

## Is the Age of Water Development Over?

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There has been increasing concern recently regarding the prospect that we are, globally, “running out of water.” This is unlikely because there has been no reduction in the aggregate supply, and we are still only using about 10% of the available quantity. What we *are* running out of is opportunities to develop new sources, that we can then use as inefficiently as we like.

This change in circumstances can be seen, only too clearly, by plotting historic water development in each decade from 1930 to 2000. What appears looks like the familiar normal distribution curve describing typical human activities—starting, rising to a peak, then leading to irreversible decline.

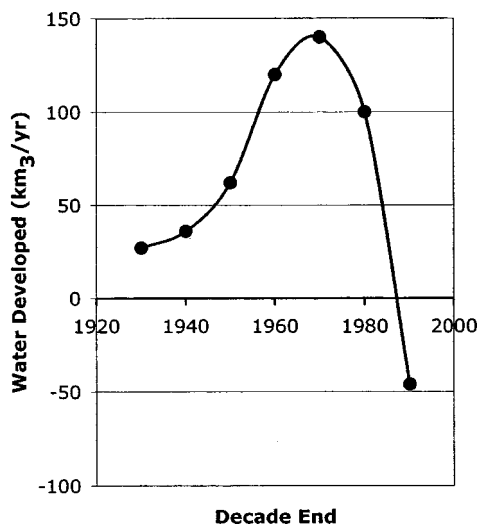
Figs. 1 and 2 illustrate the phenomenon that might be described as the “Age of Water Development”—now effectively over. (Note: As water development statistics, as such, are kept hardly anywhere, the data illustrated in Figs. 1 and 2 were calculated by subtracting estimated total water use at the beginning of each decade from water use at the end of that decade.) Why would the illustrated decline be irreversible? Simply because, for a variety of reasons, there is so very little new water remaining to be developed, economically, anywhere. Fig. 1 shows the position for the United States, where water development has effectively stopped (and dams are even being demolished). Fig. 2 shows a similar trend for the world, where some water development continues.

The Three Gorges Dam in China may well be among the last

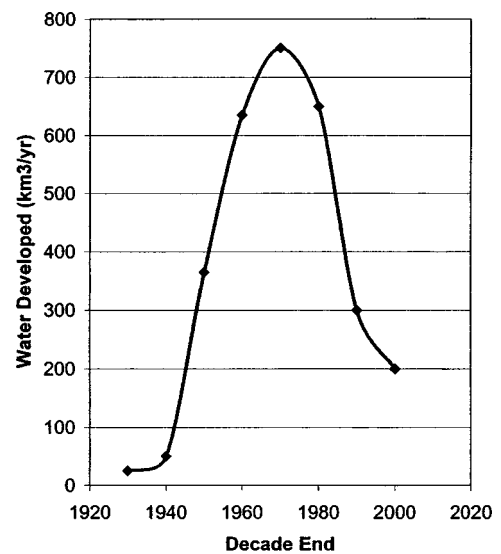
of the big storage projects, and most of the world’s major aquifers are already developed well past their sustainable yield levels. Though there is still much undeveloped water in the Amazon and Congo Rivers, the total development, pumping, and transportation costs are likely to exceed the value of this water before it gets to the places where it is most needed. The same holds true for de-salted water. Whether our colleagues the dam builders and well drillers like it or not, we seem to have already moved into the first stages of a new era—the “Age of Water Management.” The United States might well call it the “War on Water Wastage,” in which the weapons will hopefully be conservation and recycling, grassroots education, community organization, and water pricing.

Some amount of water development, of course, remains and will continue to be done, but the annual amounts, viewed from a global perspective, can be only a drop in the bucket. What has really happened is that era when water was dirt cheap is over. The quantity of available water remaining undeveloped is huge. The total quantity of water available for development worldwide has been estimated to be over 40,000, km<sup>3</sup>, of which we have so far developed less than 10%. But, the bulk of the world’s water transactions until now have occurred at unit cost below €10/m<sup>3</sup>, and it is this that has permitted us to become so wasteful.

Much future development will have occurred at delivered costs approaching or exceeding \$1.00/m<sup>3</sup>, a price at which the quantities demanded will drop so dramatically that water development is most unlikely to become again the growth industry it was in the mid-20th century.



**Fig. 1.** New water development in the United States [adapted from Gleick, P. (1998). *The World's water 1998-1999*, Island Press, Washington, D.C.]



**Fig. 2.** New water development in the World [adapted from Cosgrove, W. R., and Rijsberman, F. R. (1999). *World water vision report*, World Water Commission]