



ADB-OECD Expert Meeting

*For a beneficial private sector participation in the water and sanitation sector,
lessons learnt from Asian country experiences*

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Stocktaking of the water and sanitation sector and private sector involvement in selected Asian countries

**Background Paper for the ADB/OECD expert meeting on private sector
participation in the water and sanitation sector**

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List of Acronyms and Abbreviations

MDGs	Millennium Development Goals
MWSS	Metropolitan Waterworks and Sewerage System
PPWSA	Phnom Penh Water Supply Authority
PSP	Private Sector Participation
PUB	Public Utilities Board
PWA	Provincial Waterworks Authority
SNIS	Sistema Nacional de Informacoes
DBO	Design Build Operate
TOT	Transfer Own Transfer

Introduction

Less than 30 percent of residents in most Asian cities receive continuous water supply.¹ In 2000, water sector investment required an increase from US\$15 billion to \$30 billion annually in order to achieve the Millennium Development Goals (MDGs).² Several development agencies, including the World Bank and the Asian Development Bank have recommended engaging the private sector in meeting the water and sanitation MDGs. Private sector participation has existed in Asia's water sector for at least 16 years, and although much debate exists regarding its impact, it continues to increase throughout the Asian continent. This paper discusses the state of water resources and the water sector, the history of private sector involvement within the water sector, and related considerations, such as benchmarking, regulation, and institutional effectiveness.

This background note is part of a wider program carried out by the OECD on "Sustainable financing to ensure affordable access to water and sanitation." The program includes the development of practical guidance for governments wishing to engage the private sector in the development and management of water and sanitation infrastructure, based on the newly released OECD *Principles for Private Sector Participation in Infrastructure*. The data presented in this paper is drawn from a new evidence base that combines information on some 7 key dimensions of water and sanitation (covering approximately 90 indicators) for an estimated 30 countries in Africa, Latin America and Asia-Pacific (Annex A provides the detailed list of indicators and countries). The paper builds on the OECD country review to respond to the growing need for a dispassionate approach by providing a stocktaking of water and sanitation sector development and private sector participation in a selection of 10 Asian countries (Bangladesh, Cambodia, China, India, Indonesia, Malaysia, Nepal, Philippines, Singapore and Thailand).

Context and Background

State of the water sector and Millennium Development Goals (MDGs)

According to FAO data and analysis, Asia is relatively well endowed with water resources. The region experiences, however, a large variety of hydrological regimes which results in an uneven distribution of its water resources and its water use conditions across countries and regions. Among the countries under review, India and China are close to experiencing water scarcity, with available water close to FAO's estimated threshold of 2000 m³/inhabitant/year. Although Asian countries have generally sufficient access to surface and groundwater, anthropogenic impacts, including urbanization and waste disposal in rivers and natural impacts, including arsenic contamination in countries such as Nepal and Bangladesh, have contributed to deteriorated water quality and therefore, constrain safe water supply. China has responded to water quality challenges by strengthening standards and increasing inspections. China's reaction is however uncommon, as most Asian countries have not implemented similar practices.

¹ Asian Development Bank (2003). Reaching the urban poor.

² Global Water Partnership (2000). *Towards Water Security: A Framework for Action*.

Table 1 highlights levels of access in selected Asian countries and underlines the outstanding performance of Malaysia, Singapore and Thailand, where access to water and sanitation services is quasi universal. Elsewhere, access to drinking water in urban areas remains well developed (especially in China, India and Nepal), but rural access and especially access to sanitation lag far behind. Table 2, which identifies MDG progress in each of the selected Asian countries, illustrates that India, Malaysia, Singapore and Thailand are either on track or have already achieved the water and sanitation MDGs. Several Asian countries however, are not expected to meet their water and sanitation MDG targets by 2015, and some, including China, Indonesia and Philippines, are regressing in areas such as urban water supply. The decline is largely attributed to urban population growth as a result of rural migration. With rapid urbanization, informal peri-urban settlements are developing and limiting the prospects for connecting all households to water and sewerage networks in the short-term.

Table 1: Access to water and sanitation in selected Asian countries in % of population, 2004

	Bangladesh	Cambodia	China	India	Indonesia	Malaysia	Nepal	Philippines	Singapore	Thailand
Drinking Water Coverage in Urban Areas	82	N/A	93	95	87	100	96	87	100	98
Drinking Water Coverage in Rural Areas	72	N/A	67	83	69	96	89	82	100	100
Improved Sanitation Coverage in Urban Areas	51	N/A	69	59	73	95	62	80	100	98
Improved Sanitation Coverage in Rural Areas	35	N/A	28	22	40	93	30	59	100	99

Source: WHO/UNICEF Joint Monitoring Programme.

Table 2: Water and sanitation Millennium Development Goals progress in selected Asian countries

	Bangladesh	Cambodia	China	India	Indonesia	Malaysia	Nepal	Philippines	Singapore	Thailand
Achieved water MDGs?	No	No	No	Yes	No	Yes	Unclear	No	Yes	Yes
Achieved sanitation MDGs?	No	N/A	On track	On track	No	On track	Unclear	No	Yes	Yes

Source: OECD Investment Division (2007), based on local sources, ADB (2007) and UNDP.

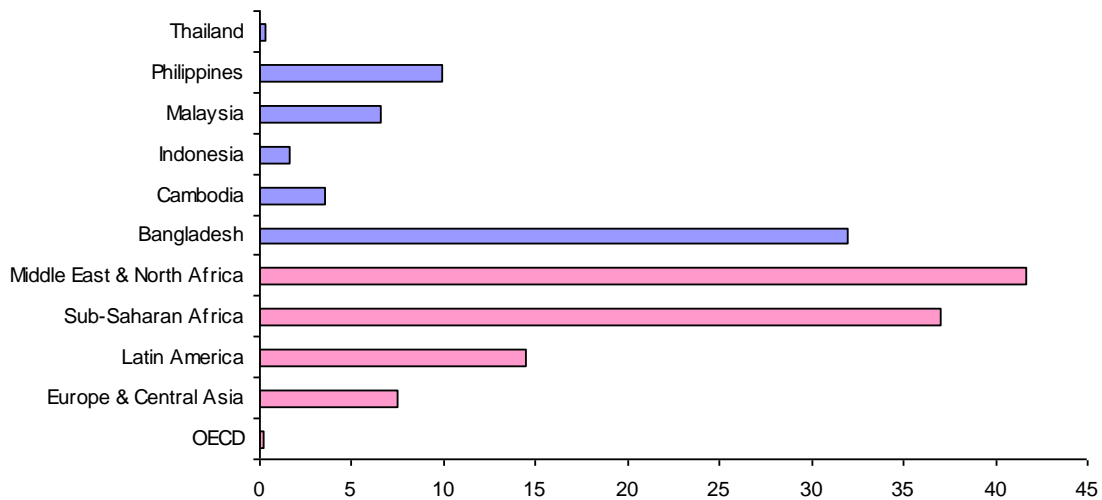
Operational performance indicators within the water sector

Operations and maintenance of water sector utilities is critical in improving access to water supply and sanitation. Table 3 identifies 6 operational management indicators that allow for a better understanding of the state of operational management of water systems in the 10 selected Asian countries. Country rankings vary based on individual indicator, but overall, Singapore and the Phnom Penh Water Supply Water Authority in Cambodia rank highest in most indicators. Countries such as China and India display very diverse performance across states and cities.

In most countries, the percentage of wastewater treated is inadequate. Wastewater treatment is characterised as poor or very poor in Bangladesh, Cambodia, India and Indonesia. By contrast, Singapore indicates outstanding performance by treating 100 percent of its wastewater. China displays heterogeneous performance, with some 91 percent of industrial wastewater treated, but only half of domestic wastewater is treated.

Continuous water supply not only varies between countries, but also fluctuates substantially within countries. Singapore, Malaysia, several cities in China, Phnom Penh and Banteay Meanchey in Cambodia, Bangkok and 88 percent of Manila receive continuous water supply. By contrast, only 24 percent of Sihanoukville (Cambodia) and 20 percent of Jakarta receive continuous water supply. In addition to this performance gauge, useful indications of how the continuity of water supply impacts business is found in the World Bank Enterprise Surveys in the form of the average number of days per year that firms experience insufficient water supply for production (Figure 1). On average, firms working in South Asia experience insufficient water supply for 12 days per year, while their equivalent in East Asia and Pacific experience only 3.5 days of disruption per year. This data compares with an insignificant 0.25 days for OECD countries, 7.5 days in Europe and Central Asia, 14.5 days in Latin America, 37 days in Sub-Saharan Africa and 41.7 days in the water scarce Middle East and North African countries. Among the selected Asian countries for which information is available, Thailand, Indonesia and Cambodia provide a particularly good water environment for business with less or around 3 days of water failures per year.

Figure 1: Number of Days per Year that Firms Experience Insufficient Water Supply



Source: World Bank Enterprise Surveys (2002-2006).

Unaccounted for water indicates the quality and level of maintenance of water networks. With levels at 4.5 and 6 percent, respectively, Singapore and the Phnom Penh Water Supply Authority present outstanding performance (among the highest ranking globally) as compared with the good practice of 15-20 percent acknowledged by OECD countries. By contrast, unaccounted for water estimates in Bangladesh, Indonesia, Malaysia and the Philippines exceed 40 percent. Once again, China and India demonstrate diverse

performance across their territories: from the good performance of 13 percent in Jamshedpur and Mumbai to almost half of water lost in Bangalore.

Table 3: Operational performance indicators of the water sector (selected Asian countries)

	% of wastewater treated	Continuous water supply and hours of access to tap water (hours/day)	Estimate of unaccounted for water	Operation cost coverage ratio	Billing collection rate (ratio)	Staff per 1000 connections
Bangladesh	10% in Dhaka	Mostly up to 4 h/d. 24 h/d in Chittagong and Dhaka in 2005.	40% to 50%	1.18. Overall 70% in Chittagong, 130% in Dhaka, lower elsewhere (2005)	83% in Chittagong, 86% in Dhaka (2005)	22.1 in Chittagong, 9.9 in Dhaka (2005)
Cambodia	Poor	24h/d in Phnom Penh and Banteay Meanchey. 25% of Sihanoukville in 2003.	6% in Phnom Penh (2003)	Full cost recovery of the Phnom Penh Water Supply Authority	100% in Phnom Penh, Sihanoukville (2003)	4 (Phnom Penh) 19.7 (Sihanoukville) overall 10-15 (2003)
China	Industrial (90.7%) domestic (45.2%) (2004) 52% of all urban 46% overall (2005)	24 h/d in many cities	38% in Henan, 18% in Chengdu	1.09 (2005)	98% (2005)	12 in Henan (2005)
India	Very poor	1/4000 utilities meet 24h/d. 4-5 h/d in Bangalore, Chennai and Mumbai	Best performers: Jamshedpur (12.8%) Mumbai (13.6%) Jabalpur (14.3%) Visakhapatnam (14.5%) Chennai (17.0%) Worst performers: Nashik (59.6%), Amritsar (57.4%), Nagpur (51.9%) Bangalore (45.1%)	1/3 of the utilities recover their costs including Chennai (0.44), Mumbai (0.49), Jamshedpur (0.62), Nagpur (0.76), Visakhapatnam (0.78), Bangalore (0.80), and Coimbatore (0.82)*	68% (2005)	Overall about 10, 5.2 in Bangalore, 13.3 Chennai, 17.2 Mumbai
Indonesia	Poor	20% of Jakarta	40% to 50%; PDAMs at 36%	1.39 (2004); 80% in Jakarta (2003)	98% Jakarta (2003)	5.3 in Jakarta (2003) smaller towns have higher ratios
Malaysia	N/A	24 h/d, except during drought	45% in Selangor (2002)	66% in Selangor (2002)	N/A	N/A
Nepal	N/A	4 days/week in Kathmandu	37% for NWSC in Kathmandu (2001)	96% for NWSC in Kathmandu(2001)	70% for NWSC Kathmandu (2001)	N/A
Philippines	Poor	Unmet and low water pressure. 88% have in Manila (2003)	48% in Manila (2004)	1.34 (2004); 100% in Manila (2003)	98% Manila (2003)	4 in Manila (2003) but higher in smaller systems
Singapore	100%	Yes	4.5%	N/A	99%	2.5
Thailand	N/A	In Bangkok	No formally published data.	0.7 in Bangkok	N/A	4.8 in Bangkok

Source: OECD Investment Division (2007), based on local sources, ADB (2007) and Ib-net.

Note: *The definition is the inverse of the usual one. A low operating ratio means revenues from tariffs cover the operation and maintenance costs comfortably.

An operating cost coverage ratio measures the extent to which consumer tariffs and additional fees or subsidies contribute to overall operations and minor maintenance costs.

A ratio below 100 percent implies that incoming fees do not meet or exceed costs, which indicates an unsustainable system. This indicator goes in tandem with the billing collection ratio that identifies income as a percentage of billed revenue. Again, a low percentage may lead to a cycle of under funding and limited operations and maintenance. Most selected countries report a good level of billing collection (quasi universal in Cambodia, China, Jakarta, Manila and Singapore), above the average ratio of other developing regions. However, there are causes for concern in India, where two thirds of utilities do not recover their costs and billing collection is below 70 percent, potentially signaling issues of financial sustainability in the long run.

By ADB standards, 2 to 4 staff per 1000 connections constitutes a reference point for an efficient system. In Asia, the staff ratio varies significantly across and within countries. Singapore, Manila and Phnom Penh are below 5, but parts of Bangladesh, Cambodia, and India employ over 15 staff per 1000 connections.

Table 4 illustrates consumer satisfaction in the water sector, as well as commercial perception of water service. Unsurprisingly, in Singapore, customers are generally satisfied with their services. Elsewhere, sources of complaints vary greatly. In Indonesia, customers complain about the utility providing unreliable and low quality water. In the Philippines, customer complaints are based on water quality and billing fluctuations.

Table 4: Perception and satisfaction

	Bangladesh	Cambodia	China	India	Indonesia	Malaysia	Philippines	Singapore	Thailand
Customer satisfaction	Arsenic problems				Services are perceived as unreliable and of low quality.		Few complaints regarding quality. Common complaints regarding billing fluctuations.	Customers are generally satisfied.	
Commercial Perception of Water Service*	3.8	4.5	4.9	4.6	4.8	5.2	4.8	6.1	4.8

Source: OECD Investment Division (2007), based on Franceys (2006) and World Bank (2000).

Note: *Index that ranks perceptions of quality. 1 indicates poor commercial perception of water services and 7 is the highest level of satisfaction.

Due to large investment gaps required to achieve MDGs, incorporating private participation within the water sector is increasing throughout the world. Table 4 identifies investment needs to achieve MDGs in several Asian countries. Cambodia, India, Indonesia and the Philippines require over US\$70 million dollars each, in annual investments in order to meet the water MDGs.

Table 5: Investment needs

	Cambodia	India	Indonesia	Philippines
Investment needs to reach the water-MDG (US\$ million)	\$70.7 (capital investments)	\$13bn (2007 capital investments) \$7.3bn (2007 O&M); 4.4bn annually during (2007-2012), increasing to \$5.25bn/year in next year for infrastructure.	\$450 annually (national budget allocated US\$124 million annually in 2004-2005)	\$141,55
Investment needs to reach the sanitation-MDG(US\$ million)	\$50.1 million (capital investments)	N/A	N/A	N/A
Investment in water and sanitation private infrastructure projects from 2000-2006 (US\$ million)	\$0	\$2	\$37	\$504
ODA to water and sanitation in 2005 (US\$ million)	\$8	\$541	\$170	\$504

Source: OECD Investment Division (2007)

Private Sector Participation in Asia

History and recent trends in private sector participation

Private sector participation has existed in Asia's water sector since at least 1992, and has increased more significantly over the last decade. However, table 6 illustrates that the extent of private sector participation varies throughout Asian countries. Indonesia has awarded a range of contracts including joint venture, concession and BOT. By contrast, India continues to limit itself to BOTs and service contracts and is reluctant to shift more risks to the private sector, as the water sector is generally considered by politicians and population as being in the State prerogatives.

Private sector participation was formally introduced in Cambodia from 1997/1998. As of 2005, there were some 35 small-scale privately owned piped-water supply systems licensed through the Ministry of Industry, Mine and Energy in the urban water supply sector and some 12 public systems. In addition, empirical evidence suggests some 300 piped-water systems in rural Cambodia, mostly in the form of family businesses, operating in towns of less than 1000 households. This small-scale private sector activity is however limited by insufficient long term financing and guarantee mechanisms, weak contracts, and inadequate regulation to manage the poor.³ By contrast, Phnom Penh's government owned water supply utility, Phnom Penh Water Supply Authority (PPWSA), which gained autonomy in 1986, reports several successes, including subsidizing for the

³ World Bank Report – Project Appraisal Document

poor, decreasing non revenue water from 72 percent to 6 percent, providing water supply to 100 percent of the inner city, and achieving 100 percent billing collection rates.

Table 6: Private sector participation in water and sanitation services, policy and institutions

	Private operators	PSP introduction	% of population served by some private sector for drinking water		Arrangement	Institutional and policy linkages to PSP	Inconsistencies within policy and the institutional framework
			Small Scale	Larger Scale			
Bangladesh	Only small scale		14% (Dhaka)			N/A	Overlapping functions within the government, limited utility operations and maintenance
Cambodia	Yes	1997	50% (Ky Cham)		Concession DBO DBL	Government supports safe water supply and acceptable sanitation for all	Inadequate regulatory arrangements
China	Yes	1993		8%	BOT TOT Joint venture	Government supports PSP in water sector. National governments encourage local governments to adopt an enterprise company management model for provision of utility services	Water sector is a government priority but central and local agency involvement is not streamlined.
India	Yes		N/A		Service contract BOT	Stated but not implemented due to limited public support	Lack of separation of different roles between various local and regional agencies.
Indonesia	Yes	1997	44% (Jakarta)	5%	Concession Joint venture BOT	Government implemented competition law in 1999, but adequate sanitation is not prioritized.	Policy, implementation and regulation are unclear, and ministries are fragmented.
Malaysia	Yes			64%	BOT Concession	Yes.	
Nepal	Yes (small-scale)		5-7% (Kathmandu)	3%		No.	No.
Philippines	Yes	1997	30% (Manila)	13%	Concession DBO	Absence of an institutional framework with policy and legislation gaps.	At least 8 government agencies are involved in the water and sanitation sector with overlapping roles.
Singapore	Yes	2002			PPP & BOT	Yes.	Yes.
Thailand	Yes	1992	10% (Sawee)	2%	Concession BOT	Yes.	Fragmented water sector, with 14 agencies under 6 ministries.

Source: OECD Investment Division (2007)

China's private participation involvement in the water sector has grown significantly over the last 10 years. In 2006, the country reported a very strong activity of private sector in the water and sanitation sector, with 2/3 of the new private participation in infrastructure contracts reported in the World Bank PPI database. The sector includes mostly BOT for water and sewage treatment plants, and more recently, a growing trend towards municipal joint ventures, which combine municipal utility and the private corporation. This increase

is largely attributed to a financial risk sharing between the firm and the municipality, perceived as beneficial by both partners, resulting in contract adjustments that are easier to implement. Municipal joint ventures however, can reduce incentives for efficiency and cost reduction, and effective regulation is needed to ensure optimal operations and maintenance.⁴ Transfer-own-transfer (TOT) contracts, a variation of BOTs, can also be primarily found in China. With a TOT contract, the vendor sells an existing facility to an operator for a period of time (transfers). At the completion of the contract, ownership is once again given to the contractor.

Thailand incorporated private sector participation in 1992, when the government established East Water as a subsidiary of Provincial Waterworks Authority (PWA) and leased all water supply utilities to East Water for 30 years. Two years later, Thames International was awarded a 25 year concession contract to finance, build, and operate a water treatment facility at Pathum Thani. In 1997, East Water became the first water company in Asia to be listed on a stock exchange (ownership: 44% PWA, 5% Industrial Estate Authority of Thailand, 51% held by private portfolio investors). In 1999, PWA extended its private sector involvement and awarded the first incentive-based leakage reduction contract to Thames International. Thailand then incorporated private participation to include BOT contracts in the suburbs of Bangkok.

In response to water scarcity concerns, Singapore's Public Utilities Board (PUB) engaged private firms in technological advancement programs, including NEWater and desalination. In 2002, Singapore's Hyflux (70%) and Suez Ondeo (30%) gained a 20 year BOT contract to build Singapore's first desalination plant. NEWater, branded by Singapore, is a water treatment process that purifies wastewater using dual-membrane and ultraviolet technologies. The water is mostly utilized for commercial and industrial uses, but it is safe to consume. By 2011, NEWater is expected to provide 15 percent of Singapore's water requirements. Four NEWater Factories were developed up to 2007. The fourth one, the Ulu Pandan NEWater Project, was developed by PUB as a DBOO (Design-Build-Own Operate), involving the private sector in operating and maintaining the assets.

Private sector is widely involved in the water and sanitation sector of Malaysia. It participates in source development, water production and leakage repair. In 1994, sewerage utilities were privatized. The consortium, Indah Water Konsortium (IWK), operated and maintained sewage treatment plants. IWK has been a successful initiative, and extended its coverage to serve over 14 million people by 2001 (from less than 4 million in 1994).

In areas where water pipes or connections are unable to meet areas due to circumstances such as geographic terrain or utility footprint, small scale providers have been found to contribute to providing water supply in several Asian countries. As a result, local and informal private organizations are increasingly acknowledged as contributors to the evolution of private sector participation within the water sector. Table 6 highlights the extent to which small and local private sector is involved in the water sector.

⁴ Stepping Up Utilities – World Bank

Asian financial crisis

In 1997, the Asian financial crisis impacted several countries on the continent, and severely damaged Southeast Asia's financial capacity, among other regions. The economic crisis directly impacted private sector participation progress, as devalued local currency was unable to meet required international debt and equity financing agreements.⁵ The crisis' impact infiltrated the water sector whose characteristics (high initial investment, long-term payback and complex pricing policy) make it particularly sensitive to foreign exchange risk.

The difficulties of the private concession in West Manila exemplify this impact. In 1997, Manila succeeded in awarding the largest water supply private sector contract at the time, in which the Metropolitan Waterworks and Sewerage System (MWSS) awarded one contract to the city's East Zone (Manila Water) and another contract to the city's West Zone (Maynilad Water). With this deal, Maynilad inherited more debt service payments, including foreign debt obligations, than Manila Water. The financial crisis severely impacted Maynilad's ability to pay foreign debt due to devalued local currency, and ultimately led it to cancel its contract in 2002. In December 2006, however, Maynilad was rebid and DMCI-Metro Pacific Consortium, an all Filipino private consortium, won the right to continue operating the West Zone concession. Not burdened by similar debt obligations, Manila Water continued to supply water to regions in Manila, although not all of its contractual obligations have been met.

Indonesia's water sector was also severely impacted by the Asian crisis. In 1997, Jakarta's water supply utility was privatized under two concession contracts. The following year, PT Thames Pam Jaya was awarded the East Jakarta concession, and PALYJA was awarded the West Jakarta concession. Within 3 months, the country was impacted by the Asian economic crisis, which limited both company's ability to meet their contractual obligations including tariff increases and capital investments.⁶ In response to the struggling water sector (exacerbated by the crisis), the World Bank provided a \$300 million loan to the government, which focused on restructuring the water sector (WATSAL). Additionally, the Asian Development Bank provided a technical assistance grant in 2004, which focuses on improving water governance and regulations within the sector⁷ and recently approved financing to Palyja for a further US\$50million.

Getting the institutional and regulatory framework right

An effective institutional environment with clearly defined roles and responsibilities is critical to successful private sector involvement in water infrastructure development. Successful private sector integration not only requires a holistic institutional framework which balances providing the consumer an affordable tariff with satisfactory service and providing the utility sufficient tariffs to manage the utility's operations and maintenance

⁵ Asian Development Bank report: Reaching the urban poor

⁶ Asian Development Bank report: Indonesia 2007

⁷ Asian Development Bank report: Asian Water Development Outlook for Indonesia (2007)

requirements. A sustainable institutional framework, regardless of private sector inclusion, should encompass government support and enforceable policies, political will, consumer willingness to pay, transparency, regulation, and accountability throughout the structure.

As of today several Asian countries, including Cambodia, India, Indonesia and the Philippines still struggle with separating roles and responsibilities, consequently impeding the development of an effective institutional framework. In Cambodia, weak regulation limits the progress of well written policies that could potentially benefit the water sector. China's government favors private sector participation and the water sector is a high priority. The country is also committed to achieving improved water quality, which directly increases available surface water resources for the population. This is exemplified by the Law on the Prevention and Control of Water Pollution and the Law on Water Prevention, which have high priority on China's 9th and 10th five year plans. However, sector's fragmentation across central and local agencies limits its institutional effectiveness. By contrast, Indonesia's government does not prioritize the provision of drinking water or sanitation, which results in limited funding for infrastructure and active private sector engagement. India continues to struggle with creating an institutional framework because its policies are poorly positioned and there is little support for private sector provision of water. In Indonesia, limited accountability and regulation enforcement policies are constraining the partnership with the private sector.

Regulatory framework

Effective regulation is critical in achieving and sustaining the water and sanitation MDGs, regardless of private sector participation. For over a decade, countries have been engaged in including regulation to address issues related to tariffs, monitoring, enforcement, operations and maintenance, and customer service levels. Table 7 illustrates that most of the selected Asian countries are involved in some form of regulation, however successful implementation is limited.

Regulation takes a number of forms, and although independent regulation has more recently gained momentum, other forms of effective regulation exist and can be effective. Manila utilizes an independent regulator, but regulation has been constrained by political influence and limited autonomy. In Singapore, an independent regulator does not exist, but in 2001, the Public Utilities Board (PUB), an autonomous entity, gained responsibility for the water and sanitation sector. PUB created and successfully implemented an all encompassing strategy and institutional framework which included management of consumer demand and utility supply, tariffs, customer service, staff satisfaction and regulation. Thailand is involved in private sector participation and has already achieved their water and sanitation MDGs, but regulation originates from ministries. Clearly, the experiences are very diverse and highlight the importance of building on the country contexts and the support of multiple stakeholders when creating a regulatory framework. As already underlined in the similar stocktaking of African

country experiences⁸, establishing a regulatory agency mainly helps to clarify the different roles in water provision by disentangling the regulatory functions from the delegation functions and from operations.

Table 7: Asian countries with a regulatory body within the water sector.

Bangladesh	No
Cambodia	No. Sectoral responsibility for piped water supply in urban areas is with the Ministry of Industry, Mines and Energy while the Ministry of Rural Development handles rural areas and point sources.
China	No
India	No, but creating a regulatory agency has been discussed.
Indonesia	Yes. The Jakarta Water Supply Regulatory Body commenced operation in 2001 but with limited powers. The Jakarta concessions foresee regulation by contract.
Malaysia	Yes
Nepal	No, effective regulatory system. The government has statutory power to safeguard consumer interests but enforcement has been ineffective because the government is also the service provider.
Philippines	Yes, MWSS-RO, but proliferation of regulatory functions across many agencies limits and fragments enforcement and the system. There is also a regulatory agency for other water supply providers but no budget, manpower to enforce the law.
Singapore	yes (regulatory framework) but effectively self regulation
Thailand	No

Source: OECD Investment Division (2007).

Benchmarking, Competition, and Corporatisation

Creating a competitive environment can not only contribute to providing a satisfactory service for customers, but can also help to strengthen accountability with the government. Competition and contract characteristics should be extensive, simple and realistic, and should extend beyond awarding a contract to the lowest cost provider. However, competition poses unique challenges in the water sector, by nature a highly monopolistic sector with relatively inelastic demand and supply, high fixed costs, economies of scale and important information asymmetry.

In an attempt to create a competitive environment and to attract quality providers, Manila segmented its water sector contracts into East and West Zones. Unfortunately, the

⁸ OECD Stocktaking of the water and sanitation sector and private sector involvement in selected African countries, Background note for the Regional Roundtable on Strengthening Investment Climate Assessment and Reform in NEPAD Countries, November 2007.

competitive process was self-limiting because the primary decision-making qualification was price, and both selected service providers eventually increased price at later dates. Ultimately, in any case, assessment and comparison should be based on performance. China's authorities are also showing strong support in favor of competition. The competitive bidding process for a BOT project to provide 400,000m³ of water per day in Chengdu is a good example that attracted 5 bidders. The effectiveness of Chengdu's competitive process however, is unclear due to limited data available to the public. In Kathmandu, the \$464 million 10 year lease contract for the Melamchi Water Supply Project was intended to provide water supplies in Kathmandu Valley. However, extreme candidate qualification criteria and lease terms limited the number of candidates in the bidding process.⁹ And despite a restructuring of the project in a management contract, the bidding process only attracted one bidder and subsequent negotiations failed.

Benchmarking can help strengthen competition (by providing reference points or models in relation to which performances are assessed) and ultimately increase transparency, accountability and quality of service. The benchmarking culture is growing in Asia, but in many cases, weak regulation and institutional arrangements may limit its effectiveness. In Singapore however, the PUB incorporates benchmarking throughout its water sector. In order to foster anti-corruption and transparency objectives, the PUB incorporates the country's civil service pay scale as a benchmark for PUB staff.¹⁰ PERPAMSI, the Indonesian Water Supply Association, reports on 29 indicators directly through internet. Although India is not fully engaged in competition within the water sector, in 2007, the government began transitioning towards a benchmarking culture. India's Ministry of Urban Development joined the Asian Development Bank in publishing a benchmarking report, which reported service levels in urban water supply operations and business plans for meeting continuous water 24 hours a day. This has, however, been developed as a one-off exercise and therefore falls short of a benchmarking objective. However, the Ministry of Finance (Government of India) has also started developing an on-line database reporting on the different characteristics of PPP projects in infrastructure.

Although long term impacts from the recent benchmarking efforts in Asia are unclear, they are evident in other continents. In Brazil, the Sistema Nacional de Informacoes (SNIS) database successfully incorporates benchmarking within its water sector. SNIS compares performance and service levels across utilities for a large audience, including local populations, government, and media. Eventually, the tool began to assist the Federal government in prioritizing water sector investments.¹¹

Corporatisation, through higher independence from political processes and greater possibility for benchmarking, may contribute to increasing economic and utility efficiency as well as positively impact transparency and accountability. Table 8 illustrates that most countries except for Bangladesh have been involved in some form of local corporatization, although some utilities, such as Singapore are more autonomous than others, such as those found in Nepal.

⁹ Asian Development Bank report: City Water Profiles and Summary Findings

¹⁰ Water Management in Singapore, Tortajada, 2006

¹¹ World Bank report, Stepping Up: improving the performance of China ' s urban water utilities, 2007

Table 8: Corporatization of local operators

Bangladesh	No, Water supply services are organized as municipal departments (pourashavas) and not as legally separated entities. Revenues and expenses fall within its overall budget.
Cambodia	PPWSA is a self-sustaining public corporation.
China	Water Utilities Companies were converted from government bureaus to independent public institutions or publicly-owned share companies, following efforts to convert them into corporations in the last few years. Each WUC is a state-owned enterprise, a privately-owned enterprise, or a limited company.
India	Yes; at least 15 municipal corporations.
Indonesia	Yes, 316 municipal water utilities: Perusahaan Daerah Air Minum (PDAM), Government-owned regional water supply companies (Perusahaan Daerah Air Minum or PDAMs) provide the majority of water services. They are small and their service areas are limited by the geographical boundary of the regional governments.
Malaysia	Yes, since 2001, Penang Water Board (PBA) became a privatized entity, but it is owned and controlled by the state of Penang. In 2002, Selangor Water Management Corporation Ltd. (SWMC) in Kuala Lumpur was corporatized. In 1987, Johor Water Company (JWC) was corporatized.
Nepal	Nepal Water Supply Corporation (NWSC) is a semi-autonomous corporation with limited independence.
Philippines	The Philippines created public corporations in the form of water districts for all primary and secondary cities/municipalities as early as 1974. There are 500 water districts nationwide under the supervision of the Local Water Utilities Administration.
Singapore	Yes, PUB is autonomous
Thailand	The 141 municipalities own and operate independent water supply systems in urban areas under the supervision of the Public Works Department. In 1967, MWA was established as a state enterprise which combined four separate utilities in Bangkok with a full range of authority.

Source: OECD Investment Division (2007), based on various sources.

Decentralization

Decentralization may also contribute both to improved utility and economic efficiency within the water sector. Decentralization can create accountability and transparency, while providing the opportunity to meet unique country, regional and/or local needs. All of the selected Asian countries found in table 9 are involved in some form of decentralization within the water sector, with the exception of Bangladesh, whose water sector is still largely centralized (and Singapore which is a city state). Some countries, including India, Indonesia, and Nepal however, continue to function with limited autonomy.

Table 9: Decentralization

Bangladesh	The public sector is largely centralized. Provision, operation and maintenance of water supply are statutory responsibilities of municipalities (pourashavas), and rely on the Department of Public Health Engineering for design and construction.
Cambodia	In 1996, the government implemented a decentralization program to increase local government and community involvement in natural resources planning and management.
India	According to Municipal Act, responsibility for urban water supply and sewerage is transferred to urban local bodies. However, responsibility very often remains with the States. Overall, limited decentralization and local capacities.
Indonesia	Responsibility for local infrastructure is given to regional governments without corresponding access to funds or expertise for infrastructure development. National and provincial governments have limited responsibilities.
Malaysia	Decentralized, but recent centralization movement due to inefficiencies
Philippines	Decentralized. In 1990, 522 water districts; nonprofit, quasi-public independently-administered local entities responsible for acquiring, installing, improving, maintaining and operating water supply and distribution systems for domestic, industrial, municipal and agricultural uses. The MTPDP 2004-2010 calls for decentralization of responsibilities to local governments.

Source: OECD Investment Division (2007), based on various sources.

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Annex A. An evidence base of country experiences in the water and sanitation sector

In order to support the conceptual work on private sector participation to water and sanitation infrastructure, a systematic review of country experiences is being carried out based on a common framework. The database involves some 30 to 35 countries in Africa, Latin America and Asia/ Pacific in 7 "dimensions" of key importance for private sector involvement in the water and sanitation sector, such as access rates, institutional setting and pricing policies.

List of countries

BRICS	Africa	Asia & Pacific	Latin America	MENA
Brazil	Burkina Faso	Bangladesh	Argentina	Algeria
Russia	Ghana	Cambodia	Bolivia	Egypt
India	Kenya	Indonesia	Chile	Jordan
China	Mauritania	Malaysia	Colombia	Morocco
South Africa	Mozambique	Nepal	Honduras	Tunisia
	Senegal	Philippines	Mexico	
	Tanzania	Singapore	Peru	
	Uganda	Thailand		
	Zambia			

List of indicators

Indicators	Sub-Indicators
1. Demography	Population growth 2005-2015 Urban population growth 2005-2015 Total Population in 2005 Total Population in 2015 Population density (pop/km ²) 2005 and 2015 Urban population in 2005 and 2015
2. Economic and business environment	Elements of business environment Informal economy estimate (% GNP) Corruption levels
3. Water resources	Water scarcity (Total renewable freshwater per capita in m ³ /inhab/yr) Over withdrawal (Total water withdrawal as percentage of total renewable water resources) Foreign dependency ratio (percentage of total renewable water resources originating outside the country)
4. Water uses	Agriculture, Domestic and Industry withdrawal
5. Access to water and sanitation	Improved Drinking Water Coverage in Urban/Rural Areas (Total) in 1990 and 2004 Improved Drinking Water Coverage in Urban/rural Areas (Household Connection) in 1990 and 2004 On track to water/sanitation MDG? Improved Sanitation Coverage in Urban/rural Areas in 1990 and 2004
6. Water management	Percentage of wastewater treated Average domestic consumption of water in m ³ /inhab/yr

	<p>Continuous water supply Average hours of access to tap water (hours/day) Estimate of unaccounted for water/non revenue water Operating cost coverage ratio Billing collection rate Staff per 1000 connections %customers satisfied⁴</p>
7. Pricing policy	<p>Geographical tariff setting Progressive tariff structure Domestic drinking water tariff in US \$ per m3 (based on 15 m3 consumption per month) Domestic drinking water tariff in US \$ per m3 (Lowest and highest block) Domestic wastewater tariff in US \$ per m3 (based on 15 m3 consumption per month) Affordability: Average annual expenditure on water as % of GDP per head Sustainable level Metering practice</p>
8. Water institutional & policy framework	<p>Elements of institutional and policy framework Presence of regulatory agency Independence of the regulatory agency Activities (monitoring quality, roll out and consumers complaints?) Year of introduction Dispute resolution mechanisms Corporatization of local operators Basin Organizations Centralization versus decentralization Level of decentralization Degree of devolution of means and responsibilities</p>
9.Private sector participation	<p>Presence of private operators % of population served by the private sector for drinking water / sanitation services Location, sector, type of contract Year of introduction of private sector participation Past disputes</p>
10. Future of private sector participation	<p>Population perception / civil society activity Expected development of private sector participation in water supply/sanitation</p>
11. Investment needs	<p>Public expenditure in water and sanitation (% of GDP) Unit cost water and sanitation Investment needs to reach the MDGs (water and sanitation) Investments gap (water and sanitation MDG)</p>
12. Available financing tools	<p>Depth of financial system (private credit / GDP) ODA to water and sanitation FDI to water and sanitation Financing mechanisms used in WSS</p>