

Rainwater harvesting: A new standard for real estate developers



Climate change in Ghana

West Africa is characterized by some of the most variable climates on the planet, and climate variability has become particularly pronounced in the 20th century. This is posing serious challenges now and for the future. In Ghana, the CSIR Water Research Institute (CSIR-WRI) projects a steady rise in temperature and reduction in rainfall over

the next decades. Ten areas are listed as vulnerable to climate change: water resources, agriculture and food security, biodiversity, human health, coastal zones, land management, national revenue, hydropower production, tourism, and women and the vulnerable.

The specific impacts on society are not clearly documented as of now, but increasing water scarcity

and the occurrence of extreme rainfall events and flooding in recent years, such as on 24-25 October 2011, have been associated with global warming.

Water sector challenges

Studies by the Water Research Institute of CSIR indicate that significant reductions in river flows, groundwater recharge and hydropower generation can be expected. By 2050 these

effects will be severe. The quality of freshwater in rivers and other water bodies is also likely to be impacted negatively.

At the same time, population growth and rapid urbanization poses serious challenges when it comes to clean water provision, especially in urban areas. In 2011, the estimated urban water coverage in Ghana was about 62%, while the un-served areas depended on secondary supplies. Limited coverage persists, even if water consumption is quite modest - in Accra, current water consumption is in the range of 60 and 120 litres per capita per day (lpcd) in the well served areas, and 25 to 60 lpcd when poor households buy water from vendors.

Rain water harvesting

Rainwater harvesting (RWH) is one of the most promising alternatives for supplying freshwater, especially for coastal zones where high salinity make boreholes less

attractive. There are many big projects to develop and install advanced, modern RWH technologies, especially in China and Brazil. Rooftop harvesting is now mandatory in certain states in India, where groundwater levels and water quality have improved dramatically as a result. In the UK, the Code for Sustainable Homes encourages fitting large underground tanks to new-built homes to collect rainwater for flushing toilets, washing clothes, watering the garden, and washing cars.

In Ghana, the new water policy recommends under Policy Measures and/or Actions (vi) ensure rainwater harvesting techniques are incorporated into the building code and

enforced). Implementation of this policy however is yet to be enforced. Estimates by the Water Research Institute and Science and Technology Policy Research Institute of CSIR, together with SINTEF,

Norway, suggest that when they are properly designed, modern RWH systems may actually function as a main water source for households in the Greater Accra Region, and provide high quality drinking water.

Water within your reach

Despite the good potential, modern RWH technology is currently not widespread in Ghana. People are not yet aware of the benefits. Some are concerned about the reliability and quality of water. Many do also not know what is required in installing and maintaining a modern RWH system.

This motivated a joint project between the CSIR and SINTEF, financed by the Nordic Development Fund, and implemented through NEFCO. Under the slogan "Water within your Reach", the project aims to implement and promote RWH systems with optimal sustainability considering local environmental, economic and social

conditions, starting with a pilot study in the Greater Accra region. Three designs for mounting on already existing houses are available and being tested in 20 homes. There will also be two larger systems, for schools or larger building complexes.

The performance of the pilot systems is being monitored with respect to quantity and quality of supplied water. The project lasts up to January 2015 when the final results will be presented. The experiences so far are very good, both with respect to quantity and quality. A team of artisans is ready and trained to do the installations, and the project partners call for cooperation with the building sector to come up with optimal designs for integration into new and high class estates, and to increase the volumes so that modern RWH becomes accessible for wider sections of the population. This is a business opportunity, as

well as an important climate change adaptation strategy.