

# Water Security in Hong Kong

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A report entitled “The Illusion of Plenty: Hong Kong’s Water Security, Working towards Regional Water Harmony” (the Report) recently published by Civic Exchange highlights that the severe water stress worldwide will be exacerbated by population growth and climate change. It also expresses concern over the natural water scarcity in Hong Kong and hence its security.

We concur with the Report that Hong Kong is scarce in water in nature. To deal with the rapid water demand growth since the 1950s, Hong Kong has designated over 30% of the territory as water gathering grounds to collect local yield and implemented a large scale seawater flushing system that saves over 20% of the total fresh water consumption for flushing every year. We have also made good the deficit by importing water from Dongjiang (DJ) in Guangdong Province since 1965.

Unlike Singapore, where water is imported from another country and drastic actions are required to enhance the water security, Hong Kong imports water from her motherland, which provides a higher level of water security. Be that as it may, Hong Kong is facing intense competition for the DJ water with neighbouring cities and regions in the Pearl River Delta due to their rapid economic and population growth as well as the impact of climate change on water resources. To better prepare Hong Kong for such challenges and to take into account the needs of our neighbouring cities, we promulgated the “Total Water Management (TWM) Strategy” in 2008. The strategy adopts a multi-pronged approach which aims to contain the water demand through water conservation and water loss management, and to strengthen the water supply by exploiting new sources that are less susceptible to climate change.

## **Water Conservation**

Hong Kong has been enjoying continuous water supply without rationing since 1982. With low water tariff, there has been inadequate appreciation of the importance of water conservation in Hong Kong. Against this, we have adopted a three-pronged approach to promote water conservation, which includes (i) education and publicity, (ii) soft and hard measures, and (iii) mandatory water conservation.

On the education front, we launched the “Cherish Water Campus” Integrated Education Programme for primary schools in collaboration with the education sector in 2015 to facilitate interactive learning and practical application of water conservation. So far,

more than 220 primary schools have participated in the Programme. We will extend the programme to kindergartens next year.

Furthermore, we have established collaborative ties with green groups, non-government organisations and various stakeholders in promoting water conservation. The Water Conservation Week in 2016, for example, was organised by the Government in partnership with related parties, attracting more than 20,000 participants, which is a good demonstration of the Government joining hands with stakeholders in promoting water conservation. We have also worked with high water-consuming sectors to formulate best practice guidelines for catering and hotel operations.

On the hardware side, we have been installing flow controllers in various types of premises. According to our study of overseas experience, mandating the use of water-saving devices is the most effective measure to reduce water consumption. We are implementing this measure in two stages. At the first stage, we mandated the use of water efficient devices registered under the Water Efficiency Labelling Scheme (WELS) in new plumbing works in February 2017. At the second stage, we will mandate the WELS labelling of water appliances for sale in Hong Kong through legislative amendments.

In regard to water tariff, we have been reviewing it regularly taking into account a host of factors including affordability, financial performance of waterworks operations, prevailing economic situations and views of the Legislative Council members.

### **Water Loss Management**

Due to hilly terrain, the water mains in Hong Kong are operating under high water pressure to provide water to premises at high altitudes. In addition, frequent road excavation causes disturbance to the underground water mains. As a result, the inherent leakage rate of our network is higher than that in places with flatter terrain. We are tackling the leakage problem with two strands of strategies. Firstly, we have implemented an ambitious 15-year project for replacement and rehabilitation (R&R) of 3 000-kilometre aged water mains to reduce the leakage rate from over 25% in 2000 to 15% in 2015. This is of moderate level amongst developed cities such as London (24.7% in 2014) and Taipei (15.6% in 2015). Secondly, to dovetail with the R&R programme, we have established the Water Intelligent Network (WIN) to ensure healthiness of the water distribution network with advanced technology.

In regard to the leakage problem of private mains, one of the difficulties is to identify unobtrusive leaks in the underground communal pipes between the connection points at

the boundaries of developments and the water meters of individual premises inside the developments. To tackle this problem, we have applied the WIN technology to monitor and identify leakage as well as unauthorized uses of water in buildings/housing estates. We believe the effectiveness of such technology will be further enhanced with the use of the “Automatic Meter Reading (AMR)” system in the near future. Following successful trials, we are now planning to extend the use of the AMR system to new developments at the Anderson Road Quarry Site and Kowloon East. In addition, we are taking forward the Pilot Scheme for Leakage Detection for underground water pipes in inside services with other Government departments and will promote the same for private developments. We are also deliberating on the need of employing new regulatory tools such as master metering billing by legislative amendment to tackle leakage in private mains.

### **New Water Resources**

To further enhance our water security, we have embarked on various schemes under the TWM Strategy to exploit new water sources that are less susceptible to climate change. We also target to commission a desalination plant in Tseung Kwan O and the supply of reclaimed water to Northeast New Territories in about five years. At the same time, we will implement greywater reuse and rainwater harvesting in the Anderson Road Quarry Development project, forging a new water supply structure comprising six water taps, i.e. local yield, seawater for flushing, DJ water, seawater desalination, reclaimed water, greywater reuse and rainwater harvesting, by 2022.

### **Way Forward**

Ensuring water security for the sustainable development of Hong Kong is one of our key objectives. Whilst we are proactively implementing the TWM initiatives, we have embarked on a comprehensive review of the TWM Strategy for timely introduction of new initiatives so as to further strengthen our water security.