

## Mitigation of Climate Change Impact

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In recent decades, climate change has attracted a lot of attention. Climate change caused by doubling of atmospheric CO<sub>2</sub> and other trace gases will likely affect available water supplies for municipalities, industry and agriculture. Also, it may influence water demand. Higher temperatures increase plant water requirements, particularly through evapotranspiration, reducing the excess remaining for groundwater recharge and streamflow. Plant response to climate change will also modify the demand side of the water balance, particularly the need for irrigation.

Extreme weather and climate events can produce severe impacts on our society, ecology and environment. Heat waves can be devastating for societies that are not used to coping with such extremes resulting in loss of human lives and forests by fire, and effects on water ecosystems and glaciers. The impact of ferocious weather resulting in long lean droughts alternating with heavy floods in many parts of the world underlines the urgent need to mitigate the impact of climate variability. Most people and governments do not have adequate capacity to cope with these disasters.

In most urban areas, supplying adequate water to meet ever-increasing population water demand and to ensure equity access to water is the most urgent and significant challenges faced by most decision-makers. There are two solutions to satisfy sustainable freshwater management: (1) finding alternate or additional water resources, and (2) utilizing the limited available water resources efficiently. Up till now much effort has been focused on the first option and only limited attention has been given to the second choice. Among the various alternative technologies to augment freshwater resources, rainwater harvesting is a decentralized, ecologically sound solution, which can avoid many environmental problems, associated with centralized, conventional, large-scale project approaches.

Rainwater harvesting is a technology used for collecting and storing rainwater for human use from rooftops, land surfaces or rock catchments using simple techniques such as jars and pots as well as engineered techniques. Rainwater harvesting has been practiced for more than 4,000 years. Rainwater harvesting systems can provide water at or near the point where water is needed or used. The systems can be both owner and utility operated and managed. Rainwater collected using existing structures (e.g. rooftops, parking lots, playgrounds, parks, ponds, flood plains, etc.) has few negative environmental impacts compared to other water resources development technologies. Rainwater is relatively clean and the quality is usually acceptable for many purposes with little or even no treatment. The physical and chemical properties of rainwater are usually superior to sources of groundwater that may have been subjected to contamination. Rainwater harvesting may provide self-sufficient water supply, decentralized water source, restoring the hydrologic cycle, as well as flood control. Appropriate application of rainwater harvesting technology is, therefore, a feasible solution for mitigating the impacts of climate change.

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