

Eco-efficient water infrastructure practices in Australia

Australia is regarded as one of the countries lacking sufficient water resources to serve its own population. The country is located at the driest continent on earth and one of the nations which uses the largest amount of water resources per capita.¹ The situation has become worse, and the government in Australia has allocated a vast amount of funds to search for sustainable solutions to remedy water shortage.

One of the leading research centers on water in Australia is the Commonwealth Scientific & Research Organization (CSIRO). This research group has committed itself to providing innovative ideas and solutions to ameliorate water shortage, and one of the recent research projects is called 'Water for a Healthy Country' (Kaye, 2004). The primary purpose of this program is to facilitate communication between scientific research and water users including communities and industries in order to change water use patterns. Such purpose implies that the program aims to touch upon non-physical water infrastructure – demand-side management and institutional settings – beyond the conventional range of research agendas in water infrastructure, physical infrastructure.

This project puts an emphasis of benefit sharing between different users, i.e. communities and industries and sustainable way to use limited water resources. Public private partnerships in water infrastructure development have been proposed so as to improve urban water services. Diverse pricing mechanisms are suggested for peak and non-peak use and different types – i.e. lower quality garden water and high quality drinking water. These innovative ideas highlight the evidence of application of eco-efficiency to water infrastructure with an emphasis on development of non-physical water infrastructure.

CSIRO leads research on development of the cutting edge 'smart science' in water management. Sensors and smart-metering technologies can be applied to change consumers' behaviors on how to use water. This technological advancement will be able to make consumers opt for rational choices about what type of water they want to use in their houses and gardens. The benefit of this new technology does not stop here. Such technology and behavioral change might improve the pattern of reusing and recycling water in urban areas, thereby resulting in recovering the lost hydrological cycle in built environments. The innovative technologies will be able to achieve economic and ecological efficiency. In addition, a series of policies to encourage reusing and recycling water resources will lead to technological innovations and creation of the new markets for business. The Australian case shows the good evidence of the establishment of eco-efficient water infrastructure with special attention to institutional rearrangements and demand management (Kaye, 2004).

¹ The website of the Commonwealth Scientific & Research Organization (CSIRO).
[Http://www.csiro.au](http://www.csiro.au)