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AquaPedia: Building Intellectual Capacity Through Shared Learning and Open Access Platform to Resolve Water Conflicts

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Water promises to be the resource that determines the wealth, welfare, and stability of many countries in the 21st century. With burgeoning population pressure and competing needs, water resources are increasingly overused, water quality is often sub-optimal, and ecological integrity is excessively taxed. This problem occurs at various levels within the frameworks created by society and are exacerbated at political, physical, cultural, and economic boundaries. A key difficulty in addressing existing and emerging water conflicts is the scale discrepancy between conflicts and policies in place. Although significant local knowledge exists for a range of water conflicts across the globe, it is neither readily accessible nor easily transferable to other regions. We suggest that the origin of many water conflicts can be understood as a dynamic consequence of competition, interconnections, and feedback among variables in the natural and societal systems (NSSs). Within the natural system, the triple constraints on water (quantity (Q), quality (P), and ecological functions, goods, and services (E)) and their interconnections may lead to conflicts. Within the societal system, interdependencies and feedback among societal values, norms, and customs (V), economic costs and benefits derived from water resources (C), and governance (G) create intractable contextual differences.

We argue that water issues can be framed and formulated within the NSSs comprised of these six variables (Q, P, E and V, C, G) and their dynamic interactions and feedbacks. As both sides of NSSs are porous, coupled, and interactive, we cannot explain – much less predict – the behavior of these systems without treating both sides as endogenous. The knowledge needed to address and manage contemporary and emerging water problems need to go beyond scientific assessment in which societal factors (C, G, and V) are treated as exogenous or largely ignored, and social science and policy research that does not consider the impact of natural factors (E, P, and Q) and coupling among them. We recognize that uncertainties and incomplete information about interconnections, feedbacks, and complexities within and between societal and natural systems will continue to pose high barriers in finding an effective solution and reaching an agreement for a given water conflict. Sharing of knowledge across river basins can catalyze this learning process. Yet, each water problem or conflict is usually highly contextual and local with different patterns of interconnections and complexities within and between societal and natural system. A management intervention that works in one basin may not be applicable to another due to differences in social-economic context and natural settings. Consequently, we need a conceptual framework that can integrate knowledge as well as compare and contrast outcomes across different scales, boundaries, and river basins. Such a framework will allow us to share knowledge and speed up the learning process across scales and boundaries. Our proposed web-based, wiki-style, self-learning repository of interactive and searchable water case studies, AquaPedia, is a step in that direction. This repository of water information and collective wisdom will bring together various stakeholders across the globe on a common platform to discuss and craft possible solution(s) for a conflict through joint fact finding and interactive learning. An open access collaborative model is adopted in AquaPedia so that stakeholders can participate in the creation, collaboration, discussion, and modification of the content in a meaningful way. The goal is to encourage and combine multiple perspectives and explore negotiated solutions to water conflicts.