

**Provided for non-commercial research and educational use only.  
Not for reproduction or distribution or commercial use.**



This article was originally published by IWA Publishing. IWA Publishing recognizes the retention of the right by the author(s) to photocopy or make single electronic copies of the paper for their own personal use, including for their own classroom use, or the personal use of colleagues, provided the copies are not offered for sale and are not distributed in a systematic way outside of their employing institution.

Please note that you are not permitted to post the IWA Publishing PDF version of your paper on your own website or your institution's website or repository.

Please direct any queries regarding use or permissions to [waterpolicy@iwap.co.uk](mailto:waterpolicy@iwap.co.uk)

# To the last drop: the political economy of Philippine water policy

Rosalie Hall<sup>a,\*</sup>, Joy Lizada<sup>a</sup>, Maria Helen Dayo<sup>b</sup>, Corazon Abansi<sup>c</sup>,  
Myra David<sup>b</sup> and Agnes Rola<sup>b</sup>

<sup>a</sup>*College of Arts and Science, Division of Social Sciences, University of the Philippines Visayas, Miagao, Iloilo 5023, Philippines*

*\*Corresponding author. E-mail: rosaliarcalahall@pinoymac.org*

<sup>b</sup>*Institute for Governance and Rural Development, College of Public Affairs and Development, University of the Philippines, Los Baños College, Laguna 4031, Philippines*

<sup>c</sup>*Institute of Management, University of the Philippines Baguio, Governor Center Road, Baguio City, Benguet 2600, Philippines*

---

## Abstract

This paper examines the conflicts arising from the layered legal treatment, fragmentation and multiplicity of institutions involved in Philippine water governance. Using a thematic analysis of national legislation, a survey of 299 water managers in 10 provinces, and five cases illustrating local contestations, the paper tracks the diversification of formal institutional stakeholders which have been found to lack coherence and inter-agency connectivity. Water managers are not grounded in policy shifts, have little understanding of formal water rights and settle local conflicts with little reliance on formal mechanisms. The select cases reveal that water rights provide weak currency in local contestations.

*Keywords:* Philippines; State water agencies; Water conflicts; Water laws; Water rights

---

## 1. Water and contestation

Water as a policy area in the Philippines exhibits multi-layered complexity and fragmentation. Multiple institutions with hierarchical areas of coverage, varying mandates (regulatory and customary) and sectoral representations inhabit its universe (Malayang, 2004). Participants include state agencies and non-state actors (non-governmental organizations (NGOs) and civil society), but their ability to influence outcomes is highly uneven. The power of each actor (i.e. their ability to influence outcomes) is in turn determined by their mandate, resources and public recognition of their legitimacy. There are 30 agencies (national and local government unit (LGU) based) managing the water resources of the Philippines (Paragas, 2012). Their regulatory mandates cover water quality and quantity, water resources

doi: 10.2166/wp.2015.150

and water services. Institutional concerns, as expected, are also varied: water sanitation and quality, watershed management, integrated area development, data collection, flood management, irrigation, hydropower, water supply, research and cloud seeding. While not all are present at every locality, the sheer number of potential actors and the assumed plurality of mandates (no mandate is deemed a priority over the others) make for serious political inertia in terms of getting the job done. Elazegui (2004) highlights the high cost of coordination given this set up and that some national agencies have no field presence in many localities, that the Environment Management Officer is an optional position for LGUs, and that there is no nationally legislated funding scheme for water resource management. As such, there is no ‘singular’ water policy to speak of but highly localized and perhaps politically contingent water governance schemes that vary from one area to the next.

This paper takes off from the premise that the state and its agents are privileged over informal, societal norm-based arrangements when it comes to decisions on water source and use. Where they are present, water laws confer authority (regulatory, supervisory or rights granting) to government agencies and interstate bodies. A state-based tenure of water bodies makes state rights pre-eminent and restricts or limits alternative methods for collective management of water as a common pool resource. In a country with a considerable informal economic sector (i.e. self or informal methods of water sourcing and provisioning), the state’s march toward formalization through water laws may not necessarily be welcome.

Water conflicts are public contestations of this assumed state privileging. Contestations over water as an area issue emerge when rights are not clearly defined, which in turn reinforces socio-economic marginalization of population groups and produces inequality or deprivation of benefits (Araral, 2010, p. 10). In the Philippines, more local contestations are expected given weak state power (Abers & Keep, 2009) and fragmentation (Teisman & Edelenbos, 2011). An indication of this weakness is the government’s failure to enforce regulation on groundwater extraction in Manila owing to the overall shortcomings in resources and capacity of local governments and regulatory agencies (Araral & Wang, 2013a, p. 439). Deficits in accountability and transparency in decision-making, coupled with the decentralized and layered (local, regional, national) feature of government make any solution to water problems necessarily beyond one government layer, unit or outside government as a whole. In their review of research on water governance, Araral & Wang (2013b) noted political economic approaches as highlighting conflicts arising from the distribution of benefits from water reforms. The review mentions factors such as institutional determinants; presence of robust support to government by winning groups (those that stand to benefit); the power and influence of water resource agencies in effecting property and price regime changes; and the effect of informal rules, roles and practices in shaping local water organizations.

How political mobilization takes place, how the issue is defined and brought before institutions for resolution (Dewulf et al., 2011), and the way groups build alliances and develop strategies to pursue interest whether by informal systems of social communication or within legally established venues (Jones et al., 1998; Ostrom, 2000) lie at the core of the politics of water. Reforms in formal institutional arrangements around water rights (where these are not clearly defined or enforceable), decentralization in irrigation, and privatization as well as regulation of urban water supply are questions of political economy, for which negotiations and bargains are key (Araral, 2010). The choice of institutional designs for agriculture and urban water provisioning, as well as the timing and sequencing of reforms, are a function of interest alignment between election-sensitive politicians, articulate and mobilized user-groups, and performance-attentive agents.

Studies on water reforms in Asia reveal parallel features of legal and policy fragmentation in other countries. Comparing water governance for 17 countries in Asia based on income levels between

two periods, Araral & Wang (2013a, pp. 12–13) noted the variety of multiple use rights among many countries (common or state property, multiple rights, riparian system, appropriative rights), with no country reporting the use of water permits and licensing as the dominant format of surface water rights. There is considerable decentralization in terms of irrigation management, but self-provisioning by groundwater extraction continues at worrying levels given cheap water pump imports. Water pricing remains heavily subsidized by the state, with many politicians refusing to impose water prices at cost recovery. The Philippines garnered significant improvements only in two indicators of water governance reform from 2002 to 2010 (the legal distinction between water sources and decentralization) owing to stronger regulatory water agencies and strong roles for river basin organizations. This modest showing suggests that governance reforms are happening in the Philippines, albeit on an incremental basis.

New water laws and institutions come into conflict with pre-existing and traditional governance structures and mindsets (Hirsch, 2006, p. 197). Reforms are seen at the grassroots level as hegemonic impositions restricting local communities' water access. In Thailand, new water laws entrenched state agency control on the community's access to local resources. The widespread notion that water for irrigation is a common resource undermines attempts by the state to impose a user cost. Many NGOs and communities oppose water pricing as a tax on the poor. Decentralization in the case of Thailand is seen more as an expansion of state control downward, rather than local empowerment. In Vietnam, provincial governments continue to be weak in legal and administrative capabilities pertaining to irrigation; allowing therefore the central Ministry of Agriculture and Rural Development to take over where disputes arise and on trans-boundary operations (Turrall & Malano, 2002, p. 192). River basin organizations are also staffed with central government appointees and lack wider representation from water users (except electricity companies) (Hirsch, 2006, p. 195). Limits on participation in river basin organizations are also evident in Cambodia. Communities attend meetings but consider directives as top down and state representatives as threatening (CDRI, 2008). Water use organizations in Uzbekistan feature the same pathologies. They are organized top down by state water management organizations and seen by users as an imposition on them (Abdullayev et al., 2008). The shift to hydrographic units (e.g. river basin based) from territorial water management institutions has generated conflict between water users associations. Such a shift was incompatible with access that is norm-based and primarily dependent on land ownership.

Water conflict dynamics carry a strong external–internal dimension as reforms find a strong push from bilateral aid agencies or by international financial institutions that underwrite reform initiatives (Budde & McGranahan, 2003, p. 91; Hirsch, 2006; Wu & Malaluan, 2008, p. 207). The trend toward integrated water resources management (IWRM) at the interstate level and neoliberal or pro-market measures at country level are often part of the bundle of adjustments attached to loans and grants. External arrangements such as the Mekong River Commission commit countries to a platform of reforms including decentralization, an enhanced role for civil society, a regulatory role for the state, private sector participation, a whole of government approach and more concrete service delivery and target institutions to do it (e.g. new water ministries or agencies) (Hirsch, 2006, p. 18). These reform packages, buttressed by a widespread *consensus* on these integrative and neoliberal approaches among external actors, state politicians and bureaucrats, come into conflict with positions of local communities and sectors at the losing end of the policy changes (Lebel et al., 2005, p. 18). In irrigation, the perverse incentives inherent in the relationship between the Philippine National Irrigation Agency (NIA) and external donors mitigate against reform (Araral, 2008b). The NIA under-invests in new infrastructure

and rehabilitation in order to ensure a steady stream of revenues, while donor agencies turn a blind eye to these performance gaps to maintain their loan portfolios.

The privatization of urban water supply, touted as a panacea for problems of inefficiencies in service and coverage likewise reveal inherent biases toward big solutions. [Budds & McGranahan \(2003\)](#) see foreign private interest in water and sanitation as declining overall and tending to favor cities with large populations (also preferred locales of international development agencies) and whose mode of privatization does not require investment obligations. [Araral \(2009\)](#) similarly argue that privatizing urban water provisioning does not necessarily result in an improved fiscal situation for the government, as private investments are not likely to figure prominently in meeting Millennium Development Goals targets, and that governments will continue to provide contract guarantees for privatization contracts. To these authors, there is inherent bias in privatization initiatives against low-income areas as they are not attractive markets. Rather than public sector or private water provision, [Budds & McGranahan \(2003\)](#) point to the more important role played by small-scale providers, community level cooperatives and NGOs. [Araral \(2008a\)](#) suggests the need for more hybrid solutions such as the reforms carried out for the Phnom Penh Water and Sanitation Authority (PPWSA), which married politician accountability to urban voters (mobilized to demand for water access for a fee) and performance-based metrics of the water agency anchored on cost-recovery water pricing.

The Philippines experience of urban water privatization for Metro Manila points to the importance of bringing urban poor communities on-board toward meeting the private concessionaires' performance goals. For [Wu & Malaluan \(2008, p. 223\)](#) and [Araral & Wang \(2013a, p. 446\)](#), Manila Water's operational initiative, Tubig sa Barangay (Water for Communities) not only enabled the company to meet its goals of reducing no-revenue water through self-managed water districts among informal communities, it also earned the company legitimacy and support from the urban poor against opponents of privatization. Community support was also found critical in the process of reforming the PPWSA in Cambodia. By articulating their willingness-to-pay and petitioning politicians for access and better service, the urban poor enabled conveyance of credible commitments between politician-principals and the PPWSA-agent ([Araral, 2008a, p. 542](#)).

The informal nature of water economy in many developing countries makes integration-oriented reforms unimplementable ([Shah & Van Koppen, 2006, p. 3416](#)). Many poor agricultural and rural communities in the Indian subcontinent have been securing their water without concrete government mechanisms. Small-scale farmers self-supply from irrigation wells and are not in touch with government bureaucracy. Rural people get their water from domestic wells and also have no contact with water agencies in the public sector. Formalization of the water economy comes inevitably as communities become more urbanized; but imposing IWRM reforms in a country where water ownership and management is predominantly household managed or owned points to the impracticality of such reforms. In Sri Lanka, water reforms met with opposition from communities, threatened water access by the poor and touched only a small segment of the water economy. [Molle \(2002, p. 218\)](#) points to a similar phenomenon in Thailand where farmers self-supply by pumping water from wells, leading to the irrelevance of water organizations supposedly controlling surface water abstraction.

This paper maps the terrain of state/government authority, mandate and economic rationale in the national water laws in the Philippines. From this review, potential flash points are identified between various actors (national government agencies, local governments, water districts, private companies, communities). The paper also describes the result of the survey of 299 local water managers, their grounding in water laws and the conflicts experienced by their respective water organizations. Five

cases of local water conflicts are presented to illustrate the gaps and disconnects between laws, and how actors utilize various platforms and mechanisms to forward their positions (see [Boxes 1–4](#)).

## **2. Locating the state, market and local players in Philippine water law**

The Philippines has a wide array of legislations and decrees pertaining to surface water, which depict changes in the government mindset about this policy area. The drive toward formalization (the creation of legal, binding instruments and specific institutions tasked to implement legally prescribed rules) coincided with the Marcos dictatorship's political agenda of centralizing power and neutralizing a virulent peasant unrest. Following the democratic transition in 1986, decentralization efforts coupled with new assertions from indigenous populations and environmental concerns shifted legal focus anew. Laws connecting surface water with forest, pollution, health safety and supply shortage emerged and, consequently, so did more inter-agency bodies with legal mandates. The end result is a multi-layered, complex and fragmented system with different platforms and diverse actors.

The following section presents a review of national laws pertaining to water: Presidential Decree 1067 Water Code (1976); Presidential Decree 198 Provincial Water Utilities Act (1973); Presidential Decree 522 (1974); Republic Act 7586 National Integrated Protected Area System Act (1992); Republic Act 8041 National Water Crisis Act (1995); Republic Act 8371 Indigenous People's Rights Act (IPRA) (1997); and Republic Act 9275 Clean Water Act (2004). In addition, the implementing rules and regulations (IRR) of the Water Code (as of 2005) were reviewed. The laws are examined according to the following themes: (1) legal treatment of water resources (ownership, rights and distinction between types – surface or ground – and sectors/uses); (2) property rights (basis, i.e. permits/license/franchise for collection and distribution; private rights granted to individual versus collective; whether rights can be leased, transferred, recalled by granting authority; right to water quality) and their enforcement; (3) legalized inter-sectoral prioritization and basis for prioritization; (4) legal linkages between land and surface water, and between land and forest/environment; (5) inter-governmental responsibility for water law; (6) integrated treatment of water law with other laws on land, forest and environment, and for water planning and development; (7) favorability to private sector and NGO participation in water planning and development; (8) openness to market solutions (as opposed to state/government ownership or intervention).

The current legal regime for water reflects multiple paradigms. Presidential Decree 198, which was enacted in 1973, points to the economic financial paradigm that sees the state (in this case, represented by its agent, the local water districts) as provider of water at subsidized price. Initially structured as government owned and controlled corporations (GOCCs), the supposed franchise monopoly of water districts in their service area was struck down by the Philippine Supreme Court (SC) in its 2007 ruling in the Adala case (SC of the Philippines; G.R. No. 168914; Metropolitan Cebu Water District versus Margarita Adala, 04 July 2007). This decision signaled a shift toward a more market orientation toward water provision, with the National Water Resources Board (NWRB) issuing more permits in the form of certificates of compliance to competitor water service providers in the same area. The privatization of Metro Manila water and sewerage system can also be seen as part of the trend toward more market orientation in urban water provision.

The earlier centralizing and state control trend also applied to irrigation. Under Presidential Decree 522 (1974), the NIA was infused with enormous capitalization and its scope of activities expanded.

**Box 1. Two tales of beleaguered water districts: Bukidnon and Iloilo**

The Bukidnon case stemmed from the unclear property rights assignment of spring water between an upland local government and the local water district in the same municipality. Starting as a rural water works that was delivering water to four villages, the water district increased its operations and was able to get a water right from NWRB for a sizeable spring water. With the water district becoming more financially viable, the LGU lg was increasingly asserting leverage over the organization. The LGU expressed that it was no longer obliged to pay its current water fees to the water district. Second, when the water district applied for a rate increase with the Local Water Utilities Administration (LWUA), the LGU called for a general assembly of subscribers and turned the assembly into a negotiation rather than a consultation. The LGU also put up its rival water delivery services to other far-flung villages from a minor water source that they had assumed without getting a permit from the NWRB. The water district accused the LGU of illegal practice and elevated the case to the Office of the Government Corporate Counsel (OGCC), with the help of the LWUA. At this time, the conflict is not yet resolved.

The Iloilo case involves a water district whose service area covers the city and 6 towns, and extracts water from Tigum River through an intake dam in one of the upstream towns. From the water district's beginning in 1926 to its shift to a GOCC in 1978, its relationship with this upstream LGU has changed. In line with sections 132 and 291 of the Local Government Code (1991) which affirms the right of LGUs to GOCC receipts, the upstream LGU passed an ordinance in 1997 which levied a 1% tax on the water district's receipts as its share for the latter's extraction of water from a watershed located within its political boundary. The water district paid a 1% user's fee to the upstream LGU from 2003 up to 2005 but suspended payments in 2006 in view of two opinions issued by the OGCC stating that local water districts are exempted from payment of share to the LGUs in the utilization of water. The upstream mayor then withheld a request by the water district in 2007 for a mayor's permit for land excavation in line with a rehabilitation and expansion project, unless a PhP 1 million user's fee was paid by the water district. Through the Congressman's mediation, a settlement was reached whereby the water district will deposit PhP 1 million every year in a trust fund toward the rehabilitation, improvement, protection and development of the watershed, subject to the upstream LGU's preparation of a program of works and financial plan and statement approved by external auditors. In 2008, the upstream LGU used the money to concrete a provincial road, but its financial statement was declared unacceptable by the water district. Henceforth, the latter suspended the payment from 2009 to date.

At issue in both cases is the LGU's ability to use other powers to upset the water district's operations. Whether by leveraging its ability to mobilize the users against a fee increase or prevent the water district from undertaking projects within its political jurisdiction, LGUs are not constrained by assertion of legal rights by the water district. The LGUs claim that they are the repository of communal interest in the watersheds or spring waters located within its political boundaries. The water district meanwhile asserts that it is the state's acting agent while arguing that the LGU is just an organization of elected officials of the town and therefore not equivalent to the state.

The NIA's operations were heavily subsidized by the state and its irrigator fees set by national government until the 1980s when irrigator associations were awarded water rights, the NIA shifted to contracts with irrigator associations and adapted participatory management approaches in its field operations (Panella, 2004, p. 108). Further decentralization efforts after 1986 transferred control over irrigation associations to LGUs.

The scientific health paradigm is also evident in the Clean Water Act which sees water as a public health concern. Under this law, standards for drinking water and effluents were set, as well as prohibitions for pollution and contamination. More recent legislation in the 1990s (e.g. Clean Water Act, National Integrated Protected Areas System (NIPAS) and Water Crisis Act) reflect the ecological paradigm which assumes interconnectivity between rainfall, topography and bedrock geology that affects ground and surface water distribution. From this paradigm, watershed, water management upstream and downstream, pollution and flooding are treated in a more integrated fashion. The more recent IPRA (1997) admits the possibility of a spiritual paradigm, in that it allows indigenous communities to base their system of local water governance on customary practices within areas declared as their ancestral domain.

Different state agencies are tasked with specific functions related to water. Water rights are granted through franchise (issued by Congress) or through permits (by the NWRB). The Department of Health (DOH) is tasked with setting the drinking water standard while the Department of Environment and Natural Resources (DENR) sets pollution and effluent standards for water bodies. The Department of Public Works and Highways (DPWH) is the lead agency on floods and flood control infrastructure technology. The Local Government Code adds another governance 'layer' by requiring local permits, by allowing local authorities to set standards and corresponding penalties/fines for violation, and to have their own enforcement mechanism. It is clear, however, that the LGUs' taxation powers do not extend to water (falling under the category of 'natural resource', not minerals, for which the state/national government has exclusive domain). The local water districts and equivalent water works in the municipality/village represent the 'state' as owner/distributor; but the playing field is increasingly becoming more populated by private players who are given permits by the NWRB. Insofar as water rights are concerned, the LGUs/customary laws for Indigenous Peoples (IP) groups are used to settle private water conflicts; the NWRB acts as a venue for conflict resolution between competing public and private interests to water; the NCIP decides cases on ancestral domain delineation, while the courts decide on competing interests between agencies and layers of government (national versus LGU) or those appealed from the NCIP.

Under the regalian doctrine, the legal system treats water as owned by the state and its subsidiary agents. Even water in private lands belongs to the state; local governments in a parallel manner do not own the water inside their territory. A pending question is whether water inside ancestral domains under the IPRA belong to the indigenous group/community, on which issue the SC was divided. Moreover, in view of the decision regarding the sale of Angat Dam to a Korean firm, the SC asserted the right of the state to conclude a sale or enter into transactions with foreign entities with respect to water projects, as a further consequence of this regalian doctrine. As such, LGUs whose territorial jurisdictions are affected by these large-scale water projects do not have a veto power although, as required by law, such projects necessitate an environmental compliance certificate from the DENR. Whether LGUs can legislate to prohibit the transfer of groundwater sourced within their territorial jurisdiction to benefit those from outside is a question that has not been brought to the higher court's attention.

Water permits or franchises cover both private individuals/firm and public collectives (i.e. municipal/village water works or irrigation associations) rights to utilize, exploit, develop, conserve and protect



**Box 2. Indigenous group versus local government claims: the case of a forest reservation in Northern Luzon**

This 336-hectare watershed is partially located in the main city and supplies it with 55,000 cubic meters/day. It was declared a forest reservation area in 1917 administered by the main city's water district, then designated 'inalienable' (i.e. state property) in a 1922 court decision. Worried by a significant decline in water generation and informal settlement encroachment, the watershed management board and a city councilor proposed fencing in 2002. The subsequent demolition order was opposed by a group of indigenous families who enlisted the help of the National Commission for Indigenous People (NCIP). They had two claims: that several parcels of land within the watershed were inherited from their ancestors; and that the fencing project would impede their access to and from their residences, farmlands and water sources within the reservation, and dispossess them of the space where tribal rituals and ceremonies are usually held.

The project was put on hold after the NCIP issued a temporary restraining order (TRO) and lower court injunction in the case filed by the families. A 2007 Court of Appeals decision upheld the NCIP's jurisdiction and authority to issue the TRO but in 2009, the SC upheld the decision of the city government to demolish the illegal settlers in the watershed. The NCIP issued another TRO and an injunction writ on the demolition from 72 hours to another 17 days, claiming that the city government had no power under the NIPAS Act of 1992 to evict indigenous communities from their present occupancy of ancestral lands or resettle them to another area without their consent. The NCIP further claimed that it had jurisdiction over all claims and disputes involving rights of indigenous cultural communities and peoples and, in the exercise of its jurisdiction, may issue injunctive writs in line with Republic Act No. 8371 (Indigenous Peoples Rights Act of 1997). In 2010, the city legal office, filed a motion for reconsideration to reverse a Court of Appeals (CA) decision upholding the NCIP power to issue writs against the city government given the absence of clear right to possess any parcels of property within the forest reservation. Another flashpoint came in July 2012 when the NCIP issued a TRO barring the Baguio Regreening Movement (BRM) from undertaking a nursery project (with fencing) over an area claimed by an ancestral land applicant. The nursery project which was carried out by foresters from the city environment and parks management office and the DENR nevertheless pushed through despite the TRO.

In 2013 the SC granted the petition for review by BRM, the City Environment and Parks Management Office, and the Busol Forest Reservation Task Force. The subsequent decision (SC of the Philippines. G.R. No. 180882. BRM Inc. vs Atty. Brain Masweng. 27 February 2013) dissolved the TRO and preliminary injunction issued by the NCIP. The Court ruled that although the NCIP has the authority to issue TROs and writs of injunction, it was not convinced that private respondents were entitled to the relief granted by the Commission. The families were only recognized as claimants but do not have rights over the portion of the watershed. In the SC's judgment, the absence of a right to be protected meant that the NCIP could not issue a writ of injunction on the claimant's behalf. The SC ruling therefore granted the petition of the City Government of Baguio and set aside the NCIP's writ of preliminary injunction. This case was ground breaking because it was the first SC decision which did not recognize indigenous people's communal rights to the watershed and instead asserted the public rights of the state, through its agent the LGU.

water resources. The law does not discriminate water use between public and private parties. The only exception from the NWRB permit requirement is individual household use.

Under the existing Water Code, permits can be transferred or leased and their purpose can be changed. The Water Code IRR as of 2005 prioritize sectoral use as follows: domestic, municipal, irrigation, power generation, fisheries, livestock raising, industrial, recreational, others. Prioritization further considers ‘time appropriation’ if there are two or more water appropriators from the same source. During an emergency, domestic and municipal requirements take priority. The NWRB may also reduce water use during shortage. Right to water quality is articulated mainly as the right to non-polluted water – with the DENR and LGUs as deputized agents set standards for effluents, issuing permits for water discharge and collecting fines/penalties for violation of permits and effluent standards. Under the Clean Water Act, the DENR adheres to the ‘polluter pays principle’ in which the polluter pays for the cleanup. Adherence to DOH drinking water quality standards is included in the permit issued to water distributors, which includes periodic tests and monitoring mechanisms. It is important to note that the governance framework on sewerage systems is weak or non-existent. Most LGUs do not have a sewerage system (this is optional for LGUs; for this research, the only one in existence is Baguio). Many water districts (including Metro Iloilo, Cebu and Davao) include the sewerage system in their mandate but in reality do not have such a system in place because it is too costly.

Any type of construction on land dealing with water collection and distribution (e.g. dams, bridges, levees, flood control, restoration of river courses, cultivation of river beds, building river easements, installing distribution pipelines) requires a permit from DPWH. Both IPRA and NIPAS laws consider the linkage between water, land resources and watersheds. Under the Water Code IRR, watershed

**Box 3. Private rights versus local government: the case of a Laguna town**

This Laguna municipality is well known for its abundance of spring waters. The municipality has an LGU-operated waterworks, which was riddled with problems (e.g. contamination, non-continuous supply and limited household subscription). In 2012, the local government entered into water contracts with a private business firm to generate revenue and to implement much-needed rehabilitation of the town’s old water system. The contracts were executed without review by the provincial government. Without community consultation, it was later revealed that the private firm had already applied for an NWRB permit to develop a water system from a big spring inside the municipality.

Some concerned municipal residents found irregularities related to the execution of the contracts. They alleged that the 50-year automatic renewal stipulated in the 50-year contract granted to the private business firm was anomalous because it was done without prior public consultation. Moreover, the 90%-10% revenue sharing in favor of the private firm was a poor bargain. Under the contract, the business firm also stands to be given the ‘right of first refusal’ to subsequent offers for spring development by other private entities, if granted with an NRWB permit. A draft case against the local executives was filed by concerned residents at the Office of the Ombudsman. The NWRB processing of water permits related to the town has been suspended until a comprehensive study on the ecosystem impact of the bulk water contract is completed by the provincial office.

conservation is a collective task involving the NWRB, DENR-Environmental Management Bureau, Bureau of Soil and Water Management, LGU, water district and the private sector. Under NIPAS, the DENR can prohibit or control occupancy within the protected area that can cause deterioration of surface or ground water. Under IPRA, this legal obligation belongs to the indigenous community/group awarded the ancestral domain title.

The laws mention various inter-agency committees dealing with water. There is the Inter-Agency National Flood Management Committee (flood) and Protected Area Management Board (protected area) whose membership includes government agencies as well as NGOs and the private sector. Some local governments (e.g. Iloilo province) have also created river basin-based management boards. Correspondingly, in both concerns (flood and protected area), there is emphasis on integrated planning. The Board of Directors for water districts also includes members representing civil society, business, educational/religious institutions and women's organizations.

Only two laws admit the possibility of a market solution (as an alternative to public provision of service or heavy regulation of market entry): the Water Crisis Act and the Clean Water Act. The Water Crisis Act allows a build-operate-transfer (BOT) scheme for financing, construction, repair, rehabilitation and improvement of water facilities and supply but no government financing or financing guarantee of contracts. The Clean Water Act encourages cooperation and regulation through incentives and market-based instruments, promotion of the role of private individual enterprises, allowing effluent trading in the management area, adoption of water pollution control technologies that are tax and import duty free, and government grants as well as government financing institution-priority financing to LGUs for these projects.

Philippine water laws depict a complex layer of rights, players and interests. The laws for surface water point to a competing and coexisting water rights regime – state property, commons/communal/public property and private rights. The legal changes articulate a shift from a view of the state as the sole provider of water at a subsidized price toward more market and regulatory orientation, as depicted in the privatization or adoption of market performance benchmarks for water districts and by allowing entry of private water providers as competitors through permits/licenses or BOT projects. The trend also depicts a change from singular-purpose policy (supply side provision; contributing to agriculture and energy production for national development) toward greater linkage with public health (drinking water and effluent standards) and environment (watershed, pollution, flooding). However, recent enactments only create 'add ons,' overlapping mandates and further multiplication of national government agencies and departments that come with non-existent or weak structures to support interconnectivity between actors and other policy areas (land use, forest, environment, health).

Conflict points are evident between municipalities, state and private companies over investment in water supply projects that balances concerns for access, equity and profit. The combination of costly investment in the water sector, shortage in public fiscal resources for water projects and pressure for anti-pollution measures combines to inhibit a clear solution to the water problem. Conflict in rights to surface water attached to riparian possession and granted for the most part by one agency (NWRB) is another dimension. Issues of accountability with respect to grants of permit and transfers/lease are paramount. Groundwater transfers across political-territorial boundaries from water-rich rural areas to water scarce urban/urbanizing areas are another flashpoint. LGUs are increasingly becoming more assertive vis-à-vis water sourced from their own locality but siphoned off (either by prior agreement or contract) for use by urban consumers. Suburbanization and industrialization are making water conflicts more politicized between cities/municipalities than ever before. Another conflict dimension is community versus local government source-use discordance. Where local governments control the water system,

communities in general resist investments or abstraction limits that increase fees or impede access. Until and unless a political bargain is struck between leaders and the community, it is expected that politicians will take the path of least resistance, i.e. not tackle water as a serious policy concern.

### 3. Grounding in water law: conflict and its resolution according to water managers

The following discussion draws on the results of a survey conducted of 299 water managers representing the diverse water organizations at the local level: water districts, irrigators associations, local government-based water systems and community-based water systems in 10 provinces of the Philippines<sup>1</sup>. The survey, conducted during 2012–2013, includes a section on water laws which probed the water managers' views on local water ordinances and rules, their connection with related rules on land use, forest and environment, private water rights, sectoral prioritization and conflict resolution. What follows below is a discussion of the findings from that survey on the section on water laws. The survey results provide a window on to how legal tenets pertaining to water are understood by their subjects.

The survey reveals a weak grounding in relevant water laws by water managers. The majority are aware of relevant local laws in place, including watershed protection, anti-pollution measures (standards for water quality and effluent, pollution control) that have a bearing on their operations as a water organization. This pattern closely follows the distribution of the respondents according to types of water organizations and, accordingly, the rules/ordinances that matter to them. Very few cited rules/ordinances pertaining to fisheries, industrial use, recreation and energy generation, indicating further a narrow legal orientation. More than half were unaware or said that there is no connection between surface water law and land use. Among those who said there is a connection, many incorrectly identified the applicable ordinances; one-fifth could not identify what these local ordinances are. Over half also did not recognize a connection between ordinances pertaining to water and forests, although those that did correctly identified the type of 'linked' ordinances – illegal logging and watershed protection.

The majority of the water managers said that local ordinances do not provide for exclusive water rights. Of the one-third who thought that they did, there is a split between those that mention individual or collective forms. Most cited were collective forms: common property administered by community; state property allocated by the local government; and shared equally with non-community members. While the majority recognized sectoral prioritization in local ordinances, the water managers correctly identified domestic use as a priority, followed by irrigation. Power generation and navigation were rated lowest priority. Managers understand that equity (rather than economic consideration) is the topmost consideration for such allocation.

Water managers mainly cited conflicts that are internal to their organization (e.g. violation of organizational rules by members and penalties, pilferage by non-members, competition for scarce water during summer among members of the water organization) and, accordingly, internal conflict resolution

---

<sup>1</sup> The water manager respondents were chosen using stratified random sampling in 10 study provinces (Benguet, Mountain Province, Ilocos Sur, Laguna, Bohol, Bukidnon, Bulacan, Iloilo, Cebu and Davao) selected based on their level of urbanization. The breakdown of respondents were as follows: 45 water districts (WD); 130 irrigators' associations; 23 local government led water systems and 101 community-based water systems (CBOs). The structured questionnaire featured items on water governance (water law, policy and administration) drawn from Saleth & Dinar (2005). The detailed methodology can be found in Rola et al. (2014).

mechanisms. In terms of the platform of choice for resolving conflicts, an overwhelming number cited the LGU, with a handful identifying independent tribunals or the NWRB. As for processes, the use of non-legal (non-binding) processes like negotiations and settlement were preferred by many, compared to formal proceedings such as filing of a legal case, putting the matter before an arbitration committee or filing a motion before national government agencies. Customary or traditional practices have little resonance for water managers; of the minority for whom it did, water managers mentioned dialogues/meetings, negotiations or community agreements as practices. This aversion to formality is further attested by the rather large proportion of water managers who do not think legally specified mechanisms nor customary/traditional practices for resolving inter-municipality/trans-boundary conflicts exist. Of those that do, a little over half said that legal provisions for resolving conflict are effective or very effective. In summary, where conflict resolution mechanisms exist, they are largely informal (that is, outside of existing legal frameworks) and involve direct engagements between actors through dialogues and negotiations.

What the survey reveals is that water managers are least informed or guided by what water laws intend. Customary or traditional practices have a limited existence beside legal frameworks. But, water managers likely bring their contestations before a local body (LGU, tribal leaders) and resort to dialogues and face-to-face negotiations rather than appealing to legalities. Those who prefer legalities would not get a case resolution for a long time, as in some of the cases cited above. These results indicate that the moves to formality at the national level (enacting legislations, creating agencies with mandates) have a weak bearing on the ground. The sheer diversity of concerns and actors therefore make for a plurality of conflicts and potential resolution paths, outside the purview of national bodies.

#### **4. Through the looking glass: water conflict in five settings**

The five cases in [Boxes 1–4](#) illustrate templates of local water conflicts. The cases were selected because they were subjects of important court decisions, NWRB pending cases, and sufficiently covered by local and national print media to warrant documentation. They were also cases found in the three watersheds (Saguin–Balili, Benguet; Tigum–Aganan, Iloilo; and Santa Cruz, Laguna), which are this paper’s research project sites. Each case identifies the issue, and describes ‘agency’ (what the actors do in response to the issue), preferred venue and process of conflict resolution mechanism, and outcome. The first set of two cases illustrates a conflict about who represents the ‘state’ in a contest for property rights assignment between a local water district and an upstream LGU where the headwaters are located. The LGU put up its rival water service delivery and claimed access to a spring water source without an NWRB permit. The rights asserted by the local water district over its operations, including pricing mechanisms and expenditures, are put to test by determined LGUs that wish to exert greater control over water resources within their political-administrative jurisdiction. The case of a northern Luzon watershed depicts a conflict over rights by a city government (claiming inalienable property of the government) versus indigenous families (claim of ancestral domain). The conflict expanded with the involvement of the National Commission on Indigenous People which issued a temporary restraining order (TRO) and writ of injunction in favor of the indigenous families and the SC, which invalidated the NCIP’s decisions, thus siding with the city government. The case in Laguna depicts a conflict between the community and the local government over a long-term bulk water distribution contract awarded by an LGU to a business firm, and between a community and an LGU-contracted bulk water distributor that lodged an application for a water right to the NWRB without the community’s

knowledge. The last case deals with small-scale mining activities seen as threatening to the structural integrity of an irrigation dam, which pits the concern of the NIA and the local mining board.

**Box 4. Sand mining versus irrigation in a Laguna town**

The Tipacan River, one of the tributaries of the Sta. Cruz River has an irrigation intake dam located at this Laguna town. The dam provides irrigation water for more than 2,200 hectares of rice fields in five municipalities through an irrigation system managed by the NIA. Services provided include the irrigation canal maintenance, operations of water dams and knowledge transfers with respect to the farm production practices. Members of the local irrigators' association pay water fees to the NIA.

In the same area, artisanal sand miners (many of whom are also rice farmers and include women) also operate. Locally called 'pala-pala' in reference to the shovels which are the main hand tool used for extracting river sand, their activity has been slowly encroaching into the 1 km buffer zone set by the NIA. They supply river material to legitimate quarrying operators, who obtain permits and clearances from the provincial government's mining regulatory board and the local Environment and Natural Resources office. These agencies do not set the same limitations near the dam site as the NIA. Most artisanal miners do not have permits. By purchasing materials from the illegal small-scale miners, the legitimate operators maintain their stockpile of river material. After 5 years, they renew their permits to operate by showing the stockpile as evidence that they have not extracted much from the river.

Views on the impact of quarrying have been conflicting – assisting water flow by dredging on the one hand, or impeding water flow with the widening of waterways on the other. The NIA contends that the provincial government is not doing a good job in regulating quarrying near the dam, thus the continuation of artisanal mining. Documents show attempts to discuss the issue between the two agencies have not prospered.

The five cases illustrate in varying forms the politics that inevitably arise where property rights to surface water are not clearly defined, leading to network competition between interest groups and their state regulator-ally. The case of the northern Luzon watershed is one of many expected flash points in the obvious overlap between the legal claims of state-ownership (inalienable land) versus common/communal property (ancestral domain). The watershed is vital to the main city's surface water supply as is the indigenous families' access to the area for their livelihood and ritual ceremonies. Because rights are understood as exclusive, the conflict between the two parties is seen as a zero-sum game. The SC may have invalidated the NCIP's claim to represent the families in this case, but the matter is far from being a closed book. It is a case mirrored in many other conflicts over the physical delineation (fencing, posting of forest guards) of protected areas that displace swidden agriculture practicing farmers with no titles to their plots. The main difference and key to the issue's elevation as a policy concern is that the indigenous families had the NCIP on their side—a state agency tasked to defend indigenous peoples as clients in a legal battle. This conflict expansion (to include a sectoral client and state regulator) is also present in the case of the upstream Bukidnon municipality, where the LWUA extends assistance to the beleaguered local water district in its fight before the NWRB. Where competing rights expressed through permits are lodged in different state agencies and

their subsidiary local units (NIA versus DENR), the lack of coordinating infrastructure may imperil livelihoods. A combination of relaxed local sand mining rules and environmental stress like typhoons endanger the structural integrity of a dam on which many farmers' incomes rely.

The cases also illustrate that at the local level, the language of 'rights' do not necessarily pass the litmus test of legitimacy. The Bukidnon case is one where the water district's presumed GOCC status under Presidential Decree 198 (and therefore the rightful state agent) is contested by the LGU, which under the democratic criteria (as elected body) sees itself as the 'rightful' representative of the community's interest on the issue, which is lower water rates and extension of service in far-flung villages. Even with a SC ruling supporting this rights-based claim, the water district, as seen in the Iloilo case, still needs to make side payments to an upstream LGU whose political powers over permit issuances related to construction can be used as leverage. The issue of exclusivity arising from an NWRB permit and its perceived limits to alternative methods of water provisioning (either by the LGU or private parties) is also seen in the Laguna case. From the perspective of the LGU, why should an office in Manila decide who and what type of water service provisions it should have within its jurisdiction? For an assertive LGU, a local water district does not have that *a priori* status. For a local water district in this position, asserting a rights-based argument carries little traction.

The Laguna case presents the other end of the spectrum where the LGU is the target of community angst for its decision that the best way to collectively provide water is through a long-term bulk water contract. At issue is the lack of transparency and accountability in the way this decision was made, which not surprisingly was done without the NWRB's hand. The case illustrates that political mobilization is at hand where the legitimacy of the LGU's decision is put in question. The rights emanating from a dubious contract, from the perspective of the citizen complainants, are not valid.

## 5. Conclusion

Philippine water laws have seen dramatic changes from the Marcos dictatorship to post-democratic transition. From a more centralized, singular policy-focused and rights-based regime, water as a policy area expanded to include watershed, pollution and health concerns. New government mandates were created adding more agencies to the mix of those with a say regarding water policy. The change did not necessarily produce coherence as inter-agency linkages are weak. Mandates have also been downloaded to LGUs with decentralization. However, this was simply a change of location of responsibilities (from regional to local bodies), and carried no corresponding rights-transfer to LGUs on water as resource (unlike minerals). In terms of the economy of water, the legal changes have seen greater openness to market solutions and a state withdrawal from intervention to regulatory mode. More competition from private businesses in water sourcing and distribution are seen while local water districts have slowly adapted market benchmarks for their performance.

These trends are not necessarily grounded in the understanding of water managers. In the survey, most water managers are aware of the rules in line with their organization type (dealing with domestic water use, irrigation) and somewhat cognizant/aware of ordinances pertaining to clean water measures (including pollution) and watershed protection management. However, when probed, they lack consensus on the legal linkages between surface water and land use or forest. A substantial majority said their ordinances do not confer private water rights. Of the minority who said they did, the most often cited bases for rights are collective: common property administration by many, state property administration by LGU

and shared equally by non-users. This suggests that for the most part, water managers see rights more on customary, group or government bases rather than by formal instruments like licenses and permits.

The majority of the water managers reported water conflicts present in their localities. While most conflicts cited concern non-compliance with organizational rules, the preferred venue for conflict resolution is at the organization level or at LGU level with customary practices and dialogues with elders as preferred mechanisms. Trans-boundary conflicts are settled primarily through LGU agreements and organization by-laws. That the NWRB or the LWUA is not mentioned suggests less reliance on formal mechanisms for conflict resolution among water managers.

The select cases of water conflicts portray types of contestations that arise given ill-defined property rights to water and parallel questions of legitimacy to these awarded rights. On one hand, competing assertions of ‘rights’ by the local water district and the LGU’s claim of accountability to community members for service provision illustrate the political tension between these state actors. The competing rights claims between indigenous peoples and the LGU over a watershed also point to the inherent irreconcilability of provisions in the IPRA and NIPAS Acts which see both claims as equally valid. Does the status of a protected area, seen as property held in trust by the government, supersede common/com-munal properties within it, even if the latter have been in place prior to the law that created the protected area? The strong recognition among water managers about collective rights supports more inclusive measures with respect to water as a resource rather than exclusive delineation in favor of the government or state agents. Moreover, the use of ‘rights’ in contestations over water has little currency at the local level; rather than being treated as a given, rights themselves can be contested where their legitimacy is put in question. LGUs and communities do not automatically contextualize water issues as questions of rights nor do they readily refer to the NWRB for this matter. As reflected in the water managers’ responses, local actors prefer dialogues, meetings and negotiations with local bodies rather than appeals to higher entities. In the two cases where the water issue was elevated, it was done so with support from a state regulator-ally (i.e. LWUA with water district or NCIP with indigenous families).

The varieties of cases and the dimensions they feature preclude an argument for a singular rights-based solution to water conflicts. The diverse local hydrological contexts of water supply and local political environments make a one-size-fits-all and mono-centric institutional arrangement impractical. Regardless of the political flavor of each local context, state and private water providers alike have to master the skill of engaging communities and local governments in order for conflicts to be avoided or mitigated. At the end of the day, policies for water use and provisioning have to meet the standards of effectiveness (does it work well?) and, equally, acceptability (do all parties agree?) but inevitably are results of political bargains, not necessarily optimal solution-based. When analyzed in conjunction with the survey results for water managers, it is clear that rights have little import in the way conflicts are dealt with by water organizations. Pathways that involve localized social communication (dialogues, face-to-face meetings) at the LGU or its tribal equivalent allow for more flexibility and carry greater chance of acceptance.

## 6. Recommendations

The complex, multi-layered and fragmented nature of *formal institutions* tasked to carry out mandates related to surface water source and allocation is eclipsed by the multiplicity of *informal institutions* (community-based and customary-based) that do not buy into the language of property rights to water as exclusively resting on the state, its agent(s) and subsidiaries (permit-wielding private entities). Conflict



points between formal institutional actors over competing rights, whether by the NCIP, NIA, water district or LGU, move the issue over to the inter-agency board or courts for resolution; but even so, legal rulings may not necessarily be recognized or even actively circumvented. As seen in the local conflict case studies, contestation is never resolved by resort to legal means but rather through negotiation, bargaining, compromises and side payments to adversely affected actors. In the survey, local water managers who are assumed to be important cornerstones to this formal governance scheme depict shallow understanding and appreciation of water laws, while displaying preference for informal conflict resolution mechanisms.

Given these findings, this paper recommends that there be: (1) a poly-centricity of governance that recognizes informal institutions and conflict resolution mechanisms at the local level as having equal weight as legal, formal means; (2) a coexistence of well-defined and grounded state, communal, public and private property rights to water (as opposed to the legal default position of pre-eminence of state rights) which then allows for informal institutions to operate and thrive; (3) a watershed-based governance space that maps physical connectivity of surface water resource (upstream, midstream, downstream) unto on to administrative boundaries, allowing for shared decision-making and political bargaining where it matters (not at the national level); and (4) the creation of a robust intra-agency coordinating body (either through a strengthened NWRB or new agency with greater transparency and accountability mechanisms in place for permit issuances) that oversees, mediates conflict and harmonizes all watershed-based use and allocation decisions to meet broad national goals. These recommendations require serious political investments but are more firmly grounded in the realities of the informality in much of the water sector and the as yet immature capacities of local water organization managers.

## Acknowledgements

The authors acknowledge support from the University of the Philippines System Emerging Interdisciplinary Research (EIDR) grant for the research project upon which this paper was based. The authors also recognize the work of Teresita Espinosa, Maria Consuelo Doble and Juan Fidel Rodriguez as research assistants.

## References

- Abdullayev, I., Nurmetova, F., Abdullaeva, F. & Lamers, J. (2008). Socio-technical aspects of Water Management in Uzbekistan: emerging water governance issues at the grass root level. In *Central Asian Waters: Social, Economic, Environmental and Governance Puzzle*. Rahaman, M. M. & Varis, O. (eds). Water & Development Publications, Helsinki University of Technology, Helsinki, Finland.
- Abers, R. & Keep, M. (2009). Mobilizing the state: erratic partner in Brazil's participatory water policy. *Politics and Society* 37, 289–314.
- Araral, E. (2008a). Public provision for urban water: getting prices and governance right. *Governance: An International Journal of Policy, Administration, and Institutions* 21(4), 527–549.
- Araral, E. (2008b). The strategic games that donors and bureaucrats play: an institutional rational choice analysis. *Journal of Public Administration Research and Theory* 19, 853–871.
- Araral, E. (2009). The failure of water utilities privatization: synthesis of evidence, analysis and implications. *Policy and Society* 27, 221–228.
- Araral, E. (2010). Reform of water institutions: review of evidences and international experiences. *Water Policy* 12(Supplement 1), 8–22.

- Araral, E. & Wang, Y. (2013a). Water demand management: review of literature and comparison in South-East Asia. *International Journal of Water Resources Development* 29(3), 434–450.
- Araral, E. & Wang, Y. (2013b). Water governance 2.0: a review and second generation research agenda. *Water Resource Management* 27, 3945–3957.
- Budds, J. & McGranahan, G. (2003). Are the debates on water privatization missing the point? Experiences from Africa, Asia and Latin America. *Environment and Urbanization* 15(2), 87–113.
- Cambodia Development Policy Research Institute (CDRI) (2008). *Framing research on water resource management and governance in Cambodia: A literature review* (Working Paper 37). CDRI, Phnom Penh, Cambodia.
- Dewulf, A., Mancero, M., Cardenas, G. & Sucozhanay, D. (2011). Fragmentation and connection of frames in collaborative water governance: a case study of river catchment management in Southern Ecuador. *International Review of Administrative Sciences* 77, 50–75.
- Elazegui, D. (2004). Water resource governance: realities and challenges in the Philippines. In: *Winning the Water War: Watersheds, Water Policies and Water Institutions*. Rola, A., Francisco, H. & Ligaton, J. P. T. (eds). Philippine Institute of Development Studies and Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, Makati City.
- Hirsch, P. (2006). Water governance reform and catchment management in the Mekong region. *The Journal of Environment Development* 15(2), 184–201.
- Jones, C., Hesterly, W. & Borgatti, S. (1998). A general theory of network governance; exchange conditions and social mechanisms. *Academy of Management Review* 22(4), 911–945.
- Lebel, L., Garden, P. & Imamura, M. (2005). The politics of scale, position, and place in the governance of water resources in the Mekong region. *Ecology and Society* 10(2), 18.
- Malayang, B. (2004). A model of water governance in the Philippines. In: *Winning the Water War: Watersheds, Water Policies and Water Institutions*. Rola, A., Francisco, H. & Ligaton, J. P. T. (eds). Philippine Institute of Development Studies and Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, Makati City.
- Molle, F. (2002). Economic tools for water demand management in Thailand: conventional wisdom and the real world. In: *Water Policy Reform: Lessons from Asia and Australia*. Brennan, D. (ed). Proceedings of an International workshop held in Bangkok, Thailand, 8–9 June. ACIAR Proceedings No. 106. Australian Centre for International Agricultural Research, Canberra, Australia.
- Ostrom, E. (2000). Collective action and the evolution of social norms. *The Journal of Economic Perspectives* 14(3), 137–158.
- Panella, T. (2004). Irrigator development and management reforms in the Philippines: stakeholder interests and implementation. In: *The Politics of Irrigation Reform: Contested Policy Formulation and Implementation in Asia, Africa and Latin America*. Mollinga, P. & Bolding, A. (eds). Ashgate Publishing Inc., Burlington, VT, USA.
- Paragas, V. (2012). *Water Regulatory Policies*. Presentation during the Roundtable on Water Rights and Water Wrongs: Towards Good Water Governance for Development. Hyatt Hotel, Manila. 26 January.
- Rola, A. C., Abansi, C. L., Arcala-Hall, R. & Lizada, J. C. (2014). *Characterizing water governance structure in the Philippines: Results of the water managers' 2013 survey (WGD-Working Paper No. 2014-01)*. University of the Philippines System-Office of the Vice President for Academic Affairs, Diliman, Quezon City, Philippines.
- Saleth, R. M. & Dinar, A. (2005). Water institutional reforms: theory and practice. *Water Policy* 7, 1–19.
- Shah, T. & van Koppen, B. (2006). Is India ripe for integrated water resources management? Fitting water policy to national development context. *Economic and Political Weekly* 41(31), 3413–3421.
- Teisman, G. & Edelenbos, J. (2011). Towards a perspective system synchronization in water governance: a synthesis of empirical lessons and complexity theories. *International Review of Administrative Sciences* 77, 101–118.
- Turrall, H. & Malano, H. (2002). Water policy in practice – a case study from Vietnam. In: *Water Policy Reform: Lessons from Asia and Australia*. Brennan, D. (ed). In: *Proceedings of an International workshop held in Bangkok, Thailand, 8–9 June 2001*. ACIAR Proceedings No. 106. pp. 189–205. Australian Centre for International Agricultural Research, Canberra, Australia.
- Wu, X. & Malaluan, N. (2008). A tale of two concessionaires: a natural experiment of water privatisation in Metro Manila. *Urban Studies* 45(1), 207–229.