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Betsy Otto

DIRECTOR, WRI GLOBAL WATER PROGRAM

Trends in water resources & Implications for people, economies, and nature

THE GLOBAL WATER CHALLENGE

Source: UNESCO Photo credit: Flickr/Paul Kidd

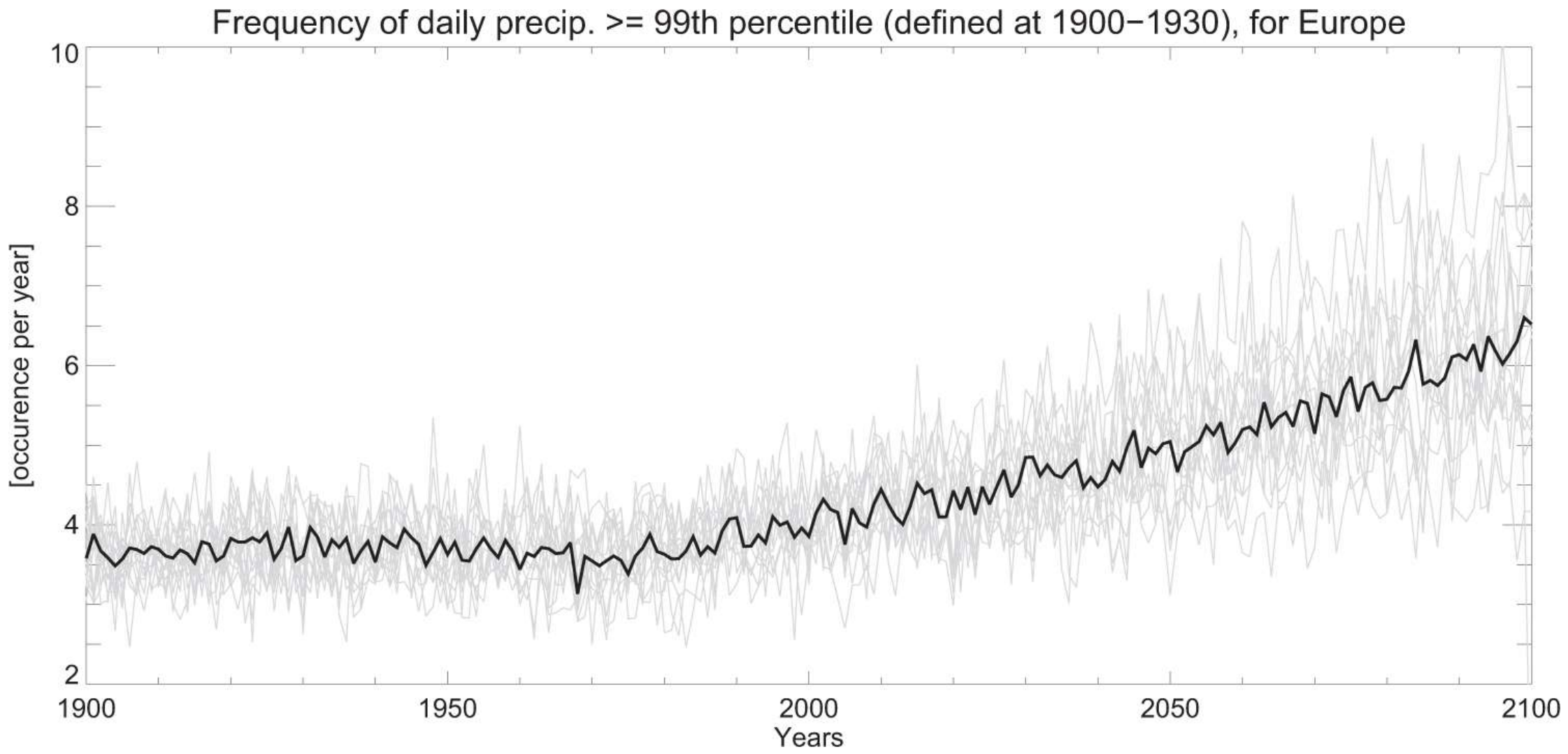
TOO MUCH

80-90% of disasters relate to water

WRI's Aqueduct Floods finds the number of people affected by floods will **double** by 2030

Image: Wikimedia Commons

FREQUENCY OF EXTREME PRECIPITATION EVENTS

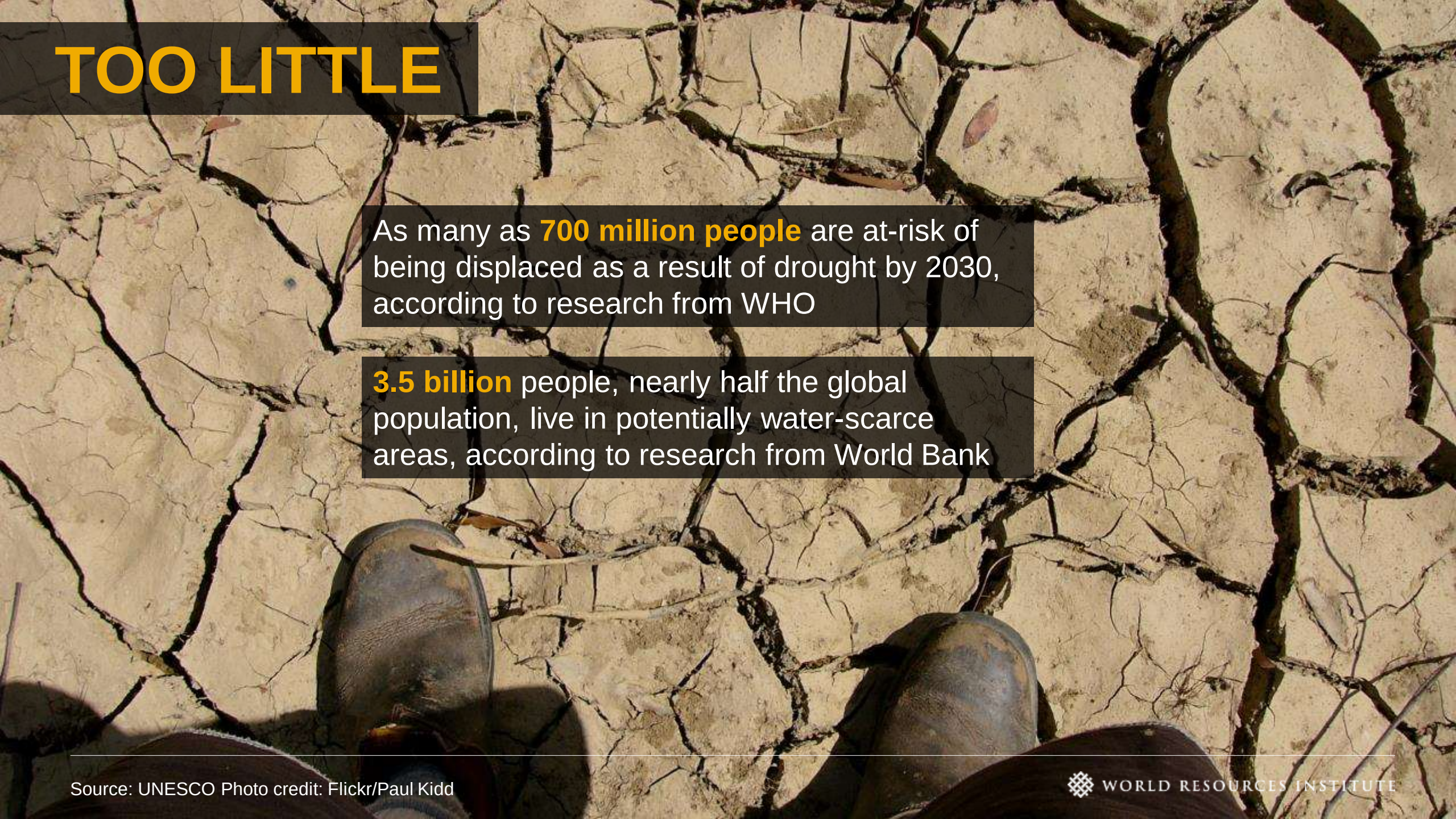


Source: *Frequency of extreme precipitation increases extensively with event rareness under global warming,* Nature, 2019

TOO LITTLE

As many as **700 million people** are at-risk of being displaced as a result of drought by 2030, according to research from WHO

3.5 billion people, nearly half the global population, live in potentially water-scarce areas, according to research from World Bank



Source: UNESCO Photo credit: Flickr/Paul Kidd

TOO POLLUTED

80% of the world's wastewater is dumped untreated into the environment, polluting rivers, lakes, and oceans

Over 2 million deaths occur each year from unsafe water-related diarrheal diseases

Photo: Flickr/ Hassan Hote

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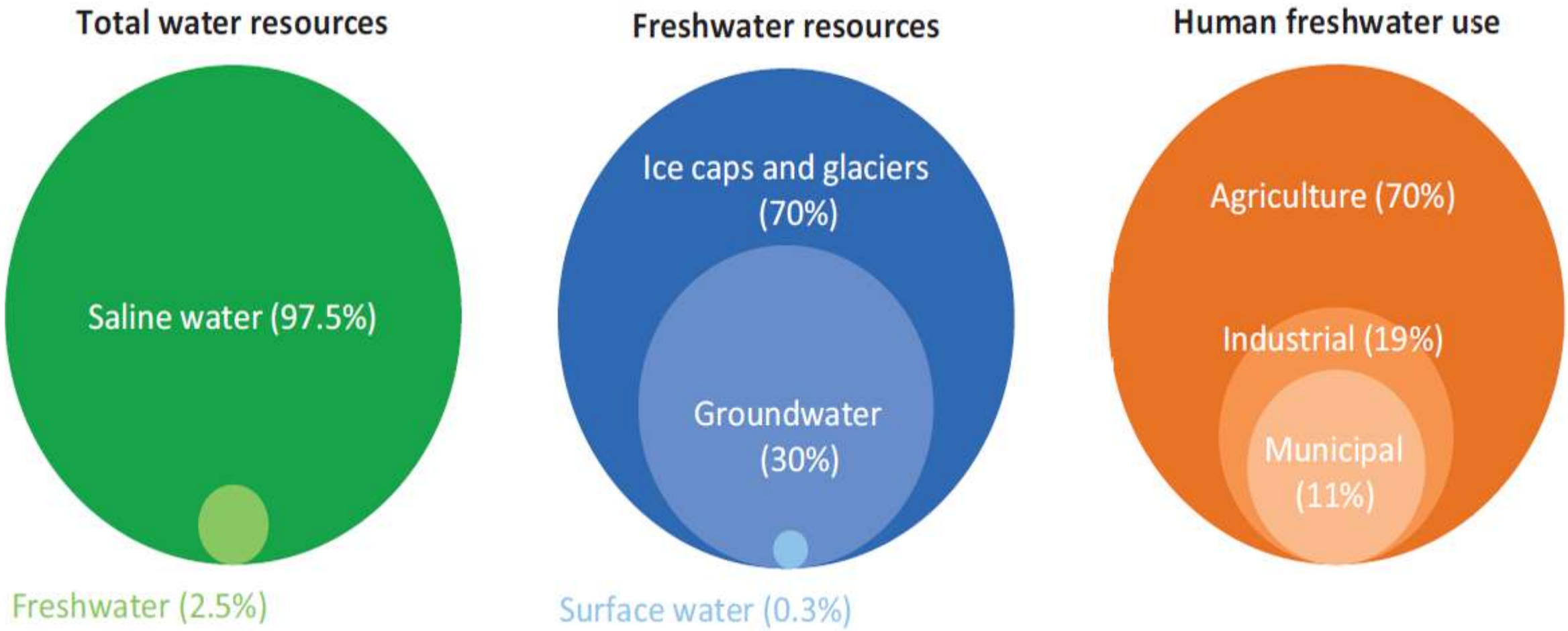
WATER STRESS IS INCREASING

Source: UNESCO Photo credit: Flickr/Paul Kidd

WATER IS PLENTIFUL, BUT ONLY .007% IS ACCESSIBLE FOR HUMAN USE



Source: Shiklomanov (1993), UN FAO Aquastat, World Energy Outlook, National Geographic

GLOBAL WATER STRESS

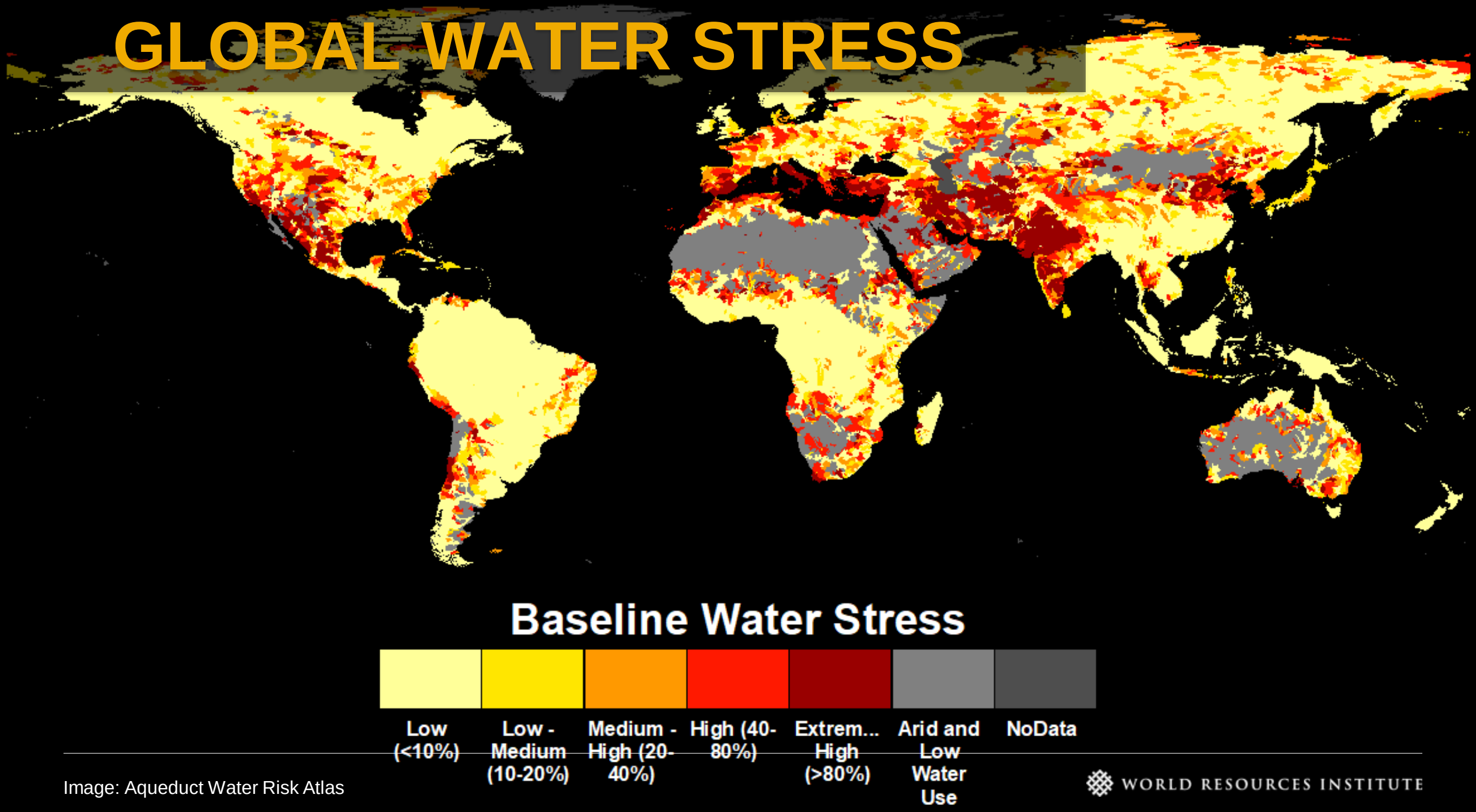


Image: Aqueduct Water Risk Atlas

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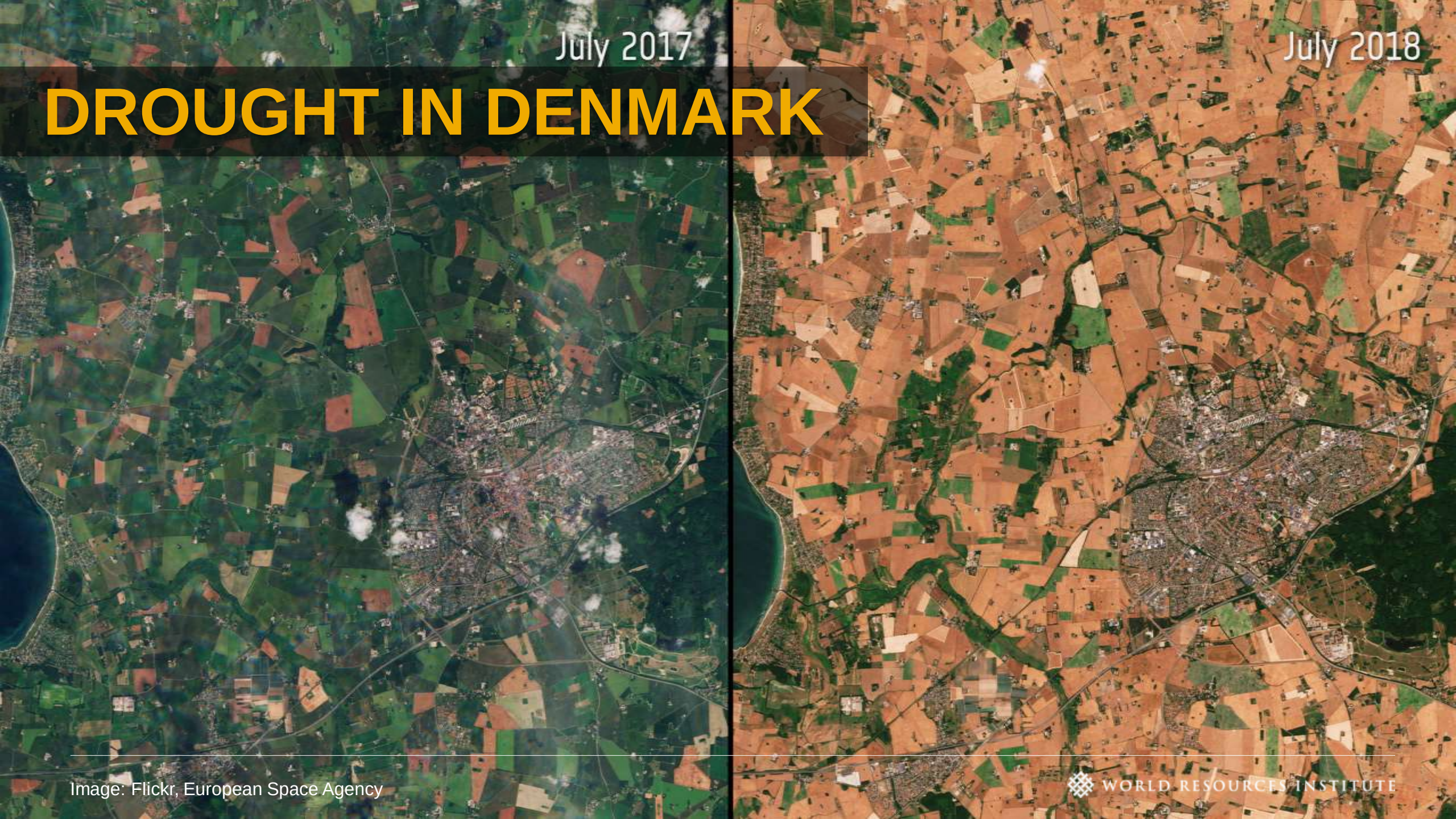
DAY ZERO: CAPE TOWN

NOVEMBER 9, 2020

In a warming world, Cape Town's 'Day Zero' drought won't be an anomaly, Stanford researcher says

Image: Wikimedia Commons



DROUGHT IN DENMARK

Image: Flickr, European Space Agency

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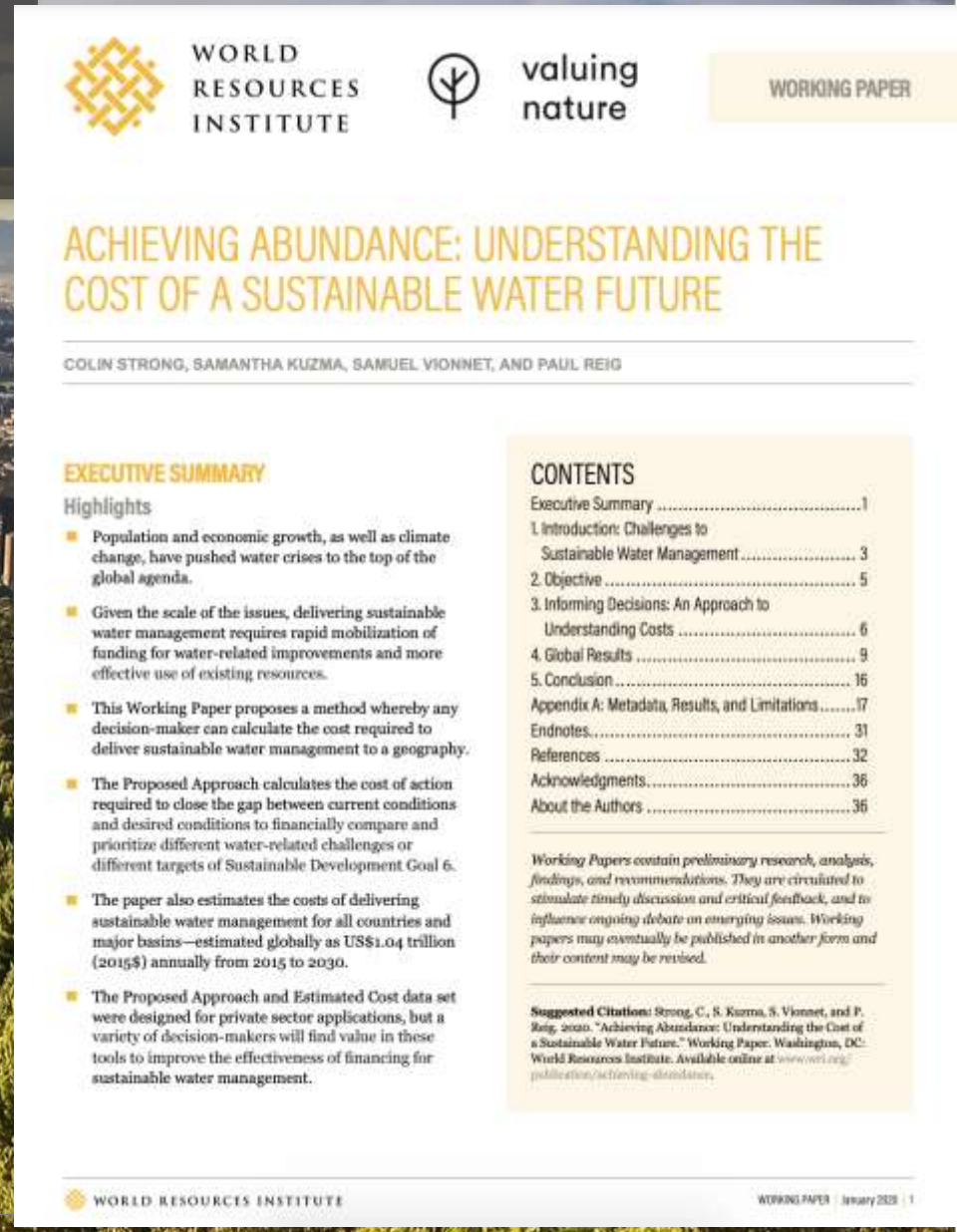
UNDERSTANDING THE COST OF FUTURE WATER STRESS

Research by WRI projects a **56% deficit** in water supply relative to demand by 2030

Meeting water scarcity (SDG 6.4) is **43% of total cost** to achieve sustainable water management by 2030



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valuing nature

WORKING PAPER

ACHIEVING ABUNDANCE: UNDERSTANDING THE COST OF A SUSTAINABLE WATER FUTURE

COLIN STRONG, SAMANTHA KUZMA, SAMUEL VIONNET, AND PAUL REIG

EXECUTIVE SUMMARY

Highlights

- Population and economic growth, as well as climate change, have pushed water crises to the top of the global agenda.
- Given the scale of the issues, delivering sustainable water management requires rapid mobilization of funding for water-related improvements and more effective use of existing resources.
- This Working Paper proposes a method whereby any decision-maker can calculate the cost required to deliver sustainable water management to a geography.
- The Proposed Approach calculates the cost of action required to close the gap between current conditions and desired conditions to financially compare and prioritize different water-related challenges or different targets of Sustainable Development Goal 6.
- The paper also estimates the costs of delivering sustainable water management for all countries and major basins—estimated globally as US$1.04 trillion (2015$) annually from 2015 to 2030.
- The Proposed Approach and Estimated Cost data set were designed for private sector applications, but a variety of decision-makers will find value in these tools to improve the effectiveness of financing for sustainable water management.

CONTENTS

Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback, and to influence ongoing debate on emerging issues. Working papers may eventually be published in another form and their content may be revised.

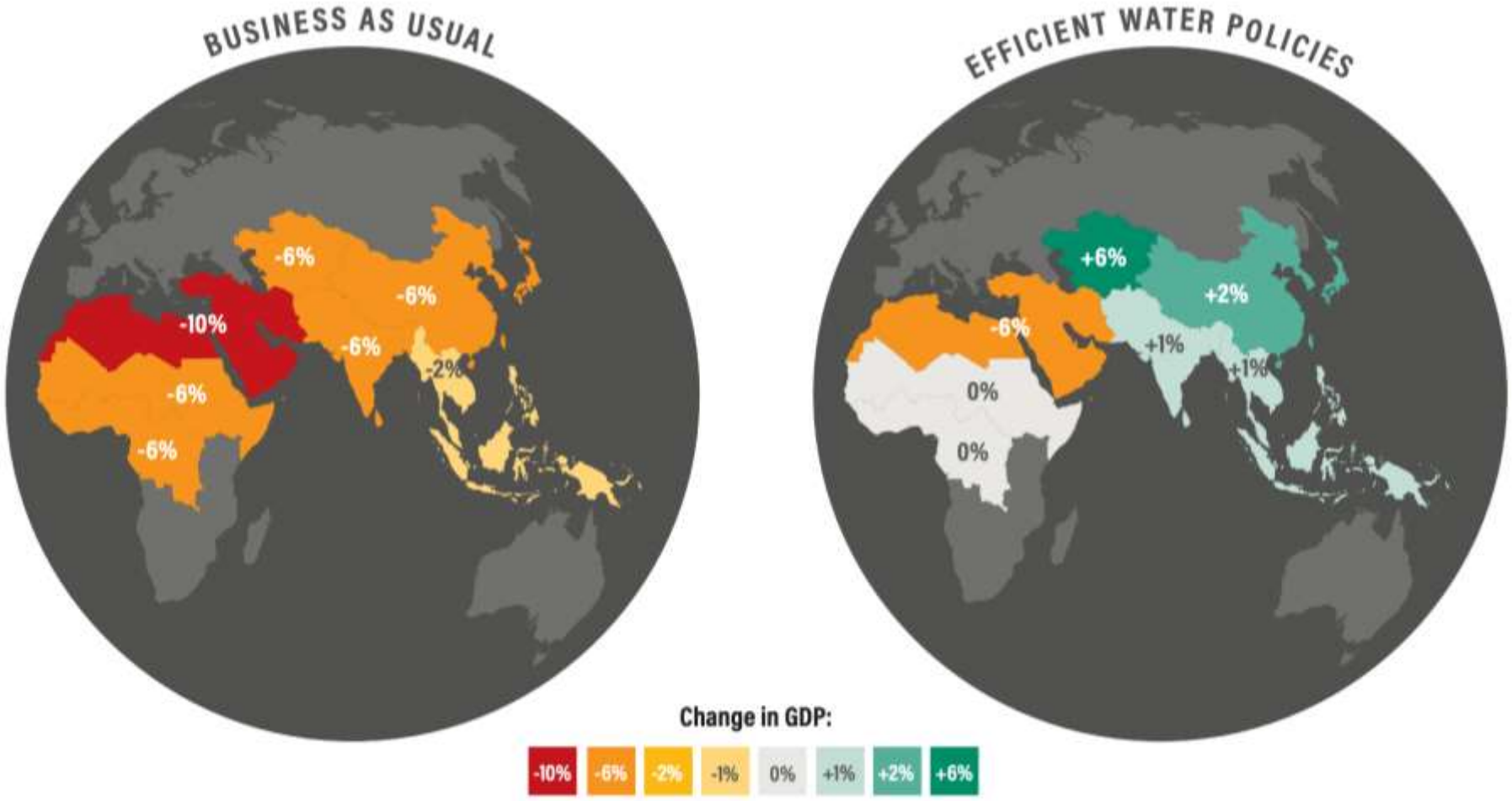
Suggested Citation: Strong, C., S. Kuzma, S. Vionnet, and P. Reig. 2020. "Achieving Abundance: Understanding the Cost of a Sustainable Water Future." Working Paper. Washington, DC: World Resources Institute. Available online at www.wri.org/publication/achieving-abundance.

Image: Cities 4 Forests

IMPACT ON PEOPLE & ECONOMIES

Source: UNESCO Photo credit: Flickr/Paul Kidd

ESTIMATED CHANGE IN 2050 GDP DUE TO WATER SCARCITY, UNDER BUSINESS-AS-USUAL POLICY REGIME



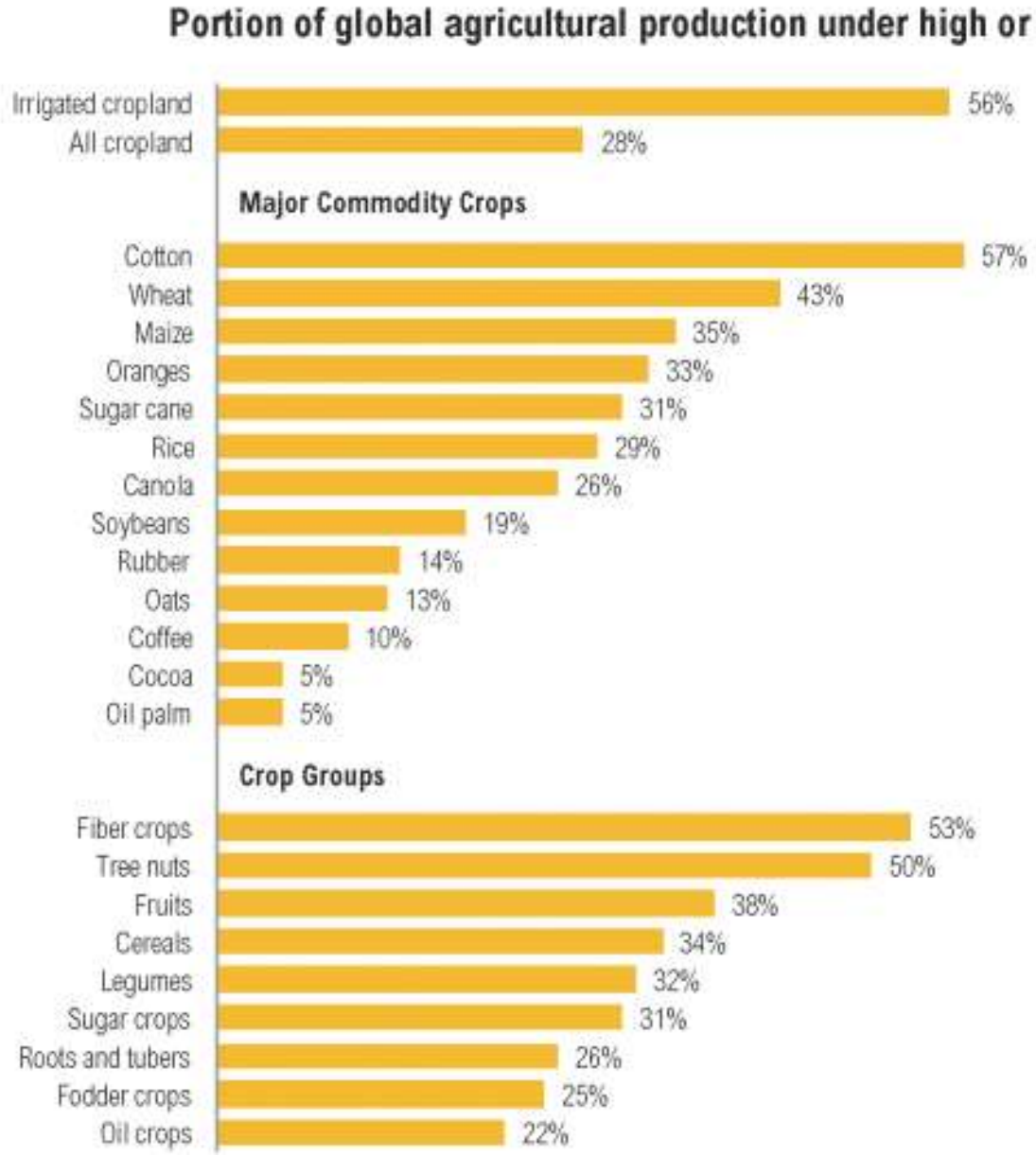
Source: Global Commission on Adaptation 2019, World Bank 2016.

NATIONAL ECONOMIES AND POPULATIONS ARE AT RISK

“India is suffering from the worst water crisis in its history and millions of lives and livelihoods are under threat. **By 2030**, the country’s **water demand** is projected to be **twice the available supply**, implying severe water scarcity for hundreds of millions of people and an eventual ~6% loss in the country’s GDP2 .”

- *Niti Aayog (Indian National Planning Agency), Composite Water Management Index, June 2018*

OVER HALF THE WORLD'S IRRIGATED CROPS ARE WATER-STRESSED



What Is Water Stress?

Water stress is the ratio of total water withdrawals to available renewable supply in an area. In high-risk areas, 40 percent or more of the available supply is withdrawn every year. In extremely high-risk areas, that number goes up to 80 percent or higher. A higher percentage means more water users are competing for limited supplies.

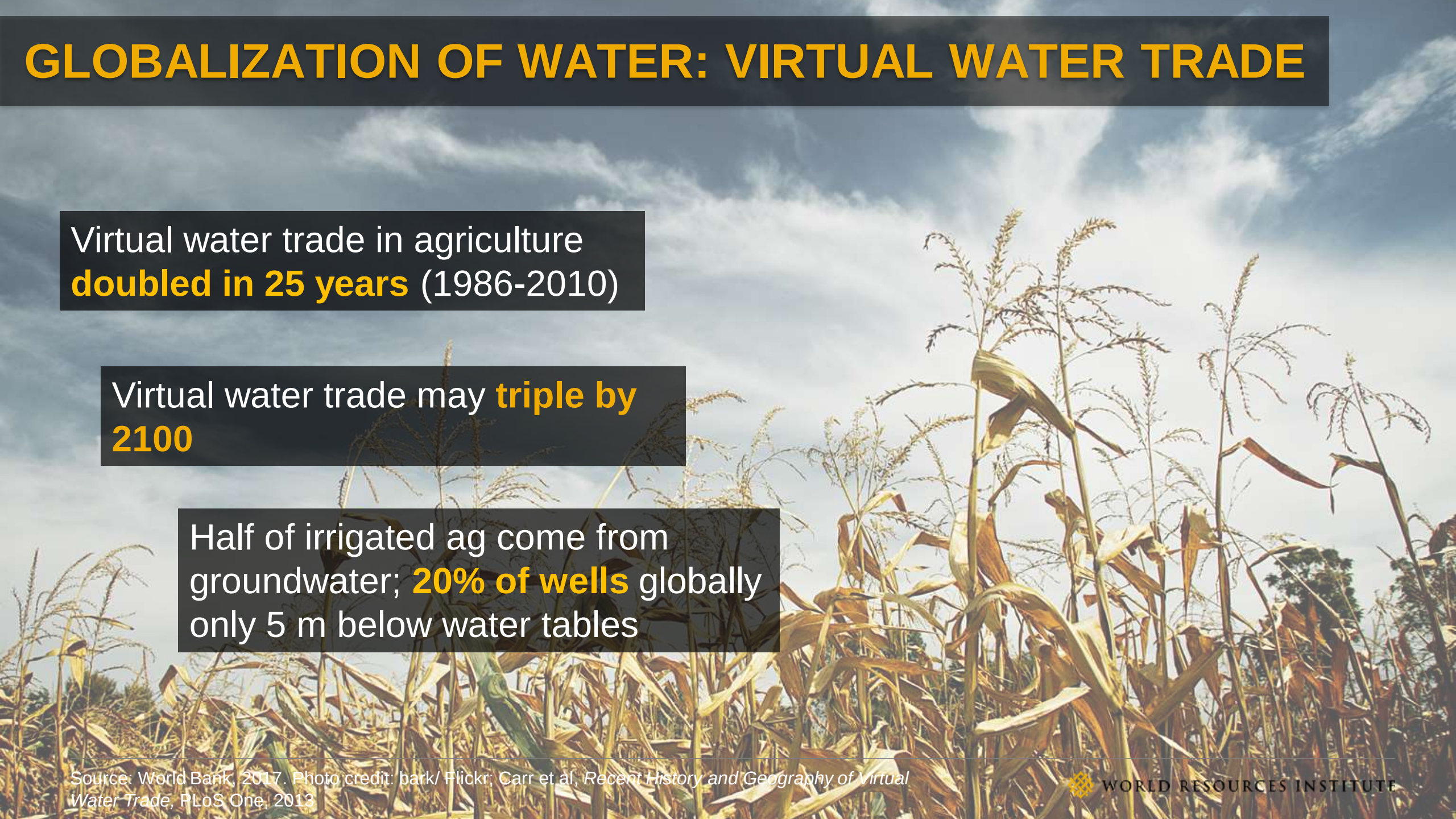
Source: WRI Aqueduct

GLOBALIZATION OF WATER: VIRTUAL WATER TRADE

Virtual water trade in agriculture **doubled in 25 years** (1986-2010)

Virtual water trade may **triple by 2100**

Half of irrigated ag come from groundwater; **20% of wells** globally only 5 m below water tables



Source: World Bank, 2017. Photo credit: bark/ Flickr; Carr et al, *Recent History and Geography of Virtual Water Trade*, PLoS One, 2013

DRY SHOCKS DEEPEN THE POVERTY TRAP

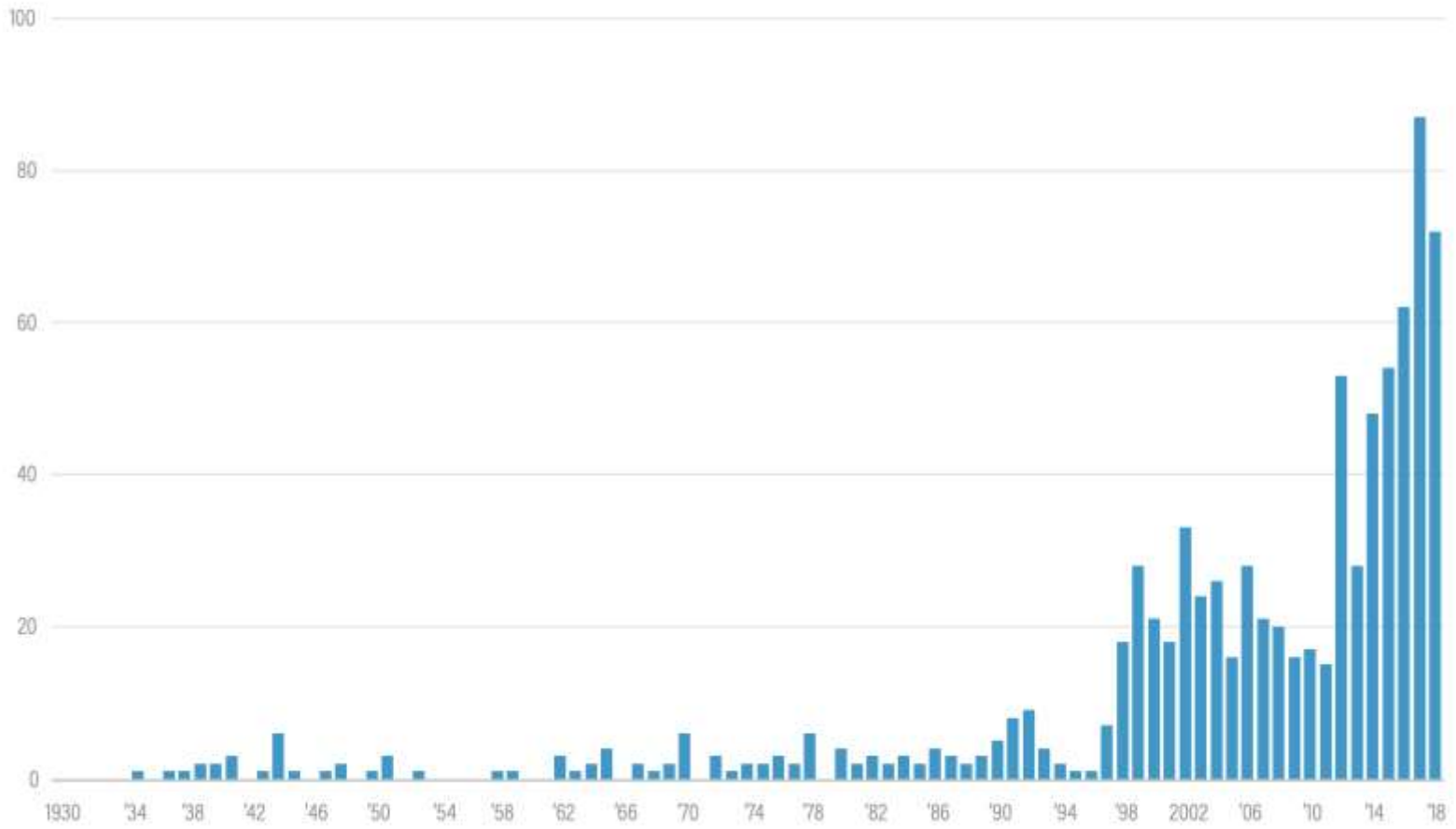
Women who experienced dry shocks in infancy had **8% lower** adult household wealth

29% more likely to have child of low height and weight

Source: UNISDR, FAO Photo credit: Flickr/Heal Pakistan

WATER-RELATED CONFLICT IS INCREASING

Figure 1 | The Trend in Incidences of Violence Associated with Water Resources and Water Systems, 1930 to 2018

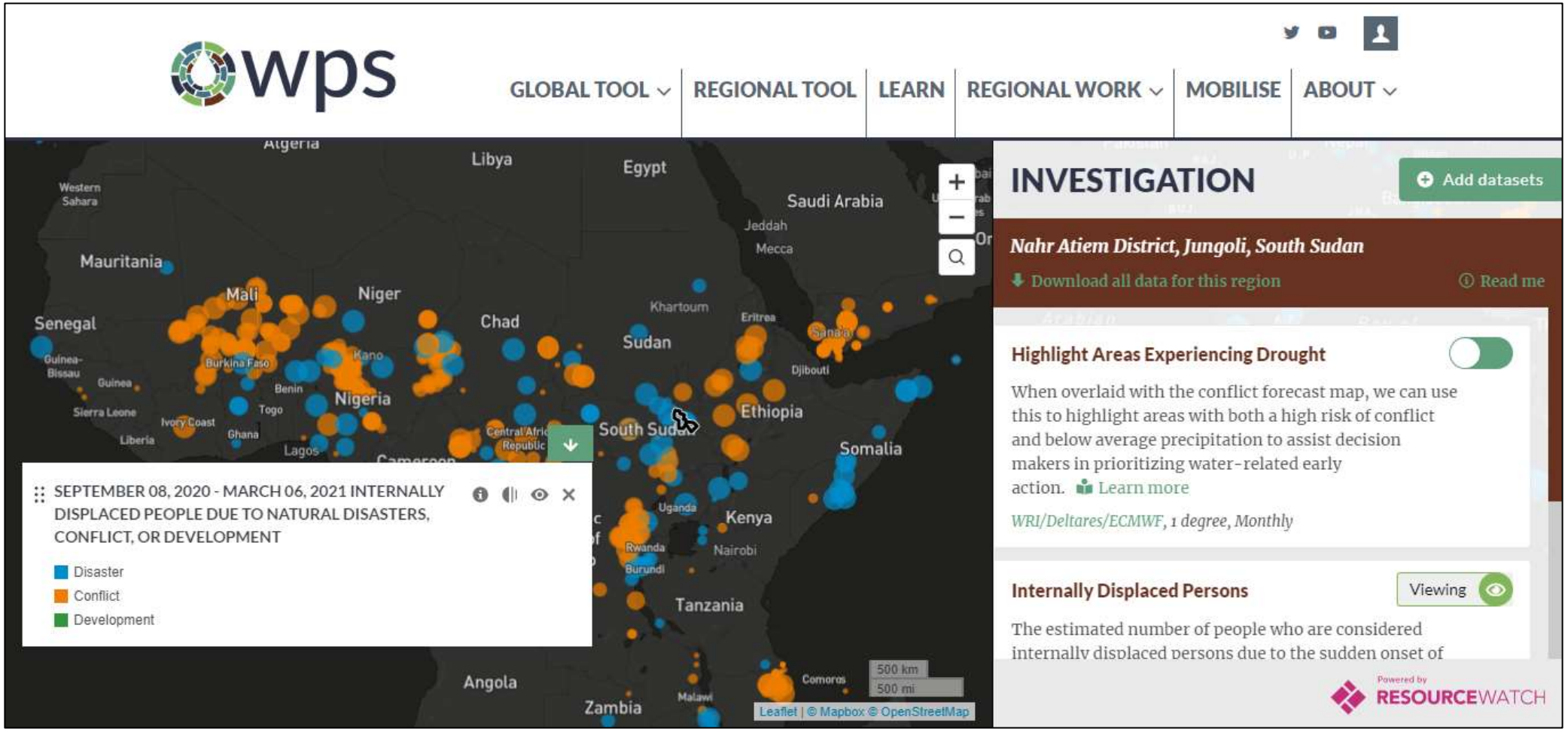


Source: Gleick (2018), October 2019 update.

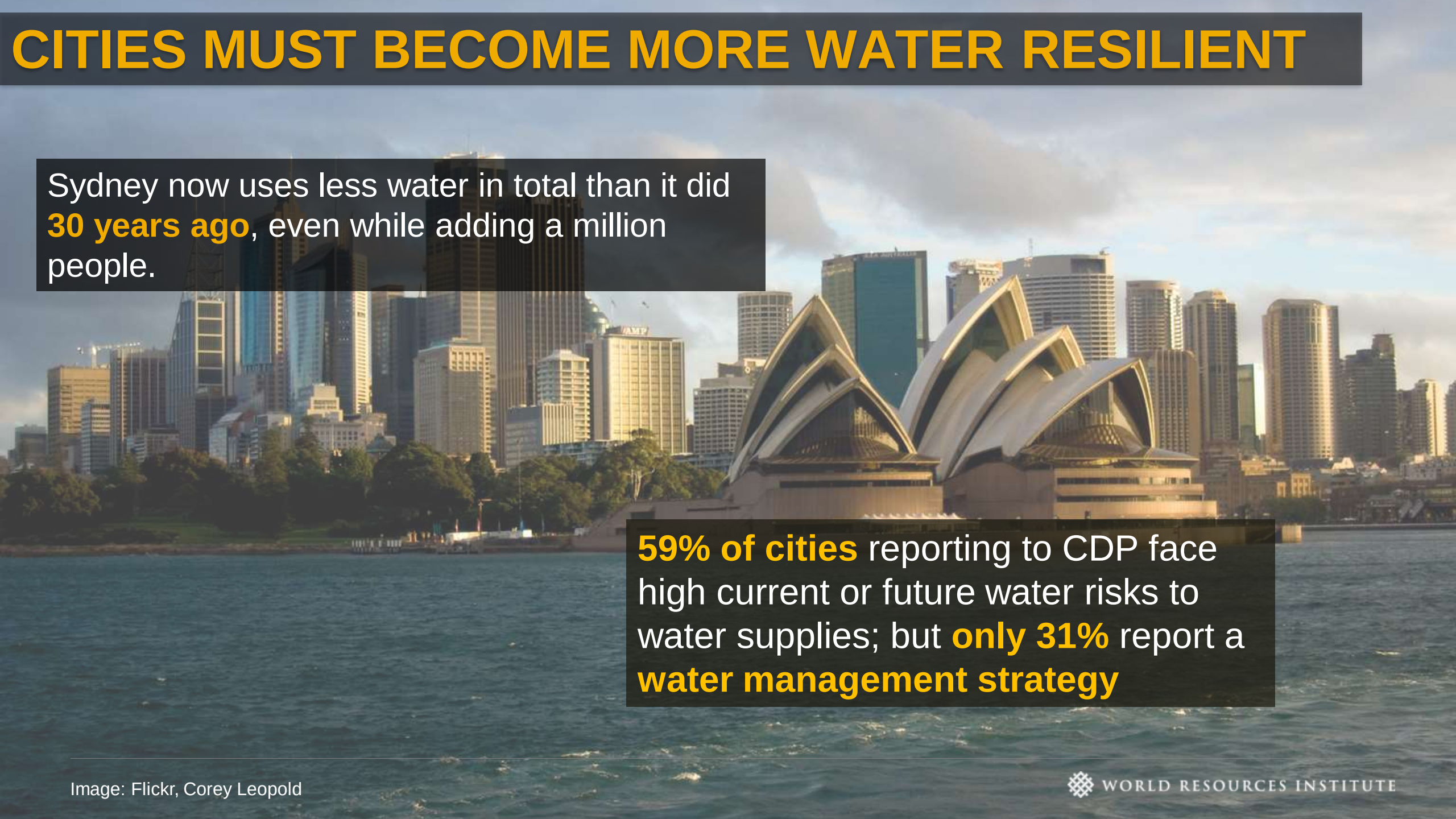
Source: *Ending Conflicts Over Water: Solutions to Water and Security Challenges,* WRI

WATER-RELATED CONFLICT

Displacement of populations due to conflict or natural disasters



CITIES MUST BECOME MORE WATER RESILIENT



Sydney now uses less water in total than it did **30 years ago**, even while adding a million people.

59% of cities reporting to CDP face high current or future water risks to water supplies; but **only 31%** report a **water management strategy**

Image: Flickr, Corey Leopold

INVESTORS SCRUTINIZING PHYSICAL CLIMATE RISK INDICATORS – INCL. WATER

Image: Wall Street Journal

THANK YOU

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