



Impact of Dams in China: A Journey Through the Three Gorges of the Yangtze River

Thomas O'Keefe

okeefe@riversandcreeks.com

Topics for Discussion

Geology

Consider the geology of the Yangtze River and the other rivers flowing off the Tibetan Plateau. Why is this region important when we consider the future of hydropower development?

What are the geopolitical implications of modifying flow regimes on rivers that leave China's borders?

What is the lifespan of a dam? How might this factor into decisions over construction and financing as well as the ultimate fate of the dam?

Energy Production

What are the costs and benefits of replacing coal-produced electricity with hydroelectric power? What do we mean by "replacing" if total energy demand in a country like China continues to increase?

How do different fuel sources for energy production relate to the operational and logistical requirements of managing an energy portfolio?—what are the challenges of having all your power produced from a single source: hydropower, wind, solar, gas-fired turbine, coal-fired turbine, or nuclear? What is the source of energy for your community? How could the ratio be changed and what would be required to balance the portfolio to ensure consistent and dependable power supply?

What do we mean when we say energy efficiency could be one of the most economical sources of new energy?

Cultural Implications

A project like the Three Gorges Dam can destroy important archeological and cultural sites. Why is this important?

Social Implications

More than 1 million people were moved for the construction of the Three Gorges Dam. Agricultural lands were lost and fishing opportunities were significantly changed? What are the implications for people who spent their life growing up on the river?—what are the costs and benefits?

How do your own individual actions potentially drive some of the things that are happening on the Yangtze River—the products you buy or consumer choices you make?

Water Development

Are there parallels between water development in China and our own history of water development in the United States?

What is the significance of water development in China for agriculture for both China and the rest of the globe?

Ecological Considerations

Dams produce electricity with minimal carbon emissions. What are the benefits of reduced carbon emissions relative to impacts on ecology of a river? In harnessing power from the river some benefits of a free-flowing river are lost—the power of a free-flowing river has important ecological function. How does a major dam impact the dynamics of a river's flow regime and how could this impact organisms in the river, soil quality, and other ecosystem services we may derive from flowing rivers? What benefits does a free-flowing river provide?

In some places dams are being constructed and in others dams are being removed. In comparing the factors below what might lead you construct or not construct a dam like the Three Gorges or one on another river flowing of the Tibetan Plateau? Consider a dam in your community and using the same criteria consider whether removal should be a viable option? What is the lifespan of a dam?

- Location of Dam: Geopolitical and Geologic
- Benefits of Dam
- Impacts and Problems Caused by Dam
- Lifespan of Dam
- Engineering Approach to Dam Including Cost and Financing