

**Name of Country: China**

## **1. Nature of Water Crisis / Status of Water delivery**

i) Population served (in 2006): 32,303,100

Percentage of population served (in 2006): 86.67%<sup>2</sup>

ii) Fresh Water Quality: 64% of ground water is severely polluted. 54% of China's seven major bodies of water are unsuitable for drinking.<sup>3</sup>

iii) Short history of the political economy of the water sector

- Before 1978, Water as a social good

Urban water supply and sewage services were provided and managed by municipal government agencies or departments. Water charges were minimal and were based on the size of the family, not on water consumption.

- The 80s-90s: Start of economic reform and urban building

In 1978, the Central government in the Third Plenum of the Eleven Congress of the CCP announced its decision to have economic reform and open policy. Some cities especially those in the South China were pilots for reform and opening up. Urban infrastructure was enhanced and charges were collected from people for the infrastructure.

The municipal water supplies and sewage agencies or departments began to be run more independently and financially self-sustained. Financial revenue was no more needed to hand over to the Central Government, leaving revenue for local water service companies (still state-owned) to construct infrastructure for water supplies and sewage.

- The 90s – Water has an economic value ; Private investment and marketization of public utilities begin

In 1988 China introduced its first Water Law, the first basic law on principals regulating all water related works and activities. It states that the water resource is owned by the state. It introduces policies on “drawing water permit” and states that people should pay for consuming water resource.

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<sup>2</sup> China Statistical Yearbook on Environment 2007, compiled by National Bureau of Statistics, State Environmental Protection Administration, China Statistics Press, Nov 2007

<sup>3</sup> Ministry of Water Resources

The State Council further ordered “Urban Water Supplies Management Method” regulating water charges, stipulating legal rights of user and supplier of water resource and further enhanced the development of water supplies enterprises. Later in 1998, the “Urban Water Tariff Administration Regulation” states that the water tariff should be made up of cost recovery, operational fee, tax and profit. Enterprises are allowed to have reasonable profits with net profits of 8%-10% on average.

In the early 90s, some municipal governments have already started the privatization of public utilities although the central government had not yet a clear national policy on privatization of public utilities. This happened especially when municipal government needed to draw in advanced technology and capital for water supply and sewage infrastructure.

Loans from the China Development Bank as well as the international financial institutes, the World Bank, Asian Development Bank and Japan Bank for International Cooperation, have invested a great deal in the water market<sup>4</sup>, bringing in capital and technology for water infrastructure and at the same time enhancing more marketization.

● The 20<sup>th</sup> century – Accession to WTO

It is since 2001 after the world economic crisis and China’s accession to the WTO, the central government has started to issue a series of direction and policies on privatization.<sup>5</sup> The policy “Guidance of foreign investment on local asset” issued in 2002 even recommend to open up markets of public utilities of communications, gases, supply of heat, water supplies and drainage which foreign investments are used to be forbidden. Some municipal governments at the same time have issued specific policies and practices on privatization of public utilities.<sup>6</sup>

Rising Water Tariff	Annual water shortage (2000-2005)	40 billion m <sup>3</sup>	f o r
	No. of towns suffering from water shortage	400 out of 661	
The urban water tariff has been increased	Estimated water demand in 2030	700-800 billion m <sup>3</sup>	til 2004.
	Estimated usable water resource	800-900 billion m <sup>3</sup>	

<sup>4</sup> Loans from China Development Bank was RMB3 From the 80s to 2005, loans from the three internati

<sup>5</sup> This includes “Notices on opinion to enhance priv development of service industry during the Tenth-F utilities”.

<sup>6</sup> Guangzhou and Shenzhen, for instance, issued “Several opinions on enhancing individual private economy to attain new level” in 2002 and “Operating method on franchise of public utilities in Shenzhen” in 2003 respectively.

nearly 400% over the past ten years it was charging people RMB0.14 per m<sup>3</sup> in 1988 and RMB1.5 to RMB5 per m<sup>3</sup> now. Rising water tariff has been claimed as a means to encourage people to save water and for solving water shortage problem like building sewage pipes, waste treatment and supply facilities, regardless of the low-income family and the fact that water enterprises are gaining a great deal of profit. China Water Affairs Group, for instance, reported a total net profit of USD54.8 million in the fiscal year to March from USD8 million a year ago.

## **2. Form of Public Management**

Who is responsible for and manages water supply in your country – the state owned departments / water Boards, independent government controlled companies, private water companies, cooperative sector companies or community owned water projects.

Sometimes the form of management may be mixed; please provide information as it relates to local government, regional and central/federal government levels.

Please indicate if there are separate or independent Water Regulatory Authorities; if so, what is the nature of their functioning?

Who is responsible for and manages water supply?

At the central government level:

- Ministry of Housing and Urban-rural development – its Urban Construction Division is responsible for urban supply planning and policy making;
- Ministry of Water Resources – responsible for water administration, monitoring drawing water etc;
- National Development and Reform Committee - to study and formulate policies for economic and social development, approving investment projects.
- Ministry of Environmental Protection – responsible for protecting environment, implementing environmental policies and enforcing environmental laws and regulations.
- Ministry of Health – involved in the control of illness and disease, coordinating the utilization of resources and expertise where necessary

At the provincial level: regulatory offices as sub-divisions under the above ministries and committee including the Price Bureau.

At municipal level: as shown in figure below

**FIGURE 6.1** General Municipal Structure

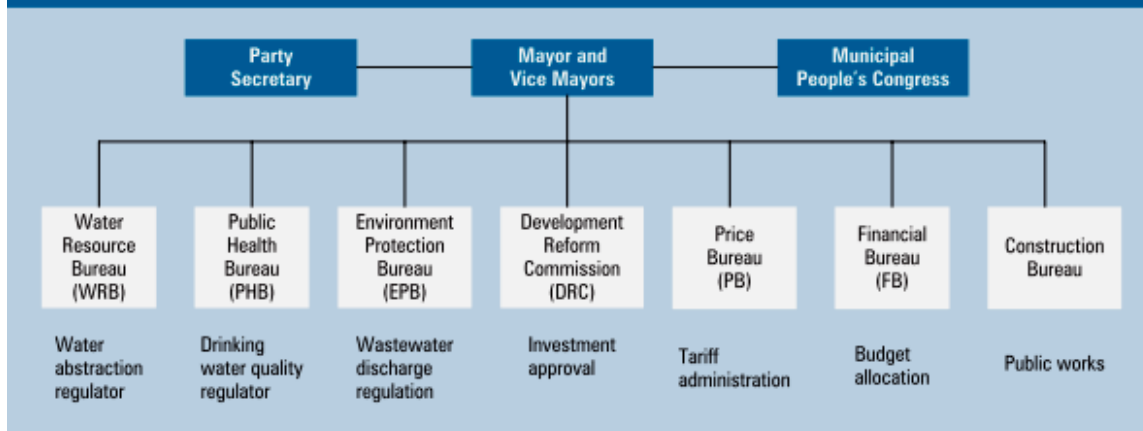


Figure copied from: “Stepping Up: Improving the Performance of China’s Urban Water Utilities” World Bank, 2007

### 3. Policies relating to Financial and Tariffing issues.

Who determines the price or cost of water; who settles water conflicts? On what basis is water charged, in urban and rural areas. Please add other information, if you have it.

The water enterprises need to submit an application to the local government price bureau. Then public hearings attended by representatives from the People’s Congress, People’s Political Congress and users have to be held. The municipal price bureau and government need to approve the new tariff before it’s put into effect.

Water tariff is consisted of the water and sewerage rate which includes O&M costs, profits, and sewerage service and water projects like building water pipes.

Many cities in China have a staggered water price to encourage saving water.

Water conflicts should be solved according the nature of the conflicts and the corresponding government departments. Yet there are usually overlapping of duties of different government departments. Government are said to be responsible for monitoring water enterprises who are already separated or partially separated from government operations but the monitoring

mechanism is not always effective and there are still some relationships connected with common interest.

#### **4. Law relating to water as part of the Commons.**

- Does your country recognize citizen has fundamental right to water?  
No.
  
- Who controls ground water extraction?  
The Ministry of Water Resources.
  
- Is water considered to be part of common resource?  
No. By law, water belongs to the state and water resources are managed by the State Council.

#### **5. History of water conflicts**

What are the issues around which recent water conflict has broken out? Please give a short history of previous water conflicts and what happened when campaigns took up these issues.

#### Water and Traditional Practices

Can you send as many local proverbs, stories, folktales and other literary forms including pictures / pictorial representations, which deal with the subject of water, water conservation, and respect for water and so on?

A list of traditional water management practices from different regions, including practices which may have disappeared or changed in the last 2-3 decades. Please also describe the social practices underlying such traditional water management practices (as for example any particular community which was traditionally assigned the task of repairing wells or water ways for which they received remuneration from the community).

## **Name of Country: Kingdom of Cambodia**

The Kingdom of Cambodia, formerly known as Kampuchea is a country in South East Asia. Covering an area of 181,035 km<sup>2</sup>, it is home to a population of some 13.6 million, 8% of whom live in the capital Phnom Penh, 10% in other urban areas, and the remaining 82% in rural areas. Cambodia is divided administratively into 20 provinces and 4 municipalities. The geography of Cambodia is dominated by the Mekong river (colloquial Khmer: Tonle Thom or "the great river") and the Tonle Sap ("the fresh water lake"). The most distinctive geographical feature is the lacustrine plain formed by the inundations of the Tonle Sap (Great Lake), measuring about 2,590 square kilometers (1,000 sq mi) during the dry season and expanding to about 24,605 square kilometers (9,500 sq mi) during the rainy season. This densely populated plain, which is devoted to wet rice cultivation, is the heartland of Cambodia. Cambodia's temperatures range from 10° to 38 °C (50° to 100 °F) and experiences tropical monsoons. The total annual rainfall average is between 1000 and 1500 mm, but the amount varies considerably from year to year. It is heaviest in the mountains along the coast in the southwest, which receive from 2500 to more than 5000 mm.

### **1. Water resources and supply**

Cambodia is well supplied with water resources. Surface water, mainly from the Mekong River Supplies most of the eastern parts of the country, while the Tonlé Sap River supplies the west and central parts of the country with drinking water and water for cooking. These two systems provide ample good quality drinking water when compared with WHO guideline values, and require only basic treatment such as disinfection. The surface water used as a drinking water supply, is often the same as used for bathing, washing clothes, and disposing of waste products. The Mekong River and its tributaries are vital to the economic and social life of the country, providing water for domestic, industrial and agricultural usage, food for people (fish, animals and plants) and fodder for animals (water spinach, water hyacinth etc).

### **2. Nature of Water Crisis**

The Cambodia Demographic and Health Survey 2005 presents information and data related to environmental health. The most significant are: 55.6% of the total population has sustainable access to an improved water source (67.3% in urban and 53.7% in rural areas); only 21.6% of the population have access to improved sanitation; bacteriological contamination of drinking water is the most important health-related concern. More than 81% of the country's population is rural, and close to 60% of them use groundwater.

Its use is common in rural areas accounting for over half of supply from dug wells and boreholes. Hand dug and open wells are widespread but with increased rural development drilled wells with hand pumps are becoming more common. The remaining supply is from rainwater

collection -26% in the rainy season falling to 1% in the dry season, and surface waters (16% in the wet season and 26% in the dry). In contrast, only 6.7% of Phnom Penh consumes well or bore water while 81% have a reticulated system and a further 10% use tanker trucks. The high rainfall also provides a reliable source of quality drinking water during the wet season through harvesting in tanks and rainwater collection jars.

The most important natural hazards in Cambodia are water-related, in particular perennial river flooding, general monsoon floods and, increasingly in recent years, droughts.

In most areas groundwater is available in abundant quantities throughout the year, although it is commonly high in iron requiring treatment before disinfection, and this has been a major issue with some of the provincial water supply works. Fine sediment can also be a problem and the use of groundwater may in certain areas be environmentally sensitive. The coverage of the piped water supply in provincial towns is as low as 15%, with service restricted to the central areas of the town.

Also the Tonle Sap Lake is subjected to re-suspension of particulate matter and contamination with chemical discharges from industry and from pesticides and fertilizers from agriculture particularly during the wet season.

Infectious waterborne diseases are still endemic throughout Cambodia and the bacteriological contamination of drinking water is the most important health-related concern. Sanitation practices in rural Cambodia are often poor, and while sanitary conditions in the central districts of the largest urban areas have improved, adequate sewage disposal is nonexistent in most rural and suburban areas.

Chemical quality of most rural and urban drinking water sources were found to be generally good except the detection of arsenic at levels above the WHO guideline of 10 microgram/L in some provinces.

### **3. Form of Public Management**

The responsibility for the provision and supply of drinking water falls to three main bodies, the Phnom Penh Water Supply Authority (PPWSA) who are responsible for drinking water in the capital city Phnom Penh, the Ministry of industry, Mines and Energy (MIME) who are responsible for drinking water in urban and provincial sectors, and the Ministry of Rural Development (MRD) who are responsible for drinking water in rural areas.

The PPWSA and the Ministry of Rural Development (MRD) are the most efficient and conduct regular testing.

- i. The PPWSA has implemented several water quality monitoring activities including the routine quality control of the treatment process, general water quality analysis and quality control of the distribution network within Phnom Penh.

ii. MIME is responsible for monitoring the water quality of urban water supply systems outside

Phnom Penh and provides some technical assistance to other public and private drinking water suppliers. The Technology and Standards Office of the Department of Industrial Technology (DIT), which operates under MIME, analyses and certifies bottled water quality for manufacturers.

iii. MRD is responsible for community water supply in rural areas through the Department of Rural Water Supply (DRWS) and Department of Rural Health Care (MRD) who concentrate mainly on educating communities on water use, hygiene education, and the safe use and maintenance of facilities and household latrines.

Apart from these three main agencies there are several other agencies with responsibilities for water quality including MOWRAM who are responsible for the management of national ground and surface water policies and water resources, particularly for irrigation, and who are a participant in the development of national drinking water quality standards.

The Ministry of Health is responsible for research into waterborne diseases, and the National Centre for Health Promotion (NCHP) is engaged in health communication and education Activities. The Ministry of Environment (MoE) is responsible for the protection of water Resources and catchments and the monitoring of water pollution, at least in part for human health protection.

The MRD is mandated to improve access to safe water supply and sanitation services in rural Areas and in 1995 MRD issued the "Water and Sanitation guidelines" and in 2001 the "Policy Framework for Rural Water Supply and Sanitation Sector" and this RWSS Policy was approved by the government in February 2003.

Other ministries have also contributed to a "Draft Law on Water Resource Management" and water pollution control is subject to a sub-decree issued in April 1999 by the Ministry of Environment who are committed to developing a national action plan for prevention of pollution of water sources by establishing national standards for pollution sources, including wastewater discharges to public areas or sewers.

The responsibilities of the government institutions are mostly separate but there are some areas that work collaboratively and there is a degree of interaction between the agencies, which hold seminars, meetings, workshops and training courses. In addition at least 25 non-government and international organizations are involved either by providing wells, simple treatment facilities, or some who have some analytical capacity, while the Asian Development Bank and World Bank provide grants and loans, and international organizations and NGOs collaborate with, and support those national agencies.

#### **4. Policies relating to Financial and Tariffing issues:**

In 1993 Cambodia underwent a major policy reform in water sector after election of new government. Before that, Only 20% of the people in Phnom Penh had access to water supplied by the Phnom Penh Water Supply Authority (PPWSA). The organization's staff of 500 was under qualified, underpaid, inefficient, and lacked motivation. The total annual income covered then only 30% of the operating expenditure and corruption was rampant. Since then, under Ek Sonn Chan leadership with \$20 million Asian Development

Bank loan and funding from the World Bank, France, and Japan, PPWSA embarked on renewing and rehabilitating its distribution network, a task which was completed in 2002. Now, more than 10 years on, each of the 82,000 PPWSA connections in Phnom Penh is metered, and 70% of the city is connected to the water distribution network. PPWSA

Started to install water meters and set up an inspection team to stop illegal connections. It revised and improved its consumer files and began to educate the public of the importance of paying their water bills. The bill collection improved from 50% in 1993 to 99% in 2004.

The success of reforms in the PPWSA shows that an efficient and sustainable urban water utility can be created even in challenging circumstances, so long as leadership and political will exist and the needs of consumers are put first.

## **5. Law relating to water as part of the Commons.**

As per PPWSA rule, an initial payment of US\$90 is required to get water connection. To enable poor people in getting connections, PPWSA has allowed the fee to be paid in installment. 20% discount has been given to urban poor. But there are still some people who are not able to afford the fee. For them, the employees of the PPWSA contribute their own money. But since 2005 there has been a subsidy to cover some or all of the connection costs, with people needs being evaluated by the Local Authority and the PPWSA. By November 2006, this subsidy had benefited 3,134 of the poorest people in Phnom Penh. PPWSA offers further help to the poorest with bill payment. And it has also made payment easier by increasing the number of places where payments can be made reducing the transport costs.

Since 1998 PPWSA has carried out a policy of 'Clean Water for the Poor'. A workforce has been appointed to investigate locations where there is a need, broadcast the policy, facilitate application forms on site, explain that the installation fee can be paid in installments and connect water to the poor. At the end of October 2006, PPWSA had arranged nearly 14,000 connections for poor house holds, distributed in over 100 poor communities.

An education team has been set up to broadcast the information the public needs about water supply, the duties of supplier and users. Also, an information desk and phone line has been put in place to serve the customers for free.

## **6. History of water conflicts**

The Mekong River links together the mainland countries of Southeast Asia in a vital geographic, but also economic and political, unit. Its historical trajectory coursed through kingdoms and colonies, and its physical presence and symbolism became more acute as it came closer to modern times. During the Vietnam War the Mekong River and Mekong Project became political pawns. In the 1950s, the decision was made to develop the river's resources to foster economic development for the four countries of the lower Mekong basin. The Mekong Project, as it came to be known, proposed the construction of a set of major dams on the mainstream and of numerous smaller ones on the tributaries to bring hydropower, flood control, irrigation, and other benefits to the riparian countries. The Project, however, was subverted to the needs of the Vietnam War. With the return of peace, the Mekong countries can now re-examine the future of the river and its potential impact on the region.

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**Name of Country: Hong Kong**

**1. Nature of Water Crisis / Status of Water delivery**

**Water Supply**

**a) Hong Kong : A General View**

Hong Kong is a vibrant city with a population of 6.8 million. The estimated fresh water consumption in 2003 is about 960 million cubic meters (mcm). Although efforts on conservation in the past have been able to curb rapid growth in the unit consumption of various uses, the overall total water consumption is expected to experience a mild growth of about 1.3 per cent per annum in the coming 10 years commensurate with population growth and increase in economic activities.

**b) Supply of Water – A Timeline**

Till about 1960, the government of Hong Kong used to provide water to all, on the basis of supply through pipes, which depended on up to natural rainfall, which was till a limit of 85 inches. Since, the geographical location of Hong Kong is such that rainfall is intensely seasonal, most of the rainfall takes place during the months of May to September, and during the other

seven months, this water has to be stored properly. The average rainfall also decreased with time from about 119.71 inches in 1889 to 35.48 inches in 1963 (Source: <http://www.jstor.org/stable/212466?origin=JSTOR-pdf>).

It was then around 1960, when the Chinese government were constructing the Shum Chum reservoir, that they intimated the Hong Kong government that they would be ready to supply water through the reservoir, and an agreement was reached between the two governments for supplying the water, in the dry season. The year 1963, was a disaster for Hong Kong in terms of water availability. So much so, that even after importing water, Hong Kong govt. had to impose severe restrictions on consuming and supply of water (which was done for 4 hours in 4 days). During this time, China helped Hong Kong through exporting water as well as supplying it through pipeline running parallel to the Canton-Hong Kong railway.

Since then, Hong Kong has been receiving raw water from the Shum Chum reservoir and many reservoirs. But basically, it receives about 70% of fresh water from the Guangdong province of China. The water is extracted from Dongjiang (i.e. East River) at a point about 83 km away, from the northern boundary of Hong Kong and is received at the Muk Wu pumping station at the very north of Hong Kong territory. From Muk Wu, the water is delivered to 17 storage reservoirs, at various locations, (17 reservoirs in which about 30% of the total water demand of Hong Kong is caught). Then a series of treatment processes are carried out and then, the water is delivered to the consumers through distribution networks.

The distribution networks consist of 166 service reservoirs, situated through Hong Kong with a total capacity of 3.42 Mm<sup>3</sup>, 141 pumping stations with a total pumping capacity of 28.57 mm<sup>3</sup>/day, and a huge piping network consisting of total 4800 km water mains. Water from the service reservoirs, is distributed to consumers by gravity, via extensive networks of water mains. The pressure in the system is sufficient to provide a direct supply to buildings of seven storeys above street level. With the assistance of individual pumping systems installed inside tall buildings, consumers at higher floor can be served. For very remote village areas, the pressure is normally sufficient to provide a direct supply to three storeys above ground level.

Sea Water Supply system is also used in Hong Kong, which is a unique system of its own kind. About three quarters of the population in Hong Kong is provided with sea water for flushing. The seawater supply system consists of pumping, treatment, storage and distribution. Seawater pumping stations are constructed near the shore and the seawater is extracted from the sea directly. There are total 38 such plants in Hong Kong at various locations, and their total pumping capacity is 1.43 Mm<sup>3</sup>/day. There are also 49 service reservoirs, built for sea water, and their total capacity is 0.2 Mm<sup>3</sup>, with a network of sea water whose total length sums up to 1100 kms. (Source: Dual Water Supply in Hong Kong, by Dr S.L.Tang, the Hong Kong Polytechnic University, Hunghom, Kowloon Hong Kong)

### **Water Consumption & Storage**

The average rainfall of Hong Kong is 22.14 cms. (way below what it was either in 1889 or 1963). The following statistics can throw a light regarding data on water consumption, storage and its availability to a certain extent.

S. No	Statistics	Amount (in m <sup>3</sup> )
1	Storage of water	411 million cubic meters(2004) 446 million cubic meters(2003)
2	Rainfall	1,739 mm (21% lower than avg. rainfall of 2,214 mm, in 2004)
3	Peak Daily Consumption	2.79 million cubic meters (Sep 20,2004) 2.91 million cubic meters (Sep 2003)
4	Consumption of Potable Water (actual supply done)	955 million cubic meters (2004) 974 million cubic meters (2003)
5	Amount of Water supplied for Flushing	255 million cubic meters (2004) 241 million cubic meters (2003)

The above statistics compare the data of 2004 with that of 2003.

Shortage of natural storage reservoir sites led to the construction of Hong Kong's first 'reservoir in the sea' at Plover Cove - the Plover Cove Reservoir. The initial scheme, completed in 1967, was created by damming and draining an inlet of Tolo Harbour and had storage of 170 million cubic meters. The storage was increased in 1973 to 230 million cubic meters by raising the dam. A similar but larger scheme at High Island, completed in 1978, has a capacity of 281 million cubic meters. The total storage capacity of Hong Kong's reservoirs is 586 million cubic meters. (source: [www.wikipedia.org](http://www.wikipedia.org) )

Given below is the amount of fresh water and sea water used for flushing. (Figures in terms of million cubic meters)

<b><i>Fresh Water</i></b>	<b><i>1000 1/2</i></b>	<b><i>667 1/3</i></b>
Annual	936.00	958.60
Daily Average	2.56	2.63
Highest Daily	2.78	2.84
<b><i>Seawater</i></b>	<b><i>1000 1/2</i></b>	<b><i>667 1/3</i></b>
Annual	235.39	235.61
Daily Average	0.64	0.65

Thus, we can see that fresh water use for flushing toilets has increased tremendously, compared to a minor decrease in use of sea water for the same. This tendency could later lead to harmful

effects for the people themselves, for it would put tremendous strain on the water resources available for drinking and other domestic purposes. (Source: Wikipedia).

## **2. Form of Public Management**

### **Public Management of Water in Hong Kong**

The water supply system in Hong Kong has been managed by the Water Supplies Department (WSD), which is under the control of the government of Hong Kong. This means that water supply is under the control of state-owned department. But this has been shifting to public-private partnership of late.

The Water Supplies Department was established in 1851, when Hong Kong was a British colony. However, because of the ever-decreasing annual rainfall, the WSD had to build reservoirs, where water obtained from China was also stored (after agreements reached between the Chinese and the Hong Kong governments). In 1941, the Japanese took over Hong Kong after the British surrendered during World War – II. But soon British control over Hong Kong was established in 1945, and it was then that the use of sea water for flushing toilets was thought of and introduced in the water supply systems of Hong Kong.

The idea why the government decided to supply water through a department of its own, was that private players were not interested in investing in this sector (it was not lucrative for them), and the government believed that ‘water is a necessity, and not a commodity’.

However, after its’ reunion with China in 1997, the Hong Kong administration is now moving towards public-private partnerships in water supply systems. This was first thought of in 1998, when the Hong Kong Government thought of either ‘corporatizing’ the system or bring total privatisation in one go. Later after vehement opposition of the scheme, the idea was shifted to public-private partnerships (PPP), which was first envisaged in ‘The Sha Tin Water Treatment Works’, which was basically the renovation and operation of the largest potable water treatment plant. Later this was extended to cover the water distribution network from the south of Sha Tin, including the Kowloon peninsula and the majority of the supply networks in the Hong Kong Island.

However, there are still laws and sections in the Constitution of Hong Kong such as Section Cap 478I SECT 29 Supply of drinking water, Section Cap 123I REG 10A Supply of water, for supply of water and Section Cap 358AD SCHED SCHEDULE for regulating quality of water.

For quality control, the Environment Protection Department (EPD) of Govt. of Hong Kong takes charge, setting standards of water in general. The Water Supplies Dept. decides the quality of water for drinking and supply purposes.

### 3. Policies relating to Financial and Tariff issues.

#### **Finance & Tariff Structure**

Before discussing the finance and tariff aspect of water supply, it would be prudent to know the stand of the government on water supply. Basically, as we have stated in the public management part, the Hong Kong administration had earlier thought of allowing private investment in water supply, but since the private players found it little lucrative, the government on its own took up water supply and introduced the concept of ‘water is a necessity, not a commodity’. Hence, the water tariffs were kept very low for domestic supplies even though the water supplies department usually suffered from losses. To counter these, taxes were imposed on land and property as well as services and industries. This can still be seen in the tariff structure, even after Hong Kong’s re-union with China in 1997.

#### **Domestic Supplies**

Domestic consumers are usually billed for their water charges at 4-monthly intervals according to the meter readings taken.

The charges payable are calculated on a tariff structure which consists of 4 tiers with progressively increasing prices. The tariff is so constructed to discourage excessive and unnecessary use of water.

The following tariff structure is applicable to water consumed in billing periods which commence on or after 16 February 1995:

S. No.	Consumption (in m3)	Charge per cubic meters (in \$)
1	Till 12 cubic meters	0.00
2	Till next 31 cubic meters	4.16
3	Till next 19 cubic meters	6.45
4	After 62 cubic meters	9.05

Since water meters will not be read at intervals of exactly 121.64 days, the volume covered by each tier is adjusted on a pro-rata basis according to the actual number of days in the period between two meter readings. As such, a consumer who uses the same amount of water as another one but over a longer period of time will receive a lower water bill.

Actual bills will be different from the amounts calculated because of the Sewage Charges, rounding of odd cents brought down from last or carried forward to next bills and surcharges of 5% for overdue bills.

#### **Non-domestic Supplies**

Non domestic consumers are usually billed for their water charges at 4-monthly intervals according to the meter readings taken. For consumers having large water consumption, they are billed at monthly intervals.

The charges payable are calculated at a flat rate dependent on the purpose of the supply.

S.No.	Purpose of using water	Charge per cubic meters (in\$)
1	For trade	4.58
2	For construction	7.11
3	For non ocean-going purposes	4.58
4	For ocean-going purposes	10.00

The

following rates are applicable to water consumed in billing periods which commence on or after 16 February 1995:

After 1 July, 1996, the rate for ocean going purposes was increased to \$10.93 per cubic meter.

### **Flushing Supplies**

Sea water supply for flushing is free of charge, while fresh water supply for flushing is usually billed at 4-monthly intervals according to the meter readings taken. There is only one meter installed in each building to record the total consumption of all flats in the same building.

The charges payable are calculated on a tariff structure which consists of two tiers. The following tariff structure for a 4-month period is applicable to water consumed in billing periods which commence on or after 16 February 1995:

S.No	Amount consumed (in m3)	Charge per cubic meter (in \$)
1	Till 30 cubic meters	0.00
2	Above 30 cubic meters	4.58

Since meter readings will not be taken at intervals of exactly 121.64 days, the volume covered by each tier is adjusted on a pro-rata basis according to the actual number of days in the period between two meter readings. If the interval between two readings is greater than 121.64 days, then more than 30 cubic meters of water per flat will be provided free of charge.

Consumers should note that charges for flushing supply are not included in their individual water bills, but are billed separately to the registered consumer who is usually the management office, agent, incorporated owner or development company.

### **Sewage Charges**

A consumer, whose premises are connected, whether directly or indirectly, to a communal drain or a communal sewer for the purpose of removing wastewater there from, shall pay a sewage charge on the volume of water supplied.

The scheme introduced since 16 January, 1995 is as follows:

S.No	Type of Supply	Charge per cubic meter (in \$)
1	Domestic Supply	1.31
2	Trade Supply	1.31

Some trades are eligible for 30% discount on their sewage charges payable. They are: -

1. bleaching and dyeing of garments,
2. bleaching and dyeing of knitted fabric,
3. bleaching and dyeing of woven fabric
4. bleaching and dyeing of yarn,
5. knit outerwear,
6. soft drinks and carbonated waters industries,
7. breweries and manufacture of malt liquor,
8. distilling, rectifying and blending spirits,
9. restaurants,
10. Ice-making industry.

For 30 types of trade/business/manufacture which discharge trade effluent, the consumer shall, in addition to the sewage charge, pay a Trade Effluent Surcharge, which is calculated based on the volume of water consumed and at a rate corresponding to the trade/business/manufacture operated - as defined in the **Sewage Services (Trade Effluent Surcharge) Regulations**.

**Source: Water Supply Department, Government of Hong Kong**

#### **4. Law relating to water as part of the Commons.**

##### **Water as a Common**

The idea has varied from being water as a common to water as a commodity, if one were to look at the timeline of Hong Kong on this front.

The Hong Kong government, when it was a British colony, had decided to allow private players to invest in water supply on both operational and management fronts. However, when private players didn't do so, the govt. on its own decided to do so. It created a Water Supplies

Department (WSD), to supply water throughout Hong Kong. The idea worked amazingly, and turned out to be a role model for public - operated water services. The idea of water as a common has been propagated by the Hong Kong govt. since long, both indirectly in terms of law, and directly in terms of its actions. Of course, recent actions have suggested something contrary to this assertion.

In terms of law, there is no law in particular for regarding water as a fundamental right. However, indirectly, there are sections in Hong Kong law, which do give a virtual guarantee to considering water as a common resource. For example, under the **Hong Kong Bill of Rights, Article 2 (1)** states that ‘Every human being has the inherent right to life’. Similarly, Section **Cap 123I REG 10A** focuses on supply of water in a proper way, whereas Section **Cap 358AD SCHED SCHEDULE** focuses on addressing the issue of regulating the quality of water through the WSD. (Source: [www.legislation.gov.hk/en](http://www.legislation.gov.hk/en))

In terms of action, the Govt. of Hong Kong has always kept the tariff levels for domestic supplies in such a way, that those who consume less are rewarded, and in a way those who consume more are made to pay for doing so. Thus, as the average water requirement of any person in today is around 4-5 million cubic meters, Hong Kong doesn’t make its citizens pay for water consumption of up to 12 million cubic meters, as per tariff levels applicable since 16 January, 1995. Above this level, tariffs are quite high to generate enough incentives for people to consume less. Thus, it treats ‘water as a necessity, not a commodity’.

Regarding water extraction, wells can be dug up for extraction of water under certain laws.

The recent public-private partnerships (PPP) in water supply mechanisms being introduced by the administration, however point to something else. After the re-union of Hong Kong with China, this idea is being incorporated after moves to privatize the water supply mechanism failed following large-scale protests. Under this mechanism, the treatment plants are being renovated and operated by the private players. This has therefore gone on to prove that the current administration treats ‘water as a commodity, not a necessity’, though the administration is still controlling the supply in most parts at present.

## **5. History of water conflicts**

### **Water Conflicts in Hong Kong**

The history of water supply in Hong Kong dates back to about 150 years back, where we find that while the Hong Kong government, initially did encourage private investment into water supply, on finding that this objective of theirs was not met, decided to take up the responsibility of providing water supply to people of Hong Kong into their own hands. Over 99.9% of the population receives a safe, stable and potable source of water supply, thanks to the kind of schemes followed by the Hong Kong government. However, all this seems to be under threat under the new government, especially after 1997, when Hong Kong reunited with China.

Water, which was regarded as a necessity by the Hong Kong government, prior to 1997, was instead treated as a financial commodity by the Hong Kong govt. after its reunion with China. Due to tremendous financial pressure exerted by the turmoil in 1998, the Hong Kong govt. decided to privatize the entire water supply system through two mechanisms; the first being a transition to privatization and the second being complete privatization in one go. However, due to public disapproval of the plan for fear of higher tariffs and poor supply, the idea was aborted.

However, the lobby of foreign governments, foreign water supply companies and local companies forced the Hong Kong government, to ‘think’ about privatization again, and so it came up with the idea of ‘public-private partnership’(PPP) in the water supply system, which was to be first introduced, in the ‘Sha Tin Water Treatment Networks’. This was in 2003. Later, in 2004, this scheme was extended to the Kowloon peninsula, the networks south of Sha Tin and even the Hong Kong islands.

Up to 3 million Hong Kong citizens were to be affected by this, but the administration did not even conduct the basic public or staff consultation. In fact, about 40% of the overall potable water available in Hong Kong is treated in Sha Tin treatment facility, but still this was undertaken without any information provided to public or civil servants, even though the plant was to be provided under private hands for a period of 20-30 years for properly renovating it, and operating as well as maintaining it, before finally handing it over to local authorities.

Finally, it was heavily opposed by the civil servants in the Water Supplies Department, who believed that such a step would be the first step towards complete privatization of water supply system in Hong Kong. In May 2004, in a special meeting of the “Panel on Environment, Planning, Lands and Works” under the Hong Kong Legislative Council, the members of the panel also strongly oppose the PPP approach and requested the HKSARG re-study the PPP’s feasibility and to conduct public consultations.

The government argued in favor of the partnership stating that it would bring in innovative ideas in technology and in administration, promote new technology transfer, accelerate progress of the project and reduce the administrative procedures. Consequently, PPP is not only a means to reduce HKSARG’s investment in the water supply services but is also a tool to enhance control, efficiency and productivity. However, the scheme was heavily opposed on account of fears of supply of very poor quality water and that too at very high rates. The people were also skeptical of this partnership after having heard of the failure of such partnerships and even privatized water supplies in many countries and cities across the globe. The demonstrations were undertaken in the WSD against this partnership by the Government Waterworks *Professionals Association (GWPA)* is a civil servants association formed in 1990 by professional and senior professional staff persons in the Water Supplies Department of the Hong Kong Special Administrative Region Government (HKSARG).

**Source: The article was first published in September 2006 as part of the Chinese edition of “Reclaiming Public Water”. (By GWPA)**

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## **Water and Traditional Practices**

### **Proverbs**

- 1) 'Flowing water never goes bad':

**<http://answers.yahoo.com/question/index?qid=20080629005005AAs1SpW>**

PS: To be honest, I couldn't get anything on water conservation practices specific to Hong Kong, though there were those related to Chinese.

References:

- 1) Water Supplies Department, Govt. of Hong Kong (Website: [www.wsd.gov.hk/](http://www.wsd.gov.hk/))
- 2) Wikipedia

Others are mentioned in the document as and when information is taken from them.