Generation STEM Community Partnerships Program

Campbelltown local scenario

Water

Of all the water in the world approximately 97% is saltwater and 2% is located in our glaciers on the North and South Poles. This leaves approximately 1% as fresh and usable. This small percentage is used for human consumption, households, agriculture, transportation and energy production. In many countries water scarcity is already a problem with 1 in 9 people worldwide not having access to safe and clean drinking water and 1 out of every 5 deaths of children under the age of 5 is due to a water-related illness. Water scarcity threatens to become a large problem for Australia's future too.

Across Australia, the driest populated continent on earth, consumers use on average 100,000 L of freshwater per person, per year. Aside from domestic uses, the agricultural industry is by far the largest consumer of water, accounting for over half of Australia's water use, primarily for sheep, beef, and grain farming[2]. Water taken out of the system for domestic, agricultural or energy production is water that is not available for the environment.

This year, Sydney Water are upgrading the Macarthur Water Filtration Plant to increase the capacity for the amount of water that can be filtered each day, to ensure continued provision of high quality drinking water in the Camden and Campbelltown regions.

How your Council tackles the complexity of this issue will impact you now and future generations.

Macarthur Water Filtration Plan Upgrade [Photo courtesy Sydney Water]

Your task

Your task is to use the information above, and resources provided below as a start to identify a local problem and design a STEM-focussed solution.

(Question, Design, Explore, Communicate)

Resources

CSIRO research

- Water: http://www.csiro.au/en/Research/Environment/Water
- Alternative water supplies for cities: https://www.csiro.au/en/Research/LWF/Areas/Resilient-cities-21C/Urban-water
- Managed aquifer recharge and stormwater: https://www.csiro.au/en/Research/LWF/Areas/Resilient-cities-21C/Urban-water/MARSUO
- Waterpipe damage: https://data61.csiro.au/en/Our-Research/Our-Work/Future-Cities/Planning-sustainable-infrastructure/Water-pipes

Reports

- Campbelltown Water Quality Monitoring Program:
  https://www.campbelltown.nsw.gov.au/LocalEnvironment/Catchmentsriversandcreeks/WaterQualityMonitoringProgram
- Sydney Water South West Growth Area:
  http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/current-projects/servicing-growth-areas/south-west-growth-area/index.htm
- Australian Bureau of Statistics: Water Account, Australia, 2014-15:
  http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4610.0
- [1]CSIRO Global Megatrends Report Overview, 2012
  https://publications.csiro.au/rpr/download?pid=csiro:EP126135&dsid=DS2
- [2] Hajkowicz, Stefan 2015, *Global megatrends: seven patterns of change shaping our future*, CSIRO Publishing, Victoria, Australia

Articles

- National Geographic, A Clean Water Crisis:
  http://environment.nationalgeographic.com.au/environment/freshwater/freshwater-crisis/
- World Water Council, Water Crisis: Towards a way to improve the situation:
  http://www.worldwatercouncil.org/library/archives/water-crisis/

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