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Using Complexity Science and Negotiation Theory to Resolve Boundary-Crossing Water Issues

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Abstract

Many water governance and management issues are complex. The complexity of these issues is related to crossing of multiple boundaries: political, social and jurisdictional, as well as physical, ecological and biogeochemical. Resolution of these issues usually requires interactions of many parties with conflicting values and interests operating across multiple boundaries and scales to make decisions. The interdependence and feedback among interacting variables, processes, actors and institutions are hard to model and difficult to forecast. Thus, decision-making related to complex water problems needs to be contingent and adaptive. This paper draws on a number of ideas from complexity science and negotiation theory that may make it easier to cope with the complexities and difficulties of managing boundary crossing water disputes. It begins with the Water Diplomacy Framework that was developed and tested over the past several years. Then, it uses three key ideas from *complexity science* (interdependence and interconnectedness; uncertainty and feedback; emergence and adaptation) and three from *negotiation theory* (stakeholder identification and engagement; joint fact finding; and value creation through option generation) to show how application of these ideas can help enhance effectiveness of water management.

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