

Total Water Management in Hong Kong

4th General Meeting of IWAHK

by
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Water Supplies Department
The Government of the Hong Kong Special Administration Region

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Water Shortage in 1960's



- Most severe water rationing in supply history
- 4 hours supply every four days
- Lasted for 1 year
- 1963 drought estimated to be a 1-in-100 year drought

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Hong Kong's Water Supply History

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From Water Rationing to Reliable Supply - Past Efforts

- Construction of impounding reservoirs
 - 17 nos. impounding reservoirs
 - Total capacity : 586 mcm
 - 2 nos. built on the sea
 - Plover Cove Reservoir (230 mcm)
 - High Island Reservoir (281 mcm)



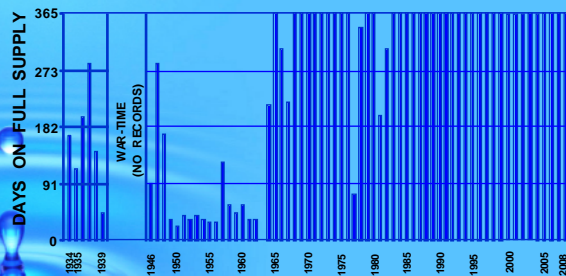
Plover Cove Reservoir



High Island Reservoir

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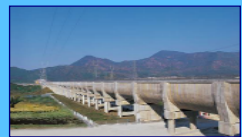
Hong Kong's Water Supply History



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From Water Rationing to Reliable Supply - Past Efforts

- Water supply agreements with Guangdong for importation of raw water
 - Started to import raw water from Guangdong in 1960
 - Import raw water from Dongjiang since 1965
 - Increased from 23 mcm in 1960 to an annual supply ceiling of 820 mcm in 2008



Dedicated Aqueduct

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From Water Rationing to Reliable Supply - Past Efforts

- Use of seawater for toilet flushing since 1950's
 - 18 nos. seafront salt water pumping stations
 - Seawater consumption in 2008 : 275 mcm
 - Currently, 80% of population receiving seawater supply for toilet flushing
- **No water rationing since 1982**



Seawater pumping station

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Importation of Dongjiang Water

- Meeting 70% - 80% of current demand
- Agreed annual supply ceiling (up to end 2011): 820 mcm
- Planned ultimate annual supply: 1,100 mcm



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Current Water Supply Arrangement

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Current Supply Arrangement

- Current supply arrangement can meet the demand up to 2030, **even in the case of drought similar to that in 1963**



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Local Catchment Yield

- Catchment area : 300 km²
- Average yield : 295 mcm/year
- Reliable supply from local yield (99% reliability) : 210 mcm/year
- Meeting 20% - 30% of current demand



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The Future – Total Water Management

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Total Water Management (TWM)

- TWM is a concept for managing water resources in all aspects
- We implement TWM to
 - Better prepare Hong Kong for the uncertainties such as climate change
 - Enhance Hong Kong's role as a good partner with other cities in PRD in promoting sustainable use of water resources



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Water Demand Management Measures

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TWM Study

- A study was commissioned in 2005 to
 - Examine water demand and supply situations in Hong Kong
 - Evaluate water demand and supply management measures in terms of
 - Quantity of water saved or supplied
 - Cost-effectiveness
 - Environmental impact
 - Public acceptance
- **Based on the findings, the TWM strategy was formulated**



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Public Education on Water Conservation

- Step up current measures on promotion of water conservation, particularly targeting at the young people
- Launch new initiatives and programmes on public education
- Introduce concepts and knowledge on water conservation to school curriculums



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TWM Strategy

- The TWM Strategy is to manage water demand and supply in an integrated, multi-sectoral and sustainable manner
- The TWM Strategy:
 - **Put emphasis on containing growth of water demand through conservation**
 - **Strengthen water supply management**

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Promotion of Use of Water Saving Devices

- Develop a voluntary "Water Efficiency Labelling Scheme" (WELS); concept similar to the "Energy Efficiency Labelling Scheme"
- Implement WELS by phases for different products – first product : showers for bathing
- Government to take a lead to install water saving devices in its projects and buildings
- WSD will retrofit water saving devices in Government buildings and schools



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Active Leakage Control

- Current programme to replace and rehabilitate about 3,000 km of water mains by 2015
- Implement comprehensive pressure management to optimize water mains pressure to reduce leakage
- Enhance leakage detection and monitoring by adoption of new technology



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Protection of Water Resources

- Strengthen current practice in protecting local water resources
 - Develop water pollution risks and impacts assessment framework for protection of water resources from developments in WGGs
 - Implement works to improve the existing catchwater systems
- Maintain close dialogue with the Guangdong Authorities to ensure quality of raw water imported to Hong Kong



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Extension of Seawater for Flushing

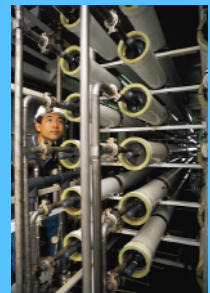
- Plan for extension of salt water flushing system whenever economically justified
- Salt water supply to be extended to Disneyland, Pokfulam, Tuen Mun East, Yuen Long and Tin Shui Wai



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New Water Resources

- Completed a pilot seawater desalination plant study using reverse osmosis (RO)
- Confirmed that RO technology for desalination is technically feasible in Hong Kong
- Further develop the option of seawater desalination



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Water Supply Management Measures

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Water Reclamation

- Two pilot schemes on use of reclaimed water at Ngong Ping and Shek Wu Hui
- Plan to provide reclaimed water from Shek Wu Hui STW for consumers in Sheung Shui / Fanling for toilet flushing and other non-potable uses
- Conduct trials in government projects for grey water reuse and rainwater harvesting and encourage private developers to adopt them



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Way Forward

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Continuous Monitoring and Review

- The TWM Strategy will form the foundation for future review
- Continuous monitoring of the state of water demand and supply in Hong Kong
- Initiate new measures to meet challenges and optimise utilization and development of water resources



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Thank You

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