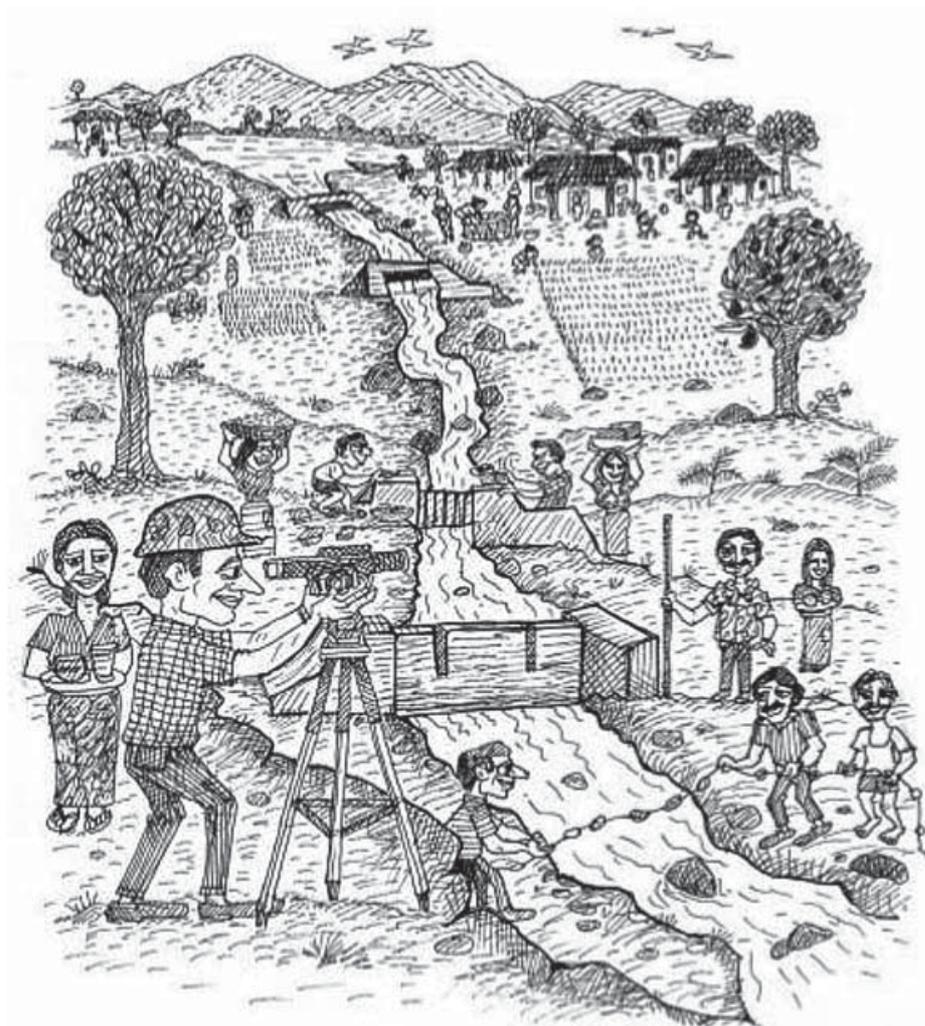


Property Rights and Collective Action for Pro-Poor Watershed Management



Watersheds are simultaneously managed at various social and spatial scales, from micro-catchments to transnational river systems and lake basins. They are also often managed for multiple objectives: environmental conservation and economic development. The flow of water, soil, nutrients, and other materials across a landscape extends the consequences of decisions about resource use well beyond the individual land user or manager, resulting in externalities. Upstream pollution by agricultural chemicals can expose downstream users to economic and health costs. More positively, upstream soil erosion can transport fertile soil that can enrich downstream rice paddies or other fields. Because watersheds have such broad impacts at so many levels, they have special implications for property rights and collective action in the management of resources.

SOURCE:

Swallow, B, N Johnson, R Meinzen-Dick, and A Know. 2006. The Challenges of Inclusive Cross-Scale Collective Action in Watersheds, Conceptual Framework of Theme 2 of the CGIAR Challenge Program on Water and Food. (http://gisweb.ciat.cgiar.org/wcp/download/Collective_Action_Swallow.pdf)

Property Rights and Watersheds

All watersheds share two keystone resources: water and land. Property rights to these two resources are often interrelated, for example, land rights often presume rights to water.

Especially important for watershed management outcomes are property rights to filters — small areas of land that help to check, divert, absorb, or stop an undesirable flow of soil, sediment, or pollutants within a watershed. Some types of filters, such as rice paddies and contour strips, are man-made and privately owned and managed, whereas others are naturally occurring and can range from private to communal to public ownership. Rights to land, water, or other benefits need not be exclusive to be secure; they can be held in common or overlap with different resource users.

Property rights to common or public lands such as wetlands, riverbanks, forests, footpaths, and grazing areas are sometimes insecure and contested. In these situations, community management, public regulation, or co-management by communities and local government agencies may be appropriate to enhance access and operation.

Insecurity or conflict over property rights may encourage extractive use of resources. Experiences from the Sumber Jaya catchment area of Indonesia illustrate the problems arising from ill-defined property rights, as the management of upper watershed areas is still dominated by the state. The Forest Department manages 70 percent of the land where local people, classified as illegal squatters, live. Conflict over property rights generates uncertainty about reaping gains on investments in conserving resources and instead provides incentives for farmers to clear primary forest land and adopt farming practices that generate short-term rather than long-term returns.

Inclusive Collective Action in Watersheds

Initiatives that seek to foster collective action in watersheds need to account for the very different interests of stakeholders in water and watershed management. While there may be relatively straightforward ways to foster collective action at a local scale, some forms of collective action may, in fact, be detrimental to other stakeholders at higher scales. In the developing world in particular, there are often geographic pockets and social groups that are chronically disadvantaged in collective and public processes. Water users' associations and basin authorities may exacerbate these disparities and further marginalize already poor people. New statutory institutions may intentionally or inadvertently weaken effective customary local institutions.

Given that the relationships between different types of stakeholders, and the links between watershed management and poverty, are likely to vary from one watershed to another, projects and

Catchments and Watersheds

A catchment is the land area that drains to a particular body of water, be it a river, lake, wetland, estuary, or ocean. The watershed is the upper area of one or more catchments. In practice, the terms are often used simultaneously, usually to refer to the catchment.

The Two Keystone Resources of Watersheds

1. **Water Resources.** Most often, water rights are more dynamic, flexible, and contested than land rights. Whereas the supply of land is relatively fixed and certain, water supplies vary depending on rainfall, hydrologic conditions, and amounts extracted by other users. Economic and urban development increases demand for water for urban and industrial use as well as for agriculture. Water users with conditional, secondary, and insecure rights to water are most vulnerable to dispossession. Markets may increase the value of water and economic incentives for its efficient use, but the more water becomes a commodity, the greater is the potential for dispossession of poor and vulnerable groups.

2. **Land Resources.** Property rights to land resources generally vary across the different types of land that make up watersheds. Insecure property rights to cropland can reduce incentives to invest in land improvements and conservation practices, such as terracing or tree planting, that could reduce soil erosion and sediment flows.

program designers need a systematic framework for assessing the implications of alternative interventions before taking action. Such a framework must integrate concepts drawn from the biophysical and social sciences, including new perspectives on watershed components, poverty and collective action. It should also reflect that collective action for water management at one level of socio-spatial organization can have effects at lower and high levels of social-spatial resolution.

Cross-Scale Linkages in Watersheds

The watershed is an intricate and complex set of biophysical and social components linked across levels and scales. These multi-scale interactions are presented in the conceptual model in Figure 1. The nodes represent the multiple levels or scales of interaction between and across components in the watershed. Together, these interactions determine the level and distribution of welfare across individuals in the three zones, as well as environmental outcomes in headwater and lowland ecosystems.

Primary Nodes. People live in the upland, midland and lowland zones. Each node is a locus of individual and collective actions that affect human welfare and the environment, both within and beyond the zone. Social and economic performance in a node is determined by factors such as available resources, policies, institutions, and technologies.

Secondary and Tertiary Nodes. Unlike primary nodes, these “virtual” nodes represent arenas of negotiation, conflict and/or collective action among adjacent water users. Examples include watershed, basin, national or international level institutions governing water, land and/or forest management. These institutions condition the nature of activity within the node as well as the upward and downward flows between zones.

Welfare and Water Transitions. The way that individuals and groups in a given zone manage water directly affects welfare in that zone. Watershed management within a zone also influences livelihood options in lower zones indirectly through its effect on water transitions. These externalities are called ‘water transitions,’ defined as changes in the quantity, quality or timing of water flows between



Stakeholders of watersheds include all people who use their keystone resources: land and water.

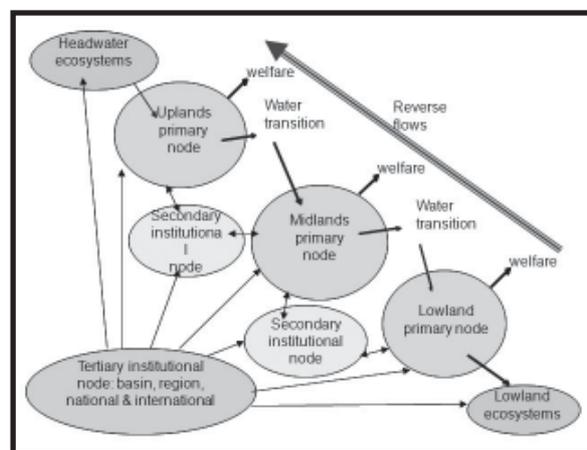


Figure 1. A conceptual model of a multi-scale interactions.



Effective watershed management requires stakeholders to coordinate their use of and investments in these resources.

primary nodes. They depend on water use and the biophysical characteristics of the catchments, as well as on the technology and management practices of people in upland nodes. Water changes from an upper to a lower node may have positive or negative impacts on downstream water users.

Reverse Flows. If downstream residents are aware of the water transitions, they make take action to either reduce or increase them. These responses may involve ‘reverse flows’ which can take the form of economic, social or political resources flowing from downstream to upstream. Direct flows can range from cooperation and negotiation among upstream and downstream stakeholders to conflict and use of force. Reverse flows can also be mediated by some public agency as in the case of regulations, subsidies, taxes, or public investments in water infrastructure. Payment for environmental service (PES) schemes are an example of reverse flows, as is lobbying by downstream residents to change land use regulations in upper watersheds.

Where are Watershed Management Decisions Made?

Water transitions and reverse flows reflect the outcomes, intentionally or otherwise, of individual and collective decisions. Understanding the factors that shape those decisions is fundamental for watershed management. These decisions are made in nodes or arenas; however, as the diagram suggests, it is possible that a specific watershed issue might be dealt with in different areas simultaneously. For example, local land use norms based on customary or religious law may coexist with rules of local customs, watershed associations or state environmental regulation. When there are no conflicts, such contradictions may not be important, but when conflicts arise, parties may seek resolution in the arena where they feel they have the best chance of getting a favorable outcome, a phenomenon known as “forum shopping.” Similarly, resolving conflicts that involve stakeholders such as mining companies or state agencies, or even people living outside the watershed, may not be able to be resolved locally. Such attempts often result in incomplete and unsustainable solutions, since key stakeholders are left out. What is important is to identify all stakeholders or actors who need to be involved in decisions and find a forum in which they can interact on a level playing field.

Key Links Between Water and Welfare Across Scale in Watersheds

- Improved access to good quality drinking water can improve family health and free up time that can be diverted to more productive, less laborious activities. Small amounts of water put to productive use can greatly enhance livestock production, horticulture and some small-scale industry within the homestead. Outside the homestead, supplemental irrigation and improved water management can contribute to major improvements in crop production over dryland agriculture. *Upland and midland areas are often thought of as suppliers of water; however, small increases in water use in these areas can have significant impacts on poverty because the poor are often, though not always, concentrated in these areas.*
- Quantity of land owned is often used as an indicator of wealth, and wealth is often considered synonymous with power in negotiations. In a watershed context, however, *the extent to which land can be an effective resource in negotiations also depends on where it is located*, either along the upstream-downstream continuum or in relation to the filters that ultimately determine the magnitude of water transitions. Actions of people living in upland areas will affect those downstream far more than those downstream can directly affect those upstream. Where water and power flow in the same direction (i.e. where better off people are located in upstream areas and in areas with high impacts on downstream communities or on watershed function), it may be difficult to reach win-win solutions to watershed problems.

- The nested and overlapping nature of watershed management makes it difficult to sustain investments in water resource management over time. For example, water-poverty traps in Africa often arise because of the high variability of water resources in time and space, and because most of the important river basins cut across national boundaries, thus being subject to numerous political and institutional risks. These factors serve to reduce returns and increase costs associated with water investment at lower scales. Poor credit facilities and low self-financing capacity further constrain investments in water, which in turn translate into low water storage capacity and poor water supply infrastructure. Poor water supplies then lead to limited production and ill health, which constrain development more generally. As such, *poverty traps replicate and reinforce themselves across scales: failure to surmount thresholds at one scale reduces returns on investments at other scales, while success at one scale increases return on investment at other scales.*
- *Knowledge and information shape people's participation in watershed institutions and negotiation processes, and this knowledge may vary widely between stakeholder groups.* Poor people frequently lack knowledge about their rights and the avenues for defending them. Consensus seeking approaches are likely to disadvantage them even further. While these approaches may prevent disagreements, they can prevent contentious but critical issues from being addressed. Negotiation, however, requires a high degree of participation and collaboration among interest groups as well as trust in one's representatives.

Conclusion

Watershed management is a complex issue that draws its many stakeholders — from the forest, the upland and lowland farms, management and conservation bodies, down to urban areas — in an intricate social and ecological relationship. Such complexities mean that simple win-win situations are rare; decisions about alternative intervention scenarios about (re-)allocating rights or (re-)organizing stakeholders need to be evaluated to determine the potential trade-offs involved. A common framework and key principles can facilitate such assessments by policymakers and practitioners.

Suggested Readings

2002. *Water Policy* 3(6). Special Issue on Property Rights and Collective Action in Watershed Management.
- FAO (Food and Agriculture Organization of the United Nations). 2006. *The New Generation of Watershed Management Programmes and Projects: A Resource Book for Practitioners and Local Decision-Makers based on the Findings and Recommendations of a FAO Review*, FAO Forestry Paper 150. www.fao.org/docrep/009/a0644e/a0644e00.htm
- Ostrom, E., 2005. *Understanding Institutional Diversity*. Princeton University Press New Haven, CT, USA
- Sadoff, C.W. and D. Grey. 2002. Beyond the River: *The Benefits of Cooperation on International Rivers*. *Water Policy* 4(5): 389-403.