

2020

WATER MANAGEMENT



ACET Global

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1. Water Management and Saving Water

- i. Climate change, extreme weather, health, rapid urbanization, water and sanitation, food security, energy and infrastructure are challenging communities around the world.
- ii. All of these are expected to be part of the Sustainable Development Goals (SDGs), a global framework to be announced this September aiming to set the world towards a sustainable future.
- iii. As we mark United Nations World Water Day on 22 March, it's more important than ever to understand the vital role of water in unlocking this future.
- iv. Tackling water and sanitation challenges will create a ripple effect across the expected set of SDGs as water is crucial to many of the challenges the SDGs aim to address:

Health and disease:

- Globally, 2.5 billion people lack adequate sanitation facilities and 1 billion practice open defecation, costing the world \$260 billion annually.
- Closing this gap will help prevent water-related diseases such as diarrhoea, the second leading cause of death in children under the age of five.
- Of the 760 000 children who die of diarrhoea every year, 88% of deaths are attributed to unsafe water, inadequate sanitation and insufficient hygiene.

Malnutrition and child development:

- In India, 90 million people do not have access to safe drinking water and almost 800 million lack adequate sanitation.
- Poor sanitation, rather than insufficient food, is emerging as a key factor in malnourishment, which leads to stunting of growth in an estimated 65 million children in India under the age of five as nutrients and energy are diverted away from growth and development to fight infection for survival.

Gender equality:

- Women and girls are more likely to bear the burden of fetching drinking water from outdoor sources.
- Surveys from 45 developing countries show that in almost two-thirds of households without a drinking water source on the premises, it is women and girls who collect water.
- In sub-Saharan Africa, women and girls spend 40 billion hours a year collecting water – the equivalent of a year's worth of labour by the entire workforce in France.

Sustainable Energy:

- Even water-abundant countries are not immune.
- Brazil generates more than 70% of its energy from hydropower – water shortages threaten electricity blackouts, affecting industrial drivers of the economy.
- Imposed energy quotas due to a drought in 2000 and 2001 are estimated to have cost the country roughly \$20 billion, reducing GDP by 2%.

Urbanization:

- Sao Paulo, Brazil's most populous city and economic heart, is experiencing its worst drought in over 80 years.
- With record low rainfall combined with the impact of deforestation and pollution, the city's key reservoirs are near depletion and the city's 20 million inhabitants are faced with water cut-offs and restrictions for days at a time.
- In China, owing to rising urbanization and increasing affluence wastewater has increased by 65% from 41.5 billion tonnes in 2000 to 68.5 billion tonnes in 2012, and is projected to grow further.

Agriculture and food security:

- Approximately half of global grain production will be at risk due to water stress by 2050.

- This is not only a problem in developing or emerging economies – the state of California is in the midst of its worst drought in over 100 years, forcing cutbacks on water allocation.
- Direct costs of the 2014 drought to California agriculture are estimated at \$1.5 billion, and at \$2.2 billion state-wide.
- A similar context occurred in Australia just over 5 years ago, where prolonged drought forced government to reduce water allocation to farmers, affecting the world’s largest rice industry in the southern hemisphere.

Peace, security and climate change:

- If greenhouse gas emissions around the globe continue to rise at current rates, some project an 80% likelihood that a “mega drought” – lasting longer than 35 years – will hit the US by 2100.
- Such extreme weather conditions have been linked to instability and conflict; extreme drought in Syria between 2007 and 2010 was most likely due to climate change, and considered to be a contributing factor to the current Syrian conflict.

2. Best ways to save water

1. Turn off the taps

Don't let your water consumption run out of control. Save 6 litres of water a minute by turning off your tap while you brush your teeth. Fix leaky taps too – and stop what could be 60 litres of water going straight down the drain every week.

2. Boil what you need

Save water, money and energy by only boiling as many cups of water as you need.

3. Shower with less

Every minute you spend in a power shower uses up to 17 litres of water. Set a timer on your phone to keep your showers short, sweet and water-saving.

Switching to an efficient shower head will allow you to lather up in less water, which means you'll save water and cut your bills.

4. Save up your dirty clothes

Washing a full machine load of clothes uses less water and energy than 2 half-loads. This means lower bills as well.

5. Get a low-flush toilet

- The average household flushes the loo 5,000 times per year.
- Modern dual-flush systems save huge amounts of water.
- They use just 6 litres – or 4 with a reduced flush – much less than the 13 litres for each old-style single flush. If you can't invest in a new loo, get a water-saving bag for your old-style toilet

6. Eat less meat

- Rearing animals for meat and dairy is incredibly water-intensive. By cutting down on meat and dairy, you'll be helping to conserve water.
- You'll also be helping to protect the climate. Meat and dairy is a big contributor to global warming.

7. Steam your veggies

- To cut water usage and retain more of the natural nutrients.
- If you do boil, try using the leftover water as a tasty stock for soups. Or let it cool and use it to water plants.

8. Reduce food waste

- It takes a lot of water to produce our cereal, fruit and other food.
- More than half of the 7 million tonnes of food and drink households bin every year could be eaten.

9. Time your gardening

- Water outdoor plants in the early morning or at the end of the day to stop water immediately evaporating in sunlight and heat. Water the soil so that the liquid goes straight to the roots, where it's needed.
- In a heatwave, animals need water too. Instead of watering your lawn, leave out a water-filled container, like a casserole dish, for birds to drink from and wash. Thirsty bees and other insects will need a saucer or bowl with water and stones in it.

10. Catch rainwater

- Installing water butts saves up to 5,000 litres of water a year. And your plants will thank you for rainwater rather than treated tap water.
- You can also cut water use by 33% by watering plants manually instead of using automatic sprinklers.

11. No more washing up

- Got a dishwasher? Fill it up completely each time you run it and you'll use less water than you would doing the dishes by hand.
- Yes, even if you're using a washing-up bowl. What better excuse to go and have a nice sit down?

12. Be plumbing prepared

- Regularly check your kitchen pipes and the dishwasher hose for slow leaks.
- Find out where your household stop valve is and make sure that you can turn it on and off. You'll thank us if you ever have a burst pipe – because you'll be able to cut off the flow before it floods the house.
- Find a contact number for your water supplier, so that if you find a leak you can let them know and stop water being wasted.

13. Don't fund the water-grabbers

- Some companies and investors that buy up land around the world contribute to water scarcity and pollution.
- They sometimes deny local people access to water, pollute watercourses or exhaust supplies.
- This can affect the ability of local communities to farm and access safe drinking water. This is known as 'water grabbing'

3. Why conserve water if it's renewable?

- Water is renewable, and the Earth will never run out of water. However, this doesn't mean that water will always be easily accessible.

Here's why:

- Different parts of the water cycle can take different amounts of time to complete. Therefore, water cycled by the water cycle can be sometimes hard to access.
- For example, it could take thousands of years for water that is hidden deep underground to cycle and fall back to Earth as precipitation.
- The same is true for water that is frozen as glaciers.
- This all becomes important when we think of our usage of water. Humans mainly use water in the form of freshwater.
- If freshwater in the water cycle is hard for us to access, then it can't be used by humans.
- For example, water that is frozen in glaciers is very difficult, if not impossible to extract for human use.
- Likewise, it is very difficult and expensive to harvest freshwater from the saltwater ocean.
- In fact, 97.5% of all water on Earth is saltwater. Only 2.5% of all water on Earth is freshwater, and of that 2.5%, the majority is permanently frozen, unavailable for our use.

- The location of usable freshwater on Earth also plays a part in the availability of water.
- What does this mean? Take this case for example: An abundance of freshwater in North America won't do much to relieve a water shortage in Africa.
- Similarly, rain in New York City wouldn't do much to help if there was a water shortage in San Francisco.
- The bottom line? Water is not very portable. Therefore, if water in one area gets used up too quickly, there could be a water shortage.
- What's more, the water cycle doesn't always replenish water right away. For example, if an underground water source (aquifer) gets completely drained, it could take thousands of years for it to be refilled again.
- So, even though water on the Earth as a whole is renewable, in areas with little precipitation, water becomes non-renewable at a local level. This is also true for areas that use up water faster than it can be naturally replenished.
- This is why it's important to conserve water, especially if you live in an area that is prone to droughts and water shortages.

4. Water conserve projects Australia

- The Australian Government will provide \$8 million in funding for water-saving projects in New South Wales under its Interim Great Artesian Basin Infrastructure Investment Program.
- The Great Artesian Basin provides water for more than 180,000 people and 7600 businesses in regional and remote Australia.
- Federal Minister for Agriculture and Water Resources, David Littleproud, said the government's \$8 million investment in the Great Artesian Basin will ensure there is water available for generations to come.
- "This will see water upgrades across the Great Artesian Basin such as capping and tapping free-flowing bores and replacing open bore drains with modern reticulation, to help maintain good water pressure," Mr Littleproud said.

- “The Great Artesian Basin is a large resource and it is important we use it sustainably and maintain the quality so it is available for future generations.
- “From the \$8 million fund we’re putting \$2.255 million into New South Wales projects and the State Government has agreed to put in another \$2.255 million. This is a great result for the community.
- “The NSW Government will be responsible for on-the-ground delivery of projects.”
- NSW Minister for Regional Water, Niall Blair, said artesian bores and bore drains are the primary source of water and a vital part of the pastoral industry across north west NSW.
- “Artesian pressure has dramatically fallen during the last 100 years. Under this agreement, NSW will be able to work with landholders to rehabilitate high priority artesian bores, which will provide clean, secure and reliable stock and domestic water to six large pastoral leases,” Mr Blair said.
- “This project alone will save 2.3 gigalitres (billion litres) a year and is strategically targeted to restore artesian pressure at the ecologically important Great Artesian Basin natural springs.
- “Similar projects that rehabilitate artesian bores have been extremely successful to date, making groundwater management in NSW more sustainable, and earning strong community support.
- “We are pleased to continue to build on this successful work that improves on-farm productivity and protects our valuable groundwater reserves and landscapes.”
- “With the end of round four of the Great Artesian Basin Sustainability Initiative (GABSI) in June 2017, this program will provide certainty to communities that rely on the Basin,” Mr Littleproud said.
- The program is an interim measure set to end on 30 June 2019.

5. Water save Australia

- Water save Australia specialises in innovative water saving solutions combining quality design and intelligent technology for sustainable business.

- Water save provides consultancy, water monitoring, leak detection and sustainable products to assist companies seeking ways to save water and reduce their overall carbon footprint.

6. Sustainable Rural Water Use and Infrastructure Program

- The Sustainable Rural Water Use and Infrastructure Program (SRWUIP) is a national programme investing in rural water use, management and efficiency, including improved water knowledge and market reform, and water purchase for the environment.
- SRWUIP is the key mechanism to 'bridge the gap' to the sustainable diversion limits (SDLs) under the Murray-Darling Basin Plan and consists of 3 main components:
 - Irrigation infrastructure projects
 - Water purchase measures
 - Supply measures.
- The majority of SRWUIP infrastructure funds are committed to projects in the Murray-Darling Basin for improving the operation of off-farm delivery systems and helping irrigators improve on-farm water use efficiency. The water savings generated from these projects are shared between the Australian governments for environmental use, and irrigators for consumptive use.

SRWUIP investments include:

- Planning, investigations and project design
- Works on off-farm irrigation systems
- Works on farms to improve water use efficiency
- Works to improve ecological health and restore natural flows
- Water saving municipal projects
- Water purchase through the commonwealth purchasing program
- Environmental works and changes to river operations that enable the same environmental outcomes to be achieved with less water.

7. Infrastructure projects in the Murray-Darling Basin

State Priority projects

- ACT Healthy Waterways project
- Goulburn Murray Water Connections project Stage 2 (formerly Northern Victoria Irrigation Renewal project Stage 2)
- NVIRP 2—On-Farm project (Vic)
- Sunraysia Modernisation project (Vic)
- Irrigation Farm Modernisation project (NSW)
- Healthy Floodplains project (NSW)
- Metering Scheme project (NSW)
- Basin Pipes project (NSW)
- Nimmie-Caira Enhanced Environmental Outcomes project (NSW)
- Private Irrigation Infrastructure Operators Program in New South Wales
- Healthy Head Waters Water Use Efficiency project (Qld)
- Coal Seam Gas Water Feasibility study (Qld)
- Private Irrigation Infrastructure Program in South Australia
- Coorong, Lower Lakes and Murray Mouth Recovery project (SA)
- Riverine Recovery project (SA)
- Flows for the Future project (SA)
- Integrated Pipelines project (SA)
- On-Farm Irrigation Efficiency Program
- Victorian Farm Modernisation project
- Irrigator Led Group Proposals
- Menindee Lakes project
- Murray-Darling Basin Regional Economic Diversification Program