

Is apocalypse real?

SESSION: Water stress: Perplexing possibilities

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**TWO TIMES DROUGHT HIT IN 2017
WORST FLOODS IN 2018**

Source of Image: https://cdn.downtoearth.org.in/library/large/2018-08-23/o.42716000_1535013850_23.jpg



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The Global Water Crisis: Why Are India's Taps Running Dry?

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India's 'worst water crisis in its history' is only going to get worse, government think tank says

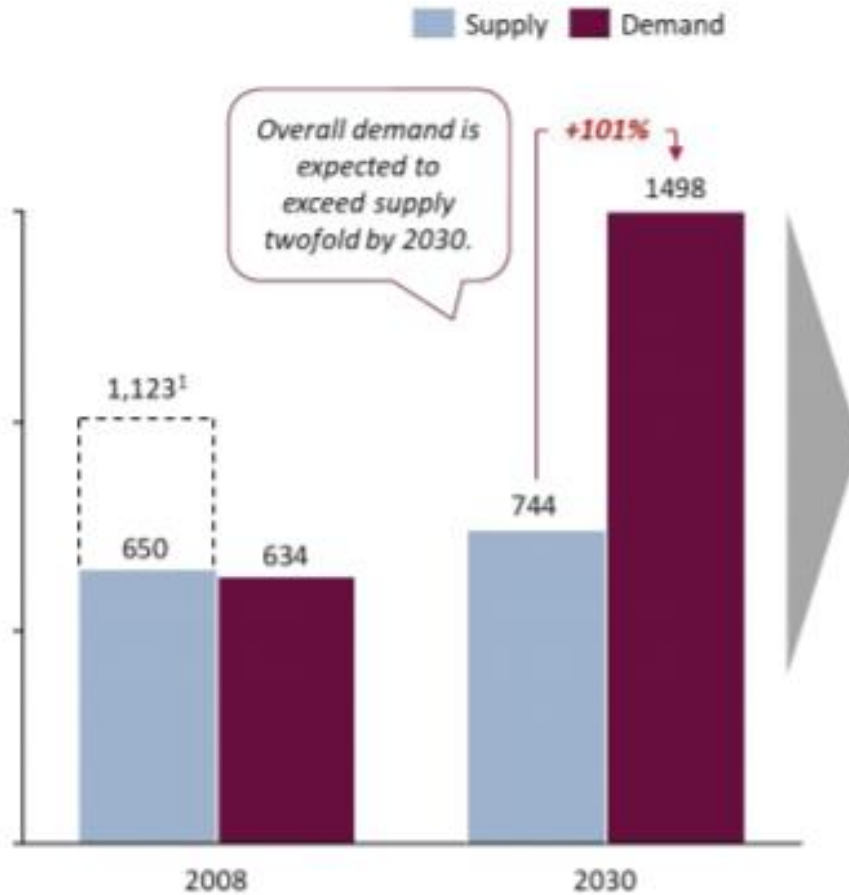
'By 2030, the country's water demand is projected to be twice the available supply'

Mattha Busby | @matthabusby | Sunday 17 June 2018 16:00 |



Grim situation!

Figure 7: Demand and supply of water in India (forecast)^{20,21}
In BCM (2008, 2030)



Facts: Scarcity is on the horizon



40% of the population will have no access to drinking water by 2030.



21 cities, including New Delhi, Bengaluru, Chennai, and Hyderabad, will run out of groundwater by 2020, affecting **100 million** people.



6% of GDP will be lost by 2050 due to water crisis (under business-as-usual).

Source: NitiAayog, 2018

Notes: 1. Water supply for 2008 is Narsimhan's estimate of 650, while the planning commission estimate is 1,123, as represented by the dashed portion of the graph 2. Demand for 2008 is based on the planning commission's estimates 3. Supply and demand for 2030 are projections by McKinsey and Water Resources Group (WRG)

Source: Dalberg analysis; CWC Water & Related Statistics 2013; FAO & UNICEF, Water in India, 2013; McKinsey & WRG, 'Charting our water future', 2009; World Bank; Times of India

Tipping points

A 1.5°C warmer world will see higher sea levels, higher temperatures and increase in frequency and intensity of precipitation, floods, droughts and heatwaves. At 1.5°C, the world would reach some critical thresholds beyond which natural ecosystems would fundamentally change and, in some cases, take millennia to recover.

2°C

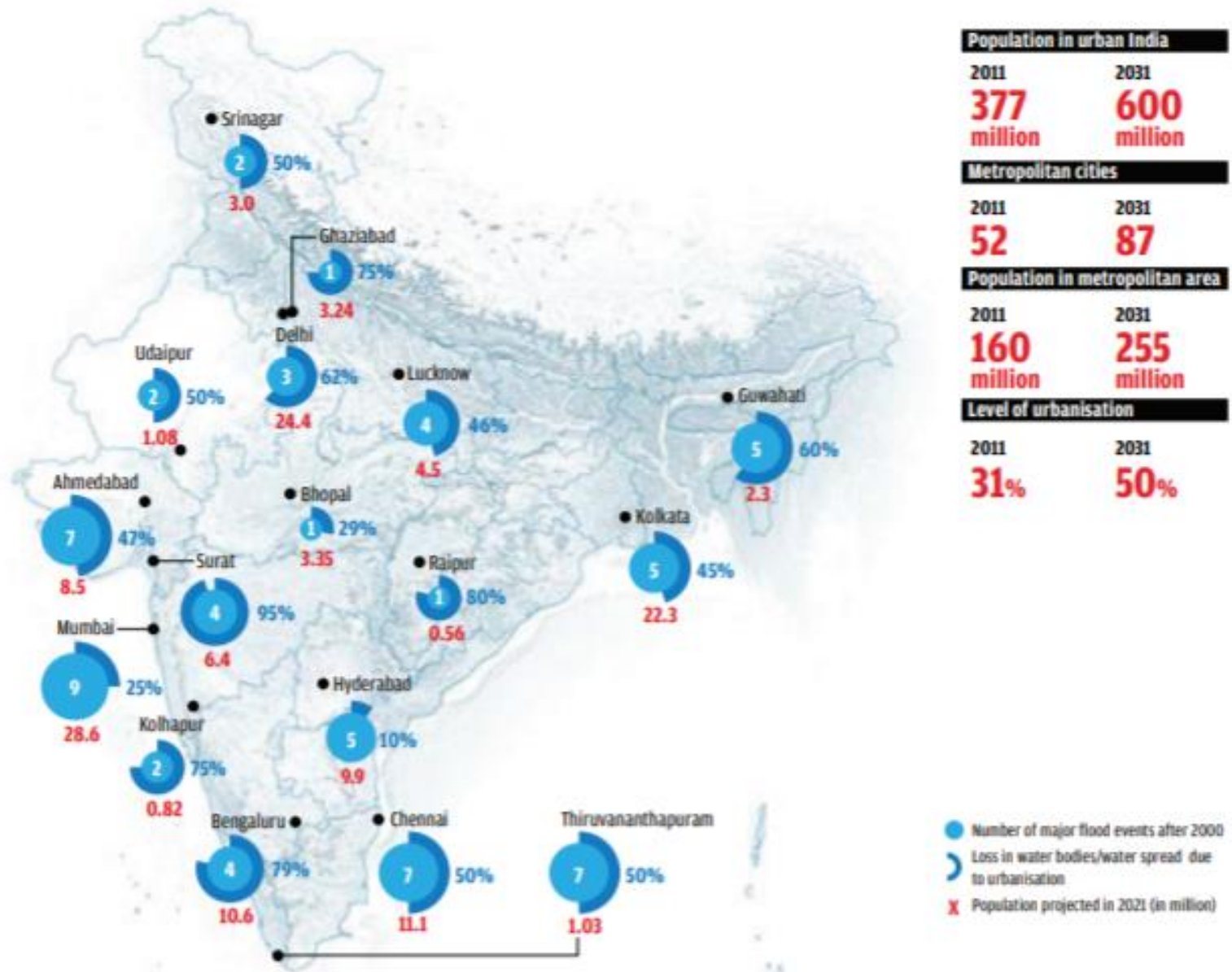
- A 2°C warmer world will lead to 0.1 m greater sea level rise compared to 1.5°C.
- This will effectively inundate vast coastal areas, disrupting the lives of **10 million more people**.
- Countries like India, which are highly dependent on agriculture, would suffer pronounced impacts in the form of **floods, droughts, water scarcity and decrease in food production, exposing a greater proportion of an already vulnerable population to poverty, food and livelihood insecurity**.
- The difference between 1.5°C and 2°C also means decreased crop productivity and nutritional quality, increased risk of vectorborne diseases and a 50 per cent increase in the extinction rates for plants, vertebrates and insect

Let's figure out the real problem:

- Scarcity or lack of understanding?
- From being frugal to a wasteful 'modern' society?



Status of water bodies in India



Source: S. Narain and S. Sengupta, 2016. 'Why urban India floods-Indian cities grow at the cost of their wetlands', CSE

Growing monster

Three years (2014-17), 500 million victims:
worst drought spread across geographical
regions of India

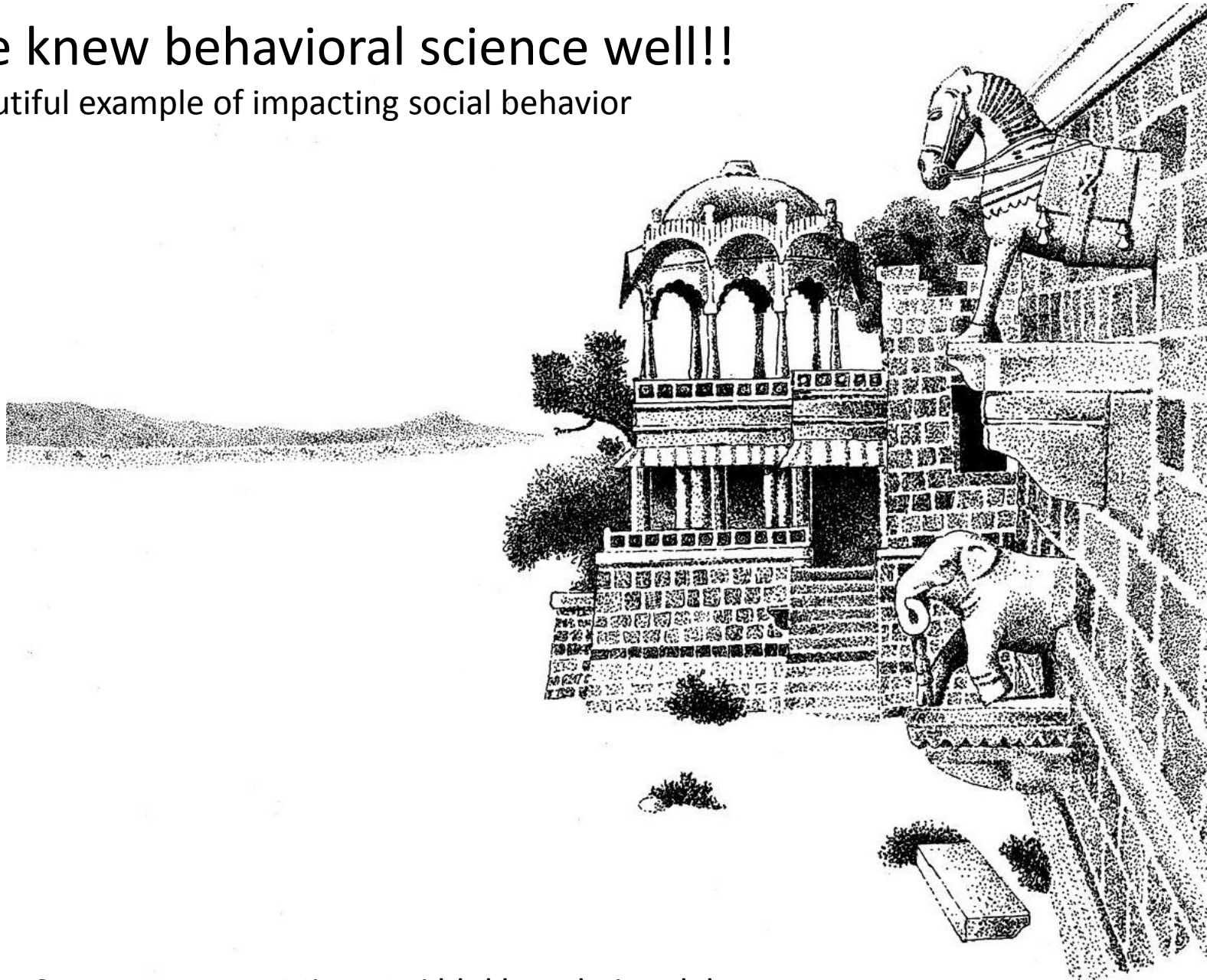
Traditional water economy to modern
water economy: *inevitable*

Transformation path?

**Are there models to emulate or should we
have our own hybrid version?**

We knew behavioral science well!!

Beautiful example of impacting social behavior



Source: Anupam Misra, Aaj bh khare hain talab

आज भी खरे हैं

तालाब



पयविरण कष्ट ॥ गांधी शांति प्रतिष्ठान

सैंकड़ों, हजारों तालाब
अचानक शून्य से
प्रकट नहीं हुए थे।
उनके पीछे एक उकारि थी
बनवाने वालों की, तो
दुहारी थी बनाने वालों की।
यह उकारि, दुहारी मिलकर
सैंकड़ा, हजार बनती थी।
पिछले दो सौ बरसों में
नए किस्म की
थोड़ीसी पढ़ाई पढ़ाए
समाज ने उस उकारि,
दुहारी, सैंकड़ा, हजार को
शून्य ही बना दिया।

Matrix of developing and maintaining water systems by the society for the society

पुराने तालाब साफ नहीं कखाए गए।
और नए तो कभी बने ही नहीं।
साह तालाबों में नहीं,
नए समाज के माथे में भर गई हैं।
तब समाज का माथा साफ था।
उसने साह को समस्या की तरह नहीं,
बल्कि तालाब के
प्रसाह की तरह ग्रहण किया था।

Sar developed first and settlements followed in the most arid region of the country

- Can we together revive our traditional wisdom and create our own 'hybrid' modern version of water future?

Approach

- **Accept**-Rain has become more variable, unseasonal and extreme
- **Augment** water resources- based on sound integrated water planning and 'people' centric
- Revise/update **drought codes**
- **Reduce** water usage in ALL sectors
- **Benchmark** water use and set dynamic targets

Possible strategies

Holistic planning

- Plans as per urban ecology (regional and local scales)/watershed approach
- Deal with the issues at macro (city level) and micro level (buildings etc)

Regulatory

- Introduce regulations/codes and standards that help plan climate resilient infrastructure
- Revise existing codes to reflect requirement for efficiency upgrade
- Implementation needs to be strengthened
- Revise and update Drought codes

Technology and Design

- Apply integrated approach to an efficient design
- Technology upgrade (fixtures/equipment/plumbing) that are cost competitive

Social and environmental

- Introducing mindset changes through proper awareness (on reuse of treated water for flushing etc)
- Ensure health and hygiene standards (issue of inequity to addressed/proper harvesting of rain water)

Pricing

- Depoliticise pricing: Pricing of water should reflect actual cost to the supplier

Monitoring and maintenance

Thank you

- Questions?