# Implementing Drought Resilience through Strategic Sub-national Climate and Economic Action Planning in India: Challenges and Successes



WRI India's report spotlights the Climate Hazard & Vulnerability Assessment (CHVA) framework, highlighting the need to integrate equity into climate action planning

Capturing differential vulnerability to climate hazards like droughts for which the extent and severity of risks depend highly on the socio-economic conditions and adaptive capacities requires extensive technical domain and local insight. CHVA provides a highly flexible, nuanced yet easily scalable and tailorable approach to assessing and measuring vulnerability through social, cultural, economic, and political factors. The methods and datasets used are sophisticated techniques setting baselines for climatic and environmental factors inter-linked to droughts at various scales. The tool enables a better understanding of how the social landscapes of cities and their positions with respect to their hinterlands interact with hazards and create differential impacts.

Vulnerable and impacted groups identified:

systems & resources



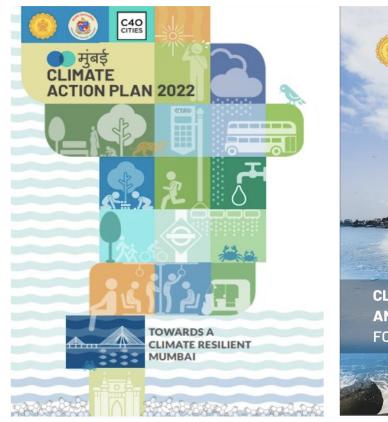








### **Policy Impact**



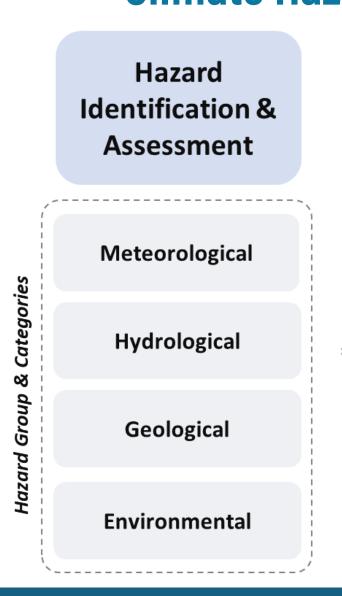


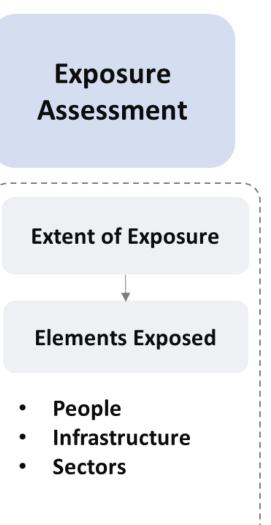
In 2022, Mumbai launched south Asia's first city level GHG inventory, climate vulnerability assessment, and climate action plan (MCAP).

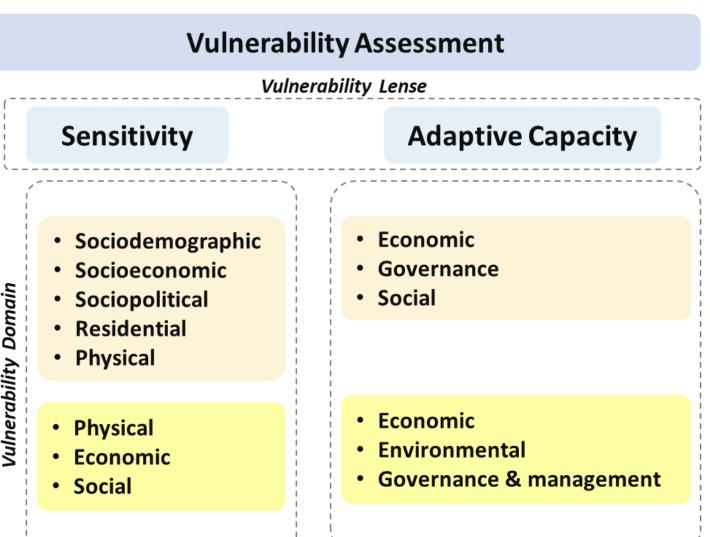
Scan the QR code for the full report & details:



## **Climate Hazard & Vulnerability Assessment Framework**

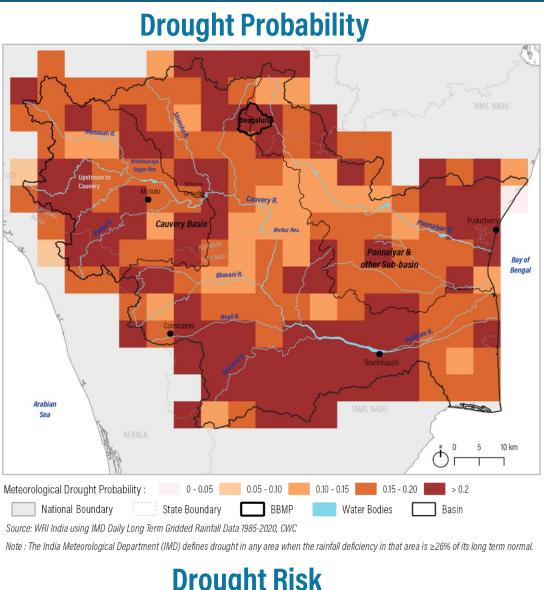


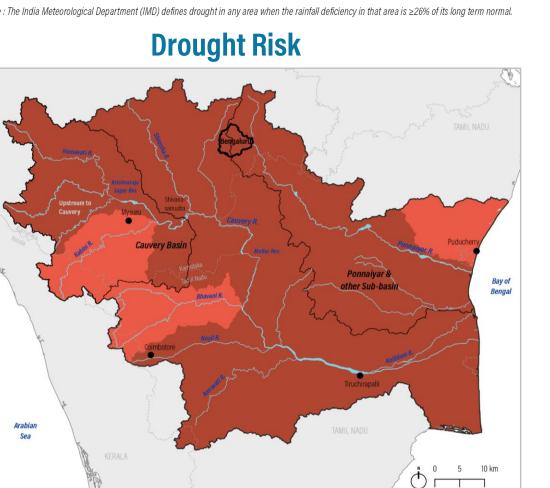




# **CHVA framework application**

**Snippets from Bengaluru Climate and Resilience Action Plan (BCAP)** 

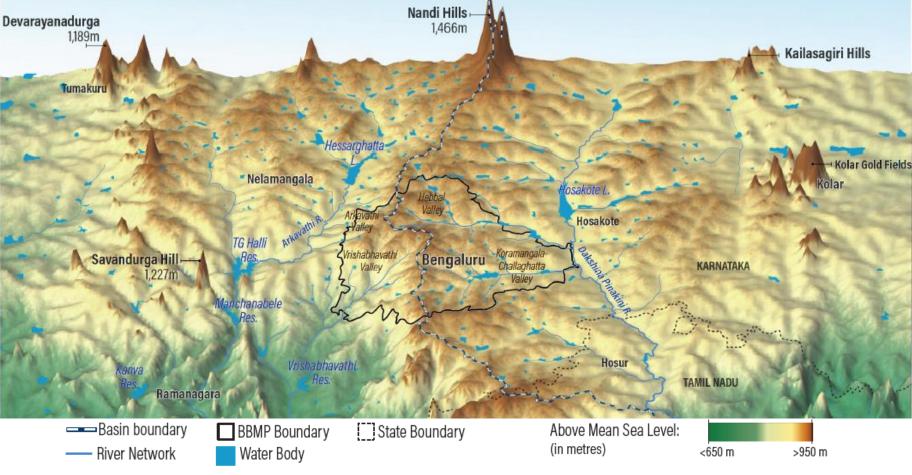




Note: The drought data available at 5 x 5 arc minute resolution is averaged for each hydrological sub-basin Temperature and rainfall are the two critical climatic parameters, thoroughly studies as part of BCAP, that can larger hydro-meteorological conditions and resource balances of the region.

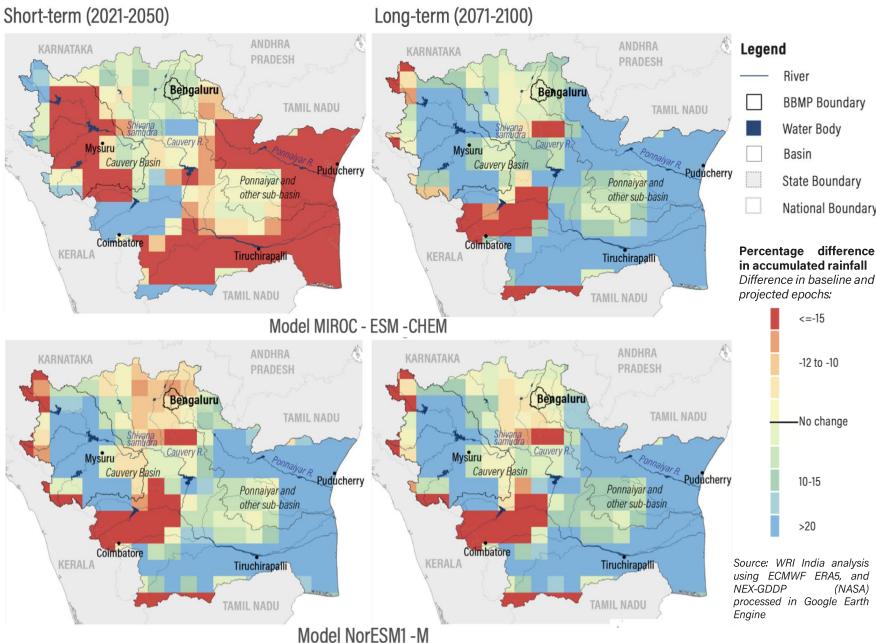
Source: WRI India 2022, CWC, WRI Aqueduct (2000-2014)

### **Regional Topography: Understanding the Watersheds**



Source: Exaggerated relief visualisation; WRI India using Shuttle Radar Topography Mission (SRTM) (refer to CCRA-VA report for details)

#### **Projected Changes in the Rainfall for the region**



Based on the historic rainfall data (1985 to 2020), nearly 50% area upstream to Cauvery (major river basin for Bengaluru) shows meteorological drought probability of >20% indicating higher susceptibility to drought. Based on the water resource availability and usage, 84% the study area is also associated with the 'Very High Risk' of drought.

One third of the city is assessed to have declined in ground water recharge potential between 2000-2020. Analysis shows that the most groundwater observation wells within the city record a decline in groundwater levels in the pre-monsoon period. The current stage of groundwater extraction in more than half of Bengaluru Metropolitan region is defined as 'Over Exploited'.





Mumbai's Climate Action Plan & Climate Budget Report

Asia's first urban local body to release a climate budget -1/3rd of the total capital expenditure budget is climatealigned & is largely water resource management focused.



Bengaluru municipal corporation is working to improve the city's water resilience as part of the BCAP

municipal corporation City conducting an ongoing initiative to collect data on open wells in the city using citizen participation techniques.



Scan the QR code for the full report



India's first state-wide heat mitigation strategy that focuses on food-water-energy, and human-animal-plant health nexus at both urban and rural scales.

The document shares strategies to combat variations in monsoons, droughts, rising temperatures, & urban heat island.

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