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Regulating Water Services for All in Developing Economies

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Summary. — Economic regulation is being introduced into the water services sector in developing economies, where widespread poverty and service inadequacies affect regulatory rationales. This paper analyzes the regulatory experience in 11 metropolitan areas with respect to the challenge of reaching all urban consumers, particularly the poor. Case study evidence suggests that pro-poor regulatory outcomes have been constrained by inadequate framework conditions and a limited understanding of alternative providers. In many cases regulatory governance has been equally vulnerable, although some regulators have demonstrated a capacity and willingness to achieve a balance between the social and financial objectives of water service regulation.

Key words — economic regulation, urban informal settlements, water supply, Africa, Asia

1. INTRODUCTION

Driven by international development policy and inspired by regulatory developments in Europe and North America, an increasing number of low and lower-middle income countries (LMICs) have introduced or are considering introducing economic regulation as part of domestic water services sector reform. The new regulators face the tremendous challenge of stimulating and supporting water service providers to improve their poor performance record, which disproportionately affects the lower income population (Prüss, Kay, Fewtrell, & Bartram, 2002; World Bank, 2003). In view of widespread poverty and service inadequacies, regulatory rationales in LMICs necessarily differ from those of the countries where economic water regulation originated but where the work of economic regulators is also increasingly influenced by social considerations (Graham & Marvin, 1994; Waddams Price & Young, 2003). With a majority of governments having expressed their commitment to the Millennium Development Goals (MDGs) for water and sanitation, social objectives are high on the political agenda. As the investment requirements for infrastructure upgrades and expansion, increasingly backed by sustainability concerns, call for greater cost-reflectivity of tariffs, regulators are required to balance politically sensitive and potentially conflicting efficiency and welfare objectives. The authors' approach is that it is an economic regulator's task to negotiate, elucidate, make transparent and monitor societal demand for water. This will be evidenced through government policies and a service provider's ability to deliver those services effectively and efficiently through access to sufficient agreed resources, based upon an appropriate balance of tariffs and fiscal support. It is the relationship between government and service provider which requires economic regulation, not the oft assumed intervention in the balance between service provider and consumer. However this intermediation needs to be supported by appropriate customer involvement and to recognize the existing role of alternative providers (Figure 1).

In LMICs, economic regulation of water supply services to date largely concentrates on urban areas, where the economies of scale inherent in networked services continue to favor monopolistic water provision by a single utility provider. These urban areas typically exhibit a highly differentiated access profile to modes of water provision—the choice too often being only between conventional household connections or street standposts. Operational difficulties, high perceived business risk and political reluctance to provide formal municipal services to informal and sometimes illegal residents act as deterrents to extend ailing water networks into many low-income settlements (Cross & Morel, 2005; McPhail, 1993). Never designed to accommodate the poorest in the "illegal" slums, inefficient utilities, in most cases providing irregular service to existing customers in commercial, industrial and formal housing areas, are ill-equipped to cope with fast growing population numbers and increasingly fragile water resources. As a result of the rapid pace of urbanization, mounting financial deficits and low managerial capacity, combined with a lack of political support, urban slums or squatter settlements on the peri-urban fringe are home to a significant proportion of the estimated 884 million people still relying on unimproved water sources to meet their daily needs (WHO & UNICEF, 2008). In the absence of direct access to piped water and due to increasing pollution of traditional alternative sources, such as streams and wells, many of the urban poor are paying high prices to alternative, usually unregulated providers for small quantities of water of uncertain quality (Collignon & Vézina, 2000; Zaroff & Okun, 1984).

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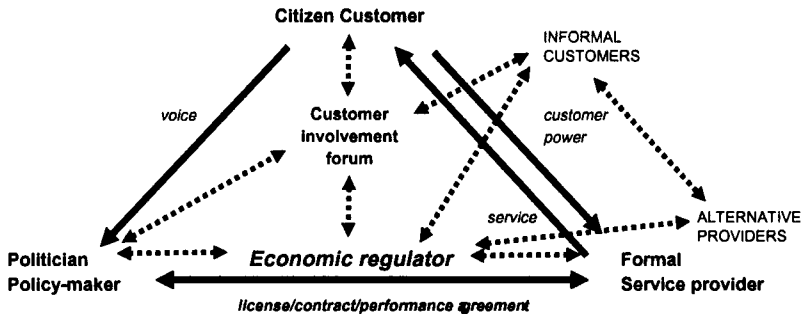

Figure 1. *The extended role of pro-poor regulation (Franceys & Gerlach, 2008, after World Bank, 2003).*

The model of economic regulation as a purely technocratic institution concerned with the correction of market failure and maximization of consumer welfare is being challenged in the European context (Finger & Varone, 2006). It is even less applicable in developing economies. Meanwhile, as this paper will show, developments in England and Wales are signaling the potential of regulation to protect the interests of vulnerable groups in society. In view of the critical importance of an affordable and conveniently accessible water supply at the household level for public health and socio-economic development, this paper responds to the need for an improved understanding of the objectives, challenges and constraints of economic water services regulation in the LMIC context. The discussion draws on the findings of empirical case study research in 11 metropolitan areas (Table 1), analyzing the regulatory experience with respect to the challenge of achieving long-term sustainable water supply services for all urban consumers, particularly the presently disadvantaged and marginalized, underserved urban poor living in slums and informal settlements.

2. RESEARCHING WATER SERVICES REGULATION IN DEVELOPING ECONOMIES

(a) *A knowledge gap*

Economic regulation, which has become the latest in a series of attempts by LMIC governments and their advisors to accelerate universal and sustainable provision of infrastructure services, is attracting considerable research interest. Economists note that given the—perhaps unsurprising—initial reliance on conceptual frameworks borrowed from the Western World, there is a distinct lack of theoretical understanding of economic regulation in developing countries (Laffont, 2005). A review of the development literature by Parker, Kirkpatrick, and Figueira-Theodorakopoulou (2008) concludes that in the light of inadequate existing knowledge there is a strong need for further research to enhance our understanding of regulatory policy, objectives and outcomes in developing economies, where regulation must fit into wider poverty reduction strategies. As organizational changes usually occurred in the context of service privatization or commercialization, the topic has remained overshadowed by ideological debates concerning the involvement of the private sector in service delivery. Academic literature specifically addressing water services regulation, sparse by comparison with the telecommunications and power sectors, tends to focus on the regulation of "privatized" utilities (e.g., Mitlin, 2002; Nickson & Franceys, 2003; Nickson & Vargas, 2002).

There is an emerging awareness within the development community that appropriate regulatory frameworks are a significant driver to implement the necessary changes to achieve basic service provision for all, including the urban poor. Recognizing that privatization was unable to deliver all the (often indirectly) hoped-for benefits for the urban poor (Marin, 2009), donor agencies instigated research into pro-poor contracting arrangements (Cross & Morel, 2005; Stallard & Ehrhardt, 2004; WSP & PPIAF, 2002). While there is now a growing practitioner-based literature on the subject (e.g., Ehrhardt, Groom, Halpern, & O'Connor, 2007; Trémolet & Hunt, 2006), pro-poor water regulation remains on the fringes of academic research. The role of adequate pricing policies to leverage the investment required to support LMIC governments' universal service aspirations, for instance, is discussed by Clarke and Wallsten (2002) and Estache, Laffont, and Zhang (2004). Tariff design options and subsidy mechanisms have been examined critically with respect to their distributional impact (Boland & Whittington, 2000; Chisari, Estache, & Waddams Price, 2003; McIntosh, 2003). However, little comparable detail can be found on topics equally if not more relevant to serving poor consumers. For example, having identified the need to extend the scope of regulatory oversight to include the various service arrangements that operate alongside conventional networked urban water supply systems, the literature offers few tangible suggestions for dealing with independent, often informal small-scale "alternative" providers (Bakker, 2008; Sansom, 2006). Overall, the current state of knowledge can be summarized in the words of Ehrhardt et al. (2007): "Much has been written about the theory and application of regulation, but little is understood about how regulatory systems work in practice in developing country environments."

(b) *Case study research*

Given that low-income urban settlements are critical to achieving the water MDG, the 11 case studies have examined the variety of challenges and constraints related to urban water supply from the perspective of regulators, providers and low-income households. The study was designed to cover global water regulatory experience, within a wide spectrum of ownership and management arrangements for service provision, to capture a range of regulatory systems at different stages of institutional development. This necessarily includes public monopoly providers where the conventional private sector drivers to incentivize service efficiencies (the potential for higher shareholder profits allowing for staff bonuses) is much less clear.

Table 1. *Case studies overview.*

	Cities		Country-level indicators[a]			Water services regulation		
	Location: city, country	Population (city) (m)	GDP pc (PPPUS$ 2008)	Poverty (<$2 per day 2007 and previous, 2003)	Urban water supply (household connections- 2006 and previous 2002)	Regulator/regulatory authority	Start date (established)/ operational	Main providers considered in case studies (name, type and status, where applicable)
Regulatory experience in a PSP context	La Paz-El Alto, Bolivia	1.4	$4,140	30.3% (34.3%)	91% (92%)	Superintendencia de Saneamiento Basico (SISAB) subsequently abolished	1999, replacing predecessor (1997)	Aguas de Illimani: concession, terminated
	Santiago de Chile, Chile	4.7	$13,270	2.4% (9.6%)	98% (99%)	Superintendencia de Servicios Sanitarios (SISS)	1990	Aguas Andinas: concession
	Metro Manila, Philippines	16	$3,900	45% (46.4%)	69% (60%)	Metropolitan Waterworks and Sewerage System Regulatory Office (MWSS-RO)	1997	Manila Water, Maynilad: concessions
	Jakarta, Indonesia	10	$3,830	– (52.4%)	34% (31%)	Jakarta Water Supply Regulatory Body (JWSRB)	2001[c]	TPJ, Palyja: modified concessions
	England and Wales[b]	8.5	$36,130	15.7%[b]	100% (100%)	OFWAT (Water Services Regulation Authority)	1989	Severn Trent: divestiture (on 25-year rolling licence)
	Accra and Kumasi, Ghana	1.7 and 0.7	$1,430	53.6% (78.5%)	NA (50%)	Public Utilities Regulatory Commission (PURC)	1997	Ghana Water Company Ltd: public, corporatising with subsequent management contract for operations only
Regulation and commercialization	Nairobi, Kenya	2.5	$1,580	39.9% (58.3%)	47% (56%)	Water Services Regulatory Board (WSRB)	(2002) 2004	Nairobi Water and Sewerage Company: corporatised
	Lusaka, Zambia	1.1	$1,230	81.5% (87.4%)	41% (47%)	National Water Supply and Sanitation Council (NWASCO)	(1997) 2000	Lusaka Water and Sewerage Company: public, corporatising with unfulfilled intention to privatize
	Amman, Jordan	2.1	$5,530	3.5% (7.4%)	96% (89%)	Programme Management Unit (PMU)	(1997) 1999[d]	LEMA: management contract, expired end 2006
Quasi-regulators (govt. dept)	Jaipur, India	2.75	$2,960	75.6% (79.9%)	49% (51%)	Rajasthan Water Supply and Sewerage Management Board (RWSSMB)	–	Public Health and Engineering Dept, Rajasthan: public
	Kampala, Uganda	1.1	$1,140	75.6% (N/A)	11% (8%)	Ministry of Water, Lands and Environment (MoWLE)	–	National Water and Sewerage Corporation: public

[a] GDP indicator from World Bank (2009); poverty indicators from UNDP (2005, 2009); urban water coverage from WHO/UNICEF (2004,2008).
[b] Unlike the other case studies, England and Wales (E&W) was a regional study, including Birmingham, with approx. 1 m inhabitants. Note that E&W poverty data refers to the percentage of the population living on <$11/day.
[c] JWSRB was established three years after the start of the "modified concessions" (1998). Prior to that, the former operators' Board of Directors, PAM Jaya, acted as the contract supervisor.
[d] Formally established in 1997, PMU did not have regulatory (contract oversight) functions until the start of the Amman management contract in 1999.

The selection of cases (Table 1) reflects the trend of introducing economic regulation in the context of privatization of water service provision and the interests of the study sponsor. The sample included the regulators of high-profile concessions in Manila, the Philippines and La Paz—El Alto in Bolivia, as well as that of a limited form of concession in Jakarta, Indonesia and the administrative unit which oversaw the management contract in the Jordanian capital city Amman. Despite service providers having changed subsequently in all of these locations, the research findings appear to remain valid, with the role of the regulator continuing beyond termination or revision of contracts with the international private operators (except in Bolivia). Three African case studies, Ghana, Kenya and Zambia, investigate national economic regulators that at the time of fieldwork were regulating one or several commercialized former public utilities. Another two case studies, Jaipur, India and Kampala, Uganda, consider service provision in the absence of any proclaimed economic regulation. Their inclusion is explained by the Indian decree requiring all federal states to establish a water regulator (since withdrawn but subsequently re-proposed as a "need to be developed" (MUD, 2009)) and the high level of performance monitoring in Uganda which mimics what a regulator might seek to achieve. The two final cases, Chile and England and Wales, were selected despite their significantly higher wealth relative to the others, for their long experience of economic water regulation of an "extreme" form of privatization, divestiture. The interactions between government, regulator and private companies in England and Wales, which resulted in the introduction of charitable trust funds, debt management programs and legal responsibilities to meet the needs of poor customers, serve as an instructive illustration that financial assistance for water consumers is not just a "poor country" phenomenon but requires careful management also in comparatively richer countries. The Chilean case completes the picture by providing a matching "Southern" experience with a focus on serving the poor through national subsidies rather than through sectoral cross-subsidization.

Initial fieldwork, consisting of semi-structured interviews with representatives of regulatory agencies, national and local government, water service providers, civil society groups and development partners, substantiated by extensive document reviews, was undertaken by a team of local and international researchers in 2004 and 2005 (subsequently updated through ongoing discussions to date with individual regulators).

The primary focus of the case study research was not to investigate economic regulation *per se* but rather specific elements relating to low-income consumers, such as poverty-aware mandates and institutional responses, the extent of needs identification and acceptance of appropriate service differentiation and the role of alternative providers. The findings, demonstrating significant awareness of poverty issues outside any formal mandate, progressively emphasized the interplay of regulatory instruments, regulatory governance and regulatory leadership, highlighting the embeddedness of water services regulation in broader local and national governance processes.

3. RESEARCH FINDINGS

With few exceptions, the case study research found that regulators are not legally required to facilitate and monitor the early achievement of universal service. Neither are they enabled to do so, their allocated powers and responsibilities often falling short of the complementary, if not prerequisite, regulatory duty of ensuring that reasonably efficient providers may achieve an adequate return on capital employed to enable them to meet any such service obligation. Despite these weaknesses in the formal regulatory framework, some of the regulators studied have been able to respond to the universal service challenge.

(a) *Formal regulatory frameworks: mandates and strategic sector targets*

The move towards privatization, or even the first step of commercialization, of water services in the case study cities or countries was usually precipitated by the incumbent operators' persistent failure to deliver an adequate level of service to large fractions of the resident population. However, the regulators established as part of this process were not explicitly mandated to prioritize network expansion into unserved areas. The countries' legal frameworks contained few explicit references to a universal service obligation (USO) or similar for service providers or an equivalent service entitlement for citizens, despite policy statements expressing a commitment to universal access and affordability of water supply services. With the exception of England and Wales, where the 2003 Water Act (finally) amended the functions of the economic regulator OFWAT to include a second primary duty to "further the consumer objective" with special consideration of vulnerable groups,[1] legislation in the case study countries contained no specific "pro-poor" duties for regulators. Thus, giving special regard to the needs of poor and vulnerable members of the community was found to be a regulatory duty only where the achievement of universal service was no longer a primary concern, but where instead the distributional implications of water tariffs dominated public discourse.

In addition to a lack of legal clarity with respect to mandates, which hence failed to specify regulatory powers and responsibilities with respect to economic *and* social matters, an incomplete separation of operator (and/or asset holding agency), regulator and policy-making functions was a common observation in the case studies. Where regulators are constrained by difficult organizational arrangements however (e.g., where functions which are best managed separately have been retained within the same entity), they have little scope for any discretionary decision-making in favor of marginalized consumers. The case studies then examined national policy frameworks, which offered little useful guidance for clarifying the weak regulatory mandates. To the contrary, ambiguously framed or outright contradictory policy objectives were found to undermine regulatory credibility, most notably in younger regulatory systems. Political commitment to below-cost tariffs while demanding cost recovery exposes regulators such as the Jakarta Water Supply Regulatory Body to public resistance and criticism in the wake of the departure from traditional public service cultures.

Clear guidance as to how to tackle the challenge to widen access to formal water services was only available where performance contracts contained specific expansion targets. Though these are normally geared towards increased accessibility of networked services, a number of cases raise the question as to whether contractual coverage targets can be a satisfactory substitute for a legally enforceable and effectively defined USO on service providers and a corresponding regulatory duty to oversee and facilitate its achievement. The renegotiation of the concession agreements in Jakarta, Indonesia, for instance, involved a revision of the service coverage ratio (based upon conventional service connections) to an equally ambitious and unrealistic "about 100%." In Kenya, a newly

introduced "coverage" performance indicator, defined as "(number of household connections * 5 + number of public standpipes or water kiosks * 1,000)/total population," obscured persistent inequalities between private tap and standpipe users whereby one thousand users accessing water through a single water point might not be considered an acceptable level of universal service. Other performance agreements made similarly generous assumptions for the number of users served per connection. Manila's concessionaires satisfied the "full coverage" criterion by installing one standpipe per 475 people in low income areas, and a private household connection could be assumed to cover 9.2 users (an average household having five members). In La Paz—El Alto, Bolivia, a discrepancy between municipal and service area boundaries, arguably excluding the poorest households from the universal coverage target, fueled disputes that ultimately led to the termination of the contract. Coverage figures alone, whether over-optimistic in their service level, service numbers or service boundaries, appear to be inadequate tools to enable regulatory processes to facilitate a "good enough" level of universal service. Like so many indicators that become targets, coverage figures can be manipulated to give the appearance of pro-poor service without achieving the reality. It requires the flexibility of a regulator to look beyond the actual targets to the underlying meaning and enable service providers to trial different approaches which deliver sufficient quantities of water through an appropriate delivery mechanism, even if these do not easily translate to conventional coverage figures.

(b) *Another set of framework conditions: lack of information and uncertainty*

However, complementary to the weakness in setting or understanding service standards, the research found that in most cases regulators did not have sufficient information as to the location, extent and present service access of the poorest, most needy (in public health terms) consumers. Reliable information is at the heart of effective economic regulation (Armstrong, Cowan, & Vickers, 1994), and besides the "right" legal framework conditions it is a prerequisite to commence the process of regulation. Regulating for the poor requires a thorough understanding of the—perhaps somewhat elusive—potential customer base of each city-wide utility, all current service providers (including alternative suppliers), and consumers' differing demand for water services relative primarily to income and location. Poor data management within water utilities notwithstanding,[2] the lack of comprehensive and accurate data depicting the existing water services situation is clearly a central problem of regulation in LMICs. Statistical information on water services as collected by government agencies is usually guided by the MDG targets. Statistics produced by government and development agencies have therefore tended to portray "coverage" by focusing on the "access" criterion without qualifying the type and level of the service provided to the population. It was found that coverage statistics derived from utility customer data, where available, are likely to overestimate the actual accessibility of formal networked services.

Problems also arise as access statistics, which have been criticized as being inaccurate and too simplistic (Bartram, 2008; Satterthwaite, 2003), are rarely linked with socio-economic data. Available census and poverty data, which could provide a basis for segmented analysis, were found to contain significant errors of exclusion. For instance, surveying methods used by the Kenyan Central Bureau of Statistics did not capture persons living outside of identifiable households, excluding the most vulnerable members of society by default. The research showed that targeted surveying in informal settlements and peri-urban areas resulted in a downward adjustment of available figures. The Kenyan case illustrates the inconsistencies between different data sets: published figures for Nairobi covering a two year period (2004–05) ranged from "92.6% access to safe water" and "23% of the [city-wide] population served by piped water supply" to "100% reliance on water kiosks"[3] or possibly "19% served by private connections and yard taps" in informal settlements, depending on data source and surveying methods (Gerlach, 2008).

Furthermore, the findings highlighted a lack of information on the full cost of water services to the various user groups, which is a significant input variable to regulators' price determinations. These gaps were most pronounced with respect to the effective prices paid by low-income consumers to access different service options. Estimates of affordability of water services failed to account for the substantial add-on expenditures, such as storage costs, that households incur as a result of intermittent service. The Jordanian case with its exceptionally high connection rates and a national pricing policy designed to safeguard affordability (rising blocks where, unusually, all consumption is charged at the highest rate consumed) highlights the importance of recognizing the prevalence of shared connections and above-average household sizes among the poorest customer segments, which then do not benefit from "lifeline" tariffs to the anticipated extent (Gerlach & Franceys, 2009a). None of the LMIC regulators studied had access to systematically collected data on tariffs charged by non-utility providers, which may be subject to substantial fluctuations, and the costs of coping mechanisms.

(c) *Alternative providers: beyond the reach of regulation?*

With the exception of the registration of water tankers, as practiced in Ghana and Jordan, and some limited licensing of water resellers (in Kenya and Zambia) and groundwater users (observed in Jakarta, Jordan and Kenya), the research found only patchy information on alternative providers and their customers. Regulators therefore had no knowledge base regarding the parallel water markets which may serve as much as 80% or more of the local population (Collignon & Vézina, 2000)[4] and whose estimated turnover may well exceed utility collections.[5]

However, the research found that African regulators in particular are acknowledging the contribution made by the various forms of small-scale, private providers, and are working on ways to minimize the risks inherent in informal, largely unregulated and only partly competitive water markets. Oversight mechanisms for alternative providers' (AP) operations were generally found to be limited in extent and enforcement was lacking, most notably with respect to resale pricing regulations. The revised water sector legislation in Kenya provides an example of legal reform seeking to regulate small-scale provision.

Generally, the risks associated with APs, who are either knowingly or inadvertently infringing on existing regulations or exploiting loopholes in the law, were recognized as high. In several cases, notably India, Indonesia and Jordan, unlicensed water businesses could be linked to environmental and water resource crises, for example by contributing to groundwater over-abstraction and seawater intrusion into aquifers. Likewise, in the absence of strict water quality controls, the AP market represents an unquantified but likely public health risk.

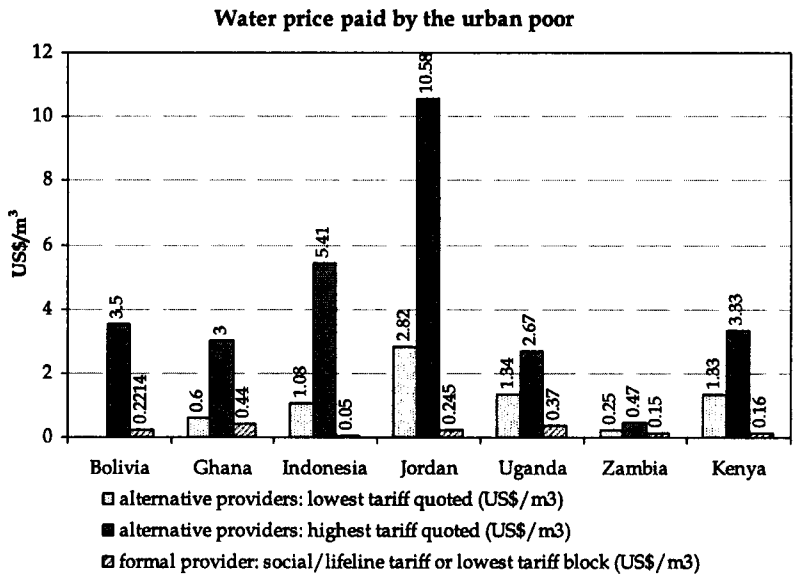

Figure 2. *Typical prices paid by the urban poor, including comparative lowest-cost utility tariffs.*

A major concern more patently related to economic regulation is the compelling evidence that corruption, anti-competitive behavior and comparatively high water prices are widespread. Figure 2 illustrates how customers reliant on APs were found to be paying significantly more per unit of water compared with the subsidized—and usually higher-income—groups able to access piped water from municipal networks. Prices largely fluctuate in response to availability of supply and consumer demand. Although not pictured in the graph, formal water tariffs (lowest/social tariff bands) were relatively stable over time compared with steadily increasing charges for alternative supplies.

Pricing differentials are partly related to the nature of different types of AP, with scale, water source and mode of water distribution impacting on operating costs. However, powerful vested interests, ranging from government income derived from abstraction fees to corrupt involvement of bureaucrats and utility staff in lucrative vending businesses and installation of illegal connections, were also found at play. In some cities, attempts to relieve the financial burden to customers through lower prices associated by encouraging greater competition through deregulation measures, or increasing the number of public water points, were opposed and sabotaged by incumbent APs. The legalization of household resale in Jakarta, for example, allegedly had to be discontinued to prevent standpipe operators' perceived profit losses. Utilities were also found to suffer from unfair AP competition, with knock-on effects on customers due to reduced revenues needed for service improvements: Where customers were not legally obliged to remain connected to formal networked services, such as in India and Jordan, vendors—mainly tankers—were observed to be siphoning off lucrative customers who, before the recent fuel price increases, were happy to switch to a cheaper and sometimes more convenient (though much less sustainable) service alternative.

Regulators were only beginning to address these issues. PURC in Ghana, which officially recognizes the role of APs in providing services to the urban poor, intended to restrict interventions to water quality regulation in the foreseeable future. End user prices in this secondary water market, which are deemed to be "subject to free market forces," are to be influenced indirectly by reducing operating costs (via bulk water tariff regulation) and the more ambiguously phrased support to "interventions which move consumers to progressively cheaper access routes" (PURC, 2005, p. 16). Zambia has successfully initiated a commercial kiosk management model involving private operators, which allows high quality utility water to be distributed in low-income areas. Linked and bound by contractual arrangements with the utility, private vendors provide water at fixed and regulated tariffs. Appropriate margins for the bulk water supplier and kiosk operator as well as community involvement were identified as key to sustainable services.

Regulatory risk, however, also affects APs, for instance where existing regulations give a competitive advantage to formal, utility water providers, in spite of their inability to deliver services to large proportions of the population. Exclusivity rights granted by contract to the Manila and Jakarta utility providers, for example, span the entire service area even if the contractual coverage targets do not envisage the entire population receiving piped water services until the end of the service agreement or, worse still, have been revised to reflect the inability of the provider to reach 100% of a city's residents within the lifetime of the concession. Which raises the question as to why the regulator was not sufficiently empowered to revise the exclusivity rights to balance that delay in service requirement? A number of small-scale providers in Kenya and the Philippines with a genuine interest in serving low-income communities expressed dismay at the difficulties involved in gaining formal kiosk operator status and the lack of regulated bulk water agreements.

Given that networked service provision by a city-wide utility is the most economic option for serving urban areas, regulatory mechanisms need to be designed on the understanding that alternative providers, while providing a critical service in many low-income settings will be gradually replaced with utility water supply. A combination of contracted resellers covering "difficult to serve" informal settlements, and licensed independent providers, who invest in areas beyond reasonable reach of networks, could be the solution for cities that attract new residents faster than the utility can upgrade and extend service infrastructure. The lack of an

enabling legal framework that would allow or encourage cooperative arrangements between APs and utilities to harness the "pro-poor service skills" acquired by the former and protect independent providers' investments, at least during a certain time period, were identified as a serious shortcoming. Conversely, the law was found to be overly prescriptive in some instances. The findings concluded that minimum service levels, which tend to closely follow internationally accepted (i.e., "developed country") engineering standards, frequently set rigid and unrealistic targets that run counter to poor consumers' aspirations for "good enough" service—confining a range of services provided by APs to the informal sector as well as acting as a hindrance to successful service differentiation on the part of utility. Any benefit of formalization of AP services in terms of consumer protection incurs a regulatory cost: "policing" a great number of independent provider licenses and sub-contracts would become a regulatory burden that would need to be mitigated, for example, by holding (formally regulated) utilities liable for services provided by their (not directly regulated) contracted resellers and by devolving certain monitoring functions to user-level third parties, such as consumer groups.

(d) *Agency response: pro-poor sector leadership*

While the ability of regulators to act was constrained, to a certain extent, by inadequate framework conditions, their capacity to interpret their mandates and proactively shape the regulatory mission and sector strategies in support of pro-poor service development emerged as a significant, if not equally important, success factor.

The majority of regulators had attempted to build a distinctive identity and published mission statements. One third had declared social protection (access, affordability and equity beyond "regular" customer protection) a stated goal of the agency,[6] and a few had developed regulatory strategies that featured explicit pro-poor measures (Table 2). The table distinguishes between three groups of regulators—those who, for whatever reason, did not have a pro-poor strategy in place, those who exhibited pro-poor tendencies, and those who openly acted in the interest of the poor.

(i) *No pro-poor strategy in place*

No strategic objectives that could be interpreted as "pro-poor" could be found in the case of the Indian and Jordanian "quasi-regulators." The Kenyan national regulator had failed to assume a leading role in pro-poor development of the water services sector within a reform process in which the pro-poor cause was being championed by external advisors and development partners. Chile on the other hand had developed a regulatory system that has been highly effective in achieving pro-poor objectives through complementary mechanisms: with a government-administered, means-tested subsidy program in place, the regulator has had no need to develop dedicated pro-poor strategies. Arguably this is only possible where government has accepted a social equity duty, a struggle that the Consumer Council for Water in England sees as ongoing.

(ii) *Pro-poor tendencies*

The regulators of the international concessions in Metro Manila could be seen as pursuing pro-poor strategies. It could equally be argued that connection targets were predetermined in the contracts, and any additional pro-poor service innovations were actually driven by the operators. Similarly, the then Bolivian regulator supported Aguas de Illimani in achieving contractual targets, which, depending on the definition of

Table 2. *Selected indicators of agency design and organizational response to the challenge of universal service.*

	Location	Regulator	Powers and duties		Institutional design	Organizational response		
			Tariff setting powers	Universal service duties	Pro-poor mandate	Mission statement		Pro-poor strategy[c]
						Published	Social protection reference	
Strategic pro-poor bias	England and Wales	OFWAT	Yes	"Give special regard to vulnerable groups"	Yes	Yes	No	Yes
	Ghana	PURC	Yes	Oversee GWCL's duty to provide "safe, adequate, efficient and non-discriminatory service"	No	Yes	Yes	Yes
	Zambia	NWASCO	Yes	Establish "Devolution Trust Fund"	No	Yes	Yes	Yes
Pro-poor tendencies	Indonesia	JWSRB	Guidance	Oversee contractual expansion targets	No	Yes	Yes	(Yes)
	Uganda	MoWLE	N/A	(No)	(No)	Yes	(Yes)[b]	(Yes)
	Bolivia	SISAB	Yes	Oversee contractual expansion targets	No	Yes	No	(No)
	Philippines	MWSS-RO	No	Oversee contractual expansion targets	No	(Yes)[a]	(Yes)[a]	(No)
No. pro-poor efforts	Chile	SISS	Yes	No	No	Yes	No	(No)
	Kenya	WSRB	Guidance	No	No	Yes	Yes	No
	Jordan	PMU	No	No	No	Yes	No	No
	India	RWSSMB	N/A	No	(No)	No	No	No

[a] Parent organization (MWSS) only.
[b] Although not specifically mentioned in the mission statement, social equity features prominently in the underlying objectives.
[c] Key: Yes – published strategy, (Yes) – no published strategy, but clear strategic actions, (No) – no published strategy, some actions could be interpreted as pro-poor; lacking strategic direction or guided/inspired by actors other than regulator, No – no strategic pro-poor focus.

the service area used, could be described as pro-poor. However, unable to resolve the complications arising from the contract ambiguities, SISAB was not perceived (or arguably, portrayed) as advancing the interests of the poor.

While Uganda had no pro-poor regulatory strategy in the performance indicators agreed with the contract monitoring board, there have been significant pro-poor developments in the water services sector. The motto "Some for All and Not More for Some" originates from within the entity with overall responsibility for water services delivery. Efforts were being made to extend services in an equitable manner. The water company dropped its disproportionately high fee for making a physical connection to the water network,[7] offering free connections to all properties within 50 m of the water main, to assist low-income households gain first-time access to piped water supplies. The challenge of extending water mains to within 50 m of unserved slum dwellings remains, however.

The Jakarta Water Supply Regulatory Body had not published a statement of its pro-poor intentions, but regulatory staff showed a high level of awareness of consumer issues beyond its customer protection mandate. The chief regulator perceived it as his role to "understand ... different [stakeholder] characteristics and try to protect the poor/low [-income consumers]" (Lanti A, 2004, personal communication). JWSRB has worked towards achieving this through formal customer involvement and exploring alternative financing and service arrangements for presently unserved low-income communities. The early introduction of a "Water Voice" system in Jakarta, modeled after the customer committees found up until recently in England and Wales, reflected the regulator's concern to adequately represent the public interest in regulatory decisions and to comply with his customer protection mandate, as well as the need to legitimize regulatory decisions that extend into the social policy domain.

(iii) *Strategic pro-poor bias*

The Ghana case study research findings initially noted the lack of explicit strategies, milestones and incentives to drive poverty-aware, universal service provision. The 2005 "Social Policy and Strategy for Water Regulation," however, spelled out the regulator's commitment and leadership aspirations with respect to pro-poor service achievement. Mandated to regulate the provision of water services and "to protect the interest of consumers" (Government of Ghana, 1997), PURC interpreted this as encompassing presently served and unserved water consumers, setting out objectives to provide mechanisms for improving access and affordability of basic services for the urban poor, emphasizing the role of consumer involvement and present "secondary providers." Critics might argue these statements took a long time to emerge and are yet to be backed with substantive actions but the same can also be said for England.

NWASCO, Zambia, clearly perceived its role as an advocate of the poor, and has defended this bias towards social aspects of its regulatory work. The regulator worked closely with the Devolution Trust Fund, which was established as an instrument for extending services to low-income and peri-urban areas, issuing pro-poor service guidelines and minimum standards for kiosk management. In addition, the regulator facilitated the incorporation of the consumer voice into the regulatory process. Contrary to its Ghanaian colleagues, NWASCO had made significant progress since its comparatively late inception, emerging as a model organization in South–South development cooperation. Water Watch Groups (WWGs), groups of competitively selected, trained volunteers receiving logistical support from the regulator, are a particular feature of the Zambian regulatory setup[8] that serves as formal communication and feedback link between regulator and customers. WWGs primarily serve the purpose of directly involving communities in continuous service quality monitoring, but were also found to be acting successfully (as successfully as any such consumer involvement can be) as a first level of arbitration between service providers and customers, handling complaints and educating consumers on their rights and responsibilities.

4. LESSONS FOR A PRO-POOR REGULATORY PROCESS

Given the framework conditions and responses discussed in the previous section, the regulators' present and potential future role in facilitating the goal of pro-poor, universal service (in locally appropriate variants) is less than straightforward. The research concluded that regulators need to be supported in: identifying more clearly the needs of the underserved, developing an understanding of a range of differentiated service delivery mechanisms, moving towards cost-reflective tariffs for conventional customers in order to facilitate creative services to the poor, and in developing leadership within the context of overall governance.

(a) *Identifying needs*

Improving the knowledge base on low-income consumers and their providers within the regulated service areas is a prerequisite for designing "pro-poor" utility services. Regulators have recognized this central role of information. Based on a 2002 socio-economic survey in Ghana, PURC developed a simple, but therefore workable, definition for the "urban poor," who were identified as "those without direct access to utility supplies, who depend on secondary suppliers, and who buy by the bucket or container." A more systematic approach was taken in Zambia to provide the regulator with accurate baseline information. A study mapping consumers, service levels and infrastructure status in peri-urban and low-cost settlements, and taking into account a new definition of "access to a sustainable water supply" and considering only installations that were actually functioning, resulted in a downward revision of official coverage statistics (Anonymous, 2006).[9] The data feeds into NWASCO's monitoring and information system, allowing the regulator, interested stakeholders and the general public to track progress of individual utility providers and the overall implementation of sector policies and targets. The development of a similar information system for the Kenyan WSRB encountered institutional obstacles when an application for funding to undertake an informal settlements baseline survey was rejected as "not relevant and sustainable" (Gerlach, 2007). It can be expected that the logical next step of improving and streamlining definitions and indicators used in routine data collection and surveying carried out by national monitoring bodies to enhance the quality and consistency of available water and sanitation data and avoid unnecessary duplication of efforts may be met by similar ignorance and resistance. In contrast, the Ministry of Urban Development, India, as part of its pre-regulation approach, is re-launching a benchmarking exercise (MUD, 2009) and has included 'improved access, targeted subsidies and incentives, participatory planning mechanisms' as the aspects of "services to the poor" categories which might be eligible under the National Urban Water Awards 2009 (ASCI, 2009).

(b) *Developing appropriate, differentiated, service responses*

A number of regulators have, in consultation with consumer groups, taken practical steps towards price and service differentiation, the case for which has been argued on economic grounds for some time (Baker & Trémolet, 2000; Sansom et al., 2004; Smith, 2000). Authors had called for more pragmatism in regulatory controls on pricing and service quality, allowing providers to adopt low-cost innovations (in technology or customer service levels) that better correspond to low-income consumers' willingness or ability to pay. While the latter remains notoriously difficult to ascertain, some regulators are now accepting the fact that they may have to—at least temporarily—embrace less conventional service arrangements in the pursuit of the ultimate goal of an affordable water connection for all households (Gerlach & Franceys, 2009b). Following the example of some private concessionaires' successful service expansion to poor consumers, arguably encompassing the principle of demand-responsiveness out of necessity (Jacobs & Franceys, 2008), JWSRB in Jakarta was seeking to replicate "Manila-type" group connections (whereby a group of households are served through a single meter with one household or community agent responsible for payment on behalf of all) in an effort to disentangle the web of vendors' "water mafias" by speeding up access to formal pipe networks. Formalizing resale activities was the favored approach in Zambia's peri-urban settlements, where kiosks under professional management are being promoted by NWASCO's Devolution Trust Fund as an effective and economical option to serve the urban poor. Addressing the questions of alternative providers and an appropriate level of consumer involvement is critical to any attempts to introduce price and service differentiation in the LMIC urban environment and lay the foundations for a pro-poor regulatory process. At the time of fieldwork a number of regulators had attempted—more or less successfully—to involve consumers in the regulatory process in order to improve demand-responsiveness, accountability, and to support the legitimacy of decisions in view of weak regulatory mandates.

(c) *Finance and planning: funding and sustaining universal service*

In the context of economic regulation, the importance of moving towards financial (self-) sustainability for the sector cannot be over-emphasized. Appropriate low-cost options enabling poor consumers to access formal services need to be matched with appropriate tariff structures, which should allow the service provider to recover the costs of everyday operations and ongoing capital maintenance, as well as, ideally, generating revenues that enable debt servicing of capital investments. An appropriate tariff level for conventional customers, perhaps the main driver for much economic regulation, is as critical in facilitating appropriate services to low-income customers as any other measure. Enabling viable tariffs remains a critical challenge for regulators in LMICs, as illustrated by this recent statement by the Zambian regulator: "One of the greatest leaps made so far has been the separation of water pricing from the direct control of politicians" (NWASCO, 2008). Given the propensity of political actors to intervene, interfere or retain control over tariff setting observed in the case studies, NWASCO's success in doubling some tariffs during a general election year in Zambia was a critical display of a new regulator's authority. Where private operators are involved, allocation of responsibilities, financial risk and profits were—unsurprisingly—found to be even more contentious. The Jakarta case illustrates the potentially perverse outcome of an arguably pro-poor contractual arrangement that effectively shielded the private operators from any commercial risk involved in serving low-income households. Bound by a complex financial setup which de-linked utility revenues from customer tariffs, JWSRB was unable to prevent the introduction of a connection quota in favor of the wealthier classes to maintain the required average tariff, illustrating the problematic of concurrent demands for cost-reflectivity and low charges for the lower tariff groups.[10]

Though poverty may be less striking in Chile, a look at this case is instructive as it underlines the necessity of recognizing a divide between "ordinary," fee-paying customers and those with little means to make contributions to service provision. The latter are taken care of under social welfare programs so as to not jeopardize service for all. While it may be tempting to suggest disconnecting "social" from "economic" decisions as a way forward to facilitate a rational debate and practical measures outside or rather alongside the regulatory process, the England and Wales case highlights how difficult this is to achieve. Governments often also find it hard to appreciate the role of profit as an incentive for efficiency in service delivery. Especially with short term contracts the mismatch between small incentives and big challenges reduces the potential for service improvements, as stated plainly by stakeholders involved in the Amman management contract. Assessing the scope for efficiency gains and thus curbing windfall profits is difficult,[11] especially in the absence of established benchmarking systems in many case study countries. Data and reporting inadequacies prevented the preparation of sound, pro-poor business and asset management plans—the latter providing a basis for economic regulation in established systems—planning being further complicated by the frequent ambiguities regarding operator, asset holder and supervisory/regulatory functions, and overlapping financial and investment responsibilities.

There also appears to have been little progress with respect to tariffs and subsidies, particularly with regard to all-important connections fees, as the research findings broadly concur with the published literature (Boland & Whittington, 2000; Franceys, 2005; McIntosh, 2003). Despite evidence that tariff structures are equally, if not more, important than tariff levels, the latter continue to feature most prominently in the regulatory debate. Lifeline tariffs were the single most frequently cited pro-poor measure in the case studies, despite their inherent bias against multi-occupancy households and the vast majority of the unconnected poor. A simple comparison of formal water tariffs, which are protected "in the public interest," with the effective prices paid by poor consumers, that is including coping costs and inflated prices paid to alternative providers where or when no formal connection is available, proved that tariff levels were not the primary concern of poor households. Again, inadequate information made it difficult for regulators to distinguish between perceived and actual weaknesses in existing tariff arrangements and to evaluate their impact on the poor.

(d) *Governance and leadership*

The case studies provide evidence for some positive developments in terms of regulators demonstrating a capacity and willingness to achieve a suitable balance between the social and economic objectives of water service regulation. It is worth noting that the "most visibly" pro-poor regulators were enabled to take a proactive stance and assume pro-poor leadership. For instance, legalization of peri-urban settlements in

Zambia placed the local low-income population within NWASCO's remit. However, in conversation the Chilean and Jakarta regulators made it clear that there are limits to the extent to which they can lead the process of shaping the regulatory framework. They insisted on a clear boundary between policy-making and regulation, but conceded that to a certain degree they perform a mediator role and provide expert advice to the government. This interplay between policy and regulation is part of the development of regulatory systems. The relevance of shifts in government policy and consequent legislative changes is particularly marked in the case of E&W, where growing concerns over the social impacts of rising water bills precipitated a change in emphasis of regulatory duties. This and the Chilean example suggest that in the first instance, it is a policy matter to ease the transition from social/public to commercial service by providing alternative social protection measures, the administration of which may form part of the regulatory duties.

While the research was not explicitly designed to investigate regulatory policy, implementation and outcomes from an institutional perspective, the obstacles to universal service consistently pointed back to the wider institutional framework. Most notably this concerned the legal and policy frameworks, but also society's attitude towards and interpretation of "universal water service" and the acceptance of a new organization more or less explicitly charged with safeguarding basic social principles in addition to its technical (economic, financial) responsibilities. Recognizing the combination of internal and external constraints that shape the regulatory process and outcomes echoes the growing consensus within the international development community regarding the role of institutions. The city case studies also show that where progress has been made towards achieving universal access and services that are sensitive to the needs and requirements of the poor, these were not achieved through regulation alone. Where significant pro-poor outcomes were observed, strong commitment of other influential stakeholders, notably political actors and proactive service providers, was also evident.

The case studies highlight the value of investing in institutional strengthening and capacity building. The Zambian experience is one example of successful international support to an LMIC water sector reform, where donor contributions were coordinated in such a way that an indigenous institution became empowered to assume responsibility for pro-poor sector development. The quality of personnel involved, their awareness of their own societies and their continuing exposure to international fora where these issues are continually raised, in addition to any formal institutional strengthening, must explain part of their leadership drive. The danger of leading too far ahead of general understanding, as demonstrated by the politico-legal mandate short comings, is confirmed by the demise of the Bolivian regulator. Other regulators appear to be being allowed some latitude to date—it is possible to surmise that their political leaders, being exposed to the same international fora but with special ministerial meetings and discussions, are grateful to have some mechanism to implement the developing consensus on urban services.

5. CONCLUSIONS

In the "typical" LMIC, regulatory outcomes are very obviously shaped by the political context. Public and social service objectives, widespread poverty and intensifying scarcity of resources accentuate the interplay of technical and social—and therefore political—dimensions of water services. The transformation of the role of the State implicitly required for effective and efficient regulation has rarely been achieved. As a result, regulatory agencies in LMICs, born into delicate economic and institutional situations, operate in politically charged environments. An understanding of the regulator as a separate (not autonomous, rarely independent) "referee," balancing the decisions to be made within the particular socio-political context, and responsible for delivering an appropriate outcome, may be more suitable. The process of regulation, which involves many stakeholders, could then be more adequately described as a subtle, perhaps impossible, balancing act on the part of a regulatory agency to achieve the outputs desired by customers and society as against the inputs that customers and governments are willing to contribute. This implies the need for political leadership to recognize that the regulatory role requires a greater degree of personal leadership and discretion than is generally perceived reasonable in what is often presumed to be only an administrative, accounting-based tariff-setting process.

Nevertheless the research findings suggest that economic regulation of water services can be an effective mechanism for LMIC governments to institutionalize their commitment to universal service and consumer protection while also promoting incentives for efficiency and effectiveness. A clearer definition of a relevant and flexible universal service obligation, and the mandate to require service providers to achieve that USO, is a crucial regulatory tool and therefore a requirement for government policy. However, the extent to which benefits for vulnerable members of society can be realized depends on regulators themselves recognizing and addressing the realities faced by the poor. This has often been a step beyond their initial remit but, to their credit, this research suggests that many have indeed taken that step.

NOTES

1. In addition to its former sole primary duty of ensuring financeability, OFWAT was now also tasked with giving special regard to the interests of the disabled or chronically sick, pensioners, customers on low incomes and those living in rural areas (Water Act, 2003, Chapter 39, Section 2C).

2. Some cases revealed major uncertainties regarding water production and operational costs of utilities (e.g., Kenya, see Gerlach, 2008).

3. Note that vended water is still not recognized as an "improved source" by international agencies (WHO & UNICEF, 2008).

4. This can of course be partly explained by the fact that in many instances small-scale independent providers and resellers operate informally, if not illegally.

5. For example, the estimated turnover of Nairobi's resellers in 2005 was found to exceed utility collections from domestic connections by a factor of nine (Gerlach, 2008).

6. A note of caution: The lack of a proclaimed pro-poor mission does not necessarily indicate a lack of pro-poor intentions or vice versa. Where

a functioning regulatory process is backed by workable pro-poor policies the regulatory framework as a whole may become "pro-poor" by default.

7. High when compared with similar countries (Franceys, 2005).

8. They have since been replicated in Kenya.

9. While the figures previously reported by the Zambian Central Statistical Office were simply based on the "access to safe water" criterion (c.f. WHO & UNICEF, 2000), the coverage definition used under the regulator's information system "is based upon what should be considered an *adequate and sustainable* service level" (Anonymous, 2006, original emphasis). Maximum allowable numbers of persons per water point are as follows: 5.5 per individual connection, 33 per communal tap, 600 per public tap and 1,800 per water kiosk.

10. Effectively halting new connections to customers with less economic (and political) power ensures that the revenue collected from higher-income customers paying a tariff equal to or above the volumetric charge levied by the provider balances the below-cost tariff charged to customers at the lower end of the market.

11. "Role model" OFWAT experienced this problem shortly after privatization, when high profits reported by the English and Welsh water companies caused public outcry (Young, 2001).

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