

SUMMARY

Water energy and food (WEF) demand is set to grow considerably in the future and need for integration in this sector is critical because they are all interlinked. This study is to investigate Adelaide's residential water, energy and food consumptions to find future demand in WEF through efficient water management, sustainable energy use and dynamic food utilisation.

Adelaide's water supply is dependent on River Murray allocation, limited supplies, drought, and below average rainfall due to global climate change which brought competition for resources. In order to maximise our efficiency in using the limited resources, we need to understand the links within the WEF sector.

This study finds the city dwellers will drive the demand in WEF resources. To meet the growing needs of the city's population, available water needs to be used efficiently, energy use should be effective and dietary change towards less water intense food will reduce water and energy resource needs.

Demand for water energy and food is growing steadily, with constraints in availability over-exploitation of natural resources will eventually lead to resource depletion: global climate change is curtailing optimum utilisation of the energy.

WEF nexus policy should focus more towards integrated approach in securing future water needs, through efficient water management, sustainable energy usage and disciplined food utilisation, to form a synergy in a sheltered plan, critical for a sustainable future. Depleted natural resource will lead to scarcity; resulting in inflated water and energy price, food shortages and hyped power supply.

Key finding in this study is that the urban population are using potable water for outdoor use; there is energy wastage through inefficient appliances and water demand through over consumption of food and wastages has grown to an unsustainable level. Adelaide city's future WEF needs can be secured through a combined approach in water energy and food alliance. These are interrelated and complex: change in one sector will be felt across the other. The effect can be local, regional or transnational. This complex and dynamic issue needs an integrated nexus approach.

Overall, this research provides insight into city scale WEF management. Results indicate the need for the conservation arrangements, and formulation of a strategic plan and policy to reduce anticipated resource shortages in the near future.