

# China lacks energy, but Three Gorges Dam blocked by environmentalists

by Cho Wen-pin

It seems that the People's Republic of China's new front-runners of speculation are striving for the world record now: to raise the real estate prices in Shenzhen, Shanghai, and Beijing to the level of New York, Hong Kong, and Tokyo. This aim is adored by the cheerleaders of the process, like George Bush, who sent Secretary of Commerce Barbara Franklin to Beijing to sign \$1 billion worth of contracts, and Russian President Boris Yeltsin, who just visited China, praising the economic reform and bartering everything from guided missiles to mango juice with Beijing.

A few weeks ago, however, Chinese Energy Minister Huang Yicheng reported that "China's energy shortage will become severe if the economy continues to grow at the present rate while the increase of investment in the energy industry fails to grow in proportion." He pointed out that investment in energy has been continuously decreasing for the past three consecutive years.

It seems to the "New Age" economists that China's new economic boom is outpacing its energy production and may go bust because of chronic power and fuel shortages. But the real issue is that China has not seriously developed its energy sector since 1949. Now, under the economic pragmatism which has reigned since 1978, especially under the administration of Zhao Zhiyang, the government has been giving away land use rights to the West, and granting tax breaks to the foreign and new private entrepreneurs, to fuel a boom in tertiary industries along the coast. China's government is only collecting debts, reducing its capability to improve the nation's collapsing infrastructure in such areas as communications, transportation, and energy supply.

Scientifically speaking, the structure of energy usage reflects the level of technological and economic advances, as the correlation in human history between the evolution of power supply—from burning wood in ancient times, to tapping water power, to the modern-day use of nuclear electricity generators—and an ever-increasing potential population density reveals. In China, a large proportion of conventional energy consumption, such as coal, marks the backwardness of the quality of life—a densely populated country, yet one with much less productive potential due to the lack of education and underdevelopment of industry; a life where every third child suffers malnutrition.

This article attempts to expose the devastating crisis of energy supply and how international environmentalists are

preventing efforts in the country to develop and exploit water resources.

## The current energy situation in China

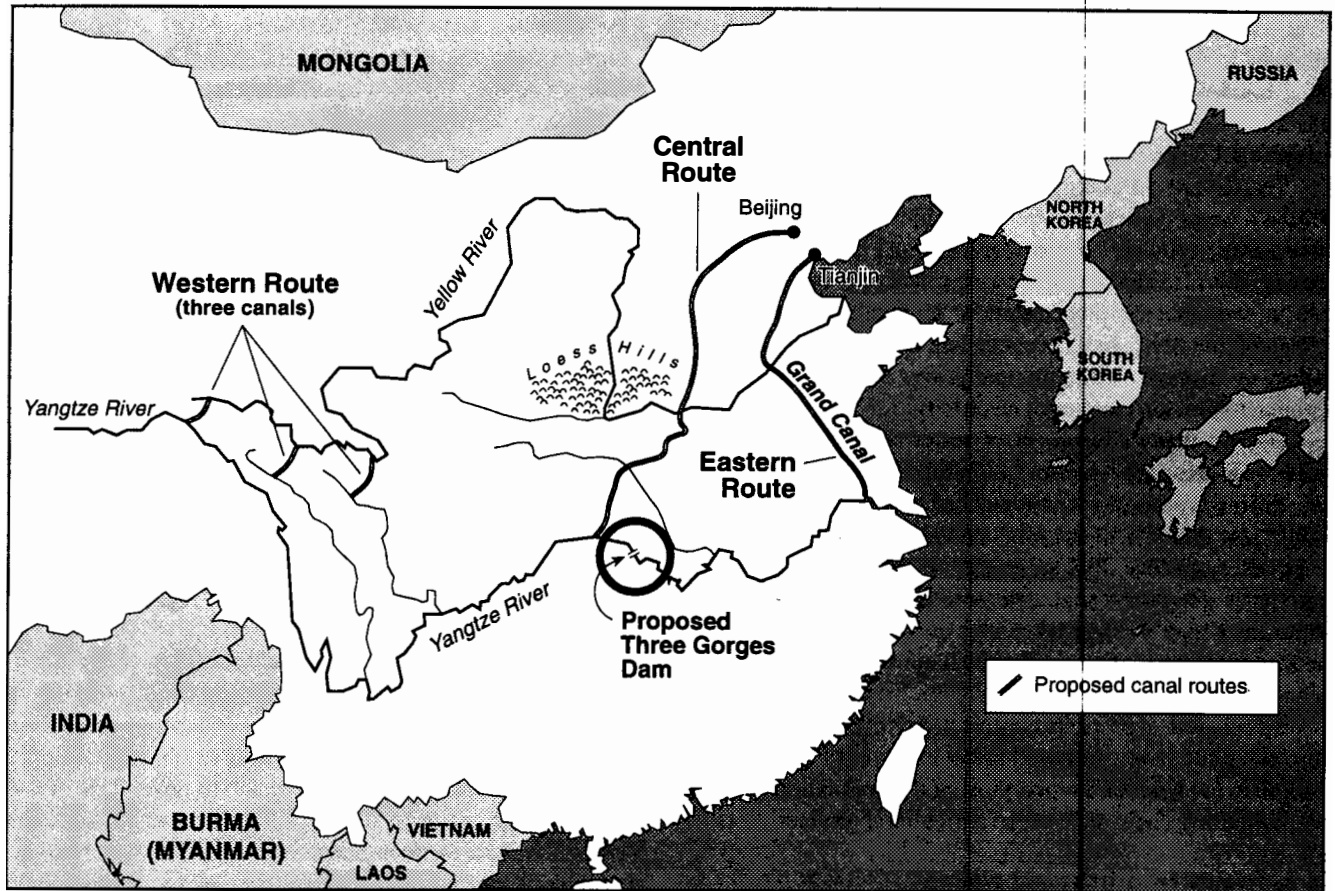
China's economic development relies primarily on coal, which accounts for 76% of China's energy consumption. As 1985 statistics show, oil accounts for 17% of energy consumption, natural gas 2.3%, water power only 4.8%, and nuclear energy a mere 0.5%. By comparison, of the world average energy consumption in 1980, some 26% was provided by coal, 45.6% by oil, and 18.5% by gas, while water power and nuclear energy provided 6.3% and 2.6%, respectively. Compare this to the energy consumption pattern of Taiwan during 1981-86. China derived only 0.5% of its energy use from nuclear energy in 1985, while 16% was derived from nuclear energy by Taiwanese in 1986 (although the island must import most of its energy, which supports a higher living standard, as energy consumption is proportional to the potential population density of any country and any culture).

In 1988, China produced 1,069 million U.S. tons of coal. At least one-third of all coal produced is derived from small, labor-intensive coal mines. Crude-oil production has increased somewhat since the early 1960s, when petroleum was discovered at Daqing, in Heilongjiang province. Off-shore oil fields have been developed in the Po Hai Gulf of the Yellow Sea and along the continental shelf.

The country generated 543,000 megawatt-hours (MWh) of electricity in 1988. Some 108,000 MWh of this was from hydroelectric stations, since the country had tapped only 7% of its hydropower potential by that year. China leads the world only in the use of small, insufficient power stations that supply local industries. An 1,800-megawatt nuclear power plant near Hong Kong, attacked by the anti-development activists and greenies, was to be completed in 1993, but is still under construction. And plans to build a giant hydroelectric project (17,000 MW capacity) on the Sun-men Gorge of the Yangtze River were postponed in 1989 for at least five years due to concerns over the dam's cost and "environmentalists' impact."

Mainland China has suffered from a serious shortage of electricity since the early 1970s. In 1985, the country was suffering a shortage of more than 50,000 MWh of electricity, which translated into a 20% shortage suffered by industry.

## Three Gorges Dam would raise level of Yangtze River enough to feed Central Route canal



Even in the southwestern provinces such as Sichuan, which is extremely rich in water resources but is not densely populated by industrial enterprises, most factories can only operate 3-4 days a week. In the region, every lost kilowatt-hour of electricity could have made at least three (reminbi) yuan worth of industrial products, which is equivalent to a worker's daily earnings (based on the regional standard). The average energy consumption of a Chinese citizen measures 700 kilograms of coal per year, only 5% of that consumed by an American. However, China's industry takes 60 million joules to produce \$1 worth of product, 2.5 times as much as what it takes in India.

Rural areas in China are faced with a shortage of 4 million metric tons of oil and 20 million MWh, and the situation is worsening because obsolete and less efficient industrial machinery is being moved from bankrupt manufacturers in the cities to the countryside for use by rural industrial companies. The Chinese News Agency Xinhua last fall reported that rural households also face a 20% shortfall of electricity, and that 200 million rural residents are living without electricity.

Chinese oil consumption in 1991 was 117.9 million tons,

up 6.9% from 1990, while production stood at 139.6 million tons, up 0.9% from a year earlier. Due to the policy pushed by international bankers, China has continuously decreased its yearly investment in energy production since 1990. The country is predicted to be an oil-importing country by the year 1995.

### Sun Yat-sen's brainchild

Due to the vastness of the country, China has the richest water power resources in the world. Its total exploitable water power amounts to 380,000 megawatts, mostly distributed among the mountainous southwestern regions, along the upper and middle reaches of the Yangtze River that stretches 3,200 miles. Sichuan, Yunnan, and Guizhou provinces have a total water power of 176,000 megawatts, half the national water power resources, while the total water power of the Yangtze, including its tributaries, adds up to 230,000 megawatts.

The Yangtze has the potential for huge destruction and huge benefits. It threatens millions who live in fear of flooding. But if its power were tapped, it could help transform the river basin into the engine of China's economic growth, and

probably transform it into the manufacturing hub of Asia.

Back in 1919, Dr. Sun Yat-sen suggested a Three Gorges floodgate in his *Plans for National Reconstruction*. Besides controlling flooding and irrigating 10 million acres, the Three Gorges Dam project also provides a hydroelectric power plant with 13-18,700 megawatts of capacity to generate 67.7-89.1 million MWh of electricity every year. Colossal as people think it may be, this project only makes use of about 10% of the total water power of the Yangtze River.

To alleviate the energy shortage for industries in the area, China's water power must be fully employed. Not only is it much more efficient to generate electrical energy by water power, it is also cheaper in the long run to operate and maintain a hydroelectric power station. Hydroelectric power in China takes only 1.1¢ to generate one kilowatt-hour of electricity on average, while thermal power plants take 3.8¢ to generate the same amount of electricity.

Despite many advantages of water power, the region's water resources are far from fully utilized. Up to 1985, only 26,400 megawatts of water power had been exploited nationwide, less than 5% of the total available. The coal industry supplies more than 70% of energy to the nation, but eight provinces along the Yangtze River have only 2% of total coal deposits. China's industrial centers are largely located in the southeastern area where neither coal nor water resources are available.

The project, if properly constructed with other infrastructure along the river, may well affect the lives of 350 million people in the heartland—one-third of the population of China, outputting about 40% of the agricultural product.

## **A gateway to southwest China**

Although China has nearly 780 billion tons of coal deposits and ranks the third largest in the world, the distribution is very uneven. Shanxi, a northern province and China's largest coal production center, contains one-third of total deposits. The northern area has as much as two-thirds of deposits, while the eight provinces south of the Yangtze River have only 2% of total deposits. Strategic industrial expansion is not taking place in the northern area, and China's manufacturing centers are largely located in the southeastern area where natural resources are inadequate. Shanghai, for instance, receives millions of tons of coal each year, transported from the north, crossing thousands of miles, to fuel this southern metropolis. On the other hand, the southwestern area, especially Sichuan, Yunnan, and Guizhou provinces, remain undeveloped, except for a few military manufacturers that were transferred into the region before the Cultural Revolution, when Mao was preparing for the outbreak of World War III. The abundant water power resources in the southwestern region are 1,000 miles away from the power-hungry industrial centers in the southeastern region. That is, those which produce don't have resources, while those which have resources don't produce.

For instance, Chongqing, a historic city in the southwest

and the war capital during World War II, stands at the upper reach of the Yangtze River where the Jinsha River joins. It has more than 9 million people in the greater area, producing about one-third of national weaponries. The defense industry is being converted to produce consumer goods. Although the assertion from the military sources that some 70% of the country's defense industry has now been converted is doubtful, the state, as part of the Eighth Five Year Plan (1991-95), pledges to channel loans of \$1.1 billion into 350 projects for military conversion, double that of the last period. China's defense industries have some of the most advanced technology, and employ about 300,000 research scientists and technicians, which could provide the backbone to support industrial development in such regions as the southwest, which once was considered the "third front," i.e., the interior of the country.

Yet this city is powered by coal, which is being depleted. The energy crisis would only worsen if productivity were unleashed by the defense industry conversion. In addition, the coal from the surrounding area contains 5% sulfur, 2% above that found in the northwest. Polluted air has given the metropolis the nickname "foggy city," and it suffers acid rain, which shortens the life of buildings, roads, bridges, as well as automobiles.

The Yangtze River in the region is joined by major tributaries such as the Yalong, the Ming, and the Jinsha rivers. There, streams flow from the Tibetan Plateau of more than 4,000 meters in elevation, to the Sichuan Basin, a drop of over 3,000 meters. As a result, Sichuan has over 25% of the national water power resources, nine times as much as the Yellow River. If Sichuan makes use of half its water power potential, it can produce 200 million MWh of electricity every year, saving 120 million tons of raw coal, equivalent to that produced in Shanxi in 1980. So far, however, it has made use of less than 3% of the exploitable water energy. More than 70% of its energy still comes from coal, a resource that Sichuan lacks, and only 10% from water power, which is just the opposite of its proportion of resources. In 1982, the average income of Sichuan, China's most populous province, was 536 yuan, which ranked 24th among the 29 provinces and districts in China.

Due to the long-term policy of ignoring infrastructure development in the northwest and southwest, China is divided. The Three Gorges Dam has a gigantic floodgate, which would permit ocean-going ships to sail to Chongqing to the southwest, 650 miles from the coast. In addition, the reservoir raised by the dam makes it possible to dig another canal west of the famed Grand Canal, which was built during the Sui Dynasty (589-618).

## **Who is behind the dam?**

In 1932, the Nationalist Party (KMT) established a committee to survey the Three Gorges area and proposed a low-dam project, which was then assisted by the U.S. Bureau of Reclamation. In 1944, Dr. Savage, an American engineering

expert, came to China to reinvestigate the project. Over the years, numbers of engineers have visited with the National Resources Commission (NRC) of China and other organizations, and the NRC met with the Tennessee Valley Authority (TVA) in July 1943 in Knoxville, Tennessee. The Nationalist government sent about 50 Chinese to America to design the first high-dam at Three Gorges. In January 1946, the U.S. Army paper *Stars and Stripes* reported: "Drawing on the idealism and practical experience of the TVA and the Reclamation Bureau projects . . . the Chinese are projecting a public works improvement surpassing anything ever built."

As a result, a dam of over 200 meters in height was proposed. A form of Yangtze Valley Authority on the model of the TVA was proposed to manage the project. But the Sino-Japanese War and the following civil war put a stop to the venture, which was joined in by both the Republic of China and United States.

In the 1950s, the government of the P.R.C. put the project back on the agenda, and each new leader has had to deal with this issue ever since.

The project is now fully supported by Deng Xiaoping and Prime Minister Li Peng, who was a Russian-trained hydroelectric engineer. Both toured the site to convince others of its importance. To a large extent, the decision was made on political considerations. Although credit for the project goes to its author Dr. Sun Yat-sen, communist leaders in China need a monumental project to glorify the party; otherwise, the party has nothing to demonstrate its commitment to build infrastructure, to help maintain its grip on power. Following the reform policy in 1981, especially in the recent years, the country has been driven to pump huge amount of money into real estate and military expansion. On Jan. 25, an article in the state-run *Economic Daily* admitted that land speculation is leading to huge increase in the cost of basic materials. In Sichuan, the price of cement has skyrocketed from 200 yuan a ton to as much as 900 yuan a ton in the course of several months. Much investment has been wasted on real estate because local governments are encouraged to jump on the economic reform bandwagon to make quick money. No construction was completed to develop real industry and agriculture.

It was believed that Zhao Ziyang, then the party secretary of Sichuan province, opposed the project in 1989, because the 150-meter, low-dam scheme would benefit Hubei province, but deteriorate navigation in Sichuan province. Other opponents argued that China should not put all its eggs in one basket.

The strongest attacks, however, come from environmentalists outside the country.

In January, a ranking official in charge of dam construction admitted that "we know that international environmentalists are putting pressure on the World Bank, the Asian Development Bank, and foreign governments, so in our structure, we have accounted for the minimum amount of imports we can get by with. If foreign loans are blocked, we

are prepared to use our foreign exchange reserves."

Among the overseas environmentalists, Defenders of Wildlife, a U.S.-based group, announced plans on Dec. 30, 1992 to sue the U.S. Bureau of Reclamation, which had worked with Chiang Kai-shek's Nationalist government to design the project back in 1944. The group was also successful in opposing a 1986 Reagan administration rule that exempted foreign projects from submitting an environmental impact statement, which was required of any project that might threaten "endangered species." The goal of this group is to block any foreign technical and financial help to the project, and it seeks to curtail the U.S. connection with the Three Gorges Dam.

Because of the environmental interference, Three Gorges engineers have had to streamline the design to minimize costs so that only \$1.2 billion in foreign equipment will be required for the construction, which includes machinery, power transmission equipment, and 26 generators of 680 megawatts apiece. Further planning may result in importing only four of the generators, and duplicating the rest in China.

### **Abetting the looters**

Building nationwide infrastructure like power plants, developing water and especially nuclear resources, and building rapid transportation systems, using modern technology, is the only feasible solution to develop this land of the oldest civilization in East Asia and to feed one-fifth of the world's population, which is being starved after four decades of communist rule. The water projects will not empower the Communist Party, which has lost its mandate of heaven as a corrupted and brutal government. And the flood of demands by the people to overthrow the current regime cannot be stopped by any man-made dam.

It takes much careful investigation to evaluate technically different schemes to develop water resources, i.e., whether one should invest more than \$10 billion to build one gigantic dam which floods 1.13 million people out of their homes along the river, or build 11 smaller projects on the tributaries that could provide as much as 3,042 MWh, effectively control the devastating floods, and provide quicker returns to meet urgent demands. Problems remain, even after half a century of feasibility studies. Nevertheless, as suggested by Dr. Sun Yat-sen, it is a right approach to protect lives and boost productivity in the poorly developed southwest area of the country. If the project can actually reach its goal, it will increase China's hydropower capacity by 10% and protect millions of lives.

More importantly, to reverse the new economic development trend in China, it may also help prevent the southwest region from being looted by the coastal Special Economic Zones, which are, in turn, looted by the same Hong Kong and western users whose stealing in China was brazen during the Opium Wars. The environmentalists who block any development for energy and flood control are abetting the looters.