

Thailand's Drought Crisis*

Over the past three years, drought caused by irregular rainfall has become a critical issue in Thailand. The Central plain, housing Bangkok's population of some 8 million people and most of the 4.5 million rai, or 720,000 hectares, of the country's irrigated paddy, has no large water reservoirs of its own. To meet growing demands for water, the Central plain thus depends almost entirely on the Bhumibol and Sirikit dams in the country's lower Northern region, particularly during the dry season—from November to May of each year. The dams have a combined capacity of 22.9 billion cubic meters of water. A minimum of 6.65 billion cubic meters of dead stock must be retained for electrical power generation and to allow sediments to settle. But the prolonged drought has contributed to a decline in the amount of water which flows into the dams each year.

While the quantity of rain fell to nearly half the normal level in 1993, the drought is only partly responsible for this year's water crisis. The decrease in the amount of water that flows into the two dams is also caused by increased water consumption upstream from the dams in the upper North, and by changes in land use patterns which have resulted in watershed destruction along the rivers and tributaries that replenish the dams. Indeed, the dams held their full capacity only once, in 1975. The yearly flow into the dams trickled from about 11 billion cubic meters 10 years ago to less than 6 billion cubic meters in 1993 ([Figure 1](#)). The combined water level in the dams at the start of this dry season (November 1993) was lower than ever before, at about 5.6 billion cubic meters ([Figure 2](#)).

Normally, the Royal Irrigation Department (RID) releases 6,600 million cubic meters of water for consumption during the dry season. Of this, 600 million cubic meters is reserved for the Metropolitan Waterworks Authority (MWA) to provide piped water services for Bangkokians. The remaining 6,000 million cubic meters is allocated for irrigation (4,100 billion cubic meters) and for flushing out saline water from the lower Chao Phraya basin (2,500 billion cubic meters). This year, however, as of January 1, only 1,948 million cubic meters were available for allocation from the dams. The amount of water for the Central plain this dry season is thus about one-third the normal need. Water allocated for irrigation has been slashed by the RID by some 3,200 million cubic meters as a result, which already has caused serious shortages for Central plain farmers. Moreover, travel by boat in upstream areas may become impossible, and the intrusion of sea water will extend upstream from its current limit at Saphan Phut Bridge to the Rama VII Bridge. Already the MWA is worried that saline water soon will infiltrate its water processing facilities north of Bangkok.

It is estimated that, if there is a normal rainy season in 1994, the amount of water that drains into both dams could possibly reach 9.5 billion cubic meters by next November. This is the average inflow for the 20-year period 1972-1992. With this amount of water, Thailand will not suffer a water crisis next year, so long as consumption level remains as is. But this is not a likely scenario, and hardly a long-term assurance, for at least two reasons. First, the demand for water from the agricultural sector, from factories, and from domestic consumers is on the rise throughout the country. And second, Thailand's profligate water consumption habits are proving hard to discipline.

One solution, often advocated by engineers, is to increase the inter-temporal water supply by building more dams and reservoirs. But this supply-side solution is only partial. Significant quantities of water could be saved by improving the efficiency of both the irrigation system and urban piped water infrastructure. The irrigation system in many parts of the country is rudimentary and wasteful. And water pipes in the cities are corroded and leaky. Most importantly, demand-side management must be addressed. Consumers could be encouraged to become more efficient if full-cost pricing of public water services for both rural and urban consumers were introduced.