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Editorial

Transforming Rural Water Governance: Towards Deliberative and Polycentric Models?

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In recent years, many countries have experienced a formal shift from command-and-control and prescriptive management of natural resources towards policy making and planning processes that build on collaboration, negotiation and deliberation among policy-makers, scientists and local stakeholders (Bouwen and Tallieu, 2004; Warner, 2006; Ansell and Gash, 2008). Public participation in environmental decision-making and implementation has become part and parcel of the environmental governance rhetoric in many industrialised countries (Sabatier et al., 2005; Messner et al., 2006; Cronin and Ostergren, 2007; Ferreyra et al., 2008; Medd and Marvin, 2008; Marshall, in press). In emerging economies and developing countries 'participatory environmental governance' has also been discussed as an alternative to centralised, top-down approaches towards natural resource conservation and management (e.g. Gupte and Bartlett, 2007; Neaera Abers, 2007; Huang et al., 2009). At the international policy level, the Rio Declaration and the Agenda 21 (1992), the World Summit on Sustainable Development (WSSD) Johannesburg Plan of Implementation (2002), and the 1998 UN Economic Commission for Europe (UNECE) "Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters" (the so-called Aarhus Convention) have been the most important drivers for enhanced citizen participation in environmental governance.

Principle 10 of the Rio Declaration is probably the most well-known statement on participatory environmental governance:

Environmental processes are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities (...) and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings (...) shall be provided (UNED, 1992: Principle 10)

After the Rio Conference many countries have enhanced their efforts to engage the public in national, regional and local environmental governance. Yet, diverging perspectives and experiences exist on how best to put the concept into practice and there is often a gulf between policy rhetoric and reality on the ground. One of the reasons is that public participation is a contested concept, "a notion that is virtually beyond consensus on meaning and use" (Sneddon and Fox, 2007). At the turn of the millennium, a growing number of sociologists and political scientists accused the practitioners of participatory approaches of ignoring the complexity of power structures both within local communities and wider governance regimes and of overestimating the expected benefits of devolving decision-making to lower levels. One group of scholars even warned against a "new tyranny" of participation (Cooke and Kothari, 2001). Addressing the question of political legitimacy of participatory approaches Guijt and Shah (1998)

lamented that "participatory processes have been increasingly approached as technical, management solutions to what are basically political issues". Critics of depoliticised forms of public participation maintained that the focus on techniques risked the disengagement of participation from its original political content of empowering the marginalised and giving a voice to non-state actors. It was stated that in avoiding wider issues of decentralisation and good governance, participatory approaches proved highly compatible with top-down planning systems (Mosse, 2001) and in many instances solidified power differentials and inequitable access to resources. Yet, notwithstanding the fierce critique against some forms of disengaged, tool-driven and depoliticised participation, the interest in participatory approaches to natural resource management and rural development has shown no signs of waning. The backlash caused by the Participation: the new tyranny? collection edited by Cooke and Kothari (2001) was quickly followed by a new volume entitled Participation: from tyranny to transformation (Hickey and Mohan, 2004), which concluded that "there are good reasons for remaining optimistic concerning the potential of participatory approaches to development and governance to effect genuine transformations at a range of levels" (Hickey and Mohan, 2004). Yet, the same authors conceded that "the conditions within which participation can be transformative, and the forms of politics that underpin such approaches, need to be closely delineated and analysed" (Hickey and Mohan, 2005).

With regard to participatory environmental governance, the first years of the 21st century have seen a growing convergence between the natural resource literature on public participation and deliberative democratic theory (e.g. Meadowcroft, 2004; Baber and Barlett, 2005; Parkins and Mitchell, 2005; Andersson and Ostrom, 2008; Ansell and Gash, 2008). This "deliberative turn in natural resource management", as Parkins and Mitchell (2005) have coined it, signified a shift from the emphasis on outcomes to a stronger focus on processes of collaborative resource governance. In response to the critique of episodic and symbolic forms of democratic participation, deliberative democratic theorists are concerned with "debate and discussion aimed at producing reasonable, well-informed opinion in which participants are willing to revise preferences in light of discussion, new information, and claims made my fellow participants" (Chambers, 2003). Democratic decentralisation processes can also lay the foundation for more institutionalised forms of collaborative resource governance (Batterbury and Fernando, 2006). Ribot (2002) claims that

the current shift from participatory to decentralized natural resource management approaches is a shift from externally orchestrated direct forms of democratic inclusion to representative forms of democracy under elected local authorities. This shift represents a move from ad hoc and experimental mobilization and inclusion techniques to more institutionalized, more easily replicated, and potentially more sustainable forms of participation through local democracy.

In the western hemisphere, deliberative democracy has been informed by Habermas' *Theory of communicative action*, which provided the theoretical foundations of public participation as an instrument to enlarge the democratic basis of decision-making (Habermas, 1988). His major concerns are that the growing reliance on technological and scientific rationale in policy-making bypasses public involvement and its potential to include a wide range of civil society actors into decision-making processes. To cope with this crisis of governance, he suggests increasing citizen participation in the political sphere through "communicative action". His concept of the "ideal speech" outlines the necessary prerequisites to guarantee an unbiased and equitable discourse (Habermas, 1988, 1998; cf. Messner et al., 2006). Yet, the socio-political conditions for communicative discourse and action are not always favourable, and the normative stance of Habermas' theory does not provide much guidance on how to analyse actual decision-making processes in public participation arrangements. Its underlying assumptions of relative equality, absence of power asymetries and shared cultural background of the actors involved in deliberative approaches have raised questions as to whether deliberative environmental governance is an ideal to which only western-style democracies can aspire (Gupte and

¹ For an overview of this critique, see e.g. Neef (2003).

Bartlett, 2007). Following the logic of deliberative democratic theorists, inclusive forms of public participation would appear elusive in many developing countries and emerging economies where the scope for communicative discourse and action is limited by patron-client structures, cultural heterogeneity, and severe power imbalances. Yet, there are also numerous examples of pseudo-democratic and manipulative processes in collaborative environmental governance in western democracies (e.g. Adams et al., 2005, for the case of the USA), and the EU member states' responses to the deliberative ideal of the European Water Framework Directive have also been mixed, pointing to cultural and historical factors as important co-determinants of the scope for deliberative spaces in environmental governance (e.g. Moss, 2004; Enserink et al., 2007; Neef, 2008).

Participatory approaches to environmental governance in many developing and transformation countries are still confined to national pilot projects and external donor assistance, e.g. in testing approaches to polycentric river basin management or devolution of irrigation management to local water user groups. At the heart of this problem of non-institutionalised participation is often policy-makers' and technocrats' deep distrust of local communities' capacity to contribute meaningfully to environmental governance. This view is particularly prevalent when it comes to the management of scarce water resources. It is widely believed that water is overused as a consequence of the inability of local communities to establish viable regulations that would guarantee a more efficient use of water resources. This perception is often used as an argument for sustained or enhanced state control of the management of water resources. Common NGO rhetoric, on the other hand, holds that local communities share common values about water rights and management, that communal management guarantees equal access to water resources and that all community members act according to locally established rules of water management. This 'ethno-romantic' position tends to neglect power differentials within local communities that can lead to strong internal disparities in resource access and control (cf. Falk et al., this issue).

While community-based institutions may be well suited to manage natural resources confined to a small locality with well-defined boundaries, the interconnectedness of communities and stakeholders in a watershed or river basin context calls for approaches that extend beyond the scale of village territories, district boundaries and sometimes even national borders. A major question is then how far more institutionalised and multi-layered forms of public participation in environmental governance of watersheds integrate the various types of community-based natural resource management (CBNRM) or whether they create a parallel universe that actually undermines local communities' or resource management groups' efforts to manage and protect natural resources (cf. Neef, 2008). This is particularly relevant for the analysis of Integrated Water Resources Management (IWRM) arrangements where citizen participation is one of the core elements. The scale of IWRM often extends over large geographic areas (mountain watersheds or even transboundary river basins), which questions the capacity of such multi-stakeholder arrangements to become a platform for shared decision-making. In many cases, IWRM has become a purely managerial exercise, similar to the blueprint participatory processes in rural development. In the editorial preamble of this journal Molle et al. (2008) state that

the massive promotion of IWRM by mainstream institutions (...) has contributed to inspire a new generation of professionals and to disseminate new ideas of dealing with natural resources and complex social settings. Yet, although the concept of IWRM holds the promise of reconciling goals of economic efficiency, social equity and environmental sustainability it is becoming clear that there is no consensus on how to weigh these priorities, or on how best to ensure their realization.

The second principle of the Dublin Statement on Water and Sustainable Development adopted in 1992 – which emphasises a participatory approach to water management that includes users, planners and policy-makers at all levels and ensures that decisions are taken at the lowest appropriate level possible – does also not provide much guidance on how to achieve this ambitious goal. Hence, one of the major challenges for IWRM remains to "reconnect the multiple and diverse spatialities of ecological,

institutional and network space at the regional scale with the practices than can more effectively and rapidly promote action at the local level" (Medd and Marvin, 2008).

The concept of polycentric governance provides a useful tool to understand many of the current transformation processes within water governance regimes. The institutional theory of polycentricity was first developed by V. Ostrom et al. (1961) for the study of collective goods in metropolitan areas. It was only recently that the concept of polycentricity gained currency both as a theoretical construct and an analytical framework of multi-scale and multi-stakeholder water resource governance systems in non-urban areas, for instance in large river basin contexts (e.g. Molle et al., 2007) and in the "regional delivery model" in Australia (e.g. Marshall, in press; see also O'Toole et al., this issue). Polycentric governance regimes have been described by Andersson and E. Ostrom (2008) as "complex, adaptive systems without one central authority dominating all of the others in regard to all policy arenas". While Blomquist and Schlager (2005) appear to regard integrated watershed management and polycentric forms of governance as inherently antagonistic concepts, other authors maintain that polycentric governance — while being challenging in its institutional complexity — holds the potential for experimenting with new rules of the game, providing spaces for integrating expert and lay knowledge in managing natural resources and creating room for manoeuvre for a broader range of non-state actors (Ostrom, 2005; Merrey et al., 2007; Molle et al., 2007).

I argue that polycentricity and deliberation should be viewed in a configurative sense. Polycentricity may be seen as the number and density of nodes (actors) and links (interactions) in a resource governance regime, while deliberation refers to the power relations among these actors and the frequency, quality and depth of interactions, i.e. the modes of communication and decision-making, negotiation and coordination mechanisms, information flows, and approaches to mediation and conflict resolution.

Some scholars have argued that polycentric networks constitute self-organising forms of governance (e.g. Rhodes, 1997) and have predicted a waning role of the state in polycentric and deliberative models of environmental governance. Yet, opponents of this school of thought have presented a strong argument for 'bringing the state back in', due to its allegedly important role in coordination, provision of information, adjudication, and resourcing of governance arrangements (Bell and Quiggin, 2008; Bell and Hindmoore, 2009). This form of meta-governance – or government of governance – is portrayed as a major regulatory instrument to ensure accountability, transparency and equity and as an alternative to both fully centralised systems and completely decentralised governance regimes (Bell and Park, 2006; Wilder and Romero Lankao, 2006).

Scientists have an important role to play in analysing the historical, political, social and institutional conditions under which deliberative and polycentric models of environmental governance are conceived, put into practice and contested by the various stakeholders. The papers in this special section of Water Alternatives examine such transformations of rural water governance, presenting a diversity of cases from both developing/transformation countries (Namibia, Tajikistan, Kyrgyzstan) and industrialised nations (USA, Australia). They scrutinise these cases from different perspectives: in her cross-country comparison of post-Soviet water governance in Tajikistan and Kyrgyzstan Sehring uses concepts grounded in historical and sociological institutionalism. She demonstrates how path dependencies limit the effectiveness of donor-driven water policy reform as Soviet and pre-Soviet institutional structures and behavioural patterns in these neo-patrimonial states continue to shape actors' responses to externally imposed changes in water governance, namely the introduction of water user associations and irrigation service fees. Drawing on the concept of 'institutional bricolage',² Sehring shows how local actors selectively adopt new rules of water management that appear compatible with their own social contexts and perceived economic opportunities (e.g. water fees and transfer of allocative responsibilities), while they discard others - such as deliberative democratic principles – that are in opposition to the predominant clientelistic patronage system in these hybrid

² On the definition of 'institutional bricolage' see e.g. Cleaver (2002) and Cleaver and Franks (2005).

authoritarian regimes. Hence, the actual outcome of water institutional reforms appears to be an institutional amalgamation of pre-Soviet, Soviet and post-Soviet elements rather than a functioning polypolistic governance regime that adheres to universal principles of good water governance.

Parker, Moore and Weaver follow a cultural anthropology tradition in their case studies of participatory watershed management in Ohio's Sugar Creek Watershed, inhabited largely by traditionalist Amish farming families. The authors show that deliberative approaches in multistakeholder settings can successfully balance local interests and environmental concerns when they build around existing social networks, established communication patterns and a common purpose. An important finding is that informal collaborative arrangements are often preferred by local actors over formalised forms of public participation. A major conclusion from one of the four case studies (the North Fork Task Force) is that policy-driven and 'representative' public participation – as opposed to deliberative forms – can lead to episodic and pseudo-democratic forms of citizen engagement that are, in the long run, met with passive resistance, distrust and/or participation fatigue on the part of the local stakeholders.

Taking the scale of analysis to a regional level *O'Toole, Wallis and Mitchell* look at communication and decision-making processes in place-based knowledge networks in south-west Virginia, Australia and outline the features of a novel "three network communication model". Against the background of Australia's "regional delivery model" (cf. Marshall, in press) the authors discuss the relative failure of a web-based multi-stakeholder platform that was meant to become a communication tool linking researchers, local communities, water management officials and the business sector. Their findings demonstrate that internet-based communication as a stand-alone tool is not enough to foster network thinking in polycentric regional water management; it cannot replace face-to-face dialogue and create institutional trust as crucial elements of deliberative environmental governance. At best, it can be part of a multi-layered and multi-method approach that aims at stimulating people from various sectors to engage in knowledge exchange and concerted action with regard to sustainable water governance. The results of the paper also raise questions about the appropriate scale of managing water-related knowledge and information networks and the potential role of network brokers in motivating the various actors to play a more active role in cross-sectoral communication.

The final paper by Falk, Bock and Kirk shifts the focus on the analysis of the socio-economic implications of post-Apartheid rural water policy reforms in Namibia, aiming at a more decentralised water governance regime and emphasising principles of community participation, subsidiarity and costrecovery. They attribute the relative success of the recent reforms to the fact that the Namibian government's approach to decentralised water management has incorporated existing institutions (e.g. traditional authorities as legitimate representatives of local water users) that ensure local enforcement of water regulations. While the state retains some degree of control and assumes a role as facilitator in an increasingly polycentric water governance regime, operational and monitoring functions have been largely devolved to the local level. Yet, the system needs sustained government support in places where customary water management institutions had previously been undermined by the discriminatory and paternalistic policies of the pre-independence era. The success of polycentric water governance – as expressed in more efficient water use - then depends on the right mix of statutory and customary enforcement mechanism. The article also demonstrates the differential impact of water fees on rural livelihoods. The authors argue that in water management systems aimed at full cost-recovery, the poor tend to be overcharged. This calls for government action towards developing social transfer mechanisms in the framework of a pro-poor water policy.

All four contributions in this themed section provide evidence that the analysis of transformation processes in rural water governance regimes needs to be historically and culturally grounded and requires a multi-faceted perspective to understand the conditions that shape their trajectories and underlying path dependencies and disjunctures. The studies suggest that evolving polycentric governance regimes alter the institutional setup of water management, change the responsibilities and capabilities of state and non-state actors, and shift power and resources among these actors in various

ways; yet, to deepen the deliberative spaces available for a broader range of actors and to enhance access for the most marginalised groups of society while guaranteeing a more efficient and sustainable use of water resources will remain a major challenge.

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REFERENCES

- Adams, J.; Kraft, S.; Ruhl, J.B.; Lant, C.; Loftus, T. and Duram, L. 2005. Watershed planning: pseudo-democracy and its alternatives The case of the Cache River Watershed, Illinois. *Agriculture and Human Values* 22(3): 327-338.
- Andersson, K.P. and Ostrom, E. 2008. Analyzing decentralized resource regimes from a polycentric perspective. *Policy Science* 41(1): 71-93.
- Ansell, C. and Gash, A. 2008. Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory* 18(4): 543-571.
- Baber, W.F. and Barlett, R.V. 2005. *Deliberative environmental politics: Democracy and ecological rationality.* Cambridge, MA, USA: Cambridge University Press.
- Batterbury, S.P.J. and Fernando, J.L. 2006. Rescaling governance and the impacts of political and environmental decentralization: An introduction. *World Development* 34(11): 1851-1863.
- Bell, S. and Hindmoor, A. 2009. *Rethinking governance: Bringing the state back in.* Cambridge, MA, USA: Cambridge University Press.
- Bell, S. and Park, A. 2006. The problematic metagovernance of networks: The politics of water reform in New South Wales. *Journal of Public Policy* 26(1): 63-83.
- Bell, S. and Quiggin, J. 2008. The limits of markets: the politics of water management in rural areas. *Environmental Politics* 17(5): 712-729.
- Blomquist, W. and Schlager, E. 2005. Political pitfalls of integrated watershed management. *Society and Natural Resources* 18(2): 101-117.
- Bouwen, R. and Taillieu, T. 2004. Multi-party collaboration as social learning for interdependence: Developing relational knowing for sustainable natural resource management. *Journal of Community and Applied Social Psychology* 14(3): 137-153.
- Chambers, S. 2003. Deliberative democratic theory. *Annual Review of Political Science* 6 (June 2003): 307-326. Cited in Parkins and Mitchell (2005).
- Cleaver, F. 2002. Reinventing institutions: Bricolage and the social embeddedness of natural resource management. *The European Journal of Development Research* 14(2): 11-30.
- Cleaver, F. and Franks, T. 2005. How institutions elude design: River basin management and sustainable livelihoods. BCID Research Paper No. 12. Bradford, UK: University of Bradford.
- Cooke, B. and Kothari, U. (Eds). 2001. Participation: the new tyranny? London, UK and New York, USA: Zed Books.
- Cronin, A.E. and Ostergren, D.M. 2007. Democracy, participation, and native American tribes in collaborative watershed management. *Society and Natural Resources* 20(6): 527-542.
- Enserink, B.; Patel, M.; Kranz, N. and Maestu, J. 2007. Cultural factors as co-determinants of participation in river basin management. *Ecology and Society* 12(2): 24, www.ecologyandsociety.org/vol12/iss2/art24
- Ferreyra, C.; de Loë, R.C. and Kreutzwiser, R.D. 2008. Imagined communities, contested watersheds: challenges to integrated water resources management in agricultural areas. *Journal of Rural Studies* 24(3): 304-321.
- Gupte, M. and Bartlett, R.V. 2007. Necessary preconditions for deliberative environmental democracy? Challenging the modernity bias of current theory. *Global Environmental Politics* 7(3): 94-106.
- Guijt, I. and Shah, M.K. 1998. Waking up to power, conflict and process. In Guijt, I. and Shah, M. (Eds), *The myth of community: Gender issues in participatory development*, pp. 1-23. London, UK: Intermediate Technology Publications.
- Habermas, J. 1988. *Theorie des kommunikativen Handelns [Theory of Communicative Action]*. Vol. 1 and 2, fourth edition. Frankfurt a.M.; Germany: Suhrkamp.
- Habermas, J. 1998. The inclusion of the other: Studies in political theory. Cambridge, MA, USA: MIT Press.

Hickey, S. and Mohan, G. (Eds). 2004. *Participation: from tyranny to transformation? Exploring new approaches to participation in development*. London, UK and New York, USA: Zed Books.

- Hickey, S. and Mohan, G. 2004. Towards participation as transformation: Critical themes and challenges. In Hickey, S. and Mohan, G. (Eds), *Participation: From tyranny to transformation?* pp. 3-24. London, UK and New York, USA: Zed Books.
- Hickey, S. and Mohan, G. 2005. Relocating participation within a radical politics of development. *Development and Change* 36(2): 237-262.
- Huang, Q.; Rozelle, S.; Wang, J. and Huang, J. 2009. Water management institutional reform: A representative look at northern China. *Agricultural Water Management* 96(2): 215-225.
- Marshall, G.R. in press. Polycentricity, reciprocity, and farmer adoption of conservation practices under community-based governance. *Ecological Economics* (2009).
- Meadowcroft, J. 2004. Deliberative democracy. In Durant, R.F.; Fiorino, D.J. and O'Leary, R. (Eds), *Environmental governance reconsidered: Challenges, choices, and opportunities*, pp. 183-217. Cambridge, MA, USA: MIT Press.
- Medd, W. and Marvin, S. 2008. Making water work: Intermediating between regional strategy and local practice. *Environment and Planning D: Society and Space* 26(2): 280-299.
- Merrey, D.J.; Meinzen-Dick, R.; Mollinga, P. and Karar, E. 2007. Policy and institutional reform: The art of the possible. In Molden, D. (Ed), *Water for food, water for life: A comprehensive assessment of water management in agriculture*, pp. 193-231. London, UK: Earthscan and Colombo, Sri Lanka: International Water Management Institute (IWMI).
- Messner, F.; Zwirner, O. and Karkuschke, M. 2006. Participation in multi-criteria decision support for the resolution of a water allocation problem in the Spree River basin. *Land Use Policy* 23(1): 63-75.
- Molle, F.; Mollinga, P. and Meinzen-Dick, R. 2008. Water, politics and development: Introducing Water Alternatives. *Water Alternatives* 1(1): 1-6.
- Molle, F.; Wester, P. and Hirsch, P. 2007. River basin development and management. In Molden, D. (Ed), Water for food, water for life: A comprehensive assessment of water management in agriculture, pp. 585-625. London, UK: Earthscan and Colombo, Sri Lanka: International Water Management Institute (IWMI).
- Moss, T. 2004. The governance of land use in river basins: Prospects for overcoming problems of institutional interplay with the EU Water Framework Directive. *Land Use Policy* 21(1): 85-94.
- Mosse, D. 2001. 'People's knowledge', participation and patronage: Operations and representations in rural development. In Cooke, B. and Kothari, U. (Eds), *Participation: The new tyranny?* pp. 16-35. London, UK and New York, USA: Zed Books.
- Neaera Abers, R. 2007. Organizing for governance: Building collaboration in Brazilian river basins. *World Development* 35(8): 1450-1463.
- Neef, A. 2003. Participatory approaches under scrutiny: Will they have a future? *Quarterly Journal of International Agriculture* 42(4): 493-501.
- Neef, A. 2008. Lost in translation: The participatory imperative and local water governance in North Thailand and Southwest Germany. *Water Alternatives* 1(1): 89-110.
- Ostrom, E. 2005. Understanding institutional diversity. Princeton, USA: Princeton University Press.
- Ostrom, V.; Tiebout, C. and Warren, R. 1961. The organization of government in metropolitan areas. *American Political Science Review* 55(4): 831-942.
- Parkins, J.R. and Mitchell, R.E. 2005. Public participation as public debate: A deliberative turn in natural resource management. *Society and Natural Resources* 18(6): 529-540.
- Rhodes, R. 1997. The new governance: Governing without government. *Political Studies* 44(4): 652-667. Cited in Bell and Quiggin (2008).
- Ribot, J. 2002. *Democratic decentralization of natural resources: Institutionalizaing popular participation*. Washington, DC, USA: World Resources Institute.
- Sabatier, P.A.; Focht, W.; Lubell, M.; Trachtenberg, Z.; Vedlitz, A. and Matlock, M. (Eds), *Swimming upstream:* Collaborative approaches to watershed management. Cambridge, MA, USA and London, UK: The MIT Press.
- Sneddon, C. and Fox, C. 2007. Power, development, and institutional change: Participatory governance in the lower Mekong Basin. *World Development* 35(12): 2161-2181.
- UNED 1992. Report of the United Nations Conference on Environment and Development. Rio de Janeiro, Brazil: United Nations Conference on Environment and Development.
- Warner, J.F. 2006. More sustainable participation? Multi-stakeholder platforms for integrated catchment management. *Water Resources Development* 22(1): 15-35.

Wilder, M. and Romero Lankao, P. 2006. Paradoxes of decentralization: Water reform and social implications in Mexico. *World Development* 34(11): 1977-1995.