# Updated Briefing Note (June 2019)
# International approaches to PCC targets

## Summary


- The Government has set out an action for England in the 25 Year Environment Plan *"We will work with industry to determine appropriate targets for personal water consumption and the measures needed to achieve them"*

- This selection of case studies on the international use of water consumption targets suggests that they are a useful policy instrument to support greater levels of water efficiency.

- Targets have been applied across a range of geographies and climates as well as at various timescales from long term planning to incident management.

- Targets have been applied at the national level, state level, city level, for individual water companies and by businesses.

- Domestic use/PCC targets have generally been used in conjunction with targets and measures to encourage reductions in non-household use and in sectors such as agriculture.

- Targets have largely been implemented as part of wider water efficiency programmes including public engagement and supportive policy measures such as mandatory water efficiency labelling.


## Background

Climate change, population growth and the need to protect the environment are increasing pressures on water resources in England. The need for greater water efficiency to reduce our demand for water was clearly set out in the National Infrastructure Commission report Preparing for a Drier Future. Without action there is a 1 in 4 chance over the next 30 years that large numbers of households and businesses will have their water supply cut off because of severe drought, with the cost of associated emergency measures estimated between £25 and £40 billion.

In January 2018 the Government published A Green Future: Our 25 Year Plan to Improve the Environment. It commits to incentivising greater water efficiency as part of an overall goal of ensuring "*clean and plentiful water*" and outlined the Government's intention to "*work with the industry to set an ambitious personal consumption target and agree cost-effective measures to meet it*".

Defra in their December 2018 Water Conservation Report to Parliament stated "*it is clear that there is more to be done on demand management if we are to secure long term*

*resilience of our water supplies*" and again committed to launching a call for evidence on setting an ambitious target for personal water consumption alongside a consultation on wider policy measures to reduce water demand.

This paper updates a briefing note issued by Waterwise in July 2018 and sets out some of the international evidence supporting personal water consumption targets to drive water efficiency.

## Australia

**Experience during the millennium drought**

In Australia, during the millennium drought, many states used a percentage reduction target for PCC to provide a figure that the industry could agree on and measure against. This was often generically set as a percentage reduction rather than based on a scientific basis, however it was effective. In 2003 the Western Australian State Water Strategy adopted a target of reduced consumption recommended in the WA State Sustainability Strategy. This was to be a reduction in water usage to a per capita target of 155 kL per year by 2012, a 19% reduction on the unrestricted consumption of 185 kL per year in 2000/1. Sydney Water adopted a demand management strategy in 1995 to meet targets set in its 1995 operating licence. The target was to reduce per capita demand by 35% from the 1991 baseline of 184.7 kL per year by June 2011. In 2002/3 the metropolitan water authorities set a target for Melbourne to reduce consumption by 25% of the 1990s average by 2015 and by 30% by 2020. This has produced per capita targets of 115.7 kL per year by 2015 and 108.8 kL per year by 2020.

In 2006 Perth had the greatest consumption out of the three cities for 2006 as well as a higher baseline and target. Perth was 2% below the 2012 target, while Sydney and Melbourne are both 4% above their comparable targets. This demonstrates that percentage based per capita consumption targets can drive water efficiency ambition and innovation.

The ‘Target 140’ campaign in South East Queensland and the ‘Target 155’ campaign in Victoria applied clear and consistent messaging and helped to focus the campaigns to reduce water use and reinforce community support for a common goal. These, and similar campaigns across the country, exceeded their targets. They were successful in part due to the strong focus on research into the attitudes of the target audience and integration with other initiatives, including restrictions on outdoor water use, the (residential) high water users’ program, non-residential sector water efficiency programs and rebate programs. The Target 155 programme is still ongoing. Further information on this programme is in Appendix A.

Sydney Water’s regulated operating license required it to achieve aggressive water efficiency targets, and these targets subsequently became a significant component of the Metropolitan Water Plan in 2004, 2006 and 2010. This is an example that shows how regulatory arrangements can strongly encourage investment in demand-side measures. As part of this arrangement Sydney Water publicly reported annually on its performance against the targets for water efficiency, reuse and leakage. These reports are an example of transparency and accountability to the public.

In its 2017 plan Sydney Water moved away from fixed water conservation targets to use an Economic Level of Water Conservation methodology where water efficiency efforts and associated targets are variable and linked more closely to the prevailing water resource situation and a calculated value of water [1]. However, in 2019 Sydney once again was facing water restrictions.[2]

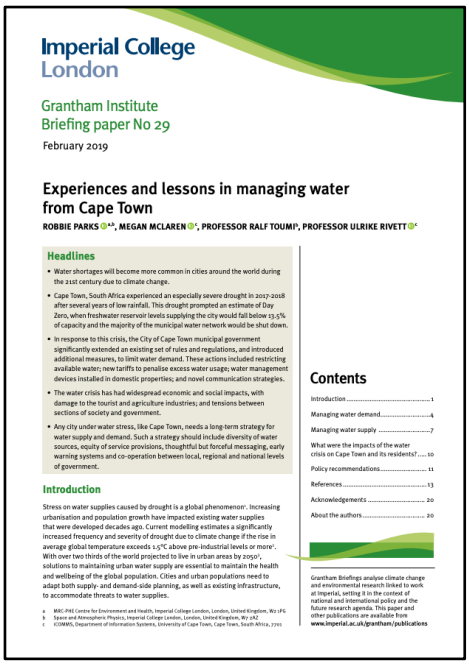
1 https://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq3/~edisp/dd_047419.pdf

2 https://www.theguardian.com/australia-news/2019/may/28/sydney-facing-first-water-restrictions-in-a-decade-as-drought-grips-new-south-wales

Since the millennium drought water authorities in Australia have continued to take action to try to keep water consumption down close to levels achieved during the drought event although budgets have generally been reduced.

The various technical and behavioural initiatives taken are summarised in this 2019 report along with data on water consumption trends.
https://www.waterwise.org.uk/resource/water-efficient-australia-report-2019/

## Cape Town, South Africa


Imperial College London

Grantham Institute
Briefing paper No 29
February 2019

**Experiences and lessons in managing water from Cape Town**

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Headlines

- Water shortages will become more common in cities around the world during the 21st century due to climate change.
- Cape Town, South Africa experienced an especially severe drought in 2017-2018 after several years of low rainfall. This drought prompted an estimate of Day Zero, when freshwater reservoir levels supplying the city would fall below 13.5% of capacity and the majority of the municipal water network would be shut down.
- In response to this crisis, the City of Cape Town municipal government significantly extended an existing set of rules and regulations, and introduced additional measures, to limit water demand. These actions included restricting available water; new tariffs to penalise excess water usage; water management devices installed in domestic properties; and novel communication strategies.
- The water crisis has had widespread economic and social impacts, with damage to the tourist and agriculture industries; and tensions between sections of society and government.
- Any city under water stress, like Cape Town, needs a long-term strategy for water supply and demand. Such a strategy should include diversity of water sources, equity of service provisions, thoughtful but forceful messaging, early warning systems and co-operation between local, regional and national levels of government.

Introduction

Stress on water supplies caused by drought is a global phenomenon[1]. Increasing urbanisation and population growth have impacted existing water supplies that were developed decades ago. Current modelling estimates a significantly increased frequency and severity of drought due to climate change if the rise in average global temperature exceeds 1.5°C above pre-industrial levels or more[2]. With over two thirds of the world projected to live in urban areas by 2050[3], solutions to maintaining urban water supply are essential to maintain the health and wellbeing of the global population. Cities and urban populations need to adapt both supply- and demand-side planning, as well as existing infrastructure, to accommodate threats to water supplies.

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Grantham Briefings analyse climate change and environmental research linked to work at Imperial, setting it in the context of national and international policy and the future research agenda. This paper and other publications are available from www.imperial.ac.uk/grantham/publications

Since the millennium drought water authorities in Australia have continued to take action to try to keep water consumption down close to levels achieved during the drought event although budgets have generally been reduced.

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https://www.waterwise.org.uk/resource/water-efficient-australia-report-2019/

## Cape Town, South Africa

Cape Town, a rapidly urbanising coastal city of over 4 million, has been at risk of water scarcity for many years[3]. In early 2018, after three winters of low rainfall the City of Cape Town (CoCT) announced that the population would need to take drastic action to avoid running out of water – a situation termed 'Day Zero' (Box 1). On Day Zero, the majority of the water distribution system for the city would be shut off, and water would be distributed through communal standpipes to residents and limited to 25 litres per person per day.

The CoCT prioritised reducing demand for water to manage the drought and introduced increasingly strict water restrictions and PCC targets over the period of the crisis. These targets became more stringent over time as the water shortage became progressively more acute. At level 4 (June 2017) the target was 100 lppd; at level 4B it was 87lppd, level 5 (Sept 2017) was 70 lppd and at the most extreme level of restriction implemented, Level 6B (Feb 2018), residents were restricted to a maximum of 50 litres of water per person per day. Target % reductions were also introduced for non household properties of between 20 to 45% compared to 2015 or 2016 baselines. Other demand management measures included use of variable tariffs, pressure reductions, public campaigning, smart metering linked to behavioural nudges, a Water Usage Map and installation of devices to restrict household usage.

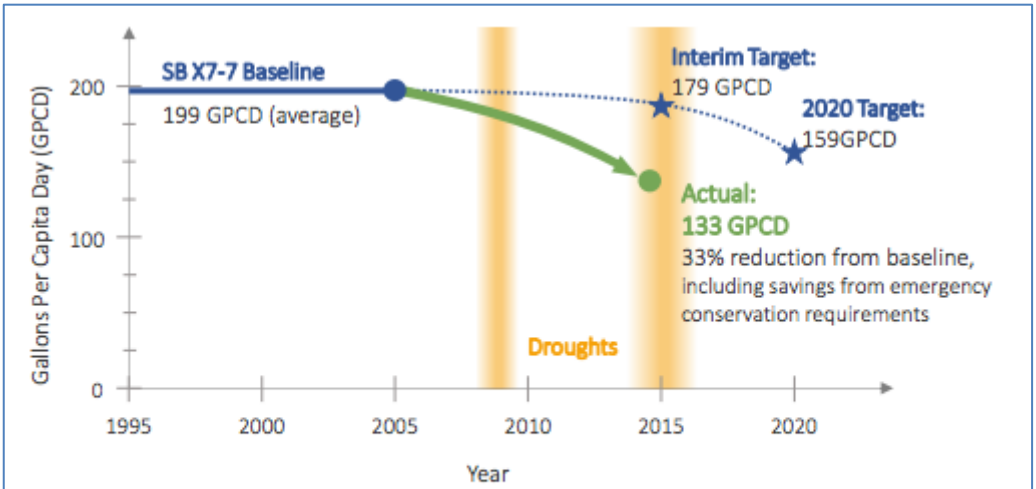
The net impact of the water saving targets and interventions was highly effective, with daily average water consumption for the city reduced by nearly 60% from 1,200 million litres in February 2015, to 500 million litres in February 2018. From December 2017 to March 2018,

[3] https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Experiences-and-lessons-in-managing-water.pdf

the percentage of single-family homes using less than 10,500 litres of water per month increased from 64% to 81%, with those using less than 6,000 litres increasing from 31% to 49%.

## California

Another recent experience of implementing water use percentage reduction targets can be seen in California (California Department of Water Resources, 2017). A report “Making Water Conservation a California Way of Life” identified that targets have resulted in a 33% reduction in water use (Gallons per customer per day - equivalent to PCC).




Urban water suppliers reported an average per capita water use of 133 GPCD in 2015, a 33 percent reduction from the baseline conditions set for SB X7-7 and well below the interim target of 179 GPCD and the final target of 159 GPCD.

The experience of Valencia Water Company was presented at the recent IWA Efficient 2017 conference in Bath (Dickins, 2017).

- January 2014 State issues call for 20% voluntary conservation (compared to 2013’s consumption)
- May 2015 State issues mandatory conservation targets of 25% (compared to 2013’s consumption)
- May 2016 - State issues targets based on supply reliability “stress tests”

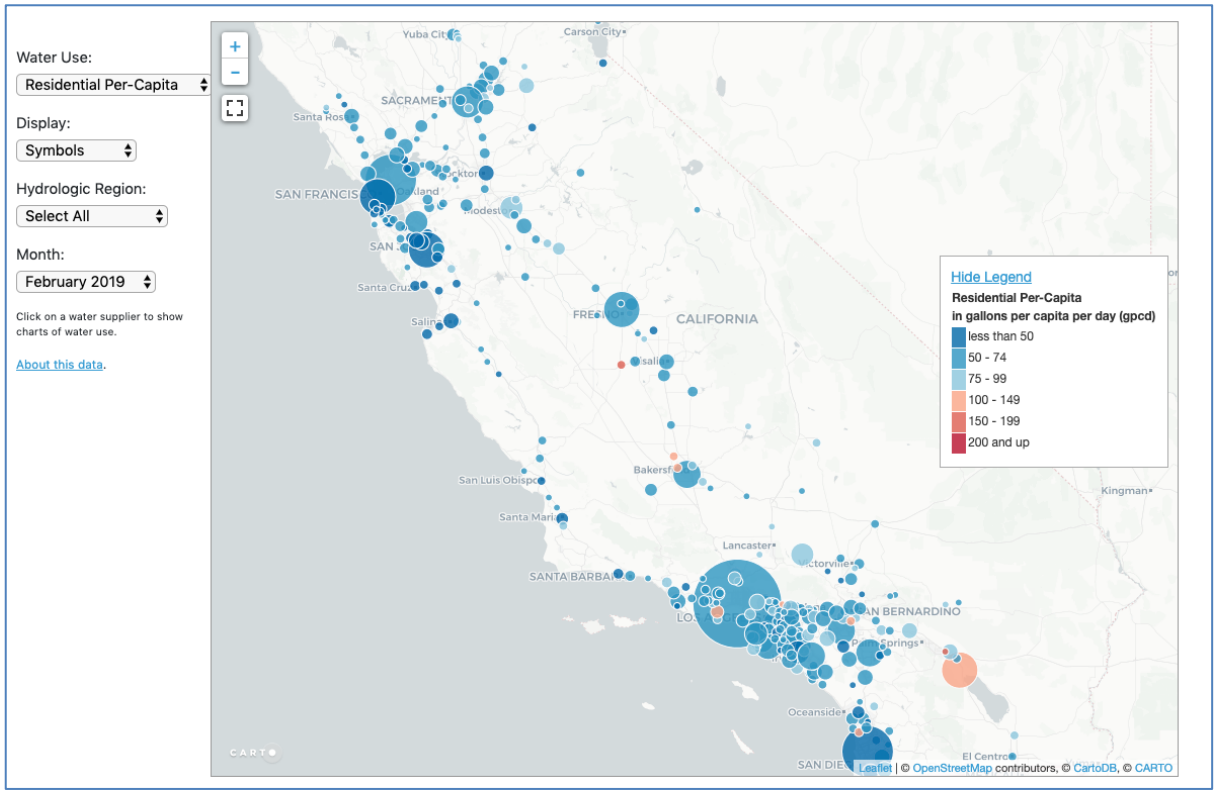
For Valencia Water company the percentage targets applied in 2014-2015 helped focus efforts to reduce water use through innovative programmes (including tailored customer drought reports and bills outlining saving they needed to make, a GIS Watermap to target high consumption areas and customers, and online education workshops for customers). The 2016 target was zero for Valencia Water Company as they now met the stress test requirements.

This case study provides a useful example of how percentage water use reduction targets helped focus activity and innovation in Californian utilities. California has since passed long-term water conservation legislation. The new framework includes[4]:

- A standard for indoor residential water use of 55 gallons per person per day (208 litres) —dropping incrementally to 50 gallons beginning in 2030 (189 litres).
- A standard for outdoor residential water use (to be determined) based upon a community's climate and the amount of landscaped area.
- A standard for water loss due to leaks in water system pipes (to be determined).

These three standards will be calculated and added together to represent an overall water use target (in gallons) for the water provider. Although some local water providers in California base their rates on a water budget for each customer, the new state laws do not contain water use targets for individual residents or businesses.

Water use data for urban areas of California is now open source enabling the public and stakeholders to look at tabulated or mapped data and trends for their urban areas and also allowing them to benchmark with other urban areas in the state[5].




4 http://www.allianceforwaterefficiency.org/uploadedFiles/Resource_Center/Library/United_States/California/CalWEP-FAQ-Fact-Sheet-on-Long-Term-Conservation-Legislation.pdf

5 https://pacinst.org/publication/interactive-map-of-californias-urban-water-use/

## Singapore

Singapore's per capita household water consumption was reduced from 165 litres per day in 2003 to 143 litres in 2017 against a target to lower it to 140 litres by 2030. However, given the progress made in response to the target in 2018 it was lowered to a new target of 130 lppd by 2030.

Achieving the target is underpinned by a comprehensive water efficiency programme for households and businesses along with the Mandatory Water Efficiency Labelling Scheme[6]. The former includes smart meter rollout, increased tariffs (in 2017) and the retro-fitting of smart showerheads with real time readings.

A labelling scheme (Singapore Green Label) for commercially used water products has also been introduced[7] which covers industrial dishwashers, water extractors and pressure washers. Approved dishwashers save around 30-40% water compared to the average.

**Singapore Green Labelling Scheme (SGLS) for commercial appliances**

**COMMERCIAL DISHWASHER**

| Type | Average water consumption range per rack (L/rack)* | Limit in SGLS criteria (L/rack) | Average water savings per rack** |
|---|---|---|---|
| Undercounter | 1-14 | 2 | **44%** |
| Multiple tank conveyor | 0.40-2.02 | 0.66 | **36%** |
| Flight type system | 0.28 -1.96 | 0.59 | **33%** |
| Hood type | 0.92-4.73 | 2 | **33%** |
| Single tank conveyor | 0.68-2.02 | 1 | **31%** |

**COMMERCIAL WASHER EXTRACTOR**

| Type | Average water consumption range per rack (L/kg)* | Limit in SGLS criteria (L/kg) | Average water savings per kg of laundry** |
|---|---|---|---|
| Side load | 10.65–15.56 | 12 | **10%** |
| Front/Top load | 6.16–11.78 | 7.8 | **7%** |

NOTES:

*Based on average water consumption of commercial dishwasher or commercial washer extractor models available in Singapore.

**Rounded off to nearest whole number.

Sources: SINGAPORE ENVIRONMENT COUNCIL, PUB

STRAITS TIMES GRAPHICS

Progress with the various water efficiency initiatives is measured annually and reported through to Government at cabinet level.

## Hong Kong

Hong Kong set a PCC target of 120 lppd by 2030[8] in its Total Water Management Strategy of 2008. A range of actions were included in the Strategy to reduce demand including public education on water conservation, introduction of a water efficiency labelling scheme, leakage and pressure management and the extension of seawater for toilet flushing.

However, in contrast with Singapore progress in Hong Kong in reducing consumption has been limited. This might be partly explained by the fact that, unlike Singapore, the water labelling scheme was only voluntary not mandatory and no tariff based signals were used. Indeed household consumption rose between 2010 and 2016 from 129 to 133 lppd. Hong Kong set a revised target in 2017 of reducing consumption by 10% from the 2016 baseline although this also equates to 120 lppd (i.e. the original target!).

[6] https://www.pub.gov.sg/watersupply/singaporewaterstory

[7] https://www.straitstimes.com/singapore/environment/businesses-can-soon-buy-green-commercial-dishwashers-washer-extractors

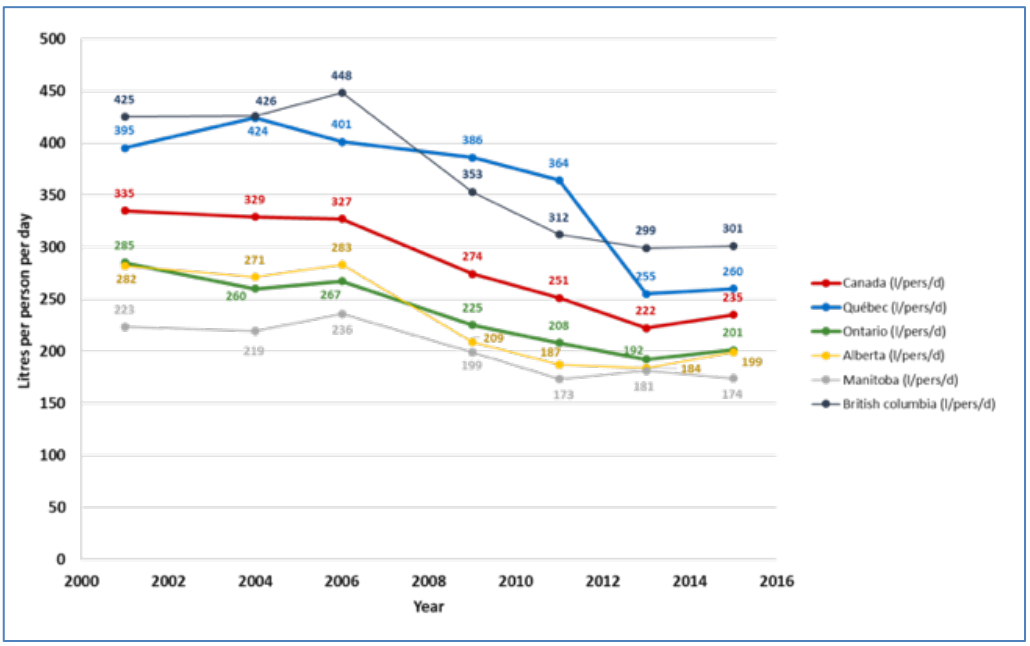
[8] https://www.mdpi.com/2073-4441/11/4/785/pdf

## Zaragoza, Spain

Over a 15 year period this city of 700,000 reduced its per capita consumption from 150 litres per person per day down to 99 lppd[9]. Despite population growth of 12% daily water use by the city fell 27%. Instead of taking the traditional approach in Spain of “we need water, where will we find it” the city prioritised demand management seeking pledges from residents to reduce water use and instigating widespread water audits

## Canada

Canada previously had a target to “Promote the conservation and wise use of water to affect a 30% reduction or increased efficiency in water use in various sectors by 2025 (based on 2009 water use levels)”[10]. Other targets are applied at the state and utility level. For example, in Quebec the draft water strategy is looking for a reduction of 20% in PCC from a 2015 baseline. For individual municipalities the target us getting to the level of Ontario or the Canada average. An example roadmap to a 2050 target of 150 litres per day in York Region is provided in Appendix B.




## Copenhagen, Denmark

In Denmark the Max100 (Water Hero) campaign run by the Greater Copenhagen Utility in Denmark, set the explicit goal of decreasing the water consumption of its customers to 100 liters per person per day. The core of the campaign is the “Water hero” website with a range of suggestions on how consumers can decrease their water consumption and hence their water bill, given the high water prices locally. The information takes the form of both short films and texts. The actions are divided into four categories: kitchen, washing, garden and

[9] https://www.theguardian.com/lifeandstyle/2014/jul/30/zaragoza-smarter-urban-water-zaragoza-spain-learned-to-use-less
[10] http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=A402AE11-1

bathroom. There are also information categories for small utilities, schools and local communities.

## Israel

The State of Israel has a national target to "maintain or decrease the domestic per capita water consumption at or below 100 cubic metres/person/year[11]". In 2009 it was 90 cm per capita with a 2025 expectation of 98 cm per capita and a 2050 target of 95 cm per capita. This is to be achieved through compulsory AMR metering, significantly increased water tariffs, pressure reductions and multimedia awareness campaigning. Where AMR meters have been installed water consumption rates have dropped 15%. Water saving campaigns in the media were able to reduce PCC by 10% in 2009. Alongside the PCC targets there are targets to reduce potable water consumption in agriculture by nearly 50% by 2050 and to increase water recycling in industry by 10% by 2035.

## United Arab Emirates

Water scarcity is a major issue across all sectors in the UAE. The 2014 to 2018 Water Resources Strategy set out a target reduction in PCC to less than 350 litres per person per day down from a baseline of 614 litres per person per day in 2010.[12]

In September 2017 the Ministry of Energy & Industry unveiled the UAE Water Security Strategy 2036[13], which aims to ensure sustainable access to water during both normal and emergency conditions. One of the overall objectives of the strategy is to reduce total demand for water resources by 21 percent by 2036.

## United Nations Sustainable Development Goals

The UN has developed a set of Sustainable Development Goals which includes an SDG on clean water and sanitation, SDG6. SDG6 itself includes sub target 6.4 on water efficiency and water stress which states "*by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity*".

To measure progress against sub target 6.4 two indicators or metrics are used. The first indicator 6.4.1 looks at evidence of "*change in water use efficiency over time*" and includes water use by agriculture, industry and services (including that used in public supply) and looks at economic value per m3 of water abstracted. Progress using indicator 6.4.1 was reviewed in detail in 2018. India has set a target linked to 6.4 to increase water use efficiency by at least 20% focussing on domestic and agricultural use. http://www.unwater.org/app/uploads/2018/08/641-progress-on-water-use-efficiency-2018.pdf

[11] http://www.water.gov.il/Hebrew/ProfessionalInfoAndData/2012/24-The-State-of-Israel-National-Water-Efficiency-Report.pdf
[12] https://www.ead.ae/Documents/PDF-Files/Executive-Summary-of-The-Water-Resources-Management-Strategy-for-the-Emirate-of-Abu-Dhabi-2014-2018-Eng.pdf
[13] https://government.ae/en/about-the-uae/strategies-initiatives-and-awards/federal-governments-strategies-and-plans/the-uae-water-security-strategy-2036

The second SDG indicator 6.4.2 looks at the level of water stress measured by "*freshwater withdrawal as a proportion of the available freshwater resources*". Water stress is defined by the following categories: <10% is low stress; 10-20% is low-to-medium; 20-40% medium-to-high; 40-80% high; >80% extremely high. Data on international progress against these 2030 targets is captured on this site https://sdg-tracker.org/water-and-sanitation#targets

Related to the SDG target 6.4 and indicator 6.4.2 is the Water Exploitation Index + (WEI+) for river basin districts. This index calculates the annual total freshwater abstraction in river basin districts across Europe as a percentage of their long-term annual average (LTAA) available water from renewable fresh water resources but usefully provides river basin level resolution as a time series. The variation across the UK through time is evident from this data set. In terms of a high level cross sector target for ensuring future sustainable water use there may be benefits in adopting this SDG approach. https://www.eea.europa.eu/data-and-maps/explore-interactive-maps/water-exploitation-index-for-river-2

## Multinational Businesses

The approach of measuring water use, setting a reduction target, progressing actions and reviewing progress is commonplace in business, particularly larger multinational businesses (Mars, Whitbread, Astra Zeneca). It is used to provide focus, drive innovation and demonstrate progress. Organisations such as CDPWater https://www.cdp.net/en/water acting on behalf on international investors provide independent review and challenge.

Interestingly, the UK government itself also has water consumption targets for each department through the Greener Government Commitments with annual progress reports published. https://www.gov.uk/government/collections/greening-government-commitments

## Conclusions

- This selection of case studies on the international use of water consumption targets suggests that they are a useful policy instrument to support greater levels of water efficiency.

- Targets have been applied across a range of geographies and climates as well as at various timescales from long term planning to incident management.

- Targets have been applied at the national level, state level, city level, for individual water companies and by businesses.

- Domestic use/PCC targets have generally been used in conjunction with targets and measures to encourage reductions in non-household use and in sectors such as agriculture.

- Targets have largely been implemented as part of wider water efficiency programmes including public engagement and supportive policy measures such as mandatory water efficiency labelling.

**Appendix A - Target 140 Case Study South East Queensland**

Turner, Andrea & White, Stuart & Chong, Joanne & M A, Dickinson & H, Cooley & K, Donnelly. (2016). Managing Drought: Learning from Australia. 10.13140/RG.2.1.1084.0725 https://www.researchgate.net/publication/297723736_Managing_Drought_Learning_from_Australia

Background

From 2004 to 2007 SEQ dam levels dropped from over 60% to less than 20%. In 2006 the state government set up the Queensland Water Commission to manage and oversee the implementation of a drought plan across the SEQ region to manage the dwindling reserves, restrictions and implementation of both short- and long-term water demand- and supply-side measures. These measures ranged from major water efficiency rebate programs to construction of the state's first major desalination plant and one of the largest water recycling plants in the world. A key component of the drought plan was the use of water restrictions. Restrictions were tightened to Level 5 in 2007, breaking new ground in terms of the extent of behavior change expected of the community. While moving to Level 5, the Target 140 campaign was introduced encouraging individuals to reduce household water demand to less than 37 gpcd (140 lcd) from pre-drought levels of 79 gpcd (300 lcd). With severe outdoor restrictions already in place, voluntary indoor water savings were seen as an opportunity. Other targeted programs such as the One to One water savings program were introduced at the same time to specifically curb the demand of the top 10% of high water users.

Program Design

The program focused on voluntary residential indoor water saving practices, behaviors, and attitudes and asked residents to reduce their average water consumption to 140 lcd (37 gpcd). Overall the program aimed to:

- reduce SEQ water use by 10% by the end of 2007
- achieve 37 gpcd (140 lcd) by the end of August 2007 (within 5 months)
- generate 60% awareness amongst SEQ residents of Target 140 by August 2007
- achieve 50% recall of campaign key messages by the end of August 2007.

The program was based on behavior change principles aiming to assist individuals to move through the various stages of behavior change leading to action, namely: pre-contemplation, contemplation, preparation, action, and maintenance. The program relied heavily on understanding where the community was already at in terms of their behaviors and attitudes through the use of extensive social research. Issues that came through in the research strongly were restrictions fatigue, belief that businesses were major users (when in fact the residential sector was responsible for 70% of demand), and there was still a significant group of high water users with high socio-economic status that had not changed their behavior.

The social research drove the design of the campaign, which ultimately focused on:

- understanding the problem (the water supply in SEQ region is at a critical level)
- being aware of regional consumption patterns (70% of demand residential)
- believing that small individual changes in behavior could in combination make a significant difference to the crisis.

The entire population of SEQ (2.3 million people) were targeted in the campaign but an additional segment, high water users, was also specifically targeted under the associated One to One program. The Target 140 campaign aimed to personalize the problem and individualize the solution to facilitate individual behavior change.

The program

Various techniques were used in the campaign and resources provided:

- powerful, pervasive imagery and messaging to highlight the issue, complemented with entertaining imagery and messaging to show what individuals can do to save
- regular imagery and messaging to let people know how dam levels and overall achievement of targets were tracking
- extensive mass media (TV, radio, newspaper, web)
- direct mail to 1.1 million households (4-minute shower timers, refrigerator magnets and educational booklets)
- a specific website with resources
- communication materials (billboards, brochures, fact sheets, posters)
- giveaways (shirts, face washers, magnets)
- media partnerships
- local stakeholder partnerships (utilities and local government)
- linkage with the rebate programs, One to One program and business programs.

The Target 140 campaign ran for 8 months, cost USD 3 M (AUD 4.2 M) and reached 2.3 million people (1.1 million households) at a cost of less than USD 1.4 (AUD 2) per person. Fifty-four per cent of the budget was allocated to advertizing to ensure consistent and engaging messaging across multiple channels to gain maximum outreach. Forty per cent of the costs went into the direct mail-out of shower timers and information booklets. The remainder went to market research, communication collateral, website and consultants. The program was highly successful in that in combination with other programs it more than doubled its target of a 10% reduction, with demand dropping from 47 gpcd (179 lcd) pre-campaign to as low as 34 gpcd (129 lcd) by the end of 2007 (mid- summer). The 37 gpcd (140 lcd) target was achieved only four weeks after the launch of the program, 13 weeks earlier than aimed and the awareness and recall of the messaging of the program were similarly successful.

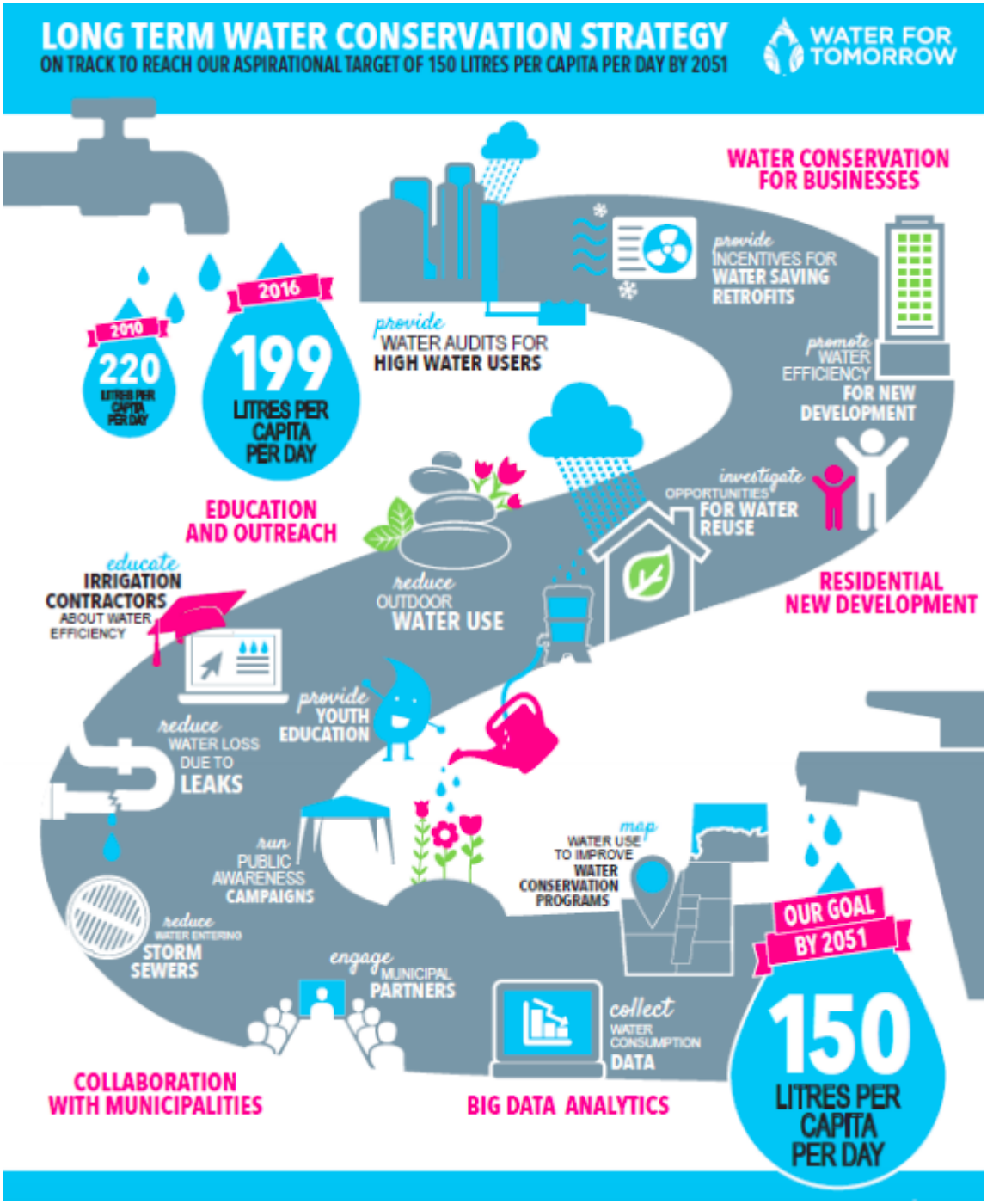
Following the easing of the drought, target messaging was used, such as Target 170, indicating that SEQ had come out of the red zone but that individuals still needed to engage in water efficiency activities. The messaging of targets was similar to those used to warn of fire danger. Due to the success of the program in SEQ, Melbourne used a similar campaign, Target 155.

Lessons

- Target 140 was a highly innovative program using multi-media, multi-strategy communication approaches to encourage reductions in household water use across all uses based on behavior change principles.

- Target 140 was highly successful in part because it used research into the attitudes of the target audience to inform the design and determine how to best take individuals along the various behavior change stages to lead to action.
- The program integrated other initiatives, including restrictions on outdoor water use, the One to One residential high water users' program, non-residential sector water efficiency programs and the rebate program thus focusing on behavioral and structural changes.
- A potentially confusing aspect of the program was the subsequent messaging of 'Target 170' and above that encouraged people to use more water. After the drought ended water demand has typically ranged between 40 and 53 gpcd (150 and 200 lcd) between the winter and summer months.
- Due to the success of the program, the design was replicated in Melbourne as Target 155 during the peak of the Melbourne crisis in 2009.

**Appendix B - Roadmap to water efficiency target in York region, Canada**

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