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Jalasangvad

A Dialogue on Water
Editors: Dr. Datta Deshkar, Shri Satish Khade





The wetland that has been created around a live spring at the RGB stretch was cleaned and cleared off water hyacinth. A team from Sandvik joined in this activity.



Team from Stantec joined for cleaning at RGB stretch.



In protest against the river front development work that has begun in the Bundgarden area of Koregaon Park, a silent march was taken up till the Koregaon Police station and a police complaint jointly filed by citizens, activists and supporters



Massive clean up drive on account of Environment day was done at the Ram Mula Confluence stretch in Aundh



Team from FIS had come for a Nature walk, followed by clean up at the Ram Mula confluence stretch

Jalsamvad



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Mouth Piece of Bharatiya Jala Sanskriti Mandal

■ August 2022

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Editorial

In one Google search, I came across one speech of Shri Nitin Gadkari regarding Indian agriculture and its productivity. In that , he states that in some western countries, the agricultural production of soya bean is more than thirty quintals per acre whereas in our country it averages to four to five quintals. He says that this is unpardonable. With the available technology, efforts should be made by the cultivators to improve our agricultural productivity. This is not the case only of soya bean but if we study the productivity of each crop the situation is more or less similar. He tried to blame the agricultural universities in the country for this poor yield. He wants the teachers from agricultural universities to come out of their air conditioned chambers and help the cultivators to make agriculture economically viable. In fact, he says that it is for this, they are paid.

He went one step ahead. In Vidarbha a new dam by name Gosi khurd is constructed on Vaingange river. This river gets huge water supply from its tributary rivers coming from Madhya Pradesh. He wants that this water should change the fate of Vidarbha farmers. In Maharashtra, sugar cane is cultivated in those districts where there is acute shortage of water. Most of the districts in Marathwada so also the districts like Ahmednagar and Solapur get scanty rainfall and it is totally wrong to have sugar factories in this area. But due to political pressure, many of the factories are opened here causing tremendous pressure on water resources. He wants that such sugar factories should come up in the vicinity of Gosi khurd Dam. But he has put one condition for that. If a farmer wants to cultivate sugar cane in this area, he should see that the yield is not less than 100 tonnes per acre. In fact, because of poor use of water, hundreds of TMC water flows to Bay of Bengal for no reason. He wants the agricultural universities to come forward to train the cultivators in this region to make productive use of water.

How is it that he is insisting the cultivators to shift to sugar cane? As it is, Maharashtra is a sugar surplus state. He does not want the farmers to use this sugar cane for producing sugar. Sugar industry is passing through a very critical situation. We are not in a position to consume such huge stocks of sugar. We are producing it in more quantity which we are unable to consume. We cannot exports it also as in international market we cannot compete with the foreign producers. He wants that this sugar cane should be used for the production of ethanol. He wants these farmers not to be ANNA DATA but they should be URJA DATA. We are importing crude oil in large quantity for which huge foreign exchange is wasted causing tension on the Government resources. This product can very well be an import substitute. It is not only cheaper but also pollution free. He firmly says, food grain farming cannot give good returns to the farmers. They cannot come out of poverty if the cultivate food grains.

He very emphatically says that the sugar research institute located in Pune should open its branch in Vidarbha to give a new look to sugar cultivation in that region. He is of the opinion that it is the change in the cropping pattern which can give a new life to the farmers. He wants that the cultivators should study the world market and act accordingly.

Shri Gadkari is saying all this only after proper studies. He is instrumental in changing the life of innumerable farmers from Vidarbha region by inculcating in them this new spirit. Whenever he visits any foreign country, he brings some new technology useful to the country. There is a saying in Marathi- Adhi Kele, Maga sangitale. He does it first and then tells others to do it. His studies are thought provoking and if implemented they can change the life of cultivators.

Dr. D. G. Deshkar
Editor.

What is our water front ? Part 13 - Epilogue

Shri Chetan Pandit

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In the previous 12 chapters, I have narrated the story of water, starting from how clouds are formed and rain takes place, to how much water do we have, how much we need and how large projects like dams, river linking, are essential. I also covered hydro-power, floods and droughts, water quality issues, and legal and institutional framework. Now we have reached the end of this story. In this last chapter I will deal with three questions.

- What is our water future;
- What ails the water sector;
- What we need to do, to improve our water, food, and energy security;

What is our water future.

The future is bleak, dark, despairing. Acute water scarcity is not something that will happen in future. It is already there, and for quite some years. Domestic water supply, which is the most essential use, needs a very small quantity of water. For an estimated population of 160 crores, at average 100 liters per person per day, the annual requirement is only 58 BCM (Billion Cubic Meters). In Chapter 4 I explained that the total water available for use is approximately 1123 BCM. The 58 BCM required for domestic use is only 5% of the total available water. And yet, we are not able to supply even this quantity. It is also not the case that this is because of uneven spatial distribution of the 1123 BCM of available water. Because, it is not as if domestic water supply is plentiful in some areas and short in some areas. It is short almost all over India. I can not name any city or town that has water supply 24X7. The few places where the water supply is relatively better, even there the water is supplied for only a few hours a day, and people have to store water.

And in most places the situation is pathetic. Getting water for a few hours once in few days, I repeat - for a few hours once in few days - is quite the norm in many places.

In 2016 the city of Latur in Maharashtra had to be supplied water by railway tankers. In June 2019, the major city of Chennai came close to be evacuated, because there was no water left for domestic use. Even in city of Pune, which has five medium sized dams, Pawana, Warasgaon, Panshet, Temghar, and Khadakwasla, within 10 KM from the city, many areas have to be supplied water by tankers.

The quality of domestic water supply is also very bad. No one trusts to drink the water from the tap. Expensive water filters in the home, and bottled water outside the home, have become the norm.

If this is the status for domestic water supply, which needs only 5% of total water resources, then you can image what would be the scenario for irrigation water, which requires about 85% of available water. In absence of canal irrigation, farmers drill borewells and use ground water. As a result of unrestricted ground water use, the ground water levels are falling, wells are going dry. Farmers' suicide are to a large extent due to crop failure, which in turn is due to shortage of water.

The water quality in most of our rivers is awful. In some stretches, viz. Yamuna in Delhi, Gomati in Lucknow, the rivers seem no different from sewage drains. Far less take a bath, you wouldn't even want to step in this river, and if you had to, immediately after return to home you will wash your feet with soap. And these are the rivers

that are revered as holy rivers. So, if we continue with the BAU (Business As Usual) the water future is dark.

What ails the water sector :

How did we come to this pass? Why are we not able to supply sufficient water, reasonably clean water, even for the domestic use? That brings me to the second question - what ails water sector. There are four main problem areas.

1: Mismanagement. Our water governance is very bad. This term, water governance, has two parts. One, taking correct decisions as are necessary for managing the water resources. And two, implementing them rigorously. We fail on both counts. We neither take good decisions, and what few decisions are taken, we are unable to implement them.

The combined live storage capacity of the five dams upstream of Pune is 1000 MCM. And that is for supply during 8 months of non-monsoon. During 4 months of monsoon there is significant flow in the river. For a population of 75 lakhs, the annual domestic water requirement at 100 LPCD is 273 MCM. There is absolutely no shortage of water for Pune. The reason why water has to be supplied in Pune by tankers is, mismanagement. The supply is not metered, therefore no one has a clue how much is leakage. And in absence of metering, wasteful use is common.

In Maharashtra, 70% of irrigation water is used for sugarcane cultivation on just 4% of land, producing 135 lakh tons of sugar, for which there are no buyers !! Sugarcane is cultivated even in Marathwada, which is a drought prone area. And then we supply drinking water to Latur by railway tankers.

Irrigation continues to be mostly by flooding the field, a very wasteful practice. The use of water saving irrigation practices, like drip or sprinkler irrigation, is very little. The average farm holding size is very small. Due to repeated division of land with each generation, the average land holding is now just 2 Ha. Drip or sprinkler irrigation requires an initial investment and is not economically viable for such small farms. Often

loan is taken for purchase of drip/ sprinkler system and is used elsewhere.

2: Reluctance to take hard decisions. It is not as if these follies are not known. Using a disproportionate amount of water only for sugarcane; or sugarcane cultivation in drought prone area; free electricity to farmers which not only makes the electricity companies go bankrupt but also spells disaster for ground water; not metering the domestic water supply in Pune; we know all this is wrong. But we do not have the wherewithal to stop it.

Sugarcane farming and sugar industry has emerged as a major industry in western Maharashtra. Millions of livelihoods are dependent on it directly and indirectly. The sugar industry is also a source of political power and the sugar lobby is very powerful and organized. For all these reasons it may not be easy to reduce the area under sugarcane. But how do we explain permission to new sugar mills, even in the drought prone Marathwada?

What is the excuse of not installing domestic water meters in Pune? Installing water meters doesn't harm anyone's livelihood or the economy. And it is a myth that there is opposition from the citizens. Even if there was, that is hardly the reason for not doing it. But, there is no opposition from the citizens. There is a large new township in Pune near Khadakwasla, called Nanded City. In this township of high rise apartments, each individual flat has a water meter. It is not at all the case that people are reluctant to buy houses in Nanded City because it has water meters. Then who exactly is objecting? The urban residents are seldom as organized as the rural communities. The opposition is only from a few small groups of misguided citizens. A few stray groups oppose it and the administration develops cold feet.

3: Disdain for technology. We as a society have a contempt for modern technology. This despite the fact that we all are reaping the benefits of modern technologies. Viz. all cities are dependent on water stored in large dams for water supply during the 8 months of non-monsoon. Yet, a class called "intellectuals" criticize the dams as evil, the media

gives them space and coverage, and projects them as “water experts”.

Elsewhere in the world, the citizens are proud of their dams, barrages, hydro-power plants, and such. Traveling from Las Vegas to Grand Canyon by road, on the way there is Hoover dam. And the busses stop there to enable the tourists to visit the dam. Aaswan dam on the Nile in Egypt is also a tourist attraction. The people are aware of benefits the dam brings, and take pride in their Nation’s ability to build them. But in India, a lobby is at work 24X7 criticizing the dams as evil, stopping the dam projects, and spinning a totally false narrative that dams are being dismantled in USA.

This disdain for modern science and technology has its roots in a misplaced faith in what goes by the name “traditional technologies”. In Chapter 6 I explained in detail that till about 50 years ago, i.e. till about 1975, farming in India based on traditional methods, organic fertilizers, native seeds, and traditional water management practices, could not produce sufficient food grains for a population of just 40 crores, and we had to depend on food grain imports, given to us as charity. Land productivity was less than 1000 Kg/Ha.

And the generation that witnessed the green revolution, which made India self-sufficient in food grain production, is still around. There were three pillars of green revolution – extension of irrigation, high yielding seeds, and chemical fertilizers. Despite a three times increase in population, India is now an exporter of food grains and other agro products.

I am not surprised that the activists advocate traditional water management practices. Large donations from institutional donors, and particularly the foreign donors, are available only to the NGOs who oppose modern technology. There is not a single instance of an NGO that supports large dams or river linking, getting any donations. But I am surprised that people who have stood in long queues for monthly rations, and have eaten the third rate Mexican red wheat given to us as charity, believe these activists.

4: Environmental Overenthusiasm. Environment conservation is important. But so is agriculture and economic development. However, in our (over) enthusiasm for protecting the environment, in 80s and 90s we enacted environmental legislation and rules that are extremely harsh and plain impractical. Using this legislation, the environmental activists file PILs in various Courts and NGT, and block or delay water resources and energy development projects.

A PIL was filed against the Sardar Sarovar dam on Narmada and the work remained stopped for about 6 years. Fortunately, the Government argued the case well, and was able to convince the Hon’ble Supreme Court that the PIL had no merit in it. The Hon’ble Supreme Court cleared the project. But in the meanwhile 6 years had passed and the cost of construction had increased by several times.

While clearing the project, the Hon’ble Supreme Court directed that relief and rehabilitation (R&R) of the persons who will be displaced, will proceed in parallel with construction of the dam; and a specially constituted sub-group in the Ministry of Environment & Forests will consider and give environment clearance at each stage of the construction of the dam.

The Government had anyway planned to do R&R of the persons in parallel with construction of the dam. But when it is to be done under the orders of a Court, it is not sufficient to do a good R&R. It is also necessary to create a record that it has been done well. Because the activists will file PILs that R&R has not been done as required. And they did file such PILs. Therefore, it wasn’t sufficient to do a good R&R, but it was also necessary to prove that it has been done.

Likewise, it is not sufficient to implement the environmental protection measures as planned. It is also necessary to create a record, so as to be able to prove, that these have been implemented. This resulted in a procedure so complex that it took 17 years to construct a project that normally should have been completed in 5 or so years.

This is just one example. Similar was the case of another good project, the Tehri dam on Bhagirathi

in Uttarakhand. This too was blocked for many years because of the PILs filed by the activists. The first Inter Basin Water Transfer project, the Ken-Betwa link, seems to be headed in the same direction.

The damage caused by environmental overenthusiasm has been realized in the last 10 or so years, and some efforts have been made towards diluting the environmental legislation. But now it is not easy to do that, because a change in laws is itself challenged in the Courts.

What we need to do, to improve our water, food, and energy security.

a) First and foremost, we need to get more serious on water management. March 22 is celebrated as World Water Day. When it started in late 1980s, it was marked by seminars and panel discussions on some water related topics. But over the years, it has degenerated in to a festival. People WhatsApp “Best Wishes for Word Water Day”, as if it was a day to make merry and have fun. In this city of Pune, people take out a procession, with a palanquin carrying water from five rivers in pots, and people in festive dresses singing and dancing. When will this society understand, that such rituals will neither provide us water, nor clean our rivers.

b) For medical problems you see not only a MBBS doctor, but often a specialist, MD, FRCP, FRCS, etc. If you are facing a legal problem, you need advice from a qualified advocate, LLB, LLM. To design your dream house, you will approach a qualified architect. For that matter, even to have your car serviced, you will go to the authorized service center. In all these and other situations, you will act as per the advice of a person well qualified in that discipline.

Then why do you think that an unqualified person who has never studied hydrology, hydraulics, meteorology, etc. perhaps not even studied any branch of science, can advice how to manage water resources, floods, droughts? Unfortunately, people who probably can not repair the leaky tap in their washbasin, and need to call a plumber, are going around as “water experts”.

Like any other specialized domain, water resources

management is also a specialized technology domain and how to manage our water resources has to be left to the water resources engineers.

c) Don't be too scared of environmental issues. As I said earlier too, conservation of environment is important, but it can not take precedence over survival of people. If mankind doesn't survive, for who are we protecting the environment? Also, environment is far more robust than we are being told. The earth has seen huge upheavals, multiple ice ages, large meteor hits, tectonic movements, and yet life carries on.

The rainfall is very high on the western slopes of western ghats and there is a large quantum of water in the west flowing rivers of Konkan region, which goes waste in to Arabian sea. It has been under consideration for quite some time to divert some of this water to the east, to areas that face acute water shortage. Will such diversion cause any harm to the environment? It most certainly will. However, don't be scared. It will not lead to extinction of the earth or mankind. Besides, what are the options? Forego development of this water resource and let people in the east of western ghats live in increasing poverty for want of water; and let people to the west of western ghats also live in increasing poverty because no development work is allowed in western ghats? Is that what we want?

A lot of discourse that goes on in the name of environment conservation, is actually just environmental scaremongering, by NGOs for whom environmental activism is a full time profession, and whose source of funding is a mystery.

d) Accept water use discipline. What that means, I have already explained. In water related articles, example of Israel is often cited. A question is asked “If Israel, a country with so little water resources, is able to do so well in agriculture, why can't we?” Good question. But those who ask this question in a self-righteous tone, are either not aware, or do not tell you, that Israel observes very strict water use discipline. In Israel, one can't simply drill a bore well, put in a submersible pump, draw ground water without restriction, and grow

whatever crop one wants. One needs a license from the government for water use.

There is a lot more to write, but for now this will suffice. I hope you enjoyed reading this "Story of Water". I certainly enjoyed writing it. I grateful to the publishers of Jal Samvad, and particularly Dr. Datta Deshkar, for giving me space and a platform to place before you all what had been boiling inside me for many years. If any of you have any questions, feel free to write to me at cmPandit@yahoo.com. And, take care and stay safe.

India's rank continue to fall in the global SDGs Report

India ranks 121 in the global Sustainable Development Report, 2022

In the 2022 Global Index of Sustainable Development Report, India ranked 121 out of 163 countries. Since 2020 and 2021, the ranking has continued to decline. India's major challenge, as per the report, is achieving 11 of the 17 Sustainable Development Goals, which has resulted in a decline in its ranking.

Progress towards SDG 2 on ending hunger, SDG 3 on good health and well-being, SDG 6 on clean water and sanitation, and seven other SDGs is similar to 2021, while SDG 8, ensuring decent work, has become more challenging.

The overall performance of India on climate action - SDG 13 - has slipped from 2019-2020, mainly due to eight states - Bihar, Telangana, Rajasthan, Uttar Pradesh, Karnataka, Andhra Pradesh, Punjab, and Jharkhand - whose scores have dipped under SDG 13 in the past two years. (Down to Earth)

CSE's recent environment report poses serious climate change concerns

A report by the Centre for Science and Environment (CSE) titled State of India's Environment 2022: In Figures warns that five Indian

states and two union territories, namely Assam, Arunachal Pradesh, Sikkim, Bihar, Himachal Pradesh, Jammu and Kashmir, and Ladakh, face increasing danger from water spread. According to the report, over a third of India's coastline experienced some degree of erosion between 1990 and 2018, with West Bengal suffering the most erosion.

In addition, the report reveals that three out of every four river-monitoring stations in India have reported alarming levels of heavy toxic metals, and one-fourth of the stations, spread across 117 rivers and tributaries, have recorded high levels of two or more toxic metals.

Water levels in most of India's reservoirs and river basins in a grim state

As per the data from the Central Water Commission (CWC), 140 important reservoirs in the country have only 32 percent live storage compared to their capacity. This is due to the absence of pre-monsoon rainfall in large parts of the country combined with heat waves. River basins such as Sabarmati, Mahi, and Mahanadi have storage below the average of the last 10 years.



Moreover, storage is less than full capacity in all 13 river basins including Ganga which has just 39.89 percent storage, Narmada 23 percent and Godavari and Krishna 31.64 and 23.92 percent, respectively.

The data also reveals that Hariharjhor reservoir in Odisha, Nanak Sagar reservoir in Uttarakhand and Tattihalla reservoir in Karnataka had zero storage. While at least eight states have below-normal storage in their reservoirs, at 35 percent Odisha is at the highest departure from normal storage.

Need to explore alternative sources of energy in the long-run: NDMA

In the wake of the 2021 Chamoli floods that killed at least 80 and left 124 missing, the National Disaster Management Authority (NDMA) has compiled a report that urges a shift to alternative sources of energy over reliance on hydropower from Uttarakhand in the long run. Moreover, according to the year-long study of the disaster, many of the hydropower plants in the Himalayan region were built in environmentally sensitive areas.

As stated in the report, lack of predictive thinking by the district administration and the project proponents, as well as the lack of early

warning systems, are also factors that contributed to the disaster taking on massive proportions.

The report warns about the impending risks that remain due to debris from the disaster forming an artificial lake and dam in the Raunthi Gadhera valley. (The Print)

Villagers in Gujarat go to great lengths to save critically endangered saras crane eggs

Residents of Ganasar village in Gujarat have turned one acre of farmland into a makeshift 'artificial wetland' to protect endangered Saras crane eggs.

Several efforts have been made by the villagers to save the eggs over the past one month. First, they used pots and buckets to fill the farmland with water, then created channels to divert water from a nearby canal.

Villagers are also on guard 24x7 to prevent wild animals and dogs from eating the eggs. In 2010, there were only 1,900 of the Saras cranes left in the state; the number is estimated to have decreased further to 600 in the past decade. (The Times of India)

This is a roundup of important news published from May 24 – June 7, 2022. Also read policy matters this fortnight.



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जलसंवाद हे मासिक मालक व प्रकाशक डॉ. दत्ता
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Organization- Paani Foundation

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Paani Foundation is a non-profit, non-governmental organization which is working in the area of drought prevention and watershed management in the state of Maharashtra, India. The organization was founded by Indian film actor Amir Khan and his wife Kiran Rao. Satyajit Bhatkal is the CEO of foundation. The aim of the foundation is to spread knowledge of watershed management and re-stock of groundwater. Since 2016 Paani Foundation is organizing Satyamev Jayate Water Cup competition. In this competition villages compete with each other to implement watershed management and water conservation methods in the summer months which goes up to monsoon season.

The Maharashtra state in India has a history of recurring droughts and acute water shortage throughout last several decades. There are both natural and man-made reason for this situation. Rainfall pattern has also changed due to effect of climate change. Irrigation in the state is 16 percent of area under cultivation which is much lower than national average of 42 percent. This leads to overuse of bore wells, leading to a steep fall in groundwater levels. Sugarcane water intensive crops also cultivated in semi-arid regions make

problem grim. As mentioned by 'Strategic Foresight Group' in their report that by 2030 India's per capita water availability is expected to decline from 1730 cubic meters to 1240 cubic meters.

Amir Khan's TV series Satyamev Jayate had addressed the issue of water scarcity and shortcomings of water management in India in the 12th episode of first season on 22nd July 2012. After the end of series in Nov.2014, Khan and serial director Satyajit Bhatkal decided to take up the issue of chronic water shortage in rural parts of Maharashtra. In 2016 Khan, his wife and Bhatkal set up Paani Foundation and introduced Satyamev Jayate Water Cup. This is people's movement against drought. Every year this event conducted during the months from April to June. It is a competition among participating villages to complete the maximum possible amount of work for watershed development and water conservation within their habitats before the monsoon season begins.

About the competition- For this competition Foundation provides training on technical aspects and leadership to a small number of representatives from each village before start of competition. After this training these trained representative are called Jal Doot or water messengers. Duty of these representatives is to mobilize fellow villagers to work on watershed management structure around the village by shramdaan. The foundation does not provide any financial assistance to carry out works. The villagers are expected to arrange finance from internal, government or from private sources. Foundation's partner organization provides excavators to the participating village free of cost. Fuel cost has to be



bear by participating village. First competition was organized in 2016 in 116 villages of 3 talukas. In subsequent years more talukas and villages included for competition.

Paani foundation got support from Ratan Tata's Tata Trust, Reliance Foundation, Rajiv Bajaj, Deepak Parekh and Ajay Piramal. Funds collected by Paani Foundation are used for arranging competition, training camps, marketing and distributing prizes. Watershed Organization Trust(WOTR) based in Amhednagar is the technical partner of Foundation.

About Water Cup :

The Satyamev Jayate Water Cup is a competition between different villages to see who can do maximum work for watershed management and water conservation in the period of conservation. The Water Cup creates a platform for villagers to apply their training output and make their village water sufficient.

Water Cup 2016 :

competition was conducted in three regions of Maharashtra- Marathavada, Vidarbh and Western Maharashtra. Chosen three talukas were Ambejagai (dist. Beed), Warud (dist. Amravati) and Koregaon (dist. Satara). 850 villagers were trained for this project from 116 participating villages. Competition was held between 20th April and 5th June 2016. Water cup 2016 was a great success. 10000 people were doing shramdaan daily. Volunteers like drivers from State Transport buses in Baramati, IT student from Satara, doctors, lawyers, actors, journalists, government officials and even senior citizens participated with full passion. This created transformative impact on the villages, creating unity in a action and sense of pride for the work they have done collectively by keeping aside old differences. It developed sense of confidence in solving old problem themselves. 1368 crore liters of water storing capacity was created in just 45 days. Velu village in Koregaon taluka was winner.

Water Cup 2017 :

Training for Water Cup 2017 began in Feb.2017, where 6000 people were trained in 22 centers in state. Competition period was 8th April

2017 to 22nd May 2017. 1321 villages participated and 65000 people did shramdaan daily. 70000 hours of machine work was donated by Bharatiya jain Sanghatna. On 1st may (Maharashtra Day) 25000 people took part in shramdaan under title 'Chala Gavi'. 8261 crore liters of storage capacity created in village. Winner village was Kakaddara, taluka Arvi, dist. Wardha.



Water Cup 2018 : 4025 villages of 75 talukas took part in competition. 5945 were given training at 60 training centers. Top three villages got cash prize of 75 lakhs, 50 lakhs and 40 lakhs. Each village that takes part in the Water Cup has an opportunity to become water sufficient village and that is the biggest prize of the village. Basis on which work is evaluated is based on different heads with total marks of 100.

Component	Max. marks
Soak pit	5
Nursery	5
Soil and water structure built through Shramdaan	20
Soil and water structure built by using machine	20
Weight age for doing adequate proportion of line work	10
quality of Structures	10
Soil treatment	10
Water saving technologies	5
Water budget	5
Repairing of existing structures, Dug well recharge	10
Total	100

Impact from 2016-2019

Year	Number of talukas	Number of villages
2016	3	116
2017	30	1321
2018	75	4025
2019	76	4706

- 55000 crore liters of water storage capacity created with a market value of this water is Rs.11020 crore.
- 7006 km length of continuous contour trenching built.
- 4420 km length of deep continuous contour trenching built.
- 14960 km length of compartment bunding.
- 3989 km length of nala deeping and widening.

Samrudhha Gaon Spardha

The Satyamav Jayate Samruddha Gaon is a competition aimed at transforming rural ecology and the rural economy in Maharashtra and empowering citizens to create village of their dream. This is launched in 2020. The main focus of this competition is on sustainable water use and environmental restoration. In 2020-21 almost 1000 villages of 40 talukas are eligible to participate in this competition. These villages have been selected

on the basis of their performance of the Water Cup. **Soyabean Digital Sheti Shala or Digital Farming School**

This Sheti Shala comprises of 23 expert-led training videos which explain the process of cultivating Soyabean. This course covers from soil and seed preparation till harvest. Sheti Shala comprises of 13 question and answer sessions which answers 320 questions raised by farmers. For any questions and suggestions one can write to paanifoundation@paanifoundation.in



Training

The Paani Foundation arranges tight schedule training program to motivate and empower villages fighting drought in Maharashtra. It is a four days residential training program which inspires villages to break social barriers and gain technical, social and social skills. Every village nominates five people for training including two women participants. In 2020 the training was opened to 1000 villages of 40 talukas of Maharashtra, eligible to participate in the 'Samruddha Gaon Spardha'. Due to COVID-19 pandemic it was conducted digitally in four phases. 51000 people trained Between 2016-19. Key points of training'

- An Emotional Experience- the course is designed with games, songs, experiments, field visits and shramdaan. Trainees are also trained to develop an emotional understanding of the

problem and solution.

- Capacity Building- Training is given to Villagers on the topics of water budgeting, use of technical instruments, surveying village topography etc.
- Exposure to Success Stories, and
- Access to an Open Source Knowledge Bank- Films and books relating to spardha are available online at no cost.

Workshop

Nisargachi Dhamaal Shala :

(Fun School of Nature) is Paani Foundation's workshop for students in Zilla Parishad schools in Maharashtra. Students to become more sensitive on environmental issues is the aim of this shala. No textbooks, homework or exam are involved and it is free of cost. Students learn about climate change, water scarcity and conservation through games, films and experiments. This is audio visual program. In their 13 weeks program in 2019 and 2020 Nisargachi Dhamaal Shala reached 65000 students of 1900 Zilla Parishad schools of 76 talukas of Maharashtra. This program was conducted in villages participating in Water CUP and samruddha Gaon competitions.

Planeteers Workshop :

Paani Foundation's Planeteers Workshop is an four session digital experience to discover the wonder of our environment. It introduces participants to the history of our planet, power of natural resources and the role of humans in the ecosystem. Topics covered are History of Planet, study on water, Climate change and Solutions for change. Upon completion certificates are awarded to participants.

Books on Watershed Management :

Watershed Management is a scientific and technical solution for improving water and soil conservation capacities. Making available simple material on creating watershed structure was a challenge for this science to reach many communities. Series of books in Marathi published by Foundation on the topic to understand and also made them available. Few books of them are,



During the fight for water abundance village, many social barriers have been broken and countless stories of change have emerged across Maharashtra.

Bridging Religious Divides :

In Janephal village of Aurangabad dist. Hindu–Muslim communities grew closer and set their differences aside and redeveloped their friendship during Water Cup 2019.

Defeating Alcohol addiction :

In Anandgaon village of Beed district Uday Kulkarni, alcohol addict was inspired by the cup competition and devoted his time towards making his village water sufficient during Water-Cup 2018.

Overcoming Political Differences :

In Krishnapur village of Yavatmal district, local representative from four political parties kept their opposing ideology aside and united to offer shramadaan during Water Cup 2017. village set an example for the whole country.

Shri Uddhav Thackeray, the than CM Maharashtra met Mr. Amir Khan, Ms. Kiran Rao to get an overview about the water conservation work done since 2016. The CM shared his appreciation

and offered his support tor the Foundation’s work.

“The water conservation work undertaken by Paani Foundation has benefited the entire state. Water management and holistic development of the village are equally crucial. For this work, the state government will offer complete support to Paani Foundation.”

Mr. Uddhav Thackeray
Hon’ble Chief Minister, Govt. of Maharashtra

Organizations supporting Paani Foundation are Luthara & Luthara Law Office, Maharashtra State Rural Livelihoods Mission, Snehalaya, ICRISAT, BARC, Sahyadri farms, WOTR, ACWADAM, PO CRA, Saytrees, Mahatma Phule Krishi Vidyapeeth, IIMR Hyderabad and Dr. Punjabrao Deshmukh krushi Vidyapeeth

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Message of Solidarity from
Shri Uddhav Thackeraty C M
Maharashtra

Evaluating water use reduction strategies in Marathwada

Shri Vivek Jha &

Shri Vishnu Khedkar

Tracking the outcome of select water conservation structures with the community in Aurangabad



Marathwada, comprising eight districts in Maharashtra, often makes the headlines due to recurring drought. Irregular rains and shifts to cash crops have made the water situation precarious in the region. “The solution lies in tapping the rains wherever it falls,” is most talked about but is not easy to implement due to a lack of financial resources and poor convergence between community, gram panchayat, and government departments.

In the selected villages of the Phulambri and Sillod taluka, Aurangabad district, rainwater has been tapped through water conservation structures in ten locations by the community, gram panchayat, and Sehgal Foundation. The outcome tracking of the rainwater conservation structures with the community shows increased water levels in wells, availability of more water for agriculture, increases in crop yields, and more regular availability of drinking water.

The Phulambri taluka has an average annual rainfall of 640 mm and witnessed an annual decrease of groundwater level by more than

0.2m/year in both project talukas as per CGWB. Also, the aquifer management plan by CGWB indicates that in both the tehsils an additional gross storage capacity of 230 million litres each is required to check the declining trend.

The threat to groundwater sustainability by any increase in the groundwater development stage (as per CGWB) from 83.24 percent in Phulambri, and 67.57 percent in Sillod to more than 90 percent will need to be offset through the construction of more check dams and enhanced groundwater recharge. The villages where ten check dams were constructed in 2019–21 have the lowest groundwater levels, i.e., 200 ft below ground level, as per the CGWB, Aquifer Maps and Ground Water Management Plan for Aurangabad district by CGWB (2019).

Nearly 50 percent of the villages in Aurangabad district received only 56 percent of average rainfall in 2018. The average annual rainfall from 2013-17 was 640 mm as per the India Meteorological Department (IMD). Recurring droughts have highlighted the urgent need for water conservation and for increasing water availability using different water augmenting techniques. Sehgal Foundation’s proposal for the construction of check dams had instant community and gram panchayat support.

Site selection with the village development committee

While selecting sites, a participatory approach was adopted. The process started with the formation of village development committees (VDCs) comprised of influential persons of the village, members of gram panchayat, women leaders, and those from deprived sections, with the

objective of orienting selected community leaders to lead the process of development in the village.

Feasible sites proposed by the VDCs were finalized on the basis of technical inputs on local geology, water harvesting potential, and priority area maps for groundwater recharge prepared by the state Groundwater Survey and Development Agency (GSDA) of Maharashtra.

The VDCs also helped to overcome and deal with various concerns related to dam safety, submergence of adjoining fields, obstruction to their field roads, and socio-political issues raised by adjoining beneficiary farmers and site owners. It was not always a smooth ride. On many occasions, families, in spite of knowing the benefits, protested the civil construction that led to changes in two check dam sites.

Selected sites were near agricultural fields with a high density of irrigation wells so that benefits could be immediately visible. Depending on the sites, structure sizes varied from 8.5 to 16 meters in length and 2.5 to 3 meters in height. All check dams were constructed in RCC to overcome safety issues of the structure due to sudden surges of water, challenges posed by black soil, and the non-availability of good quality stones required for stone masonry.

Check dams in the area had to be constructed in a short period, i.e., April to June when fields are vacant, to transport construction material and machines to the site, otherwise it would have been difficult due to standing crops and wet soil.



Tracking outcomes with the community

After the construction of the check dams, outcomes were tracked with the help of the community and engineers. The tools used for outcome tracking were transect walks to the sites, wells, and agriculture fields; focus group discussions with farmers and families in the villages, sentinel images (remote sensing data), and the Google Earth Engine platform for estimating crop acreage.

Table: Increase in rabi crop coverage measured with sentinel images and Google Earth images

Name of the Village	Cropping area 2019, ha	Cropping area 2020, ha	Cropping area 2021, ha	Cropping area 2022, ha	Times increased over the pre-construction period
Hatti	146	603	383	644	4.4
Nidhona	212	606	515	612	2.87
Wawna	139	428	388	369	2.64

The data in the table was gathered from farmers in the focus group discussions, indicating a substantial increase in area under rabi crop due to enhanced water availability as compared to the preconstruction period. The rise in Hatti village was considerably more due to a large rainfed area (>90% reported in the 2011 District Census Handbook) brought under irrigation.

The groundwater level also showed a significant increase up to 33 feet in the dug wells in the Wawna and Nidona villages from 2020 to 2022. The average rise in water level was in the range of 12–10 feet in the dug wells located 200 to 500 meters from the check dams.

Ashok Shelke, a farmer of Wawna shares that water in his well has increased from 4-5 feet before the construction of the check dam to 25-30 feet after the construction of the check dam, hence he has enough water to irrigate his crops. Prakash Janjal of Hatti village and Mahadev Rautry of Nidona village have also seen several feet increase in water level in their wells after the construction of check dams. Farmers recognized that the construction of sixteen artificial recharge wells also contributed to faster groundwater replenishment.

Focus group discussions and interviews with thirty-nine farmers show that 97 percent of farmers accept that groundwater levels and

cropping areas under irrigation have increased in the last two years. Also, the average income from agriculture has increased by 30–40 percent in this time span.

In the three villages, some farmers have shifted from cotton and wheat to ginger as it fetches a good price in the market. It also shows that farmers are assured of regular irrigation water, hence they have started cultivating ginger.

When asked about any changes or improvements in drinking water availability, 90 percent of farmers mentioned that their drinking water problem is completely resolved as water is regularly available in wells. Earlier, the wells used to dry up in April–May every year.



Demand side management of water through village development committee

The community has testified that the water availability (irrigation and drinking) has increased due to the construction of check dams in the villages. Aurangabad received good rains in 2020–2021, which has also affected crop yield positively. But good rainfall may not result in the replenishment of water in the wells as the drains in the area are steep, and water flows through them quite fast.

Check dams, by slowing down the flow of water, have resulted in the replenishment of the wells. The average recuperation rate (time taken to reach water level to its original position) of the well has improved from 23 to 12 hours after the construction of check dams in Nidona village and 5 to 3 hours in Wawna village due to the construction of check dams in the villages. The faster recuperation rate in Nidona may be due to the

location of sites in higher reaches of hills and geological formations.

Realizing the benefits of check dams, villagers have been keen to install water-saving devices in agriculture through the state government scheme, Nanaji Deshmukh Krishi Sanjeevani Prakalp (POCRA), which provides drip, sprinkler, and other irrigation facilities at 80 percent government subsidies. VDC members have been made aware of the scheme in the training programs run by Sehgal Foundation.

Due to the efforts of VDCs and gram panchayat in adopting the scheme, nearly 70 percent of cotton-growing areas in project villages are under drip irrigation, thereby saving considerable water on irrigation in the village. However, farmers shifting to ginger due to better availability of water is a cause of concern that still needs to be discussed with farmers.

Farmers have shifted to cotton in the villages from less water-consuming traditional crops two decades back, and its reversal seems to be a difficult proposition in the context of unpredictable income from agriculture due to weather issues. Overall, villagers understand the importance of conserving water using water harvesting structures and saving water in usage through appropriate water-saving devices in agriculture.

Way forward

The process followed in site selection with the community, and tracking outcomes with them make the construction of water harvesting structures inclusive and helps the community to own the structures. Closely watching the benefits which accrue to them, they want to maintain the structures with the help of VDCs and the gram panchayat.

The question is how to replicate the process and build structures appropriate to local conditions. Neither the panchayat nor the community has the financial resources to build the structures. Shortages of local black stones prevent them from making structures from local materials. The central or state government schemes should bring in policy to support the construction of two


water harvesting structures per year in a gram panchayat, which will give a fillip to water harvesting in rural Marathawada.

Authors

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Vishnu Khedkar is Program Lead, Water Management, Sehgal Foundation. He has a B Tech degree in Agricultural Engineering, (PDKV Akola, MS), Master of Engineering in Agricultural Engineering (specialization in Farm Machinery Power); PG Diploma in Organic Agriculture Management from MPUAT, Rajasthan. He specializes in natural resource management and in the capacity-building of farmer organisations.

Courtesy : India water Portal

Stockholm Water Prize 2003 Prof. Peter A. Wilderer, Germany Gajanan Deshpande +91 9822754768	
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(An article series has been launched in August 2020 to learn more about the World Water Prize winners and their work.)

The winner of the World Water Prize-2003 was Prof. Peter A. Wilderer from Germany. Wilderer set out to become an architect in his youth. But in real life things turned out very differently. Instead of designing buildings, prof. Wilderer spent his life in water management and for his outstanding work in this field he became the recipient of the Stockholm Water Prize-2003.

Professor Wilder, in his long-term study, firmly believes that water management can only be successful if the interrelationships between its

ecological components, ecological and microbiological systems, and human activities are understood in detail. Professor Wilderer repeatedly demonstrated his ability to solve and define scientific problems in a variety of disciplines and developed a comprehensive and holistic approach to sustainable and integrated water management as well as wastewater management.

Peter A. Wilderer is a professor at the Technical University of Munich and also serves as director of the Institute for Advanced Studies on Sustainability. Professor Wilderer, a civil engineer, recognized the need to understand the various effects of human activity on the water cycle in the early 1970's. He brought together scientists working in various disciplines to solve the problems that have arisen and also with due interaction with society, industry, business and public bodies he showed that sustainable water management is possible only if the decision-making process is based on sound scientific foundations and appropriate technology.

An example of this is an international training program "Safe Blue Danube" on water-related risk management. The aim is to detect, prevent and develop appropriate measures to prevent catastrophic flood and accidental pollution in the River Danube, its tributaries, and the delta of Black Sea.

Professor Wilder's research is characterized by a rare combination of in-depth development of technology and in-depth study of the environment and the quality of human life. With the introduction of basic research into modern bio-film kilns, their contributions have made it possible to treat and dispose of wastewater from civic and industrial plants around the world safely and in everyday use.

He was one of the first researchers to question how sustainable it would be to exchange Western sanitary concepts with the rest of the world, focusing on large-scale centralized measures used in traditional methods in large cities. Thus, they quickly recognized the importance of decentralized small-scale efficient

wastewater treatment and water reuse and encouraged it everywhere; as 95 percent of urban population growth will be in the fastest growing cities in developing countries.

Professor Wilder humbly states, "I am not a philosopher; but I think that in order to be able to survive, human societies must adapt to the adoption of new ideas. Also applies to all technical concepts, where it is necessary to adapt to local cultural requirements. For me, sustainability does not mean that we have enough oil for the next generation, but I mean that the next generation should be able to adapt to any future energy source."

Professor Wilder's earlier ambition to become an architect is still reflected in his work. Creativity and curiosity are two essentials in any way of life. "Even if you don't have the technical equipment or the expensive kits for analysis, you still have them fully in your mind," says Professor Wilder." There is so much more to learn through the internet. However, the solution lies in the combination of individual creativity and ability."

In the end, he says, such creativity is already there everywhere. For example, it would be helpful in finding out solutions to specific water problems that are faced by the developing countries.



34 percent of India's coastline suffers from

erosion, West Bengal worst affected

Taken from India Water Portal

West Bengal's coastline suffers the worst erosion while Goa's remains stable



The recent National Centre for Coastal Research (NCCR), Chennai, data shows that 34 percent of India's coastline of 6,907.18 km is facing erosion, while 26 percent is accreting, and the remaining 40 percent is stable.

States with stable coastlines are Goa (67.1%), Maharashtra (64.6%), Daman and Diu (53.7%), Gujarat (53%) and Karnataka (50.1%) which are all on the West coast. In contrast, West Bengal, Puducherry, Kerala and Tamil Nadu are experiencing erosion of more than 40 percent, with West Bengal being the worst affected.

Accretion is highest along the Odisha coast at 51 percent followed by Andhra Pradesh and Karnataka. A number of coastal protection measures have been undertaken by the government, including Integrated coastal zone management plan, prevention of soil erosion, shelterbelt plantation, mangrove plantation, etc. (News 18, The Hindu)

2022 to experience a normal monsoon, predicts IMD

Using climate models, the India Meteorological Department (IMD) has generated a long-range forecast for the upcoming southwest monsoon season, which brings rainfall across the country from June to September. According to the forecast, the monsoon in 2022 will likely be normal with 96-104 percent of India's long-period average (LPA). The seasonal precipitation is predicted to be 87 cm.

As per the spatial distribution for the four-month period, there is a possibility of normal to above-normal rainfall in parts of northern peninsular India, adjoining Central India, and along the Himalayan foothills and in some parts of Northwest India. In contrast, many parts of Northeast India, some parts of Northwest India, and some parts of the South Peninsula will be likely have below-average rainfall. (The Weather Channel)

Cost of destroying forests for Mokedatu project is estimated at Rs 8,160 crore: IISc

The Indian Institute of Science (IISc) has conducted the first-ever economic analysis of its kind on the destruction of forest resources due to the Mokedatu project.

It concluded that the submergence of 4,800 hectares of forest due to the project would cost Rs 8,160 crore. The Mokedatu project is a multipurpose (drinking and power) project, which involves building a balancing reservoir, near Kanakapura in Ramanagara district.

Net present value for the ecosystem assets of the forests to be submerged for Mokedatu has been calculated by factoring in a stream of income

that will be earned in the future and discounting that income back to the current accounting period. The project is expected to impact about 3,000 hectares of forest land in Cauvery Wildlife Sanctuary (CWS) which forms part of the elephant corridor connecting to Biligiri Ranganathaswamy Temple (BRT) Tiger Reserve. (News nine)

Heat waves cause fires in food-bowl states, destroying harvest-ready wheat

A combination of extreme temperatures and hot dry winds across northern Indian plains has led to unusual farm fires in the food bowl states - Uttar Pradesh, Rajasthan, Punjab and Haryana - over the past two weeks. In these states, the fires have destroyed swathes of harvest-ready crops. As a preventive measure, the Punjab government has cut off electricity in high tension wires running through fields as a safety measure. Authorities in Rajasthan and Punjab have asked farmers to avoid smoking near fields or storing combustible materials.

Experts report that the extreme heatwave conditions and lack of moisture have made vegetation brittle and dry, which has made crops easily combustible. The northern part of the country will continue to experience severe heat waves in the coming days, according to the

forecast. (Hindustan Times)

Fish deformities linked to microplastics in the Cauvery river: Study

The Indian Institute of Science (IISc) has published a study on the pollution at the Krishna Raja Sagara dam and its potential effects on fish. The study indicates that microplastics and chemicals containing cyclohexyl functional groups, commonly used in agriculture and pharmaceutical industries, are responsible for deformations in fish from the Cauvery River. There were two parts to the study, the first part was to analyse the physical and chemical parameters of the water samples, and the second part investigated whether pollutants in the water are affecting the fish.

Researchers found that microplastics and chemicals with the cyclohexyl group reduced dissolved oxygen in the water, which in turn triggered ROS (Reactive Oxygen Species) accumulation in animals like fish causing them to develop abnormalities. (The Hindu)

This is a roundup of important news published from April 5 - 18, 2022. Also read policy matters this fortnight.



Informing children about environmental pollution

Smt. Amita Bhandari

Children are important stakeholders in bringing about change, say experts



Children are important stakeholders in the path to sustainable development, in addition to being the most effective agents of climate change-related actions, emphasized experts at the launch of *Pollution Solutions: For a Cleaner, Greener Earth*, a book for children authored by senior journalist Urmi A Goswami and brought out by The Energy and Resources Institute (TERI) supported by GAIL (India) Limited, in New Delhi on Tuesday.

The book, aimed at children in the age group of 8-12 years, serves as a step-by-step guide to pollution control and sustainable development. The author introduces children not only to different aspects of pollution, but also to the concept of climate change and global warming.

Launching the book, Dr Vibha Dhawan, Director General, TERI, said, "We have to leave behind for our children at least the kind of environment we inherited. Development has to take place; fortunately, we have greener options now." Asserting that children are the most important stakeholders in bringing about change, she noted that it is our collective duty to impart to

them values of sustainability.

Publishing good books, observed Ms Anupama Jauhry, Head-TERI Press and Associate Director, TERI, is a service to society. "We have built an empire on pollution. Pollution and growth have become inextricably linked. While laws and regulations are in place, the effects of pollution are still apparent. Apart from introducing changes in policies, including behavioural changes have assumed greater importance," observed Ms Jauhry.

In his opening address, Dr Suneel Pandey, Senior Fellow and Director, Environment and Waste Management Division, TERI, emphasized the need to view the problem of pollution holistically. "Pollution should not be seen in silos but holistically. *Pollution Solutions* is a step in the right direction as the author also tries to bring in the climate change perspective as well," said Dr Pandey.

In his special remarks, Mr MV Iyer, Director (BD and Marketing), GAIL (India) Limited, said the authority has been highlighting the menace of air pollution long before it became a part of mainstream conversation. "Although awareness has increased over the years, further sensitization to nudge individuals to lead a sustainable and green lifestyle is needed. One of the ways is to start the conversations early, especially in schools and colleges. We realize that change happens more often through public-powered democratic movements than enforcement through laws," said Mr Iyer.

Author Ms Goswami observed the book is a way of addressing the issue of pollution in a way that makes sense to children. "The book also deals

with kinds of pollution which are not talked about often — light and noise pollution, for instance. The idea is to engage with children,” added Ms Goswami.

In a panel discussion on ‘A Way to Cleaner and Greener Earth’, Dr Sumit Sharma, Programme Officer, UNEP; Mr Santanu Roy, Executive Director, GAIL (India) Limited; Dr Kavita Sharma, Professor, Department of Elementary Education, NCERT; and Ms Goswami, deliberated on how individual action can bring about incremental but impactful changes. “Children can guide us in adopting a better way of living,” said Dr Sharma.

Noting that time is running out on climate action, Mr Roy asked, “Everyone has a part to play, but who takes the baton?” Professor Sharma addressed the need for a multi-disciplinary approach to environmental education; Ms Goswami underscored the power of small steps in bringing about change. “It is important to take

small measures as well because they add up,” she added. Dr Livleen K Kahlon, Senior Fellow and Associate Director, Environment Education and Awareness, TERI, delivered the vote of thanks.

About TERI

The Energy and Resources Institute (TERI) is an independent, multi-dimensional research organization, with capabilities in policy research, technology development, and implementation. Headquartered in New Delhi, TERI has regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji, and Nainital, supported by a multi-disciplinary team of scientists, sociologists, economists, engineers, administrative professionals and state-of-the-art infrastructure.

Courtesy : India Water Portal



Making the invisible, visible

Shri Eshwar Kale

The water stewardship initiative by WOTR that developed a tool to visualise aquifers has not only helped farmers understand groundwater as a shared resource, but also led to a behavioural change among water users and helped implement groundwater laws and policies.



Excessive dependence and unregulated use of groundwater is draining India dry with 84 percent of groundwater being used for irrigation and 90 percent for drinking in rural areas. The number of overexploited blocks (district subdivision) in the country have increased from 28 percent in 2004 to 31 percent in 2013.

The State of Maharashtra, which has 52 percent of its area prone to drought has been witnessing rapid declines in groundwater levels. Climate change and monsoonal variations are further worsening the situation and extreme events such as droughts, heat waves and floods are rising in the state. Drinking water shortages are becoming common. The perception of groundwater as a private resource has made it vulnerable to exploitation and put farmers into a competitive mode as they abstract it through wells

and boreholes.

The challenge is to mobilise and sensitise communities for improving water governance by making the invisible groundwater visible argues the paper 'Making the invisible, visible: 3D aquifer models as an effective tool for building water stewardship in Maharashtra, India' published in the journal Water Policy.

Making the invisible, visible

It is important to develop an understanding of the aquifer systems, including basic hydrogeology, groundwater flows, groundwater depth, and sustainable aquifer yields among people from villages for them to manage it sustainably. Maharashtra has a long history of watershed development programmes, which have increased water availability in the villages, resulting in an increase in irrigation, agricultural output, and economic prosperity.

However, this effort has now become unsustainable as surface water availability has declined triggering a race among farmers for groundwater, resulting in water scarcity and crop failure. Thus, how to develop an understanding of groundwater among the villagers has been a challenge.

Water stewardship initiative (WSI)

The paper discusses the findings of a unique effort made by Watershed Organisation Trust (WOTR), a premier organisation working in India in the field of water management and sustainable land management practices to initiate the Water Stewardship Initiative (WSI). This involved the development of a Community-Driven Visual Integrator (CoDrIVE-VI or CDVI) as one of the important tools that can produce an operational 3D

map of the local aquifers.

WSI was implemented in 100 villages in Maharashtra from 2015 to 2018 and stakeholder engagement events were conducted leading to water supply and demand-side interventions, institutional strengthening, and capacity building. The CDVI tool was applied in 25 villages that were groundwater stressed along with WSI activities, to enhance groundwater literacy and mobilise communities for aquifer management.

A pilot on aquifer management under the WSI was planned in a district of Marathwada region. Applying the CDVI tool, an aquifer shared by 14 villages was identified and delineated in Bhokardan block and named as the 'Malegaon aquifer' - based on the name of the central village in the shared aquifer.

The main objectives behind the Malegaon pilot were generating awareness, sensitising and mobilising the villagers, building a cadre of 'Water Stewards' (Jal Sevaks, trained village youths) who would take up the responsibility of managing the aquifer sustainably, and motivate villagers to regulate their water use through water management practices.

Village Water Management Teams (VWMT) were formed in 14 villages, and Jal Sevaks facilitated VWMTs for planning and execution of water management practices. These 14 VWMTs were federated in the Aquifer Management Committee (AMC). Each Gram Panchayat (local government executive) nominated two members from its VWMT to the AMC. Once the AMC was formed, a CDVI model was prepared for surface and sub-surface with the involvement of key villagers.

These models were then presented in the Gram Sabhas and village meetings. The Malegaon AMC had 15 members, one representative from each village, and the Jal Sevak on this committee. The Malegaon AMC was registered under the 1860 Societies Registration Act by contributions from members to pay the registration fees and for covering daily expenses.

The maps helped participants develop a clear

understanding of aquifers

The maps generated consensus on many points and all the participants understood that they all drew groundwater from the same aquifer, and thus needed to prioritise more efficient groundwater use. This led to:

- Plans to harvest water to recharge their aquifer (a few structures have been constructed to address this)
- Demand management through appropriate crop planning
- Water-saving by micro-irrigation
- Formulation of village-level rules for water use and crop selection.

These discussions and information shared during the stakeholder engagement workshops led to a new and deeper understanding of water resources and presented the villagers with an opportunity to deliberate and discuss 'water' as a 'shared problem' leaving aside all other differences and dynamics of the village. They learned how to calculate the water budget and decide how to use water efficiently by taking collective actions.

The villagers also highlighted some external challenges that served as barriers in sustainable use of water such as convincing the large irrigating farmers, mainly orchard owners, for following the village water budgets and aquifer management plans due to availability of good market for water-intensive cash crops and changing rainfall patterns. The AMC members highlighted the need for effective regulation on water users by law and the district and block-level administration, besides social pressure.

Applying the CDVI model in the villages or watershed

With the CDVI tool, CDVI models were prepared in 25 groundwater-stressed villages of the Ahmednagar and Jalna districts with the help of the CDVI tool and engaging a team of key village informants representing older knowledgeable people, women, members of the Gram Panchayat, and other village institutions, adults and youth. This

greatly helped the villagers to visualise their village topography as well as sub-surface aquifers, which they had never seen in a 3D format before.

As one of the participants from the Sangamner block stated "I never thought that I could see our groundwater resource. The stakeholder engagement event made us realise that we pull out groundwater from the same aquifer. It is a common resource and therefore, important to manage together."

A Sarpanch (village head) from one of the villages from the Bhokardan block said, "Attending the workshop enhanced our knowledge regarding the different rock types that are available in our village. It made us realise that if we do not manage water sustainably now, the coming generation will suffer. At the same time, women must be involved in these efforts as they face water problems in everyday life."

WSI outputs and impact

Of the 100 villages where WSI work was carried out in Maharashtra, the performance of 46 villages was considered satisfactory.

Most members of VWMTs in these villages acknowledged the water crisis facing them and their own water usage and management practices. In all these villages, communities made their water stewardship (WSI) action plans (such as water budgeting and its follow-up in terms of supply and demand-side management), and 75 villages submitted these plans to the government authorities to seek the convergence of different government schemes and programmes.

Information about the poor water status and the water demand has encouraged the VWMTs and the Gram Panchayats to frame village-specific rules as guidance that are endorsed by the Gram Sabha. Seventy-eight villages have formulated rules, such as a ban on drilling new boreholes, limits on the depth of boreholes, and other such rules as acceptable to them.

Around two thousand farmers have adopted water-efficient technologies (such as

micro-irrigation and mulching) and better farming techniques. The water harvesting capacity in all the villages has increased by about 9 billion litres through community contributions and governmental action.

The VWMTs and Jal Sevaks have played an important role in sensitising people and organising them and stakeholder engagement events have provided a platform for village representatives, experts, service providers, and government agencies.

The events have helped government functionaries to understand the underlying causes of the local water crisis and lent their support to the committed measures in these villages.

The WSI has provided valuable lessons in understanding the complex relationships and compulsions that influence behaviours that determine water access and use them at the ground level.

It remains a challenge, however, to sustain the motivation of Jal Sevaks and VWMTs after the withdrawal of WOTR from villages.

Limitations have also been found in achieving equity as gaining the cooperation of large and irrigating farmers for changing their practices has proved to be difficult. However, the social pressure through the Gram Sabhas has been able to address this to a limited extent.

Learnings and the way forward

- The implementation experience of the WSI highlights the need for an enabling policy and institutional framework that can facilitate and encourage community and stakeholders to participate in the effort.
- Guidance and monitoring support to the community are extremely essential beyond the duration of the project period to make the effort sustainable in the long run.
- The establishment of a mechanism that enforces policies and regulations for the common good in a transparent, fair, and consistent manner is necessary if the culture and practice of 'water stewardship' is to become ingrained.
- The WSI and CDVI tools can be greatly useful in

influencing the behaviour of groundwater-using communities and help achieve the goals set by existing policies and programmes such as the Maharashtra Groundwater Act of 2009, the National Project on Aquifer Management (NAQUIM), the Atal Bhujal Yojana, the SDG-6 ('Clean water and sanitation for all'), and international commitments for climate adaptation.

- Generating knowledge and information jointly with people, and making scientific information accessible to people through stakeholder engagement have great potential in encouraging communities to be a part of the effort.

However, it is necessary to simultaneously address the external forces such as the market incentives for water-intensive crops and the effective implementation of water-related laws and policies through effective regulation on the ground, argues the paper.

Courtesy : India Water Portal

World Water Day-2005
Water for Life : 2005-2015 -
An International Decade for Action
Gajanan Deshpande, Pune
+91 9822754768



(A new article series has been launched from August 2021 to learn more about the importance of World Water Day and the various water awareness programs implemented every year.)

Maintaining the balance of the environment, eradicating poverty, solving the problem of hunger are essential for human health and well being and water has become a key issue in these development aspects. In the year 2005, the theme for world water day was "Water for Life : 2005 to 2015 - An International Decade For Action".

Since water is essential for life, it was expected that various plans would be drawn up from 2005 to 2015 to take practical action on developmental issues of water as per the above concept. Accordingly, various issues related to

water were to be addressed in this decade and it was decided that each government should clarify its water policy. The member states were urged to implement the agenda within 10 years, set out at the Rio-de-Janeiro conference on Agenda 21.

Water and Environment:

The most important factors in maintaining the balance of the environment are water and human beings. Water is an essential element of life on earth for humans, animals, and plants. The essence of a happy life on earth lies in how nutritious this element is for the life of all of them. Based on water, man achieved his development and made paradise flourish on earth. In the Indian psyche, water has been given the name 'Tirtha' and placed in the highest place of reverence. In the same way, we celebrate various festivals like Pola, Nagpanchami, Vat-puja in order to increase the respect towards animals, birds and trees by recognizing their real importance in life. The feeling behind this is that the balance of the environment will be maintained properly.

However, it is now clear that true harmony and mentality are disappearing. Our rivers, reservoirs and various water sources are getting polluted, deforestation is taking place, cleanliness of our temples, our public places, our roads is declining, dust and pollution in the air is increasing and crop practices are not being adjusted according to location. In general, it seems that our social and mental sensations are rapidly declining. Water will remain in the environment as a useful element to the extent that a vigilant society that conserves water surrounds that water.

With this in mind, environmentalists, scholars, rulers, administrators, social and political activists should all come together to discuss and manage environmental issues. It aims at holistic development of the society as well as elimination of social and economic inequality through balanced use of natural resources. A number of measures will have to be taken to curb and transform such issues that cross the boundaries of the environment. Water should not be an individual property but should be developed as a

system of social ownership and social welfare.

To achieve this socially, you have to change your personal habits too. You just have to give up your habits like throwing out garbage anywhere or throwing something in the water. The environment is not only created by nature but also depends on the efficiency of human society to manage it consciously and this has to be brought to the notice of all. From schools to the educational system and beyond to the public forums, we will have to constantly undertake new initiatives for this and we will have to build organizations that can handle it.

Water and food security:

Due to the growing population and improved lifestyles, the demand for food has been steadily increasing not only in India but all over the world. The agricultural sector will have to play an important role in meeting the growing demand for modernization of cultivation methods, research on improved varieties of seeds, pest control and water management skills. The importance of water

management for food security has now been formally recognized at the United Nations level. That is why the theme "Water for Food Security" has been widely used for universal awareness.

In the same way, we have to plan the use of water socially. It has to be matched with the natural availability of the region. Misuse of groundwater, especially invisible to the naked eye, needs to be controlled more. For this, wide public dialogue and the laws that give it statutory status will have to be pursued. In that direction, the situation in the drought prone areas of Maharashtra will have to be changed in the coming decade and it will be desirable to implement measures such as shifting the sugar industry to the areas of water abundance i.e. Konkan region or in the valleys like Waingange and Wardha river.

*Lovely thing to learn
from water:*

*Adjust yourself in
every situation and
in any shape.*

*But most importantly
find your own way
of flow.*

Award-Winning Farmer Earns Rs 30 Lakh/Year

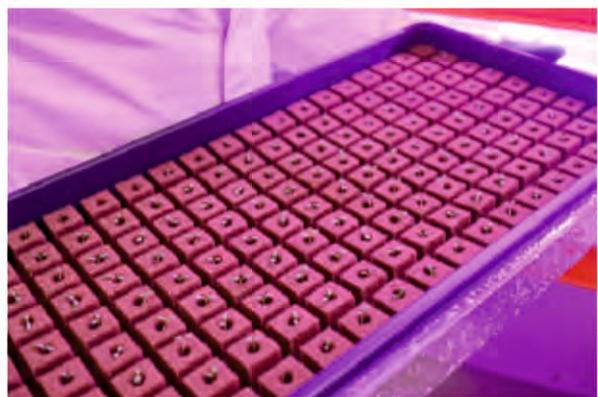
With Unique Method that Saves Space & Water

Taken from google

The building will produce 2 million pounds of greens per year, in a country that currently imports nearly all of its food.



If you walk into a grocery store in Dubai, the spinach on the shelves will probably be from Europe—or even from as far away as the United States. Because of limited arable land and water, the United Arab Emirates imports about 90% of its food. But inside a warehouse-like building near the Dubai airport, a new vertical farm is now beginning to grow more than 2 million pounds of local leafy greens per year.



The farm, called ECO 1, is now the largest vertical farm in the world, with the more than 330,000-square-foot facility stacked with shelves growing lettuce, spinach, arugula, and mixed greens. “Size does matter in the food production space,” says Craig Ratajczyk, CEO of Crop One, a vertical farming company based near Boston that partnered with Emirates Flight Catering, the company that supplies Emirates Airlines with food, to build the farm. Like other indoor farms, the new facility automatically tracks and adjusts lighting, humidity, nutrients, and other factors to boost plant growth. But scaling up production helps spread out the cost of that tech. “When you’re talking about something this large, the economics work out well,” says Ratajczyk. “So it turns out to be a very profitable farm.”



The facility also uses 95% less water than is required to grow greens in a field, and no pesticides or herbicides; because it’s grown in a controlled environment and immediately sent to stores or the airline, Ratajczyk says the greens don’t have to be washed before they’re eaten. Unsurprisingly, there is less spoilage than with produce that has traveled



thousands of miles. Still, though it saves on fuel, it's not clear how the total carbon footprint compares to imported food. The company declined to share details about how much energy the farm will use (lighting is one factor in the emissions from vertical farms, and air conditioning is another (especially in so hot a location), though the company says that it

uses systems that are as efficient as possible). The farm runs on conventional energy, though the company plans to use solar power in the future. It also will supply only a small fraction of the greens that the nearly 10 million residents of the United Arab Emirates consume each day. But additional large indoor farms are likely coming to the area. In Abu Dhabi, the government recently invested \$100 million in indoor farming, including a new research facility working on improving vertical farming methods and technology. Some of the lessons may come to the U.S., where vertical farming is also growing: startups like Bowery, Plenty, BrightFarms, and others, are all in the process of expanding. Worldwide, the vertical farming industry may grow to \$9.7 billion in the next four years.



Jeevitnadi : Activities for the month of June 2022

Smt. Shubha Kulkarni

(M) : 9930809046



Awareness :

- In the 2nd batch of Nadi ki Pathshala, the Toxin Free Lifestyle session was conducted by Shailaja Deshpande and Dr. Pramod Moghe. The batch responded positively to the relevance of 'My river my responsibility' and how rivers can be cleaned from ones homes.
- Shailaja Deshpande was felicitated by Dyan Prabodhini, women's group for her untiring work towards river rejuvenation in Pune.



- There was an online session conducted for KPIT staff, leading software company for understanding river front project and the actual effects it has on our rivers.
- Shailaja Deshpande addressed the Literature group of Empress garden where the flaws of River Front development were explained by her. The group was taken aback to know about how the natural flow of the river would be affected. The signature campaign was extended to this group too.
- Jeevitnadi was part of the two day workshop organized by ACWADAM on ground water. Jeevitnadi presented the connection and correlation of surface, subsurface and ground water. The presentation was very highly appreciated by the group.

- Organized by Maharashtra Education Society (MES), Social Work Course, Jeevitnadi presented River Ecosystem and how community can be part of revival. Participants were from all over Maharashtra

Action:

- River walk was organized for KPIT staff, and was conducted by Manish Ghorpade; on 11th June



- With the help of Garden department, 20 saplings were planted at the Aundh stretch of RGB. There was a group from the local P&G store who joined in these activities



- The wetland that has been created around a live spring at the RGB stretch was cleaned and cleared off water hyacinth. A team from Sandvik joined in this activity.



- Team from Stantec joined for cleaning at RGB stretch



- In protest against the river front development work that has begun in the Bundgarden area of Koregaon Park, a silent march was taken up till the Koregaon Police station and a police complaint jointly filed by citizens, activists and supporters.



- Massive clean up drive on account of Environment day was done at the Ram Mula



Confluence stretch in Aundh

- Team from FIS had come for a Nature walk, followed by clean up at the Ram Mula confluence stretch.
- For the first time, we organized 'Green Mike' a platform for all volunteers working in the environment field to express themselves and

have a group of understanding and earful people around them. The 2 hour long session at the Ram Mula Confluence stretch was a grand success with all volunteers expressing their point of views and expectations from this never ending journey of 'doing'.

- The June issue of Know your stretch from Ram Mula Confluence





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Sunday by the river

KNOW YOUR STRETCH | June 2022 @ RAM MULA CONFLUENCE

Beauty and the Beast!

Welcome to the world of the beautiful green aquatic plant that eventually becomes the beast to live around it! The red carpet is on edge of celebration, whereas the green carpet made by these species, is a sign of devastation.

We are talking about the species that have found its way into most of the Indian rivers. *Pontederia zosterifera*.

Pontederia zosterifera (commonly known as water hyacinth/ *Eichhornia crassipes*). It's a free-floating perennial aquatic plant native to tropical and subtropical region of south America. With broad thick, glossy ovate leaves 10-20 cm across water hyacinth can rise above water as high as 1 meter height. Its long spongy bulbous stalk has leafy freely hanging roots. It blooms with six petals in a very attractive lavender-pink color flower. One of its 6 petals has a yellow spot. As seen in the photo it resembles a peacock feather. We rarely find an exact stalk which supports a single spike of 5-15 prominently beautiful flowers.




Beast within: The plant absorbs the nitrogen that is in the silt and acts a phyto remediation tool, but due to its sheer density, water hyacinth takes in all the oxygen from the river, thus killing all the flora and fauna species in the river. Thus, causing the whole river to be dead. Water hyacinth is one of the fastest growing plant known. It was used to decorate ornamental ponds, but now come to be known as the world's most problematic aquatic weed. The fact that develops complex of a single capsule containing in the region of 400-500 seeds. After flowering, the inflorescence bends down into the water and seeds sink to the bottom of the waterbody where they can remain dormant for 200 years before germinating. So even if the water



dries up and all the parent plants are dried, there are chances of the fresh stock of plants coming, the next time water is replenished.

Being an invasive species, they also upset the native equilibria among native species. Thus, also changing the surrounding ecological processes. The plant also has an impact on human activities. The weed can impede navigation even in motorised boats. Also, the weed has affected health of fisherman folk, whose major protein intake is through fishes. Also, the hyacinth mats are a breeding ground for carriers of human and animal disease such as malaria etc.

Controlling:

Once established, water hyacinth is very difficult to eliminate. We can control them through three means: Physical, Chemical and biological controls. Physical methods are very intensive and also expensive. Chemical methods are most prevalent, but they have a lot of negatives too; which includes killing of non-targeted flora and fauna species. Also, it can affect the water itself and thus causing harm to human population too. Biological control involves the use of host specific agents that are naturally occurring enemies of invasive weeds. In their native bioregion, Biological control can provide an environmentally sensitive, cost effective and permanent solution to the problem of water hyacinth, though it is time consuming. Most of the time a combination of all three methods might be needed to address the situation.

Activities of the stretch:

Tree mapping:

As an internship project for a **XII** std student from Orhid school, we have started the Tree Mapping of the stretch. The project involved

1. Identifying the tree - Species and number of the tree
2. Measuring its height and girth
3. Uploading on Google maps the details

The project was a great success and we hope to continue it for the whole stretch, wherein we will be able to map all the trees!




Green Mike:

For the very first time, we conducted 'Green Mike', an open platform for people to express their views about working in the environment field. It was successful event with 20 people showing up and opening their hearts out to like-minded people around. We hope to do this more often and build the community space of our beautiful stretch!



Picture credit: **Archi M**

The June issue of Know your stretch from Ram Mula Confluence

Heartiest greetings form the Jalasamvad family

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