

Net-positive water systems for schools in drought-stricken areas

Gibberd, Jeremy T

Abstract:

In many areas of the world, climate change is leading to higher temperatures and water scarcity. At the same time, rapid urbanisation is increasing the demand for existing water resources. As a result in many drought-stricken areas, water costs have rapidly increased and supplies are becoming more unreliable. Schools in drought-stricken areas are particularly vulnerable. Limited resources mean that schools struggle to pay additional costs for water. Health risks also mean that schools have to close when there is no water. Closing schools significantly affects the quality of education as teaching is disrupted and learning time is lost. It is, therefore, important to find alternative affordable and reliable water solutions for schools in drought-stricken areas. Rainwater harvesting offers a potential solution but there is limited research and guidance on how these systems work at schools. This paper addresses this gap by investigating whether a rainwater harvesting system can be developed that would enable schools to become more resilient to water scarcity and outages. Modelling carried out indicates that a rainwater harvesting system has the potential of generating sufficient water to exceed the water needs of the school and therefore enables it to be water net-positive. The study shows that the business case for rainwater harvesting appears weak where there is a reliable local municipal water supply. However, this changes when schools are faced with punitive drought tariffs and increasing water outages which force closures.