#### The Tribune 29-March-2021

### Sources drying up, Kangra stares at water paucity

#### TRIBUNE NEWS SERVICE

#### DHARAMSALA, MARCH 28

Owing to lesser snowfall in the Dhauladhars this year, the Kangra valley is staring at a water shortage. With summers yet to set in, about 25 per cent water supply schemes in Kangra district are facing water paucity.

Enquiries from Irrigation and Public Health (IPH) officials reveal that water sources near Bhagsunag, from where water is lifted for supply to IPH moots interlinking water supply schemes



Bhagsunag waterfall goes dry. The site is a major tourist attraction.

Ram Nangar and Shayam Nagar areas, has dried up. Many areas in Mcleodganj, a tourist hub, have been hit too.

Superintendent Engineer Suresh Mahajan says a proposal has been mooted to interlink water supply schemes. "The department tried to lift water from the Manji river but faced resistance by locals," he said. Villagers fear if the IPH Department lifts water from rivers, there will be no water in

CONTINUED ON PAGE 11

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## Sources drying up...

khuls (natural drains) to irrigate their fields.

With glaciers in the Dhualadhars receding each year,
experts say the government
should look for alternative
schemes rather than
depending on the natural
flow in streams. Major rivers
Neugal, Binwa and Baner,
which feed over 200 water
supply schemes in the district, are with little water
these days. The water discharge in most of the natural

water sources, particularly in Palampur, has come down to 20-30 per cent.

Scientist working on global warming say melting glaciers and receding snowline have affected the availability of surface water. However, groundwater is available in abundance right up to the higher reaches of the Himalayas. Therefore, the government must shift emphasis from surface to ground water.

Deccan Herald 29-March-2021

# Make water programme a success

The Jal Shakti Abhiyan, launched by the Central government, is a key initiative aimed at ensuring water security for all people in the country. The first phase of the programme, which was launched in 2019 after the formation of the Jal Shakti ministry by integrating other existing ministries related to water, is over and the second phase is set to be launched on April 1. The aim of the programme is to provide water to every household (Har Ghar Jal) by 2024. The second phase will have the motto "catch the rain where it falls when it falls", and will be implemented across 734 districts covering over 6,00,000 villages. The overall strategy for implementation of the programme consists of management and conservation of rainwater and preservation and rejuvenation of water bodies, including the recharging of aquifers in the country. The first phase of the programme did not yield the expected results. The shortcomings and failures of the programme should be studied and the lessons should guide the implementation of the second phase.

The importance of the programme cannot be overemphasised because nearly 600 million Indians are considered to be facing "high to extreme water stress" and the country's water demand is likely to double by 2030. India supports about 18% of the world's population and 15% of



Importance of programme can't be overemphasised the livestock but has only about 4% the global fresh water resources. The shortage and stress will be aggravated by climate change which will result in unexpected events including weather variations which will have an impact on the availability of water. Events like excessive rainfall or failure of the rains, the rise in sea levels and the melting of glaciers will have serious consequences. The Jal Shakti Abhiyan at present only has the limited aim of making the minimum requirement

of water available to all households in the next three years, but the long-term scenario should not be lost sight of.

The figures for water conservation and water bodies renovation projects, rain water harvesting, reuse and recharge initiatives and watershed development during the first phase show that performance could have been better. One encouraging achievement, as was brought out by a recent report, was the exemplary use of MGNREGA funds for water conservation and rainwater harvesting by some villages. The programme needs to be made a people's programme with greater involvement of agencies and organisations outside the government. There is increasing awareness about the worth of water among the people but it has not been turned into habits and practices in everyday life. Wastage of water is very high even as there is acute scarcity in many places. The programme needs to be made a success in national interest.

## Time to make the water switch

Technological solutions to make rice and sugarcane farmers use water more sustainably can work if there are right incentives



RITIKA JUNEJA

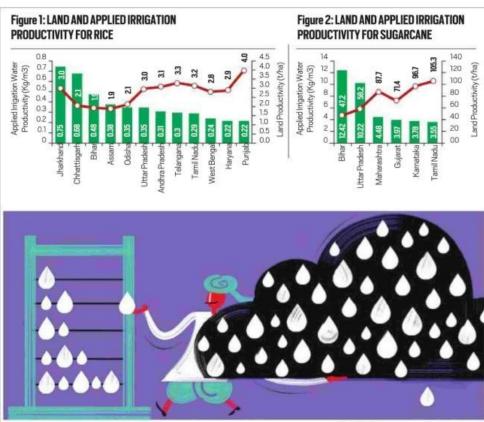
ON WORLD WATER day (March 22) Prime Minister Narendra Modi launched the "Catch the Rain" campaign under the government's flagship programme, Jal Shakti Abhiyan. He emphasised the importance of using every penny spent under MGNREGA to conserve water. This is a laudable objective. But what is the state of our water resources? How can we ensure that everyone has access to safe drinking water, while industry and agriculture also get sufficient supplies to produce enough to meet the country's demands? These issues demand close attention.

As per the Central Water Commission's reassessment of water availability using space inputs (2019), India receives a mean annual precipitation of about 3,880 billion cubic meters (BCM) but utilises only 699 BCM (18 percent) of this; the rest is lost to evaporation and other factors. The demand for water is likely to be 843 BCM in 2025 and 1,180 BCM by 2050. So, the targets are not beyond our reach, if we remain focused and follow an appropriate strategy that not only "catches more rain" but also ensures better demand management of this precious resource.

As per the UN's report on Sustainable Development Goal-6(SDG-6) on "Clean water and sanitation for all by 2030", India achieved only 56.6 per cent of the target by 2019. This indicates that we need move much faster in order to meet this SDG goal. Further, as per the Niti Aayog's Composite Water Management Index (2019), 75 per cent households in India do not have access to drinking water on their premises and India ranks 120th amongst 122 countries in the water quality index. India is identified as a water stressed country with its per capita water availability declining from 5,178 cubic metre(m3)/year in 1951 to 1,544 m3 in 2011 this is likely to go down further to 1,140 cubic metre by 2050.

How does one move forward? Agriculture uses about 78 per cent of fresh water resources. And as the country develops, the share of drinking water, industry, and other uses is likely to rise. Unless one learns to give effect to the credo of "per drop more crop" in agriculture, the challenge can be daunting. We need a paradigm shift in our thinking and a strategy to not just increase land productivity measured as tonnes per hectare (t/ha), but also maximise applied ir-rigation productivity measured as kilogrammes, or Rs, per cubic metre of water

So far, with decades of large public and private investments in irrigation, only about half of India's gross cropped area (198 mil-lion hectares) is irrigated. Groundwater contributes about 64 per cent, canals 23 per cent, tanks 2 per cent and other sources 11 per cent to irrigation. This results primarily from the skewed incentive policy of free or highly subsidised power, particularly in the country's north-west, the site of the erstwhile Green



Graphic: Ritesh Kumar; Illustration: CR Sasikuma

Revolution, Over exploitation of groundwater has made this region amongst the three highest water risk hotspots, the others being north eastern China and south western USA (California). Overall, about 1,592 blocks in 256 districts in India are either critical or overexploited.

When it comes to the issue of using water more wisely in agriculture, two crops rice and sugarcane — deserve special atten-tion. As per a NABARD-ICRIER study on Water Productivity Mapping (http://icrier.org/pdf/Water\_Productivity\_M apping\_of\_Major\_Indian\_Crops.pdf), these crops alone consume almost 60 per cent of India's irrigation water. Figure 1 shows applied irrigation water productivity against land productivity for rice and sugarcane in important growing states. It is interesting to note that while Punjab scores high on land productivity of rice, it is at the bottom with respect to applied irrigation water productivity. Similarly, in the case of sugarcane, irrigation water productivity in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu is only 1/3rd of that in Bihar and UP (Figure 2). There is, thus, a need to realign cropping pat-terns based on per unit of applied irrigation water productivity.

There are technologies to produce the same output of these two crops with almost half the irrigation water. Jain Irrigation, for instance, has set up drip irrigation pilots for paddy in Karnal (Haryana) and Tamil Nadu and for sugarcane in Maharashtra, Karnataka and Andhra Pradesh. The results of these pilots indicate while it takes 3,065 litres of water to produce 1 kg of paddy grain (yield level 7.75 t/ha) under traditional flood irrigation, under drip, it can be reduced to just 842 litres.

Agriculture uses about 78 per cent of fresh water resources. And as the country develops, the share of drinking water, industry, and other uses is likely to rise. Unless one learns to give effect to the credo of 'per drop more crop' in agriculture, the challenge can be daunting. We need a paradigm shift in our thinking and a strategy to not just increase land productivity measured as tonnes per hectare (t/ha), but also maximise applied irrigation productivity measured as kilogrammes, or Rs, per cubic metre of water (kg/m3).

The benefit cost ratio of drip with fertigation in case of sugarcane in Karnataka is observed to be 2.64. An extension to this is the "Family Drip System" innovated by the largest drip irrigation company in the world, the Israelbased - Netafim. The company has also launched its largest demonstration project in Asia at Ramthal, Karnataka. Technologies like Direct Seeded Rice (DSR) and System of Rice Intensification (SRI) can also save 25-30 per cent of water compared to traditional flood irrigation. Unfortunately, however, technological solutions cannot make much headway unless pricing policies of agri-in-puts are put on the right track and farmers are incentivised for saving water.

The Punjab government, along with the World Bank and J-PAL, has started some pilots with an innovative policy of "Paani Bachao Paise Kamao" to encourage rational use of water among farmers. Under the initiative, me-ters are installed on farmers' pumps, and if they save water/power compared to what they have been using (taken as entitlements) they get paid for those savings — this is credited directly into their bank accounts

Overall, it seems it is time to switch from the highly subsidised price policy of water/power (and even fertilisers) to direct income support on a per hectare basis, and investment policies that help with newer technologies and innovations. Water and power need to be priced as per their economic value or at least to recover significant part of their costs to ensure sustainable

Gulati is Infosys Chair Professor for Agriculture and Juneja is a Consultant at

#### **Indian Express 29-March-2021**

### Notice to DJB, IGL and irrigation dept for 'encroaching' Asola sanctuary area

#### **EXPRESS NEWS SERVICE**

NEW DELHI, MARCH 28

THE FOREST department has issued a notice to the Delhi Jal Board and Indraprastha Gas Limited for laying water and gas pipelines and to the irrigation and flood control department for constructing a road in the Asola Bhatti Wildlife Sanctuary, officials said. The notice was issued earlier this month, officials said, for an apparent violation of the Wildlife Protection Act 1972 by the agencies. Officials said construction work was done threefour years ago. It came to light recently when tracking of violations began after officials received the forest land map in 2020, following completion of



Asola Bhatti sanctuary

the forest land survey in 2018.

Officials said the road and pipelines were being laid as part of the Centre's 1986 Twenty Point Programme, aimed at poverty alleviation and improvement in quality of life. "A residential colony was to be developed in the sanctuary area under the Twenty Point Programme. Pipelines and road were to cater to this colony. A hearing on this has been under-

way since 2013 by the forest settlement officer... Details have been sought from DJB, IGL and the irrigation department about permission received for construction in the area," an official said.

DJB staff said the office is yet to receive the letter and that the line, according to DJB officials, has not been laid through the sanctuary.

Meanwhile, the forest department is making a push to declare 19 villages in Southern Ridge area as 'reserved forest' from 'proposed reserved forest', following NGT's directions in January. Officials said as per a notification in 1994 under section 4 of the Indian Forest Act 1927, the Delhi Ridge is a declared to be a reserved forest. To officially make it a reserved forest, a notification under Section 20 of the 1927 Act has to be issued.

Telangana Today 29-March-2021

In Focus

# Irrigation experts fume at 'partisan' Centre

Say KLIS more qualified for national status than Upper Bhadra in Karnataka

M SRINIVAS HYDERABAD

Telangana irrigation experts are seeing red over the Central government for ignoring the pleas of the State government to grant national status to the Kaleshwaram Lift Irrigation Scheme (KLIS) in the wake of similar status accorded to the Upper Bhadra project in Karnataka a few days ago.

Telangana Chief Minister K Chandrashekhar Rao earlier wrote a letter to Prime Minister Narendra Modi to accord national status to the Kaleshwaram project. The then Irrigation Minister, T Harish Rao also submitted representations to the then Union Ministers for Water Resources — Uma Bharathi in 2016 and Nitin Gadkari in 2018 in this regard.

TRS MPs raised the issue inside and outside the Parliament repeatedly. While replying to a question in Lok Sabha in 2018, Nitin Gadkari had categorically announced that the Central government



Kaleshwaram is one of the largest lift irrigation schemes in the country and will irrigate over 37 lakh acres in Telangana unlike the Upper Bhadra which will only cater to 5.57 lakh acres in Karnataka.

had no plans to accord national status to any project in the country in future.

However, the alleged partial attitude of the Central government towards the BJP-ruled States has once again come to the fore after granting national project status to the Upper Bhadra project. On Friday, Karnataka Chief Minister BS Yediyurappa tweeted, say-

ing, "Upper Bhadra project gets national project status and will receive Rs 16,125 crore from Union government. I thank PM @narendramodi ji & Union Minister @gssjodhpur ji for supporting this project which will be a boon to farmers of Davanagere, Chitradurga, Tumakuru & Chikkamagaluru districts." Irrigation experts said the Kaleshwaram proj-

ect is more qualified for the national status than the Upper Bhadra project in all aspects including acreage it will serve. KLIS, one of the largest multi-purpose and multi-stage lift irrigation schemes in the country, will irrigate over 37 lakh acres of new and existing ayacut in 21 districts of the newlyformed Telangana State.

(SEE PAGE 2)



CHANDRADEEP KUMAR

#### WHERE FARMERS **CONTROL THE FLOW**

A participatory project involving farmers and elected water users' committees ensures water to the last farm in parched Bundelkhand

By ASHISH MISRA

a resident of Chauka village of Mehroni tehsil in Lalitpur district, Bundelkhand, was very worried last year when the rains failed again. Chauka falls at the tail end of the Chauka minor, a sub-canal originating from the main trunk of the Rohini dam in Lalitpur. The dam has a capacity of 12.1 million cubic metres of water, but was only 34 per cent full last year. To solve the problem, assistant

ardan Lal, 60,

engineer at the Rohini Canal System, Nafees Ahmed, took the help of the water users' committees associated with the canal's Chhaprauli, Tisagnan, Chauka and Gharauli minor sections. Hanumant Singh Tomar, president of the Chhaprauli water users' committee, says, "The committees talked to the farmers to ask them what time they wanted the water discharged from the Rohini dam so that it could be put to optimum use for the crop."

In November last year, water was discharged to all the four minors for 15 days alternately. The committee also made sure that water reached every farm even at the ends of the minors. The result: Mardan Lal's three-acre farm produced 24 quintals of peas, earning him over Rs 1 lakh.

In 2016, the irrigation department had started a 'participatory irrigation management system' in the Rohini canal system as a pilot project in Bundelkhand, Under this, eightmember water users' committees were formed in all the minors connected with the Rohini canal system. Ahmed says, "Voters in the catchment area of the

was built in 1984, but water never reached the tail end of the minor canals. Some 4,000

for their crops

of the minors voting

farmers were not getting water

 The Solution: Water users' committees were formed through elections in 2016, with

villagers in the catchment areas

in their respective areas in June 2016." After 2018, irrigation management in the minors was also handed over to the respective committees. B.K. Suhera, executive engineer of the irrigation department in Lalitpur, says, "The entire irrigation system in the minors is monitored by the committees. So misuse and illegal diversion of water have also been minimised."

minors elected the committee members

#### India Today 29-March-2021

THE WATER SPECIAL 🗥 ODISHA PANI PANCHAYATS







### RISE OF THE PANI **PANCHAYATS**

They have ensured equitable supply of water and spurred cultivation in Odisha. More importantly, they have put an end to the water wars

By ROMITA DATTA



suma village in Cuttack district had for long witnessed frequent fights and even serious law and order issues over rights on the canal water coming from the Mahanadi river 15 km away. But not anymore. A successful 'pani panchayat' formed in 2000, comprising Usuma and nine other villages and their 420 hectares of cultivable land, has ensured that the 250 households in Usuma get their fair share of water. The pani panchayats of Odisha are farmer-led bodies engaged in water management and its equitable distribution at the local level. There are now 35,511 pani panchayats involved in getting irrigation water to the fields. Their main job is to ensure that not a single hectare



of land under irrigation is 'waterdeprived or water-denied. "A farmer who loves his land will naturally want to see the farmlands of others taken care of. True, there have been major fights in the past, blood has been spilled over unequal distribution of water but it was all in the interests of the land," says Samiullah Khan, secretary of the Usuma Pani Panchayat.

Even though Odisha is a waterabundant state with a number of major rivers criss-crossing the state. getting the water to the fields has been a huge task. Of the 6.1 million hectares of cultivable land in the state, 4.3 million bectares are irrigated with the help of canals, channels and other minor irrigation techniques. The rest of the land is rain-fed; the state averages annual rainfall of 1,400 mm.

Launched almost two decades ago, the pani panchayat concept has evolved through experience and the demands of the farmers. To begin with, they were given command of a minimum area of 40-100 hectares. going up to 500 hectares. For every

#### THE BIG PICTURE

- The Crisis: Inequitable distribution of canal water leading to violence, law and order issues
- The Solution: 'Pani panchayats' were formed comprising farmers and locals to oversee fair water distribution and operation, maintenance of canals at the local level

10-40 hectares, there was a water outlet (a sort of water point, fed by the main canal through field channels) manned by a committee ('chak') which governs the distribution of water and operation, maintenance and desiltation of channels within its area. Now the water resources department is looking to reduce the command area of the chak to one hectare for better management and to further decentralise the pani panchayat system.

"By empowering farmers, we succeeded in minimising conflict

#### **LUSH GROWTH**

Usuma's pani panchayat members at a meeting; a farmer checks a water supply channel in the village



Number of 'pani panchayats' active in Odisha

and ensuring that not a single block is deprived of water. There are provisions for penalties and fines for misusing the supply," says D.K. Samal, chief engineer, water resources department. "Initially, getting the farmers to agree on sharing water was not easy. We had to impress upon them that if the water stagnated in their fields without flowing to adjacent ones (through the feeder channels), it would endanger the crops, do more harm than good. The scientific explanation paid off."

The need to reduce the command area of the chaks and empower the farmers on crop selection has arisen following the agriculture department's demand for crop diversification and cash crops. Paddy requires a lot of water whereas groundnut, oilseeds and pulses can be cultivated with minimum water resources. "Instead of pushing all farmers into paddy, if we can encourage crop diversification, we'll be able to save a considerable amount of water. This is possible if the land parcel is small and there are fewer stakeholders for managing water over a small area," says the chief engineer.

"Even drought-prone Kalahandi is cultivating two crops a year with the average yield up by 15 per cent, courtesy the 267 pani panchayats there. They have been active for two decades, covering a command area of 128,000 hectares in and around river Indravati," says Rajendra Besra, chief engineer of the Command Area Development.



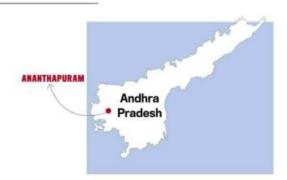
THE WATER SPECIAL 🧥 ANDHRA PRADESH: WATER MANAGEMENT

# DRIPPING WITH ROMISE

Artificial surface ponds, percolation pits, check dams and community ponds, along with microirrigation techniques, have helped drought-proof this region and made farming sustainable

By ARAVIND GOWDA





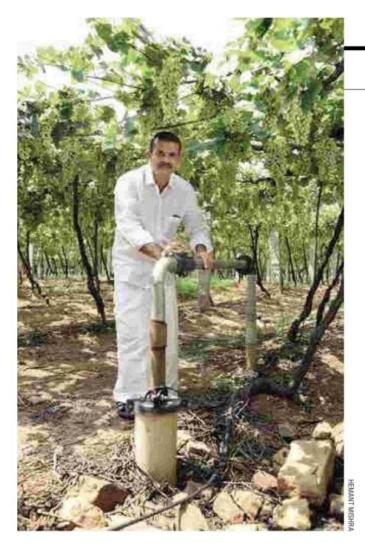
A third standard dropout, M. Shivashankar Reddy recalls sleeping on gunny bags in his childhood. Today, the 49-yearold grows pomegranate, musk melon, grapes and vegetables on the three parcels of land he owns in Parasannayapalli village in Andhra Pradesh's Ananthapuram district, earning Rs 3-4 lakh per acre. "We created 10 ponds across three parcels of land and adopted a drip irrigation system," he says. "The water storage capacity ranges between 1 million and 3 million litres. The surface ponds recharge the groundwater level, especially during the rains." He now has water available at a level of 150-200 ft in all 25 borewells on his lands. Reddy does not pump water from all of them; he uses water from only 10. "I ensure water from the ponds is never drained out."

The neighbouring village of Venkatareddypalli has 70 artificial ponds, 12 check dams and two percolation ponds, all of which have been developed in the past six years with the help of the government. The village of 400 families has

#### THE BIG PICTURE

- . The Crisis: The perennially drought-prone district saw the water table drop drastically. making the cultivation of rainfed crops a nightmare
- The Solution: Funds from the Pradhan Mantri Krishi Sinchayee Yojana were used for micro-irrigation projects; 51,825 water harvesting structures increased irrigation potential by 15,783 ha. A District Irrigation Map was drawn up, ponds excavated, water users' assoclations revived, and resource maps and apps developed

#### India Today 29-March-2021



#### FRUITS OF LABOUR

M. Shivashankara Reddy, 49, at his grape orchard in Parasannayapalli village in Ananthapuram district

.

formed water user groups to support each other. Water is drawn through pipes from the nearby Penna river in the rainy season and stored in artificial ponds, which recharge the groundwater. Chavva Rajashekara Reddy and his three brothers, who live in the village, have created three large surface ponds on their lands, with water holding capacities of 120 million litres, 15 million litres and 5 million

litres, respectively. The 120 million litre tank functions as a community pond, as it benefits other farmers in the region too by recharging the groundwater. "Initially, the farmers were resistant to the drought-proofing measures and scientific water management. Today, the results are unbelievable, as water is available at 200 feet. With drip irrigation, we are growing horticulture crops round the

200 ft The level to which water is available now

"Ananthapuram's gross value addition to agriculture from horticulture is Rs 11,000 crore. We produce 5.8 million mt of fruit annually"

Boya Surya Subbarayudu Project director, APMIP, Ananthapuram

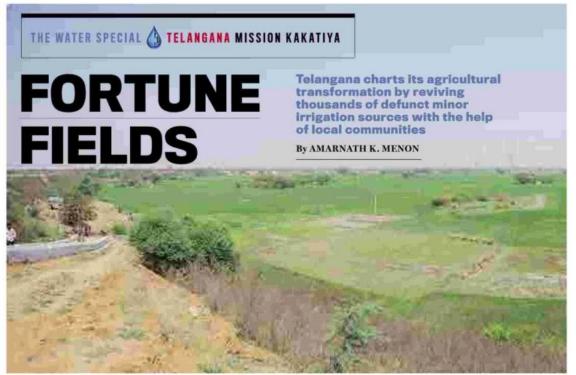
year. Our income per crop has tripled in the past six years," says Rajashekara Reddy, who grows pomegranate, grapes and drumsticks on his land.

As part of the Per Drop More Crop component of the Prime Minister's Kisan Sinchayee Yojana, Ananthapuram district constructed 51,825 water harvesting structures to increase its irrigation potential by 15,783 hectares. A District Irrigation Plan (DIP) was drawn up under which defunct water users' associations were revived, farm ponds excavated and resource maps and mobile apps designed to guide farmers to the nearest water sources during dry spells. Additionally, farmers were encouraged and trained to use micro-irrigation methods such as drip and sprinkler systems, which now cover 39,801 hectares of land.

Simultaneously, the Andhra Pradesh Minor Irrigation Project (APMIP) and District Water Management Agency are providing subsidies and other promotions to convince, train and educate farmers on horticulture. So far, APMIP has spent Rs 1,500 crore on promoting horticulture in the district. Of the 1 million hectares of land under cultivation in the district, traditional crops are grown on 700,000 ha. and horticultural crops on another 202,000 ha.

"Ananthapuram district's gross value addition to agriculture from horticulture is Rs 11,000 crore. We produce 5.8 million metric tonnes of fruits annually," says Boya Surya Subbarayudu, project director of the Ananthapuram APMIP.

#### India Today 29-March-2021





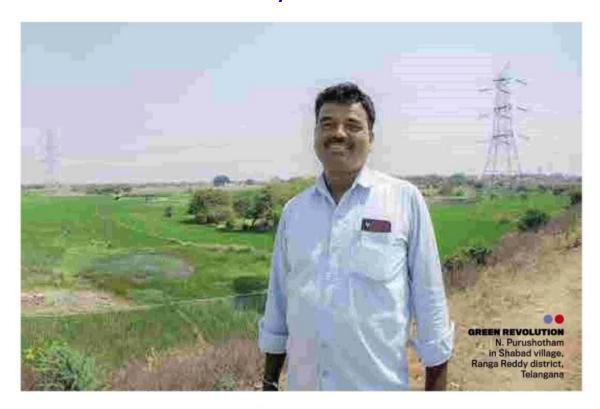
"It's a god-sent opportunity," says N. Purushotham, 49, about how an assured supply of irrigation water has boosted his farming. Until 2017, there was just enough water to raise a single paddy crop a year on his two-acre farm in Telangana's Ranga Reddy district. But ever since the Pahalwan Talab in Shabad village was revived, by removing silt and strengthening the feeder channels, farmers like Purushotham have also been growing vegetables for half the year. "Earlier, I would grow veggies only if there were rains. But with steady water supply, leafy vegetables that are in great demand are being grown regularly," he says. Since 2015, Mission Kakatiya has spurred the revival of 27,625 of 46,531 lakes/irrigation tanks, with the help of local communities, boosting water supply to the state's 11,000 villages and their farms. There is no plan, though, to revive the remaining lakes/ tanks since they irrigate less than 20 acres each or have been in disuse.

All restored irrigation tanks have been geotagged for unique identification with the help of the International Institute of Information Technology, Hyderabad, to enable continuous monitoring using digital toposheets, satellite imagery and other tools. The use of technology enables farmers to tap water resources optimally.

"Instead of gambling with cotton or jowar crop, I grow paddy on five acres twice a year and vegetables in the intervening period," says Kammala Ilaiah, 52, of Pamulaparthi village in Siddipet district. Land prices, Ilaiah claims, have shot up from about Rs 8 lakh an acre in 2010 to Rs 1.5 crore an acre. "Water availability has turned the cotton soil into black gold for us."

The Telangana government has so far spent Rs 9,110 crore on Mission Kakatiya. The project draws its name from the Kakatiya dynasty (1163-1323 AD), whose rulers had developed a vast network of village tanks and irrigation utilities in the region. "With Mission Kakatiya, the water table has risen by an

#### India Today 29-March-2021



average 10 metres across the state. The miracle was achieved due to a welldefined mission plan coupled with widespread people's participation," says Dr Rajat Kumar, principal secretary (water resources), Telangana.

The work involves clearing silt from the bottom of lakes and tanks, ferrying it to farms for use as fertiliser, restoring feeder channels, repairing bunds and weirs, and reviving irrigation channels that bring water to the fields. Tree planting and beautification of tank bunds have also been carried out. Besides, one tank has been identified in each of the 119 assembly constituencies and developed as a recreation spot. Other outcomes include fish farming and ensuring water security for livestock during the lean season. Impressed by the state's efforts, 135 NRIs have donated Rs 18.5 crore towards Mission Kakativa.

The 2019 Composite Water Management Index report of the NITI Aayog calls Mission Kakatiya a 'great example' of restoring minor



#### THE BIG PICTURE

- The Crisis: Telangana was utilising only about 37 per cent of the irrigation potential of its 46,531 minor irrigation sources, such as lakes and tanks
- The Solution: Under Mission Kakatiya, local communities were roped in to restore 27,625 lakes/ tanks by desilting them, repairing bunds and reviving feeder channels

irrigation structures to improve water availability to small- and mediumscale farmers. The report says local water bodies, such as lakes and ponds, can serve as vital resources for irrigating small farmlands.

So far, 8.75 thousand million cubic feet of water storage capacity has been restored and 1.5 million acres of tank basin have been stabilised. The intensity of irrigation (percentage of irrigated area to net sown area) has gone up by 45.6 percentage points, from 88.4 per cent in 2013 to 134 per cent in 2017, according to NABCONS, the consultancy arm of the National Bank for Agriculture and Rural Development, which studied 400 tanks across Telangana's agro-climatic zones. "Water was at the heart of the Telangana statehood campaign. Mission Kakatiya begins a transformational journey to revive water supply and farming in India's youngest state," said T. Harish Rao, the state finance minister who handled the irrigation portfolio when the mission was launched.

India Today 29-March-2021



## PONDS OF MANY MIRACLES

Farm ponds have turned around parched Dewas's fortunes, converting its weakness into its biggest strength

By RAHUL NORONHA

aalav maati gahan gambhir, dag dag roti, pag pag neer (the soil in Malwa is fertile, food and water are available in abundance). For centuries, these lines had signified the prosperity of Malwa in western Madhya Pradesh. But Dewas, in the heart of the Malwa region, was an exception. The district was facing acute shortages of water, so much so that in the early 2000s, drinking water was transported to the town of Dewas by trains. Farmers were reduced to growing one crop, livestock was dying and the local economy was on the verge of collapse.

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So, what was happening in Dewas? Why was Malwa's good fortune eluding the district?

It isn't that Dewas has scanty rain-its average rainfall stands at 1,066 mm-but overexploitation of ground water in the 1990s had resulted in the water table sinking to 600 ft. The water at that depth contained minerals that would damage crops. "The soil in Dewas is classified as 'medium black cotton soil' with a low percolation of 0.02 per cent unlike, say, sandy loam (3-5 per cent)," says Dr Mohammed Abbas, assistant soil conservation officer in the department of agriculture, explaining why most of the rainwater in Dewas flowed out through its rivers.

Moreover, despite prominent rivers, like the Chambal and Kali

#### THE BIG **PICTURE**

- . The Crisis: Acute water shortage for drinking and irrigation purposes
- The Solution: Farm ponds, which can harvest rainwater for groundwater recharge, irrigation and drinking

Sindh, rising not far from Dewas, and the Narmada and Kshipra flowing through it, the district did not benefit from canals or dams

Dewas needed help. And, interestingly, the solution was in the soil.

In 2006, during a district-level coordination committee meeting, Raghunath Singh Tomar, a farmer in Dewas's Harnawada village, told Umakant Umarao, the then district magistrate and current principal secretary, Bhopal, that he had dug a pond over a bigha of land which was charged with rainwater and could irrigate 15 acres. "It struck me that the solution to our water shortage problem did not lie in making dams, but in harnessing rain water and providing a source for groundwater recharge, irrigation and drinking water," says Umarao. "The strata in Dewas, which does not allow higher percolation of water, was a blessing in disguise."

Umarao worked out a strategy to popularise tanks. The large farmers in



Farm ponds dot Dewas today, with some villages, like Dhaturia and Gorwa, accounting for over 200 each

the area, who needed to be convinced to part with a section of their land, were brought on board; over 10,000 trucks were organised, some even brought in from Rajasthan, for earth moving work; and a system of bank loans for the farmers to pay for the ponds, which cost around Rs 2.5 to 3 lakh each, was streamlined. The state government launched a Balram Talaab Scheme to help farmers finance the ponds on their land.

The farmers, all of whom were being affected by the shortage of water, welcomed the idea and got digging. The scheme was christened Bhagirath Krishak Abhiyan by Umarao. "The programme became like a festival. In village after village, we would see tractors working through the night," says Dr Abbas, who worked with the DM on the project.

Around 10,000 farm ponds dot Dewas today, with some villages, such as Dhaturia and Gorwa, accounting for over 200 each.

Earlier, farmers would sow low-yielding varieties of wheat in the rabi season since those needed less water, but now they have been able to switch to high-yielding and durum varieties of wheat, leading to increased incomes. "Earlier, we managed to get around seven or eight quintals of sharbati wheat, which, as per present prices, would get us around Rs 20,000 per acre. Today, we are sowing Malwa Shakti, which gets us around 15-18 quintals and returns of around Rs 35,000 per acre," says Shivnarayan Patel of Gorwa village, who has six ponds on his land. The availability of water has also led to crop diversification. Farmers are now planting orchards of oranges and have begun exploring horticulture. The net sown area in Dewas has increased from 1 lakh hectares in the mid-2000s to around 4 lakh hectares now.

The project was recognised by the United Nations in 2011-12 as one of the three best water management practices in the world.



THE WATER SPECIAL 🚳 MAHARASHTRA COMMUNITY DESILTING

# SHARE THE NEALT

A desilting scheme, under which the state waives its royalties on silt and supports NGOs in excavating it from local water bodies, has led to improved groundwater levels, increased rabi planting and more sustainable farming

By KIRAN D. TARE



mol Patil, a 36-year-old farmer from Datala in Maharashtra's Buldana district, is evidently excited about his upcoming harvest-five acres of sweet lime, a very thirsty crop. He says he has been able to grow it only because of the improved water supply in the area resulting from the state government's Gaalmukt Dharan, Gaalyukt Shivar (silt-free dams, silt-filled farms) Yojana.

This programme, run by the state's soil and water conservation department, was launched by former Chief Minister Devendra Fadnavis in March 2018 as part of the Jalyukta Shivar Abhiyan (JSA). Under this scheme, NGOs are allowed to excavate the silt that



collects at small dams and other small water bodies, with the government waiving the royalties it would normally have collected.

The Bharatiya Jain Sanghatana (BJS), one of the largest NGOs in the state, had inked a deal with the government for excavation in five districts. It provided the diggers, while the government paid the fuel and deployment costs. Farmers were allowed to use the excavated silt free of cost, only having to spend on transporting it back to their farms. The result was a win-win for all involved-the government saw the dams and water bodies under its management cleared of silt at a very low cost, farmers got highly fertile soil for their farms and the districts as a whole saw notable





The increase in the waterholding capacity of small water bodies across the five districts that the desilting scheme has been implemented in

#### THE BIG **PICTURE**

- The Crisis: An acute water shortage and low groundwater levels
- The Solution: A desilting scheme for small dams and water bodies, increasing their water holding capacity

improvements in groundwater levels and water table heights. As a result, farmers have begun cultivating sugarcane, guava and grapes, which they could not earlier. Thanks to the rise in agricultural potential, rates for farmland have also shot up tenfold.

Ironically, given that this result came from a political decision, politics may end up damaging the effort. In September 2020, CM Uddhav Thackeray halted funding for the JSA and ordered an inquiry into alleged 'improper use' of funds. Former CM Fadnavis has protested this turn of events. The current phase of the scheme will conclude on March 31, having only been implemented in five of Maharashtra's 36 districts.

THE WATER SPECIAL 🧥 ANDHRA PRADESH: SUBSURFACE DAMS IN YSR KADAPA



# FROM THE GROUND UP

ANDHRA PRADESH

YSR KADAPA

Subsurface dams
have helped the YSR
Kadapa district recharge
its groundwater levels and
contribute to sustainable
irrigation in the droughtprone district

By AMARNATH K. MENON

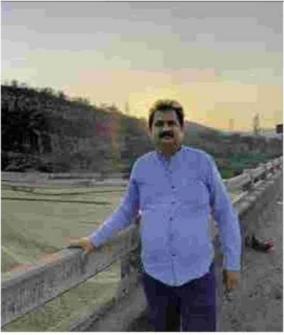


tanding on the bridge on river Papagni in Andhra Pradesh's YSR Kadapa district, Chirutani Pratap points to the shimmering rivulets in the dry river bed below. "We have begun seeing this only in the past two years. Usually, the river flows like a stream just for four months during the rainy season every year," says the 50-year-old environmental engineer of the Andhra Pradesh water resources department about the unique transformation.

The change has been brought about by a string of subsurface dams (SSDs) on the Papagni, a non-perennial river which joins the Penna river in Kadapa. The purpose



\*\*\*\* \*\*\* 80% area in YSR Kadapa covered with sedimentary deposits leading to quick depletion of groundwater



A NEW HOPE Chirutani Pratap on a bridge over river Papagni

acres recharged in YSR Kadapa district within two years of building the SSDs

#### THE BIG **PICTURE**

- The Crisis: Scanty rains and loss of rainwater due to the impervious nature of the soll
- The Solution: Building subsurface dams (SSDs) to replenish and secure groundwater for the dry periods in the region. Plus, the cost of constructing SSDs is barely a tenth of that of conventional dams with the same storage

of SSDs, built across streams or valleys, is to establish an underground reservoir and to recharge groundwater. The structure relies on piling technology that drives zig-zagshaped steel sheets 18 metres deep into the sand to form a wall of sorts across the groundwater channel and impound water in reservoirs below to increase the groundwater storage. In Kadapa, the dams were built between May 2017 and March 2018 at six slopes along a 34 km stretch of the river. By 2019, the increased water levels ranged from 5.19 metres at Gandi district to 14.64 metres at U Rajupalem.

"They are cost-effective, unlike the conventional concrete dams, and allow for minimal evaporation, which prevents the loss of stored water," says Pratap. The SSDs have raised the groundwater table and allowed farmers in the vicinity to tap into this resource for at least four months even after the trickle on the

river surface has dried. The cost of constructing SSDs is barely a tenth of that of conventional dams with the same storage.

In YSR Kadapa, since 80 per cent of the geological area is covered with sedimentary (shale and limestone) deposits that are impervious in nature, groundwater tends to deplete quickly. As a result, natural recharge is very slow. Data shows that since the construction of SSDs, the water levels in borewells in riveradjacent areas have been augmented and contribute to sustainable irrigation in the drought-prone district. As a result, the growth of the paddy crop during the kharif season has stabilised and a second crop, mostly sunflower, is also being grown during the rabi season.

The United Nations Convention to Combat Desertification suggested groundwater dams, such as SSD, as a technology suitable for economic storage of water in arid and semiarid regions.

In the absence of budgetary allocations, YSR Kadapa district collector C. Hari Kiran banked on the mineral cess collected in the district and available for discretionary use to find the Rs 26 crore required for the construction of SSDs. "There have been many inquiries about SSDs from drought-prone areas," says Kiran. "A minimum topographic riverbed slope of five to six metres is required. Suitable gradients, between 0.2 per cent and 4 per cent, which is usually the case in the transition zones between hills and plains, are the essential geographical circumstances." Further, SSDs can be built where rivers are narrow-less than 500 metres wide-or in areas with already developed farms but ones that lack water for irrigation.

SSDs have changed the face of farming in YSR Kadapa within two years, and benefitted an area of around 8,000 acres.

THE WATER SPECIAL 🗥 NAMAMI GANGE

# ODE TO A SACRE

Several attempts have been made to clean the Ganga in the past. But never before has the project been undertaken on mission mode, with the prime minister himself overseeing its execution

By RAJ CHENGAPPA



other river in India evokes as much awe or is surrounded with as much religious fervour as the mighty Ganga. The river begins its 2,525 km journey from the mouth of the Gangotri and ends up at the Gangasagar in West Bengal. The river covers 26 per cent of the country's landmass, straddling a mammoth area of 8.6 lakh square kilometres. It flows through five states and has six other states in its basin. The Ganga and its tributaries contribute as much as 28 per cent to India's water resources. More than 43 per cent, or 500 million people, of India's population depends on it and the Gangetic delta is considered the food bowl of the country.

There are 97 major urban centres and 4,457 villages along the river's main stem. And therein lies the problem. Over the decades, these habitations



have indiscriminately allowed their sewage and industrial effluents to flow into the river, causing its water to become highly polluted and, on many stretches, destroying aquatic life.

There is every reason to be cynical when the term Clean Ganga is bandied about. The first attempt to clean the highly polluted river was launched by the then prime minister Rajiv Gandhi in 1986, but a huge gap emerged between what was being promised and what was actually being practised. Officials who handled the episodic missions to clean the Ganga said their main flaw was that they were half-hearted and piecemeal. There was little coordination between the Centre, states and local bodies and a complete disregard for the river's carrying capacity. Between 1985 and 2015, only Rs 4,000 crore was spent mainly to set up sewage treatment plants. Delays in project execution were the norm, apart from a lack of clarity on basin-level issues and inadequate technology interventions.

hen Prime Minister Narendra Modi came to power in 2014, he brought about a sea change in the approach. The effort to clean the Ganga, given that it is a river the Hindus revere, was part of the campaign promise of the Bharatiya Janata Party (BJP). Modi worked to ensure that the programme would be far more successful than the previous attempts. While announcing the Namami Gange Programme (NGP), he set up a National Ganga Council as the overseeing authority, which he would head. The National Mission for Clean Ganga (NMCG) was formed as the implementing agency. The Modi government notified that the NMCG would be treated as an authority with statutory powers under the Environment (Protection) Act, 1986, giving it bureaucratic autonomy and regulatory powers to execute the mission in coordination with the respective state governments. The prime minister then sanctioned Rs 20,000 crore for five

years or five times the amount committed in the past 35 years, ensuring that the hundred per cent Central funding of key projects would overcome the states' reluctance to cough up money.

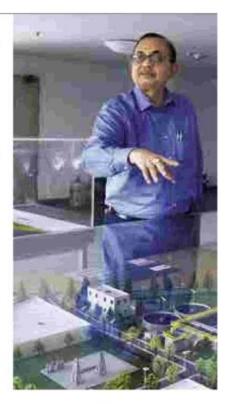
The NMCG went about its task in a holistic manner, dividing its mission into four major parts: Nirmal Ganga (cleaning up pollution), Aviral Ganga (ensuring ecology and flow), Jan Ganga (public participation in the clean-up efforts) and Gyan Ganga (promoting research on policies and management of the river). Unlike in the past, the focus is on rejuvenating the entire main stem rather than a few cities on its banks. It also emphasised on regenerating and conserving the aquatic and riparian biodiversity of the river basin. Of great help was the fact that seven

"We have worked in a focused manner and aggressively pursued the mission. It is showing results"

Rajiv Ranjan Mishra Director-general, NMCG

#### THE BIG PICTURE

- The Crisis: Household sewage and industrial effluents from 97 major urban centres and 4,457 villages along its banks have made Ganga among the world's most polluted rivers
- The Solution: The BJP government has set up a whole National Mission for Clean Ganga, with a budget of Rs 20,000 crore over five years. The focus will be on rejuvenating the entire main stem and not just the cities on its banks



IITs (Indian Institutes of Technology) had prepared a detailed basin management plan and plenty of field work, including estimating the amount of sewage generated by major urban and rural centres along its banks, had been done even before the various projects were sanctioned. All this was to ensure that the implementation was done on a scientific and time-bound basis.

Rajiv Ranjan Mishra, directorgeneral of the NMCG, says that several major policy decisions were taken to overcome the problems encountered earlier. These included a hybrid annuity model (HAM) for sewerage infrastructure projects where operation and maintenance were made an integral part of the projects, making space for public-private partnerships as is being done for the national highway projects. The government would pay 40 per cent of the capital expenditure

**≒**≋ 142

of the total 333 projects sanctioned by the NMCG have been completed so far



CHANDRADEEP KUMAR

#### A RIVER FIGURED OUT **2,525** km 97 Length of the Ganga **Urban centres** river from Gangotri and 4,457 in Uttarakhand to villages along the main stem Gangasagar in West Bengal 28% 333 of India's water Sanctioned projects for contributed by Ganga Graphic by TANMOY CHAKRABORTY and its tributaries the Ganga **29,751** cr States in river basin, Money spent on main stem flows the Namami Gange through five states project so far

A MODEL PROJECT Rajiv Ranjan Mishra, director general, National Mission for Clean Ganga, at his office in New Delhi

upfront and the remaining 60 per cent would be in annuity. This was a paradigm shift along with the norm that each city would have only one operator who would get the project and be responsible for both its construction and maintenance for 15 years. "This improved the governance and accountability in wastewater management apart from the quality of the work, as the agency knew that it had to ensure its smooth operation and maintenance for a long duration," Mishra says.

Ensuring that industrial effluents are not indiscriminately dumped into the Ganga but are properly treated has been another focus of the NMCG. Apart from local regulators, the authority carries out its own annual inspection to ensure that industries along the Ganga are complying with norms. That led to a dramatic improvement and, as the case studies in the following pages show, many stretches of the river have been revived to the extent that they can support aquatic life. Another unique approach is to ensure that hydroelectric projects release the water on time to avoid any discontinuity in the river. Care has also been taken to maintain the wetlands in the basin rather than just the river itself so that the groundwater in the region improves and biodiversity begins to flourish. The return of the dolphin in large numbers is a good sign that the river rejuvenation is on track. To ensure people's connect and involvement in the river, riverfront boulevards are being developed so that the locals can go for walks and other forms of recreation. "We have worked in a focused manner and aggressively pursued the mission and it is showing results," says Mishra. The NMCG has sanctioned a total of 333 projects at a cost of Rs 29,578 crore, of which 142 projects have been completed. While the accompanying chart shows how much has been done (see The Ganga Action Plan), Mishra acknowledges that there is still a long way to go. What is significant, however, is the zest and zeal to get the job done well and on time.

Asian Age 29-March-2021

# Good start in Bangla, but Teesta is credibility test

rime Minister Narendra Modi's just-ended visit to Bangladesh is likely to be noted as an effort on India's part to pull back from the brink and rescue what is inarguably the most mutually fruitful relationship this country has with any other neighbor. It is to be welcomed.

No matter how the effort is eventually assessed, a genuine attempt has doubtless been made. The tone struck in Dhaka by both sides was one of warmth, indicating that a return to a positive normal, and then moving to a higher plane, is an aspi-

ration of both countries.

India's governing party's regrettably communal pitch on the question of citizenship, as manifested through the Modi government's relentless pursuit of NRC, specifically in the context of being the primary step toward giving effect to the CAA, cast a shadow on a perfectly productive relationship with Bangladesh.

Since then it would appear that the Modi government is learning that it is a bad idea to play domestic politics in a manner that adversely impacts India's diplomatic ties and hurts its heritage of being a country that promotes high human val-

ues in a mind-bogglingly diverse demcracy.

In the fitness of things, the PM should have taken with him an all-party delegation to Dhaka and not made the journey a purely governmental affair In its own years since liberation from Pakistan, Bangladesh has travelled a fairly rocky path. Communalists and Islamists in that country, finding encouragement from influential political quarters, acted as obstacles to friendship with India. Prime Minister Sheikh Hasina has shown immense courage to counter that trend, and continues to do so. Mr Modi's visit was viciously opposed by Islamist elements. The Hasina government stood up to them, and this could cost her.

If India is to strengthen the hands of secular politics in Bangladesh in order to strengthen bilateral relations with that country as a key element of our

neighbourhood policy, in its dealings with Dhaka, a higher profile must be accorded to aspects that touch ordinary people. Easing trade, transport, and irrigation

bottlenecks suggest themselves.

It is in this context that the interim agreement to share the waters of the Teesta river with Bangladesh, signed in January 2011, was flagged yet again by the Bangladesh leader in her conversation with the Indian PM. New Delhi is yet to find creative ways to help West Bengal overcome its reservations on the sharing of the Teesta waters. It is time for India to apply itself with diligence to this subject, lest in Bangladesh it acquire the status of being the touchstone of good intentions on India's part.

During Mr Modi's visit, India signed five important agreements in areas such as disaster management and trade. Better border management, starting new train services to connect the people of the two countries, invitation to innovative Bangladesh start-up entrepreneurs to find angel investors in India, looking at cooperation in the fields of civil nuclear energy and artificial intelligence, besides supplying the anti-Covid vaccine, are among the many likely areas of future cooperation. The going will be smoother in these and other important areas if past

promises and agreements are not lost sight of.

The 50th anniversary of Bangladesh as an independent country and the centenary of the birth of its charismatic founder Sheikh Mujibur Rehman was seized on by Mr Modi to try to re-invigorate ties with our neighbour. In the fitness of things, the PM should have taken with him an all-party delegation to Dhaka and not made the journey a purely governmental affair. The liberation of Bangladesh was a non-partisan affair in India, and this should have been reflected.

#### FROM PLATE TO PLOUGH

REPLACE WATER, POWER AND FERTILISER SUBSIDIES WITH DIRECT PER ACRE BENEFITS TO HELP FARMERS ADOPT TECHNOLOGY THAT IMPROVES IRRIGATION PRODUCTIVITY

# Improving Indian agriculture's water efficiency

NWORLD WATER DAY (March 22), PM Narendra Modi launched a campaign, 'Catch the rain', under the Centre's flagship Jal Shakti Abhiyan. He emphasised that every penny being spent under MGNREGA must be used to conserve water. This is a laudable objective. But, what needs close attention is where do we stand on the water front, and how can we ensure that everyone has access to safe drinking water, while industry and agriculture also get sufficient water to produce what is demanded.

As per the Central Water Commission's assessment of water availability using space inputs (2019), India receives mean annual precipitation of about 3,880 billion cubic metres (bcm) but it utilizes only 699 bcm (18%), the rest being lost to evaporation and other factors. The demand for water is likely to be 843 bcm in 2025 and 1,180 bcm by 2050. So, the targets are not beyond our reach if we remain focused and follow an appropriate strategy that not only 'catches more rain' but also manages demand of this precious resource better.

demand of this precious resource better. Yet, as per the UN's report on Sus-tainable Development Goal-6 (SDG-6)-Clean water and sanitation for all by 2030-India achieved only 56.6% of the target by 2019, indicating the need to move much faster. Further, as per the Composite Water Management Index of Niti Aayog (2019), 75% households in India do not have access to drinking water on their premises, and India ranks 120th amongst 122 countries in the water quality index. India is identified as a water-stressed country with its per capita water availability declining from 5,178 cubic metre (m³)/year in 1951 to 1,544 m3 in 2011, which is likely to go down further to 1,140 m3 by 2050. This does not paint a very rosy picture on the water front.

How does one move forward? Agriculture uses about 78% of India's freshwater resources. And, as India develops, the share of drinking water, industry, and other uses is likely to rise. Unless one learns to produce 'more crop per drop', the challenge can be daunting. For this, we need a paradigm-



shift in our thinking and strategy to not just increase land productivity measured as tonnes per hectare (t/ha) but also maximise applied irrigation productivity measured as kilograms or ₹ per cubic meter of water (kg/m³).

So far, with decades of large public and private investments in irrigation, only about half of India's gross cropped area (198 million hectares) is irrigated. Groundwater contributes about 64%, canals 23%, tanks 2% and other sources 11% to this irrigation. This results primarily from the skewed incentive of free or highly subsidised power, particularly in the northwestern belt of India, the erstwhile seat of the Green Revolution. Over-exploitation of groundwater has made this region one amongst the three top water-risk hotspots, the others being northeastern China and southwestern US (California). Overall, about 1,592 blocks in 256 districts in India are either critical or overexploited.

If we have to use our water more wisely in agriculture, two crops—rice and sugarcane—deserve special attention. As per a NABARD-ICRIER study on water productivity mapping

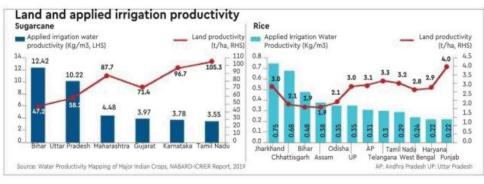
(bit.ly/3ct9Tmd), these two crops consume almost 60% of India's irrigation water. The accompanying graphic shows applied irrigation water productivity against land productivity for rice and sugarcane in important states growing these crops. It is interesting to see while Punjab scores high on land productivity of rice, it is at the bottom with respect to applied irrigation water productivity. Similarly, in case of sugarcane, irrigation water productivity in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu is only a third that of Bihar and UP. Thus, there is a need to realign cropping patterns based on a per unit of applied irrigation water productivity.

Technologies exist that can produce the same output with almost half the irrigation water in these two crops. Jain Irrigation, for instance, has set up dripirrigation pilots for paddy in Karnal (Haryana) and Tamil Nadu and for sugarcane in Maharashtra, Karnataka and Andhra Pradesh. The results of these pilots indicate while it takes 3,065 litres of water to produce 1 kg of paddy grain (yield level 7.75 t/ha) under the traditional flood irrigation, under drip, the

requirement can be reduced to just 842 litres. The benefit-cost ratio of drip with fertigation' in case of sugarcane in Karnataka is observed to be 2.64. An extension to this is the 'Family Drip System' innovated by the largest drip irrigation company in the world, Netafim (Israelbased). Netafim has also launched its largest demonstration project in Asia at Ramthal, Karnataka. Direct Seeded Rice (DSR) and System of Rice Intensification (SRI) can also save 25-30% of water compared to traditional flood irrigation. But, unfortunately, the harsh reality is that technological solutions cannot make much headway unless pricing policies of agri-inputs are put on the right track and farmers are incentivised for saving water.

The Punjab government, along with the World Bank and J-PAL, has launched certain pilots under its Paani Bachao Paise Kamao policy to encourage rational use of water among farmers. Under the initiative, water-meters are installed on the farmers' pumps, and if they save water/power compared to what they have been using (taken as entitlement), they get paid for those savings, with direct transfers to their bank accounts.

It is time to switch from highly subsidised pricing of water, power, and even fertilisers, to direct income support on a per hectare basis and investment policies that help with newer technologies and innovations. Water and power need to be priced as per their economic value or at least to recover significant part of their costs to ensure sustainable agriculture.



## Telangana, Andaman and Goa households get tap water supply

Staff Writer feedback@livemint.com

he Centre's Jal Jeevan Mission got a big boost with Goa, Telangana and the Andaman and Nicobar islands providing tap water to every household, the government said on Saturday.

The government also said that 40 million households have been provided with tap water connections since the scheme was announced on 15 August 2019. The government aims to supply tap water to all rural households by 2024. "Presently, Andaman and Nicobar Islands, Goa and Telangana have become 'Har Ghar Jal' states, or UT, and every household in 55 districts and 85,000 villages of the country have tap water supply," the Jal Shakti ministry said in a statement.

In the Union budget for FY22, an outlay of ₹2.87 trillion was announced for the launch of the Jal Jeevan Mis-

In the budget for

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Mission Urban

sion Urban. The aim is to supply water to 4,378 urban local bodies with 26.8 million tap connections.

"Since the announcement of Jal Jeevan Mission on 15

August, 2019, so far, 40 million households have been provided tap water connections, thus increasing the tap water supply from 32.3 million (17%) to over 72 million (37.6%) rural households in the country," the ministry added.

In July 2019, the Centre had formed the Jal Sakti min-



The government aims to supply tap water to all rural households by 2024. GETTY

istry to ensure water supply. The ministry also looks at the management of water resources and drinking water supply.

Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Gujarat and Himachal Pradesh have also qualified for the ₹465 crore performance incentive grant for the current financial year, under the Jal Jeevan Mission (JJM).

"For performance incentive grant, the criteria include physical and financial progress under JJM, functionality of piped water supply schemes and capacity to utilize the fund,"

the ministry said in the statement.

The Jal Shakti ministry was formed by integrating existing ministries including water resources and the ministry of drinking water and sanitation. The larger aim is to work with state governments to ensure 'Har Ghar Jal' to every rural household by 2024.

#### Dainik Jagran 29-March-2021

दिल्ली विकास प्राधिकरण ने शुरू की लुप्त हो चुके जलाशयों की खोज, 21 के पुनरोद्धार के लिए जल वोर्ड को दिया अनापत्ति प्रमाण पत्र

# दिल्ली के 90 जलाशयों को पुनर्जीवित करेगा डीडीए

संगीव गुप्ताः नई दिल्ली

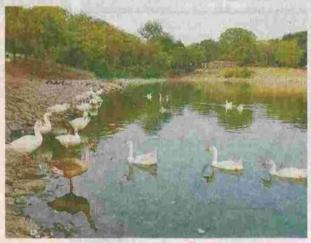
राजधानी में सरकारी अनदेखी और विकास की अंधी दौड़ में विलुप्त हो रहे जलाशयों को दिल्ली विकास प्राधिकरण (डीडीए) नया जीवन देगा।



इसके लिए त्रिस्तरीय प्लान तैयार किया गया है। पहले चरण में 90 जलाशयों पर काम करने

की योजना है, 50 पर काम शरू भी कर दिया गया है। साथ ही डीडीए ने लुप्त हो चुके अन्य जलाशयों की खोज भी शरू कर दी है।

नेशनल ग्रीन दिब्यूनल (एनजीटी) में दिए गए एक जवाब के अनुसार डीडीए ने दिल्ली में अपने अधिकार क्षेत्र वाले 155 जलाशय चिह्नित किए का पुनरोद्धार करने के लिए दिल्ली जल बोर्ड को अनापित प्रमाण पत्र दिया गया है, जबकि शेष बचे 90 जलाशयों



वैदिक पद्धति से साफ हुए रोहिणी झील के पानी में तैरती बतखें 🔹 हरीश कुमार

के लिए डीडीए खुद कार्ययोजना तैयार कर रहा है। इनमें भी 50 जलाशय हैं। इनमें से 44 विलुप्त हो चुके हैं। 21 उद्यान विभाग और 40 इंजीनियरिंग विभाग के अधीन हैं। उद्यान विभाग अपने जलाशयों को नया जीवन देने के लिए जट चका है।

#### यह है त्रिस्तरीय प्लान

ज्यादातर जलाशय पाकों में हैं। ऐसे में जहां जल बोर्ड का पाइपलाइन नेटवर्क है, वहां पर डीडीए इस पानी के जरिये इन जलाशयों को साफ करने और उनमें न्युनतम जल स्तर बनाए रखने

का प्रयास कर रहा है। जहां पाइपलाइन है। एक अन्य तकनीक के तहत कंक्रीट नेटवर्क नहीं है, लेकिन एसटीपी यानी सीवरेज टीटमेंट प्लांट है, वहां इसके पत्थर (गोल, चौकोर, छोटे-बड़े ) और शोधित पानी इस्तेमाल किया जा रहा है। कुछ आयुर्वेदिक पौधे लगाए जाते हैं। हालांकि एसटीपी के पानी को बेहतर इस प्रक्रिया से पानी का शोधन होता है. बनाने के लिए डीडीए पालिशिंग प्लांट उसकी गंदगी व दुगँघ खत्म होती है भी लगवा रहा है। तीसरी तकनीक है इन सीटू बायो रेमेडियल यानी वैदिक पद्धति। इसके तहत जलाशयों में पानी से दूषित और विषावत पदार्थों को निकालने के लिए बैक्टीरिया और माइक्रोब्स (रोगाणु) का उपयोग किया जाता है। यह ऐसी विधि है जिसमें पानी में काओनिमिक्स बैक्टीरिया छोड़े जाते हैं। यह बैक्टीरिया पानी में जमी काई खत्म कर देते हैं, उसकी दुर्गंध भी कम होने लगती है और आवश्यक तत्व में यह तकनीक सफल पाई गई है। महरौली के एक जलाशय में प्लास्टिक प्रदूषित पानी का उपचार किया जाता

के स्लैब बनाकर उनमें तरह तरह के और जलाशय के पानी में कुछ खनिज लवण भी उत्पन्न होने लगते हैं।

#### खोजे जा रहे और भी जलाशय

डीडीए अधिकारियों के मृताबिक करीब डेढ साल पहले दिल्ली के 89 गांवों को शहरीकृत घोषित किया गया था। ऐसे में इन गांवों और ग्रामसभा की जमीन पर बने जलाशय भी अब डीडीए के अधीन हो गए हैं।

ये जलाशय कहां-कहां हैं और किस फिर से जीवित हो उठते हैं। प्रसाद हालत में हैं, इसे लेकर डीडीए ने एक नगर और रोहिणी में किए गए प्रयोग सर्वे भी शुरू कर दिया है। मकसद उनका भी पुनरोद्धार करना है। हालांकि दिल्ली पार्क एंड गार्डन सोसायटी तो घास के उतराने वाले स्लैब पर कुछ डीडीए के अधीन करीब 800 जलाशय आयुर्वेदिक पौधों की जड़ों को लगाकर बता रही है, लेकिन यह आंकड़ा प्रामाणिक नहीं है।

#### सकारात्मक परिणाम से मिला हौसला

डीडीए के उद्यान विभाग के अधिकारियों ने बताया कि नेशनल एन्वायरमेंटल इंजीनियरिंग रिसर्च इंस्टीटयट (नीरी) और आइआइटी दिल्ली के सहयोग से प्रायोगिक आघार पर इन सीटू बायो रेमेडियल तकनीक का इस्तेमाल किया गया। लगभग दो महीने तक प्रयोग करने के बाद परिणाम काफी सकारात्मक रहे। इसीलिए अब इन अनुभवों के आधार पर अन्य जलाशयों में भी इसी का इस्तेमाल किया जाएगा। वसंत कंज के एक पार्क व स्मृति वन में एक जलाशय के कायाकल्प और पारिस्थितिक तंत्र बहाली के लिए टेंडर भी जारी कर दिया गया है।

#### Rashtriya Sahara 29-March-2021

## देश की 48 हजार ग्रामीण बस्तियों का भूजल दूषित

■ संजय टुटेजा

#### नई दिल्ली। एसएनबी

देश की लगभग 48 हजार से अधिक ग्रामीण बस्तियों के भूजल में आर्सेनिक फ्लोराइड, नाइट्रेट व अन्य हानिकारक तत्व मौजूद हैं, जिनसे गांवों के लोग रोगों का शिकार हो रहे हैं। हालांकि प्रभावित क्षेत्रों में शुद्ध पेयजल पहुंचाने के लिए केन्द्र सरकार की ओर से भी कई योजनाएं चलाई जा रही हैं लेकिन राज्य सरकारों द्वारा पेयजल गुणवत्ता पर ध्यान नहीं दिया जाता, जिसका खिमयाजा ग्रामीणों को भुगतना पड़ता है।

वर्ष 2024 तक प्रत्येक ग्रामीण परिवार को पेयजल के लिए नल कनेक्शन उपलब्ध कराने के लिए यूं तो केन्द्र सरकार द्वारा जल जीवन मिशन चलाया जा रहा है, लेकिन देश में बड़ी संख्या में ऐसे क्षेत्र हैं, जहां के भूजल में आर्सेनिक, फ्लोराइड, नाइट्रेट व अन्य हानिकारक तत्व मौजूद हैं। ग्रामीण कोई और स्रोत ना होने के कारण यही दूषित जल पीन को मजबूर हैं। केन्द्रीय जलशक्ति मंत्रालय के अनुसार भूजल में आर्सेनिक, फ्लोराइड, लौह, लवणता,

- इन बस्तियों के भूजल में मौजूद हैं आर्सेनिक फ्लोराइड, नाइट्रेट व अन्य हानिकारक तत्व
- रोगों का शिकार हो रहे हैं यहां के लोग
- राज्य सरकारें पानी की गुणवत्ता को लेकर हैं लापरवाह

नाइट्रेट व भारी धातु जैसे तत्वों की संख्या घटती बढ़ती रहती है और ऐसे में अंतरिम उपाय के रूप में प्रभावित क्षेत्रों के लोगों को 8 से 10 लीटर शुद्ध पेयजल प्रति व्यक्ति प्रति दिन उपलब्ध कराने के लिए गावों में ही जल शुद्धिकरण संयंत्र लगाने के लिए राज्य सरकारों को कहा जाता है।

मंत्रालय के आंकड़ों के अनुसार, वर्तमान में राज्य सरकारों की ओर से केन्द्रीय जलशक्ति मंत्रालय को जो आंकड़े उपलब्ध कराए गए हैं, उनके अनुसार देश में वर्तमान में 48169 ग्रामीण बस्तियों में पेयजल की गुणवत्ता संबंधी समस्या हैं। राज्य सरकारों की ओर से इनमें से मात्र 2637 बस्तियों में ही जल शुद्धिकरण संयंत्र लगाए गए हैं बाकी लगभग 46 हजार ग्रामीण बस्तियों के लोग दूषित जल पीने को मजबूर हैं। जलशक्ति मंत्रालय के अनुसार, केन्द्र सरकार ने जल जीवन मिशन के तहत ऐसी बस्तियों में जल कनेक्शन प्राथमिकता के आधार पर देने का निर्णय लिया है, जहां के पानी में गुणवत्ता संबंधी समस्या है। केन्द्र सरकार के आंकड़ों के अनुसार वर्ष 2017 में भी 27544 ऐसी ग्रामीण बस्तियों की पहचान की गई थी, जहां के भूजल में आर्सेनिक व फ्लोराइड की मात्रा अधिक थी। केन्द्र सरकार के संज्ञान में आने के बाद इस तरफ ध्यान दिया गया और इन बस्तियों में शुद्ध पेयजल उपलब्ध कराने की प्रक्रिया शरू हुई, जिनमें से 1369 बस्तियों को छोड़कर बाकी में शुद्ध पेयजल उपलब्ध करा दिया गया था। अब दुषित भूजल से संबंधित बस्तियों की संख्या एकाएक बढ़कर लगभग 48 हजार से अधिक हो जाने के बाद केन्द्र सरकार ने राज्य सरकारों को प्रभावित क्षेत्रों में प्राथमिकता के आधार पर शुद्ध पेयजल की व्यवस्था के निर्देश दिए हैं।

#### Rashtriya Sahara 29-March-2021

### जल बचेगा, भविष्य बचेगा : राजेंद्र सिंह

#### सहारनपुर (वार्ता)।

जल पुरुष के नाम से विख्यात देश के प्रसिद्ध जल प्रबंधक एवं पर्यावरणविद् राजेंद्र सिंह ने कहा कि जल बचाने से ही जीवन बचेगा और हमें अभी से ही इसके संरक्षण के लिए गंभीरतापूर्वक ध्यान देना होगा। नगर निगम के तत्वावधान में जनमंच सभागार में जल संरक्षण में निदयों और तालाबों की भूमिका पर आधारित विचार गोष्ठी में जलपुरुष राजेंद्र सिंह अपने विचार व्यक्त कर रहे थे।

नगर निगम तालाबों के संरक्षण और उनके सौंदर्यीकरण का अभियान सर्वोच्च प्राथमिकता पर चला रहा है जिसकी जल पुरुष ने मुक्तकंठ से प्रशंसा की। उन्होंने कहा कि मेयर संजीव वालिया और नगर आयुक्त ज्ञानेंद्र सिंह की सोच से वह बेहद प्रभावित हैं।

श्री सिंह ने केंद्र और राज्य सरकारों से आग्रह किया कि वे पानी को बचाने के लिए उन किसानों को हर तरह से प्रोत्साहित करें, जो कम पानी के इस्तेमाल वाली फसलों को अपना रहे हैं। बारिश के पानी को बचाने और भू-जल संरक्षण पर खास ध्यान देने की आवश्यकता है। राजेंद्र सिंह ने सहारनपुर प्रशासन और नगर निगम द्वारा नगर की पांवधोई नदी और ढमोला नदी को पुनर्जीवित करने के प्रयासों की सराहना की।