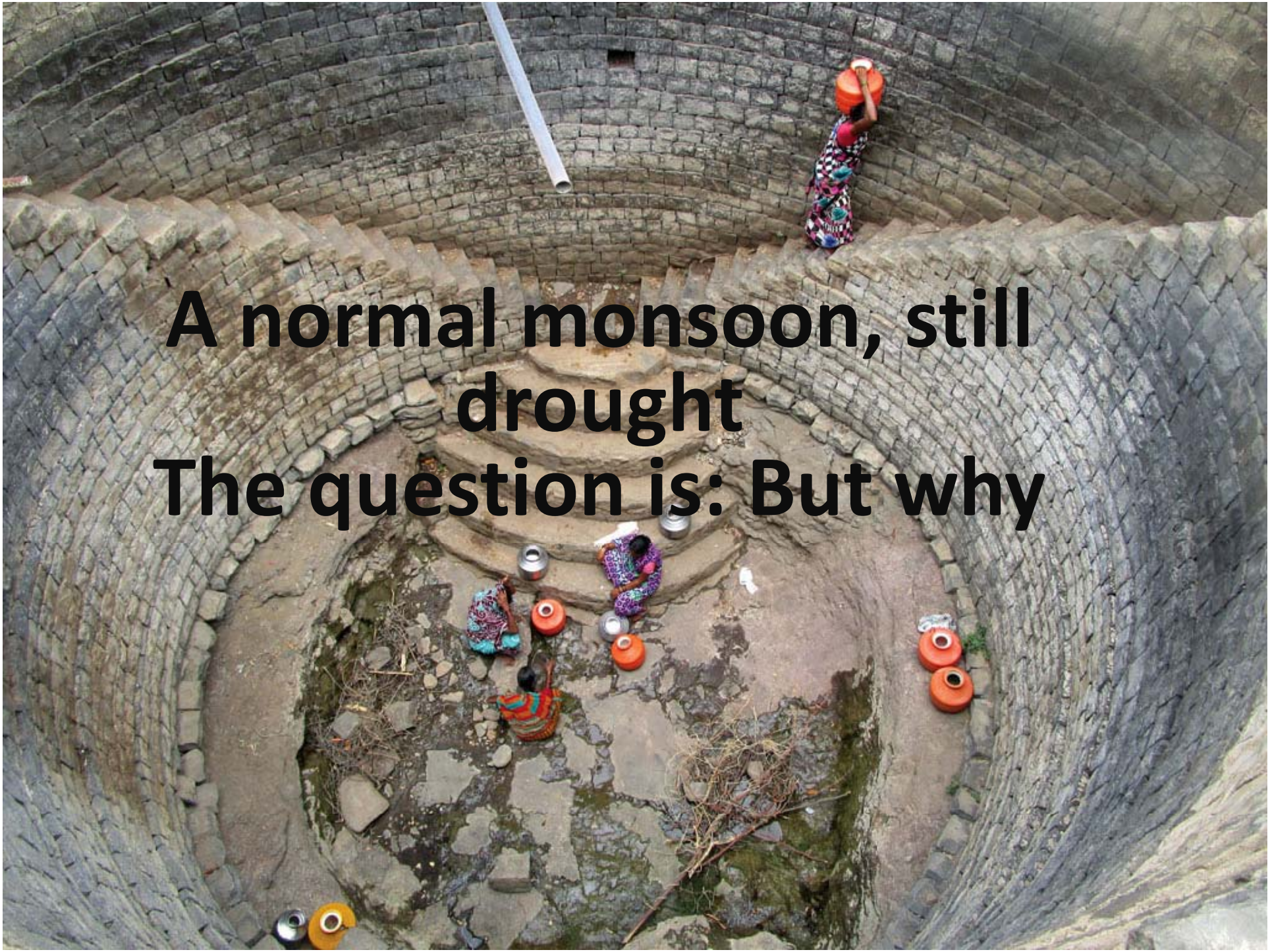
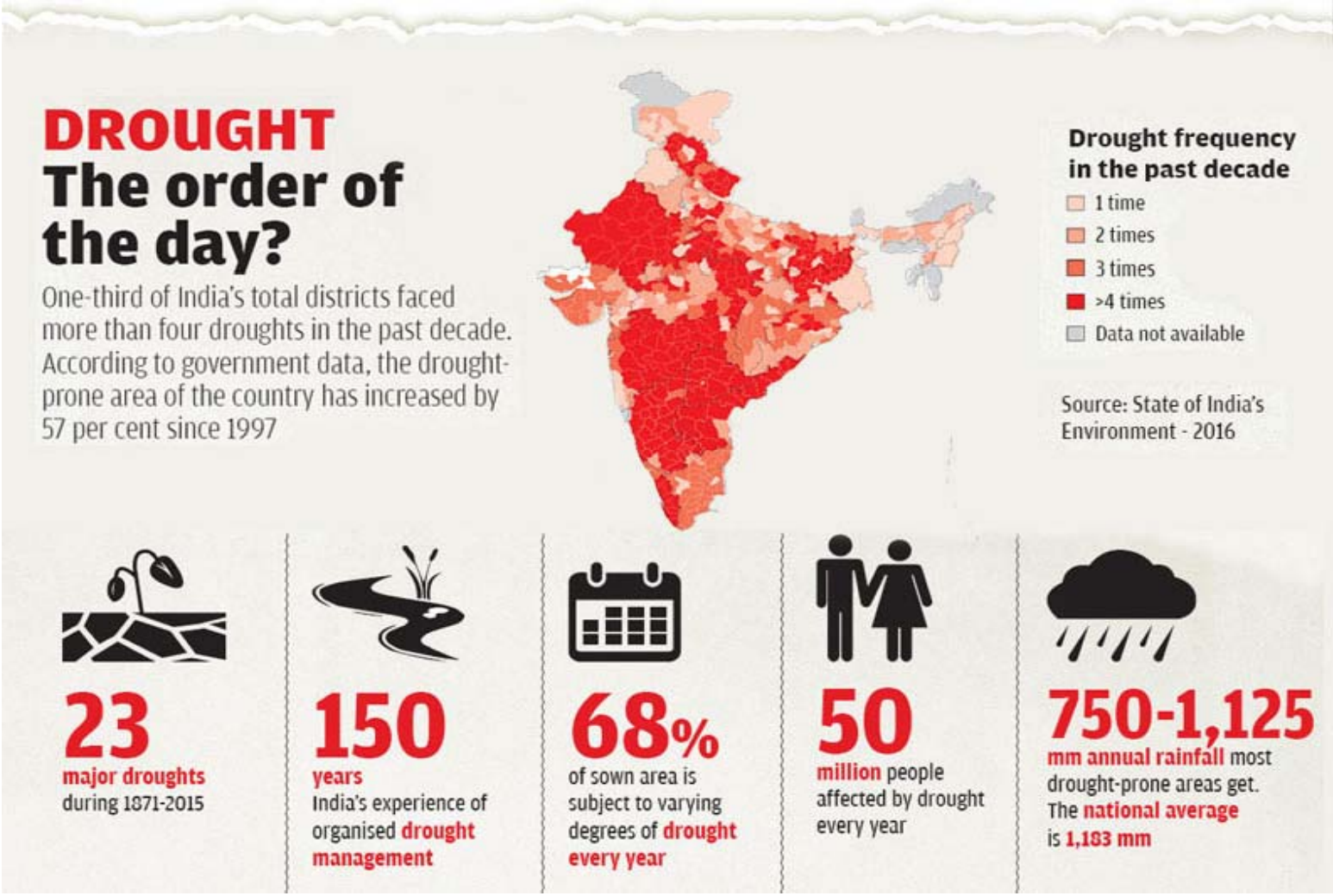

A normal monsoon, still drought
The question is: But why

DROUGHT, but why

DROUGHT, but why



DROUGHT, but why

- In the last 10 years, MGNREGA has created, on an average, 21 water bodies in every village
- Some 12.3 million water harvesting structures have been built.
- 64% of the total expenditure under MGNREGA was on agriculture and agriculture-related works.
- From its inception in 2006 to March 2016 , the government has spent over Rs 3 lakh crore on
- Of this, Rs 2,30,000 crore has been spent as wage or money that has gone to people directly

DROUGHT, but why

- Drought 2016 is different, and difficult
- Impacts both rural and urban areas
- The failure of the winter monsoon
- The failure of the government

DROUGHT 2016

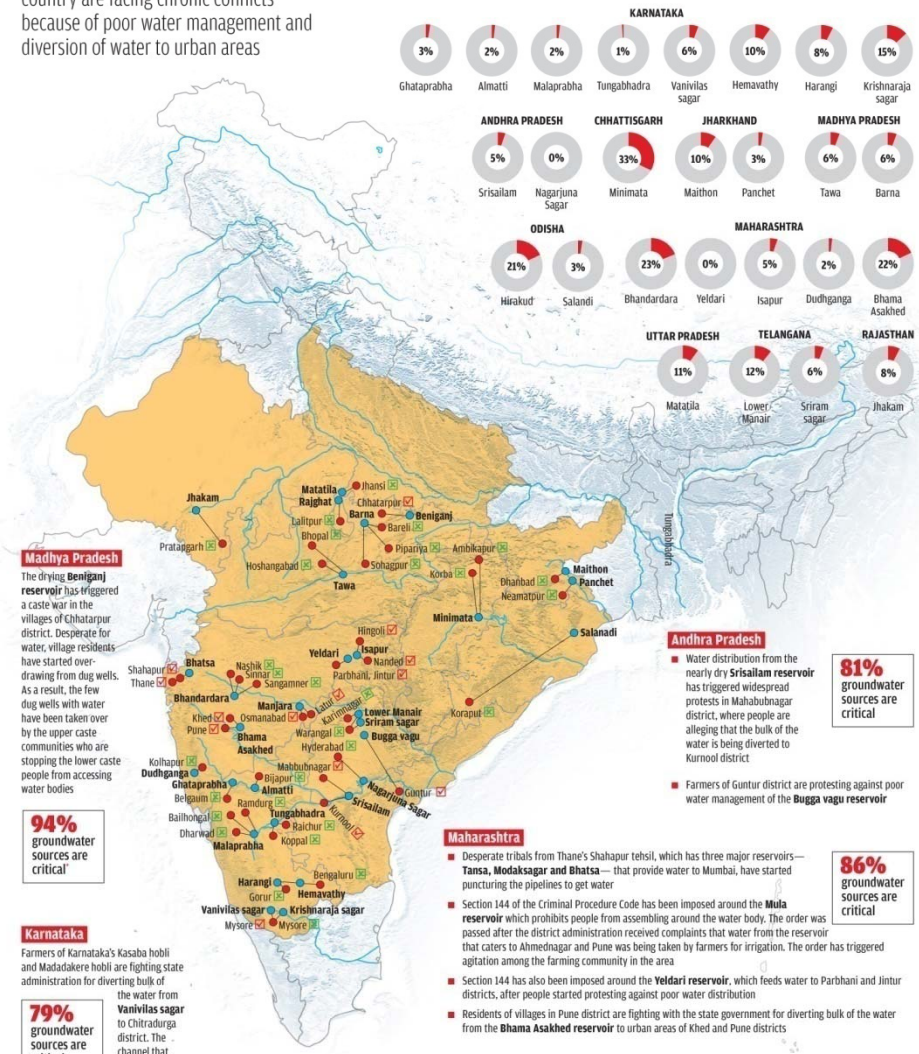
Conflicts over WATER

WORLD ENVIRONMENT DAY SPECIAL

Four of the 10 drought-hit states in the country are facing chronic conflicts because of poor water management and diversion of water to urban areas

Percentage of available water in major reservoirs in drought-affected states

The average water available in the major reservoirs is just 8 per cent (as on May 26, 2016)



Madhya Pradesh

The drying **Beniganj reservoir** has triggered a caste war in the villages of Chhatarpur district. Desperate for water, village residents have started over-drawing from dug wells. As a result, the few dug wells with water have been taken over by the upper caste communities who are stopping the lower caste people from accessing water bodies

94% groundwater sources are critical*

Karnataka

Farmers of Karnataka's Kasaba hobli and Madadakere hobli are fighting state administration for diverting bulk of the water from **Vanivilas sagar** to Chitradurga district. The channel that connects the reservoir with the two villages has also been highly encroached in the recent past

79% groundwater sources are critical

Andhra Pradesh

- Water distribution from the nearly dry **Srisailam reservoir** has triggered widespread protests in Mahabubnagar district, where people are alleging that the bulk of the water is being diverted to Kurnool district
- Farmers of Guntur district are protesting against poor water management of the **Bugga vagu reservoir**

81% groundwater sources are critical

Maharashtra

- Desperate tribals from Thane's Shahapur tehsil, which has three major reservoirs—**Tansa, Modaksagar and Bhatsa**— that provide water to Mumbai, have started puncturing the pipelines to get water
- Section 144 of the Criminal Procedure Code has been imposed around the **Mula reservoir** which prohibits people from assembling around the water body. The order was passed after the district administration received complaints that water from the reservoir that caters to Ahmednagar and Pune was being taken by farmers for irrigation. The order has triggered agitation among the farming community in the area
- Section 144 has also been imposed around the **Yeldari reservoir**, which feeds water to Parbhani and Jintur districts, after people started protesting against poor water distribution
- Residents of villages in Pune district are fighting with the state government for diverting bulk of the water from the **Bhama Asakhed reservoir** to urban areas of Khed and Pune districts

86% groundwater sources are critical

Drought declared states
Reservoirs
Connecting channels
Cities/districts where the drinking water is supplied

Conflict over water: Yes ☑ No ☒

Prepared by DTE/CSE Data Centre
Infographics: Raj Kumar Singh, Shri Krishan and Chaitanya Chandan;
Analysis: Rashmi Verma
Note: * All water bodies with water level more than 2 meters below ground level are classified as critical
Data source: Central Water Commission, Central Groundwater Board and media reports
For more such infographics visit: www.downtoearth.org.in/infographics

India's climate change projections for 2050

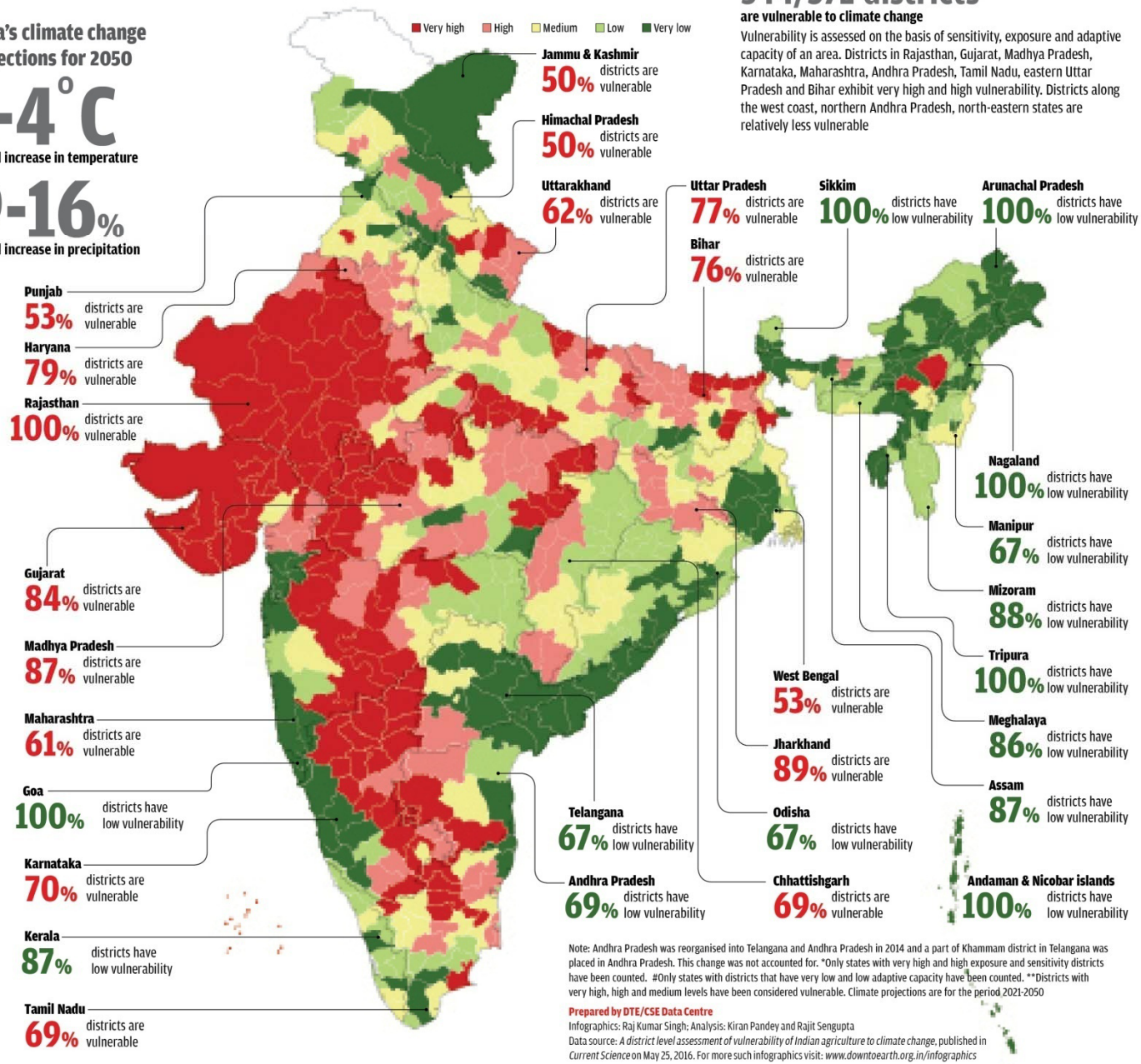
1-4°C
overall increase in temperature

9-16%
overall increase in precipitation

Vulnerability

344/572 districts**
are vulnerable to climate change

Vulnerability is assessed on the basis of sensitivity, exposure and adaptive capacity of an area. Districts in Rajasthan, Gujarat, Madhya Pradesh, Karnataka, Maharashtra, Andhra Pradesh, Tamil Nadu, eastern Uttar Pradesh and Bihar exhibit very high and high vulnerability. Districts along the west coast, northern Andhra Pradesh, north-eastern states are relatively less vulnerable



Jammu & Kashmir 50% districts are vulnerable

Himachal Pradesh 50% districts are vulnerable

Uttarakhand 62% districts are vulnerable

Uttar Pradesh 77% districts are vulnerable

Bihar 76% districts are vulnerable

Sikkim 100% districts have low vulnerability

Arunachal Pradesh 100% districts have low vulnerability

Punjab 53% districts are vulnerable

Haryana 79% districts are vulnerable

Rajasthan 100% districts are vulnerable

Gujarat 84% districts are vulnerable

Madhya Pradesh 87% districts are vulnerable

Maharashtra 61% districts are vulnerable

Goa 100% districts have low vulnerability

Karnataka 70% districts are vulnerable

Kerala 87% districts have low vulnerability

Tamil Nadu 69% districts are vulnerable

Telangana 67% districts have low vulnerability

Andhra Pradesh 69% districts have low vulnerability

Chhattishgarh 69% districts are vulnerable

Odisha 67% districts have low vulnerability

Jharkhand 89% districts are vulnerable

West Bengal 53% districts are vulnerable

Nagaland 100% districts have low vulnerability

Manipur 67% districts have low vulnerability

Mizoram 88% districts have low vulnerability

Tripura 100% districts have low vulnerability

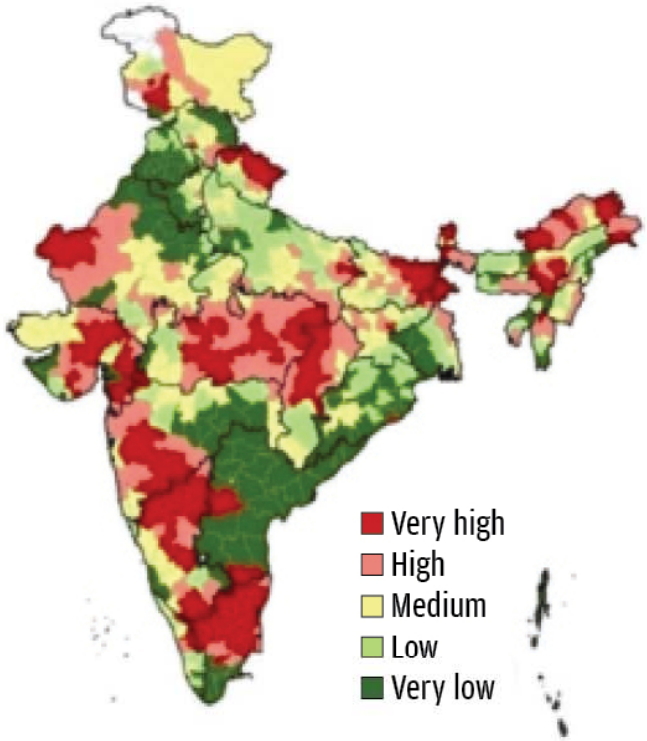
Meghalaya 86% districts have low vulnerability

Assam 87% districts have low vulnerability

Andaman & Nicobar islands 100% districts have low vulnerability

Note: Andhra Pradesh was reorganised into Telangana and Andhra Pradesh in 2014 and a part of Khammam district in Telangana was placed in Andhra Pradesh. This change was not accounted for. *Only states with very high and high exposure and sensitivity districts have been counted. #Only states with districts that have very low and low adaptive capacity have been counted. **Districts with very high, high and medium levels have been considered vulnerable. Climate projections are for the period 2021-2050

Prepared by DTE/CSE Data Centre
Infographics: Raj Kumar Singh; Analysis: Kiran Pandey and Rajit Sengupta
Data source: *A district level assessment of vulnerability of Indian agriculture to climate change*, published in *Current Science* on May 25, 2016. For more such infographics visit: *www.downtoearth.org.in/infographics*

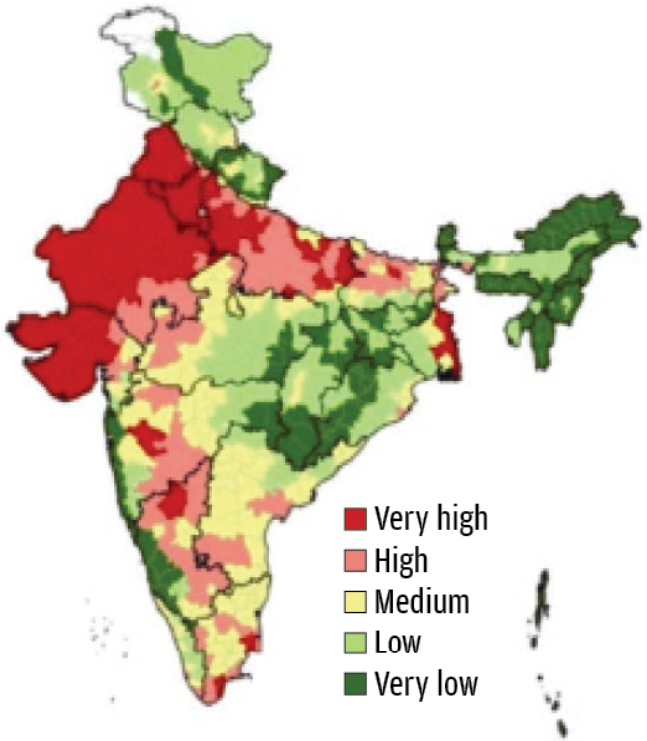


Exposure

21 states*

have districts that are highly exposed to climate change risks

Exposure is defined as the nature and degree to which a system is exposed to significant climatic variations. It includes parameters such as maximum and minimum temperatures and number of rainy days. High to very high exposure is observed in the districts of Madhya Pradesh, Karnataka, Rajasthan, Gujarat, Maharashtra, Bihar, Tamil Nadu, north-eastern states and Jammu & Kashmir. Districts with low exposure are seen in Andhra Pradesh, Odisha, West Bengal, Punjab, Haryana, Rajasthan and Uttar Pradesh

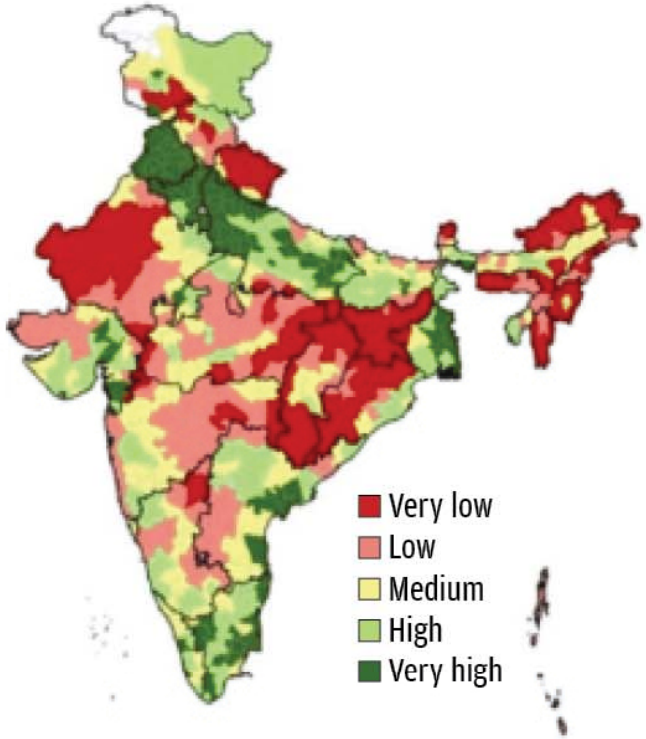


Sensitivity

12 states*

have districts that are highly sensitive to climate change

Sensitivity is the degree to which a region is affected, either adversely or beneficially, by climate-related stimuli. It is determined by demographic and environmental conditions such cyclone and drought proneness, and population density of a region concerned. Most districts in north-west India have very high sensitivity. Sensitivity is found to be relatively low in the eastern, north-eastern, northern parts and along the west coast of the country



Adaptive capacity

17 states[#]

have districts with low adaptive capacity to climate change

Adaptive capacity is the ability of a region to adjust to climate change. It is a function of wealth, technology, education, skills, infrastructure, access to resources, and management capabilities. Adaptive capacity is found to be very low in the eastern and north-eastern states, Rajasthan, Madhya Pradesh, peninsular and hill regions. Adaptive capacity is high in Punjab, Haryana, western Uttar Pradesh, and Tamil Nadu

DROUGHT, but why

- Chhattisgarh, Odisha and Jharkhand: $400 million/year loss in a drought year
- 13 million people fall below poverty line
- “Inadequate rain” and drought two biggest disasters
- Bundelkhand: 15th consecutive crop loss; Marathwada: 5th consecutive deficit rain

DROUGHT, but why

- 42% of cultivable lands in drought prone districts
- 68% lands are rainfed; so dependent on monsoon entirely
- Impacts food security; Green Revolution areas will not meet the demand
- The drought-prone districts are the saviour

DROUGHT, but why

- Water use is changing, both in rural and urban
- India doesn't have credible water data
- Water inequity is very high
- So, what to do? "Hydrocide"

DROUGHT, but why

- It is not a drought
- Drought has nothing to do with deficit monsoon
- Rain/water doesn't have anything to do with suicide
- Then, who is responsible

DROUGHT, but why

- There are villages in the same areas who don't see a drought
- They have raised their income by even 700%
- They have not spent extra; don't depend on takers
- And, they are not using rocket science

DROUGHT, but why

- In 10 years India can be drought-proof
- Barmer: 100 mm rain but never water crisis
- In 1 Ha, harvests 10 lakhs litres of water
- Enough to meet drinking and cooking water needs of 182 people at a liberal 15 litres per day

कैसे 10 साल में एक गांव को सूखा रहित करेंगें |

उदाहरण दर्शाते हैं कि सूखा रहित क्षेत्र का निर्माण अत्यधिक जल दुर्लभ क्षेत्र में भी संभव है। प्रस्तुत है चार स्तरीय सूत्रः

0-2 साल

फोकस: परंपरागत जल संरचनाओं को पुर्नजीवित करना एवं जल में निवेश करना

क्षमता: प्रत्येक गांव के पास अनुमानतः 340 हेक्टेअर भूमि है जो वर्षा के 3.75 बिलियन लीटर पानी को इकट्ठा कर सकती है। यह पीने, घरेलू एवं सिंचाई जैसी बुनियादी जरूरतों के लिए पर्याप्त है।

अवसर: मनरेगा ने औसतन प्रत्येक गांव में 21 जल संचयन संरचनाएं बनाई हैं; लगभग डेढ़ लाख इस वर्ष के लिए नियोजित की गई हैं।

प्रभाव: पानी की उपलब्धता सुनिश्चित करने के लिए एवं अनियमित मानसून से लड़ने के लिए दो वर्षों में, काफी पानी, संग्रहित एवं रीचार्ज हो जाएगा।

3-5 साल

फोकस: कृषि पुनरूद्धार से पानी की भविश्य की उपलब्धता को हाथ में रखना

क्षमता: प्रत्येक मनरेगा संरचना भूमि के एक हेक्टेअर को सिंचित कर सकती है, छोटे एवं सीमांत किसानों के लिए द्वितीय फसल सुनिश्चित कर सकती है।

अवसर: मनरेगा कुछ समूहों की निजी भूमि पर कृषि गतिविधियों की अनुमति देता है; सरकारी नये बीजों का वितरण एवं फसल बीमा किसानों को साहस देगा।

प्रभाव: सही फसल मिश्रण के साथ, तीन साल के अंदर एक किसान आय को दोगुने से भी अधिक कर सकता है। कृषि मानसून के प्रदर्शन पर निर्भर नहीं है।

6-8 साल

फोकस: पशुधन एवं मत्स्य पालन का पुनरुद्धार

क्षमता: पशुधन पालन शुरू कर सकते हैं; कोई भी एक उत्पादक गाय से ₹85 प्रतिदिन कमा सकते हैं, जो ग्रामीण गरीबी रेखा का लगभग 4 गुना है।

अवसर: मांसाहारी भोजन एवं डेअरी उत्पादों की मांग स्वाभाविक है; अध्ययन बताते हैं कि राजस्थान में एक किसान कृषि की तुलना में 10 बकरियों के झुंड से दोगुना कमाता है।

प्रभाव: सूखे के परिणामों की आर्थिक तंगी से प्रभावित लोगों के लिए आय के पूरक स्रोत

9-10 साल

फोकस: बागवानी और वृक्षारोपण

क्षमता: किसान इससे नगदी कृषि अपना सकता है; वर्तमान में बागवानी कृषि अर्थव्यवस्था को चला रही है और खाद्यान्नों की अपेक्षा अधिक लाभकारी है

अवसर: सरकार का बागवानी पर अपना फोकस है; एक राष्ट्रीय मिशन किसानों को मदद करता है

प्रभाव: मानसून एवं निवेश की अतिरिक्त पूंजी के लिए बीमित। आठवें साल तक सूखा रहित बनाने के लिए यहां पर उदाहरण

DROUGHT, but why

- Average Indian village needs 1.12 hectares to capture 6.57 million litres of water
- It will use in a year for cooking and drinking
- If there is a drought and rainfall levels dip to half the normal, the land required would rise to a mere 2.24 hectares.
- The amount of land needed to meet the drinking water needs of an average village will vary from 0.10 hectares in Arunachal Pradesh (average population 236) where villages are small and rainfall high to 8.46 hectares in Delhi where villages are big (average population 4769) and rainfall is low.