CRC for Water Sensitive Cities

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Sustainable Urban Water Management in Asia
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Biofilters for Urban Agriculture in Asia
Designing systems and understanding social receptivity

Background

- Increasing rural-urban migration and urbanization has led to more than half of the world's population being found in urban areas since 2007 (World Urbanization Prospects The 2014 Revision UN 2014).
- Future urban population growth will be more rapid in developing countries such as Asia and Africa (Mougeot 2006).
- In developing countries, 791 million individuals suffered from chronic hunger in 2014 while the most recent estimates on poverty in 2011 showed that 17% of individuals in developing countries lived on US$1.25 or less a day (The State of Food Insecurity in the World 2014 FAO; World Bank 2015).

Urban Agriculture

- Urban agriculture is a potential solution for food insecurity especially for the urban poor. It also has other social, environmental and economic benefits.
- With increasing pressures on available water resources, the sustainability of urban agriculture is challenged and alternative water sources for irrigation are required.
- Stormwater is a potential source of water for irrigation but there are potential health risks associated with heavy metals and pathogens.

Figure 1: Urban agriculture on rooftops (http://charlestonup.com/strategies/urban-agriculture/)

Figure 1. Flow diagram of the application of biofilters in urban agriculture and its outputs.

Study Aims

The study aims to:

1) Understand social receptivity to irrigation of vegetable crops with stormwater irrigation using surveys and interviews.

2) Develop biofilters that are able to produce vegetable yields comparable to traditional vegetable gardens while maintaining treatment reliability and safety of crops. A series of lab experiments will be conducted to understand the influence of design variables and operating conditions on crop yield and treatment performance.