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In times of drought, history shows us the scientific way to conserve water

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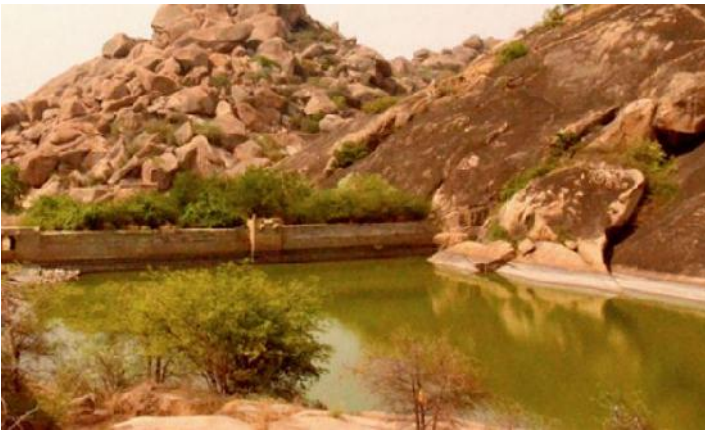
CHITRADURGA: Surrounded by giant boulders, the possibility of the Chitradurga Fort holding enough water might appear remote. However, three centuries ago, the fort's efficient water conservation system could sustain the city's populace even in times of drought.

According to the Indian Meteorological Department, average rainfall in Chitradurga over the past 50 years has been 65cm, qualifying it as a semi-arid region.

Three centuries ago, the fort enclosed a small city. "The diameter of the fort is roughly 35km," said Lakshman Telagavi, a retired professor of history at Kannada University, Hampi, who has authored several books on

Chitradurga. He added that the fort we see to day is the result of nearly 800 years of labour. While the hilly terrain, coupled with the fort's ingenious design, provided defence against human adversaries, how did the rulers ensure the inhabitants of the walled city never died of thirst?

"The annals of Chitradurga's Palegars indicate that drought was common in the region," said Prof Telagavi. At a time when the state is grappling with an unprecedented water crisis, a study of the rainwater harvesting technique within the Chitradurga fort complex - a series of interconnected ponds that could, according to popular lore store water for 12 years in the 18th Century - would be an edifying exercise.



Much like the fort itself, not all tanks were constructed by a single king or dynasty. Successive rulers deftly ensured that additions to this system were seamlessly integrated within the existing ones. The ponds, dug into the face of the hard rocks served as bowers for rainwater. The topography had a huge role to play in the success of the system - rainwater washed off the surface of the water-resistant boulders, and collected in these massive ponds. By the time Chitradurga Fort fell into the hands of Haider Ali in 1779, the fort had one of the most efficient water conservation systems in the state. "The population of Chitradurga in the 18th century must have been approximately 50,000," said Prof Telagavi. Gopalswamy Honda or Gopalswamy Tank, in front of a temple of Venugopalswamy lay at a higher elevation, and excess water collected in the pond emptied itself into the Jodi Kola or the twin ponds, called the AkkaThangi Honda, which lay about 200m to 250m downwards. A small passage or canal connecting the two ponds can still be discerned. A stony barrier served to dam the water in Gopalswamy Honda, while an outlet etched into this wall carried excess water to the ponds at a lower elevation.

"Gopalswamy Honda is a gorge. It's believed the pond has never gone dry. Its width is approximately 60ft and depth is approximately 40ft," said Prof Telagavi. The Akka Honda, where the water from the former tank is first collected is about 30ft wide and as many feet deep, where yet another small outlet carried the water into the Thangi Honda.

Standing about 1km south of a spot that has become synonymous with the valour of Kannada women in popular imagination -Obavvana Kindi -one sees the Sihiniru Honda, where the surplus water from Thangi Honda was deposited. "Water collected in this pond always remained cool, and tasted very sweet. Hence the name," said KS Basavaraju, a guide, who has a degree in history from Kuvempu University. A well laid out drainage system at the entrance to Sihiniru Honda was meant to carry water into Santhe Honda, in the Chitradurga town today.

"Sensible earlier rulers, taking advantage of the undulating topography created interconnected waterbodies in Karnataka," said Prof TV Ramachandra, of the Centre for Sustainable Studies, Indian Institute of Science. A study on the water situation in Bengaluru he was a part of emphasises the need for seamless connectivity between lakes and ponds in cities. The channels that connected the ponds in Chitradurga Fort, and the role they played in water conservation, attest to the need for obstruction-free storm water drains.

The rulers of Chitradurga also made optimal use of the steep incline of the hill to minimise loss of water. The crevices in the rocks, coupled with the naturally occurring hollows on the hill served to collect excess water. Indents made at spatial intervals on the walls points to the presence of a simple, yet effective drainage system. Guided by the sloping surface, excess water was collected in a moat at the entrance to the fort. "The water in the moat helped re charge groundwater aquifers that was collected in the Kamana Bhavi or Sisandra (deep wells) near the entrance," said Prof Telagavi.



Chikkaballapur temple tanks that never ran dry

About 200km to the south of the Chitradurga Fort stands the diminutive Bhoga Nandeeshwara Temple in Nandi, Chikkaballapur district. Nestled at the foot of the Nandi Hills, the temple, more than a millennium old, houses three ponds.

Constructed by more than three dynasties - Cholas, Hoysalas and the Vijayanagara rulers among them - the temple's biggest pond is Shungi Thirtha.

"Shungi means horn. Myth has it that Shiva's transport, Nandi dug a huge hole in the earth with his horn, from which water sprouted. Hence the name," said Kalvamanjali Gopal Gowda, who has authored a book Nandi mathu Rangastahla, on the pilgrimage centres in Chikkaballapur.

Historically, the square tank dates back to 500 to 600 years, and was constructed by the Vijayanagara Kings. The three ponds in P Anjanappa, 85, who was the temple's convenor for 20 years pointed out that the three tanks in the premises never ran dry till 50 years ago.