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A brief history of 20th century dam construction and a look into the future

Nick van de Giesen
Delft University of Technology, Water Resources Management, Delft, Netherlands (n.c.vandegiesen@tudelft.nl)

In this presentation, an overview is given of global dam building activities in the 20th century. Political, economical and hydrological factors shaped the building of large dams. The development of the relations between these three factors and dam building over time is examined. One can argue whether or not history is simply "one damn thing after another" but the second half of the 20th century suggests that history is at least reflected by the construction of one dam after another. The financial crisis of the 1930's started the first construction wave of large hydropower dams in the United States. This wave continued into the Second World War. During the Cold War, the weapon race between the USA and USSR was accompanied by a parallel neck-and-neck race in dam construction. By the 1970's, dam construction in the USA tapered off, while that in the USSR continued until its political disintegration. In China, we see two spurts in dam development, the first one coinciding with the disastrous Great Leap Forward and the second with the liberalization of the Chinese economy after the fall of the Berlin Wall. Economic and political events thus shaped to an important extent decisions surrounding the construction of large dams.

Clearly, there are some hydrological prerequisites for the construction of dams. The six largest dam building nations are USSR, Canada, USA, China, Brazil, and India, all large countries with ample water resources and mountain ranges. Australia has relatively little reservoir storage for the simple fact that most of this country is flat and dry. A few countries have relatively large amounts of reservoir storage. Especially Uganda (Owens Falls), Ghana (Akosombo), and Zimbabwe (Kariba) are examples of small countries where gorges in major rivers were "natural" places for large dams and reservoirs to be built early on. It seems that, deserts aside, the average potential storage capacity lies for most continents around 10 cm or about 50% of the total yearly continental runoff. Some of the least developed countries, such as Papua New Guinea, Congo DR, and Myanmar, still have large hydropower development potential. In most countries, however, dam construction seems to have reached its peak.

For the presentation, use is made of GapMinder software (www.gapminder.org), which provides direct insight in the dynamic and multi-dimensonial aspects of 20th century dam construction.