utility" between "supply and demand." This has more recently been augmented by the addition of the "environmental" component of their imaginary "natural law," whereby they heavily fund so-called "environmental movements" to interfere with and stop large-scale energy and development enterprises. Such obstructionism, together with currency and interest-rate manipulations, aims at making large-scale development "too expensive" as well as "environmentally unsafe," and this is how they hold back progress.

They further justify such obstructionism with racist arguments of "cultural relativism"—again defied by the experience of the United States, whose growth during the 19th century was based upon immigration from all parts of the globe. Technology is the fruit of the universally shared power of human Reason, and only someone who would argue that certain cultures inherently lack that power, can argue that the best technologies to economically transform a region are not the most appropriate. Educational deficiency among certain peoples simply presents itself as a component of the overall array of problems to be solved, but never as an insurmountable cultural or "cosmic" obstruction.

Understanding how the gamemasters of world finance capital run this operation, is the first step among autonomous nations to overcoming their differences on questions of shared large-scale projects. For example, this explains why Africa, after centuries of colonial exploitation, remained so underdeveloped. This is why the colonial powers in Africa made sure that a transcontinental rail system would be impossible on that continent, by constructing the rails in the different colonies at different gauges (widths), so they could never be interconnected. This is how one can see the extent to which the United Nations has become a pawn of this outlook.

Once opposition to development of this kind is removed as a factor to obstruct cooperation, then an environment for expedient talks among the relevant autonomous entities, centered upon their mutual and combined benefits from a particular proposed project, can occur. Contracts can be let to determine a choice of approaches to a desired project, and decisions can be made.

The fundamental methodological principle is that a specific development proposal serves as the basis for cooperation, rather than some generalized notion of concord or stability achieved prior to considering a development strategy. Israeli Prime Minister Peres's Marshall Plan strategy for the Middle East is an example of this: It reflects the basic understanding that mutually beneficial regional economic development is the best incentive for political concord.

For example, the architects of the NAWAPA water project for North America understood this well when they went to the American, Canadian, and Mexican people with this program, back in the 1960s. Tapping the enormous fresh

water resources of Canada and Alaska for multipurpose uses throughout the continent, provides an abundance of surplus resources to be shared by all three nations, and many of the provinces and states within the nations. This was made clear in the NAWAPA proposal: Eleven Canadian provinces, 35 U.S. states, and 5 Mexican states would enjoy an immediate positive impact from the project, thus laying the basis for an overwhelming consensus for its adoption.

The only reason NAWAPA was not adopted and completed by now, to bring 180 million acre feet of water annually to productive use on this continent, was obstruction by the international financial forces identified above. This occurred despite the fact that the friendship treaties for natural resources sharing between the United States and Canada do exist already, although technically reserved for times of national security crisis to either nation. However, since times are rapidly approaching when the North American water shortage crisis can properly be defined as a national security crisis, this treaty, dating back to World War II, can be an expedient way to realize this particular project for the general good. Such friendship treaties, after all, are not hard to arrive at and implement, when everyone, except maybe a few international financiers, stands to gain.

III. Three model water projects

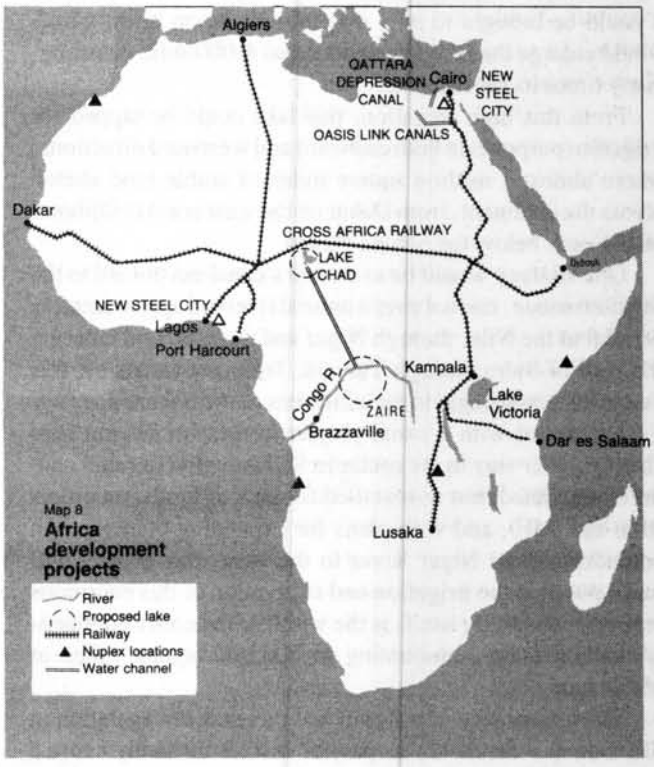
From the following three specific development proposals, we can readily see the immediate potential to overcome the most fundamental problems associated with famine in the world today, within less than two decades. These projects can, virtually by themselves, increase food production so massively as to eradicate food shortage as a problem facing humanity. They are only three of a vast array of projects designed for almost every section of the globe, awaiting only the political will to realize them.

1) Zaire River diversion (Africa)

The continent of Africa contains a total of seven major river systems and more unused arable land than any other continent on the face of the Earth. By putting the water of those rivers onto that arable land, this continent would become among the richest agricultural producers on Earth. Outlined in the Mitsubishi "Global Infrastructure Plan," or GIF, the Zaire River diversion project proposes a "control of the flow of the Zaire River by building a dam to create a vast lake in the Congo, Central African Republic, and Chad regions of central Africa to improve natural conditions." The massive Zaire River is among the world's most powerful—containing 19% of all the world's hydroelectric potential in its flow. According to the estimates of this report, redirecting its flow into the Lake Chad basin would permit the cultivation of 800,000 square miles of arable land in the Sudano-Sahel region below the Sahara Desert.

A dam would be built on the Zaire River north of Kinshasa, creating a gigantic lake, in what is now the Zaire

MAP 1
Africa development projects



Basin, of about 130 square miles. According to geologists, this basin was once a huge inland sea, hundreds of thousands of square miles in size, larger than the Black Sea, and, although it has shrunk over the centuries to about 130 square miles, it would be refilled with the fast-flowing waters of the Zaire River to approximately its original size, extending from Bangui in the north, to Kisangani in the east, to near Lubambashi in the south, and near Kinshasa in the west, with a total surface area of almost 400,000 square miles. This would cover a huge swamp and tropical rain forest area virtually untouched to this day. This huge lake would be connected with spoke-like rivers and canal systems, becoming the axis of interior African transport, and the region's already enormous hydroelectric power potential would be doubled.

This gigantic Zaire reservoir would then be connected to Lake Chad by a canal north through the Central African Republic. The canal would run northward up the Ubangi River, a tributary of the Zaire, to its northernmost point near the city of Nagi, and then be cut through a mountain chain of the northern equatorial ledge which regulates a watershed running into the Lake Chad basin.

The Lake Chad basin is a huge natural depression enclosed by mountains on all sides 1,400 feet above sea level. At its present level, Lake Chad, almost totally dried up through

evaporation, is at only 800 feet of elevation, and is one of the shallowest fresh-water lakes in the world. Augmented by the fast-rushing waters from the Zaire (amounting to four times the amount of water the Rhine River dumps into the Atlantic), it could be brought to its 1,400-foot elevation brim, which would enlarge the lake to an enormous 4,000-mile coastline, many times its present size.

From this high elevation, this lake could be tapped for irrigation purposes in both eastward and westward directions, where almost 1 million square miles of arable land stretch across the continent, from Dakar on the west coast to Djibouti on the east, below the Sahara Desert.

One strategy would be to extend a canal northward to the Mediterranean, carried over a natural riverbed approximately parallel to the Nile, through Niger and Algeria, and entering the Gulf of Sidra through Tunisia. Tributary canals off this extension could begin to reclaim areas of the Sahara directly.

Combined with a canal project to reclaim swamp land already under way in the southern Sudan region (a canal one-third completed, but now stalled for lack of funds, on orders from the IMF), and with plans for expanding the irrigation potentials of the Niger River to the west, this project will make possible the irrigation and cultivation of this enormous region—which, by itself, is the width of the entire continental United States, amounting to 800,000 square miles of arable land.

The appearance of a significant increase of vegetation in this area as a result of this project will immediately cause a dramatic shift in weather patterns, due to the exchanges between plant life respiration and photosynthesis, and the surrounding atmosphere. This will draw natural precipitation to the area, which will encourage even more plant life, and more rainfall. The net result of this will be a naturally induced reclamation of the Sahara Desert itself. The "desertification" process, in other words, will be reversed. Rather than growing every year, the Sahara Desert will rapidly recede. Augmented by advanced soil technologies, such as are being perfected in California's Imperial Valley, even the most menacing regions of the Sahara would become susceptible to development.

This program gives the lie to the United Nations' Sudano-Sahel "Strategy for Survival" report, which proclaims the growing "desertification" of the region as irreversible. Combined with a transcontinental railroad—east-to-west, and then north-to-south—and nuclear-powered industrial "nuplex" complexes along the coast lines, this Zaire River diversion project can unlock a virtually limitless potential for the development of the rich resources of the African continent.

Contrary to the U.N. argument of the need for population control, under the conditions of rapid economic development that would follow from this project, Africa would experience a manpower shortage—the effects of underpopulation from the ravages of decades of drought and famine. In the nations of the Sahel, for example, the land mass equals that of all Europe west of the Iron Curtain, excluding Scandinavia. Yet, whereas that area of Europe has 330 million people, there are only 18 million people in the Sahel (thus the absurdity of asserting that the problems of the Sahel stem from overpopulation!).

A premium on education—in the way that President Lincoln combined the Land-Grant Colleges Act with his other legislation to open up the Western frontier in the United States—would be a priority component of such an economic development boom throughout this region.

2) Brahmaputra-Ganges Canal (India)

By virtue of the majestic Himalayas, the highest mountain range in the world, the Indian subcontinent is blessed with some of the greatest water resources in the world. However, the water originates in the high altitutes of the far north, and the arable land is far away. Second, the monsoon rain pattern turns the region's rivers into deadly, flooding torrents, more a menace than a benefit to man during these seasons. Therefore, flood control and irrigation are both required to fully tap the water potential of this area for man's use. The combination of the two can provide for a qualitative increase of food production on the massive arable portions of the region, allowing for a rotation system of three irrigated plantings annually, rather than one which is at present dictated by the whims of weather and the monsoons.

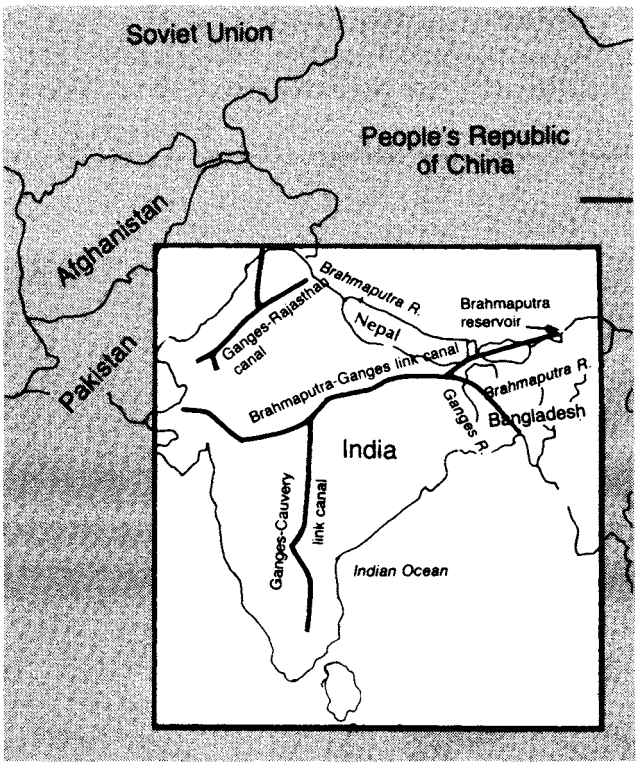
Also known by the name of the "Himalayan Project," the Ganges-Brahmaputra Canal proposal, as conceived by the GIF, involves "damming the Sanpo River on the upper reaches of the Brahmaputra in the frontier area between China and the Indian province of Assam, to make it flow into India through a tunnel across the Himalayas," and projects an annual hydroelectric-generating capacity of 240 to 300 billion kilowatt-hours. While the GIF proposal is excellent from the standpoint of flood control—taming the Brahmaputra from its uncontrollable, deadly flooding during the monsoon seasons—and hydroelectric power, this concept was expanded in a 1979 report on the development of India by the Fusion Energy Foundation (FEF), to include vast irrigation works for agriculture. Combined with fertilizer production, this irrigation could lead to a tripling of India's grain output within two decades, making the country not only self-sufficient in food, but a major net exporter of food to the world.

The FEF's work, in turn, drew on the concepts of Dr. K.L. Rao, once irrigation and power minister in India, who in 1972 drafted a comprehensive Ganges revitalization and Brahmaputra control plan. His plan looked forward to the production of an additional 1 billion tons of food grains annually, or, eight times the present level, with 130 million hectares of land under irrigation, three times the present level. He foresaw at least 40 gigawatts of new hydroelectric capacity, compared to 5 gigawatts at present.

The FEF conceived of realizing this plan in two 15-year stages, beginning with a canal diverting the Brahmaputra

MAP 2

Water development in the Indian subcontinent



near Dhubri to the Ganges near Patna. This canal would include outlets for irrigation releases to Bangladesh en route. A second diversion canal would be built from the upper Ganges and Yamuna rivers in Haryana (north of Delhi), with groundwater recharge and extraction facilities en route, to convey surplus water into the Sutlej Basin for delivery into the Western Desert, through an enlarged Rajasthan Canal.

Near Bikaner in western Rajasthan, a pump-lift canal facility would convey Himalayan water to the porous sandstone aquifers about 105 kilometers northeast of Jodhpur, as a regulating storage facility. That water now runs off, either through the Ganges tributaries or those of the Indus River. These canal systems would be augmented by groundwater recharge and extraction systems, using PNEs, required to impound the massive monsoon runoff during the July-October season, especially in the Ganges delta area, whence about 65% of all India's water runoff comes. Use of PNEs as well as radial wells can double the country's groundwater storage capacity. Finally, a seawater barrier at the mouth of the Ganges for flood control and improved navigability is a priority.

A master plan for this was prepared by the International Engineering Company of San Francisco 22 years ago, and is slowly being implemented by the government of Bangladesh. Nonetheless, IMF austerity conditionalities prevented the Bangladesh government from purchasing, at the beginning of the decade, the dredges needed for flood control; that IMF dictate led directly to the loss of tens of thousands of lives in the floods of 1984. The seawater barrier, similar to the Zuider Zee reclamation project of the Netherlands, would maximize the fresh-water potential of the Ganges delta area, especially during the low-flow season, when salt water incursion becomes greater.

Stage Two of the FEF plan involves extending the canal system southward through the subcontinent—the so-called Ganges-Cauvery link canal. This canal would stretch along eastern India from Patna to the Cauvery River in the far south, with an ultimate capacity of 240 BCMY (billion cubic meters per year), 10 times greater than the original plan estimated by Mr. Rao—since it will be drawing from the year-round storage capacities of the Ganges and Brahmaputra achieved in Phase One, rather than only the monsoon surplus, and could be augmented with nuclear power for pumping. The canal would optimally be 60 feet deep and 1,500 feet in average width at the upper end, and taper down to a 350-foot width, with the same depth, at the lower end. Its total length would be 1,640 miles, all but 440 miles of which would be in gravity-flow canals or rivers. About 120 BCMY of storage is necessary for delivery regulation. In addition to irrigation, the canal would be a vital inland barge-transport system for ores, grains, and bulk products from south to north, turning Patna into a bustling seaport.

Estimates for the cost of the system are $80 billion for Phase One and $100 billion for Phase Two, including the pumping power plants. Since the facilities would be constructed over a 30-year period, the average capital requirement would be $7 billion annually for the first 10 years, and about $5 billion a year for the last 20 years. The installed power requirement is about 13 gigawatts after the first 10 years, mostly for groundwater pumping, increasing to 85 gigawatts over the next 20 years as the pump-lifts for the north-south Ganges-Cauvery canal become operative.

However, that canal will generate about 25 gigawatts of that power by itself, through hydroelectric turbine installations on it and on neighboring river systems. Estimates of basic materials include 40 million tons of predominantly construction-grade carbon steel and 190 million tons of concrete—requiring 23 million tons of Portland cement.

3) North American Water and Power Alliance (NAWAPA) (North America)

The conception of this project dates back to the last century, just as the vision of a Panama Canal was already present in the mind of Benjamin Franklin. It involves capturing the fresh waters of the northward-flowing Canadian and Alaskan rivers, and diverting them southward for productive use in Canada, the lower 48 states of the United States, and northern Mexico. This is no small amount of water we are talking

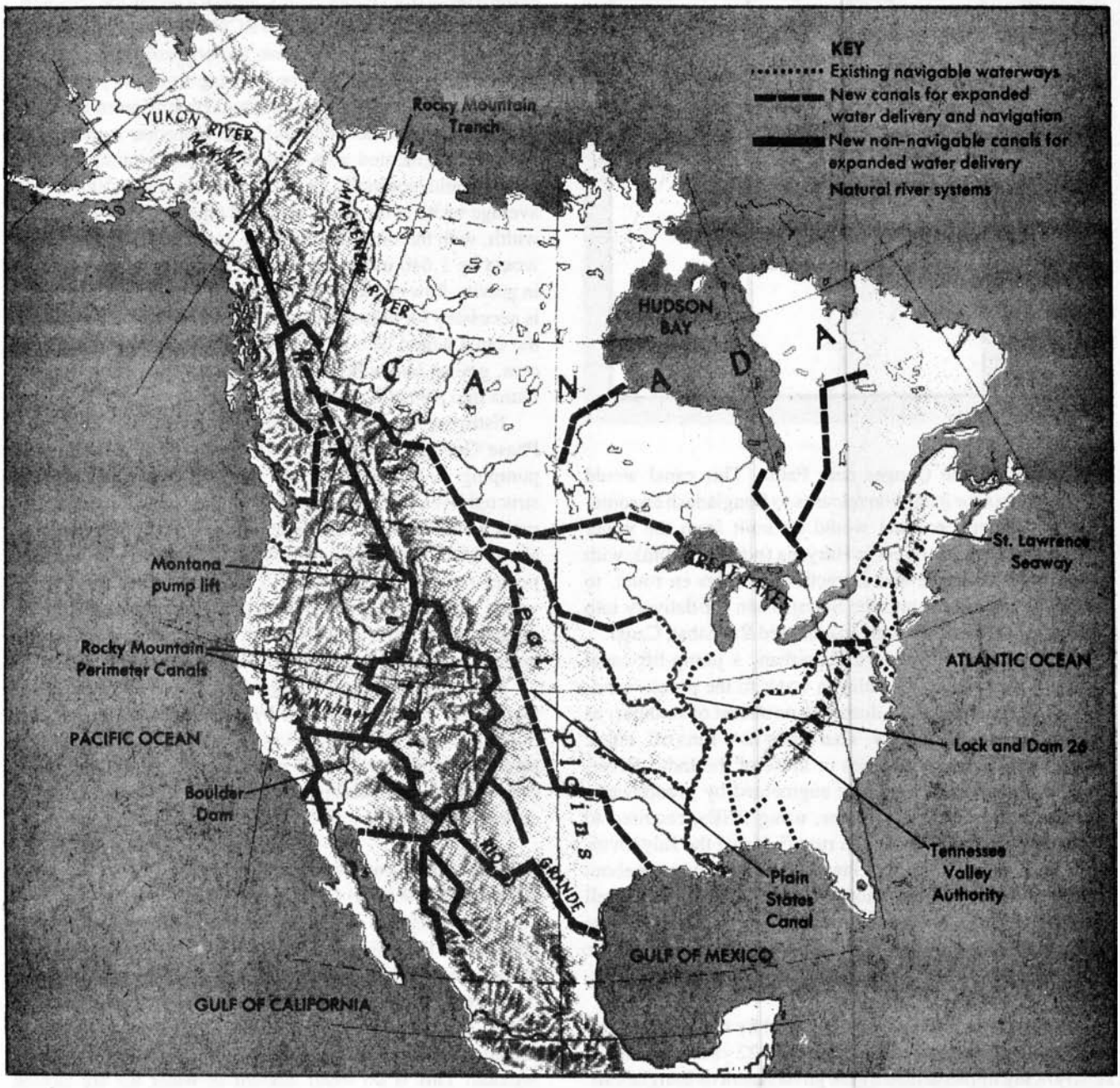
about: fully 26% of all the rainfall on Earth which hits land and flows off into the ocean, lands in Canada and flows northward into the Arctic Ocean, not utilized by man for any purpose.

Tapping this resource would achieve three immediate benefits: 1) It would immediately employ the idled industrial and manpower resources of the nations involved productively, a vital component for an economic recovery; 2) it would alleviate the critical water shortage conditions threatening population-dense southern California, as well as the rich agricultural lands of the United States' High Plains; and 3) it would allow for new economic growth in the West beyond the imagination.

This project was given the name NAWAPA by the Ralph M. Parsons Company of Pasadena, California, which invested millions in private funds to draft a master plan proposal

MAP 3

The North American Water and Power Alliance



for maximum exploitation of this untapped water resource in the early 1960s. This became a hot issue through the mid-1960s, the subject of a report by the Senate Subcommittee on Western Water Development chaired by former Sen. Frank Moss (D-Utah), which was published in 1966, and was the subject of numerous debates and a book by Rep. Jim Wright (D-Tex.), called "The Coming Water Famine," which promoted the project.

However, the NAWAPA project became the victim of the "environmentalist" movement of the late 1960s, beginning with the move by the late Sen. Henry Jackson (D-Wash.) to pull Moss off his post as chairman of the Western Water Subcommittee. It was only in the late 1970s, when Congress realized that the Ogallala aquifer, the groundwater resource upon which 11 million acres of irrigated cropland on the High Plains depends for water, was drying up, that interest in the NAWAPA concept began to be renewed. However, "environmentalist" fixations of the Carter administration, a little-known provision in Congress' omnibus water legislation prohibiting even the study of inter-basin water transfers affecting the Columbia River, and fiscal constraints, prevented NAWAPA from being little more than a "pipe dream," until Lyndon LaRouche and the National Democratic Policy Committee (NDPC) began to make it a cornerstone of a national economic reconstruction program in the late 1970s.

By providing over 160 MAFY (million acre feet of water a year: one MAFY equals 0.89 billion gallons per day) for deployment throughout the continent, NAWAPA can address every major water crisis facing the United States, Canada, and Mexico—from the Great Lakes and the St. Lawrence Seaway to the Mississippi, to South California, Arizona, Texas, and the High Plains, to Mexico's Sonora and La Laguna regions, to Eastern Seaboard municipal reserves. Since virtually the entire system runs downhill in a free, gravitational flow, it can generate an enormous net yield of hydroelectric power above and beyond its own pumping requirements—thus, the term "power" in the NAWAPA name. The total surplus hydroelectric yield has been estimated at 70 gigawatts.

As an example of the magnitude of increase in water availability NAWAPA would provide, the entire state of California, the most populous and agriculturally dense (in terms of cash yield per acre under production) in the Union, today consumes approximately 37.4 MAFY during a normal year (of this, 5 MAFY is for urban use; 31.7 for agriculture; the remainder for power plant cooling and fish, wildlife, and recreation).

NAWAPA would augment this total for California by 12 MAFY, or 33%. NAWAPA would also provide 12 MAFY to Arizona, which would more than quadruple its total present usage. Mexico would receive 20 MAFY, and the Canadian provinces, themselves, 58 MAFY (including a navigable barge canal linking the Great Lakes to the Pacific Ocean).

The project in its totality is composed of over 350 dam and canal projects, tapping a collection area stretching from the Yukon River to northern Montana. Of a total water runoff of 800 to 1,000 MAFY in this 1.3 million square mile area, NAWAPA would divert a total of 160 MAFY for consumption and waterway control. It would begin in Alaska, high in the headwaters of the Yukon, Susitna, and Tanana rivers, where, through a series of reservoirs, waters would be collected and diverted into the Fraser River—where the water would meet water coming from the Peace River and Parsnip River, and flow into a natural geological formation roughly along the British Columbia-Alberta border, and extending 500 miles, along what is known as the Rocky Mountain Trench.

With dams at the southern outlet to this trench, it will become a giant lake storing 300 to 400 MAFY of water (over three times the entire annual fresh water consumption of the lower 48 states). Nearby, a supplemental system would draw from the Clarke, Snake, Clearwater, Bitterroot, Big Hole, Jefferson, Salmon, Little Colorado, and Escalante river basins. A navigable waterway would extend from the Fraser River eastward across the Canadian plains to the Great Lakes.

Southward flows from the Rocky Mountain Trench and Clearwater subsystem would supply the lower 48 states and Mexico—a total of 80 MAFY to the United States (California, Arizona, and Texas getting 12 MAFY each, New Mexico 8, Nebraska 6, the Dakotas 5.5 each, Missouri 5, etc., under the original plan), and 20 MAFY to Mexico (Sonora 9.5, Baja California 4.3, Chihuahua 3.6).

According to a presentation by a Parsons Company spokesman to a public meeting of the Fusion Energy Foundation in 1980, the estimated cost of NAWAPA would be $200 billion over a construction period of 30 years. However, this was excluding the use of PNEs, which formed part of the original NAWAPA concept, but was removed for fear of anti-nuclear protest in the early 1970s. With PNEs, the cost and construction time both would be reduced tremendously. However, with the massive net surplus of energy on top of the enormous water yield, NAWAPA must be seen as perhaps the best investment in the future—apart from NASA or Strategic Defense Initiative programs—the United States and its neighbors could make. Pay-back time for the original construction costs could be achieved more quickly than the decade it took to pay off the costs of building the Erie Canal, and profit yields would be far greater.

Objections which surfaced among certain Canadian interests in the 1960s can be overcome by invoking the emergency friendship treaties that exist between the United States and Canada for use in the case of national emergencies. These treaties focus on sharing natural resources—and in this case, the resource is a renewable one whose use does not threaten to exhaust the supply, but only to create a permanent, stable, and growing market for the inexhaustible commodity. Work on such a project could begin by invoking the War Production Act of 1949, or by a more standard legislative route.