



Water-Energy-Food nexus at city scale: Adelaide, South Australia

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Presently 55% of the global population lives in cities; this figure is expected to grow to 70% in 2050. Moreover, 80% of global GDP is produced in cities, while 75% of global primary energy is consumed in urban areas. It follows that global water-energy-food (WEF) use, security and sustainability is highly determined by urban areas. Hence, understanding the WEF nexus at the city level provides the logical scale for management needs. However, to date most WEF studies take a national approach.

In this study, we unravel the WEF nexus for Adelaide, South Australia; a middle-sized, coastal city on an energy-rich, water-poor continent. Our goal is to identify key pathways within the WEF nexus which may be impacted by socioeconomic and climatic drivers in the future. In addition, we identify key areas which require enhanced data collection to optimise WEF nexus analysis. Adelaide has a population of 1.3 million inhabitants and covers an area of 3200 km² plus a large hinterland. Although obtaining city-scale data has been challenging, Adelaide's population represents 77% of the total population in South Australia, thereby enabling use of state-scale data to infer city-scale WEF interactions.