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DRINK OF LIFE ON DEATHBED

RABINDRA KUMAR PANDA

Odisha receives 231 BMC (billion metre cube) rainfall annually. Its average annual rainfall is 1,500 mm, nearly 80% of which occurs from June to September. Due to lack of proper management of this resource, the state experiences water shortage in rural and urban areas and faces floods and droughts at frequent intervals.

The effects of climate change have aggravated things. Uneven rainfall distribution and high evaporation have made water scarce in many parts of the state in the pre-monsoon period.

Groundwater is one of the most dependable sources of water for the domestic needs of over 80 per cent of the rural populace and half of the urban population, and also for irrigating 38-45 per cent of agricultural land. Due to overexploitation, the groundwater in 24 out of 30 districts has been depleting both in terms of quantity and quality, the Central Groundwater Board has said.

Appropriate site-specific rainwater management — through conservation, recycling, and recharging of structures — can solve the problem to a great extent. Rain-fed paddy is the major crop of the state. But its yield is affected by erratic rainfall. Small ponds of appropriate size can be used to retain excess rainfall for supplemental irrigation during long dry spells and to meet the initial water demand of post-monsoon crops.

Detailed field investigations of major groundwater basins have revealed that the level of groundwater in central and western parts of Odisha shows a declining trend. Continuous groundwater level-monitoring, spatio-temporal recharge estimation and modelling in the mid-Mahanadi basin have shown that the total groundwater explored exceeds the region's net recharge. This calls for low-cost artificial recharge measures. The regions using surface water extensively are going to see waterlogging in the next few decades, whereas groundwater-dependent areas will face extreme water scarcity by 2030. The groundwater level of a region is highly influenced by the stage of the rivers in it. With erratic rainfall and increasing industrial demand on river systems, the groundwater levels are declining.

A drought hotspot analysis shows that the net area under severe drought is increasing and also changing due to changing rainfall pattern. Site-specific soil moisture conservation measures can mitigate drought severity. Long-term soil moisture forecast on a regional scale using satellite-derived products and simulation optimization approaches have been found to be helpful.

The conjunctive utilization of surface and groundwater through an accurate understanding of surface and groundwater interaction is a promising practice. The mapping of potential recharge zones and protecting them from activities like infrastructure development and dumping of contaminants is critical. Construction of artificial recharge structures at those potential recharge zones will enhance water table elevation. Understanding site-specific issues in different regions is a challenge because of the unavailability of monitored data on various parameters. Each location has typical issues and needs site-specific solutions. Collaborative work by multiple organizations working in the domain and data sharing is the way forward.

(The author is professor and head of the School of Infrastructure at IITBBS)

RANJAN K PANDA

We are a forgetful society. As the monsoon showers bring much-awaited relief from the long spell of heat, we forget the fact that our water reserves are getting depleted every year. In case the monsoon is delayed, or the heat gets worse than usual, we suddenly realize that our reservoirs are dry and our farmers are facing a tough time.

Almost half of India is suffering from an acute water crisis. The crisis is worsening as the extent of water-scarce areas is increasing. Prime Minister Narendra Modi has given a timely reminder to the citizens to harvest rainwater. This is a welcome move from the highest office of government, in a country that harvests only eight per cent of its rainwater.

The Centre has launched a campaign to promote water conservation and plans to promote five targeted interventions — water conservation and rainwater harvesting; renovation of traditional and other water bodies/tanks; re-use and recharge of borewell structures; watershed development; and intensive afforestation.

The intent looks good but it needs to be backed by strong policy action. Our water policies are virtually a wish list, and have not achieved what they were supposed to. If they had, we would not be in such a situation now. The first policy action we need to take is to recognize and restore the traditional water harvesting structures and systems that have the potential to store rainwater for us, recharge groundwater and meet many of our water needs. The large dam-centric water planning of the past several decades has done all that was possible for it to do to destroy these sustainable systems.

What we now need is to go back to some of these good traditions. Odisha can be a model state in this. If we are seriously interested in tackling the water crisis, we need to learn from the good and the bad of these traditional resource management systems.

Take for example the western region of Odisha. It has always been a resource-rich region and also one with a long history of good and sustainable practices to manage these resources. One of the main reason for the frequency of droughts in the area is the neglect of its traditional water-harvesting structures.

Just four decades ago, the drought-prone Kalahandi-Balangir-Koraput districts, known as one of India's most backward zones, combated droughts successfully with a network of about 20,000 traditional tanks built with community participation. Given the undulating topography of the region, these tanks stored water that was later used during the dry months. So, a failure of rainfall caused some scarcity of water but not droughts.

We can go back to this system with some modern applications and innovations, funding support and a strong emphasis on the revival of traditional systems through the strengthening of the Mahatma Gandhi National Rural Employment Guarantee Scheme. Over-dependence on concrete structures of water management, imposed from the top-down, have alienated the locals from decision-making processes. People who once managed their own water have started to lose faith in their own traditional wisdom, knowledge and technology. This I say from my experience of working with communities and helping them revive their water-harvesting practices.

(The author is a leading water and c
mate expert of the countr

PM Modi's call to conserve water has placed the spotlight on the need for a concerted effort in this area. ***TOI*** *takes a look at the many challenges facing Odisha and the ways in which the crisis can be addressed*