

# **An Overview of Public and Private Sector Capacities for Environmental Infrastructure in Five East Asian Countries**



**GEF/UNDP/IMO Regional Programme on  
Partnerships in Environmental Management  
for the Seas of East Asia**

**AN OVERVIEW OF  
PUBLIC AND PRIVATE SECTOR CAPACITIES  
FOR ENVIRONMENTAL INFRASTRUCTURE IN FIVE EAST ASIAN COUNTRIES**

February 8, 2005

This online document is made available as a free public service for environmental managers, researchers and institutions and anyone may view the information contained therein without any obligation to PEMSEA, unless otherwise stated.

This online document may be reproduced in whole or in part and in any form for educational or non-profit purposes or to provide wider dissemination for public response, provided acknowledgment of the source is made and no commercial usage or sale of the material occurs. PEMSEA would appreciate receiving a copy of any publication that uses this document as a source.

The use of this document for any purpose other than those given above must be agreed to in writing between PEMSEA and the requesting party.

PEMSEA makes no express or implied warranty nor assumes responsibility in the use of this document or its contents for its accuracy, completeness, currency, or its use for any purpose.

PEMSEA. 2005. "An Overview of Public and Private Sector Capacities for Environmental Infrastructure in Five East Asian Countries." PEMSEA Manuscript Series No. 2. Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines. [www.pemsea.org](http://www.pemsea.org). Unpublished.

This document was prepared by the  
Global Environment & Technology Foundation  
in fulfillment of a contract with PEMSEA.

**A GEF Project Implemented by UNDP and Executed by IMO**

The contents of this publication do not necessarily reflect the views or policies of the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), the International Maritime Organization (IMO), and the other participating organizations. The designation employed and the presentation do not imply expression of opinion, whatsoever on the part of GEF, UNDP, IMO, or the Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) concerning the legal status of any country or territory, or its authority or concerning the delimitation of its territory or boundaries.

## EXECUTIVE SUMMARY

The GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of Asia (PEMSEA) commissioned the Global Environment & Technology Foundation to conduct a desktop review of current constraints regarding the provision of water and sewerage/sanitation services in East Asia, covering five countries namely: Cambodia, China, Indonesia, Philippines, and Vietnam. The review focused on four key components: 1) supply and demand situation in the water and sewerage/sanitation services; 2) institutional arrangements and structures; 3) funding sources and constraints; and 4) private sector participation. The results of that review are presented herein, and summarized below.

### **Supply and Demand of Water, Sewage and Sanitation Services**

#### *Water Supply*

In all the countries covered, the common theme is that of severe shortfall in the provision of piped water, sewerage and sanitation facilities. In Philippines and Vietnam, water supply facilities cover only between 50% - 60% of the total population. In Cambodia, it is estimated that only about 32% of the total population has access to piped water. In China, the world's most populous country, the water supply deficit is estimated at 40 billion cubic meters per year, making it also one of the world's most water-deficient nations. In most of the countries, at least a third of the population relies on self provisioning via unregulated boring of deep or shallow wells, resulting to lowering water tables, saline intrusion and health risks.

#### *Sewerage and Sanitation*

The lack of sewerage and wastewater treatment systems is one of the most daunting problems in all five countries. In Indonesia, less than 1% of the total households are connected to a centralized sewerage system. In Cambodia, there is no organized sewage system outside of Phnom Penh, except for Sihanoukville where a sewerage system is presently under construction. In China, with its water deficit situation, more rational use of water has become a pressing issue. Wastewater treatment facilities in China effectively handle only 22% of total wastewater volume of 13.5 billion cubic meters.

The lack of sanitation facilities raises important issues related to the social cost and sustainability. For instance, in Indonesia, 90% of Jakarta's shallow wells are polluted by domestic wastes. In the Philippines, 58% of groundwater is contaminated with coliform bacteria.

### **Institutional Arrangements**

The institutional set up for provisioning of water and sewerage/sanitation services varies across countries in East Asia. In China, the provision of water has primarily been the function of the state. However, in 1998, the public water infrastructure was opened to foreign and non-state-owned capital financing. In Indonesia, the control of water services was decentralized beginning 2001, effectively transferring the control of water enterprises from the central government to the municipal government. In the Philippines, water services are handled by autonomous local water district companies (WDs), the local government units (LGUs), private contractors, and small-scale independent providers, with WDs covering the cities and provincial centers outside Metro Manila. In Vietnam, water supply and sanitation is still in state hands, with the responsibility falling both on the central and provincial governments. Meanwhile, in Cambodia,

most water providers are publicly-owned and operated, although a few private companies offer treated piped water to some parts of the provinces and district communities.

## **Water Finance**

Water and sanitation facilities in the five countries covered still rely heavily, if not entirely, on government financing and developmental loans from multilateral lending institutions, such as Asian Development Bank and World Bank. Sourcing of funds from the private banking institutions appears to be the exception rather than the rule. The constraints faced by private banks are numerous: short maturity structure of deposits; low probability of repayment from local government borrowers; and high cost of information and monitoring.

- In Cambodia, there is no special government lending program for local water infrastructure projects, and local governments rely on grants from the central government. The local financial market has no depth, with average length of all deposits at only six months.
- In China, the primary sources of financing for environmental infrastructure are the State bonds and State Development Bank Loans. Commercial bank loans can also be availed from four major local commercial banks, namely: People's Construction Bank of China, Industrial and Commercial Bank of China, the Bank of China, and the Agriculture Bank of China.
- In Indonesia, the national government established the Regional Development Account (RDA) as an institution to lend to local government units. The institution, however, is plagued with narrow funding source, mainly from the central government, and a poor collection record. In 1999, laws on decentralization provided the local governments with more latitude to borrow from domestic sources and from foreign sources, through the national government.
- In the Philippines, WDs can access loans through a subsidiary loan agreement with the Local Water Utilities Administration. These loans are made by multilateral lending institutions, guaranteed by the National Government, through the Department of Finance. The LGUs can access funds from government financial institutions (i.e., Development Bank of the Philippines and Land Bank of the Philippines). These loans are funded either by internally generated funds or from official developmental assistance. The LGUs can also obtain funds from private banks and financial institutions, but at steeper and floating interest rates and shorter repayment periods.
- In Vietnam, the banking system is underdeveloped and dominated by state-owned institutions with weak risk management techniques. Local banks can only handle loans with a maturity of 5 – 6 years, as compared to the 14 -25 year requirement for environmental infrastructure projects. Foreign banks face discriminatory restrictions on mobilizing local currency and providing services. The World Bank, ADB, AusAid and Danida are the major organizations that have been active in funding rural water projects.

## Issues in Private Sector Participation

The common themes regarding the issue of private sector participation in water and sanitation services relate to corporate governance. These include: 1) lack of transparency in procurements; 2) lack of a clear set of legal and regulatory framework for private involvement; and 3) lack of access to finance. Nevertheless, there are already initiatives being undertaken by some of the central governments to liberalize the water sector.

- In Cambodia, the legal basis for granting licenses to private sector is uncertain and is based on a general principle issued by the Ministry of Industry, Mines and Energy, an executive body. However, the country has had experience in private sector partnership in the form of Build-Operate-Transfer and Build-Operate-Own arrangements for periods of 23 – 30 years.
- In China, the government issued legislation (mainly the Water Resource Law in 2002) relating to water tariffs and other environmental fees, which resulted in new investments in water. Many forms of private and public partnerships are now being accepted by the Chinese government for supplying technology and equipment and for providing long-term investment opportunities for foreign companies. The lack of financial transparency that pervades many Chinese state-owned enterprises and the subsidized, and sometimes inefficient, business conditions under which they operate make issues of credit and performance acute. This has caused some foreign participants to rely on structures guaranteeing rates of return or government support letters.
- In Indonesia, the government has had experience in private sector partnership since the mid-1980s. In 1995, the government of President Suharto signed a concession contract with Thames Water Overseas Ltd and Suez Lyonnaise for Jakarta's water system. This deal, however, was plagued with controversies. Aside from this deal, the government had some smaller partnerships, such as the one with PDAM Tangerang and Tirta Degremont for wastewater treatment plant in Serpong.
- In the Philippines, private investment in the water sector was concentrated in Metro Manila where the water supply service was divided and awarded to two private consortia of companies. Since 1997, the privatization of the service resulted in new investment of US\$41 million annually, but these have been insufficient to generate necessary efficiency gains. Outside Metro Manila, private financing has not been forthcoming. Small-scale water supply services managed by community-based organizations under local government supervision have been largely financed by grants.
- In Vietnam, the Vietnam Chamber of Commerce and Industry (VCCI) has been actively involved in the promotion of greater private sector participation in the delivery of public services. These efforts though have been geared toward micro and small enterprises. The country faces major impediments to greater private participation, namely: 1) inadequate legal and regulatory framework; 2) uneven capacity levels among local governments in the design and development of infrastructure project; and 3) lack of financial capacity at the local level regarding budgeting, accounting and fiscal management.

## Affordability of Water Services

Table 1 shows the gross domestic product (GDP) per capita in current dollars, adjusted by corresponding Purchasing Power Parity (PPP) based on World Bank estimates. PPP-GDP is a measure of the total value of goods produced by the economy adjusted for the differences in the relative prices of goods and services, particularly non-tradable goods and services. As it takes into account the price differences of non-tradable goods and services (e.g., water services), it provides a better measure of standard of living of residents of an economy.

Analyzing the PPP GDP figures (Table 1), one can make an insight about the relative affordability of additional investment in water and sewerage/sanitation services. For instance based on current per capita water consumption rates of around 219 liters per day in urban China, an average person would spend US\$1.54 per month (or US\$18.44 per year) on an average water utility rate (“tap and water resource fee”) of US\$0.23 per cubic meter (range would hover between US\$0.13 to US\$0.35). This figure would correspond to only 0.33% of per capita GDP. Even if investing in wastewater treatment facilities would result in a fifty percent increase in utility rates, water bills would still represent 0.49% of per capita income, PPP-adjusted.

In East Asian countries with half or less than half of the per capita income of China (e.g., Cambodia and Vietnam), the cost of water services as a percentage of income will be higher. Nevertheless, the price of more water supply coverage and sanitation will still represent only 1% of each country’s income. In Metro Manila, Philippines, as a result of the privatization efforts, the cost of water has escalated to around US\$0.47 – US\$0.54 per cubic meter, corresponding to around 0.7% of its US\$5,000 per capita GDP. *(However, the ratio is actually only half as the per capita income of households in Metro Manila is double the national average.)* Given that water costs still amount to a minimal share in household expenses, raising water fees to finance additional water and sewerage facilities is a compelling argument not just from an environmental standpoint but from an affordability and financial sustainability aspect as well.

Table 1 also shows that in the five countries, the consumption share of the lowest income group (or lowest 10% of the households) in the national income or consumption ranges from 2.3% to 4% while the consumption share of the highest income group (or highest 10% of the households) ranges from 26.7% to 33.8%. This skew in income distribution and consumption pattern suggests the need to target the lower income groups, which usually do not have access to safe water and sanitation among other goods and services, and at the same time, a restructuring of the water tariff rates to make it more ‘socialized’, i.e., the higher income groups will have to pay more.

**Table 1: COUNTRY INDICATORS**

<b>Country</b>	<b>GDP<sup>1</sup></b>	<b>GDP per capita<sup>2</sup></b>	<b>Household Income or Consumption by Percentage Share<sup>2</sup></b>
Cambodia	PPP* - \$26.99 billion	PPP* - \$2,000	lowest 10%: 2.9% highest 10%: 33.8% (1997)
Indonesia	PPP* - \$827.4 billion	PPP* - \$3,500	lowest 10%: 4% highest 10%: 26.7% (1999)
Vietnam	PPP* - \$227.2 billion	PPP* - \$2,700	lowest 10%: 3.6% highest 10%: 29.9% (1998)
China	PPP* - \$7.262 trillion	PPP* - \$5,600	lowest 10%: 2.4% highest 10%: 30.4% (1998)
Philippines	PPP* - \$430.6 billion	PPP* - \$5,000	lowest 10%: 2.3% highest 10%: 31.9% (2003)

\* PPP (Purchasing Power Parity)

<sup>1</sup> source: <http://www.cia.gov/cia/publications/factbook/geos/cb.html#Econ>

<sup>2</sup> source: [http://globalis.gvu.unu.edu/indicator\\_detail.cfm?country=PH&indicatorid=147](http://globalis.gvu.unu.edu/indicator_detail.cfm?country=PH&indicatorid=147)

## Table of Contents

CAMBODIA.....	7
List of Abbreviations.....	7
Overview.....	8
Roles, Responsibilities and Mandates.....	9
Financial and Investment Programs.....	10
Private Sector Participation.....	12
Cambodia Contacts.....	14
 CHINA.....	 19
List of Abbreviations.....	19
Overview.....	20
Roles, Responsibilities and Mandates.....	21
Financing and Investment Programs.....	23
Private Sector Participation.....	24
China Contacts.....	25
 INDONESIA.....	 29
List of Abbreviations.....	29
Overview.....	30
Roles, Responsibilities and Mandate.....	32
Financing and Investment Programs.....	33
Private Sector Participation.....	34
Indonesia Contacts.....	37
 PHILIPPINES.....	 41
List of Abbreviations.....	41
Overview.....	42
Roles, Responsibilities and Mandates.....	43
Financing and Investment Programs.....	44
Private Sector Participation.....	46
Philippines Contacts.....	49
 VIETNAM.....	 54
List of Abbreviations.....	54
Overview.....	55
Roles, Responsibilities and Mandates.....	57
Financial and Investment Programs.....	59
Private Sector Participation.....	61
Vietnam Contacts.....	63

### APPENDIX -- Project Development Fund Review

## **CAMBODIA**

### **List of Abbreviations**

PPWSA	Phnom Penh Water Supply Authority
RGC	Royal Government of Cambodia
MPWT	Ministry of Public Works and Transport
MOWRAM	Ministry of Water Resources and Meteorology
MOE	Ministry of Environment
CDC	Council for the Development of Cambodia
PPI	Public Private Investment
MIME	Ministry of Industry, Mines and Energy
BOT	Build-Operate-Transfer
BOO	Build-Operate-Own

## Overview

The structure of Cambodia's water sector can be characterized as one in which isolated, vertically integrated systems provide water supply services to communities without providing sewage services. Most systems are publicly owned and operated, but a handful of private providers also offer treated, piped water delivery to parts of provincial and district communities. Despite this plethora of ownership arrangements, the government estimates that only 70 percent of residents in Phnom Penh, 13 percent of residents in other urban areas, and 23 percent of rural residents have access to safe water. As the population of Cambodia is largely rural, these data signify that only about 32 percent of the total population has access to piped water. The short-term opportunities for investment in water supply lie in provincial towns and peri-urban areas not served by piped distribution systems. Compared with countries at similar levels of GDP per capita, Cambodia's water systems supply relatively few households with piped water and there is no treatment of sewage.

Phnom Penh Water Supply Authority (PPWSA), Cambodia's first autonomous water supply authority is responsible for the water supply for the capital city of Phnom Penh and is the largest water supply provider in Cambodia. Since full autonomy was granted, PPWSA has effectively utilized approximately \$100 million of donor assistance (from IDA, ADB, the Governments of Japan and France) to increase coverage and expand services to the poor living within the city core. Between 1997 and 2002, non-revenue water was reduced from 78percent to 17percent, service coverage quadrupled, the water quality met WHO standards, and special programs were launched to connect low-income families. All of this has taken place while the PPWSA has accumulated substantial increases in cash reserves.

PPWSA is widely seen as a good example of successful tariff reform. It has demonstrated how financial and operational autonomy, and enforcement of full cost recovery, have improved water services delivery and transformed PPWSA into an outstanding public utility in the region. This transformational process has demonstrated conclusively that changes in institutional structures are possible and can improve performance. This process also demonstrates that separation of policy and regulatory functions from asset ownership and service provision can enhance overall service.

Outside Phnom Penh, the government's policy is to create financially self-sustainable and autonomous water supply entities either as state owned enterprises replicating the success of the PPWSA or as privately owned utilities. With donor assistance, eight of twenty-four water supply systems of the provincial capitals will be rehabilitated by 2006. This includes the Sihanoukville water supply system, completed in 2003 and already operational, as well as the Seam Reap Water Supply system, which is to be completed by November 2005.

The Royal Government of Cambodia (RGC) is seeking to improve the performance of publicly-owned and operated service providers so that they can better meet the service demands of their present and potential consumers. This will be accomplished through a process of converting the existing public water supply systems to autonomous operating units, that is, state-owned enterprises.

Each of the 23 provincial towns in Cambodia is officially served by a water utility, but in practice many do not have functioning networks. Even in those towns with treated water supplies, coverage is generally less than 15 percent. The total number of people served by household connections across all the towns is only about 80,000. Several towns are served by private

network providers that have customer bases ranging from about 200 to 1,700. Private providers also provide bulk water supplies in some towns and villages. At the district level, supplies are also provided by bore holes or by taking water directly from lakes and streams. The situation is much worse for sewage. Outside of Phnom Penh and Sihanoukville, Cambodia has no organized sewage systems. Within Phnom Penh most sewage drains directly into the river and none is treated. In Sihanoukville, a sewerage system is currently under construction, which is will eventually treat about 70percent of the domestic sewage (current population is approximately 156,000).

While Cambodia has made progress in providing water and sanitation services to its people, rural water coverage still remains the second lowest in Asia. The great majority of rural and poor households still rely on self-provision through groundwater abstraction, rainwater collection, or use of surface water, with little government investment to ensure a sustainable supply or to monitor water quality. Sanitation in rural areas is almost non-existent and limited to simple on-site facilities.

The key environmental issues affecting Cambodia are: (i) an inadequate legislative framework, (ii) limited coordination among water-related institutions, (iii) non-sustainable extraction of fishery and forestry resources, (iv) weak land and water resource management, (v) severe pressure on the Tonle Sap ecosystem, and (vi) unplanned urban and industrial development.

### **Roles, Responsibilities and Mandates**

The water sector consists of both publicly- and privately-regulated network providers and a wide range of unofficial (unlicensed or unmonitored) bulk water suppliers. A clear division of responsibilities exists between urban and rural water suppliers. This division, along with the involvement of various other ministries, for health and environmental reasons, means that the water sector is characterized by the large number of ministries and other institutions. The following institutions are responsible for different aspects of water resources, water supply, and sanitation:

- Ministry of Industry, Mines and Energy (MIME). MIME is responsible for providing urban water supplies outside of Phnom Penh. MIME runs water supply facilities in 23 provincial towns. In three of these towns, MIME has granted licenses to private operators. MIME has also granted licenses to six other private operators that run systems in district towns.
- Ministry of Rural Development (MRD). The MRD is responsible for rural water supplies and sanitation. It oversees the operations, tariffs, and quality of water supplied by non-commercial organizations, that is, non-profit agencies such as NGOs, donors, and local cooperatives. It also coordinates donor activity in rural water supply.
- Phnom Penh Water Supply Authority (PPWSA). The Municipality of Phnom Penh is responsible for water in the Capital, while the national government retains responsibility for sanitation. Thus the operation of the water supply network is the responsibility of the autonomous PPWSA, while sanitation is currently the responsibility of the MPWT.
- Ministry of PublicWorks and Transport (MPWT). The MPWT is responsible for sanitation in provincial towns, including Phnom Penh.

- Ministry of Water Resources and Meteorology (MOWRAM). MOWRAM was established in 1999 to define the policies for and strategic development of water resources. It currently has a limited role in the water sector and focuses mainly on granting water abstraction rights.
- Ministry of Environment (MOE). The MOE was established in 1993 with the mandate to protect and upgrade environmental quality and public health through prevention, reduction and pollution control measures. It inspects pollution sources in collaboration with concerned institutions, issues fines, and/or compiles information for authorized institutions.

Other ministries and agencies also play a role in the sector's operations and finance. For example, the Municipality of Phnom Penh reports to the Minister of the Interior. The Minister can therefore influence tariff and other policy decisions concerning the PPWSA. In addition, the Ministry of the Environment is responsible for monitoring wastewater effluent from industrial and other sites. The Council for the Development of Cambodia (CDC) is the main body through which any foreign private sector interest is channeled.

Recognizing the complexity of the sector and the confusion that these overlapping roles create, the government has moved to clarify institutional responsibilities by creating a coordinating committee for the sector composed of senior representatives from the relevant ministries, the CDC, and the Municipality of Phnom Penh. However, while the committee provides a central forum through which the various institutions can coordinate their actions, it has no formal decision-making authority within the water sector.

A comprehensive water sector assessment was conducted in 2001-2002 that led to: (i) a National Water Sector Profile, (ii) a draft National Water Resources Strategy, (iii) a draft Strategic Plan for MOWRAM, (iv) a draft National Water Resources Policy, and (v) a draft Law on Water Resources Management. A Water Sector Roadmap was also completed in 2003 and updated in 2004. The National Water Resources Policy was approved in January 2004. Various other sectoral policies and strategies have been drafted or adopted in recent years, including the National Water Supply and Sanitation Environmental Action Plan.

### **Financial and Investment Programs**

Cambodia has a relatively centralized government structure without special financing programs for local governments. Aside from federal grants to local governments for particular infrastructure projects, there are no special lending or investment programs for local water infrastructure projects. About twenty percent of government spending happens at the provincial and local levels, with communes responsible for only about two percent of total public spending. Attention to the way in which different levels of government interact is a key issue in Cambodia. Grant disbursements to provinces are consistently late and so different from initial budget allocations that budgets have become virtually meaningless.

Cambodian financial markets are small. The local debt market is limited, both in terms of liquidity and maturity on loans. The maximum length of time for which money can be borrowed is about two years, and the average length of all deposits is six months. In addition, the amounts lent are relatively small: most loans are around US\$1,000 or less and few exceed US\$50,000. These amounts are insufficient to finance even relatively small infrastructure projects.

Seven foreign banks have branches in Cambodia, but all basically serve existing overseas clients and none is looking for or accepting new local customers. There are also about 15 locally incorporated banks. These banks are characterized by their limited lending abilities and their concentration in Phnom Penh.

As regards infrastructure, the financial markets are unable to contribute significantly to anything other than small-scale projects for limited terms. Consequently, in addition to entrepreneurs' own funds, private infrastructure projects tend to be supported through microfinance schemes. To date foreign capital markets have not been accessed for local infrastructure projects. To increase confidence in the banking system, the National Bank is re-licensing each of the commercial banks. Other measures aimed at increasing confidence in the sector—such as technical and financial support from international donors—will be required in the years to come.

Most funds for environment infrastructure projects come from the multilateral lending institutions. One such project involved a \$23 million Asian Development Bank loan for a Provincial Towns Improvement Project. The Project is designed to rehabilitate the water supply systems in six towns, develop a sewage collection and treatment system in Sihanoukville, improve community sanitation conditions in three towns, and help mobilize resources at the local government level.

The Project is designed to improve the urban environment, public health, and basic urban services in seven towns: Battambang, Kampot, Kompong Cham, Kompong Thom, Pursat, Sihanoukville, and Svay Rieng. The Project consists of the following parts.

**Part A:** Community Sanitation and Health Awareness. Sanitation conditions in the poor communities in Battambang, Kompong Cham, and Sihanoukville will be improved through community education and participation in project design, cost sharing, and operation and maintenance.

**Part B:** Water Supply. Water supply in Battambang, Kampot, Kompong Cham, Kompong Thom, Pursat, and Svay Rieng will be improved. The subprojects involve the provision, upgrading, or rehabilitation of the facilities for water intake and production, and replacement and extension of the reticulation networks.

**Part C:** Wastewater Management. A sewage collection and treatment system with a capacity of 5,700 cubic meters per day has been designed and constructed in Sihanoukville.

**Part D:** Local Governance and Resource Mobilization. The essential structures for urban local governance will be developed and revenues at the local level improved.

Another ADB project funded at \$21 million for implementation of the Rural Infrastructure Improvement Project was recently reviewed and the evaluation indicated that:

- Involving local communities and stakeholders in the identification and prioritization of project activities is critical to develop their sense of ownership and prepare them for future maintenance obligations.
- Decentralized selection, prioritization, and implementation of infrastructure rehabilitation are effective provided the technical skills are available to supervise and monitor works programs.

- The MRD capacity-building initiatives were successful; MRD now has a cadre of skilled and experienced personnel in project identification, prioritization, implementation supervision, and that can be utilized for future development initiatives. Some concerns remain over the sustainability of interventions requiring ongoing routine and periodic maintenance that, if not addressed, could undermine the success of the projects.

### **Private Sector Participation**

Unlike most countries at a similar level of economic development, Cambodia already has significant experience in private sector participation in infrastructure, ranging from major projects involving foreign investors in the airports and telecommunications sectors to small-scale local entrepreneurs who are active in the water and power sectors.

None of these transactions has benefited from published performance requirements, a competitive bidding process, or established procurement procedures, and none of the agreements has been subjected to public scrutiny. Cambodia may benefit from establishing a legal framework that will clarify and confirm the acceptability of a range of modalities of PPI, establish clear and effective rules governing the transparent procurement of private infrastructure projects, and confirm that international arbitration is available to resolve disputes arising from private infrastructure projects. Enforcement of procurement requirements as applied to PPI projects may eventually be aided by the National Audit Authority -- once that agency is fully operational.

The legal basis for granting licenses to the private sector is uncertain. MIME issued what is termed a general principle (Number 02 GTS, dated June 10, 1997) laying down the basic principles for PPI. The licenses granted to date have been based on this general principle. In the absence of a specific law on PPI, the licenses and contracts derive their legal sanction from the other cross sectoral laws and sub-decrees discussed in the section on water supply outside Phnom Penh.

In response to the generally poor development of networks outside Phnom Penh, private operators put forward proposals for privately financed companies in six towns (Sisophon, Kompong Speu, Takeo, Kien Svay, Sre Ambel, and Udong) that were accepted by the government. Five BOT contracts have been awarded for periods of 23 to 30 years and one BOO contract has been awarded. This entrepreneurial effort was led in three towns by water supply managers who have developed their own water treatment manufacturing plants and entered into partnerships with local construction companies and business people. The schemes have been in operation for up to four years.

All the private operators share some similar characteristics and face similar challenges. Private operators consistently cite the lack of adequate financing for investment as the greatest difficulty facing new schemes, much greater than the need for technical support or the licensing process. External engineering advice was used to design the systems. In most cases the advice came through MIME, which provided an expatriate engineer, but was paid for by the private company.

Among policy makers, opinion on these utilities has been divided. Many government officials believed that they needed to be replaced by publicly-run systems, like those in the other 19 provincial towns. But despite obvious drawbacks in the privately-run systems (such as *ad hoc*

tariff setting and the lack of a competitive selection process), there was potential for building on the experience to enhance private participation in the sector.

Impediments to Private Sector Investments in Cambodia have been identified as the following:

- Cambodia's legal and regulatory environment needs further strengthening to provide a secure basis for private sector participation and to avoid difficulties related to property rights, licensing, and revenue collection.
- Implementation of laws is generally weak, although advances are being made, e.g. in administering the provision related to wastewater management of the Law on Environmental Protection and Natural Resources Management.
- Institutional capacity remains limited especially at sub-national and provincial levels. Capacity building will continue to be required in Ministry of Water Resources and Meteorology (MOWRAM) and other water-related institutions at both central and provincial/district levels to (i) develop the regulatory framework and implementation capacities required to implement water policies and law, (ii) promote IWRM, and (iii) support other water sub-sectors.

The incomplete nature of the legal system, coupled with an unclear allocation of responsibilities between levels of government and among agencies at the same level of government, creates costs and uncertainty for investors.

Cambodia's legal system remains at an early stage in its evolution, and the courts system has not yet established a reputation for independence, competence, or efficiency. This is a significant source of concern for investors. In addition, while the current Law on Investment offers significant guarantees and incentives for foreign investors, it still has several critical limitations, such as a prohibition of the transfer of investment incentives and restrictions on land sales and the employment of foreign nationals.

## Cambodia Contacts

### Government

#### **Mr. Kean Hor Lim**

Minister  
Ministry of Water Resources and Meteorology  
47 Norodom Boulevard  
Phnom Penh, Cambodia

#### **Dr. Bonheur Neou**

Chief of Tonle Sap Environmental Management Project  
Ministry of Environment  
48 Samdech Preah Sihanouk Boulevard  
Phnom Penh, Cambodia  
Tel: +855 12 976383  
Fax: +855 23 212994  
Email: bonheurneou@yahoo.com

#### **Mr. Hak Mao**

Director  
Ministry of Water Resources and Meteorology  
47 Norodom Boulevard  
Phnom Penh, Cambodia  
Tel: +855 12 937595  
Email: maohak@online.com.kh

#### **Mr. Te Navuth**

Director  
Department of Hydrology and River Works  
Ministry of Water Resources & Meteorology  
576, National Road 32, Chak Angre Krom  
Khan Meanchey Phnom Penh, Cambodia  
Tel: +855 12 930 914  
Fax: +855 23 425 606  
Email: te\_navuth@online.com.kh

#### **Mr. Mao Saray**

Director  
Department of Rural Water Supply  
Ministry of Rural Development  
#139, Kampuchea Krom Blvd.  
Phnom Penh, Cambodia  
Tel: +855 12 558558  
Fax: +855 23 883272  
Email: maosaray@bigpond.com.kh

#### **Mr. Ek Sonn Chan**

General Director  
Phnom Penh Water Supply Authority  
95 Street 315

Sangkat Boeung Kak 2, Khan Toul Kork  
Phnom Penh, Cambodia  
Tel: +855 11 779779  
Fax: +855 23 428969  
Email: eksonnchan@ppwsa.com.kh

**H.E. Pich Dun**

Deputy Secretary General  
Cambodia National Mekong Committee  
Tel: +855 23 949 877  
Fax +855 23 218 506  
Email: dun@cnmc.gov.kh

**Mr. Kol Vathana**

Deputy Director  
Department of Nature Conservation and Protection  
Ministry of Environment  
#48 Samdech Preah Sihanuk Blvd., Tonle Basac  
Chamkarmon, Phnom Penh  
Cambodia  
Tel: +855 11 852 208  
Fax: +855 23 210 173

**Mr. Tu Trong Dao**

Officer-In-Charge (and SEATAC Member)  
Mekong River Commission  
364 M.V. Preah Monivong  
PO Box 1112  
Phnom Penh, Cambodia  
Tel: +855 23 720 979  
Fax: +855 23 720 972  
Email: trongtu@mrcmekong.org  
mracs@mrcmekong.org

**NGO/Academic**

**Mr. Michael Scott Roberts**

SE Asia Regional Director  
International Development Enterprises  
PO Box 1577, Phnom Penh  
Cambodia  
Tel: +855 23 880 604  
Fax: +855 23 880 059  
Email: mroberts@online.com.kh

**Mr. Christophe Legrand**

Project Coordinator  
CambodiaCARE International  
P.O. Box 537, House 52, Street 352  
Phnom Penh, Cambodia  
Tel: +855 23 215 267

Fax: +855 23 496 233  
Email: care.samrong@online.com.kh

**Mr. Robert Shore**

Mekong Officer  
World Wildlife Fund for Nature – Cambodia  
28, Street 9, Tonle Basac  
Phnom Penh, Cambodia  
Tel: +855 23 218 034  
Fax: +855 23 211 909  
Email: rob@everyday.com.kh

**Private sector**

**Mr. Mam Sanoun**

Sin Vat Enterprises (Kadal Province)  
No. 9 Street 9 Sangkat Tonle Bassac  
Khan Chamkarmon  
Phnom Penh, Cambodia  
Tel: +855 12 632965

**Mr. Sophanara Tang**

Chief of Environment  
SAWAC Consultants for Development  
1 Street 259 (P.O. Box 549)  
Phnom Penh, Cambodia  
Tel: +855 12 824628; +855 23 991074  
Fax: +855 23 883545  
Email: sophanara2003@yahoo.com; sawacam@online.com.kh

**Mr. Un Yuthy**

Owner  
Production and Water Supply  
Chbarmon District  
Kampong Speu Province, Cambodia  
Tel: +855 016 894892

**Mr. Saronn Em**

Director of Water Supply  
Mekong Water and Electric Supply  
Wat Machhimavon, Kien Svay District  
Kandal Province, Cambodia  
Tel: +855 12 886452

**Mr. Khov Boun Chhay**

President  
The Association of Banks in Cambodia  
2nd Floor, 1 Kramuong Sar St.  
Khan Daun Penh  
Phnom Penh  
Kingdom of Cambodia

Tel: +855 23 218 610  
Fax: +855 23 217122  
e-mail: bankers@online.com.kh

**Mr. Jean-Pierre Mahe**  
Program Manager  
KOSAN Engineering Ltd.  
Cambodia  
Email: jpmahe@online.com.kh

### **International/Donor**

**Ms. Mudita Chamroeun**  
Rural Development Officer  
World Bank  
113 Norodom Boulevard corner Street 240  
Phnom Penh, Cambodia  
Tel: +855 12 801308  
Fax: +855 23 210504  
Email: cmudita@worldbank.org

**Mr. Tue Kell Nielsen**  
Water Resources Management Advisor  
National Capacity Development Project (NCDP) of  
Danish International Development Assistance (DANIDA)  
C/o # 47 Norodom Boulevard  
Phnom Penh, Cambodia  
Tel: +855 12 520558  
Email: [tue@kellnielsen.dk](mailto:tue@kellnielsen.dk)

**Mr. Moriyaman Nobuhiro**  
Expert/MOWRAM  
Japan International Cooperation Agency  
440-448 Monivong Boulevard  
Phnom Penh, Cambodia  
Tel: +855 23 211 67374  
Fax: +855 23 211675  
Email: jica@online.com.kh

**Mr. Jan-Willem Rosenboom**  
Senior Water and Sanitation  
Water and Sanitation Program  
World Bank  
70 Norodom Boulevard  
P.O. Box 1115  
Phnom Penh, Cambodia  
Tel: +855 12 464360  
Fax: +855 23 210922  
Email: jwr@online.com.kh

**Mr. Paul Van Im**

Senior Project Implementation/Programs Officer

Asian Development Bank

93/95 Norodom Boulevard

Sangkat Boeung Raing, Khan Daun Penh

Phnom Penh, Cambodia

Tel: +855 23 215805, 215806, 216417

Fax: +855 23 215807

Email: [pvanim@adb.org](mailto:pvanim@adb.org)

## CHINA

### List of Abbreviations

WTO	World Trade Organization
EPD	Environmental Protection Bureau
WRL	Water Resources Law
WPL	Water Pollution Prevention and Control Law
PRC	People's Republic of China
SEPA	State Environmental Protection Administration
SBD	State Development Bank

## Overview

At present, China is encountering severe water shortages, resulting from both a large population and water pollution caused by rapid economic development with a minimal regard for environmental impacts. Although China significantly improved its water and wastewater infrastructure, with annual water supply at 549.7 billion cubic meters in 2002, there are still annual water shortages of 40 billion cubic meters.

Accelerated urbanization and high-speed economic growth in China continue to aggravate the water shortage problem. The amount of fresh water per capita in China is about one fourth of the average of the whole world and stands 110th on the global list. China is ranked by UN as one of 13 most water-deficient countries in the world. With population growing along with the development of the economy and society, water usage and wastewater discharges are increasing.

The development of adequate municipal freshwater supply and wastewater treatment systems will be costly, because China is far behind in the development of this infrastructure. Some 75 percent of all urban areas do not have adequate systems for the supply and distribution of potable water. In many cases, wastewater is simply discharged into rivers and lakes, which has contributed to a rapid deterioration of water quality in recent years. The lack of effective measures to stop or slow urban water pollution has exacerbated China's problems with freshwater supply.

According to China's Tenth Five-Year Plan, the municipal wastewater treatment rate needs to increase to 60 percent in 2005. New municipal wastewater treatment plants are rapidly being constructed in China's cities.

The water and wastewater treatment industry was a commonwealth enterprise in China for many years, with only limited fees levied for the consumption of resources and provision of services. This system led to huge amounts of water being squandered and polluted, as well as to a scarcity of capital in the construction, renovation, operation, and maintenance of water and wastewater infrastructures or facilities. Fortunately, the Chinese government realized the need to value water as a resource and introduced market mechanisms in the water supply and wastewater treatment sector.

Only since the early 1980s have the major cities begun to implement modern water supply and sanitation facilities. It was estimated that between 1981 and 1993 the annual investment in urban public water facilities increased from just 365 million to 5,948 billion yuan. However, the measures so far have been insufficient. Smaller cities and towns in rural areas in particular, still have only very basic waste water treatment facilities.

All water supply plants and piping networks are still state-owned property, although operation strategies changed significantly after the water sector opened to non-state-owned investment in 1998. Many municipal water supply and piping systems constructed before the 1950s are encountering serious problems from deterioration, exacerbated by poor operation and inadequate maintenance. Pipe breakages occur frequently, resulting in water loss and decreased water supply efficiency.

At the end of 2002, approximately 500 of the 660 cities in China had constructed municipal wastewater treatment facilities, but there were no municipal wastewater treatment facilities in most of the 17,000 towns. The annual wastewater treatment amount was 13.5 billion cubic

meters, equal to 39.9 percent of the total wastewater volume. The actual treatment rate of domestic wastewater, however, is only 22.3 percent because treatment plants often operate below design standards or capacity.

Industry is the biggest source of water pollution in China. Industrial wastewater accounts for about two-thirds of the total discharge into rivers, lakes, and the sea. Existing facilities for treating industrial wastewater are operating with outdated technology or are poorly maintained. Recycling of process water is minimal in Chinese industry. It will be very costly to build new facilities and update the existing ones. Over 61,220 industrial wastewater treatment facilities had been constructed in China by the end of 2001.

Industrial wastewater treatment facilities are often owned by the enterprises, and the enterprises are also responsible for the operation and maintenance of the facilities. The enterprises are under pressure from the government for better treatment performance. Public pressure is not yet a major factor driving improved treatment. The quality of operation and maintenance is low because of the high wastewater treatment costs, low equipment quality, low environmental awareness, spotty monitoring by the government, low penalties for environmental violations, and poor economic condition of some enterprises.

### **Roles, Responsibilities and Mandates**

China revised its main legislation, the Water Resource Law, in 2002 and issued many related regulations and policies. Water tariff and wastewater treatment fees are rising to rational levels, and public water infrastructure was opened to foreign and non-state-owned capital financing. China's water market is quite brisk, and China's World Trade Organization (WTO) accession significantly affected water market reforms.

As a result of China's water market reforms significant amounts of new water infrastructures are to be built, and the operation and maintenance of all existing and newly built municipal water and wastewater treatment plants have been or will be transferred to authorized enterprises. Many forms of private and public partnership are now accepted by the Chinese government for supplying technology and equipment and for providing long term investment opportunities for foreign enterprises.

Since the promulgation of the Water Pollution Prevention Law by National People's Congress, China has formulated or amended seventeen laws, administrative laws and regulations, sector norms and technical policies, such as Water Pollution Prevention, Measures of the Implementation of Water Pollution Prevention, and Technical Policy of Urban Sewage Treatment and Pollution Prevention. The State Environmental Protection Administration has issued 21 standards on water environmental protection such as Standards of Ambient Surface Water Quality, Standards of Ground Water Quality, and Comprehensive Standards of Sewage Discharge.

The local governments have also, in line with the local situation, formulated a series of local laws, rules, regulations and standards for water pollution prevention. Large-scale inspection on environmental enforcement is carried out in the entire country every year, including inspection on the implementation of laws and regulations on water pollution prevention. In addition, special inspection on certain areas and sectors has been conducted.

The Water Resource Law facilitates a unified management of water resources by authorizing one administration department under the State Council to oversee all water affairs. This modification eliminates separate management of water resources, water supply, and wastewater. Water bureaus have been established at the local government level to integrate the management of all local water-related affairs, including water extraction, water treatment and distribution, and wastewater collection and treatment. Nearly 1,200 water bureaus have been established, covering nearly 50 percent of all the cities and counties in China. A Beijing water bureau was established in May 2004.

Three major laws provide the policy and regulatory framework for the water sector:

The **Water Resources Law (WRL)**, initially enacted in 1988, was amended in 2002, and took effect in October 2002. The amended law marks a new stage for China, in which the country is changing from traditional water management to sustainable development management and is attempting to build a society that is based on water conservation and sustainability. In addition, the new law identifies a water quality management system. Water authorities, together with local environmental protection bureaus (EPDs), are to play a significant role in water environmental protection and water quality improvement.

The **Water Pollution Prevention and Control Law (WPL)** is the main law for water pollution control. It applies to discharges to rivers, lakes, canals, reservoirs, and groundwater. The WPL contains sections pertaining to water quality and discharge standards, pollution prevention, surface water, and groundwater. The WPL requires water pollution discharges to be registered with the local EPB, and requires polluters to pay for their discharges.

The **Implementation Regulation of Water Pollution Prevention and Control Law** was enacted on March 20, 2000. This law regulates the supervision and management of surface and ground water pollution, prevention, and control measures.

In China, methods of enforcing environmental legislation include discharge fees, surcharge fees, fines, and administrative sanctions. Pollutant discharge activity is subject to a discharge permit, which must be registered and obtained before the pollutants are generated. A discharge fee is collected and supervised by the local EPB, even for discharges within the applicable standards. A surcharge or fine may be imposed on the facilities whose discharge violates the standards. All temporary and routine discharges must comply with relevant standards, or the facility may be ordered to treat the pollution within a given time frame.

A revised pollutant discharge fee levy and use policy was put into effect July 1, 2003. The most significant change in this new policy is the method used to calculate pollution fees. According to the old policy method, if discharged wastewater at the same outlet contained more than two pollutants, the pollutant discharge fee would be calculated and based solely on the single pollutant that incurred the maximum discharge fee. The new policy stipulates that all the pollutants listed on the standard will be calculated into the total pollutant discharge fee. The new policy clearly encourages and accelerates the industrialization of municipal wastewater treatment.

Regulations and standards not only exist at the national level but also at the provincial and municipal levels. Local regulations and standards can specify more stringent emissions requirements than national legislation and can regulate parameters that are not regulated at the national level. When local and national emissions and discharge standards vary, the more stringent standards apply.

There are specific items within the Constitution of the People's Republic of China (PRC) and the PRC Criminal Law to strengthen the enforcement of environmental legislation by disciplinary sanction, civil liability, and even criminal liability. Disciplinary sanctions may come in the form of a warning, a fine, a requirement to install environmental protection equipment, or a requirement to cease operations. The severity of the sanction ordered by the State Environmental Protection Administration (SEPA) or the local EPBs depends on the severity of the violation. Criminal liability can also be passed on to the legal representative of an enterprise if the polluting activity caused severe damage to property, health, or interests of the state or its citizens. In these cases, the individual deemed responsible may be prosecuted. Civil liability also exists and is aimed at activities that may result in civil disputes (such as noise exposure). Generally, the dispute may be settled through financial compensation by the facility that caused the damage.

### **Financing and Investment Programs**

The primary domestic financing sources for environmental infrastructure in China include state bonds, State Development Bank loans, and commercial loans.

**State Bonds.** State bonds are awarded to key state projects by the central government. Large municipal infrastructure construction is a priority market for state bonds. Both water supply and wastewater treatment plants have been funded by state bonds. However, large wastewater treatment plants in key state pollution control areas or key cities offer the best opportunity to access state bonds. The construction of 19 wastewater treatment plants located in the Three Gorges area attracted \$180 million, accounting for 65 percent of the total investment. State bonds also funded the ongoing construction of three wastewater treatment plants in Beijing.

**State Development Bank.** Different from a commercial bank, the State Development Bank (SDB) is a policy bank that provides long-term, large-sum loans at low interest rates. The total amount of an SDB loan may reach \$1 billion. The priority sectors are state infrastructure and fundamental industries. SDB loans have been awarded to construct municipal water supply and waste water treatment facilities.

**Commercial Bank Loans.** The four major commercial banks in China are the People's Construction Bank of China, the Industrial and Commercial Bank of China, the Bank of China, and the Agriculture Bank of China. These commercial banks provide loans to construct water supply and wastewater treatment facilities. Examples of significant loans include:

- The People's Construction Bank of China loaned a total \$240 million to the Beijing Municipal Drainage Co., Ltd., to build municipal wastewater treatment plants in Beijing.
- The Agriculture Bank of China, in cooperation with the Ministry of Construction, is lending \$3.62 billion over the next 10 years for infrastructure construction in small cities, including water supply, wastewater collection, and wastewater treatment.
- The Bank of China and the Industrial and Commercial Bank of China are providing a \$13.18 million loan for a wastewater treatment project in Hebei Province.

## **Private Sector Participation**

The lack of financial transparency that pervades many Chinese state-owned enterprises and the subsidized, and sometimes inefficient, business conditions under which they operate make issues of credit and performance acute. This has caused some foreign participants to rely on structures guaranteeing rates of return or government support letters that run against the grain of current policy and, in some cases, of PRC regulation.

Traditional models of foreign investment in the water sector can be broadly categorized as either joint-venture structures, often involving unsolicited negotiations with a local partner; and BOT structures, involving a competitive bid and wholesale foreign ownership and operation.

Foreign investors have often used their existing business relations in China to secure investment opportunities in conjunction with a local partner and generally without a publicly announced competitive bid. The joint-venture structures have generally taken the form of "multi-role" structures or "innovative" structures.

Risky and high-cost innovative structures take varying forms, including offshore debt funded via the foreign shareholder; pooled equity funds, and all-equity funding through construction. The risky nature of innovative structures is evident in the security and comfort arrangements employed. These are generally defensive in approach and stray from a uniform market standard through the use of guaranteed shortfall payments, support letters, and stand-alone arrangements to make termination payments backed by insurance arrangements.

The combined effect of the varying forms of innovative structures is to create uncertainty and delays, lengthier project-development periods, higher development and capital costs, and higher infrastructure commodity prices for the consumers.

## China Contacts

### Government

Mr. Chen Yuan, Governor  
**China Development Bank**  
29 Fuchengmenwai, Xicheng District  
Beijing 100037, China  
Phone: +86-10-68307304  
Fax: +86-10-68311517  
Web site: [www.cdb.com.cn](http://www.cdb.com.cn)  
E-mail: [Zhaopin@cdb.com.cn](mailto:Zhaopin@cdb.com.cn)

Ms. Zhang Jie, Deputy Director  
**China State Engineering,**  
Beijing 100035, China

Ms. Ren Yuhong, First Secretary  
**Division of Coordination, Information Department**  
**Ministry of Foreign Affairs**  
No. 2 Chao Yang Men Nan da Jie  
Beijing 100701, China.

Minister Bo Xialai  
**Ministry of Commerce**  
2 Dongchanganjie  
Beijing 100731, China  
Phone: +86-10-65121919  
Fax: +86-10-65599340  
Web site: [www.mofcom.gov.cn](http://www.mofcom.gov.cn)

**Ministry of Construction**  
9 Sanlihe Road  
Beijing 100835, China  
Phone: +86-10-58934114  
Web site: [www.cin.gov.cn](http://www.cin.gov.cn)  
E-mail: [cin@mail.cin.gov.cn](mailto:cin@mail.cin.gov.cn)

Mr. Yu Ying, Director  
**Department of International Cooperation**  
**Ministry of Science and Technology**  
15 (Yi) Fuxing Road, Haidian District  
Beijing 100862, China  
Phone: +86-10-58881800  
Web site: [www.most.gov.cn](http://www.most.gov.cn)  
Phone: +86-10-68515048  
Mr. Gao Bo, Director

**Department of International Cooperation and Science and Technology**  
**Ministry of Water Resources**  
2 Baiguang Road, Ertiao

Beijing, China  
Phone: +86-10-63202558, 63202557, 63202561  
Fax: +86-10-63202556  
Web site: [www.mwr.gov.cn](http://www.mwr.gov.cn)  
E-mail: [webmaster@mwr.gov.cn](mailto:webmaster@mwr.gov.cn)

Minister Ma Kai  
**National Development and Reform Commission**  
**Department of Environment and Resource Conservation**  
Division of Environment Industry  
38 Yuetannanjie, Xicheng District  
Beijing 100824, China  
Phone: +86-10-68535653  
Fax: +86-10-68535652  
Email: [hzs@ndrc.gov.cn](mailto:hzs@ndrc.gov.cn) ; [ndrc@ndrc.gov.cn](mailto:ndrc@ndrc.gov.cn)  
Web site: [www.sdpc.gov.cn](http://www.sdpc.gov.cn)

Vice Minister Pan Yue  
**State Environmental Protection Administration (SEPA)**  
115 Xizhimennei, Nanxiaojie, Xicheng District  
Beijing 100035, China  
Web site: [www.zhb.gov.cn](http://www.zhb.gov.cn)  
E-mail: [mailbox@zhb.gov.cn](mailto:mailbox@zhb.gov.cn)  
SEPA Department of International Cooperation  
Phone: +86-10-66556495 ; +86-10-66556517

### **Institutes and Associations**

Mr. Wang Xin Fang, Director General  
**China Association of Environmental Protection Industry**  
9 Sanlihe Road, Haidian District  
Beijing 100835, China  
Phone: +86-10-65211883  
Fax: +86-10-65211887  
Web site: [www.cepi.com.cn](http://www.cepi.com.cn)  
E-mail: [cepi@vip.163.com](mailto:cepi@vip.163.com)

Mr. Wang Yue, Officer in Charge  
**China International Center for Economic and Technical Exchanges (CICETE)**  
18 Bei San Huan Zhong Lu  
Beijing 100011, China  
Phone: +86-10-62049988, Fax: +86-10-62011328  
Web site: [www.cicete.org](http://www.cicete.org)  
E-mail: [webmaster@cicete.org](mailto:webmaster@cicete.org) or [info@cicete.org](mailto:info@cicete.org)

**Chinese Research Academy of Environmental Sciences (CRAES)**  
8 Anwai Beiyuan, Dayangfang, Chaoyang District  
Beijing 100012, China  
Phone: +86-10-84915193  
Web site: [www.craes.org.cn](http://www.craes.org.cn)  
E-mail: [office@craes.org.cn](mailto:office@craes.org.cn)

## **Private Sector**

Mr. Liu Xiao Guang, General Manager  
**Beijing Capital Co., Ltd.**  
7th Floor, 8 Jingan Center, Bei San Huan Dong Lu  
Beijing 100028, China  
Phone: +86-10-845-52266, Fax: +86-10-845-52900  
Web site: [www.beijingcapital.com.cn](http://www.beijingcapital.com.cn)  
E-mail: [bjcapital@beijingcapital.com.cn](mailto:bjcapital@beijingcapital.com.cn)

Dr. Sonia X. Y. Li  
**China International Institute of Multinational Corporations**  
6/F, United International Building  
No. 19 Dongsanhuan Road  
Beijing 100021, China

Mr. Charles Martin, President  
**The American Chamber of Commerce**  
People's Republic of China  
China Resources Building  
No. 8 Jiaguomenbei Avenue  
Beijing 100005, China

**Anhui Guozhen Environmental Protection Science and Technology Co., Ltd.**  
50 Tianzhi Road, Hi-Tech Development District, Hefei  
Anhui 230088, China  
Phone: +86-551-5314889, 5313412, 5319529  
Fax: +86-551-5329201  
Web site: [www.gzep.com.cn](http://www.gzep.com.cn)  
E-mail: [ahgzep@ahgze.com](mailto:ahgzep@ahgze.com)

**Beijing Golden State Engineering and Technology Co., Ltd.**  
An Yuan Jia 8, An Hui Bei Li, Chaoyang District  
Beijing 100101, China  
Phone: +86-10-64915588, Fax: +86-10-64979796  
Web site: [www.gsgc.com](http://www.gsgc.com)  
E-mail: [goldenstate@gsgc.com](mailto:goldenstate@gsgc.com)

Mr. Tu Zhaolin  
Director  
**Beijing Municipal Drainage Co., Ltd.**  
4 Longtanhubeili, Chong Wen District  
Beijing 100061, China  
Phone: +86-10-67100700 ; 67147708  
Fax: +86-10-67147709  
E-mail: [bdc@bdc.cn](mailto:bdc@bdc.cn)

**CNECP Water Service Investment Co., Ltd.**  
F315 Yuanyang Mansion  
158 Fuxingmennei Street, Xicheng District

Beijing 100031, China  
Phone: +86-10-66410550  
Fax: +86-10-66415028  
Web site: [www.cnepc.com.cn/swt.htm](http://www.cnepc.com.cn/swt.htm)

**Tsinghua Tongfang Water Engineering Corp.**  
10th Floor, Tower A, Tongfang Technology Plaza  
1 Xiwangzhuang, Haidian District  
Beijing 100083, China  
Phone: +86-10-82390588  
Fax: +86-10-82390586  
E-mail: [fwater@thtf.com.cn](mailto:fwater@thtf.com.cn)

**China Municipal Works Investment Net**  
*Website: <http://zhaoshang.csjs.com.cn>*  
Business promotion and equipment purchase information; municipal works investment information; policy research reports

**Beijing Huajian Hulian Technology Development Co. Ltd.**  
7<sup>th</sup> Floor, B, Zhongjian Mansion  
15 Sanlihe road, Beijing 100037, China  
Phone/Fax: +86-10-58934547  
Email: [csjs@hjhlsoft.com](mailto:csjs@hjhlsoft.com)

## INDONESIA

### List of Abbreviations

GOI	Government of Indonesia
PDAM	Municipal Water Enterprise
PERPAMS	Indonesian Drinking Water Company Association
IEPC	Industrial Efficiency and Pollution Control project
SME	Small-medium enterprise
MoF	Ministry of Finance
RDB	Regional Development Bank
SMI	Small-medium industrial enterprise
RDA	Regional Development Account
BOT	Build-Operate-Transfer

## Overview

Indonesia is a collective of 17, 508 islands divided into 27 provinces, 235 districts, 3,841 sub-districts, 55 municipalities, 35 administrative cities, and 16 administrative municipalities. These divisions serve as the administrative framework of the fourth most populous country in the world, having a population of 204 million that is immensely ethnically diverse.

Despite its size, geography, and diversity, Indonesia's bureaucracy and economy has traditionally been highly centralized. Provision of quality services in the water, sanitation, and irrigation sectors has been a task that has not been realized to the satisfaction of urban and rural water users. The financial crisis of 1997, the over-throw of the Soeharto regime, and the continued less than satisfactory provision of basic services heightened the nation-wide demands for reform. The Government of Indonesia (GOI) responded to these calls by promulgating Law No. 22, 1999 entitled "Local Government" and Law No. 25, 1999 concerning "Fiscal Balance between Central Government and the Regions."

Indonesia's water quality is deteriorating. One of the most serious problems is the lack of sewage systems in urban areas. The *Indonesia Environment Monitor* notes that Indonesia ranks among the worst countries in Asia in sewage and sanitation coverage. Few Indonesian cities possess even minimal sanitation systems. For example, according to a 2002 World Bank report, less than 3percent of Jakarta's population is connected to a sewer system. The absence of an established sanitation network forces many households to rely upon private septic tanks or to dispose of their waste directly into rivers and canals. This has led to significant contamination of Indonesia's surface and groundwater, as well as to repeated epidemics of gastrointestinal infections. As of 2001, an estimated 90percent of Jakarta's shallow wells were polluted by domestic waste.

Indonesia's relative absence of controls on industrial emissions also has led to the degradation of water resources. Many factories continue to dump their liquid waste into rivers without treatment. A lack of regulations on agricultural chemicals has led to damage of water resources in Indonesia's farmlands. In large part because the growing numbers of small-scale mines operate with little or no environmental precautions, Indonesia's mining sector is an increasingly large source of water pollution.

Indonesian coastal waters are highly polluted, especially in high traffic areas such as the Malacca and Lombok Straits, the major shipping pathway between Asia and the Middle East. Unsustainable fishing practices (e.g. blast fishing), industrial effluent, sewage, and agricultural discharges also have placed the ecosystems of Indonesia's reefs, the most biologically diverse in the world, in jeopardy. According to a 2002 report by the World Resources Institute, 86percent of Indonesia's reef area (19,700 square miles) is at medium or high risk.

Until late 1990s, most of Indonesia's 300+ municipal water enterprises were owned and managed by the central government. In 2001, decentralization took effect and local governments gained full legal control over municipal water enterprises (PDAMs), changing the business dynamic between water enterprises and their new local government owners while creating a new challenge to enhance service provision for existing and potential customers.. Investments needs in water projects are huge and the PDAMs face many financial and managerial challenges in meeting demand.

At present, there are approximately 300 PDAMs operating in Indonesia. These PDAMs consist of 8 large scale operations (over 50,000 connections) and 77 medium-scale operations (10,000

to 50,000 connections) with the rest serving fewer than 10,000 house connections. To date, a total of \$3 billion has been invested in the water sector, primarily through international development bank loans, and yet only 39percent of urban populations and 8percent of rural populations have access to piped water. Most of this water must be boiled before drinking.

PDAMs suffer from systemic problems including non-revenue water. Both for technical and social reasons (illegal connections or non-paying customers), non-revenue water is nearly 50percent for most PDAMs. More than two-thirds of all PDAMs collectively owe more than \$400 million to the Ministry of Finance, and most are in arrears or default of these loans.

Many Indonesian state-owned companies including PDAMs are loaded with extensive corruption problems, and bad financial conditions. After the 1997 crisis, many PDAMs nearly went bankrupt, yet about 41percent of the Indonesian population live in urban areas and very much rely on clean water services of PDAMs. From that amount only 51.7percent or 20percent of the total population gets PDAM services.

According to PERPAMSI (Indonesian Drinking Water Companies Association), 293 PDAM companies surveyed in Indonesia -- including five companies forming joint ventures with foreign private companies -- had the following financial performance profile:

- 82percent earn negative profit or are experiencing loss
- 22percent have positive equity
- 44percent earn less than their operation and maintenance cost
- Only 10percent are in healthy financial condition
- 119 PDAMs have foreign debts and 146 PDAMs have domestic debt

The sanitation sector is even more discouraging. Sewage systems are minimal, with only about 200,000 connections in the entire country. Less than 1percent of urban households in Indonesia are currently connected to a municipal sewer. Septic tanks, the principal form of sewage containment in Indonesia, are frequently in a state of disrepair, with septage left to drain into groundwater or open drainage canals. Untreated sewage discharges and septage pose significant risks to human health. Additionally, widespread coral and fisheries losses and degradation of coastal areas have been linked to nitrogen and phosphorous pollutants from sewage discharges into rivers, coastal and marine areas.

Industrial pollution is a big problem in Indonesia due to the rapid industrialization process that is taking place in this country. There are several hundred thousand small and more than 20,000 medium-sized industrial enterprises in Indonesia. The industrial sector contribution to gross domestic product last year was 28percent (around USD 34 billion). Most of the industrial products are exported.

The Industrial Efficiency and Pollution Control project (IEPC) was established in 2000 to tackle industrial pollution problems through the government's provision of investment loans to SMEs for efficient production and cleaner technology. Bapedal is administering the technical implementation of this project in cooperation with the Ministry of Finance (MoF) and four Regional Development Banks (RDB).

The IEPC Project is an environmental revolving fund, which provides investment loans to SMI, i.e., to industrial enterprises, which own less than Rp 8 billion in operating assets (all assets less the value of land and buildings owned by the SMI). The grant finances SMI investment loans to

combat industrial pollution and investments in efficient and cleaner production technologies. The project is one of several GOI incentives to industrial enterprises aimed at abating industrial pollution. The maximum loan amount to one single SMI is Rp 3 billion and to a group of SMI, Rp 8 billion (1 USD = Rp 9,500).

IEPC loans finance three main types of environmental investments:

- Investments in production facilities aiming at substantial pollution reduction and/or natural resource savings by financing of more efficient and cleaner production equipment/process technologies;
- Investments in machinery and equipment to be used by the SMI to recycle, reuse, and recover (3 R) waste materials and waste products;
- Investments in waste treatment plants and equipment to reduce and neutralize industrial waste and pollution after the production process (end-of-pipe solutions).

The IEPC project's lending rate to SMI is presently 14percent p.a. and the cost of funds for the four RDB is 9percent p.a. leaving a percent gross margin to the RDB. IEPC loans to SMI have a maximum tenure of 10 years and a grace period of maximum two years for loan installment repayment.

The total grant of DM 11.7 million will be withdrawn from the German State Bank, Kreditanstalt fur Wiederaufbau (KfW) by the RDB in accordance with the regulations for the IEPC project. The RDB will on lend their IEPC funds to SMI and later re-lend loan repayments from SMI that have been granted IEPC loans to other eligible SMI. That is, the environmental fund will be revolved by the RDB over a 12 year period. The RDB cover the full credit risk for the IEPC fund, meaning that all losses resulting from non-performing loans and bad debts are fully covered by the RDB.

According to the Coordinating Minister for the Economy, Indonesia will need up to \$150 billion to finance environmental infrastructure-related projects in the next five years. Of the total, one-third will be funded by domestic sources including the state budget, while multilateral lenders are expected to contribute some \$10 billion, leaving global private investors to cover the remaining \$90 billion.

### **Roles, Responsibilities and Mandate**

A new water resources law No. 7/2004 has been enacted focusing on the provision of sustainable water resources, the management of the water supply and wastewater, and participation of the private sector. A supplementing government regulation on water supply and sanitation will also be established to formulate the role, responsibility, rules and procedures on how local governments will manage the water supply and wastewater system, and how the private sector can participate in water projects.

Indonesia is finalizing a comprehensive Environmental Management Law that would merge elements from the existing Environmental Management Act and a draft Natural Resources Act. The law would establish specialized regulatory agencies to oversee different natural resource sectors and would allow provincial and municipal governments some leeway to set

environmental standards as long as they at least match national norms. The law should also streamline some areas of environmental regulation where there are now overlapping regulations and conflicting agency jurisdictions.

The law would give the central government authority for issuing licenses for handling hazardous and toxic materials, but would delegate to regional governments licensing authority for managing waste water, underground water, and air emissions. In the case that regional governments lack regulations, however, national law will prevail. In general, the law is aimed at tightening environmental regulations and strengthening provisions on corporate and individual liability for pollution.

In advance of the law, the Environment Ministry issued a decree in late 2004 outlining procedures for environmental damage complaints – complaints that were previously handled by the police. Under the new decree, however, regional governments are required to form an investigation team within seven days of receiving a complaint, and if the team finds evidence of negative environmental impact the government must form a verification team to report its findings within 30 days.

The verification team must then issue one of four findings with specific consequences:

- In the event of a regulatory violation with no damage resulting, the business will be monitored closely by the government.
- If a violation with pollution occurs, sanctions may be placed on the business in the form of warnings, suspensions, the collection of fines and cleanup costs, or even closure.
- If a violation occurs with pollution that causes loss of property, the case should be settled in or out of civil court.
- If there is a criminal violation, the case is to be handled by the police.

### **Financing and Investment Programs**

Before the political transition in 1998-1999, local government borrowing was controlled very tightly by the central government under Law No. 4/1974. Under this law, regional governments were permitted to borrow only with the approval of the Minister of Home Affairs, who put limits on the amount that could be borrowed and also gave approval on the specifics of the borrowing proposal.

In 1988 the national government established the Regional Development Account (RDA) as a further effort to unify the system of local borrowing in terms of process, lending, and repayment requirements. This account is under the Ministry of Finance, and run by the Director General of Financial Institutions.

The RDA was intended to help make the transition from the previous system of local borrowing policy to a more market-based system, by establishing an institution (and an account) that was a pure lending and intermediary institution. The role of local governments in borrowing was expected to increase and gain in importance, accompanied by an improvement in the capacity of local governments to plan and manage their investment projects and to mobilize their own revenue sources to repay their borrowing. However, the sources of funds of RDA were still

primarily from the general budget of the central government and from foreign government loans, and only a very small portion (less than 10 percent) of the RDA actually came from RDA repayment.

With a narrow funding source, as well as with other administrative difficulties, the RDA was largely unable to respond to the demand for funds. After more than ten years, the RDA has failed to transform local government borrowing practices in Indonesia to a more market-based approach. As a result, virtually all long-term financing of local water projects today is provided by the RDA.

While the RDA has a poor record regarding repayment on loans from local governments, this is due to a non-payment culture at the local level, not due to poor design of water projects. Local governments with the assistance of RDA and local consultants are able to design and build water projects to acceptable standards.

The GOI has recently shifted to a new policy toward borrowing. On balance, local borrowing policy in Indonesia has changed in a mixed direction since the new laws of decentralization were passed in 1999. Under Law No. 25/1999 local governments are given substantial latitude to borrow from domestic sources, and from foreign sources through the central government. Long-term borrowing (e.g., more than one year) is only allowed for investment spending to build infrastructure that can generate revenue for repayment. Short-term borrowing is permitted but only for the management of local government cash flow, and must be repaid by the end of the current year.

Local governments face huge pressures and demanding tasks in managing their budgets under the new fiscal decentralization. However, the capacity of local governments to manage their budgets and their borrowing has not changed. Given the high and unsustainable public debt (in excess of 100 percent of GDP), there are significant fiscal and macroeconomic risks that severely constrain the ability of the Indonesian economy to sustain additional borrowing even at the local level. In combination with the limited capacity of local governments and the continuing economic crisis, there are pressures on the central government to restrain local governments in their borrowing.

### **Private Sector Participation**

Since the mid 1980s, the Indonesian government has undertaken public private partnerships (PPP) in the water supply sector on a small scale, such as for meter reading and bill collections, as well as maintenance work.

- The first PPP project was a BOT (Build, Operate and Transfer) in Serang Utara, West Java in 1993.
- The next concession was for water supply services on Batam Island (near Singapore) by P.T. Aditia Tirta Batam in 1995. In 1998, modified concessions were granted for Jakarta, and P.T. Palyja and P.T. Thames PAM Jaya formed PPP's in Eastern Jakarta.
- The other PPP's are BOT projects between PDAM. Tirtanadi (Medan) and the French company Ondeo to provide water.

- Another PPP between PDAM Tangerang and P.T. Tirta Degremont for a water treatment plant in Serpong to provide potable water for Jakarta and Bumi Serpong Damai has been successful because it provides good quality water and operates efficiently with a small, competent local staff.

In 1991, when PPP experience began, Thames Water Overseas Ltd. and Suez Lyonnaise, a French company, competed to run Jakarta's water system. In 1993, Thames made an alliance with Sigit Harjojudanto, the son of President Soeharto, while Suez approached Anthony Salim, a conglomerate and Soeharto's crony. In the end, Jakarta water management was divided into two equal portions for the two companies.

Upon request of Thames and Suez, in 1995, then President Soeharto gave orders to the Public Works Minister to privatise PAM Jaya. In 1997, PAM Jaya and the two corporations signed a concession contract for 25 years. Both Suez and Thames established local companies with their Indonesian partners, with Thames holding 80percent stake of their company with Sigit, and Salim Group gave 40percent stake to Suez. In the contract, all components of the Jakarta water service system are in the hands of both companies, including clean water supply, treatment plants, distribution system, recording and billing. In turn, both companies agree to pay PAM Jaya's debt of US\$ 231 million.

After the fall of Soeharto's government and pressures by huge demonstrations in Jakarta against the deal, the Indonesia Government tried to annul the contract but later withdrew after threats of lawsuits by Thames and Suez. The concession contract was then renegotiated and ended with Thames and Suez both holding 95percent stake in PT Thames PAM Jaya (TPJ) and PT PAM Lyonnaise Jaya (Palyja).

There had been two large tariff increases in six years after the two companies took over Jakarta's water system. In 2003, the two companies asked the Jakarta government to again increase the water tariff and threatened to pull out of their contract agreements if their demands were rejected. They claimed that they experienced losses and that the current water tariffs were no longer justified in light of the investment the companies had made. Consequently, the water tariff was increased again by about 40percent in the beginning of 2004.

Neither Thames nor Suez has actually met the agreements in the contract. Water leakage is still high, about 50percent, while in the agreement they were supposed to minimize the leakage to only 35percent within five years. Also, their promise to service 70percent of the population after five years has not been met. Thames and Suez have blamed failure to reach projected connection targets on the Asian economic crisis and to local employees who refused to cooperate with their foreign employers.

The major impediments to private sector investments include:

- A culture of non-payment of loans by local governments and utilities.
- Capacity constraints at the local government level regarding financial accounting and budgeting.
- A culture of corruption at the national and local government level.

- Inadequate legal framework that requires regulation of the private investments through contractual provisions.
- Early stages of project development appear to be the most difficult if a project is proposed on a sole source basis by the developer. Once government is convinced a project should be done via a public private partnership, and particularly if the decision is made to tender, matters move relatively quickly.
- From a developers perspective, impediments include the uncertainties associated with tariff setting - currently done in the provinces through local legislature. Other problems include timeliness of consents and approvals, and lack of comprehensive legislation at the local level.
- The water sector is not understood by local bankers generally.

## Indonesia Contacts

### Government

Mr. Harmin Manreponz  
**State Ministry of Environment**  
Jl. Mayjend. D.I. Panjaitan  
Jakarta, Indonesia

Mr. Andin. H. Taryoto, Secretary General  
**Ministry of Marines and Fisheries**  
Jl. Medan Merdeka Timur 16  
Jakarta, Indonesia  
Tel: +62 21 350 0045  
Fax: +62 21 350 0049

Mr. Susmono, Director of Environmental Sanitation  
**Ministry of Public Works**  
Jl. Pattimura 20, Kebayoran Baru  
Jakarta, Indonesia  
Tel: +62 21 7279 7175  
Fax: +62 21 726 1939  
Email: susmono\_2@yahoo.com, niken2829@yahoo.com

Ms. Siti Bellafolijani Adimihardja  
**Directorate for Water Supply Development**  
**Ministry of Public Works**  
B Building 8th Fl, Jl. Pattimura 20  
Jakarta, Indonesia  
Tel: +62 21 7279 6823  
Fax: +62 21 7279 6905  
Email: bellafolijani@yahoo.com

Mr. Amier Hartono, Head of Irrigation Water Program  
**DG of Land & Water Management**  
**Ministry of Agriculture**  
Jl. Harsono RM No.3, Ragunan  
Jakarta, Indonesia  
Tel: +62 21 782 3975  
Fax: +62 21 782 3975  
Email: [amierhartono@hotmail.com](mailto:amierhartono@hotmail.com)

Mr. Pranoto Sugimin, Director  
**Directorate General of Urban and Rural Development**  
Jl. Pattimura No. 20, Kebayoran Baru  
Jakarta Selatan, Jakarta, Indonesia  
Tel: 62 21 72796461  
Fax: 62 21 7251668  
Mobile: 62 0811 195331  
Email: supranoto48@hotmail.com

**Directorate of Environment Technology Instrument Development  
Environmental Impact Management Agency (Bapedal)**

Jalan D. I. Pandjaitan, Kebun Nanas  
Jakarta 13410, Indonesia  
Tel./fax. (62-21) 8590-6167  
E-mail: bangtek@bapedal.go.id

**NGO/Academic**

Mr. Sulaiman Sembiring, Executive Director  
**Institut Hukum Sumberdaya Alam (IHSA)  
Natural Resources Law Institute**  
Jl. Intan I No. 40, Cilandak Barat  
Jakarta Selatan 12430 Indonesia  
Tel: +62 21 7590 3617; 7590 3618  
Fax. +62 21 7500 475  
Email: soel@indo.net.id

Dr. Helmi  
**Center for Irrigation, Land and Water Resources and Development Studies  
Andalas University**  
PSI-SDALP Unand  
Jln. Musa Enda, Kampus Unand Air Tawar  
Padang 25131  
INDONESIA  
Telephone: (62) 751 43660; 71686  
Mobile: (62) 81 2660 4703  
Fax: (62) 751 443660; 71691  
Email: helmi@indosat.net.id

Mr. Achmadi Partowijoto, Senior Water Management Specialist  
**Indonesia Water Partnership**  
Sekretariat KAI Jl. Pattimura 20 Kav 7  
Gedung IX Lt. Dasar Kebayoran Baru  
Jakarta Selatan 12110, Indonesia  
Tel/Fax: 62 21 7398604  
Mobile: 62 0811119701  
Email: sekretariat@inawater.com

**International/Donor**

Ms. Janelle Plummer, Senior Institutional Development Specialist  
**Water & Sanitation Program for East Asia & Pacific  
The World Bank**  
Water and Jakarta Stock Exchange Building  
Tower 2, 13th Floor Jl. Jenderal Sudirman  
Kav. 52-53, Jakarta 12190, Indonesia  
Tel: 62 21 5299 3170  
Fax: 62 21 5299 3004  
Email: jplummer1@worldbank.org

Mr. James Woodcock, Urban Infrastructure Advisor, Indonesia

**USAID / US-AEP**

c/o US Embassy Jl. Medan Merdeka Selatan

No. 5, Jakarta, Indonesia

Tel: 62 21 3135 9480

Fax: 62 21 3483 4518

Mr. Jaco Mebius, First Secretary, Water Resources and Management Expert

**The Royal Netherlands Embassy**

Jl. H.R. Rasuna Said Kav. S-3, Kuningan 12950

Jakarta, Indonesia

Tel: +62 21 524 1060

Fax: +62 21 527 5976

Email: Jaco.mebius@minbuza.nl

Ms. Amreeta Regmi, Municipal Water Services Advisor

**USAID**, c/o US Embassy Jl. Medan Merdeka

Selatan No. 5, Jakarta, Indonesia

Tel: +62 21 3435 9480

Fax: +62 21 3483 4518/380-6694

Email: aregmi@usaid.gov

Mr. Abrams Russell, WASPOLA Project Team Leader

**World Bank**

Jl. Cianjur 4, Menteng

Jakarta, Indonesia

Tel: +62 21 314 2046; +62 21 3989 6949

Fax: +62 21 314 2046; +62 21 3989 9649

Email: rabrams@worldbank.org

Ms. Erna Witoelar, Special Ambassador for the Millennium  
Development Goals in Asia and the Pacific

**United Nations**

Jl. M.H. Thamrin Kav. 3

Menara Thamrin Building, 9<sup>th</sup> Floor

Jakarta, Indonesia

Tel: +62 21 314 1308 Ext 144

Fax: +62 21 314 5251 / 725 0719

Email: erna@witoelar.com

Ms. Cecilia A. Devi, Mission Secretary

**Asian Development Bank**

Gd. BRI II 7th Floor

Jl. Jend. Sudirman 44-46

Jakarta, Indonesia

Tel: +62 21 5798 1656

Fax: +62 21 251 2749

Email: irmmissionsec@adb.org

Ms. Almud Weitz, Project Implementation Specialist

**Asian Development Bank**

Gd. BRI II 7th Floor

Jl. Jend. Sudirman 44-46

Jakarta, Indonesia

Tel: +62 21 251 2721

Fax: +62 21 251 2749

Email: [aweitz@adb.org](mailto:aweitz@adb.org)

## **PHILIPPINES**

### **List of Abbreviations**

WD	Water District
SSIP	Small Scale Independent Provider
PBE	Philippine Business for the Environment
SWAPP	Solid Waste Management Association of the Philippines
LGU	Local Government Unit
NEDA	National Economic Development Authority
DoF	Department of Finance
LWUA	Local Water Utilities Association
DILG	Department of Interior and Local Government
NWRB	National Water Resources Board
MWSS	Metropolitan Waterworks and Sewage System
BOT	Build-Operate-Transfer
LWUA	Local Water Utilities Administration
SLA	Subsidiary Loan Agreement
IRA	Internal Revenue Allotment
GFI	Government Financial Institution
SSIP	Small Scale Independent Provider

## Overview

The water sector in the Philippines has not been able to sustain the momentum in increasing access to services. Recent government figures indicate that access levels might have actually dropped nationwide below the 1999 levels. Efforts to strengthen the regulatory framework for the sector and broadening access to financing sources as well as deepening private sector involvement have had little success. In particular, policies for expanding coverage in rural areas and smaller urban centers appear to have been ineffective.

Over the last few years, total investments in the water sector have remained low compared to estimated requirements in order to meet the government's stated policy objectives of improved services and increased access. Following decentralization of responsibilities for water supply and sanitation services in 1991, the national government reduced funding to the sector, consistent with policies for fiscal decentralization.

About 90 percent of the domestic wastes are not properly collected, treated and disposed of and contribute immensely to water pollution. At the national level, it is estimated that about 50 percent of organic wastes being discharged to water bodies is from domestic sources. Approximately 58 percent of groundwater sampled is contaminated with coliform bacteria, an indication of fecal contamination.

In cities and provincial centers, local water districts (WDs) serve as a major service provider. As of 2003, WDs were serving 15.3 million people in almost 700 cities and municipalities out of more than 1,500, and provide services to about 68 percent of the population in the franchise areas of WDs, and about half of total population in urban centers outside Manila.

Households without access to established levels of service, or unreliable or inadequate services, either resort to self-provisioning or go to small-scale independent providers (SSIPs), or a combination of these modes, either to augment or provide fully for their water supply needs.

Self-provisioning comes in the form of shallow wells for the poor or deep wells for the non-poor. It is estimated that about a third of rural and urban populations have resorted to self-provisioning. This has adversely affected groundwater tables particularly in the urban areas inasmuch as boring of wells to supply water for domestic purposes is largely unregulated, causing concern on the lowering of groundwater tables and deterioration of water quality due to saline intrusion and pollution from onsite sanitation facilities, which is prevalent in the urban areas.

Industrial waste is an expensive and environmentally challenging problem in the Philippines. The Philippine Business for the Environment (PBE), a non-profit organization dedicated to helping businesses balance economic growth with environmental responsibility, plays a leading role in addressing this issue by developing an industrial waste exchange network to improve recovery, exchange, and recycling of wastes. The exchange network matches industrial waste generators with buyers and recyclers, which results in savings on disposal costs for waste generators, low cost or free raw materials for buyers, and less industrial waste in landfills. PBE has also worked together for more than ten years to establish a Clean Technology and Environmental Management information center and to serve as an intermediary and catalyst between business, government, and the community.

The Solid Waste Management Association of the Philippines (SWAPP) was formally registered in 1999 as a non-profit organization composed of solid waste management practitioners from

local government units, academia, and the private sector. SWAPP is now the primary source of technical assistance on solid waste management for local governments in the Philippines. SWAPP also recently enlisted private partners to create a Design Manual on Ecological Solid Waste Management Facilities for Urban Settings.

The Philippines generates nearly 2.5 million tons of hazardous waste each year, and while a regulatory framework for managing this waste exists, government officials lack the capacity to effectively implement and enforce the regulations.

### **Roles, Responsibilities and Mandates**

The broad policy objectives for the water sector are spelled out in the Medium-Term Philippine Development Plans 2004-2010 and confirm government commitment to a sector policy that encompassed institutional, policy, regulatory and financing reforms. The policy was formulated in the context to call for a more vigorous implementation of the Local Government Code (Decentralization Law) that called for a realignment of roles between the central and local governments on basic service provisioning, water supply and sanitation included.

Various national government agencies retain responsibilities in developing and implementing overall sector policies, including providing technical assistance and capacity building to service providers. Policy-making and regulatory functions are lodged in different government agencies with no single entity in charge of the sector or accountable for performance at the national level.

As a result, the two main providers, WDs and Local Government Units (LGUs), are subject to different sets of rules, making it difficult to assess overall performance of the sector. In addition, there is no consistency in data that are being monitored across service providers and poor public disclosure of available information among agencies. Specific functions assigned to national government agencies include the following:

- National Economic Development Authority (NEDA) defines the institutional roles and responsibilities of sector agencies, sets broad coverage targets for the country, defines broad policies particularly regarding the access of low income groups to services, cost recovery to support sustainability, incentives to improve operational efficiency, and mechanisms for private sector involvement;
- Department of Finance (DOF) sets and implements policies on the use of grants from national government and official development assistance;
- Local Water Utilities Association (LWUA) and the Department of the Interior and Local Government (DILG) set and are expected to enforce specific quality and performance standards of service for WDs and LGU-managed systems, respectively. Both are responsible for performance monitoring, including on service levels, and financial and technical performance. However, data are not made available publicly and LGU data in particular remain of insufficient quality to guide policy decisions.
- In addition to policy making and enforcement functions, DILG and LWUA are also mandated to assist service providers through capacity building and technical assistance. DILG bears responsibilities for capacity-building programs for LGUs but has not yet been able to build capacity itself in order to fulfill its role effectively.

- The National Water Resources Board (NWRB) regulates tariffs of small privately-run systems and, eventually, of WDs which are currently still being regulated by LWUA. The Metropolitan Waterworks and Sewage System (MWSS) concessionaires are regulated according to contractual provisions entailed in the concession agreement. Similarly, the few contracts between LGUs and private operators are regulated as well based on contractual provisions.

Local governments in all administrative levels of the province, city, municipality, barangay, retain responsibility for limited policy, planning and regulatory functions specific to their jurisdictions. This may include:

- Choosing among financing and management options for service provision, such as direct management by a local government department, subcontracting to a private party under a management or service contract and creation of a Water District.
- Deciding on contractual provisions governing tariffs charged by service providers and tariff adjustment mechanisms;
- Setting performance standards in terms of service levels, operational performance, customer relations, service coverage targets specific to individual service providers; and
- Providing investment and funding support, as necessary, as well as targeted assistance and/or subsidy support for low-income consumers.

Government policies emphasize the ultimate need to ensure the financial and technical performance of water utilities as the core challenge in order to address the sustainability of water supply and the need for incentives for water utilities to adopt appropriate institutional models that ensure high levels of corporate governance. Policies explicitly encourage private sector participation of water supply facilities in urban areas and emphasize a shift from BOT scheme to the transfer of existing assets through concessions or other PSP arrangements to better address not only specific investment needs but also management aspects for service provisions as a whole.

### **Financing and Investment Programs**

For the last 30 years, significant investments in the water sector were made through public financing, mainly in the form of loans from Local Water Utilities Administration (LWUA), through subsidiary loan agreements (SLAs), with the WDs. These loans were made by multilateral lending institutions for water projects and guaranteed by the national government through the Department of Finance. LWUA has also been a recipient of grants from international funding agencies.

Since the late 1990s, LWUA has had difficulty in availing of foreign loans due to lack of counterpart funds as well as the inability of the WDs to raise equity contributions. As of September 2002, unavailed foreign loans of LWUA amounted to US\$175 million. While the government continues to appropriate subsidies for LWUA in the amount of ₱200 to ₱300 million annually to be used as counterpart funds for development projects of WDs, this has not been fully disbursed. About 75percent of LWUA's cash position in 2002 is accounted for by undisbursed government grants. The lack of counterpart funds from both LWUA and the WDs

has constrained capital expenditures in the past years. The government has stated its intention of increasing LWUA's capitalization to ₱10 billion, but respective legislation has not been passed by Congress.

WD projects are financed at highly concessionary terms. Projects are typically funded 70percent from international financial institutions (IFI) loans, 20percent from LWUA counterpart funds and to 10percent from WD equity. Funds are provided to WDs at fixed interest rates of 8.5percent to 12.5percent depending on the loan amount with a repayment period of 25 to 30 years with 4 years grace period on the principal repayment.

In addition to capital works, LWUA lends for technical assistance for feasibility studies and design (9percent of project costs), as well as supervision costs (4percent of project cost). Both technical assistance and supervision are not contracted out by LWUA but implemented by LWUA staff, foregoing competition that may help to reduce these costs. The government has had increasing difficulty in providing subsidies to LWUA in view of its worsening fiscal deficit. Since NEDA directed LWUA to lend only to viable WDs in the mid-1990s to improve its financial performance, LWUA's loan portfolio has been concentrated on the larger WDs. As of December 2001, out of 431 water districts that have availed of LWUA's loans, 20 water districts (medium to very large) accounted for 60percent of the value of loans availed, with loans of at least ₱100 million each, which presumably has constrained expansion of WDs and financing of new ones.

Over a seven-year period between 1996 and 2002, only 45 WDs were provided with new loans, accounting for about 10percent of total number of WDs with outstanding loans in 2003. This shift in lending policy has, however, substantially improved LWUA's collection efficiency, 35percent-40percent in the early 1990s to 88percent at present. Operating expenditures for LWUA, without debt servicing, have remained in the order of P 420-450 million.

LWUA is undergoing reform that would involve redirecting its attention to the development of less creditworthy WDs and other water service providers – and in the process weaning the creditworthy WDs from its financing support and encouraging them to source their financing needs elsewhere. LWUA's rationalization plan would therefore need to include new rules that would facilitate WD access to the financial markets, including lifting its requirement for prior claim on a WD's revenues in cases where it has a financial exposure.

LWUA has been involved in the identification, design and construction management of hundreds of water facilities. The staff possesses the capacity to design and develop projects to LWUA standards and financial conditions. The staff, however, does not have any experience in working with private sector financial institutions.

### **Local Government Units**

Local governments have in the past mostly relied on grants from the national government and from international funding agencies for their water projects. Since decentralization however, local governments have increasingly used their resources to finance investments or used these to leverage for borrowings or for grants from the national government. Under the Local Government Code, local governments are mandated to use 20percent of their Internal Revenue Allotment (IRA) for development projects. The allocation across sectors is left to the discretion of the local governments and for annual amortization of loans to be within 20percent of the LGU's regular income.

LGUs are free to access financing from government and private financial institutions for their capital investments. However, because of the requirement for LGUs to use only Government Financial Institutions (GFIs) as depository banks, LGU loans have been so far only with GFIs. GFIs may finance loans to LGUs either from their own resources or from official development assistance. The lending terms under the former are much more steep (5-7 years repayment at interest rates of about 16percent to 18percent with annual repricing) and therefore not attractive to LGUs.

GFI loans to LGUs financed from official development assistance provide concessional financing. Lending terms of GFIs include interest rates of between 9percent and 15percent, normally fixed over the repayment period of 15 to 20 years inclusive of a grace period on principal repayments of 3 to 5 years. LGUs have to provide cash equity of 10percent of project cost. Grants are also available for project preparation and capacity-building. For LGU participation in NG programs involving NG grants, the LGU equity requirement depends on the LGU's income level but must not be more than 50percent for water supply (level 1) and communal sanitation projects.

However, the low availment rates of ongoing projects of LGUs show that investments at the local level have not been as forthcoming as expected. Of the US\$109 million of ongoing loans, 31percent cater to rural water supply facilities that are deemed to be unsustainable. The capacity to identify, design, develop and finance water projects varies greatly among LGUs. The larger LGUs generally possess greater capacity in this area.

### **Private Sector Participation**

In the early 1990s, the Government of the Philippines found itself facing a predicament of declining financial resources and absorptive capacity vis-à-vis the rising demand for more and more infrastructure services and facilities. Twelve-hour power outages were crippling the economy as government was unable to finance the necessary power plants to meet basic growth in demand. And true to the dictum that "necessity is the father of invention," it was because of rising needs that the Government ventured into an innovative approach of tapping private sector resources in bridging the infrastructure gap in the country.

On 10 July 1987, President Corazon Aquino issued an Executive Order (EO 215) allowing independent power producers (IPPs) to put up power generation plants in the Philippines on a "take-or-pay" basis in order to avert the power crisis that threatened the country's economic and political stability. Under EO 215, the IPPs quickly infused a total investment of about US\$ 6 billion to build an aggregate installed capacity of 4,800 megawatts.

Availability of money and speed of implementation were the two elements that allowed the private sector to do what the Government wanted. Subsequently in 1991, Republic Act No. 6957, otherwise known as the Build-Operate-Transfer (BOT) Law, was enacted. The BOT Law was designed to encourage further investments in other infrastructure sectors mainly by offering a clearer framework and fiscal incentives to private investors in public infrastructure.

Private investment in the water sector has been largely concentrated in Metro Manila. Since 1997, MWC1 (East zone) invested ₱6.5 billion (US\$116 million) and MWS1 (West zone), ₱9.5 million (US\$170 million), in the past seven years. At an average of US\$41 million annually, these investments have obviously been insufficient to generate necessary efficiency gains, in particular with regard to network losses, and service improvements as envisaged in 1997.

Outside of Metro Manila, private financing of water utilities has not been forthcoming, despite the earlier interest shown by international operators after the successful bidding of the Metro Manila concessions.

Water supply services managed by community-based organizations under LGU supervision in rural areas have been largely financed from grants. However, the experience throughout the Philippines in the implementation of rural water supply projects has shown that communities are willing to contribute to capital costs for services they want and can afford. In the past, grants for these projects were up to 80percent of project cost. Financing of household level water supply investments has come mainly from the households themselves. A shallow well (with 12 meters depth) constructed by a household costs about ₱25,000 and a deep well (with 20 meters depth) costs about ₱60,000.

Small-scale Independent Providers (SSIPs) are mainly local entrepreneurs who generally invest capital to start their businesses. They are informal providers in the sense that most do not have a license to provide the service, except subdivision operators which may be registered with NWRB, but they may be legal entities registered with some government regulatory bodies such as the Securities Exchange Commission, Cooperative Development Authority, holders of business permits from local governments, etc.

In urban areas, SSIPs are a diverse group of water operators that serve different groups of customers, some affluent and others poor, and with varying needs. They include real estate developers, homeowners' associations, local entrepreneurs and mobile water truckers and haulers. Most operate without recognition from local authorities or the water utility and develop their business in a competitive environment as they do not have exclusive rights. SSIPs in urban areas may serve between 100 and 3,200 connections.

In Metro Manila alone, it was estimated that 30percent of the population depended on SSIPs in 1996; similarly in Cebu, about 30percent of the population of 1.5 million is being served by SSIPs. Many SSIPs buy bulk water from the concessionaires and invest in tertiary lines to serve the urban poor settlements but charge a higher tariff than those directly connected to the system, yet some do invest in deep wells.

In rural areas, SSIPs take the form of water vendors, who invest in pushcarts or pedicabs and usually source their water from public taps or from private connections. Water vendors augment water supplies of households from private wells or where the water source is at a distance such that households would prefer to buy water rather than spend time fetching water or queuing up especially during inconvenient times of the day.

The overall market size of SSIPs is unknown and very difficult to estimate, but it can be assumed to be sizable as there remains to be a substantial portion of the population that does not have access to formal levels of service, and even for many household with formal access, services may be insufficient and unreliable.

Government policies and efforts have not been successful in deepening private sector involvement in the sector. Outside Manila, only a very limited number of systems is being managed by private operators. Attempts by the government to encourage local governments to contract private operators for the provision of services have met with mixed results. While operators have expressed interest and participated in tenders, private operators have in no case

assumed operational control of water systems as envisaged under various PSP designs for LGUs.

Also, reforms aimed at improving the regulatory framework for the sector and to ensure better governance of service providers have not progressed significantly. The regulation of private sector arrangements remains embedded in individual contracts and therefore fragmented, throwing into doubt the capacity of local governments to develop credible regulatory institutions and dispute settlement mechanisms to attract private sector involvement and financing.

In the early 1990's the government also established a BOT center to ensure the steady promotion of infrastructure projects that are ready for private sector investments, the Government established the Build-Operate-Transfer Center (BOT Center), whose mandate is to find technical, legal, financial, economic and institutional solutions to help government implementing agencies to make BOT projects work.

The BOT Center performs a unique role in the Philippine bureaucracy. As the agency tasked to market BOT as an investment scheme, the BOT Center stands behind the implementing agencies and LGUs in developing solicited BOT projects and in assessing unsolicited BOT proposals.

With regard to solicited projects, the BOT Center liaises with sectoral agencies even at the early stages of project identification. In the planning activities of agencies, the BOT Center is usually invited to present BOT as an implementation option. The BOT Center identifies projects and activities that can be bundled (or unbundled, as the case may be) in order to package a BOT that is attractive to private investors. These activities are those that exhibit sufficient revenue streams.

The BOT Center has the skills set that enables the Government to look at a prospective BOT project closely to see if it will hold water as a BOT undertaking. Those that exhibit potential for private sector participation, i.e., those technically viable for operation under private hands and capable of generating a steady revenue stream to justify a reasonable level of profit, get a big push from the BOT Center. By contrast, those that exhibit little potential owing to technical and/or financial considerations are nipped in the bud.

Private sector participation in the water sector has been inhibited by the following factors:

- Concessional lending by GFIs particularly LWUA for WDs
- Poor government characteristics by LGUs
- Lack of planning and implementation capacity
- Conflicting implementation policies of government agencies, GFIs and donor programs
- The mixed results of the MWSS Water Concession with one company in financial difficulty and local citizen unhappiness with service provided by private companies.

## Philippines Contacts

### Government

Roberto Tan, Undersecretary

**Department of Finance**

5/F DOF Building

Central Bank Complex

Roxas Blvd., Manila

Tel: (632) 523-9221

Email: rbtan@dof.gov.ph

Ms. Margarita Songco, Deputy Director-General

**National Economic Development Authority**

NEDA on Pasig Building

12 Blessed Jose Maria Escriva Drive

Ortigas Center, Pasig City 1605

Philippines

Tel./Fax: +63 2 633 6014

Email: gmlanto@neda.gov.ph

Dr. Ricarte S. Javelosa, Director

**Directorate on Integrated Water Resources Management**

**Department of Environment and Natural Resources**

Visayas Avenue, Diliman

Quezon City Philippines

Tel./Fax: +63 2 928 8655

Email: diwrm@hotmail.com

Mr. Ramon Alikpala, Executive Director

**National Water Resources Board**

8/F National Irrigation Administration Bldg.

Edsa, Quezon City, Philippines

Tel: 63 2 928 2365

Fax: 63 2 920 2641

Email: rbalikpala@nwrp.gov.ph

Mr. Jose Maria Palabrica, Project Manager IV

**DTI - BOT Center**

6/F EDPC Bldg., Bangko Sentral ng Pilipinas

Mabini St., Malate, Manila

Philippines

Tel: 63 2 525 3985

Fax: asamoza@botcenter.gov.ph

### NGO

Ms. Lyn Capistrano, Executive Director

**Philippine Center for Water and**

**Sanitation/ITN Foundation**

P3-Minnesota Mansion, 267 Ermin Garcia

Street, Cubao, Quezon City  
Philippines  
Tel: 63 2 912 0531; 421 9470  
Fax: 63 2 911 5783  
Email: capistranoly@pacific.net.ph

Ms. Amy M. Lecciones, Executive Director  
**Philippine Sustainable Development Network  
Foundation, Inc.**  
5/F, ALSCO Bldg., Herrera Street  
Legaspi Village, Makati City  
Philippines  
Tel: 632 750 6357  
Email: amym@psdn.org.ph

Ms. Lisa Lumbao, Project Manager  
**Local Initiatives for Affordable Wastewater  
Treatment**  
3B Cordova, 138 Valero Street  
Makati City, Philippines  
Tel: 63 2 818 2887  
Fax: 63 2 813 0168  
Email: lumbao@mozcom.com

Ms. Jessica Calfoforo Salas, President  
**Philippine Watershed Management Coalition**  
KSPFI 25 B Magsaysay Village, La Paz  
Iloilo City 5000, Philippines  
Tel: 63 33 320 0854  
Fax: 63 33 320 0854  
Email: kspfi@skyinet.net

### **Private Sector**

Mr. Cesar Virata, President  
**Bankers Association of the Philippines**  
c/o RCBC Yuchengco Tower  
Ayala, Makati City  
Tel: (632) 844-8889  
Email: ceavirata@rcbc.com

**Mr. Rolando G. Roque**  
President, Radian Consulting, Inc.  
18th Floor, Herrera Tower Herrera St. cor Valero  
St. Salcedo Village, Makati City 1227  
Philippines Tel: + 63 2 845 1345  
Fax + 63 2 845 1346  
Email: rgroque@radian.com.ph

Mr. Antonino Aquino, President  
**Manila Water Company, Inc. (MWCI)**

Administration Building, MWSS Compound  
489 Katipunan Road  
Balara, Quezon City 1105  
Philippines  
Tel: 63 2 928 1223  
Email: 63 2 928 1223  
Fax: tony.aquino@manilawater.com

Ms. Edna Balucan, Chairperson  
**IDP Consult, Inc.**  
Rm. 307 308 PSSC Building  
Commonwealth Avenue, Diliman  
Quezon City 1101, Philippines  
Tel: 63 2 920 4606; 456 0647  
Fax: 63 2 456 0647  
Email: idpconsult@info.com.ph

Mr. Lorenzo Buhain Jr., General Manager  
**AAA Water Corporation**  
Suite 1607, Ayala Triangle Tower I  
Ayala Avenue, Makati City, Philippines  
Tel: 63 2 848 6881  
Fax: 63 2 848 6884

Mr. Cristeto Dinopol, Jr., Deputy Administrator  
**Maynilad Water Services, Inc. (Regional Office)**  
MWSS Compound, Katipunan Road, Balara  
Quezon City, Philippines  
Tel: 63 2 435 8904  
Fax: 63 2 925 6619

Mr. John D. Herrman, President  
**WorldWater (Philippines) Inc.**  
Corporate Headquarters  
Suite 403 Gabriel III Condominium  
Amethyst Ave., Ortigas Center  
Pasig City 1605, Philippines  
Tel: 63 2 631 2673  
Fax: 63 2 631 2667  
Email: johnwwp@hotmail.com

Mr. Jun Matsumoto, Representative  
**Nippon Koei Manila Office**  
4/F Pacific Star Building, Makati Avenue  
cor. Gil Puyat Avenue, Makati City 1201  
Philippines  
Tel: 63 2 848 4729  
Fax: 63 2 811 6033  
Email: jmatsumoto@philkoei.com.ph

Ms. Elsa D. Mejia, Treasurer

**Inpart Engineering**

Block I Lot 9, Marytown Circle, Greenfields I  
Subdivision, Novaliches, Quezon City  
Philippines  
Tel: 63 2 419 11 03; 936 45 41  
Fax: 63 2 418 70 21  
Mobile: 63 9178861293  
Email: inpart-02@yahoo.com

Mr. Klaus Kurt Schonfeld, President

**Koh Engineering Group, Inc.**

233 Sampaloc Street, Casimiro Village  
Las Piñas, Philippines  
Tel/Fax: 873 5747  
(43 Dominy Drive, Ajax  
Ontario, L1T 3B9, Canada  
Tel: 1 905 426 2791  
Fax: 1 905 426 2792)  
Email: kks@koh-eng.com

**International**

Mr. Osamu Murata, Chief Representative

**Japan Bank for International Cooperation**

31/F Citibank Tower, Paseo de  
Roxas, Makati City  
Tel: (632) 848-1828  
Email o-murata@jbic.go.jp

Ms. Lynette Corcino, Acting Program Coordinator

**Canadian International Development Agency**

c/o Coffey Philippines Inc., 3/F JMT Building  
ADB Avenue, Ortigas Center  
Pasig City, Philippines  
Tel: 63 2 687 3517  
Fax: 63 2 687 3518  
Email: lcorcino@coffey.com.ph

Mr. Andreas Kanzler, GTZ Program Director

**GTZ-DILG Water Program**

5/F, WSSPMO, Francisco Gold II  
EDSA cor. Mapagmahal St., Diliman  
Quezon City, Philippines  
Tel: 63 2 927 1875  
Fax: 63 2 927 1884  
Email: gtzwater@info.com.ph

Ms. Isabel Margarita Bela Ferreira, Deputy Head of Mission

**Embassy of Portugal**

17/F Unit C and D, Trafalgar Plaza  
105 H.V. dela Costa Street, Salcedo Village

Makati City, Philippines  
Tel: 63 2 848 3790; 848 3789  
Fax: 63 2 848 3791  
Email: [isabel.ferreira@scman.dgaccp.pt](mailto:isabel.ferreira@scman.dgaccp.pt)

## VIETNAM

### List of Abbreviations

VWSA	Vietnam's Water and Sewerage Association
PWC	Provincial Water Company
MONRE	Ministry of Natural Resources and Environment
MARD	Ministry of Agriculture and Rural Development
PARS	Provincial Agriculture and Rural Development Service
IMC	Irrigation Management Company
LWR	Law on Water Resources
VEPA	Vietnam Environmental Protection Agency
DONRE	Departments of Natural Resources and Environment (city and provincial levels)
SOE	State-owned enterprise
FIE	Foreign-invested enterprise
ADB	Asian Development Bank
VUWSD	Vietnam Utilities Water Supply Development project
VCCI	Vietnam Chamber of Commerce and Industry
PPIAF	Public Private Infrastructure Advisory Facility
NRW	Non-revenue water

## Overview

One of the most pressing environmental concerns in Vietnam is the lack of clean water. Currently, only 60percent of the Vietnamese population has access to clean water. A high rate of water loss, averaging around 40percent, further aggravates the problem. Hence, municipal government officials are seeking assistance in developing management systems for more effective water supply and distribution networks, as well as water loss control and reduction.

Drainage and sewage problems also constitute a growing concern. Drainage systems not only contain both rainwater runoff and untreated wastewater, but also solid waste. No city or province within the country has a centralized wastewater treatment plant. Although international developers and bilateral donors have helped the government with a number of projects to develop and upgrade the drainage and sewage systems, projects for urban wastewater treatment have not made much progress.

Urban water supply systems are generally in poor physical condition, a condition compounded by the infrequency of maintenance checks and the system's inability to meet a growing population's demand for safe drinking water. Operation and maintenance of existing water supply systems is far below the level necessary to maintain an appropriate level of service.

Water supply companies are usually unable to meet design and construction standards. They do not have the appropriate equipment, high quality materials, management skills, and financial resources. Because of poor metering systems, water unaccounted for in urban water supply systems is reportedly at 30-55percent of water produced.

An urban water benchmarking study was carried out in 2002 by The World Bank in collaboration with Vietnam's Water and Sewerage Association (VWSA). The study collected data from all 67 Provincial Water Companies (PWC) in the country. This was a significant achievement given that participation in the exercise was voluntary.

The results of the survey indicated a range of performance across the sector. The overall urban coverage of Vietnam remains low at 45 percent, with coverage in larger cities reaching on average 67 percent and smaller towns about 11percent. Approximately 319 towns have a coverage level lower than 25 percent. Nevertheless the sector has been expanding at a rapid rate since 1997: 40percent of the distribution system has been built within the last five years. However, the capacity of the treatment plants exceeds the capacity of the distribution system. On average the utilities are operating at 78 percent of production capacity, although in the smaller towns the level is closer to 60 percent.

The sector is performing moderately well financially, recovering at least the cost of production and operation with an average Working Ratio of close to 0.7. This is very good compared to other water utilities in developing countries - but not good enough given the low absolute level of the tariff and the need for significant investment to expand coverage. In addition the collection period is very good at less than 30 days.

The metering practices are also impressive averaging at 95percent. However, the average percentage of unaccounted for water remains high at 38percent

The number of staff per connection is twice as high as what is considered "best practice" in developing countries; however, the trend in this area over the past few years demonstrates a considerable effort to reduce this number.

Average residential consumption levels vary on average from 70 lpcd in smaller cities to 105 lpcd in larger cities. Water tariffs are highly regulated by Provincial People's Committees (PPC) and are based on consumer category. On average, water charges per served population is 1.45 percent of the provincial GDP per capita

Overall, there are areas of good performance and areas in need of improvement. Efficiency gains are clearly there to be taken through increased staff utilization, reduced unaccounted for water, and by selling more water from currently under utilized production facilities.

The World Bank study also noted that there is a very close relationship between the PWC, and the local provincial administration, the PPC. The performance of the water companies, as presented in the study, therefore reflects the performance of both the PPC and the management of the PWC. Good PWC managers with poor PPC oversight may perform no better than poor PWC managers with good PPC oversight.

Due to ongoing urbanization and industrialization problems, surface and groundwater is polluted in many places. The urban centers commonly discharge wastewater and storm water through combined systems to nearby watercourses without treatment. Domestic wastewater in urban areas is considered to be a leading cause of surface water pollution. To address these challenges, the VWSA estimates that the total investment for water projects will be more than \$2 billion for the next ten years and investment in sewage and drainage systems will be about half that amount. International organizations have provided substantial assistance to the water sector, including the World Bank, Asian Development Bank, UNDP, UNICEF and the Governments of Australia, Denmark, France, Japan, and the Netherlands.

Industrial wastewater is also having an enormous negative impact on the environment. Many local industrial enterprises lack resources to install their own wastewater treatment facilities. This has resulted in the direct discharge of wastewater into the environment without treatment. However, responding to a trend of global integration and global corporate citizenship standards upheld by many multinational corporations, this problem will draw greater attention from both the government and private enterprises as Vietnam's economy grows. City authorities have determined to relocate industrial polluters from the residential areas to regulated zones or industrial parks. To help local businesses with relocation efforts, financial assistance programs have been launched such as the Environmental Revolving Fund and the Development Assistance Fund.

Another concern is the mass accumulation of solid waste in the country. A recent environmental survey indicated that the average generation rate of solid waste is about 20,000 tons per day throughout the country. With a collection rate of 50-70 percent, the landfills, which are poorly designed and constructed, are overfilled. Leachate, the liquid seeps out from municipal waste, has become an increasing environmental problem in the cities. Towns and provinces are trying to find solutions to deal with solid waste pollution. More money from both the local and central governments is being allocated for solid waste projects, supplementing ODA funds. However, there is not enough capital for solid waste treatment projects such as sanitary landfill construction, composting, and waste conversion schemes to move forward.

Hazardous waste from Vietnam's factories and hospitals has also become a problem. Most parts of industrial waste and hospital waste are still disposed together with domestic waste without proper treatment. Currently, there is no industrial waste management and control system in place in the country. Contamination from pesticides and agricultural chemical runoff

is growing at an alarming rate. In addition to the disposal of hospital solid waste, there is a need to treat wastewater from hospitals. Although the national budget and bilateral aid have dealt with some problems, much more capital is needed.

### **Roles, Responsibilities and Mandates**

In Vietnam, urban water supply and sanitation is the responsibility of both the central and provincial governments. Central government agencies are chiefly responsible for policymaking, standards, and development. Provincial and local governments are responsible for construction, supervision, and operation and maintenance of water supply systems.

There is some capacity within various agencies of the government to collect and process environmental quality data but there is no system in place for use of information for decision making and planning especially for environmental health. Access to this data and information is difficult, costly and time consuming. Data is not compiled and edited in an easily accessible format.

At present, water quality management in Vietnam is not unitary but rather involves a mosaic of institutions and programs. The following agencies have responsibilities related to environmental health especially for the water and sanitation sector:

- Ministry of Health is responsible for promoting health education and for water quality testing;
- Ministry of Natural Resources and Environment (MONRE) is responsible for setting standards for drinking water and wastewater discharge;
- Ministry of Agriculture and Rural Development (MARD) is responsible for regulating and monitoring surface water. MARD includes several agencies with water quality management-related responsibilities:
  - The Bureau of Water Environment Management is responsible for state national water quality monitoring.
  - Within each province, there is a Provincial Agriculture and Rural Development Service (PARS) composed of the former provincial agriculture, water resources, and forestry services.
  - Linked to MARD are the Irrigation Management Companies (IMC) that are responsible for the operation and maintenance of specific irrigation schemes. The IMCs function as both suppliers to and acceptors of (polluted) discharges from agriculture and all other users in their areas and are increasingly being affected by water quality issues.
- Ministry of Construction is responsible for urban and rural planning and policies, construction standards, evaluation of construction projects, and human resources development for urban infrastructure development and maintenance. The Ministry is preparing an Urban Water Supply Strategy and Urban Drainage Strategy. The National Steering Committee for Safe Water and Environmental Sanitation reporting to the Premier, is headed by the Minister of Construction, and includes representatives from a

wide range of ministries including Public Health, Science Technology Environment, MARD, and Defense.

- Urban piped water supply companies and sewage services are under the purview of each municipality's People's Committee.
- Vietnam Water Supply and Sewerage Association is a non-government business and professional organization, with members from WSCs and related companies.

At present, there is no inter-ministerial body specifically addressing consultation/coordination related to national water quality management/monitoring.

The urban water sector of Vietnam is administered by 67 PWCs, each responsible for water provision to the urban areas of one province. The Ministry of Construction retains authority over sector policy at the national level whereas Provincial People's committees are largely responsible for decisions related to investments and tariffs in their respective jurisdiction.

The main function of PWCs is to manage all activities related to water provision, such as operating and maintaining piped water systems, billing and collection. However, many companies carry out additional activities to either respond to a need or/and to supplement the company's revenue. The percentage of companies involved in activities in addition to water service provision are provided below:

Sewage system operation	25.80 percent
Consulting (project preparation, detail design)	40.90 percent
Construction of W&S Systems	72.70 percent
Trading of sector equipment and material	39.40 percent
Manufacturing of sector equipment and material	4.60 percent

The provincial level agencies involved in water resource management have limited capacity to implement the resource management reforms that are embodied in the Law on Water Resources (LWR).

### **Regulatory Overview**

Vietnam launched its Environment Protection Law in December 1993. The law is considered not only a regulatory framework to address environmental issues but also an administrative tool for the government in the process of sustainable development. MONRE takes responsibility for the environment management throughout Vietnam. MONRE promulgates legal documents and standards, procedures, instructions, economic and technical norms in the fields of water and environment. Under MONRE, the Vietnam Environmental Protection Agency (VEPA) is established to implement the administrative and regulatory functions. The Departments of Natural Resources and Environment (DONRE) at city and provincial levels are responsible for the management of environmental protection activities in the local areas.

Over 250 environmental standards have been issued by MONRE. These include standards on the quality of the surrounding environment, wastes, testing to identify indicators of the environment quality and on pollutants, and other general standards. Environmental standards are a major part of the legal system for the protection of the environment. The concepts of

environmental management systems and ISO14000 standards have been applied by industries in recent years. MONRE delegates to local DONREs the power to verify whether a project complies with environmental standards. Projects with technology transfer have to be approved by MONRE. An inspection panel organized by MONRE, including officers from agencies such as VEPA, MONRE, the State General Department of Inspection, the People's Committees, and the Customs Bureau, execute the inspections to ensure the projects comply with relevant environmental standards.

Pollution control is required by law of all industrial producers. The government requires industries to install pollution control systems in their facilities to ensure compliance with certain environmental standards. However, one of the key problems in addressing implementing environmental standards is lax enforcement. There are not sufficient numbers of properly trained and equipped inspectors to support effective monitoring and enforcement of pollution control standards and regulations.

Additionally, fines levied on those found to be non-compliant with environmental regulations are so low that industries do not see an adequate reason to invest in pollution prevention technology. In May 2004, the Vietnamese Government issued a new decree implementing tougher penalties for violations of environmental regulations. Effective June 7, 2004, this new decree raises maximum fines on those found to be violating environmental regulations. However, even these revised fines may be insufficient to compel full compliance with environmental standards.

Despite the increased fines, compelling compliance remains challenging. Enforcement of environmental regulations at state-owned enterprises (SOEs) is particularly problematic since local DONREs find it difficult to force government-owned enterprises to comply with the regulations. Foreign-invested enterprises (FIEs) are more conscientious in complying with the environmental regulations than the SOEs, because environmental compliance is strictly required when the FIEs initially set-up production facilities. New investments in production facilities must include concrete plans to prevent environmental pollution.

City governments have recently given a strong message to polluting companies: they must follow environmental standards. Industries can either relocate their operations to non-residential areas or install pollution control systems. Otherwise, they will be forced to close their operations.

In principle, polluters are responsible for any environmental cleanup if their operations contaminate the environment. In an effort to reinforce the laws on environmental protection, Vietnam embraces the basic principle of "polluters pay." If a spill or contamination is detected in an area, DONRE is responsible for investigating. Once the perpetrator is identified, they are required to clean-up any pollutants and pay compensation for any harmful effects caused by the spill.

### **Financial and Investment Programs**

As in other transitional economies, Vietnam's banking sector is underdeveloped and dominated by state-owned institutions with weak risk-management and supervision techniques. Meanwhile, there is a rising demand to expand investment in infrastructure, industrial plants and human capital. More dynamic formal financial intermediation is needed, but that requires modern improvements be made to the banking sector's legal guidelines. Foreign banks, in

particular, face discriminatory restrictions on mobilizing local currency and providing certain services.

The local banking system is unable to meet the environmental infrastructure needs of local utilities as financing of projects requires long-term lending (15-25) years and local bank's maturity tolerance is currently at 5-6 years for their best credit customers.

Funding for water supply and wastewater projects therefore must come from various sources within the state budget, as well as ODA loans and grants. Small water projects for rural areas are mostly financed by bilateral ODA projects. In addition to the World Bank and the ADB, AusAid and Danida are two major organizations that have been active in funding rural water projects.

The World Bank's lending program in Vietnam for the next three years is projected at \$700 million per year on average. The Bank has financed projects concentrated in the areas of energy, water supply and sanitation, urban management, and rural development. The Asian Development Bank (ADB) has also committed \$975 million in loans for Vietnam for the period of 2004-2006.

In February 2004, the ADB and the Government of Vietnam agreed on a \$44 million loan to be used to improve the urban environment in six towns and their surrounding areas in the central region of Vietnam. The project will strengthen local management capacities and the institutional framework for providing sustainable urban infrastructure. It is intended to improve drainage, sanitation, and solid waste systems in five provincial towns and one district level town. In these localities, inadequate infrastructure poses serious environmental and health risks, and inhibits social and economic development in the target area. The project hopes to make the towns less prone to water pollution and flooding.

The ADB has signed loan agreements with Vietnam for both water supply and sanitation projects. The ADB has committed to provide \$73.5 million and \$63.6 million, respectively to projects in each area. These projects are at an early stage of implementation and are expected to be completed by 2008.

The World Bank has committed to give a \$100 million loan towards the \$110 million Water Supply Development Project. The objective of this project is to expand water services to all households that are not already being served in both large urban centers and smaller district towns. The project will make funds available to water companies, which either achieve pre-defined levels of performance or are willing to commit to the competitive appointment of contractors to design, build and lease facilities. A revolving fund will also be established to allow households to invest in sanitation facilities.

The project development objective is to expand water services, which are financially and environmentally sustainable, to currently unserved households, in both large urban centers and in smaller District Towns. Furthermore, the project will aim to improve the technical, financial and commercial performance of the PWCs.

The Vietnam Utilities Water Supply Development (VUWSD) project will make available two lines of credit (LoC) for Provincial Water Companies: (a) a "competition LoC" to expand services through the use of competitive bidding to select contractors to design, build and operate water systems for a period of 15 years; and (b) a "performance LoC" to enable well-performing companies to expand their coverage and to increase efficiency. Higher levels of utility

performance will enable companies to have access to higher levels of borrowing from the line of credit.

The current performance of the top 25percent of PWCs has been used in this study to determine performance eligibility criteria for water utilities, the achievement of which will make the utilities eligible to access the performance LoC.

Within the performance line of credit there will be two levels of participation. All companies that achieve the above eligibility criteria will be able to borrow from the line of credit to make improvements to their current operation (for example to replace old pipes, improve billing and collection systems). In addition, those companies that meet even more stringent performance targets will be able to borrow larger amounts from line of credit in order to expand service.

### **Private Sector Participation**

The Vietnam Chamber of Commerce and Industry (VCCI) has been actively involved in promoting greater private sector participation in the delivery of public services. The Chamber has focused in particular on micro and small enterprises (MSE). The VCCI efforts have been focused on improving employment opportunities in the local communities by facilitating micro and small enterprise development focused on public service. The goal is to increase effectiveness of provincial government in providing and management of public services in the city based on public-private partnership (PPP).

The main problem encountered in developing a PPP approach to local urban employment in the informal economy in Vietnam has been the relative newness of studying and assessing the informal economy, and interactions between the public sector and an emerging small-scale private sector. This is especially challenging in a country moving towards a market economy where urban unemployment, the informal economy, and public-private governance solutions are new concepts. Considerable efforts of explanation and communication by VCCI have been needed to generate understanding and appreciation of the project's objectives. External support to this practice is received from the International Labour Organization, the United Nations specialized organization for social justice and employment.

The main obstacle to expand and replicate PPP is the availability of investment funds for the developed proposals. In Vietnam, these funds are at district People's Committee level and their decentralized use needs to be approved by the head of District People's Committee. Working reality has shown that functioning agencies at commune level are limited both in human resource and capacity.

Regulatory and legal frameworks do not address the issues of the micro enterprises in the informal economy. The awareness of the local government of the role of the informal economy in employment creation is limited. The informal sector is not fully recognized by law and is mainly seen to be carried out by household enterprises. In addition the coordination between local authorities and the various other economic actors is not very good.

The Public Private Infrastructure Advisory Facility (PPIAF) of the World Bank has also launched a number of initiatives in this area including:

*Pilot Private Sector Participation (PSP) in water sector.* Prepare transaction documents for pilot competition in water service provision to currently unserved district towns in two provinces in

Vietnam. Provide support to Provincial Water Companies and their local authorities in the bidding, bid evaluation and award process of the design-build-lease contracts.

*Performance Based Contracts with the Private Sector to Reduce Non Revenue Water.* Review existing international practices to reduce non-revenue water (NRW) through performance based contracts with the private sector; support Ho Chi Minh City in developing performance based NRW contracting arrangement using international best practices, developing materials for dissemination/training with guidelines and recommendations for a boilerplate performance-based contract that would reduce NRW.

*Public Private Participation (PPP) decree in Urban Water Supply.* Assist the Government of Vietnam in drafting a PPP or equalization decree in urban water supply for Vietnam. This initiative would delineate to the Government and other stakeholders the institutional and legal issues to be taken into account for the implementation of the full range of PPP options in that sector, from BOTs (Build-Operate-Transfer) or concessions to service contracts.

*Charter & Legal Framework for Rural Water Supply & Sanitation Enterprises.* Support Private Sector Participation (PSP) in the rural water sector, by allowing private users to be part of capital formation of the joint-stock approach being piloted in Vietnam. Furthermore, this would allow -- for the first time -- outsourcing of the construction and operations and management responsibilities to private operators.

*PPP support for solid waste collection and septage management in Vietnam.* The specific objective of the activity is to ensure that the municipal governments responsible for solid waste and septage collection are fully informed on the key issues related to partnering with the private sector and the options that are available, leading to the municipal governments making an informed choice on the preferred approach.

Major impediments to greater private sector investments include:

- Inadequate legal and regulatory framework.
- Uneven capacity levels among local governments in the design and development of infrastructure project.
- Lack of financial capacity at the local level regarding budgeting, accounting and fiscal management.

## Vietnam Contacts

### Government

Dr. Pham Ngoc Thai, Director  
**Ministry of Construction and Municipal and Provincial Water Companies Management  
Board of Water Supply and Sanitation Development Projects**  
37 Le Dai Hanh St., Hanoi, Viet Nam  
Tel: +844 976 1852 or 974 0090  
E-mail: dactn@hn.vnn.vn

Mr. Le Van Can, Director  
**Ministry of Agriculture and Rural Development  
Center for Rural Water Supply and Sanitation**  
C10 Nam Thanh Cong, Hanoi, Vietnam  
Tel: +844 835 5821  
Fax: +844 835 5964  
E-mail: cerwass@fpt.vn

Mr. Le Duc Nam, Deputy Director General  
**Department for Management of Water Resources and Hydraulic Works**  
2 Ngoc Ha Str, Badinh District, Hanoi, Vietnam  
Tel: +844 733 5709; 733 5710  
Fax +844 733 5702  
Email: waterplan@hn.vnn.vn

Mr. Dam Hoa Binh, Division Chief  
**Department of Water Resources and Hydraulic Works Management  
Ministry of Agriculture and Rural Development**  
2 Ngoc Ha St., Badinhdis, Hanoi, Vietnam  
Tel +844 744 5710  
Fax +844 733 5702  
Email: waterplan@hn.vnn.vn

Mr. Do Manh Hung, Senior Programme Officer  
**Vietnam National Mekong Committee**  
23 Hang Tre, Hanoi, Vietnam  
Tel: +844 934 3565; + 84 91 307 5840  
Fax: +844 825 6929  
Email: vnmc@hn.vnn.vn

Mr. Nguyen Viet Thanh, Senior Researcher  
**Research Center for Energy and Environment**  
Trung tam KTTV Bac Bo, Nguyen Chi Thanh  
Hanoi, Vietnam  
Tel: +84 4 852 6901  
Fax: +844 773 3686  
Email: Dr\_thanhv@hotmail.com

## **NGO**

Dr. Ha Luong, Chief  
**VNWP Secretariat**  
165/4 Chua Boc street - Dong Da District - Hanoi  
Tel: 844-565-648, Fax: 844-564-809  
Email: vnwp@hn.vnn.vn

Ms. Do Hoang Thao, Programme Officer  
**VNWP Secretariat**  
165/4 Chua Boc, Hanoi, Vietnam  
Tel: +844 563 5648  
Fax: + 844 563 4809  
Email: vnwp@hn.vnn.vn

Mrs. Do Hong Phan, Director  
**Center for Resources Development and Environment**  
C11, Ha Thuy, Hoang Cau, Hanoi, Vietnam  
Telephone: +844 511 4173  
Fax: +844 934 3857  
Email: redeen@hn.vnn.vn

Ms. Thuy Thi Thanh Tran, Secretary  
**Southeast Asia Water Utilities Network**  
127 B Bui Thi Xuan  
Hai Ba Trung District, Hanoi, Vietnam  
Tel/Fax: +844 976 2716

Mr. Quyen Kim Vu, Vice Chairman  
**Southeast Asian Water Utilities Network**  
127 B Bui Thi Xuan  
Hai Ba Trung District, Hanoi, Vietnam  
Tel: +844 976 2716  
Fax: +844 976 2716  
Email: [ykquyen@hn.vnn.vn](mailto:ykquyen@hn.vnn.vn)

## **Private Sector**

Mr. Hoang Hien, Deputy Director  
**Hong Ha Engineering & Consulting Company Ltd.**  
119 Chua Boc, Hanoi, Vietnam  
Fax: +844 935 0078

Mr. Mai Van Huyen  
**Centre for Rural Clean Water and Environmental Sanitation,**  
73 Nguyen Hong Street, Hanoi, Vietnam  
Email: mvhuyen@cerwass.org.vn

Alfonso L. DeMatteis, General Director  
**Delta Construction Management Company**  
46 Nguyen Du Street, Hai Ba Trung District, Hanoi, Vietnam.

Phone: (84-4) 943-3077, Fax: (84-4) 943-3076  
Email: [dematteisvn@hn.vnn.vn](mailto:dematteisvn@hn.vnn.vn)  
Web: <http://www.deltavietnam.com>

Mr. Nguyen Tran Bat, Chairman & General Director  
**InvestConsult Group**  
No 26 Lane 41 Thai Ha Street, Dong Da District, Hanoi, Vietnam.  
Phone: (84-4) 537-3262, Fax: (84-4) 537-3283  
Email: [incom@hn.vnn.vn](mailto:incom@hn.vnn.vn)  
Web: <http://www.investconsultgroupservices.com>

Mr. Mark Khan, Chief Representative  
**Star Management Services Ltd.**  
92-96 Nguyen Hue Street, District 1, Ho Chi Minh City, Vietnam.  
Phone: (84-90)-397-2765, Fax: 822-2983  
Email: [mark\\_khan@hcm.vnn.vn](mailto:mark_khan@hcm.vnn.vn)  
Web: <http://www.starlimited.com>

Mr. Rick Mayo-Smith, Managing Director  
**Indochina Capital Corporation**  
Saigon Trade Center, Suite 1002  
37 Ton Duc Thang Street, District 1  
Ho Chi Minh City, Vietnam  
Telephone +84 8 910-4855, Fax + 84 8 910 4860  
website: [www.indochinacapital.com](http://www.indochinacapital.com)