

Pune. First Year. June, 2022. Sixth Issue.  
Pages : 32 Yearly subscription : Rs. 100 only

# Jalasangraha

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

## Cover story

Save rivers- Message from  
Jeevit Nadi Movement.



**Punyache Paani**  
Stories of Pune's Waters

2nd April '22  
6th Edition  
www.punyachepaani.org

**Water and the Performing Arts**

Time: 5:00 pm - 7:30 pm  
Venue: Shrikanth Jagannath Shetty Auditorium,  
Karnataka High School, Parvati Nagar Colony, Erandwane, Pune

**OPEN TO ALL**

- Musical performance by Rashmi Mukta, IISER Pune
- Dance performance by Anika Talwar, IISER Pune
- Theatre performance by Nightfall - IISER student group
- Punyache jeevit jag jeevit Street Theatre by Chaitan, Jeevitwad
- Charm by Narmada Dance Club IISER Pune
- Firewalk on Pune's river by INACH Pune chapter

Organized by: Jalasangraha, Pune  
Sponsored by: CEE, IISER Pune, INACH Pune chapter, Jalasangraha, Pune, Jalasangraha, Pune, Jalasangraha, Pune







## Rain Water Harvesting I:



- Out of the total rainfall, it is said, we harvest hardly 10 to 12 percent water. Rest of it, we allow to flow back to the sea or we invite the sun to take it away by way of evaporation. With the growing heat due to climate change, the rate of evaporation is also increasing very fast. When our water needs are increasing very fast, can we justify this huge loss? One water expert says that if we are successful in harvesting 31 percent of rain water, all our normal needs could be very well satisfied.
- Nature, of its own, regularly does the work of rainwater harvesting. When the rain starts, water starts flowing. But trees, plants, bushes, shrubs come in its way and slows down the flow. When the flow slows down, water starts percolating in the soil. It meets the ground water stored in aquifers. This is a continuous process. Our withdrawal of water from the soil is duly compensated by this recharge. It is our duty to see that water deposited in the soil should be more than what we withdraw.
- But unfortunately with the growth of population and increase in our use of water beyond limits, this balance is not maintained. Our withdrawal is much more than what Nature deposits. The result of this is apparent. The ground water level is dropping down very fast. Who knows, after some years no water would be left out under the ground.
- Ground water satisfies the need of drinking water all over the country, especially in rural India. And if this situation continues, we cannot just imagine what would happen to the rural folk. As it is, we observe heavy migration from rural areas to cities where sufficient arrangement is made by local bodies to make water available. The result of this migration is we do not have hands to work in the villages and the cities are over burdened.
- If Nature cannot recharge the soil, is it not our duty to promote this recharge artificially? In recent years, efforts are being made to promote this artificial recharge by a special movement popularly known in Marathi 'Pani Adwa, Pani jirwa' i.e. stop the flow of water and promote its percolation.
- But..... This but is very important. If we see the soil structure, for eight to ten feet we have soft soil, then we come across soft rock followed by impervious hard rock. That hard rock does not accept this water. Its capacity is just limited to 2 to 2.5 percent.
- These hard rocks are formed out of lava erupted billions of years ago and cooled on the ground. Such rocks are found in layers. In between these layers lies some gap where some soft material in the form of sand or soft rocks is found. That is the place where water can be stored. But for reaching to that level, artificial cracks have to be developed. That is what we call angioplasty technique. Such technique is used in Sirpur Pattern in Dhulia District of Maharashtra.
- Sometimes, the roots of the trees do this job. These roots develop cracks in the rocks. Even when the rocks are hard these roots have that capacity of developing cracks.
- This ground water has to be used very carefully. But unfortunately, man has become so greedy that he is emptying the aquifers very fast. A stage is bound to come when man will have to repent for what he is doing.

# Jalsamvad



## Contents

<b>Mouth Piece of Bharatiya Jala Sanskriti Mandal</b>
■ June 2022
■ <b>Founder Editors</b> Dr. Datta Deshkar Late. Shri. Pradeep Chitgopekar
■ <b>Present Editors</b> Dr. Datta Deshkar - 09325203109 Shri Satish Khade - 09823030218
■ <b>Cover Design</b> Ajay Deshkar
■ <b>DTP &amp; Page Setting</b> Aarti Kulkarni
■ Annual Subscription Rs. 100 /- 5 Yearly Subscription Rs.200/- 10 Yearly Subscription Rs.500/-
■ You can pay your subscription by google pay id on dgdwater@okaxis
■ <b>Advertisement Rates :</b> Full Page : Rs.500/- Half Page : Rs.300/- Quarter Page : Rs.200/-

- Editorial / 4
- **Story of Water. Part 11 - Constitution, Law, and Policy**  
Shri Chetan Pandit / 5
- **Aao Nadi Ko Jaane - Report 7**  
Shri Vinod Bodhankar / 9
- **World Water Day - 2003**  
Shri Gajanan Deshpande / 14
- **Intra-Regional Development Disparities : Strategy for Development of Water-stressed Regions in Maharashtra**  
Shri. Vidyanand Ranade / 15
- **Prosperity through Equitable water Distribution : A Success Case Study of a Water User Association - Indore Minor Irrigation Project**  
Dr. Pradeep Bhalge / 20
- **Journey of Water in Watershed & its Effect on Ecology**  
Shri Upendradada Dhonde / 25
- **Water Hyacinth !!**  
Smt. Shailaja Deshpande / 28
- **Jeevitnadi : Activities for the Month Of April 2022**  
Smt. Shubha Kulkarni / 30
- **Stockolm Water Prize 2001**  
Shri Gajanan Deshpande / 32
- **Polavaram - displaced and nowhere to go: Ineligible for rehabilitation, many in a fix**  
Information from Google / 33



We all are aware that the total water available on the earth is fixed, it can neither be increased or decreased. Even though water is available in plenty on the earth, the tragic part is, potable water is available in a very limited quantity. This is available in rivers, lakes or under the ground. Nature has installed one desalination plant in the form of water cycle. Sea water is salty. But the same water is converted into potable water just by distillation process. Due to the heat generated by the Sun, sea water is converted into vapour which is free from all salts, this vapour develops into clouds and those clouds give us rains. Is it not the magic of Nature that though the sea water is salty, water we get from rains is sweet potable water?

Nature is taking our care but in return do we take care of the Nature? We say that getting adequate water is our birth right. But while saying so, we forget that rights and duties go together. We are aware of another cycle which works between man and plants. They exchange oxygen and carbon dioxide. To maintain balance between these two, is it not our responsibility and duty not only to preserve trees but also to increase their population? We are unscrupulously cutting trees and disturbing the balance which Nature expects us to maintain.

Due to overuse of river water, many of the rivers do not reach the sea. In absence of water, many of the eco-systems existing on the banks of rivers and the delta regions are totally disturbed. Environmentalists always insist that some minimum flow of water should be maintained in the rivers till the end. But due to the greed to use all the water available, this minimum flow is not maintained and the sufferer is Nature.

On one hand, we say that water is scarce and on the other hand we are polluting the available pure water. Show me a single river or lake where the water is pure. In Mumbai, in the heart of the city there is one lake by name Powai Lake. It is such a huge lake that it can satisfy the water needs of at least some lakhs of people. Once upon a time, residents of the nearby area used to use that water. But what is the position now? It is now said that it is not fit not only for drinking purpose but also for other use. Instead, we are bringing water from quite a long distance causing injustice to the people residing in the vicinity of those lakes, namely Vihar and Tansa.

When we know that water is scarce, is it not our duty to use it judiciously? It is said that out of the water brought from 100 kilometers in Mumbai, there is a leakage of nearly 40 percent. There are no sincere efforts on the part of the civic authorities to reduce this leakage. This is not the situation only in Mumbai. Everywhere in the state the story is more or less similar. Water which leaks, is a treated water. We spend crores of rupees on its purification. In some western countries there are water users associations in urban areas which take care of the water made available to the residents. Here, in our country, we are just the passive observers as if it is not our duty. We feel that whatever has to be done, should be done by the Government.

It is very rightly said that educated people need more doses of water literacy programme than the rural folk. Of all the living beings, it is man only who takes more and gives less to the Nature. Be aware, Nature is getting angry day by day and the day is not far off when Nature will show the human beings their right place.

**Dr. D. G. Deshkar**  
Editor.

## Story of Water. Part 11

### Constitution, Law, and Policy

Shri Chetan Pandit - (M) : 9423174594



In the ten parts just completed, I have told you the story of water pertaining to science and technology aspects. Now we start the non-science/engineering topics. In this 11th part I will introduce you to the Constitutional and legal provisions pertaining to water, and also the water policy.

The division of power between the Union government and the State governments is dealt with in the Indian Constitution through three lists. List-I is the Union List. Only the Union Government has jurisdiction on the topics in this list. Some examples are : Défense, Railways, External Affairs. List II is the State List. Only the State Governments have jurisdiction on the topics in this list. Some examples are : Trade and commerce within the State, Land revenue, Fisheries.

List III is the Concurrent List. For the items in this list, the Union Government and the State Government, both have jurisdiction. Some examples are : forests, electricity, education. If the Union and the State Government both make a law, and if the two are different, then the law made by the Union Government prevails.

“Water” is placed in List II, i.e. the State List. Entry 17 of List II reads “Water, that is to say, water supplies, irrigation and canals, drainage, and embankments, water storage and water power subject to the provisions of entry 56 of List I.”

This means, the State Government has full authority to plan, construct, and operate the projects for water supply, irrigation, drainage, embankments (for flood control), water storage and hydro-power. However, this authority of the State Government is “subject to the provisions of entry 56 of List I.”, i.e. subservient to what is stated in the Entry 56 of List I.

The Entry 56 of List I (the Union List) says “Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.” Which means, the Union Government can take over the regulation and development of inter-state rivers and river valleys, and that includes all the activities mentioned under Entry 17 of List II, i.e. water supply, irrigation, etc. But the Union Government can do so only by the Parliament passing a law for such take over of a particular inter-state river / river valley. And, the Union Government can take over only such functions, as the law passed by the Parliament allows.

To summarize, normally the water resources development and management is to be dealt with by the State Government. However, under the powers given by the Constitution under Entry 56 of List I, for an inter-state river, the Parliament can pass a law and take over these tasks entirely or partially. However, the Union Government has never used these powers to completely take over the development and management of water resources in any basin.

That was about provisions in the Constitution. There are also some Acts (laws) pertaining to regulation of water. I will explain four of them, the River Boards Act, Interstate River Water Dispute Act, Dam Safety Act, and Easements Act.

The River Boards Act says “The Central Government may, on a request received in this behalf from a State Government or otherwise, by notification in the Official Gazette, establish a River



Board for advising the Governments interested in relation to such matters concerning the regulation or development of an inter- State river or river valley or any specified part thereof and for performing such other functions”

Let us understand what this means, part by part.

- The Central Government may establish a River Board.
- Central Government may do so either on a request received in this behalf from a State Government, or otherwise. Means, a River Board under this act can be established even if no request has been received from the State Government.
- And for what purpose? For advising the Governments interested in matters concerning the regulation or development of an inter-State river or river valley. That is, primarily the Boards shall have only advisory functions.
- Note the word “interested”. The Board can advise only those State Governments who are interested in receiving such advice. If a State Government is not interested in receiving such advice then the Board can not advise them. Many river boards have been established, but none under the 1956 River Boards Act. Perhaps because if established under this Act, the Board can only advise, and that is not sufficient.

#### **Interstate River Water Dispute Act :**

Article 262 of the Constitution provides that the Parliament may make a law for the adjudication of inter-State water disputes; and the Parliament may deny jurisdiction to any court, even the Supreme Court, in respect of such disputes.

Using powers given to them under this Article 262, in 1956 the Parliament enacted the Interstate River Water Disputes Act for resolution of disputes between the states on sharing of waters of inter-state rivers. A State Government having any water dispute with the Government of another State on an inter-state river, can request the Central Government to refer the dispute to a Tribunal for adjudication. The Central Government can make an attempt to resolve the dispute by negotiations, for which they may take a maximum of one year. If the Central Government concludes that the water

dispute cannot be resolved by negotiations, then the Central Government constitutes a special Tribunal, called Water Dispute Tribunal for the adjudication of the dispute. The Tribunal consists of a Chairman and two other members, nominated by the Chief Justice of India from serving Judges of the Supreme Court or of a High Court. The Central Government may also appoint two or more persons as Assessors to advise the Tribunal in technical matters. The Assessors are usually retired officers of the Central Water Commission, of the rank Chief Engineer or higher.

The Tribunal adjudicates the dispute and sends their decision to the Central Government. The parties or the Central Government may seek clarifications on these decisions. The Act allows a time of five year for the Tribunal to give their decisions, and a further one year to give clarifications. At the end of this process, the Central Government publishes the decisions of the Tribunal in the Official Gazette. After such publication in the Gazette the decision has the same force as an order or decree of the Supreme Court, and is final and binding on the parties to the dispute.

Disputes in Narmada, Godawari, Krishna, Cauvery, Mahadayi, Vamsadhara, and Ravi-Beas have been adjudicated by the Tribunals. In some cases the process has not reached its finality. The dispute on Mahanadi basin is presently being adjudicated by a Tribunal.

Remember, Article 262 empowers the Parliament to deny jurisdiction to any Court, in inter-state water disputes. Accordingly, clause 11 of the act says neither the Supreme Court nor any other Court shall have or exercise jurisdiction in respect of any water dispute. i.e. an appeal can not be filed against decision of the Tribunal in any court, not even in the Supreme Court. However, Article 136 of the Constitution of India provides the Supreme Court with a special power to allow an appeal against any judgment or order or decree in any matter, made by any Court/tribunal, even if such an appeal is normally not allowed. The SLP is meant to be used in case any substantial



constitutional question of law is involved, or gross injustice has been done. Using this provision, some state Governments have challenged the decisions of the Tribunal before the Supreme Court.

The Government in the process of making some amendments to the Inter State Water Disputes Act. The main differences from the earlier act are as below.

#### **Earlier Act :**

Attempts to resolve the dispute by negotiations were at informal level; separate Tribunals were constituted for each basin; all the members of the Tribunals were Judges; the Assessors were retired technical personnel; and the decision of the Tribunal became effective only after it was published in the official Gazette.

#### **New Act :**

There will be a formal Dispute Resolution Committee (DRC) for resolution by negotiations, before the dispute is referred to the Tribunal; there will be a permanent Tribunal, to which all disputes will be referred; Experts will also be appointed as Tribunal members; the Assessors shall be serving engineers from the CWC; and the decision of the Tribunals will become operative immediately, publication in the official Gazette is not required.

#### **Dam Safety Bill :**

There are a large number of dams in India and some of them are quite old. Safety of these dams was a matter of concern. Therefore, in December 2021 the Government has enacted a Dam Safety Act which provides for adequate surveillance, inspection, operation and maintenance of all large dams in the country so as to prevent dam failure related disasters.

#### **Ground Water**

The Constitutional provisions and the laws discussed in the foregoing, were about surface water, i.e. the water in the rivers and lakes. The Ground Water (GW) is governed by a very old law dating back to 1882, called the Easements Act. This act ties up the ownership of groundwater with the ownership of land. At a simplified level what it means is, a person who owns a piece of land also owns all the GW under that piece of land, and since

he owns all that GW, he can extract any quantity of ground water from the land owned by him.

When this Act was made, the geology of aquifers and the flowing nature of GW in the aquifer was, perhaps, not understood. Solid minerals like coal, metal ores etc. are static, they do not flow laterally. Extraction of, say, coal which is under a piece of land does not deprive the adjacent plot owner of the coal which is under his land. However, that is not true for liquid minerals like water and crude oil. The land on the surface may be divided in to plots owned by different people. But the aquifer under the ground is one and the liquid in it is common property. A person pumping the water or oil from that aquifer from a well in his plot, is taking it out from a stock of common property.

This situation is like common overhead water tanks in a high-rise buildings. Suppose there is a 10-story tower with several apartments on each floor. But the apartments do not have individual water tanks on the terrace. The water storage on the terrace is common, and one family using too much water deprives other families of their due share.

Another problem with GW is, easy accessibility to individuals. Does a citizen need any permission to take out water from a river? The answer to that is not a simple Yes or No, and I will not go in to that. But even if the answer was 'No permission is required', taking out significant quantities of water from the river is not easy, and is beyond the capabilities of individuals. However, it is well (pun unintended) within the capabilities of an individual to sink a bore-well in his farm, put in a submersible pump, and extract significant quantities of GW without any check. As a result, GW is being extracted without any control and the GW levels are falling.

Without repealing the 1882 Act, the Government has made some attempts to regulate the GW extraction using the provisions of environmental act, but it is not effective and GW extraction continues unchecked. Regulating the GW use is a difficult task. The number of wells is too large and policing of all these wells, to monitor who

is extracting how much water, is impossible. In some places an attempt was made to regulate GW extraction by restricting the supply of electricity to borewell pumps. The cost of electricity, where it is metered, is also an indirect check on pumping of GW. However, now the solar panels have become affordable and provide free electricity after a one-time investment. These are being promoted as an environment friendly option from the energy perspective, but they play havoc with the GW, by enabling uncontrolled pumping without any costs.

### **National Water Policy**

A policy is a course, or a set of principles, carefully selected after examining many different options, to achieve some specified objectives. In 1987 India adopted a written National Water Policy (NWP). This was revised in 2002, and then again in 2012. You can read the text of all the NWPs at the website of Union ministry of water resources, which is presently called Jal Shakti Mantralay. The NWP lays down some basic principles on how to develop, use, and manage the water resources. However, the NWP is ineffective for two reasons.

First, it is just a policy, not a law, and therefore is not binding on the Governments. Second, some of the key provisions—namely, a river basin as a unit for all planning; creation of River Basin Organizations (RBOs) to assist such basin planning and management; and a concept called “Integrated Water Resources Management” (IWRM), sound very nice in scholarly articles, are very impressive in seminar hall debates, but are unworkable in practice. All the major river basins span more than one state, and water being in the jurisdiction of states, they all plan their water use independently, in their own way. Further, the very concept of dividing a basin along state boundaries, and then each state developing water resources in its territory independently, goes against the concept of planning for entire basin. The states zealously guard their jurisdiction on water and are not willing to accept the RBOs. Not a single RBO has been established on any inter-state river.

The IWRM is an esoteric idea that originated in the seminars in western Europe.

There is no clarity as to what this exactly means and those who invented this idea themselves have not been able to demonstrate that they have implemented it in their own country. International seminars on water are held regularly; are attended by “Civil Society” actors who have little understanding of the complexities of water sector; and they bring back with them fashionable ideas that sound very nice in seminar halls, but are impractical in the field, and particularly so in the Indian context. IWRM is one such idea.

### **National Water Framework Law**

Since the NWP is only a policy, not a law, and is not binding on the governments, therefore around 2012 a suggestion came up that the key provisions of the NWP should be enacted as a legislation, to be called National Water Framework Law (NWFL), so that it will be enforceable. A committee was appointed to draft the NWFL. I was a part of that exercise, and a draft was prepared. But the states, unwilling to relinquish their control on water, opposed the idea. In an effort to get the states to agree to it, the Union Government diluted the proposed law so much that it ended up being as insipid (i.e. dull, lifeless) as the NWP. Even this diluted version was not acceptable to the states and finally the idea has been consigned to cold storage.

Well, that is all that there is on the Constitutional, Legal, and Policy aspects. In the next article, I will deal with institutional arrangements and water governance. Till then, take care, and stay safe.

\*\*\*\*\*



## Aao Nadi Ko Jaane - Report 07

Shri Vinod Bodhankar

(M) : 9850230064



In the previous 4 articles, I had posted the context of studying the Sustainable Development in a River Basin under 4 of 5 headings (listed below, on next-page), and how myself, Narendra Chugh and the Late Dr Sandeep Joshi had spent some time and effort in creating a Citizen's Paper. For all of us at Indian Peninsular River Basins Council and Indian Himalayan River Basins Council the Citizen's paper becomes one of the preliminary documents to refer to.

While it is understood that each river has a complex geo-cultural, industrial-agricultural, political and socio-economic matrix in which the local people alone can evolve custom made dynamic models of mutually supportive human-river relationships, it is also understood that the river systems are vast and varied and that thousands of rivulets originate from a mountain range such as the Western Ghats. As such, we come across experts on mountains who see the mountains as inclusive and integrated eco systems and dedicate entire lives studying and working in the task of healing what we have hurt in these mountain eco systems.

This month, on 7th, 8th and 9th May, Dr. Jay Samant, myself and Dr Snehal Donde represented IPRBC (Indian Peninsular River Basin Council) in a conference at AELI, Aluva village, Kochi, Kerala where the subjects of discussion, deliberation and collaborative initiatives were 1. The Madhav Gadgil & Kasturirangan Reports and Recommendations on the Western Ghats. 2. The Mullaperiyar Dam and related differences and collaborative approach between citizens and governments of Tamilnadu and Kerala. The details will be for another article. In the context of this article, I observe that this

conference widened the scope of engaging with the river and river basin and at the same time gave a clear indication that there are experts on River Basins and there are experts on Mountain Ranges. There are overlapping subject areas because the mountains are catchments for the rivers and yet there are myriad issues related to mountains which are not solely about rivers. Mountain ranges stand as eco-systems in the same way as River Basins do. They not only intersect but are interwoven into the reality of Mother Nature made up of both such interwoven eco-systems. We also found, increasingly, the people who represented the coastal farmers and the delta and estuary and coastal waters fishermen who depend on a unique blend and rhythm of the intermixing of salt and fresh waters of rivers and oceans. With India having a long coastline, there are independent experts who have studied the coastal eco-systems – which also stand as vast domains of study not usually covered by the river basin experts. A collaborative exchange between river basin, mountain ecology and coastal ecology experts and mentors is in the present and future – developing into a composite approach which is neither of the three alone. This is welcome as other eco systems like Desert and Tundra, Snowcapped Plateaus and Different Types of forests will only add to the composite dialogue to be created between the different experts and mentors.

The approach will be modular as well as federal. While each eco-system in its existential reality and dynamics will be studied as a module, the people populating the eco-system become a subject of study in transformational dynamics. The existing eco-system must exist as a reflected image



in at least 30% of the population of that eco-system and it must be reflected in more detail in the minds of 100% of the decision makers who do not live in that eco-system but affect the eco-system. This means that the eco-system is 'complete' and 'ready' for transformation and sustainable existence when it exists in real-time-flow in objective reality and ALSO when it exists in real-time-monitoring-flow in subjective observation by the population of the eco-system and by the subjective observation of the decision makers. It is also true that the subjective observation of the eco-system - by the population and the decision makers - must Evolve, through consistent Enabling Dialogue, to become a Collaborative Real-Time Monitoring that constantly edges towards improving and verifiable objectivity. A similar Enabling Dialogue must exist between the primary mentors of different eco-systems (desert, coastal, mountain, river basin, tundra, forest, etc) and it must evolve from mentoring to post-mentoring team-work, from eco-system overviews in isolation to eco-system overviews in dynamic collaboration that never crystallizes as a 'final view or manifesto'. Humanity must remain as diverse and as integrated and as continuously transforming as nature and her flows.

This indicates that the physical reality layer of pancha mahabhutas (five elements: earth, water, air, energy, space-time) is only one of the three layers of reality and the environment. The observation of this FIRST physical reality layer involves the SECOND layer of mind in this process along with some sensory observations and so the five senses and the five process of observation triple the basic elements to be studied and converged up to 15 basic elements – Drishya, Drishti, Drushta – Object, Observation, Observer – 5 elements, 5 observations, 5 senses. Earth, Water, Air, Energy, Space-Time; Touch, Sight, Hearing, Smell, Taste; Skin, Eyes, Ears, Nose, Tongue. Beyond these 3 sets of 5 basic elements we are also faced with considering the architecture and dynamics of each human being in the context of the SECOND layer of Mind, Intellect, Identity, Feelings, Emotions

and Decision Making. And when we go deeper to involve all of society we are compelled to study the THIRD layer of spirituality which brings us to experience the common link with the inner infinite and outer infinite universe.

In studying the FIRST physical layer we rely on Science and Dnyana Yoga; in studying the SECOND mental layer we rely on Community Mind as involved in Governance Decision Making and Administration and Karma Yoga; in studying the THIRD spiritual layer we rely on Spiritual Practices of the INTEGRATED Experiencing of Bhakti Yoga. In this, the evolution in scientific, administrative and spiritual synergy is seen as Life Evolution.

In studying on the collaboration between observers and their diverse observations we are faced with the study of the human society living in the river basin (and other eco-systems). We are confronted not only with respecting the observations of the mentors who have studied a river basin but with every observation of every person in the grass-roots population of that river basin. The entire population and their situational observations must be given primary respect as they will participate completely in the healing of the river basin only if the river basin realities are reflected in their minds and hearts. This opens up the sequence of Jala-Saksharta, Jala-Sanskaar, Jala-Sanskriti, individual Jala-Seva, institutional Jala-Samwardhan and collective Jala-Samaaj. This is - Water-Literacy, Water-Orientation, a sound establishment of intergenerational family-based Water-Culture, individual Water-Service, institutional Water-Conservation and collective Water-Civilization. These matters are studied and expressed, with reference to the eco-system river-basin, in the 5th part of the document being serialized through his journal:

Outreach to the generation-next is a part of the 'River Culture and Society' section of the document extract that follows in this last extract from the document.

**Extracts - (continued and concluded) - from :**  
Citizens Paper on Concepts of Sustainable Development in River Basin



By (Late) Sandeep Joshi, Vinod Bodhankar, Narendra Chugh

#### **The Index -**

1. River Catchment Area Approach
2. Removal & Prevention of Encroachment
3. Controlling the Pollution of the Lakes and Rivers of India
4. Maintaining Ground Water Balance

The above four sections of the document have already been published in previous 3 articles in e-magazine JALASAMVAAD. In this volume of the e-magazine we are presenting Section no.5 of the content of the 'Citizen's Paper on Concepts of Sustainable Development in River Basin':

5. River Culture and Society (is the final section of the document reproduced below):

#### **5. River Culture and Society**

##### **Present Condition**

- Deterioration of health of rivers due to utter ignorance of population, family and educational institutions about the importance of personal contribution to maintain the riverine-regional development–environment balance.
- Deterioration of health of rivers due to skewed perception of business development and profits wherein the limited resource of water is treated as a commodity and the long term ill effects on river health and sustainability of riverine-regional development–environment balance are ignored.
- Deterioration of health of rivers due to biased plans, policies and projects wherein convenience and profit of vested interests takes precedence over river health and sustainability of riverine-regional development–environment balance.
- Deterioration of health of rivers due to failure of religio-cultural leaders to guide themselves, population, technologists and governance about the overwhelming importance of maintaining the river health and sustainability of riverine-regional development–environment balance as a personal, sacred, social and patriotic duty.

- Rivers are the cradles of civilization, but because of the above failures of the leadership at all levels, population is faced with the dire question of its survival. Disastrous consequences of global warming, floods, depletion of water resources, poisoned water supplies and water-borne diseases of pandemic proportions have already sounded alarm bells which herald the possibility of imminent mismanaged and crippled future.

Examples of Leadership failure in society to preserve, conserve and protect the riverine systems and river culture

- Proliferation of use and throw culture due to failures of familial, educational, mass-media and religious guidance.
- Incompetent legislation and implementation in managing the segregation, disposal and recycling of solid and liquid wastes thereby transforming freshwater rivers into stinking and lethal conveyers of raw sewage and hazardous waste.
- Failure of divisive religious leadership to alert and unite populations from all cultures and faiths towards sacred healing duty of cooperating to restore and rejuvenate rivers as team without internal cultural splits and polarizations
- Laxity of local, state and federal leadership in paying attention to environmental impacts of developmental, infrastructural projects for maximization of GDP and profits through use of materialistic sciences, modern planning and management principles, contemporary engineering and ineffective legal tools with no understanding of ecological processes and balance
- Deliberate disinterest and letting down of inquest to evolve cost effective technologies suitable for local conditions
- Miserable failure of premier government water research institutes and scientists, with large budgets, to transfer their lab models to fields and to demonstrate holistic, integrated approach and effectiveness in any single river basin.
- Failure of each literate, educated and creative citizen to understand, exercise and realize



the personal potential and strength -

- to be patriotic
- to live and work together in a national team which transcends division and polarization
- to be vigilant custodian of national resources (including rivers),
- to evolve eco-sensitive lifestyle and family culture
- to be participant in voting for selecting the competent leaders,
- to regularly participate in democratic decision-making for representative governance.
- 

#### Issues

- Physical separation of the individual and society from the regular contact with rivers resulting into lack of traditional ownership, relationship and responsibility towards rivers.
- Insistence of family culture to focus the growing child's attention and activities towards issues of economic insecurity and monthly livelihood, thereby discouraging growth of character towards community responsibilities and custodianship of rivers
- Macro-economic and commercial models, based on parasitic over-consuming-exploitation, have mis-evolved into over-competitive flows which emphasize spurts and peaks of localized development and growth (higher GDPs) with complete blindness to the ecological costs and health of the natural resources including rivers
- Governance of society which was based on a natural reality of limited population and abundant resources has miserably failed to provide creative leadership at a turning point in human history where this needs/greeds: resources (NR) ratio has rapidly changed into a reality of exploding population and limited resources. Short sighted reactive leadership poses and pretends to fill the leadership vacuum thereby creating dangerous role models of 'leaders' who show fabulous expertise in cornering and over-exploiting rapidly depleting natural resource reserves.
- Science and technology mastered the material world and therefore believe that

intervention through material-infrastructures could be sufficient to restore the ecological balance which, however, is a constantly shifting dynamic equilibrium affected by the countless choices and activities of humanity and therefore requires a combination of material and social engineering (social transformation through enlightened self-interest) to manage the harmonious continuity of pro-life ecological-equilibrium. It is incompleteness in human culture to have failed in embedding the fabulous scientific and technological capacities within the multi-intelligent social dynamics of a truly alert, integrated and pro-active humanity - which can begin its repositioning as custodian of this planet by preserving the rivers and ecology.

- Religious leaders using traditional timeless wisdom had the duty
  - of nurturing holistic understanding and
  - of nurturing the wisdom to make harmonious and appropriate choices which hurt neither man nor nature,

However, apparently working aside from their timeless mandate, Religious leaders have divided humanity into contending divisions.

- Therefore entire populations are misled into over-competitive, defensive and offensive postures, military-expenditures and efforts. These predetermined and biased postures distract the attention, alertness and resources from the global team-effort that is urgently required to rescue the rivers, the entire deteriorating environment and the very survival of the species.

#### What is needed?

- Bringing children, families and society in frequent physical contact with rivers, lakes and other water bodies for purposes of educational recreation and eco-sensitization
- Development of family culture where a weekly community service to clean the rivers and care for ecosystems is encouraged. Students must be encouraged to develop a career as environmental professional.
- Costs of ecological resources should be inbuilt into the costs of each stage of life cycle of



products, services and projects.

- Training and inclusion of every affected river basin citizen in the equitable sharing of benefits, decision making process, monitoring and audit of implementation by the governance.
- Governance should use science and technology judiciously to equate the development and environmental balance for sustainability.
- Governance as a custodian of water resources should comprehensively prevent its privatization and commoditization to forbid making of obscene profits and to forbid the concentration of wealth.
- Governance should balance the involvement of scientific with social engineering in every project which has significant impact on the health and harmony of river basin. Civic society empowered by NGOs should become the vigilant public-will which compels the political will to accept such balanced development.
- Religious leadership must create or modify occasions, celebrations and festivals to
  - involve all cultural and religious groups with river cleaning and festivals
  - set precedents to remove non-heritage encroachments on river lands
  - set precedents for exceptional self-disciplined cleanliness and hygiene in the holy places along the river banks and water bodies
  - innovate various mass awakening programmes for eco-sensitization
- Lessons of river culture must become the cornerstone of training, art, media and education to create future citizens as capable custodians of a holistic eco-sensitive civilization.

#### **Action Plan to link people with river**

- Pilot projects for comprehensive river basin development with decentralized community driven initiatives
- Pilot projects for reviving water sufficiency of villages to ensure reverse migration and reduction of urban pollution in rivers
- Pilot projects for comprehensive participation by urban citizens in every aspect of water utilization, purification, quantification,

treatment of wastewater, reuse and recycling of treated water and discharge of clean water for downstream consumers. As a result, river culture which trains citizens in being sensitive to their water footprint will develop.

- Citizen's charter for establishment and maintenance of self-discipline and externally imposed waste disposal discipline
- Annual or biannual river festivals shall be started or supported
- Regular participatory river cleaning programmes shall be started or supported

#### **(Extract concluded, PTO for epilogue)**

Since the writing of the above document, several initiatives by government, civil society, non-government organizations, independent experts and associations and federations of stakeholders have taken place. Initiatives have been designed and implemented as projects and programs to involve, train, mobilize and synergize the people at large. Our own Aao Nadi Ko Jaane series of online and offline meetings, being reported here, is but one of the threads in this systemic decentralized response being given by humanity to the local and regional and global aspects of the global ethical, environmental and economic crisis. In essence these are an inner look at the Darwinian Evolution of humankind as we adapt from a favourable Needs:Resources ratio to a now changed unfavourable Needs:Resources ratio. We will be covering the progress of such initiatives in coming issues. On the surface, if we take a shallow and casual look - the changes and transformations seem to be led by leaders. This is not so. The works of leaders and others are a systemic evolution which is simultaneous and worldwide... and consists of changes known-by-us and changes unknown-to-us happening in human beings and communities across our vast and vastly populated planet earth.

For queries/feedback contact:

Vinod Bodhankar,                      Narendra Chugh  
9850230064,                                9850074952

\*\*\*\*\*



**World Water Day-2003**  
**Water for the Future**  
**Gajanan Deshpande, Pune**  
**+91 9822754768**



(A new series of articles 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.)

In order to preserve the quality and quantity of fresh water for future generations, everyone in the world needs to behave more responsibly in water use. This thought was inculcated in the minds of the people so as to assure the next generation the necessary pure and sufficient water. Keeping this in mind, the main theme of World Water Day-2003 was kept as "Water for the Future". This year, an effort was made to create a proper understanding of the world in this regard. So also, this was the 10th World Water Day, which was celebrated as the International Year of Freshwater.

It was appealed to all to have prudent approach in water use so that water sustainability is maintained for future generations. At the same time, the aim was to inspire water conservation through political and community participation and to increase social awareness about more responsible water use and conservation needs. The United Nations, this year, had appointed the 'United Nations Environment Program - (UNEP)' as its coordinator.

**Global Water Development Report - Water for People - Water for Life:**

On the occasion of World Water Day-2003, the United Nations released the first edition of the World Water Development Report. The joint project, comprising 23 UN agencies, outlines a comprehensive approach to today's water problems and makes detailed recommendations for future water supply.

The Global Water Development Report is the first report of the United Nations assessment of global water resources. For the first time, all 23 UN water-related organizations have worked together to monitor progress on water-related targets in areas such as health, food, environment, cities, industry, energy, risk-management, economic assessment, and resource allocation. The water crisis is at the heart of our survival and our planet, which is one of the social and natural disasters that human society has to face. However, despite the overwhelming evidence of the crisis, there seems to be little political commitment to overcome it. Over the last 25 years, many council have focused on water issues and set a number of objectives to improve water management. But, seldom have they been completed, the report said. Many countries and territories are already in crisis, and by the middle of this century, seven billion people in 60 countries will be facing a difficult situation of water scarcity, the report said. Despite the constant debate over the existence of such a crisis on the threshold, the water crisis is only going to get more and more serious.

To this end, the United Nations must engage the human community in its efforts to make water available in a sustainable, peaceful and protective environment in which equality prevails. Freshwater is essential for a healthy ecosystem, sustainable development and human survival, yet, in many places, water is wasted, contaminated and degraded. If this trend continues, more than two decades from now, two out of every three people on earth will face moderate to severe water scarcity; the report predicts. The poorest in the developing world suffer the most. This is a social, economic, environmental and political crisis, which should be one of the top priorities of the world community. A "Blue Revolution" is needed to improve the management of this vital resource.

\*\*\*\*\*



## Intra-Regional Development Disparities: Strategy for Development of Water-stressed Regions in Maharashtra

Shri Vidyanand Ranade (M) : 9822792798



(Article is based on the Power Point Presentation made by the author in the 'Online National Conference on Intra-Regional Development Disparities: Experiences and Policy Options', organised by GIPE, IDF, MSEPP & PIC, Pune; held on the 9th and 10th December 2021)

Pre-independence period - Nearly 35 to 40 percent area of the Maharashtra State, lying to the East of Sahyadri (Western Ghats) in the rain-shadow zone is drought prone. Drought prone area would be seen on the map of India and Maharashtra. Average annual rainfall in this area lies between 400 to 600 mm and is subject to drought conditions once in about five years on an average. Two large masonry dams were constructed in Sahyadri in the years 1875 & 1885 to store water for its use for irrigation in drought prone area. During pre-independence period, after the disastrous famine of 1896-1900 in many States of the country, an Irrigation Commission was constituted in 1901 under Sir Colin Scott-Moncrieff. It was a commission appointed to Report on the desirable irrigation facilities in India as a protection against famine. The Report submitted in the year 1903, recommended construction of irrigation works in the country in accordance with the broad plans outlined in the Report. In view of these recommendations, in the early 20th century (years 1910 to 1930), four large masonry dams were constructed in the then Bombay state (present Maharashtra state), in the high rain fall zone along eastern slope of North-South running Sahyadri ranges to store copious monsoon runoff. Stored water was conveyed by means of gravity canals to provide assured irrigation facilities in the drought

prone area towards East in the same basin.

These were the first structural measures taken to meet with irrigation needs of water-stressed areas by means of Intra-basin (within the basin) transfer of water. During pre-independence period, some small earthen dams were also constructed in the plains purely as famine protection works, to provide work to the famine-affected labour during scarcity years. Canals were constructed later to provide irrigation facilities to the drought prone area.



In the water short Tapi basin, series of masonry bandharas (weirs) were constructed in the 18th and 19th century on some of its tributaries to provide irrigation facilities, which was known as 'Phad system' of irrigation. At the same time, about 10,000 small tanks (Malgujari tanks) were constructed in the eastern part of the present Maharashtra State, to provide water to the paddy

crop. Despite good average rainfall in this area, during occasional long dry spells or in cases of early cessation of monsoon season in some years, such tanks used to provide protective irrigation to the paddy crop and ensure assured crop yield. In all, there were about 10 lakh such tanks constructed in all the states located along East coast of the country.

#### **Post-independence period -**

All major rivers (except West flowing rivers along West coast of the State) in the State viz. Godavari, Krishna Tapi and Narmada are Inter-State Rivers. Hence water use in these river basins and their sub-basins would have to be kept within the provisions of the Award of the 'River Water Disputes Tribunals' constituted as per provisions in the Constitution of India. Water use in Godavari, Narmada, Tapi and Narmada basins was hence confined within those limitations. For the Krishna River basin, water use was done as per decision of the Award given by the first Tribunal in 1976. However, as per provisions in that Award, a new Tribunal was set up and water use was then done as per decision given by the second Tribunal in the year 2013.

With the limited three and a half-month Monsoon season between mid-June to mid-October (87% of annual rainfall in less than 70-80 rainy days) and 'having no perennial rivers in the State, constructing dams on rivers to store monsoon runoff (yield) and utilizing it all the year round to meet various competing demands on water, had been the main stay of water resource development activity in the State after independence. About 16 large dams were then constructed as above along the eastern slope of Sahyadri (from North to South), to store and provide water by gravity canals to the drought prone area towards East by Intra-basin transfer of water. In addition to these dams some large dams were also constructed in the plains in all regions where topography was favourable, to store water and provide irrigation facilities to the water stressed area by means of gravity canals.

These large dams provided irrigation

facilities along banks of major rivers, leaving upper reaches of the sub basins high and dry. Hence on considerations of equitable water related development in the State, several medium dams (each irrigating between 2,000 to 10,000 ha) and minor dams (each irrigating between 250 to 2,000 ha) have been constructed subsequently. With the result, at present there are in all about 7,200 completed major (each irrigating more than 10,000 ha), medium and minor irrigation projects in the State. As per definition specified by the World Commission on Dams set up in the year 2000, (i.e., a dam having height more than 15 meters and/or storage more than 3 Mcum), there are about 2,400 large size dams in the Maharashtra state, out of about 5,800 large dams completed in India so far. It signifies the need to construct dams of various sizes to store water to meet with needs of water stressed area of the State in an equitable manner.

To meet water needs of shallow sloping land in small watersheds located in the upper reaches of all river basins and sub basins, about 61,000 small water conservation structures (less than 250 ha each) have also been constructed. These measures primarily meet irrigation demand and household needs of marginal and small farmers located in upper reaches of the watersheds. Creation of a mosaic of different sizes of WRD structures during the last 75 years as described above was the result of inevitable response to the dynamics of changes in the water demand pattern and has improved the water stress situation.

Lands located in elevated regions such as the Deccan Plateau and which suffer from scanty rainfall have been particularly water stressed. Some Lift Irrigation Schemes (LIS) were constructed to lift water from reservoirs and/or rivers to provide irrigation facilities to these lands. Even if capital investment and recurring cost of running such schemes was very high, such investment was done to ensure establishing social equity in the water stressed area. Some Lift Irrigation schemes to lift reservoir water were also constructed to provide irrigation facilities to lands of the people displaced



on account of major dams, on social equity considerations. With a view to utilizing water allocated to the State as per provisions of the Award for Krishna valley, some large Lift Irrigation Schemes have been constructed on Krishna River and some are in progress in the Krishna basin. Resorting to LIS was necessary because there were no sites available in the Krishna basin to construct large dams and provide water by gravity canals. Taking such measures was essential if the State had to use the quota of water allocated to the State as per Award.

Next water resource development pattern was the 'Inter basin transfer of water', i.e., transfer of water from a relatively water surplus river basin into a water short river basin, either by gravity or by pumping the water. There is ample surplus water in the Konkan region along west coast of the State. But storing water there is costly due to topographic conditions and transferring of water to the water short basins in the east by lifting it by 300 to 500 meters is very costly and hence prohibitive. Projects for lifting and transferring surplus water from the Godavari basin from Vidarbha region to water short Marathwada & North Maharashtra regions have been investigated but have not been taken up so far due to prohibitive cost. Under the National Inter Linking of Rivers Project, there are 2 schemes of Inter basin transfer of water, but they are not yet started.

#### **Regional imbalance in Water Resource Development–**

Maharashtra State at the time of State re-organization on the 1st May 1960 consisted of some districts from erstwhile Bombay State, some districts from Nizam State (Marathwada Region) and some from CP & Berar State (Vidarbha Region). There was some evident imbalance in the development of water resources within the State at that time. Even after 20 years after the formation of the Maharashtra State, the situation did not improve much. As per demands of representatives of people from these Regions made in the Legislative Assembly, Government of Maharashtra appointed in the year 1983 a 'Fact Finding

Committee on Regional Imbalance' under the Chairmanship of Dr. V.M. Dandekar, an economist. The Report of the Committee submitted in the year 1984 covered regional imbalance in 11 important Development sectors of which, 'Surface Water Irrigation' sector was one of them. Regional imbalance in the 'Water sector' in physical and financial terms was estimated, duly stating mechanism for redressal of the imbalance and time frame to implement it in practice. However, in practice the implementation did not materialise as expected on account of various reasons and one more Committee was appointed to examine measures to expedite the process. Finally, allocation of funds for the water sector for the Marathwada and Vidarbha Regions had to be taken over by Hon. Governor of the State. With the result, the process of removal of regional imbalance in the water sector took about 25 years from the year 1985.

#### **Dynamics of changes in the concept of water stress conditions–**

Water- stressed conditions exist when the availability of water falls short to meet demands for water. If water shortage is chronic, it needs long term solutions such as Intra-basin & Inter-basin water transfer. Between 1920 to 1925, Tata Hydro Electric Company constructed 6 masonry dams in Sahyadri ranges near Lonavala and Mulshi in Pune district to store about 1130 Mcum (40 TMC) water and to divert it westwards to generate hydropower for Mumbai city and for industries around it. At that time there was strong opposition to the construction of dams because of problems of submergence of lands of villagers and their displacement to new locations. But there was no opposition from any sector at that time to divert the water out of Bhima basin westwards permanently. After independence, in the nineteen fifties when Koyna dam was planned to store about 28,300 Mcum (100 TMC) of water and divert a major part of it westwards to generate hydropower, discussions were held only on the issue whether the State needs and can consume so much hydro power generated. There was no



objection at that time from any quarter for permanent diversion of so much water westwards. But now in the twenty twenties eastern part of Krishna basin is facing severe water stress conditions. Hence people are arguing that there could be a substitute to electricity but not to water and hence westward diversion of water from Koyna and Tata dams should be stopped and it be diverted eastwards to meet irrigation and other needs. This is one example of the dynamics of changes in the demands for water and consequent water stress patterns.

Up to the seventies and eighties of the last century, water stored in almost all the reservoirs was planned to be used for irrigation. Only some quantity of water from few dams located close to cities and industrial area was reserved for urban and industrial use. But due to rapid growth of industries and consequent urbanisation from eighties onwards, location specific demands of water for non-irrigation purposes increased very rapidly. Since this demand had priority over irrigation demand, water availability for irrigation had to be curtailed to that extent. During drought years when storages in the reservoirs were very low, all water used to be diverted for non-irrigation use and negligible water was available for irrigation. Due to partial or non-treatment of urban and industrial effluent so generated, treated effluent was not available for reuse in irrigation. Besides that, release of untreated effluent in the rivers had caused pollution of most of the rivers in the State after nineties. Such increase in competing water demands for non-irrigation purposes gave rise to Urban-Rural conflicts and water stress had been created in the area where it was not there earlier. This is another example of the dynamics of changes in composition of water demand and the water stress patterns.

#### **Use of Groundwater in the basin –**

Groundwater is a very important resource on many considerations because it meets needs of water stressed land located in upper reaches of most of the river basins and sub basins. Firstly, there is no evaporation loss of GW as in the case of

surface water resource. Secondly, investment for its use is entirely done in the private sector and Govt. does not make any capital investment in the infrastructure. However, it assists farmers by giving soft loans for digging/drilling wells, installation of water lifting arrangements, installation of Micro Irrigation Systems, and in providing electricity at subsidised rates. Thirdly, water-use efficiency of GW use is very high i. e. about 75 to 85 %, as against 25 to 40 % for the surface water use. Hence there is 'more cash, crop and jobs per drop of water'.

GW use in Maharashtra was on a low key till nineteen seventies. It started increasing after the severe scarcity years during 1971-1973 in the Maharashtra State. Another reason was reduction in family land holding size. Due to partition of land during transfer of landed property from one generation to the next generation, there had been gradual reduction in family land holding size. Presently it is about 1.3 to 1.5 ha against about 4 to 5 ha as at the time of independence. This situation induced rain-fed farmers to exploit GW to increase land productivity from the reduced land holdings, to meet family needs for their survival. Coupled with extensive coverage of rural electrification network and the facilities provided by the GoM on social equity considerations as elaborated above, pace of GW exploitation increased rapidly during the last 30-40 years. However, exercising control on the development of GW to avoid overexploitation of watersheds was seen to be the most difficult part to handle at the ground level. Hence it resulted in overexploitation of some watersheds especially in the drought prone zone.

Most of the watersheds in the State had parent basalt rock which was decomposed to form layers of murum and residual topsoil. Hence it was possible to construct different types of water conservation structures in the mini watersheds to conserve rainwater and to recharge groundwater locally. With such artificial GW recharge, it was possible to provide protective irrigation to seasonal crops and meet with other water needs of villagers. Hence from the nineteen nineties, GoM took up works of Watershed Development as Govt. works



on a large scale. Water stress situation could be mitigated to a certain extent in such watersheds by augmenting GW by means of watershed development works.

#### Conclusions –

It would be seen from the elaborations as above that, concept of 'water-stress' in any Region changes with the demand-supply situation and it is a dynamic process. Living and adjusting their lifestyle in tune with the natural availability of scanty water resource would cause social injustice to the people residing in water short river basins. Hence several structural and non-structural measures have been taken by the Govt. to transfer water from the same basin or from relatively water

surplus river basins to such water short basins, to provide fairly good opportunities of water related development. Extrapolating the continuously increasing and changing water demand patterns and then planning completion of WR development infrastructures to match demand and supply should always be aimed at. Optimum development of water resource in a river basin and reasonably good dispersal of irrigation and other benefits in the entire basin needs to be planned on social equity considerations. This had been the strategy for development of water-stressed Region in the Maharashtra State.

\*\*\*\*\*



To a **thirsty** man, a drop of **water** worth more than a sack of **gold**.  
Thousand live without **love**, but not without **water**.

**Save Water, Save Life.**

## Prosperity through Equitable water Distribution: A Success

### Case Study of a Water User Association -

### Indore Minor Irrigation Project

Dr. Pradeep Bhalage (M) : 9404141543



The monsoon rains is becoming more and more erratic due to Climate change impacts. water availability for agriculture sector is being reduced due to significantly increase in non-irrigation demand. Poor water use efficiency of widely adopted conventional water distribution network in the command of an irrigation project makes the problems more severe. There is an urgent need to come up with better answers. Innovative solutions are emerged and proven to be successful in case of Indore Minor irrigation Project in Nasik district of Maharashtra State, India. The water user association formed in the command of this Project has achieved significantly high water use efficiency and agricultural productivity. The sustainable, simple, low cost adoptable technique is unique of its type. Light is thrown over the innovative, efficient and effective technique used here and concluded that with location specific modification, such scheme can be utilised to achieve the high water use efficiency, strongly stabilisation of water user association and prosperity of the beneficiary farmers.

#### Introduction

Government of Maharashtra has taken an initiative to transfer the water management of Irrigation Project in the hands of Water Users Association (WUA). Numerous water user associations are fighting for existence. Their major problems are associated with water management by conventional water distribution. WUA are findings difficulties to maintain equitable water distribution among the beneficiary farmers and as per their water rights. Farmers are not getting the water at right time right place, as per the plan schedule. These reasons are drastically hampering

the water productivity and existence of WUA.

The Jai Malhar Water user Association in the Command of Indore Minor Irrigation Project (Nasik, Maharashtra) has adopted an innovative equitable water distribution technique and resolved all above discussed problems. All the members of the society are adopting innovative techniques of water use in a very simple and easy way using PVC pipe water Distribution System through public participation. This organization has brought transit Losses to zero percent and has demonstrated its invaluable and exemplary performance to the irrigation lovers and the general farmers in the area. They have succeeded to bring total reforms in water management. The Water and Land Management Institute (WALMI), Aurangabad as well as several high ranking officials of the Water Resources Department of the Government have visited the project site from time to time and observed this success and appreciated this invaluable work. Since adoption in 2004-05 the WUA is well stabilised and managing its water resource without any conflicts. It has successively achieved very high water use efficiency, high water productivity and thereby attended prosperity.

#### Salient Features

The storage capacity of the project is 0.89 Mcum. Two unlined irrigation canals emerge from the dam, one at the left and other at the right flank. Indore and Madakejamb are the two Villages brought under the command area and 157 hectare irrigation potential is declared to be achieved. Before adoptions of the innovative technique there were huge conveyance losses in the open channel water distribution system, as a result maximum area irrigated never crossed 22 hectares.



## Water User Association (WUA)

A managing committee 13 members is formed. It to decide the irrigation program and manages the available water in the reservoir. on the basis of number of share holders, Water rights have been established. It is not on the basis of land holding in the command. Generally each shareholder has only one share. The WUA has decided to provide equal amount of water to each shareholder. Total 115 no. shareholders are registered.

### Innovative Water Distribution Chamber and Pipe network

A jack well of three meter diameter has been dug inside the reservoir. Two submersible pumps of 25 HP each are installed over it. The discharging capacity of each pump is 50 liter per seconds (lps). The water is lifted by the pumps is conveyed through 315 mm diameter PVC rising main to deliver in to the main distribution chamber. This unique and innovative chamber is built for the equitable water distribution on a higher elevation near the dam wall. It is designed by a Nasik based Agro consultant Mr Yashpal More.

The diameter of the distribution chamber is 3 meter and the depth is kept as 2 meter. 115 pieces of PVC pipe having 63 mm diameter and 300 mm in length are fixed over the vertical wall of the chamber exactly at a level. These PVC pipe pieces works as an out lets. Their number has kept equal to the number of shareholders. The 100 lps water delivered inside the chamber automatically gets divided equally among the all 115 pipes and 0.87 lps water flows out from each pipe out let. The shareholders are divided in to various groups. A group has 3 to 11 members. Peripheral compartments receiving water from 3 to 11 pipe outlets have been built as shown in the Figure 1.

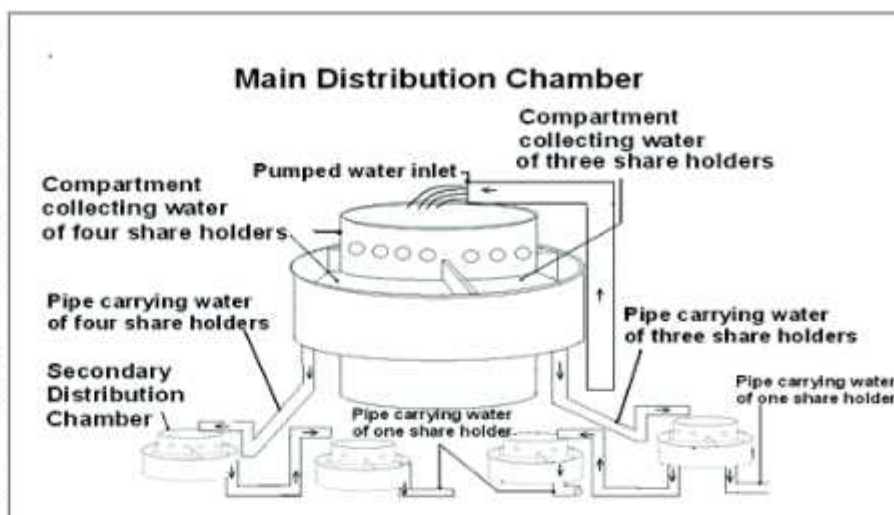


Figure 1: Innovative Water Distribution System

### Conveyance of the water from the main distribution chamber to the farm

Water falls in all peripheral compartments at same time. If, there is one group of 3 members, then the water collected in the compartment form 3 pipe out lets is conveyed up to the secondary distribution chamber through a specially designed common pipe line. The secondary distribution chamber has been constructed at the common point and suitable location for that group. The secondary distribution chamber has 3 pipe out let fixed over vertical wall. The water collected in this chamber gets equally divided in to 3 parts and flows out from each pipe outlet. It is then conveyed to the open dug well of each individual. Thus all the shareholders get equal quantum of water without any time lag..

### Equality in water distribution with No differentiations in head middle and Tail Reach farmer

All the beneficiaries get equal amount of water at the same time makes them happy and conflicts in water distribution does not arise this is the beauty of this scheme. This system avoids splitting up of irrigation command in tail, middle and head reach.

### Women's participation in water management

Out of 13 members of the management committee 2 are female members.

### Guaranteed irrigation

Water is managed in such a way that every shareholder is guaranteed to get water sufficient to irrigate one hectare Grapes. This is the principle objective of this WUA. It has facilitated them to switch over from traditional rain fed crop to high yielding Grape plantation.

### Assured irrigation water supply in hot weather

The annual amount of irrigation water required for grape planted area inclusive of evaporation and other losses is kept reserved. The surplus water available in the project is utilized for other seasonal crops..

### Conjunctive water use

Priority is given to use the well water first. In the month of January, when the well yield reduces, WUA starts the use of water available in the project.

### Timely Water supply

Irrigation interval concept is avoided. Once the scheme starts, every day every share holder gets predefined and equal amount of water.

Inbuilt ownership and affection of the System

All the beneficiaries contributed in the cost of infrastructure developed here. Hence inbuilt ownership and affection to this System has been evolved among the beneficiaries. This is the key successes of the efficient run of the system.

### Volumetric water supply

The water supply to the WUA is on inbuilt volumetric basis. There is no necessity of volume measuring device. The engineer in charge has to take the reservoir water level at the start and at the end of the season. The amount of evaporation and other losses are deducted and the volume of water content used by the WUA is assessed, with the help of area capacity table of the reservoir.

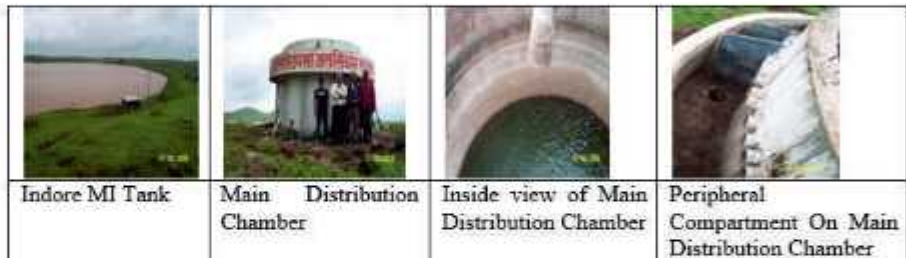
### Assessment and Recovery made easy

Irrigation engineers prepare the water bill on the basis of water volume assessed as said above. WUA pays the bill amount to the irrigation department. There is no need to measure the

individual's crop area irrigated. the predefined additional charges will be added to the bill amount by the WUA and will be equally divided among the 115 share holders. WUA Prepares the bill of each group and gives to the group leader. The group leader then collects the charges from his member and submits to the WUA. In addition the WUA is responsible to collect the electricity charges and pay to the respective office.

### Modernization of the Irrigation System

The water received by the individual is then let in to their own well. The collected water is then utilized with drip irrigation system. Due to adoption of the drip system the water is utilized efficiently and the farm yield is increased several times more.



Inside view of Main Distribution Chamber  
Peripheral Compartment On Main Distribution Chamber

### Built in transparency

There is no scope for malpractice in the water distribution. All the outlets runs simultaneously and delivers equal discharge and equal quantum of water. In this system Control valves neither provided nor required. The built in transparency enhances the faith of the shareholder over the WUA.

### Efficient and conjunctive use of ground and surface water

Initially the farmers irrigate their crops with the water available in their well. The water yield in the well get reduces in the month of December or January. At such time WUA takes the decision to use the water stored in the reservoir. Pumping hours per day of the main pump fixed over the jack well are worked out in such a way that the stored water in the reservoir will be available to



irrigate one hectare of land of each shareholder, till the start of the monsoon.

#### **Crop diversification towards high yielding crops**

Previously the farmers were raising crops like Millet, Green gram, Black gram etc in the rainy season, and crops like Wheat and Gram in the Rabi season. Due insufficient and uncertain water supply from the reservoir, the yields of the crops were not enough. Due to assured water supply thorough out the year and conjunctive water use, the farmers got diverted towards raising the perennial grape crops. The grape area has increased from 2 to 112 ha. Some of the beneficiaries are raising vegetable crops of short duration and getting good yield.

#### **Multiple gains in farm income**

Due to assured and timely water supply the farmers are able to raise the crops like grape and vegetables. Thus their farm income is multiplied in many folds. Per hectare average income is raised from Rs. 2500 to Rs. 93000.

#### **Increase in water productivity**

The per hectare water use at the reservoir out let head is considerably reduced from 12778 cubic meter to 2742 cubic meter and thus the per cubic meter water productivity has increased from Rs. 1.96 to Rs. 33.91

#### **Increase in utilization of Irrigation Potential**

Though the potential creation over this tank was 157 ha, the area irrigated was not more than 22 ha, But after implementation of the scheme the area irrigated is more than 287 ha. It is worth to note that out of the total 287 ha area, 112 ha. is perennial Grape crop.

#### **Benefits to Government**

The management is made very simple. Conflicts are reduced. Irrigation staff not required, thus saving in staff wages. Assessment of water charges is made simple. Recovery of water charges is 100%. The irrigation revenue has increased from Rs 5000 to Rs 1 30 000 per annum..

#### **Self-Finance**

They have not taken any aid from the government while establishing the infrastructure and PVC pipe irrigation network.

#### **Results**

After the implementation of the scheme following changes are observed.

1. The conveyance water losses are reduced to zero, thus saving in large amount of water.
2. Equitable distribution of water
3. Water is delivered to the farmers in command as well as non command area of the project.
4. Cost of pipe line is saved due to group formation.
5. Every group has a group head. He is authorized to solve the dispute among them if arises.
6. Due to involvement of people's participation, the scheme runs smoothly as the powers and responsibility are decentralized.
7. The youngsters turned towards the farming instead of wandering for searching jobs in the Cities.
8. It became possible to produce export quality grapes and vegetables.
9. Able to adopt advance irrigation techniques such as Drip and Sprinkler irrigation.

#### **Awards**

In recognition of this exemplary and proud work, which has achieved immense success through public participation and organizational activism, Maharashtra Irrigation Association has honoured them with the Irrigation Friend Award at the 10th Maharashtra Irrigation Council, Latur-2009.

#### **Conclusion**

This innovative, low cost, adoptable, efficient and effective technique is well suited for use on all other irrigation projects, with some location specific little modification. Such a scheme can be used to build high water use efficiency, strengthen WUAs, stabilize them and achieve the prosperity of the beneficiary farmers.

#### **References:**

1. Pradeep Bhalage, D.G. Holsambre(2009), Jai Malhar co-operative Lift Irrigation Association – a success case study of Participatory Irrigation Management, National Seminar on Participatory Irrigation management, WALMI, Aurangabad

2. Pradeep Bhalage (2007), Participatory measures in irrigation – a case study of Indore Minor Irrigation Tank, 4th Asian Regional conference and 10th International seminar on Participatory Irrigation Management, May 2-5, 2007, Tehran, Iran.

3. Pradip Bhalage (2022), Equal and Proportionate Distribution in Irrigation Schemes- Success story of Indore Scheme, Water Resourcesment of Maharashtra, India – Retrieved from <https://wrd.maharashtra.gov.in/Site/ViewPDFList>

?doctype=%20UcFurDNxPS8c9858WIXOj/FR6uT4 yOOKuW5VO6TljSKyqJPHeK\_tbADI6fHd/5tNzv5se Hckar08rFB9KI/f01IA6hgveolrGceKUwXfUSY=

4. Webinar conducted on 9 April 2022 by WRD e-Governance Circle, Pune Retrieved from [https://www.youtube.com/watch?v=k5TeQKgCI\\_0&t=4567s](https://www.youtube.com/watch?v=k5TeQKgCI_0&t=4567s)

\*\*\*\*\*



Publishing shortly: **Jalopasana** - Diwali Issue (Marathi)  
Subject: Water on the World Forum

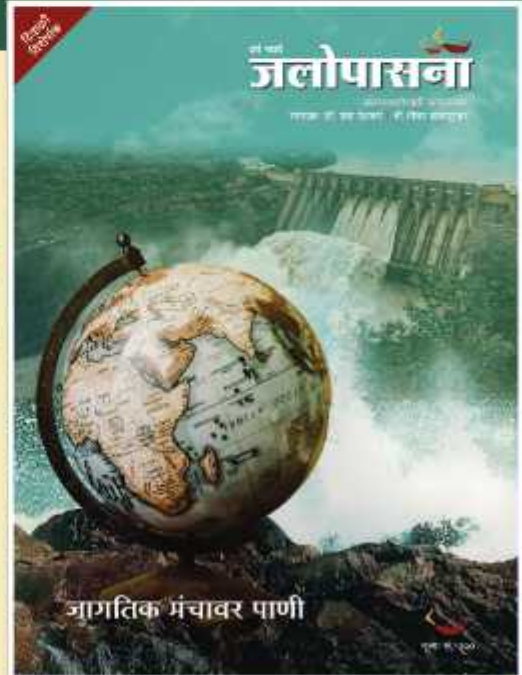
**Contents:**

Articles by following famous water activists:

- (1) Shri Vidyanand Ranade
- (2) Shri Sharad Mande
- (3) Dr. Mangesh Kashyap
- (4) Shri Suresh Kulkarni
- (5) Dr. Nagesh Tekale
- (6) Shri Sumant Pande
- (7) Dr. Ranjan Garge
- (8) Dr. Anilraj Jagdale
- (9) Shri Anil Patil
- (10) Dr. Kshama Khobragade and Dr. Vijay Pawar
- (11) Shri Sanjay Belsare
- (12) Dr. Ajit Gokhale
- (13) Shri Gajanan Deshpande
- (14) Shri Vinod Hande
- (15) Dr. Gangotri Nirbhavane
- (16) Shri Upendra Dhonde
- (17) Dr. Datta Deshkar
- (18) Blessings from Dr. Madhavrao Chitale



Price Rs. 200



Note: Make your payments on this UPI ID: [dgdwater@okaxis](mailto:dgdwater@okaxis)

Please communicate your postal address on Whatsapp no. 9325203109, Postage extra: Rs. 50



## Journey of water in Watershed & its

### effect on Ecology

**Shri Upendradada Dhonde - (M) : 9271000195**



Watershed is made-up of various components like, Network of streams & bio-diversity or it is made-up of living and non-living things. There are Interactions between these living & Non-living things through various physical, chemical, and biological processes termed as ecological processes. The sufficient availability of any natural resource for fulfilment of the human needs depends on these ecological processes.

Watershed, is a land or catchment area that collects precipitation and drains all water to a common place, such as the outflow of a reservoir or any point along a stream channel. Ridges and hills that separate two watersheds are called the drainage divides.

The watershed area comprises of surface water--lakes, streams, reservoirs, and wet lands and all the underlying ground water. Larger watersheds contain many smaller watersheds. The gross structure of a watershed is its 'head to tail' area, varying slopes, water bodies, soils and bed rock composition/minerals, native plants and animals etc. It is the raw material for all the human activities that occur in Watershed area. The natural processes like rainfall, runoff, infiltration, evaporation are important ones which continuously affect structural or functional characteristics of watershed over time and provide beneficial services to society when functioning properly.

Whereas watershed ecosystem has a certain degree of organization and order, it also exhibits constant change and disturbance at varying levels mostly relatively small, frequent disturbances. But when the intensity of these processes drastically changes, they may cause

large, infrequent so-called "catastrophic" disturbances/disasters like droughts, floods, earthquakes etc. When humans misunderstood the catchment characters and interfere knowingly or unknowingly then same results in 'intensifying natural disasters and/or create new ones'. In all, Watersheds have such structural and functional characteristics that can influence how human and natural communities coexist within them. Hence Watershed eco-hydrogeology is an essential knowledge. It is crucial for people to understand watersheds and how they work before they make decisions or take actions that may affect important components of watersheds as ecosystems.

To understand watershed eco-hydrogeology, we need to have accurate information about,

**1. Climate data** : Temperature, humidity and precipitation (including type and amount), winds and cloud cover measured over an extended period of time. Climate heavily influences watershed vegetation, stream flows, water temperatures and many other key watershed characteristics.

**2. Hydrogeology** : study of water in relation with various earth structures/landforms, processes, compositions, characteristics especially important to understand the formation and alteration of the streams or river. it is the science of water in all its forms (liquid, gas, and solid) on, in and over the land areas of the earth, including its distribution, circulation and behaviour, its chemical and physical properties, together with the reaction of the environment (including all living things) on water itself.

**3. Vegetation** : it is an important component of watershed eco-hydrogeology and is dependent on bio-geographical patterns based on climate,

physiography, soils, disturbance regimes and their interactions. The "rain shadow" of Marathwada and heavy rain area of Western ghat is a common, basic example of how vegetation varies with physical position. Based on different environmental conditions, there are hundreds of vegetation patterns like manmade agriculture and natural ones, where a few species of plants dominate and establish a characteristic form or structure within which a potentially large number of less abundant organisms also exist. Few vegetation patterns based on their growth form are, Forests (deciduous, evergreen and mixed), Shrublands, Grasslands, Forbs (broad-leaved herbs). These categories are commonly found on land cover maps likely to be available in the GIS data for most watersheds and can be consulted to give a general sense of vegetation patterns in the watershed. Human activities such as urbanization (residential, commercial, industrial or mixed), agriculture (row crops, field crops, pasture), transportation (roads, railroads, airports), mining etc. fragmented many of the natural vegetation patterns that formerly covered our watersheds.

Severely degraded watersheds means, they have lost several of their components and functions and as a result they provide fewer benefits (or even harm) to human and natural communities. So it is clear that recognizing rules of the watershed ecosystem and working toward protecting its critical components/ functions are key to sustainable watershed management.

#### **Journey of Water :**

When Precipitation starts, raindrops fall on dry ground, some of the water soaks in, or infiltrates in the soil. Not all precipitation that falls in a watershed flows out but the quantity and quality of the water coming to a river is always affected by many factors in its watershed. Those factors may be human-induced or natural but are universal in nature and not specific to a single stream.

After precipitation, some of the water that infiltrates will remain in the shallow soil layer, where it will gradually move downhill, through the

soil and eventually enters the stream by seepage into the stream bank. Some of the water may infiltrate much deeper, recharging groundwater aquifers. Water may travel long distances or remain in storage for longer periods before returning to the surface. The amount of water that soaks-in over the time depends on several characteristics of the watershed like Soil characteristics, Soil saturation, Land cover, Slope of the land, bed rock formation. Also water from rainfall returns to the atmosphere largely through evaporation. The amount of evaporation depends on temperature, solar radiation, wind, atmospheric pressure, and other factors.

The root systems of plants absorb water from the surrounding soil in various amounts. Most of this water moves through the plant and escapes into the atmosphere through the leaves, this is transpiration. It is controlled by similar factors as in evaporation, by the characteristics and density of the vegetation. The amount of stored surface water also affects evaporation rates and infiltration rates. The storage and release of water in reservoirs can have a significant effect on the stream flow patterns of the river below the dam. Uses of a surface water ranges from a few domestic purposes to large amounts of water withdrawals for irrigation, industries, mining, and to supply populations with drinking water.

Stream may often continue to flow where there is no direct runoff from recent precipitation. Ground water flow rarely occurs across the topographical water divides and each watershed can be treated as a separate hydrogeological unit for planning the development of ground water resources.

Depletion in groundwater levels means drying of rivers. So watershed is the meeting point or the interface between Climatology and Hydrology- Hydrogeology. In view of the climate change and the increasing number of erratic high intensity rainstorms, this interface must be made like a shock-absorbing, resilient cushion. This cushion is ground water and is maintained in watershed with many soil and water conservation



methods like afforestation, recharge structures, Storages etc.

### **GW resources evaluation**

A Micro-watershed (hydro-geomorphic unit ) can be evaluated for its recharge potential and suitable map showing such ground water recharge potential zones for appropriate recharge can be prepared to be used for better and improved ground water resources i.e. for accuracy in water budgeting and to provide scientifically appropriate locations & structure types for artificial recharge to Aquifer.

But, Ground water and surface water are regulated by different agencies that do not properly account for the linkages between them. Today's water budgeting needs improvisation. In absence of reliable data on rainfall, evapo-transpiration, flood discharge of a stream and pumpage from existing wells, a fair estimate of ground water resources available for eco-restoration in watershed is difficult to assess. Also in the absence of technical feasibility, the financing institutions/ Banks are not able to estimate the economic viability of an average individual well or structure. Finding suitable sites for locating dugwells and borewells and planning for long term sustainability of the wells is becoming difficult now a days under these circumstances.

There is need to understand importance of accurate assessment of Ground Water resource. But due to Non-availability of correct figures, meager number of fixed monitoring stations. The data is not sufficient to draw any conclusion at a micro-watershed level. Also Sporadic nature of rainfall, heterogeneous, structurally complicated rock formations etc. conditions adding the misery. Without accurate data, the selection of sites, design of site etc. all hamper and there is failure in getting desired results. In spite of Claim of Good water conservation works, Maharashtra is continuously facing drought, the reason is "Wrong assessment of Ground water resources at micro-watershed level. Though Government trying hard, it has its own limitations: Man power, financial provisions, time limits etc. So formulating and

implementing various developmental activities by Administrators is a big problem and remedy to this is "GW budgeting at Micro-watershed level". Hence, the Government schemes Jal kranti abhiyan, Jalshakti abhiyan, Atal bhujal, Jalyukt Shivar etc. all also expect to contribute towards more decentralized governance & increased participation in GW resource management at watershed level.

\*\*\*\*\*



## Water hyacinth!

Smt. Shailaja Deshpande

(M) +91 9822391941



Water hyacinth or *Ecchornia Crassipes* is a non native aquatic species that has been introduced in India, from South America with a good intention of controlling the water pollution in our country. Sadly however since it is a non-native plant, it doesn't have any predators to control it. Thus due to the increasing pollution levels of our river waters, and also a strong seed which stays alive for around 20 years, the water hyacinth continues to proliferate.

### Why does it proliferate?

Water quality in our cities is a major reason for the rampant proliferation of this species. Untreated sewage and the other interventions (like debris and rubble dumping) in the urban rivers, lead to stagnation of water and thus a perfect feeding ground for the water hyacinth to proliferate.

### Managing the issue

When we look at managing this issue of rampantly growing water hyacinth, we realise, there is a two-fold approach that needs to be taken.

1. Making sure the water is treated before it enters the river and
2. Manage the water hyacinth that's already in the river

Managing the water hyacinth that's seen in the river always seems to be the easier available option. As working the real cause of the issue is always harder!

Last year 2021, the amount spent on cleaning one lake : Pashan Lake was around 23 crores! We can imagine the money being spent on this activity when cities are surrounded by huge rivers and smaller lakes, all of which are masked with this plant starting from January every year.

Updating the sewage treatment plant of the city to

treat 100% of the water is the only solution, until which time we have to find better ways to manage and control this spread.

### Research and Experiment

As we were surrounded by this issue, and solutions that were going nowhere, we decided to figure out if there was any other means of converting this plant to a more useful resource.

The root of the water hyacinth plant is usually converted to compost and used accordingly. Stem of the plant in the North Eastern part of India is made into artefacts and other commercially useful items.

As we got into studying the water hyacinth on the Mula River in Aundh area, Pune; we came to understand that there is a very high level of heavy metal content in the species here. Due to this 'composting' and use as an 'animal feed' as solutions, were ruled out.

To better understand the process we did a Life cycle analysis (LCA) of the plant and studied the growth under different conditions. Season wise we mapped the changes that occurred.

Through this experiment we realised, that the heavy metal and pesticides at this location are always beyond permissible limits. Water hyacinth was absorbing upto 70% of the pollutants in the water, thus making it very ineffective for commercial uses that were already known.

After interaction with research scientists, making Bio char of this plant came up to be a viable solution. A certain major percentage of water hyacinth along with other Agri waste like ground nut, sugarcane, rice husk etc could make this a very effective bio-char that purifies water into completely potable level.



This project is still in the research stage, and we hope to bring it to community applicability soon. The communities downstream are the major sufferers of this polluted water released by PMC & PCMC. It is our moral and ethical responsibility to rectify our mistakes by making sure how downstream can get water at least of usable quality. Attached is a video of the whole project that was undertaken through a CSR funding by Jeevitnadi. <https://www.youtube.com/watch?v=PLxtI3AS89k>

Some photos from our project

### Way ahead

The plant that masks the rivers, reduces the oxygen to aquatic life and also are the perfect breeding ground for mosquitoes is a sign of our pollution levels in the cities. The River ecosystem is disturbed

and is unable to produce phyto planktons and zoo planktons which maintain Oxygen balance of the water.

Reducing toxic waste generated from households will be a highly ambitious dream that one would like to hold for the future. However, until then, we need to work towards making our sewage treatment plants more effective so that no untreated or partially treated sewage water is sent into the river. If these are done, the problem would definitely be solved to a large extent. Every stream meeting the river needs to be treated with natural solutions by way of use of phyto reeds or Bio char made from Water hyacinth or combination of both to filter the polluted water to some extent before it reaches downstream.

\*\*\*\*\*



Jalsamvad monthly is owned & published by  
Datta Ganesh Deshkar  
Published at A/201, Mirabel Apartments,  
Near Pan Card  
Club, Baner, Pune - 411045.  
Editor - Datta Ganesh Deshkar

जलसंवाद हे मासिक मालक व प्रकाशक डॉ. दत्ता  
देशकर यांनी  
ऐ - २०१, व्यंकटेश मीराबेल अपार्टमेंट्स,  
पॅनकार्ड क्लब जवळ, बाणेर हिल्स, पुणे -  
४११०४५ येथे प्रसिध्द केले.  
संपादक डॉ. दत्ता देशकर  
e-mail - [dgdwater@gmail.com](mailto:dgdwater@gmail.com)  
मासिकाची वेबसाईट - [www.jalsamvad.com](http://www.jalsamvad.com)

## Jeevitnadi : Activities for the month of April 2022

Shubha Kulkarni

(M) : 9930809046



- Street play: A team of young warriors of Jeevitnadi, perform a very powerful street play: *Punya Jevhaan Jaag Yete*, on the topic of river conservation. The play is written and directed by one the volunteers Sagar Kulkarni. In the month of April, we were invited at two locations to perform the same.

- April 2nd in IISER (Indian Institute of Science Education and Research) and

- April 24th at the Happy street organized by Times of India, in the streets of Kothrud area in Pune



**Punyache Paani**  
Stories of Pune's Waters

24th April '22

**Water and the Performing Arts**  
Time: 9:30 am - 1:30 pm  
Venue: Shrikrishna Jagdish Shetty Auditorium,  
Karnataka High School, Parsipada Colony, Shivajinagar, Pune

OPEN TO ALL

- Manipulation performance by Radhika Mahes, IISER Pune
- Dance performance by Ritika Talwar, IISER Pune
- Theatre performance by Nightfall - IISER student group
- Musical performance by children's street theatre group
- Dance by Navras dance club IISER Pune
- Power to the People's Water by WISACH Pune Chapter

- At the Adopt a stretch Ram Mula confluence (Aundh, Pune), we had a biodiversity walk for the first time on 24th April. Audience was introduced to the various eco systems in the

riparian zone, keystone species and its uniqueness. The fauna seen was explained in terms of the surroundings and them being bioindicators. It was a very enlightening session for all participants.

- HSBC corporate teams ( from different

locations) visited two of our other Adopt a stretches at : Vitthalwadi and Aundh, through this month. They did cleaning and also understood the activities that Jeevitnadi undertakes.

at  
Vitthalwadi

at Aundh  
ghat





☑ We also had a team from Concentrix visit our Aundh stretch and work on the plucking of invasive weeds that have taken over some spaces. The idea is to dry and then burn these weeds to get rid of it permanently. The activity cannot be just limited to pulling out the weeds, as they would then reproduce back into the same space.



- At the Aundh stretch, as part of the live spring revival, the volunteers have created a wetland around the spring and are tending to it. Lately we have noticed water hyacinth (an invasive plant that is supposed to control the water pollution) inside the wetland. A team has begun to pull this out and attempting to keep the wetland isolated from polluted water entering it.

- A group of aware and sensitive citizens have taken the lead of spreading awareness and raising their objective against the proposed River Front Development. Jeevitnadi has spear headed this movement and it is gaining speed and size as the days go by. Citizens are also continuing a chain fasting also against this since February 27th 2022. To know more, please visit our website. <https://sites.google.com/view/puneriverrevival/>



## Stockholm Water Prize 2001

Prof. Takashi Asano, USA

Gajanan Deshpande, Pune - (M) : 9822754768



(An article series has been launched in August 2020 to learn more about the World Water Prize winners and their work.)

The 2001 Stockholm Water Prize was awarded to Prof. Takashi Asano of USA. The award was presented to Professor Takashi Asano by King Carl Gustaf of Sweden on August 16, 2001. It was a great moment that glorified the journey of his life.

He began his journey from the beautiful town of Sapporo on the northern Japanese island of Hokkaido where he was born and moved on to Berkeley, California, transitioning from the social and scientific epoch-defining period of the 1960s and further to the forefront with many notable government and academic pursuits.

Until receiving the award, Professor Asano spent more than 20 years engaging in both theoretical and practical research on wastewater recovery and recycling. The basic study was conducted in the 1980's and 1990's. As a result, it became clear as to how to use the recovered water safely and it set out the rules and procedures for water recycling in the state of California. This research provided a reference point for most international projects on how to use water efficiently. Professor Asano used the original research to promote agriculture, irrigation, groundwater recharge, industry and the environment globally.

He expanded his original research and the concept was adopted in developed and developing countries. Reliability, health protection and public acceptance as the promoters of the concept were

his main achievements considering the scientific basis and the approach of risk management for the present and future in the complex world of technology. Significant achievements of his work include his concept of microbial risk assessment and the expansion of that concept in the field of wastewater recycling. He and his colleagues combined reliable and anticipated virus-monitoring data with new approaches using statistical evaluation and simulation methods. This area is now rapidly expanding as a tool of policy and management.

His contributions to science and technology have gone beyond his role as an educator and former government employee. He acted as a catalyst for technological advancement. He also acted as a mediator between scientists, practitioners and politicians in arid and semi-arid Asian and Western countries - where water is most needed.

Prof. Asano says, I learned one thing from visiting these countries that, a lot of well educated and trained people work in the fields of hydrology, engineering and public health. We always need to get valuable advice from these knowledgeable people.

Prof. Asano soon recognized that developing countries in the semi-arid or arid regions of the world with their rapidly growing populations and limited economic resources needed special attention and contributed significantly to the problems and solutions of developing countries in this regard. Many local, regional, national and international agencies benefited from Prof. Asano's knowledge and





advice.

Although, there is no other well-known name in the field of wastewater recovery and recycling, Prof. Asano equally values and respect others. In fact, he credits his Stockholm Water Awards with the combined efforts of colleagues and mentors from the United States, the Mediterranean, North Africa, the Middle East, South America, Japan, and elsewhere.

Since 2001, Prof. Asano has focused on writing a textbook on water recycling along with his two expert colleagues. The main focus of this textbook is on the use of integrated water resources management as a sustainable alternative to water recycling treatments. Prof. Asano is developing a blueprint for how wastewater recycling will be integrated with water resources in an integrated manner using public health care for public health purposes.

\*\*\*\*\*

### **Polavaram — displaced and nowhere to go: Ineligible for rehabilitation, many in a fix**

Several disqualified from rehabilitation process on absurd grounds, found DTE

Those displaced by the Polavaram project in Andhra Pradesh have found themselves in the middle of yet another quandary: Scores of them are ineligible for rehabilitation by the state government.

The Polavaram irrigation project, set to be operationalised by April 2022, will displace the highest number of people in India's history of such projects: 106,006 families across 222 villages (total 373 habitations) in Andhra Pradesh, upon completion.

Many who haven't been given a house or compensation yet have been living in the hope of a promised rehabilitation. But those who have been disqualified from the rehabilitation process on absurd grounds after being displaced find themselves at the bottom rung of the ladder.

Take the case of K Ramanagara, a washerwoman from the now submerged Ramanayyapeta village. She is not eligible for the rehabilitation and resettlement (R&R) package — she and her family weren't present in the village on the day of the survey for relocation by the government in 2009.

During that time, her now handicapped husband was bitten by a snake while working in fields and the family had to temporarily shift to Rajahmundry for his treatment.

"The government surveyed the village for relocation and missed my name. I have all documents to prove my residence. I visited the authorities here several times but they do not pay heed to my requests," she said.

She is now living in a rented house in Krishnuniapalem, some 35 km from her village, where she pays Rs 2,000 a month. She uses Rs 3,000 disability pension her husband gets to pay for it. There is not much laundry work in the colony the family has shifted to. So, Ramanagara wants to work as agricultural labourer. But after displacement and subsequent shifting, there is surplus labour in the area and subsequently, not enough jobs.

Dasara Venkatesh, 45, has stayed all his life in Chinaramayapeta village. But he was told he was ineligible for compensation after the "government lost his identity cards and papers".

Sidda Sachinarayan, a journalist and among the displaced, lives in the same colony as Venkatesh. He said the government left people out very randomly from the compensation lists.

"Initially, when the decision of relocation was taken, the government depended on Socio-Economic and Caste census data. But later, they conducted surveys at village level and began to disqualify people on different grounds," he said.

Gangadhar Rao, a fisherman, didn't have a ration card of the village he lived in till May 2021. He had migrated to Devipatnam in 2004 because fishing opportunities were better.

He and his family have now been living in a fishing boat along with four other families, who are awaiting construction of their houses in an R&R colony, for about seven months now.

The other families have at least got the compensation money. Till May 2021, his three kids (in grades III, V and VI) went to the now-submerged school building. They later dropped out.

Ravi Rebbapragada, executive director, Samata, which has been working with the displaced population in East and West Godavari districts, said the government should conduct a reassessment of all disqualified people.

The government not compensating for 'banjar land' is another battle that the displaced population is fighting.

Banjar land is unregistered government land but cultivated by villagers, mostly tribals, for many years now. The R&R package includes compensating people for their agricultural land; banjar land has not been surveyed or included in the package.

"People have been cultivating banjar lands for 40 years or so. We have demanded providing pattas (a land deed) of such land to the government authorities. The Polavaram Project Authority also acknowledged it but things have not moved," said S Jhansi Lakshmi, Andhra Pradesh state president of Rythu Kuli Sangha, a non-profit working for the displaced.

We don't know how much of this land exists in the state because it's not registered, she added. There is no data or record of such land which was the livelihood for many people in the submerged villages.

K Abhay Reddy (45), his wife and three children had been dependent on two acres of such

land for their livelihood since 2006. "Other families can at least claim compensation. We can't even do that because we don't have the papers. The government lies. Before shifting to the colony, the officers made promises that we will get better work but that is not the case here."

Rebbapragada said the authorities have been disqualifying people occupying banjar land on technical grounds, but it is unjust in terms of rehabilitation being an inclusive process.

"The land is technically owned by the government and people cultivating on it are not entitled to compensation, but when the Polavaram Authority is genuine about rehabilitating every person then it should think about giving some compensation on account of banjar land, if not giving them an equivalent piece of land," he said.

Another problem — of cut-off date — was also found across all colonies. According to the Land Acquisition Act, 2013, those aged 18 years were eligible for compensation at the time of the survey. However, by the time the process started, a significant number of new youth population had become eligible for compensation.

"This issue, coupled with not providing R&R package to married women above 18 years, is an exclusionary process," said Rebbapragada.

Down to Earth travelled to the West Godavari district and East Godavari district in Andhra Pradesh where Polavaram project (a multi-purpose irrigation project) is underway to see how the biggest displacement in the history of displacement projects is being managed.







## Rain Water Harvesting II:



In the earlier part we have seen that we have restricted the Nature to harvest rain water. This loss has to be duly compensated by taking resort to artificial rain water harvesting. There are many ways to harvest the rain water. For that, we have to create different structures. Let us study them one by one:

**1. By constructing earthen bandhara:** There are innumerable streams which flow in the rainy season. These streams join together and rivers are formed. If a bandhara is constructed on such stream that will restrict the flow of water. On one stream many bandharas can be constructed in a chain. Stagnant water has always a tendency to percolate in the soil. This is how the rate of percolation would increase and that water could be stored under the ground. This ground water is more or less a water bank. There are two major advantages from such bandharas. Because of these bunds, flow to the rivers is restricted and chances of river flooding get reduced. They work as flood controllers. Secondly, the cost of construction is negligible. Even the villagers can come together and construct such bunds. Because of flooding, even when the bund is washed away, the loss is minimum. Those can be erected again with minimum efforts.

**2. Compartment bunding:** A farmer can divide his agricultural land into parts, i.e. compartments and construct bunds there. By doing so, he can restrict the flow of rain water from his farms. This work can be easily done in summer when the farmer has less farm work. These bunds not only restrict the water to flow away but also stop the erosion of soil. On the other hand, this helps the process of leveling of the soil. Soils with slopes become flatter over years if such bunds are constructed. Thus these bunds help the farmers to retain the rain water in the farm itself.

**3. Cement check dams:** Bunds explained earlier are more or less temporary structures needing repairs time and again. This can be avoided by creating permanent structures in the form of check dams. We can create permanent structures by using steel bars and cement. They are to be erected on sound footings so that leakages do not occur later. Gujarat has taken lead in construction of such check dams. In a period of last 15 to 20 years It has constructed more than 5,00,000 such check dams. The result is very clear. The farmers there, have started cultivating three crops every year giving economic stability to the farmers. Voluntary agencies there, have come forward in large numbers to assist the villagers by providing equipments and technique for the construction of such dams.

**4. Gabian structures :** Construction of Check dams requires more funds so also technical knowledge. That is not the case with the Gabian structures. Here we need thick wire mesh which can be put in the stream, create a stone wall on it, fold the wire mesh from both the sides and lock it at the top. Thereby the stones inside do not move and the wall stays even when there is a pressure of water in the stream. When water starts flowing through the gaps in the stones, mud settles there and in course of time this flow stops. Construction of this structure does not need any skill and a common man also can do this job easily. (continued)



# Heartiest greetings form the Jalasamvad family

Members of our family:

## जलसंवाद (Jalasamvad - Marathi Monthly)

The only monthly magazine published in Maharashtra on the subject of Water  
17th Year, Annual subscription Rs. 500 only, pay on: [www.payyoursunscription.com](http://www.payyoursunscription.com)

## जलोपासना (Jalopsana - Diwali Issue)

Thought provoking, in depth analysis on the subject of Water - published for 7 years



## जलसंवाद रेडियो:

The only web Radio that relays issues around Water 24 x 7  
Download the **Jalasamvad Radio** app from your Google Play-store and enjoy free!



## यू ट्यूब वर जलसाक्षरता:

Subscribe to the **Jalasamvad** 'You Tube' channel  
Search us by typing Jalasamvad and listen to a series of 10 minutes clips on water

## जलसंवाद वेब साइट:

Log on and get e-copies of Jalasamvad, Jalopasana,  
Booklets on water written by Dr. D G Deshkar, etc.

[www.jalsamvad.com](http://www.jalsamvad.com)

# Jalasamvad



A monthly magazine that provides a platform for seamless dialogue on Water  
Editor: Dr Datta Deshkar: 9325203109, [dgdwater@gmail.com](mailto:dgdwater@gmail.com)