

## **A Profile of Dams in China**

by Shui Fu

The following is from the just-published book about the Three Gorges Dam, *The River Dragon Has Come*, edited by Dai Qing. The book's dozen essays describe the many awesome social and economic problems arising from the world's most grandiose dam project. This excerpt describes the political and historical context behind China's dam-building frenzy. The book will be available from IRN shortly.

There were virtually no large-scale water projects in China before 1949. But in the ensuing years, and especially in the years during and since the Great Leap Forward (1958-60), the Chinese Communist Party has heavily promoted dam construction as part of a massive national campaign. In less than forty years all of China's major rivers have been dammed. In the mindset of the Chinese people, dam projects became more than just another kind of construction project; the campaigns promoting dam construction equated harnessing rivers with developing the country and mandated absolutely that citizens demonstrate their "positive support" and "political enthusiasm" for the projects. Under the dictatorship of the Party, the goal of "harnessing water" became equated with "harnessing people."

Most people associate the "Great Leap Forward" with national campaigns to increase iron and steel production. But just as important was "engaging the mass movement" for the "large-scale water conservancy campaign." At that time, water conservancy policy "gave primacy to the accumulation of water irrigation and gave only secondary consideration to drainage and flood control" (yixuweizhu, xuxiejianchou). There was, however, lively debate on the subject. One school favored relying on local initiatives to build small-scale dam projects which would emphasize the accumulation of water irrigation purposes. The other favored state-sponsored, large-scale projects whose primary function would be flood-control.

The debate lasted for decades and was transformed from an academic dispute over the merits of the different approaches into a political struggle in which the supporters of the first approach won a decisive victory. As a result, "accumulation" was taken to the extreme. Anhui Province built an excessively large "river irrigation network," while people in the north took the policy of accumulating rain water for irrigation to such extremes that their fields became waterlogged. Thus the "water conservancy campaign" was ultimately reduced to a campaign to build reservoirs and dams, and by 1990, 83,387 of them had been built in China. Three hundred and sixty six of them had a capacity over 100 million cubic meters, 2,499 had a capacity of 10 million to 100 million cubic meters, and more than 80,000 had capacities below 10 million cubic meters.

In the early 1970s during the Cultural Revolution, there was a second, smaller "Leap Forward" of water conservancy projects in which dam projects and other irrigation projects once again began sprouting up all over the country.

## The First Wave

The first dam construction boom in the 1950s was a thrilling time. People's communes, the Great Leap Forward, and the manufacture of iron and steel all stimulated the construction of more hydropower projects. Leaders boldly approved projects to accumulate more water for irrigation without knowing whether they were feasible. According to He Xiaoqiu, the former deputy chief engineer of the Hydropower Investigation and Design Institute of the Ministry of Water Resources Electric Power, all a particular leader had to do was to point his finger at a certain place and the decision would be made to build a dam between one mountain and another. The engineers were left to assess whether the project made sense, but few projects were rejected: no one wanted to be accused of being a "rightist" or "an obstruction on the bridge leading to communism." (The 1957 Anti-Rightist Campaign, which preceded the Great Leap Forward, targeted scientists and intellectuals for persecution.)

As a result, reservoirs for irrigation were built en masse. "There was water as far as the eye could see," said He Xiaoqiu on visiting one of the country's largest reservoirs, which, to his horror, was being operated by a teenage girl who had just graduated from the hydro training program. The government's slogan, "The land will yield as much grain as the people desire" was being taken to heart -- projects were being built (and operated) with abandon.

But some were concerned about the emphasis on accumulation and irrigation over all other goals, and especially about its effects on the land. After the 7,000 Cadres Conference in 1962, Zhou Enlai openly expressed his concern about the situation. "I've been told by doctors that if a person goes without eating for a few days, no major harm will result. But if one goes without urinating for even one day, they will be poisoned. It's the same with land. How can we accumulate water and not discharge it?" In 1964, Zhou pushed for a more comprehensive approach. He proposed a management policy for water conservancy projects that was very similar to the existing policy, but with one important exception: he recommended that all aspects of water conservancy projects be integrated and that the projects be governed by a comprehensive approach to management. Senior hydrologists correctly understood Zhou's policy as an attempt to make the previous policy somewhat ambiguous and to focus on the comprehensive management of water conservancy projects, whatever their size. In 1966, Zhou also commented: "I fear that we have made a mistake in harnessing and accumulating water and cutting down so much forest cover to make way for more agricultural cultivation. Some mistakes can be remedied in a day or a year, but mistakes in the fields of water conservancy and forestry cannot be reversed for years."

However, no one, not even Zhou Enlai, was able to block the national dam building "campaign." In 1958, hydro departments in the Ministry of Water Resources and Electric Power established the Office of the Water Conservancy Campaign (Shulli yundong bangonshi). According to Lui Derun, the then-deputy director of this new office: "Our daily work consisted of making phone calls to the provinces inquiring about the number of projects they were building, how many people were involved, and how much earth

they had moved. In hindsight, some of the data and figures we gathered were obvious exaggerations, but no one back then had the energy to check them out." From 1949 to 1959, 800 million cubic meters of earth was moved -- 580 million cubic meters in 1958 alone.

### **Costs Versus Benefits**

Before 1949, only 23 large- or medium-sized dams existed in all of China. One, the Fushan dam on the Huai River, was used to block passage across the Huai during an attack against the Wei Kingdom in AD 516. The scale and sophistication of the Fushan Dam were unprecedented for the time, but the knowledge gained through its construction was not passed down: like so much else in China, it disappeared with the collapse of the imperial autocracy. The Fushan dam also demonstrated to the world the kind of disasters that large dams can produce. Four months after the dam's completion, the Huai overtopped the Fushan, releasing 10,000 million cubic meters of water, killing 10,000 people downstream.

The 80,000 dams and reservoirs built over the past forty years have played an important role in flood control, electricity generation and irrigation and have provided water for urban areas and industry. These achievements should not be underestimated, but dam construction, especially during and after the Great Leap Forward, also had disastrous consequences.

By 1973, 40 percent (or 4,501) of the 10,000 Chinese reservoirs with capacities between 10,000 and one million cubic meters were found to have been built below project specifications and were unable to control floods effectively. Even more dams had problems relating to the geology of the dam site, and to sedimentation. Most serious, however, were the numerous dam collapses. By 1980, 2,796 dams had collapsed, including two large-scale dams (the Shimantan and Banqiao dams). One hundred and seventeen medium-sized and 2,263 small dams had also collapsed. On average, China witnessed 110 collapses per year, with the worst year being 1973, when 554 dams collapsed. The official death toll resulting from dam failures came to 9,937 (not including the Banqiao and Shimantan collapses, which had a combined estimated death toll of up to 230,000). Some people say that among the more than 2,000 dam collapses, only 181 involved fatalities but this hardly seems accurate.

By 1981, the number of formally recognized dam collapses had risen to 3,200 -- roughly 3.7 percent of all dams in China. According to Ma Shoulong, the chief engineer of the Water Resources Bureau of Henan Province, "The crap from that era [the Great Leap Forward] has not yet been cleaned up." In 1958, more than 110 dams were built in Henan; by 1966 half of them had collapsed. Of four key dams on the Yellow River -- the Huayuankou, Wei Mountain, Luokou, and Wangwang Village dams -- two were dismantled and two were postponed.

According to experts, if the riskiest of these dams were to fail, hundreds of thousands of people could be killed. But current levels of funding are woefully inadequate to repair or

reinforce the dams. At least ¥5 billion would be required for the large and medium sized reservoirs alone. Where will the money come from? According to Vice Premier Tian Jiyun, the task must be completed according to schedule or those in charge will be held accountable. The Ministry of Water Resources, however, just shrugs its shoulders. Everyone knows the task is impossible. It would appear that the "crap" left by the Great and Small Leaps Forward will linger for some time to come.

It is difficult to predict the disasters that these dams might produce should they fail, because most information regarding dam collapses in China is confidential. During a 1991 conference on dam collapses in Vienna, participating countries exchanged information, as is the general practice, on collapses; in their respective countries. Only China indicated that it had no dam collapses to report. Foreign experts attending the conference commented to China's representative, Pan Jiazheng, that it was miraculous for a country as big as China, a country with 80,000` reservoirs, to have had no dam collapses. Either our representative knew nothing about the dam collapses or, owing to Party discipline, he could not say. All in all, he must have been very embarrassed.