

## **GOVERNANCE NETWORK DESIGN: A CASE STUDY ANALYSIS OF VERMONT**

**BRIAN KELLY\***

*UVM-GUND INSTITUTE.*

The long-term sustainable management of a community's groundwater resources continues to be an area of great interest. Historically, local, state and national efforts to govern groundwater use have focused on supply-side management. In the face of new threats, governments developed restrictions of groundwater and land use to control human activity. In the last few decades, demand-side management has been investigated as a potential complementary policy instrument to confront this resource management issue, in line with the Rio Declaration's call for internalization of environmental costs and the use of economic instruments.

Exploitation of groundwater has stimulated economic development in the last few decades, increasing agricultural production and supporting domestic and industrial production as well. Technological improvements have further stimulated this trend. As the scale of human groundwater use has approached the limits of the ecological environment, researchers have begun to investigate the efficacy of groundwater pricing mechanisms to provide demand-side management of over-use. Many models have been developed to estimate shadow prices for costs that have historically been externalized to the general public. Some estimate in situ values of groundwater, recognizing that use beyond the recharge rate affects the net present value of water, and this should be incorporated into the current price structure. Others models attempt to incorporate the costs of ecological scarcity, measuring how anthropogenic changes in groundwater levels affect related ecosystems. Still other models estimate the costs of quality degradation in groundwater on net present value, recognizing that a degraded water stock imposes increased costs in the future. Although these models have been useful in helping us better understand appropriate valuation of groundwater, which too often is valued at a price of zero in the absence of quantitative scarcity, their proposed application is often devoid of an understanding of the complex governance network dynamics that drive decision making within specific jurisdictional contexts.

Often times, the unit of analysis for investigating groundwater governance issues centers around the particular decision-making polity that imposes regulations or incentives on the population. The analytical lens, and the boundaries drawn around that lens, will affect the definition of the network's goals and policy functions, in addition to the range and efficacy of potential policy instruments at the network's disposal. Public administration theory offers a particular perspective, often focusing on a governmental unit or policy, or more recently, on the relationship between government and other entities whether public or private. Although this lens gives a helpful analytical framework, the narrowness of the focus on a particular policy tool, or a particular working relationship between a governmental department and an outside entity, may fail to capture critical network dynamics.

Advances in the field of public administration and natural resource management have shown that analysis of policy in isolation of the other suite of policy instruments currently in force can lead to perverse outcomes. Researchers have stressed that the complex challenges of governance require further investigation to identify different network appropriate procedural policy tools. This paper responds to that call, providing an empirical case study of the network structural responses to specific policy tools.

Network actors have different degrees of decision-making power at their disposal to affect network outcomes and policy tool implementation. Although network actors have different performance measures, and different conceptions of acceptable management practices and degraded use, they constitute a single governance network. The policy tools of the governance network inform the effectiveness of the network in achieving its goals, and their effectiveness depends on the interrelationship between actors. The choice of policy tools thus informs authority and resource flows in a governance network, which can vary depending on the placement within a policy stream.

This paper presents a case study of the groundwater governance network in the state of Vermont, providing a unique analysis of the changes in network structure associated with the 2008 legislation that changed property rights designations, placing groundwater in the public trust to be managed by the state. Property rights assignments are critical in economic valuation and natural resource management, and their shift affects the entire suite of regulatory, economic, and voluntary/advisory policy instruments in use by the governance network. The paper outlines the opportunities and barriers of the governance network's adoption of economic policy tools, with a particular focus on the main action arena in the network.