Abstract and Keywords

Decentralization in water management authority has shifted decision-making to the local level and expanded participation to include a wider set of actors. The result is a politics of water that is more variable than in the past, across space and over time, reflecting the diversity of local values and local water resources. Fragmentation of policy responsibility offers potential for more environmental and financial sustainability in the long term, but in the short term it requires management agencies and stakeholders to find ways to interact effectively. How we design our local institutions, and the incentives that higher levels of government provide for directing local decisions, will help determine whether the new approach produces a more sustainable and resilient water future.

Keywords: decentralization, urban water, integrated water resources management, water privatization, water infrastructure, water conservation, fragmentation

Global water politics is becoming increasingly localized. In the developing world, a recent wave of decentralization backed by international financial institutions has transferred authority over water and sanitation services in many countries from central to subnational governments. The Dublin Principles of 1992 have further encouraged decentralization of water governance by endorsing integrated water resources management (IWRM), which calls for coordinated planning for the various uses of water resources, ideally at the river-basin level. In the wealthiest countries, local governments long have managed delivery of water and sanitation services, but in recent decades they have taken on added responsibility for securing water supplies and reducing environmental and social harms arising from the extraction and distribution of freshwater resources.

Part of what has motivated decentralization is the growing demand for broader participation in water policy. Historically, water resources served as supports for economic growth, and throughout much of the world water development was guided
Local Water Politics

through centralized political processes dominated by those with the largest economic stakes in growth. This approach produced enormous advances in agricultural and industrial productivity, energy generation, and human health protections. Recent decades have brought growing recognition of the environmental costs of this approach, however, as well as the persistent failure of the benefits of water development to reach the world’s poor and rural populations. Those who previously were marginalized in resource management—environmental organizations, small-scale users, the poor, and native populations—are demanding opportunities to express their interests, and international financial institutions and nongovernmental organizations have started to pressure governments to create more participatory processes for water policymaking. At the same time, the technical community has adopted new approaches that integrate elements of the water cycle that previously had been managed separately.

Taken together, these new demands, new actors, new values—and often new institutions and policymaking venues—are creating a more local, more participatory politics of water. Local governing institutions including municipal and regional governments, river basin organizations, and watershed councils are increasingly seen to offer the best opportunity for managing water in a way that addresses its many uses and includes a broad range of stakeholders. Shifting decision-making to the local level and including a wider set of actors in the decision-making process means that different political forces are now at play than previously: policymaking is often incremental and occurs at a smaller scale, and coalitions are more fluid. Local water politics refers to the decision-making processes, venues, and actors operating at the subnational level—often in interaction with national and international levels—to influence the distribution and management of water resources.

The challenges facing water governance at all scales are daunting. In 2012, an estimated 11 percent of the world’s population lacked access to piped drinking water and 36 percent did not have access to improved sanitation (United Nations Children’s Fund [UNICEF] and World Health Organization [WHO] 2000). The availability and quality of local water resources vary widely: in some developing countries large portions of the population do not have access to improved water sources, while in developed countries such as the United States water and sanitation services are nearly universal (WHO and UNICEF 2015). Clean water is least available in rural communities: five times as many people living in rural areas lack access to an improved water source compared to urban areas (UNICEF and WHO 2012). Even in the United States, 14 percent of the population uses private wells for drinking water and 20 percent uses on-site septic systems, some of which are not subject to the full suite of federal water quality regulations (Kenny et al. 2009; US Environmental Protection Agency [EPA] 2008; Daniels, Weinthal, and Hudson 2008). Where community water infrastructure does exist, it often is not adequately maintained, creating risks for water loss and contamination (United Nations Educational, Scientific, and Cultural Organization 2012).
Apart from these disparities in access to clean water, the global water system as currently developed is not sustainable. Water withdrawals outpace replenishment in many parts of the world, and by 2025 water scarcity is expected to affect more than 1.8 billion people in both the wealthiest and the poorest nations (United Nations Development Programme 2014). The alteration of river systems by dams, diversions, and canals has caused ecological damage, fragmented communities and heightened flood risk and has harmed water quality. Agricultural and industrial development, which in many ways was enabled by the alteration of water systems, has put further pressure on those systems in the forms of pollution and land-cover change. Amplifying all of these concerns is climate change, which increases hydrologic variability and the vulnerability of water systems to contamination threats and extreme weather events.

In many countries and regions, the water governance systems that have emerged over time are institutionally layered, a consequence of water’s multiple—often conflicting—uses and the different geographic boundaries associated with those uses. In recent decades, many local institutions have been added to this mix, a response to pressure from the World Bank, the United Nations, and other international institutions calling for decentralization in water management as well as to communities’ demands for greater involvement (World Bank 1993; United Nations 2003; Jonsson 2005; World Water Council 2010; Herrera and Post 2014). In South Africa, new local catchment management agencies and water user associations are responsible for implementing public participation guidelines enacted in 2001 (Department of Water Affairs and Forestry, Republic of South Africa 2001). Zimbabwe is using stakeholder-elected catchment councils to implement its decentralization aims (United Nations 2003). Brazil’s creation of river basin committees to coordinate water management across uses and functions came as part of a larger set of institutional innovations promoting participation (Abers and Keck 2009; Lemos and Oliveira 2004). In the United States, regional watershed councils have emerged as a tool to resolve conflicts among users and coordinate resource management (Sabatier et al. 2005). Typically, these new entities are charged with newly created responsibilities including planning and dispute resolution, but decentralization of water management also can take the form of devolving existing authority down to lower levels of government. Over the past thirty years, at least forty-one developing countries have transferred responsibility for water and sanitation services from central to subnational governments (Herrera and Post 2014).

The shift in water governance—and therefore politics—down to the levels of basins and localities is not only a response to political demands, both top-down and bottom-up, but also reflects new approaches to water management that rely less on ambitious infrastructure projects to enhance supply or harness water’s energy and instead emphasize small-scale policies and projects aimed at reducing demand, restoring water quality and ecosystem services, and distributing water more efficiently. No single solution dominates: some policies aim to return water to more natural hydrologic cycles, while others promote long-distance transfers to reallocate resources to more valuable use. Communities are experimenting with pricing, regulations, and contracts to direct water to its most productive uses. To address infrastructure deterioration, many localities have
Local Water Politics

adopted “green” infrastructure strategies and decentralized distribution systems that reduce reliance on pipes and treatment facilities and promote resilience to potential changes in water supply (Gleick 2010). Partly due to the nature and scale of these policies and partly due to new rules and institutions that broaden participation in decision-making, a decentralized governance system is emerging that relies on collaboration more than hierarchy and consists of individually negotiated agreements that take local conditions and values into account.

The new approach offers potential for more environmental and financial sustainability in the long term, but in the short term it requires management agencies and stakeholders to find ways to interact effectively. In order to be effective, new basin-level participatory institutions must be able to integrate their activities with traditional management systems and local government structures, a process that can be hindered by a lack of human and financial capacity (United Nations 2003; Malzbender et al. 2005). Because more local water conflicts occur within communities among users competing for a common water source than between communities, all local water governing bodies must find mechanisms for managing conflict and preventing overexploitation of shared resources (Ravnborg et al. 2012). Meaningful water reform requires some degree of openness in the political environment, because changes in allocation may well counter the interests of those most powerful in the community (Lemos and Oliveira 2004).

This essay explores the new local water politics that has emerged as water governance has become more decentralized. We focus especially on the United States, with more limited attention to conditions in other parts of the globe. The stakes for water management in the United States are low compared to much of the world, because safe drinking water and sanitation services are widespread and affordable.\(^1\) The changes in water governance are perhaps most striking in this context, however, because the centralized, infrastructure-based approach had been ambitious in scope and deeply institutionalized through regulatory standards, financing mechanisms, public expectations, and professional norms. We examine the factors contributing to the transformation and the role of local water governing institutions in addressing a set of emerging challenges including growth politics, privatization, rural to urban water transfers, boundary conflicts, and sustainable urban water management.
Factors Contributing to a New Local Politics of Water

Fiscal Decentralization and the Infrastructure Funding Gap

The development and distribution of water in the United States historically was directed by federal agencies, especially the Bureau of Reclamation and the Army Corps of Engineers, with a supporting role from states. Starting in 1902 and lasting into the 1970s, the Bureau of Reclamation in particular initiated and oversaw water development projects throughout the American West, working with the Army Corps to build facilities that permitted settlement in flood-prone areas and expanded irrigated agriculture, energy generation, and economic development. From a management perspective, water agencies from the federal to the local levels emphasized supply reliability over any other values. They faced few regulatory obstacles in pursuing their goal; during this time of construction and supply enhancement, agencies were under no legal obligation to review the environmental impacts of their projects, and few protections existed for wildlife or water quality.

The era of new, large infrastructure projects is over in the United States. Many freshwater sources already have been overdrawn, and heightened environmental regulation and rising costs rule out many projects where supplies might be available. Proposals for projects that may induce growth and disrupt existing water allocations consistently face public resistance from homeowners, local businesses and developers, and community and environmental groups (Hundley 2001; Mullin 2009). Federal government funding for large water projects declined dramatically in the 1970s and has remained low ever since, effectively reducing the federal role in water supply development (Carter and Stern 2011). Today, national-scale water management in the United States relies on collaborative partnerships with subnational actors in a more “pragmatic federalism” that emphasizes process and problem-solving (Gerlak 2006). Whereas river management once was dominated by federal agencies, now the federal government actively encourages and participates in partnerships and working groups that bring together local, state, and federal agencies along with nongovernmental actors to reach decisions about water allocation and use (Blomquist 1992; Heikkila and Gerlak 2005; Lubell et al. 2002; Ostrom 1990; Sabatier et al. 2005; Scholz and Stiftel 2005).

These institutions typically operate at the scale of the watershed or groundwater basin and emphasize restoring hydrologic systems from degradation caused by pollution and reduced flows. Such partnerships also place demands on local political actors and venues to effectively coordinate with national agencies and add a multilevel dimension to local water politics.
During the time that the federal government was building dams and aqueducts, localities were constructing a massive piped infrastructure to convey drinking water, wastewater, and stormwater through the underground landscape of American cities. The main periods of investment occurred at the turn of the twentieth century and during the post-World War II economic boon. In the 1970s and 1980s, under regulatory direction of the federal government and with significant federal financial assistance, localities expanded their wastewater treatment infrastructure, producing substantial gains in public health protection. Much of that drinking water and wastewater infrastructure has reached the end of its useful life, inadequate to meet even our current needs (Copeland and Tieman 2010; Anderson 2010). The US EPA has estimated that the nation’s water systems would need to invest $334.8 billion in drinking water infrastructure and $298 billion in wastewater infrastructure between 2007 and 2027 (US EPA 2008, 2009). This high level of investment need is the product of deferred maintenance, new regulations, inadequate capital replacement, and a generally aging infrastructure (US EPA 2002, 2009). Anticipated spending levels based on existing revenue fall far short of that sum, and the EPA has warned about the possibility of a significant funding gap that could jeopardize public health, service reliability, and the quality of surface water bodies. Funding this gap through local revenue is a major challenge because of restrictions on localities’ ability to tax and public resistance to high user fees (Morgan and England 1999). Annual federal assistance for drinking water and wastewater infrastructure, measured in constant dollars, is less than half of what it was in the late 1970s, falling from 46 percent of combined federal, state, and local spending at its height in 1977 to less than 5 percent in 2007. Although the federal government continues to support infrastructure investment through appropriations to state revolving fund loan programs, these programs have come under threat as Congress has prioritized deficit reduction (Cooper 2011). Inadequate system maintenance is an even bigger problem in the developing world, where emphasis on investment in new rather than existing infrastructure has produced water losses totaling two to three times the rate of loss in developed countries (Herrera and Post 2014).

The shrinking federal role in addressing water supply shortages and the deteriorating infrastructure for urban water provision combine to put substantial pressure on local water utilities that are attempting to maintain reliable water service. The challenge no longer resides only in arid regions; population growth and infrastructure deterioration have created water scarcity and have threatened water quality even where natural water supplies are relatively plentiful. The prospect of a water crisis has challenged water managers to search for effective ways to satisfy future demands without jeopardizing the long-term sustainability of current water resource systems (e.g., Christian-Smith et al. 2012).

The reduced emphasis on large-scale water infrastructure is not universal. While support and funding for new projects have stalled in the United States, other countries are pursuing hydropower and water transfer projects that have the potential to profoundly reshape local landscapes. In the Andean Amazon region of South America, for example, plans are currently in place to build 151 new large dams between 2012 and 2032 as part
Local Water Politics

of regional governments’ long-term development and energy security plans (Finer and Jenkins 2012). The South-North Water Transfer Project aims to divert water from the Yangtze River in humid southern China to the Yellow River in arid northern China and, when completed, will be the largest water engineering project in the world, diverting almost 45 billion cubic meters of water each year and displacing an estimated 330,000 people (Wang 2013). After ending support for large dams in the early 1990s, in 2013 the World Bank announced its intention to help finance a new generation of controversial megaprojects (International Development Association 2013). On the whole, though, planners and political leaders operating both inside and outside of government increasingly are emphasizing smaller scale and locally managed systems for developing and distributing water resources.
Federal and State Environmental Law

Another important factor contributing to the localization of water politics and management in the United States is the growing emphasis on environmental protection in federal and state environmental law. For example, the 1974 Federal Water Resources Development Act established an erosion prevention and control program for the Army Corp of Engineers and a study of how land use practices affect water development projects. By the year 2000, the act included provisions for watershed management projects, ecosystem restoration, and even dam removal. A range of additional federal legislation has solidified an emphasis on environmental protection in water management. The 1973 Endangered Species Act set guidelines for establishing minimum flow levels for fish species, and the National Environmental Policy Act requires environmental impact assessments for new projects. Federal law now requires use of efficient plumbing devices, reducing toilets’ water use from up to 7 gallons to 1.6 gallons per flush (Blanco, Newell, Stott, and Alberti 2012). The Clean Water Act, passed in 1972, created broad new directives for surface water protection through regulation of point source and nonpoint source pollution (Christian-Smith et al. 2012; Murchison 2005). It also provided considerable funding to assist local water agencies in building infrastructure to reduce pollution from wastewater and urban runoff, eventually transferring responsibility for its water infrastructure funding programs to the states. The 1974 Safe Drinking Water Act created new mandates for local water systems to safeguard against contamination. Overall, these shifts at the federal level—away from supply development and toward environmental protection—have required that local governments adopt new priorities in their own approach to water resources management, giving greater emphasis to demand management and pollution prevention. The federal government also has used funding incentives to influence local priorities, for example by spurring local water suppliers to increase usage of recycled water (Hughes 2012a).

Many states have developed additional rules requiring long-term planning for water resources and the environmental impacts of water development. Sixteen states have laws that require some level of environmental impact review for proposed development projects, which may include review of water impacts. The strictest of these laws, the 1970 California Environmental Quality Act (CEQA), covers private as well as public projects and has been an important tool for communities to force consideration of water supply in their land use planning (Shigley and Krist 2002; Hanak 2005; Mullin 2009). Recent CEQA guidelines require local governments to consider the impacts of climate change in new projects as well. California also is advancing water conservation among existing users through a statewide mandate for residential water meters and a requirement that agencies reduce urban water usage 20 percent by 2020 (Mullin 2013).

The city of Los Angeles, once notorious for its profligate water usage and the massive and damaging projects it built to support that usage, now offers an example of how pressure from the broader water governance system has helped to transform the local politics of water (Hughes, Pincetl, and Boone 2013). Regulatory changes at both the state and
federal levels reduced the amount of water available for delivery to the city, while political and institutional changes within the city generated demand for more environmentally oriented water management strategies. As a result, the city is now a leader in water conservation—maintaining constant water usage while population increased by 1 million new residents—and participates in ecosystem restoration efforts at Owens Valley and Mono Basin, the remote areas that serve as the headwaters of the city’s water supplies.

**Changing Values of Water Managers and Users**

The final factor contributing to a new local politics of water is the change in values of water users and managers, which reflect increasing recognition of the multiple uses and purposes of water. Water resource management agencies traditionally have been very conservative, pursuing consistency and regularity in the presence of natural variability in supply and quality (Rayner, Lach, and Ingram 2005). They resisted innovation and tried to avoid attracting public attention. Many water agencies were intentionally designed to be free from political interference; in her study of water districts in Boston and Oakland, Elkind (1998) shows that the lack of responsiveness built into these districts’ institutional designs later hampered their efforts to address the environmental impacts of urban growth. Water agencies commonly measured their success by the ability to deliver safe, affordable drinking water in as much quantity as people demanded, making sure that limitations on water supply did not interfere with development and economic growth. To do this they relied on structural solutions to problems with water quality or supply.

Over time, these values have changed, however, and many water agencies have transitioned from infrastructure-intensive strategies for managing uncertainty to an approach that spreads risks through cooperation and shared decision-making authority (Lach, Rayner, and Ingram 2005). Norms in the water industry have shifted to favor demand management strategies, and the job mobility of water utility executives has helped diffuse these policies across water agencies (Teodoro 2010). Agencies are learning from one another and cooperating to find efficiencies. For example, over 200 urban water suppliers in California have adopted a set of best management practices for urban water conservation that have helped to demonstrate the effectiveness of measures like low-flow toilets and outdoor irrigation efficiencies (Hughes 2012b). As a result, US per capita water use peaked in 1975 and has been declining since then, and total water withdrawals have remained fairly steady since 1980 despite a growing population (Kenny et al. 2009).

Pricing water to achieve conservation goals has become a popular policy tool, and the evidence suggests that water demand can be responsive to price signals (Renwick and Green 2000, Dalhuisen et al. 2003). Starting in the 1980s, many utilities have shifted from pricing strategies in which the per unit price declines or stays constant at high levels of use to an increasing block rate design, in which the price of water increases as volumetric consumption rises, providing an incentive for more efficient and conservative water use. Increasing block rates provides a more accurate signal about water scarcity.
and may be more equitable, but it also increases variability in a utility’s revenue collection, which can interfere with long-term planning. Local agencies also have been experimenting with alternative demand-side management policies such as water allocations, use restrictions, and public education (Renwick and Green 2000). In some cases, these measures may be less politically controversial than changing water prices and can be enacted on a short-term basis during times of water shortage or drought.

Implementing demand management in less developed countries has been more difficult because of a lack of information and access to technology (Gumbo, Juizo, and van der Zaag 2003; Sharma and Vairavamoorthy 2009). Local water agencies may lack baseline water use data with which to structure demand management programs, such as determining what types of demand management tools to adopt, where in the city to implement them, and how to best set and track progress toward a conservation goal (Gumbo et al. 2003). Demand management approaches typically are designed to avoid construction of new, capital-intensive supply sources such as reservoirs and treatment plants, but they still require an investment in institutional and technical capacities. In many places intermittently available water supplies also pose a problem for demand management programs because they lead to low and variable water pressure in the system (Sharma and Vairavamoorthy 2009). Alternative technologies and practices, such as rainwater harvesting and water loss management, may be more usefully prioritized in such contexts.

At the same time that the values of water managers have changed, the public has organized to oppose new supply projects and has become more supportive of taking personal action to reduce water consumption (Mullin 2009). In many places, water managers and users are beginning to view water resources as the source of valuable ecosystem services, including water supply for drinking and irrigation purposes, the supply of fish and waterfowl, and in-stream benefits such as recreation and flood control (Daily 1997; Kareiva, Marvier, and McClure 2000; Cook and Spray 2012). Studies have found that water users are increasingly willing to pay for these types of ecosystem services (Loomis et al. 2000, Holmes et al. 2004). Introducing ecosystem services as a management goal changes the demands on managers and the scale at which effective decisions can be made, requiring further evolution from a structural to a governance approach in water management (Bullock et al. 2011). Like decentralization, new institutional arrangements are often needed to incorporate ecosystem services into management goals. For example, in 2003 Mexico introduced a payment system for landowners willing to set aside forested land and protect watershed functions (Munoz-Pina et al. 2008). A critical component of such programs is a long-term and sustainable funding stream, but some cities in Mexico have successfully implemented the program without a payment program when confronted with severe water scarcity (Alix-Garcia et al. 2009).
Water Governing Institutions and Emerging Challenges

Some of the same forces that have contributed to decentralizing and broadening participation in water management systems also are creating significant challenges for water planning. Damage to natural ecosystems and failure to maintain built infrastructure have contributed to water shortages and deterioration in water quality in many regions. Population growth and redistribution can amplify these problems by creating mismatch between developed water resources and population needs. As water management institutions have formed and reshaped to emphasize local decision-making, they have faced the challenges of managing water conflicts across borders and of integrating water use and distribution with the broader governance of local development and fiscal policy.
Growth Politics

In a water politics that centers on allocation rather than the development of new supplies, decisions about growth become inseparable from decisions about the distribution of water. Communities can no longer build new housing or expand their commercial sectors under the expectation that water will flow. In an earlier era, cities bought up land and built massive infrastructure to secure adequate water supplies to support their growth (Kahrl 1982; Reisner 1986; Hundley 2001; Elkind 1998; Soll 2013). Drought conditions or rapid expansion occasionally would put development on hold, but growth would ensue as soon as the utility could augment its system or emergency conditions passed. Communities facing shortages would appeal for state or federal assistance to develop new supply or build the pipes to reach a new source. More recently, water availability has become a critical point of conflict in local land use decisions. For communities confronting permanent constraints on system capacity, adding new connections might jeopardize service reliability for existing customers. Even where water is relatively plentiful, controversy may arise about the effects of development on water quality or supply. The intersection of water and land use creates multiple opportunities for political conflict over growth.

Disputes over water and growth invoke diverse and potentially competing values. To some, water is a necessary part of the infrastructure that facilitates expansion and economic prosperity; to others, it is a scarce resource that offers ecological and scenic benefits apart from its consumptive uses. Water managers typically seek to accommodate the growth goals of a community’s political leaders, but residents who oppose those goals might view water as the most effective tool for halting new development or shifting its costs to incoming residents and businesses (Frieden 1983; Herman 1992; Lach et al. 2005). The fragmentation of water governance and sharing of water supply sources may introduce neighboring jurisdictions as actors with their own interests and values. Moreover, some local agencies face growing pressure to satisfy demands that depart from their original mission. Where changes in land use bring residential development into previously agricultural areas, farmer-dominated irrigation districts often face demands to provide treated drinking water and other urban services and to address new types of policy questions related to social equity and political community (Briffault 1993; Jepson 2012).

Local institutional arrangements influence how these values are articulated and negotiated. Research on local growth politics shows that institutional design interacts with the configuration of interest groups to shape land use and development outcomes (Lubell, Feiock, and Ramirez 2005, 2009; Gerber and Phillips 2004, 2005). Political actors who support growth and those who oppose it operate within systems of decision-making rules—rules that define the relative power of mayors versus city councils, for example, or those that require voter approval for new development—that influence their success in pursuing development policy outcomes. Where water becomes an issue in local growth disputes, one critical feature of institutional design is whether authority for water and
land use is formally divided between governments. If a city responsible for approving new development does not oversee the community’s water system, it might not consider or even fully comprehend the impacts of its decisions on local water resources. California planners, for example, responding to a survey reported higher levels of information sharing and coordinated activity between water and land use planning in cities that have their own water departments than in cities with outside water providers (Hanak 2005; Hanak and Simeti 2004). If policymakers fail to address water issues early in a planning process, concerns and objections are more likely to arise in the public sphere, expanding opportunity for participation by the public, interest groups, and neighboring governments. Public negotiations make compromise more difficult and threaten to erode trust between actors in the long term (Mullin 2009).

Under the new local politics of water, policymaking is incremental. Without major projects to develop or reallocate supply, policy victories or defeats may not persist. Local political actors pursue their interests and values through repeated interactions, creating fluid coalitions with membership that may change depending on the nature and salience of the policy question. Changes in technology and regulation may expand participation and prompt new alliances in growth debates. For example, as water utilities across the United States increasingly emphasize source water protection as a means to improve drinking water quality, they must cooperate with their neighbors to control growth outside their own jurisdictional boundaries (Salzman, Thompson, and Daily 2001). In another example, the expansion in US regulatory efforts to address nonpoint sources of water pollution affects a broader set of activities and actors than addressed by traditional point source pollution control. The inherent uncertainty in nonpoint source water pollution assessment leaves more room for political conflict over regulatory approaches and targets and even over the underlying science of pollution assessment (Maddock 2004).

**Privatization**

Private providers long have played an important role in the drinking water sector. During the nineteenth century, when industrialization and urbanization created demand for water systems in many American communities, private firms were the first to step in and build infrastructure to collect and distribute drinking water (Crocker and Masten 2002). Although municipalities later became more active in water provision, private companies and cooperative associations still often set up the first water systems in newly settled communities, and in many cases they retained ownership and management responsibility for the long term. Currently, 49 percent of US community water systems are privately owned. Of these, 22 percent are operated as for-profit businesses and 38 percent as nonprofits; the remaining 40 percent are ancillary businesses such as mobile home parks where water is ancillary to the primary business (US EPA 2009). Private water systems tend to be small, however, so even though they represent half the population of total
Local Water Politics

water systems, they account for just 9 percent of water delivered and are more prevalent in rural than in urban areas.

The proportion of US water services managed by private providers has remained stable since World War II (National Research Council 2002), but privatization has attracted attention from local public officials in recent decades as a strategy for obtaining needed investment in aging and deteriorating infrastructure (US Conference of Mayors 1997). In the United States, where availability of piped drinking water is nearly universal, investment needs are the primary driver for water contracting (Jacobs and Howe 2005; Goldman Sachs 2013). Contracting with a private firm may offer improved efficiency and performance in water services provision and at the least promises some political insulation for water rate increases that may be needed to maintain an operational infrastructure.

In many communities, the public has mobilized to oppose new water service restructuring proposals that involve contracts with private firms. Opposition to water privatization stems both from instrumental concerns about water access or employee protections and from moral objections to the commodification of a natural resource. These movements often draw on broader public resistance to economic globalization, depicting privatization as an opportunity for multinational corporations to wrest a shared resource from local control (Petrella 2001; Barlow and Clarke 2002; Snitow, Kaufman, and Fox 2007; also see Bakker this volume). In a study comparing local social movements organized against water privatization in two North American cities, Robinson (2013) argues that one reason activists in Vancouver, British Columbia, were successful in convincing the responsible public agency to withdraw plans for privatizing construction and operation of a new filtration plan was their ability to draw linkages, both rhetorically and in terms of personnel and tactics, with a broad coalition of groups engaged in resisting globalization. In contrast, the coalition that opposed outsourcing water management in Stockton, California, framed its arguments and strategies in strictly local terms, missing an opportunity to engage a broader public in the debate. Stockton’s water services came under private control, but opponents continued their resistance in the courts, ultimately returning the city’s water system to municipal management five years later. Atlanta experienced a similar reversal: just four years into a twenty-year contract with a provide provider to run the city’s water system, problems with system breakdowns, water quality, and service prompted a newly elected mayor to cancel the contract and return the system to city control.

Increased resistance to privatization has roots not only in a global movement challenging neoliberal water policies but also in changes in the local governance of water. Expanding participation in water governance allows the expression of more perspectives and values associated with water. Whereas water managers and local political officials focus on the technical and financial challenges in maintaining functional water systems, many activists are motivated by broader principles related to grassroots participation and local control. As Dilworth (2005) points out, these visions not only differ in emphasis; they also rest on
different notions of the fundamental social contract that governs the allocation of water resources.

Outside North America, private-sector participation in the operation of water utilities is less common (UNICEF and WHO 2000) but has received significant attention in recent decades as part of a strategy for expanding access to public services throughout the developing world. In declaring the International Water Supply and Drinking Water Decade (1981–1990), international organizations and bilateral development agencies started promoting private-sector participation in water services to countries receiving international aid. Starting in the mid-1980s, at least one metropolitan water and sanitation system in sixty-one countries privatized, and many more systems corporatized or were put under the control of fiscally autonomous public entities managed by a corporate board rather than by elected officials (Herrera and Post 2014). Privatization as a mechanism for expanding access to water and sanitation services gives rise to even more striking value conflicts than those that arise in the developed world, where serious risks to drinking water quality or reliability are rare. Where safe drinking water is not widely available, a tension exists between treating water as an economic good, which would acknowledge its scarcity and provide incentives to direct it to its most valuable use, and treating it as a human right, recognizing it as an essential human need (Budds and McGranahan 2003). Concerns about affordability and access to water have prompted at least 38 resistance movements to privatization efforts in the Global South, most notably in Cochabamba, Bolivia, where government response to protests against a privatization effort resulted in injuries and death (Bakker 2010). Although the Cochabamba movement had immediate roots in rate hikes and service cutoffs that reduced water access, it tapped into concerns about community control of local resources (Baer 2008). This is typical of campaigns to resist privatization, which often blend these instrumental and moral values (Hall, Lobina, and de la Motte 2005). Even in instrumental terms, Herrera and Post’s (2014) review of the empirical literature indicates that privatization is not always successful in providing the political insulation that water systems need in order to recover costs, because in systems with few institutional checks and balances, local politicians still interfere to secure low water rates for their constituents. Where decentralization of water systems predates the introduction of private or corporate management, local political intrusion is amplified.

Rural to Urban Water Transfers

Another market mechanism receiving renewed attention in the current era of supply constraints and aging infrastructure are water transfers, which offer the potential to increase the efficiency of existing supply by reallocating water to areas with the greatest need and improve the resilience of water systems to changes in climatic conditions. Especially in the American West where water scarcity is most severe, water markets can supplement a rights-based allocation system with one based on price, allowing farmers
Local Water Politics

with historical water rights the opportunity to profit from them while meeting the water needs of growing cities.

Perceptions of agriculture-to-urban water transfers in the United States are dominated by Los Angeles’ quest for water in the first half of the twentieth century, which resulted in the draining of water from Owens Lake and severe ecological damage in the Mono Basin (Kahrl 1982; Reisner 1986; Hundley 2001). The dominant narrative portrays these events as urban exploitation of rural communities that experienced only negative economic and environmental effects from the plunder of their local resources. Recent research suggests that the story is more complex; although these and other early water transfers created conflict between booming urban areas and the rural communities providing their water, Owens Valley and other source communities have enjoyed some benefits from water exports, even as the trades offered inadequate payments for the purchased water and the long-term loss of agricultural productivity (Steinberg and Clark 1999; Libecap 2007).

The stories of Owens Valley and Mono Lake are well known, and after decades of legal battles Los Angeles eventually reduced its withdrawals from these areas in order to promote ecosystem restoration. Although many agricultural communities continue to resist the sale of water for urban uses, the number of these transfers has grown in recent decades (Libecap 2007; Hanak and Stryjewski 2012). The persistently large price differential between water uses in agriculture and urban uses serves as an incentive for farmers to participate, and state and federal legislation has introduced a variety of mechanisms to help stimulate the market. Local water institutions, such as municipal water departments and irrigation districts, have been effective in facilitating these trades, although they often fail to consider the community and social impacts of water transfers (Thompson 1993; Nunn and Ingram 1988). But recent transfers do incorporate greater consideration of water’s instream value and of third-party impacts related to decline in the agricultural economy in the source region. Nonetheless, high transaction costs and uncertainty about the future serve as obstacles to many potential long-term transfers, and throughout the American West more water is transferred within the agricultural sector than to more profitable urban uses (Libecap 2007).

Boundary Conflicts

As water resources become more constrained, international, state, and watershed boundaries are increasingly being contested by communities in ways that are changing the local politics of water. Critical for US water management, conflicts have emerged in both the border region with Mexico and the Great Lakes watershed region. In the arid border region where the United States and Mexico meet, local governments have become more central in managing shared water resources (Brown 2003). The Border 2012: U.S.-Mexico Environmental Program strategy, developed in 2003, called for “a bottom-up approach, anticipating that local decision making, priority setting, and project implementation will best address environmental issues in the border region” (US EPA and Secretaría de Medio Ambiente y Recursos Naturales [SEMARNAT] 2002: 13). The current
Local Water Politics

strategy, *Border 2020*, continues this focus on bottom-up decision making and takes steps to tailor actions to the particularities of places and communities (US EPA and SEMARNAT 2012). For both institutional and geographic reasons, in many cases this has meant that the asymmetrical power relationships between US and Mexican border cities result in lower water quality and less water availability for Mexico (Maganda 2005). Cross-boundary collaboration between localities is likely to continue: the city of San Diego has been exploring desalination opportunities in Mexico for several years (San Diego County Water Authority 2012). With fewer environmental regulations for desalination in Mexico, such a move could effectively displace the environmental effects of desalination, such as harm to marine wildlife near intake and outflow pipes, from one municipality to another (Rosenfeld 2011).

The municipalities in the Great Lakes region face different challenges. The region currently has ample water supply, but the region’s eight US states and two Canadian provinces have entered into an agreement that aims to prevent the export of water outside the Great Lakes watershed. Climate change and population growth are expected to increase demand for water resources both inside and outside the Great Lakes basin, stimulating conversations about conservation and demand management (Hall and Stuntz 2008). The only diversion allowed outside of the Great Lakes basin, for the city of Chicago, remains highly contentious, and a request from the city of Waukesha, Wisconsin, to draw water from Lake Michigan has tested states’ commitment to the international agreement and the interstate Great Lakes Compact (Changnon 1994; Platt 2002; Teodoro 2010). Water management in the region is increasingly led by states and provinces, rather than the national governments, which places the hundreds of local governments in the Great Lakes basin in relatively new and unique regulatory environments (Hall 2006). This means that these local governments will be responsible, and accountable, for designing management strategies able to balance the long-term needs of the basin as well as their locality. As communities adjacent to the Great Lakes basin continue to grow, the pressure for diversions will only increase.

Population growth and environmental pressures have led communities in both the eastern and the western United States to compete domestically for water supplies. The city of Atlanta experienced a severe drought in 2007 and 2008 that has triggered a reassessment of the legality of its withdrawals from Lake Lanier, its primary source of water. The “tri-state water wars” among Georgia, Alabama, and Florida are aggravated by the increasing pressure placed by a rapidly growing Atlanta on the shared lake (Southern Environmental Law Center 2008). In the American West, conflicts between growing municipalities that rely on water from the Colorado River are increasing as rising demand and declining precipitation put stress on the system. In 2003 the federal government reduced the amount of water going from the Colorado River to California cities due to increasing demands from upstream cities (Stakhiv 2003). The cross-border competition between cities for shared water resources places new requirements on them
Local Water Politics

to negotiate effectively with national, state, and local governments; demonstrate need; and manage risk.

Sustainable Urban Water Management

At the same time as water supplies have become more scarce, improved scientific knowledge and changing regulatory requirements have made it increasingly evident that urban management of water for flood control, sewage treatment, and drinking water provision have caused environmental damage both within cities and more broadly in the basins where they obtain and discharge their water. Sustainable urban water management (SUWM) seeks to reduce the harmful impacts of urban development on the natural water cycle through coordinated management of water resources in an urban setting. In emphasizing a holistic approach to managing water, it is part of IWRM, defined by the Global Water Partnership (2000) as “a process which promotes the coordinated development and management of water, land and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment.” The IWRM approach aims to coordinate management of all the elements of a hydrologic system at the basin level in an attempt to achieve a sustainable balance between human demand for water and the supply of water in a natural system (also see Lubell and Balazs this volume). In less-developed communities that lack of infrastructure for managing wastewater and stormwater, low-impact and decentralized management of flood control, and water quality risks occurs by default (Porse 2013). In the United States, where a massive “gray infrastructure” of concrete pipes and treatment facilities has built up over decades, methods of reintroducing the natural hydrologic cycle represent an important departure in urban water management.

A sustainably managed urban water system differs from traditional systems in several respects (Daigger 2011). It relies less on pristine water from remote sources, instead emphasizing the reuse of treated water and efficient reallocation of imported water. It treats stormwater not as a flood risk but as a resource to meet water supply needs or to support environmental services. Wastewater is managed not only to minimize harm but also to maximize its reuse value and to extract its heat, organic material, and nutrients for energy production and other uses. Integration of these separate water functions offers promise for minimizing the impacts of urban water use in areas of origin and in receiving waters, improving the environment and quality of life in urban communities, and avoiding expensive new infrastructure for water treatment and collection. It also may increase a community’s resilience to climate change impacts, as these new management strategies offer benefits regardless of the magnitude and character of future change (Frederick 1997).

Although the potential benefits are numerous, this new approach presents an important challenge with respect to water governance. In an era when large infrastructure projects offered the solution to water supply or pollution problems, the main political challenge
facing water managers was to acquire funding to build the project, be it from rate hikes, federal financing, or other sources. The type of projects pursued under SUWM still require investment, but the products of that investment are less visible to voters and may offer fewer rewards to politicians who want to claim credit for building a large public works project. Water managers must persuade politicians and the public that these less visible projects merit investment and help to solve problems that may be difficult to observe. Managers must earn the cooperation of agencies and governments that previously had acted independently and overcome considerable institutional obstacles, often including state law, interstate compacts, and fragmented governance of river basins (Frederick 1997). Moreover, these strategies require ample participation from private actors, who make the critical decisions about land use and building construction that shape how urban residents and businesses use water.

SUWM strategies often require coordination between multiple local departments and agencies, which can prove challenging in historically siloed bureaucratic structures. In Los Angeles, the water supply and sanitation departments have developed an integrated resources plan that forwards a strategy for the two departments to work together to introduce recycled wastewater into the city’s water service system (Hughes et al. 2013). The plan requires direct and continuous collaboration between the two agencies that historically have operated independently. Regional coordination of water management strategies and funding resources is also increasingly common and is being promoted in both California and Oregon.

One leading example of an SUWM approach is stormwater management through low impact development (LID), also commonly known as green infrastructure. The flow of stormwater through developed cities creates flood risk, stream channel erosion, polluted runoff, and the potential for sewage overflow in systems that convey stormwater with wastewater in the same pipes. Traditional approaches to managing stormwater have emphasized building pipes to capture runoff and transport it into waterways as well as expanding sewage treatment capacity to handle large volumes during wet weather events. In contrast, LID promotes the natural movement of water within a watershed by managing rain and snow where it falls. Rather than flow across impervious surfaces into receiving waters, capturing pollutants on its way, stormwater infiltrates into soil or is collected for later reuse. LID practices such as vegetated landscaping near streets and parking lots, green roofs, rain gardens, urban forests, and permeable pavements not only can improve conditions for receiving surface water bodies but also offer benefits to city residents including recreational opportunities, beautification, and cooling.

A LID approach to stormwater management requires reconsidering where and how development may take place. It replaces large, publicly owned infrastructure with a decentralized system of small-scale projects, many of which may be located on private land. LID allows more incremental progress toward pollution-reduction goals than infrastructure-based solutions do, but in combination they have the potential to reshape the flow of water through a city. In 2011 Philadelphia embarked on a twenty-five-year plan to invest $2 billion in reducing the city’s impermeable surfaces to promote
Local Water Politics

stormwater infiltration and evapotranspiration. Under orders from the US EPA to address combined sewer overflows, the city reached agreement with the agency to use green infrastructure to capture an inch of rainfall during storms and reduce stormwater runoff by 80 to 90 percent per year (Philadelphia Water Department 2011). The Philadelphia plan, like most LID efforts, involves extensive interagency partnerships, because building a green stormwater infrastructure affects how the city plans its parks, streets and transit systems, housing, schools, and more. It also creates a new role for public participation in infrastructure management. The participation of private property owners is critical to the plan’s success, and the city is attempting to secure cooperation through a combination of new stormwater regulations and incentives tied to stormwater fees and the distribution of redevelopment funds. The city must also convince its neighborhood associations, which historically have exercised powerful influence over planning and zoning, to accept changes in road surfaces and new use of public spaces.

Philadelphia’s initiative and similar efforts in Seattle, Chicago, New York, and many other cities represent a transformation in the culture of urban stormwater management, where technical expertise traditionally has been privileged over other types of knowledge (Brown 2005). Relative to many other local services, stormwater management typically attracts little attention from the public, but destructive storm events may require rapid decision-making in a politically contested environment. These conditions have contributed to development of hierarchical and nonparticipatory decision-making structures that may impede the adoption of new approaches (Brown, Ashley, and Farrelly 2011). Financial constraints also can pose an important barrier to green infrastructure. Although LID allows a more incremental approach to stormwater management, the public often objects to paying fees to address a problem that is difficult to observe and understand, and many potential sources of state and federal funding are unavailable for LID because they define infrastructure too narrowly or forbid supporting projects on private property (Keeley et al 2013). These constraints may diminish with time, however, as more cities perceive LID as an attractive and feasible strategy for achieving compliance with federal regulatory standards. Early evidence suggests that when considering whether to adopt LID policies, local officials tend to look to the experiences of proximate neighbors who share cultural and regulatory contexts (Dolowitz, Keeley, and Medearis 2012).
A Future of Fragmentation or Coordinated Effort?

The new local water politics is a product of increasing decentralization, environmental requirements for water management, and shifting values and priorities of decision-makers and communities. These changes have introduced new constraints, new actors, and new policy questions for local water managers and challenged them to find new ways of working within and between existing and new governing structures. In response, we can observe some old policy choices being renewed, such as privatization of water services and market-based water transfers, while new collaborative and regional institutions are emerging. Watershed partnerships, green infrastructure initiatives, and the integration of water considerations into growth politics all require coordination across agencies and meaningful involvement of private actors. New approaches to local water management require avenues for managing conflict and balancing competing values. While resource constraints will shape the parameters for decision-making by local water managers, there exists the potential for practical politics to help produce solutions that avoid or manage the impacts of future resource constraints (Agnew 2011). Local networks of actors can promote cooperation and problem resolution; not only can government policy help to build such networks (Schneider et al. 2003), but such networks have been shown to improve the implementation of federal policy (Scholz and Wang 2006). The effect of new institutions is not always predictable: even local institutions formed in order to avoid strict regulation from higher levels may be end up working in support of greater resource sustainability (Somma 1997).

The challenges faced by local water managers are significant, however, and funding for the many innovative policies and programs that are gaining support in the water policy community is an ongoing challenge (White and Boswell 2007). Uncertainty about the changes that climate change will bring makes it increasingly difficult to evaluate the costs and benefits of water management innovations. There is also the possibility that decentralization will facilitate fragmentation and prevent the development of a guiding philosophy for sustainability (Stakhiv 2003).

Although the transition may be most striking where the centralized approach to water governance was most firmly established, the United States is in a relatively strong position for adapting to the changing local politics of water and forwarding a sustainable water management agenda. Urban water reform is more complex in other parts of the world. In communities with widespread poverty and pressing risks to public health, the barriers to adopting new management schemes are high. The simple provision of access to water and sanitation services takes priority over questions of how to provide that access, often with long-term consequences for affordability, reliability, and environmental protection. In political systems with higher levels of corruption or less political stability, politicians, bureaucrats, and private contractors may have a greater vested interest in
Local Water Politics

preventing reform to urban water management. This is due in part to the fact that water reform has low political benefits compared to reform in other utilities such as energy (Shirley and Menard 2002).

Even so, a growing commitment to a decentralized approach is evident at all levels of water governance, from international financial institutions to local water agencies and the publics that are taking advantage of new opportunities for participation and local control. This is likely to produce a politics of water that is more variable than in the past, across space and over time, reflecting the diversity of local values and local water resources. The allocation of water resources is an inherently political activity that is becoming more conflictual as environmental and fiscal challenges multiply. Fragmentation of policy responsibility can heighten responsiveness to local conditions but complicate efforts at collective action. How we design our local institutions, and the incentives that higher levels of government provide for directing local decisions, will help determine whether the new approach produces a more sustainable and resilient water future.

References


Local Water Politics


Local Water Politics


Local Water Politics


Local Water Politics


Local Water Politics


Local Water Politics


Notes:

(1) Reliable data comparing countries’ household water costs do not exist, but the US Environmental Protection Agency’s affordability threshold for water and wastewater bills combined is lower than the threshold set by the United Nations Development Program for water bills alone.

(2) Calculated from US Census Annual Survey of Government Finances data, compiled by the Congressional Budget Office (2010).

(3) The states are Arkansas, California, Connecticut, Florida, Hawaii, Indiana, Maryland, Massachusetts, Minnesota, Montana, New York, North Carolina, South Dakota, Virginia, Washington, and Wisconsin.