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A market-based approach to share water and benefits in transboundary river basins

Diane Arjoon (1), Amaury Tilmant (1), and Markus Herrmann (2)
(1) Civil and water engineering, Laval University, Québec, Canada, (2) Dpt of Economics, Laval University, Québec, Canada

The equitable sharing of benefits in transboundary river basins is necessary to reach a consensus on basin-wide development and management activities. Benefit sharing arrangements must be collaboratively developed to be perceived as efficient, as well as equitable, in order to be considered acceptable to all riparian countries. The current literature falls short of providing practical, institutional arrangements that ensure maximum economic welfare as well as collaboratively developed methods for encouraging the equitable sharing of benefits. In this study we define an institutional arrangement that distributes welfare in a river basin by maximizing the economic benefits of water use and then sharing these benefits in an equitable manner using a method developed through stakeholder involvement. In this methodology (i) a hydro-economic model is used to efficiently allocate scarce water resources to water users in a transboundary basin, (ii) water users are obliged to pay for water, and (iii) the total of these water charges are equitably redistributed as monetary compensation to users. The amount of monetary compensation, for each water user, is determined through the application of a sharing method developed by stakeholder input, based on a stakeholder vision of fairness, using an axiomatic approach. The whole system is overseen by a river basin authority. The methodology is applied to the Eastern Nile River basin as a case study. The technique ensures economic efficiency and may lead to more equitable solutions in the sharing of benefits in transboundary river basins because the definition of the sharing rule is not in question, as would be the case if existing methods, such as game theory, were applied, with their inherent definitions of fairness.