



Dam Construction on International Rivers

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“We will defend each drop of Nile water with our blood if necessary,” proclaimed Mohamed Morsi, then president of Egypt, in June 2013. He was referring to the Grand Ethiopian Renaissance Dam that Ethiopia has been constructing upstream from Egypt, which may affect the flow of the Nile River into Egypt. The two nations continued to be at a stalemate until signing a Declaration of Principles in 2015 that gives Egypt rights to some of the electricity that will be generated from the dam. Intense negotiations still lie ahead.

Even if countries make efficient decisions about dam construction on domestic rivers,

countries sharing a river may overdevelop it if they are able to pass on some of the costs imposed by dams to other countries. As the Egypt–Ethiopia dilemma shows, these issues can create the potential for conflict across borders.

Managing water in rivers should present a relatively straightforward global resource problem, with a small number of countries sharing a well-defined resource and a natural default allocation of property rights to the upstream country. Many economic models would predict that this sort of problem would readily be solved by bargaining between the upstream and downstream countries. However, based on our examination of the record, even this fairly well-defined issue presents significant challenges for international cooperation.

For years, economists have been concerned that the local benefits of dams may have been overstated and the local costs have been understated. In our

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research on international cooperation and conflict surrounding dam construction, recently published in the *Journal of the Association of Environmental and Resource Economists*, we examined what happens when some of the costs of dams are incurred downstream, outside of national borders. We analyzed 382 global river basins and 4,696 dams and concluded that dams are 27 percent more likely to be placed in areas upstream of international borders. Being able to pass some of the inherent cost of the dam to downstream neighboring countries seems to encourage construction of dams on international rivers.

In addition to the number of dams, we examined two other measures of intensity of dam-building activity: the total reservoir capacity and the total height of dams. Like the number of dams, these measures seem to increase upstream of international borders. The total capacity of dammed reservoirs nearly doubles and dam height increases by about 59 percent when an area is upstream of an international border.

Multinational agency involvement and international treaties might help resolve international conflict in the placement of dams. But when we examined projects that were funded by the World Bank or that are in river basins with water treaties, we found only weak evidence that either diminishes free riding. Dams funded by the World Bank do seem to be less subject to the common property problems in international basins than those funded using exclusively domestic resources—but it is possible that the World Bank simply selects less controversial projects.

Meanwhile, the results regarding the presence of a treaty were more complex. The models used for this purpose had to deal with the possibility that treaties might be more likely to appear after conflict over

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water allocation has developed between two countries sharing a river. In addition, the small number of international basins around the globe restricts our ability to identify the impact of treaties because only these international river basins are candidates for treaties and the analysis thus compares fairly small groups. Nonetheless, our results offer some evidence that the presence of an international treaty may almost offset the effects of free riding on dam placement.

The need for effective international environmental cooperation will likely grow: a changing climate could have serious impacts on the availability of water resources, causing many countries to look to large dams as potential solutions. Our research indicates that economists and policymakers should consider this important source of inefficiency—the incentive to overexploit shared rivers—in deciding where to place a dam when potential projects are evaluated. ●

FURTHER READING

Olmstead, Sheila M., and Hilary Sigman. 2015. Damming the Commons: An Empirical Analysis of International Cooperation and Conflict in Dam Location. *Journal of the Association of Environmental and Resource Economists* 2(4): 497–526.