

June 1, 2011

Plan for China's Water Crisis Spurs Concern

By [EDWARD WONG](#)

DANJIANGKOU, China — North [China](#) is dying.

A chronic drought is ravaging farmland. The Gobi Desert is inching south. The Yellow River, the so-called birthplace of Chinese civilization, is so polluted it can no longer supply drinking water. The rapid growth of megacities — 22 million people in Beijing and 12 million in Tianjin alone — has drained underground aquifers that took millennia to fill.

Not atypically, the Chinese government has a grand and expensive solution: Divert at least six trillion gallons of water each year hundreds of miles from the other great Chinese river, the Yangtze, to slake the thirst of the north China plain and its 440 million people.

The engineering feat, called the South-North Water Diversion Project, is China's most ambitious attempt to subjugate nature. It would be like channeling water from the Mississippi River to meet the drinking needs of Boston, New York and Washington. Its \$62 billion price tag is twice that of the Three Gorges Dam, [which is the world's largest hydroelectric project](#). And not unlike that project, which Chinese officials last month admitted had "urgent problems," the water diversion scheme is increasingly mired in concerns about its cost, its environmental impact and the sacrifices poor people in the provinces are told to make for those in richer cities.

Three artificial channels from the Yangtze would transport precious water from the south, which itself is increasingly afflicted by droughts; the region is suffering its worst one in 50 years. The project's human cost is staggering — along the middle route, which starts here in Hubei Province at a gigantic reservoir and snakes 800 miles to Beijing, about 350,000 villagers are being relocated to make way for the canal. Many are being resettled far from their homes and given low-grade farmland; in Hubei, thousands of people have been moved to the grounds of a former prison.

"Look at this dead yellow earth," said Li Jiaying, 67, a hunched woman hobbling to her new concrete home clutching a sickle and a bundle of dry sticks for firewood. "Our old home wasn't even being flooded for the project and we were asked to leave. No one wanted to leave."

About 150,000 people had been resettled by this spring. Many more will follow. A recent front-page article in People's Daily, the Communist Party's mouthpiece, said the project "has entered a key period of construction."

Some Chinese scientists say the diversion could destroy the ecology of the southern rivers, making them as useless as the Yellow River. The government has neglected to do proper impact studies, they say. There are precedents in the United States. Lakes in California were damaged and destroyed when the Owens River was diverted in the early 20th century to build Los Angeles.

Here, more than 14 million people in Hubei would be affected if the project damaged the Han River, the tributary of the Yangtze where the middle route starts, said Du Yun, a geographer at the Chinese Academy of Sciences in Wuhan, the provincial capital.

Officials in provinces south of Beijing and Tianjin have privately raised objections and are haggling over water pricing and compensation; midlevel officials in water-scarce Hebei Province are frustrated that four reservoirs in their region have sent more than 775 million cubic meters, or 205 billion gallons, of water to Beijing since September 2008 in an “emergency” supplement to the middle route.

Overseers of the eastern route, which is being built alongside an ancient waterway for barges called the Grand Canal, have found that the drinking water to be brought to Tianjin from the Yangtze is so polluted that 426 sewage treatment plants have to be built; water pollution control on the route takes up 44 percent of the \$5 billion investment, according to Xinhua, the official news agency. The source water from the Han River on the middle route is cleaner. But the main channel will cross 205 rivers and streams in the industrial heartland of China before reaching Beijing.

“When water comes to Beijing, there’s the danger of the water not being safe to drink,” said Dai Qing, an environmental advocate who has written critically about the Three Gorges Dam.

“I think this project is a product of the totalitarian regime in Beijing as it seeks to take away the resources of others,” she added. “I am totally opposed to this project.”

Ms. Dai and some Chinese scholars say the government should instead be limiting the population in the northern cities and encouraging water conservation.

The project’s official Web site says that the diversion “will be an important and basic facility for mitigating the existing crisis of water resources in north China” and that sufficient studies have been done. Wang Jian, a former environmental and water management official with the Beijing government and the State Council, China’s cabinet, agreed that the project “carries huge risks,” but he said there were no other options given the severity of the current water shortage.

The middle route is to start major operations in 2014, and the eastern route is expected to be operational by 2013. The lines were originally supposed to open by the 2008 Summer Olympics, but have been hobbled by myriad problems.

The diversion project was first studied in the 1950s, after Mao uttered: “Water in the south is abundant, water in the north scarce. If possible, it would be fine to borrow a little.”

In a country afflicted by severe cycles of droughts and floods and peasant rebellions that often resulted from them, control of water has always been important to Chinese rulers. Emperors sought to legitimize their rule with large-scale water projects like the Grand Canal or the irrigation system in Dujiangyan.

After the initial studies in the 1950s, the government did not look seriously again at the project until the 1990s, when north China was hit hard by droughts. In 2002, the State Council gave the green light for work to start on the middle and eastern routes; the western route, which would run at an average altitude of 10,000 to 13,000 feet across the Tibetan plateau to help irrigate the Yellow River basin, has been deemed too difficult to start for now.

Officials in Tianjin are so skeptical of the eastern route’s ability to deliver drinkable water that they are looking at desalinization as an alternative. Planners have more hope for the middle route, though the engineering is a much greater challenge — the canal has to be built entirely from scratch, with 1,774 structures constructed along its length to channel the water, since there is no pre-existing waterway like the Grand Canal to follow.

At the start of the route, the water level of the Danjiangkou Reservoir on the Han River has been raised 43 feet to 558 feet so that the water can flow downhill to Beijing. The government said the rising waters and a need to combat soil erosion necessitated moving 130,000 farmers last year from around the reservoir. Similar relocations are taking place all along the main channel, which runs through four provinces.

About 1,300 residents of Qingshan township have been moved to Xiangbei Farm, desolate land where a prison once stood. The villagers now live in sterile rows of yellow concrete houses 125 miles east of their abandoned ancestral homes. A government sign in the middle of the settlement says: “The land is fertile and has complete irrigation systems.”

The farmers know better. Each person is supposed to get a small plot of land free, but the soil here is well known to be exceedingly poor. The people also complain that in the government’s compensation formula, their old homes were undervalued, so many have had to pay several thousand dollars to buy new homes.

“There’s nothing here,” said Huang Jiuguo, 57. “There’s no enterprise. Our children are grown, and they need something to do.”

For three days last November, thousands of residents of a resettlement area in Qianjiang city blocked roads to protest poorly built homes and lack of promised compensation, according to a report by Radio Free Asia. Officials ordered the police to break up the rally, resulting in clashes, injuries and arrests.

Forced relocations, though, could pale next to larger fallout from the project.

“We feel that we are still unsure how the project is going to impact on the environment, ecologies, economies and society at large,” said Mr. Du, the geographer in Wuhan, who carefully added he was not outright opposed to the project.

The central question for people in Hubei is whether the Han River, crucial to farming and industrial production hubs, will be killed to keep north China alive.

In a paper published in the Bulletin of the Chinese Academy of Sciences, Mr. Du and two co-authors estimated that the diversion project would reduce the flow of the middle and lower stretches of the Han significantly, “leading to an uphill situation for the prevention of water pollution and ecological protection.” Though the study first appeared in 2006, the government has not altered its original plan, Mr. Du said.

Central planners decided on the amount of water to be diverted based on calculations of water flow in the Han done from the 1950s to the early 1990s; since then, the water flow has dropped, partly because of prolonged droughts, but planners have made no adjustments, Mr. Du said. The amount to be diverted is more than one-third of the annual water flow. “That will exert a huge damaging impact on the river,” he said.

The Han River is already facing enormous challenges — industries are discharging more and more pollutants, companies are dredging sand to feed construction needs in nearby cities and algal bloom has hit the river hard. The diversion of water to Beijing will add to the pressures. “If the water quality cannot be ameliorated effectively, the aquatic life populations will be further decimated,” Mr. Du and his co-authors wrote.

The diversion from the Han is necessitating more complex projects to raise water levels. One side diversion brings water from the Yangtze to the Han. Another would bring water from the Three Gorges reservoir to the Danjiangkou reservoir.

Government officials in the south are keenly aware of the changes coming to the Han. In Xiangfan, officials have shuttered some small factories like paper producers and forced others to use more nonpolluting materials, said Yun Jianli, director of the environmental advocacy group Green Han River. “The local government is very concerned about the river and impact of the diversion project,” she said.

The political conflicts are obvious. Mr. Du, a member of the provincial consultative legislature, said officials in Hubei had been in constant negotiations with officials in Beijing for compensation. In the 1990s, the central government proposed a package of water projects valued at \$50 million at the time to help Hubei. After rounds of negotiations, the current proposal for supplemental water projects is estimated at more than \$1 billion.

The demands of the north will not abate. Migration from rural areas means Beijing’s population is growing by one million every two years, according to an essay in China Daily written last October by Hou Dongmin, a scholar of

population development at Renmin University of China. “With its dwindling water resources, Beijing cannot sustain a larger population,” Mr. Hou said. “Instead, it should make serious efforts to control the population, if not reduce it.”

Beijing has about 100 cubic meters, or 26,000 gallons, of water available per person. According to a standard adopted by the United Nations, that is a fraction of the 1,000 cubic meters, or 260,000 gallons, per person that indicates chronic water scarcity.

The planning for Beijing’s growth up to 2020 by the State Council already assumes the water diversion will work, rather than planning for growth with much less water, said Mr. Wang, the former official.

City planners see a Beijing full of golf courses, swimming pools and nearby ski slopes — the model set by the West.

“Instead of transferring water to meet the growing demand of a city, we should decide the size of a city according to how much water resources it has,” Mr. Wang said. “People’s desire for development has no end.”

Li Bibo, Jonathan Kaiman and Jimmy Wang contributed research from Beijing.