WWF'S WEDNESDAY WATER FILE

WE ARE NOT ALONE

7 March 2018

Most cities are located where they are because they had a good water source to start with, but as they grow they need to import drinking water and export waste water. Although Cape Town – with almost 4 million residents – has been billed as the first major city in the world to run the risk of its taps running dry, there are many other cities that are water stressed. The World Economic Forum lists water crises among its chief concerns in its annual Global Risks Report 2018 and many cities are now struggling to make the transition to climate-resilient water budgets that reduce demand and increase levels of reuse and recycling. We asked colleagues in WWF offices around the world to share insights that might help Cape Town get ahead of the curve.

1. São Paulo, Brazil (21 million*)
The largest city in Brazil went through a major water crisis from 2014 to 2016 when about two thirds of São Paulo's population experienced water shortages. At the end of 2014, the Cantareira reservoir sunk to its lowest levels (dropping below 5%) and the city came to within 20 days of running out of water.

Since human supply is a priority under law, industries and farmers from across the state were heavily affected by cutbacks, which exacerbated the financial crisis that these sectors were already facing. Multiple factors were at play, among them a lack of long-term planning, limited incentives for consumers and industries to reduce their water usage, degradation of forests and springs around São Paulo, and even increasing deforestation in the Amazon.

Most of the responses were short-term, such as a financial reward for households that reduced water use and improved water-saving infrastructure. The lack of long-term commitments, including a permanent incentive to entrench new water-saving habits as well as investment in forest restoration or water treatment, means that the city will in all likelihood face another water supply crisis in the future.

2. Mexico City, Mexico (21 million)
Mexico City faces enormous challenges in terms of drinking water supply and the operation of drainage infrastructure that prevents flooding. Currently, 18% of residents do not receive water every day and 32% don't get enough water to cover their basic needs – so they have to buy water at great expense. Meanwhile, 45 neighbourhoods regularly face a high risk of flooding in the rainy season and subsidence due to over abstraction of groundwater.

Residents know that their city is at risk of a medium-term water collapse, and that the water supply for future generations is also at risk. In particular, it is critical to establish a public body that can respond quickly to cope with the evolution of the water needs of the city's vast and growing population. The new "Water Sustainability Law of Mexico City" represents a significant step forward as it should lead to a change in public administration and better governance of water resources.

3. Karachi, Pakistan (17 million)
One of 20 megacities in the world and the most populous in Pakistan, Karachi faces severe water risks with a growing gap between water supply and demand. This is partly because the city's population growth has always outstripped projections and partly because of a delay in the execution of mega water supply projects.

To meet their needs, Karachi households and industries depend on limited water supplies from the Karachi Water and Sewerage Board (KWSB) as well as groundwater and tankers. A "tanker mafia", which gets 25% of its water through the KWSB supply line, much of it illegally, dominates this water supply.

An additional problem is the contamination of freshwater sources. Over 450 million litres of wastewater containing hazardous chemicals – produced by 2,000 legal industrial facilities and a similar number of illegal ones – are discharged directly into the sea without proper treatment every day. This harms freshwater and marine ecosystems and contributes to Karachi's daily shortfall of more than 380 million litres.

4. Los Angeles, California, USA (12 million)
California is the seventh-largest economy in the world and Los Angeles is its largest city. Since 2011, California has experienced a multi-year drought, followed by a record-breaking winter storm season and then its worst fire season ever.

During the height of the drought, LA imported 89% of its water from more than 300km away – a very energy-intensive process. In the midst of water restrictions, some of the lowest levels of water use were just over 132 litres per person per day – still almost triple Cape Town's 50 litres a day!

After a year-long reprieve, southern California is again under severe water scarcity conditions following low annual rainfall last year. A new study from the University of California, Los Angeles suggests the region should reduce its dependence on imported water by reducing demand while also transforming its infrastructure to maximise recycled water, groundwater and storm water capture

5. Nairobi, Kenya (4 million)
Kenya's capital faces a water deficit of 200 million litres of water a day, with some saying that demand for water now surpasses supply by 600%. Due to a prolonged drought since 2014 and the degradation of critical catchment areas, most of the dams that supply water to the city are well below capacity. The Thika dam, which supplies 84% of the city's water, is around half of its full capacity.

The Nairobi City Water and Sewerage Company has been forced to ration water to ensure that every domestic customer gets an equitable amount of water, especially in the informal settlements, to avoid the outbreak of water-borne diseases such as cholera and typhoid. They also supply companies in the central business district, all hospitals, airports and major security installations. They've established a hotline to ensure a prompt response when areas experience long periods without water.

However, it is clear that Nairobi will continue to experience water shortages unless policies to secure key catchments and construct necessary infrastructure are developed to cope with the demands of the city's ever increasing population.

6. Brisbane, Australia (2,2 million)
Australia's "Millennium Drought" hit rural and urban water supplies extremely hard. Most major cities were affected, including Brisbane, by low rainfall between 1997 and 2009. With dam levels dropping below 20%, stringent measures were taken to avoid water running out:

- Major investments to fix leaking infrastructure – one of the most cost-effective measures to improve water supplies;
- A demand management programme which included strict new legal requirements on business and domestic water use, coupled with a major education campaign;
- A diversification of water supplies so if one source failed others could be drawn on, among them: dams, desalination, recycled water, rainwater tanks, groundwater, and storm water harvesting, and
- A water grid which linked up major regional water supplies so water could be moved to where it was needed.

The lack of pre-planning for drought meant that billions had to be spent to avert a water crisis. Expensive infrastructure, including water recycling and desalination plants, now sit idle although these may play an important role in future droughts. However, some positive legacies exist. Although water use has increased since, it has stayed well below pre-drought levels. Water use was 330 litres per person per day and went down below 140 litres during the drought. It has stabilised around 200 litres per person. This proves that managing demand and improving water efficiency is the cheapest and most sustainable way to address water challenges.

7. Seville, Spain (> 1 million)
During the drought of 1992 to 1995, reservoirs in the Guadalquivir river basin – which supplies the city of Seville – dropped to 9.5%. The consequence was severe water restrictions, including cutting the water supply to just 10 hours a day, reducing water pressure and a ban on watering gardens. The objective was to reach water savings of around 30%.

Even with these restrictions, the city had to draw water from alternative sources, such as the Guadalquivir River, but the poor water quality meant that the authorities had to invest in expensive emergency treatment plants. Once the drought was over, construction started on the Melonares reservoir, but it was mainly due to water awareness and other measures implemented by the local water company (including new water tariffs that encouraged better use of water) that demand for water fell significantly in the ensuing years making the investment something of a white elephant.

Useful links:
- **The Conversation** has published several articles on what was known as the Millennium Drought in Australia Drought Business Support
- This article in **The Guardian** tells a frightening story of what happens when taps start to run dry in a high-rise building
- The **New York Times** explains what lies behind the water crisis in Mexico City
- **Al Jazeera** has reported on neighbourhoods in Karachi where water on tap is the exception rather than the rule

WWF South Africa compiled this Water File in collaboration with WWF offices in Mexico, Spain, Kenya, Pakistan, Brazil, the USA and Australia.

All population figures, barring Seville, are from "The World Cities in 2016**" published by the United Nations' Department of Economic and Social Affairs. Figures have been rounded up.*

TOP 20 CITIES AT RISK

Cape Town currently tops WWF's list of cities most at risk of water shortages. The other 19 cities come from countries as far apart as Chile and China. The list was compiled using data from the WWF Water Risk Filter on average conditions (supply versus demand), recent droughts (past three years), and future projections (to 2050) as well as Urban Blueprint Data from The Nature Conservancy.

This list is not a prediction but it is definitely a clear wake-up call. Like Cape Town, these cities urgently need to think about water resilience under conditions of climate change and address water risks by reducing demand, considering water allocations, strengthening water governance, and financing green and grey infrastructure. Critically, all cities need to address water access as an issue of social justice to ensure that the poor have access as well as the wealthy. And as an environmental issue to ensure that enough water is left for nature to thrive.

Top 20 cities by average depletion, drought and projected future water discharge

1. Cape Town, South Africa	**11. Bathinda, India**
2. Tel Aviv, Israel	**12. Meerut, India**
3. Valparaíso, Chile	**13. Tbilisi, Georgia**
4. Amman, Jordan	**14. Madrid, Spain**
5. Havana, Cuba	**15. João Pessoa, Brazil**
6. Oxnard, USA	**16. Santiago, Chile**
7. Santa Barbara, USA	**17. Chengdu, China**
8. Agadir, Morocco	**18. San Diego, USA**
9. Casablanca, Morocco	**19. Gurgaon, India**
10. Tunis, Tunisia	**20. Siliguri, India**

DAY ZERO PREP - THIS WEEK'S BUCKET LIST:

- **Ask yourself, if you could TURN BACK THE CLOCK a year and start preparing for Day Zero now, what would you do?**
- **Keep the CONVERSATIONS going in your water committees at schools, work and in your neighbourhoods. With less of a panic about Day Zero, what long-term plans do you need to implement together?**
- **We all have a responsibility to each other to STICK TO OUR 50 LITRES per day!**
- **Put your plumber on speed dial and FIX LEAKS as quickly as possible.**
- **RE-WEAR your clothes by airing them after wearing them.**
- **Dry yourself with a smaller hand towel after showering to SAVE ON WASHING.**