

## Climate Change Corner

### **Climate change and Hong Kong's freshwater supply**

Freshwater is the Earth's most valuable natural resource. As the population in Hong Kong continues to grow, Hong Kong will require more freshwater. The city, because of its coastal location, has a mean annual rainfall of about 2,225 mm per annum, according to the Hong Kong Observatory; which is already higher than the amount much of inland China gets. For Hong Kong to achieve greater economic sustainability, a long-term, high-quality and low-cost freshwater supply is needed. Because of the threat of climate change on future freshwater supply, Hong Kong's freshwater resource, including groundwater, should be explored efficiently using an integrated approach. The advantages include:

- (1) Reduction of the human impact on the natural hydrological cycle. This is potentially an important anthropogenic cause of climate change overlooked by many.
- (2) Reduction of greenhouse gases produced locally and regionally.
- (3) Recent tunnelling projects such as the one in Butterfly Valley have revealed great potential for freshwater supply from groundwater within the volcanic rocks, which may provide suitable aquifers due to their relatively narrow joint spacing and fault fracturing.
- (4) The groundwater aquifers in Hong Kong are naturally recharged by annual precipitation.
- (5) Groundwater is purified by natural filtration and should require less monitoring and treatment than Dongjiang water.
- (6) Because country parks are already designated over much of Hong Kong's highlands, the runoff from precipitation is already of high quality.
- (7) Utilisation of existing surface runoff for recharging groundwater aquifers.
- (8) Reduction of Hong Kong's reliance on Dongjiang, to alleviate the increasing demands for freshwater by Guangdong and Macau.
- (9) Money saved by importing less freshwater from Dongjiang can be used for landslide prevention.
- (10) Reduction of landslide risks through lowering of the groundwater table.
- (11) Improvement in the co-ordination of water supplies, drainage services, environmental protection, landslide prevention and land use including urbanisation.

*This article is contributed by Prof Wyss Yim of the Guy Carpenter Asia-Pacific Climate Impact Centre, City University of Hong Kong, with the co-ordination of the Environmental Division.*