



Cover Story



INREM
Foundation

India Natural Resource
Economics and Management

Shri Vinod Hande

जलसंवाद



जलसंवाद तर्फे इ पुस्तके

- (१) मी एक जलप्रेमी : डॉ. दत्ता देशकर
- (२) जाणून घ्या आपले पाणी : डॉ. दत्ता देशकर
- (३) जल-सुसंस्कृततेच्या दिशेने : श्री. गजानन देशपांडे (आगामी)
- (४) Towards Excellence in Water and Culture :
Shri Gajanan Deshpande (आगामी)
- (५) उद्योजकता : (स्वतःचे भविष्य स्वतःचे हाती) : डॉ. दत्ता देशकर (आगामी)
- (६) जलक्षेत्रातील यशोगाथा : संपादन : डॉ. दत्ता देशकर (आगामी)
- (७) जलक्षेत्रात काम करणाऱ्या संस्थांचा परिचय : श्री. विनोद हांडे (आगामी)
- (८) पाण्या तुझा रंग कसा? : श्री. विनोद हांडे (आगामी)
- (९) स्टॉकहोम पुरस्काराचे मानकरी : श्री. गजानन देशपांडे (आगामी)
- (१०) Recipients of Stockholm Water Prize :
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Jalsamvad



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Dr. Datta Deshkar

Late. Shri. Pradeep Chitgopekar

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In the year 1956 the Government appointed one committee by name Gorwala Committee. Its purpose was to evaluate the role of cooperation in rural credit. **Cooperation has failed, cooperation must succeed** was the conclusion drawn by the committee.

Today, I remember this statement in different context. A similar situation has arisen in the field of water users associations where it is observed that **Water user Societies have miserably failed, but they must succeed** if we want to use each drop of water in a better way. In last 75 years, the Government has achieved success in creating huge storages of water but that stored water is not being used effectively and efficiently. On the recommendation of the World Bank, we tried to establish many water users societies. But the number does not indicate the success. Most of them are in a rickety condition. Teething troubles are short run but as far as these societies are concerned, there does not seem any end to these troubles. The users need training but for the present there is no training facility. Once WALMI used to offer this training not only to the farmers but also to the women working on farms. But due to some policy changes, this source has come to an end. It is earnestly requested that some alternate arrangement should be made so that required skill of management develops. Most of the farmers do not possess the management skill. They, in fact, need intensive training to develop these skills. But in absence of these skills, most of the societies are facing different management problems.

As per the Act passed by the Government, there is a provision that for every meeting of the society some representative of the Irrigation Department should make himself available for guidance. But surprisingly enough, this representative is never available at any of the meetings. As a consequence, these societies are ill nourished and their functioning has become very difficult. This disinterestedness or indifference on the part of the Irrigation Department has become very irritating to the societies.

While passing the Act itself, it was decided that such societies once formed, would look after the allied activities useful to the farmers to make the societies financially viable. But presently the societies are handling only water distribution. In fact, their aim should be proper water use. The aim of the Government is to get **more crop per drop**. But this is not on the agenda of the societies.

What we need is the establishment of some 100-200 model societies by the Irrigation Department in different areas of the State to show how the societies can be run. These societies will work as a model to copy for of all the societies working in the State.

A time has come now to evaluate the system, find out the bottlenecks in the working of the societies and find out solutions to see them working effectively. If that is not done, one day, the whole system would collapse without delivering any fruits.

Dr. D.G.Deshkar
Editor

Organization - Indian Natural Resources

Economic and Management (INREM)

Shri Vinod Hande, (M) 9423677795



“Indian Natural Resources Economic and Management” (INREM) is basically a research institute searching social issues relating to water, public health, agriculture and environment. The institution develops innovative solutions and brings them into different fields by practicing with communities and government. It is established in 1994 with supports from Winrock International, Ford Foundation and Rockefeller Foundation. Dr. Katar Singh is the chairperson of the INREM who was Chair Professor of the RBI. Under the guidance of Dr. Katar Singh, Institute of Rural Management, at Anand, Gujarat has now developed into a recognized institution in the field of natural resource management with special focus on water related researches, field implementation, training and policy formation. The INREM Board supervises the functioning of organization. The INREM is also guided by an Institution Ethics Committee that supervises the ethics practice of research performed by the organization. INREM team is located in Anand Gujarat and in Jhabua Madhya Pradesh. The INREM works in various fields like Water quality and health, River Basin management, Water and livelihoods and issues concerning policy and governance. INREM also works in participation with wide group of professors and organizations involving both in research and its application. INREM also collaborates with NGOs, government institutions to address water challenges.

INREM is registered under the Society Registration Act,1860 and Bombay Public Trust Act,1950. Organization is also registered under 80G Income Tax rule where donors get tax exemption as per rule.

INREM approach towards work

- Collaborative Solutions – INREM collaborates with government and NGO programs ant both national and state level. They partner with Jal Jeevan Mission of a national significance in addressing water related challenges.
- Promoting Sector Convergence- They make smooth collaboration among institutions in various sector like water, Health, Nutrition and agriculture.
- Advocating Policies for Change- INREM engage in collective policies to make changes in solving water contamination issues. Water testing protocol is also streamline across India.

A world with clean water for everyone, everywhere is the vision of INREM. INREM also aims to achieve a high quality natural environment that helps & supports a healthy ecosystem, society and economy. By keeping this vision in mind organization is working in 11 districts of 7 states of India.

INREM Projects

INREM carries out a various activities under the following five main projects themes.

- Water Quality and Health
- Sanitation and Groundwater contamination
- Hydrology and Management
- Water and Livelihood
- Policy and Governance

Water Quality and Health

Sparkly water look pure but devastating to millions in India and worldwide. What is this disease? This disease is called as fluorosis. How does this happen. Can we do something about it? Is there any hope to those already affected? INREM highlights this issue.

What is Fluorosis?

Fluorosis caused by consuming high fluoride mainly through water or through food which may be irrigated from high fluoride water. It becomes severe by deficiency of calcium. Deficiency of Magnesium and Vitamin-C worsen fluorosis. In affected person their Teeth get permanent yellow stain or bones and legs crippled. Studies show that,

- More than 60 million people in India are at risk from fluorosis.
- 20 states in India report incidences of fluorosis.
- Fluoride more than 1 mg/l is harmful for drinking.
- Malnutrition makes fluorosis worse.
- A generation of Children is at risk of being crippled
- Calcium deficiency worsens fluorosis.
- Fluorosis also worsens Osteoporosis, Anamia, and other nutrition related disease.
- Safe water and good nutrition prevent fluorosis.

Fluorosis is a health problem related to basic habit of water and food. INREM works with fluorosis affected communities and tries people to understand their disease. Organization has a proper and safe system of detection of disease. Organization also has technologies which can help people to alter their current behaviour. In this INREM initiative organization gets support from Sir Dorabji Tata Trust, Mumbai and expects more people to join them in this mission.

Community :

Communities are the centre of work of



INREM. In Jhabua they work with Bhil community to understand the culture, health practice and behaviour, food access and nutrition. This way they come to the close of people by way of understanding them. Studies made by INREM on following subjects.

- Interaction with health practitioners.
- Study of food availability and prices at Haats (weekly market).
- Understanding culture, food habits and migration.
- Malnutrition and its roots.

Health diagnosis for fluorosis can be done by following five steps. INREM utilizes public health facilities and laboratories for diagnosis fluorosis. And the tests are,

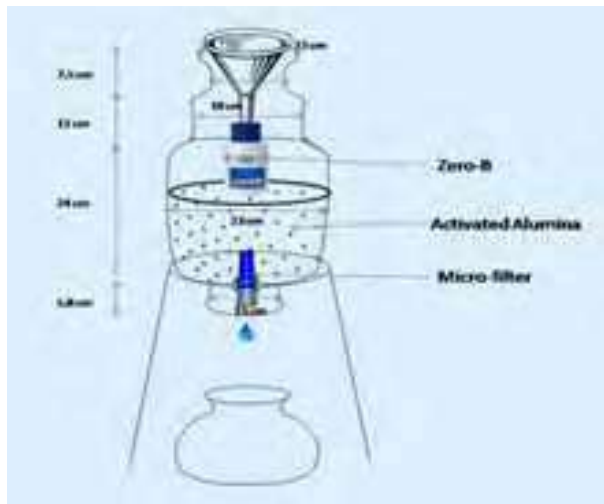
- Fluorosis systems
- Food analysis
- Blood-Urine fluoride
- X-ray
- Monitoring

As per study conducted by INREM in 5 villages Jhabua shows that handpump has greater levels of fluoride levels than dug well. Water samples collected from dug well have fluoride level of less than 1 mg/l, Whereas sample from handpumps have fluoride level up to 12 mg/l in some cases. As recommended by medical specialists resistance to fluorosis and removal of fluoride from the body to some extent can be done

with calcium, Magnesium, Vitamin D3 and zinc tablets, Amla tablets, Milk powder, Dried salted Amla, Soya laddu and Sweet amla.

Safe Water :

In area like Jhabua availability of electricity and roads is difficult. We think of technologies which can be maintained and can be used easily. Keeping these problems in mind INREM has developed an earthen pot filter which uses Activated Alumina (AA) for fluoride removal and Zero-B as a disinfectant. This filter has a water flow rate at 8 litres per hour and suited for AA based filter. Till Jan. 2012, 47 families from 4 villages received water filters and 110 patients received nutrition.



Sanitation and Groundwater Contamination :

Community sanitation programmes mainly focus on construction of toilets. This is an achievement for many rural and urban area of South Asian countries like India and Bangladesh.

Though the contamination from feces above the ground is stopped but contamination route persists below the ground. Proper design of on-site sanitation structures is not paid much attention. Maintenance of these systems, desludging of tanks and waste water disposal is not a centre of action, so risk from contamination of ground water from on-sight sanitation structure is very high as source of drinking water is ground water. To minimise such contamination of ground water should be considered at the initial stage of planning.

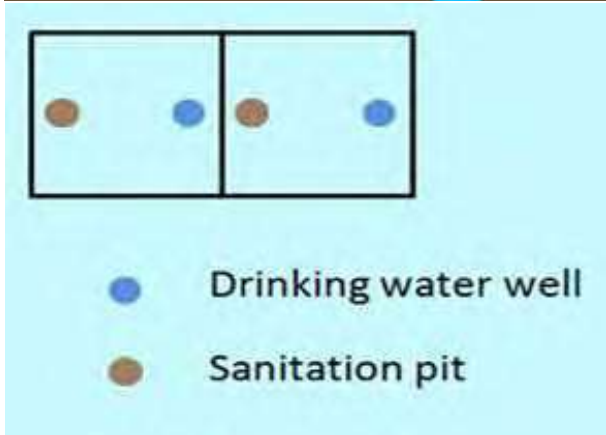
In India the National Environment Engineering Research Institute (NEERI) conducted case studies in two cities Indore and Kolkata. There are case studies of Afghanistan, case study of Dumaguete city, Philippines, Maharashtra, Bhopal and Puri available on the site of INREM. But the study also indicates that following points must be taken into consideration before deciding on-site sanitation. And those are,

- Affordability and acceptability by the end user
- Soil, groundwater and climatic condition of a location
- Associated environmental, ecological and health aspect and
- Availability of water and longterm sustainability of the system.

In addition to above points following points also need consideration.

- Not lead to surface soil contamination
- Not contaminate springs or wells
- Not contaminate surface water
- Not give access to flies or animals
- Involve minimum handling of fresh excreta
- Offer freedom from smell and unsightly conditions. And
- Be simple and inexpensive in construction and operation.

A very simple program called Sanitcontam has been developed in order to bring out interlinkage and adjustment in decision making.



Hydrology and Management Project : Under this project INREM covers following aspects.

- **Meghal river basin** : Alternative approach to river basin management in rearranged river basins with distributed storage.
- **Forest and water** : The complex relationships of forest with water and bringing out the current scientific debates on this issue.
- **Sabarmati river basin** : Presenting a river basin wide water availability and use for looking at alternative management approach.
- **Well Driller's knowledge on groundwater** : Presenting the knowledge that people have on groundwater hydrology specially focusing on the knowledge of well drillers.
- **Dug-well recharge** : Impact of a nationwide programme on dig well recharge to revive groundwater in hard rock areas.

Water and Livelihood Project

This is partnership program of INREM with EU(European Union) to promote district platforms

on water quality and develop water quality network with aim to connect Civil society with government programs on water. There are two programs, one is Primary focus for District Water Quality Platform and second one, secondary focus that supports National Programmes on Water Quality. Duration of project was 6 years from Jan.2018 to Dec. 2023.

Over the period of six years this program has been successfully over nine districts of seven states in India and the states were Karnataka, Telangana, Odisha, Madhya Pradesh, Rajasthan, Bihar and Assam. These platforms have served as regional platforms for water quality practitioners to contribute their views and approaches for national programs such as Jal Jeevan Mission and the National Programme for Prevention and Control of Fluorosis (NPPCF).

Success of the program include capacity building initiative, innovative solutions for ensuring safe water, support to government on their programs with collaborative efforts. These program have enabled INREM to widen their scope to wider range of water quality issues. Out come of the projects are,

- 22% improvement in Safe water measured in 5 years in 9 districts across 7 Indian states benefiting over 6.1 million people.
- Lead partner role on water quality management for Jal Jeevan Mission and Swachh Bharat Mission with Rural WASH partners Forum with knowledge support to Water Quality Monitoring and Surveillance (WQM&S) programme reached more than 2 million water tests by community across India.

Another programs of INREM on livelihood listed as below.

- **Water Saving Technology**- The impact of water saving technologies on livelihood of farmers.
- **Small-pond Fishery Management**- Policy and Institutional aspects of small water body fisheries that can expand production and create more livelihood.
- **Irrigation and Land Lease**- The connection between irrigated land and lease price of land. Policy and Governance project

The above project of INREM following sectors.

- Working groups with Planning Commission-Engaging in policy formulation with the Planning Commission working groups for the 12th five year plan.
- Panchayat and Water- The function of Panchayats with respects to water services and their performance across the India.
- Sajjata Sangh- Impact of NGOs in Gujarat with watershed related interventions on agriculture.
- Groundwater Governance- Bringing about an experienced groundwater professional through multi-disciplinary education to practitioners.

About the case study on “Health Impact of Poor Water Quality along Coastal Area of Gujarat”. To this study of INREM financial support was given by Coastal Salinity Prevention Cell, Ahmedabad.

Kachchh and Saurashtra in the state of Gujarat have a long coastline and therefore exposed to the effects of saline water. Most places up to several kms inland have saline groundwater. Therefore people of this area are suffering from the impacts of drinking this poor quality water. About 1000 villages of this region are located in this coastline have TDS of more than 1000 ppm throughout the year due to seawater intrusion and excess groundwater extraction. Providing safe drinking water to the people of Kachchh and Saurashtra is the priority of state govt.. Water sector reform project supplying water from Narmada and Mahi and from number of village level drinking water projects like water treatment and rain water harvesting to the above affected area. Supply of safe drinking water results in improvement in health. But the point is what health conditions they want to improve with this health program. Doctors working in Junaghad, Bhuj, Rajkot and Bhavnagar are focusing on the following health aspects.

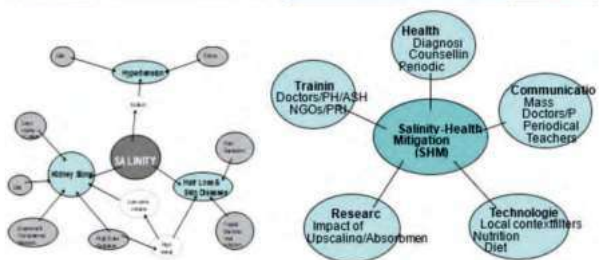
- Kidney stone and related diseases.
- Skin diseases- eczema, scabies, fungal patches etc.
- Hypertension
- Hair loss.

Remedy for the above health problems is to drinking adequate water. But how to get adequate drinking water is another question. People can not follow this in practice. Now why?

- Availability
- Adequacy
- Affordability

Table below shows the extent of salinity Increase in Junaghad .

Salinity Ingress Parameters	1977	1988	1996	1997	1998	1999	2000
Maximum extent of salinity ingress (in km)	6.00	7.00	7.2	6.6	7.5	6.0	8.25
Affected area (in hectares)	18000	19707	21084	20041	21321	22109	24304



For study purpose INREM have divided above in four zones and they are 1) Kachchh, 2) Jamnagar-Porbandar-Rajkot, 3) Junaghad, and 4) Bhavnagar-Amreli.

INREM’s Publications

INREM have their own publications in the following subjects by different authors of their organization.

Hydrology and Management

1. Local well driller knowledge on groundwater in Bihar
- 2 . Popular science of Basaltic hydrogeology in Saurashtra, Gujarat
3. Is it possible to revive dug wells in hard rock India through recharge?
4. Baby steps towards groundwater revival in India
5. Forests as hydrologic rejuvenators
6. Meghal river basin management

Water and Livelihood :

1. Inland fishery in traditionally vegetarian Gujarat
2. Poaching and productivity in small pond aquaculture
3. Inland culture fishery in ponds and tanks of India
4. Inland culture fishery analysis across locations in India
5. A turning point: Water saving technology in north Gujarat
6. Asset creation through employment guarantee

Policy and Governance :

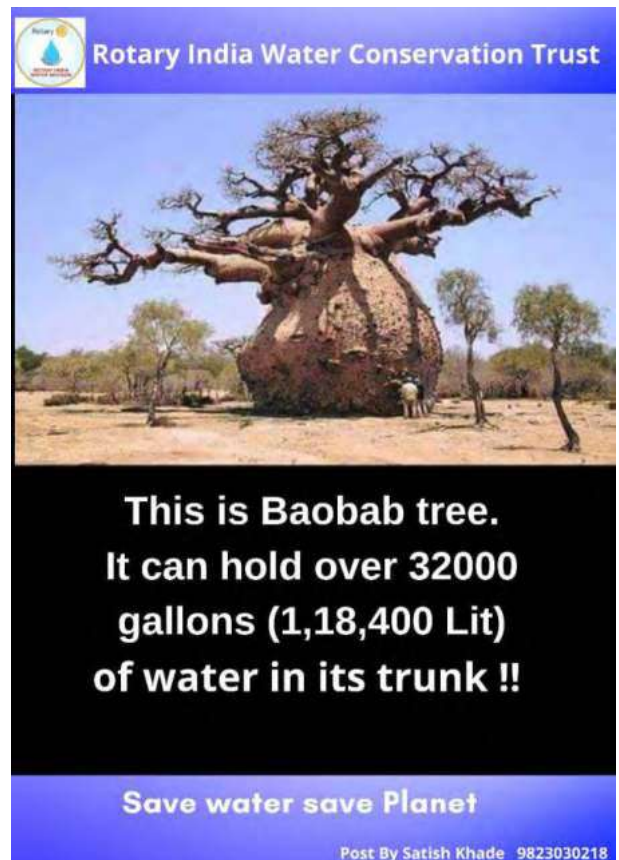
1. Groundwater situation in urban India
2. Environmental impacts of groundwater overexploitation in India
3. An illustrated collection of groundwater problems
4. Water management and Panchayats in India
5. Towards a participatory approach for groundwater management
6. Inputs on Groundwater quality into 12th five year plan
7. Planning Commission 12th five year plan Working Group Report on "Water Database and Development"
8. Planning Commission 12th five year plan Working Group Report on "Sustainable Groundwater Management"

Following is the list of the partners those are helping INREM technically and financially in achieving their goals. Only few names from the list are mentioned here.

Partners	Partners
Sir Dorabji Tata Trust	Apollo Hospitals, Hyderabad
International Water Management Institute	Coastal Salinity Prevention Cell
Sir Ratan Tata Trust	Sajjata Sangh
Planning Commission of India	Institute for Rural Management Anand

Address and other details of INREM Head Office.

INREM Foundation,
Bolck B, Paramkrashna Apts,
Near IRMA
Anand, Gujarat -388001
Phone- (02692)- 262385
Email: sundar@inremfoundation.org
www.inremfoundation.org



NGO partners with residents to restore

stepwells

By Aabha Souche

Pune : Sevavardhini, a city based NGO, is working with local communitis in Jejuri, Supe (Baramati Taluka) Dhamari (Shirur Taluka) and other such places to revive old and dilapidated stepwells in their areas.

Built solely to be the source of drinking water during the reign of Ahilyabai Holkar in the drought - prone regions of the state, many of these neglected structures are currently being restored to celebrate the third centenary year of Malwa queen.

So far five stepwells have been restored by removing accumulated garbage and sludge cleaning walls and floor, refitting underground streams to feed the stepwells and carrying out other necessary works.

After restoration, stepwell Fakirachi Barav

is providing drinking water to 40,000 residents in Jejuri. The town was facing drinking water crisis because the dam from which residents used to pump water from was not enough to meet their needs, said Pramod Kulkarni from Sevavardhini.

Some of the stepwells are engineering marvels, requiring more time and effort to restore. For instance, Muktai Barav in Shirur Taluka was built using a stone locking technique, without any adhesive material like cement. It has been cleaned manually by local villagers, said Kulkarni. Since some of these structures are over 1000 years old, the NGO has refrained from using heavy duty machines for sludge removal, and instead use pulleys to avoid causing any damage to the structure.

The state government has set up a

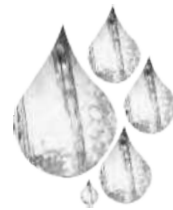


committee of experts to systematically plan and restore stepwells in the state on the occasion of the 75th year of India's independence in 2022. Pramod Kale, a member of the committee said, The initiative to rejuvenate stepwells aims at bringing about a change in the mindset of the people who would rather use a handpump than visit a stepwell to fetch drinking water. But only when the ground water dries up, people use the stepwells. We are conducting awareness campaigns in villages where stepwells have been restored to encourage locals to use them throughout the year.

The restoration has brought partial relief to residents of these areas. Sagat Kenjale, a resident of Dhamari village, who helped to restore a local stepwell said, We organised a deepotsav on Mahashivratri at the stepwell in March. Villagers lit diyas on the steps of the stepwell. Tushar Hirve, the sarpanch of Supe village said, Since the restoration

work has been a labour of love for the locals, we will be more enthusiastic towards use the stepwells for drinking supply once the borewells dry up.

Residents of villages in Parbhani, Nanded, Ahilya nagar, and Hingoli have taken it upon themselves to clean their stepwells. Some of the residents of neighbouring villages saw the restoration work being done and started cleaning the stepwells in their areas too. They did not have the expertise to carry out any repair work, but the community took a great initiative to kickstart the restoration processes, said Kulkarni



Bengaluru Water Supply and Sewerage Board

plans community rainwater harvesting programme

By Sneha Ramesh

In the first phase, the board plans to utilise areas in apartment complexes excluded from previous Rain Water Harvesting systems.

community RWH systems will divert the collected rainwater to nearby lakes, helping recharge groundwater levels in the area.



A rainwater harvesting open well at the Lalbagh botanical garden

Bengaluru : After urging residents to set up rainwater harvesting (RWH) systems and planning initiatives to implement it in public spaces as schools and colleges, the Bengaluru Water Supply and Sewerage Board (BWSSB) is now preparing for a community rainwater harvesting programme.

In the first phase, the board plans to utilise areas in apartment complexes excluded from previous Rain Water Harvesting systems. The

Many apartments already have RWH systems to utilise the water collected on rooftops. However through the community rainwater harvesting initiative, we intend to utilise the water collected in passageways and large untapped spaces, explained a senior BWSSB official.

The BWSSB has identified 17 apartment complexes in the city for the first phase of the programme mapping them to nearby lakes.

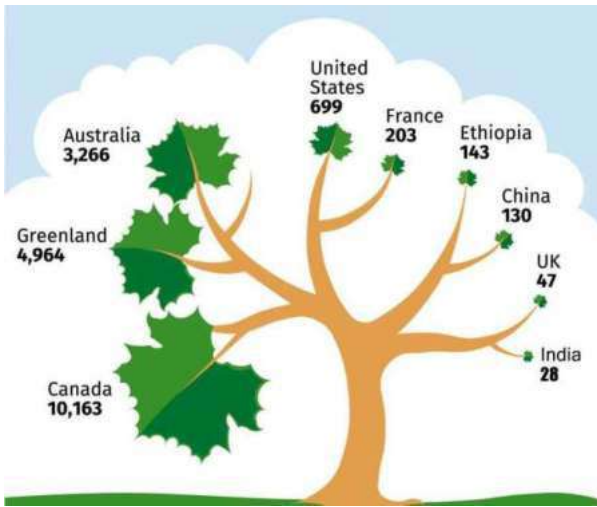
To ensure easy flow, we have mapped apartment complexes and lakes that are close to each other, around 100-200 meters apart. This

way, it will help put rainwater to good use and also prevent unnecessary costs associated with laying too far, BWSSB Chairman Ramprasad Manohar V said.

The BWSSB will soon start laying pipelines to connect these apartments to lakes. The project will be funded by penalties collected from households that have failed to install RWH systems, despite a state government mandate.

Sources said the BWSSB has collected close to Rs.36 crore by penalising households that have not installed RWH systems and collects nearly Rs. 1 crore a month in penalties.

Saul Kere in Bellandur, Hoodi Lake, and Sheelavanthakere in Whitefield are a few of the lakes selected for the first phase of the initiative.



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संपादक डॉ. दत्ता देशकर
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Deepest lakes in the World 2024

Let's find the deepest lakes in the world that remind of the beauty of nature and its significance, Lakes such as Baikal, Tanganyika, and Caspian Sea are among the deepest, teeming with biodiversity—Baikal Seal and Antarctic Lake included. Viedma, Vostok, O'Higgins San Martin, Issyk Kul, Crater Lake, and Great Slave have unique features from glacial waters to ice roads. Rich histories and high fish diversity make these serene attractions notable.

Lakes hold a special place in people's hearts. The deepest lakes in the world represent some of the most mysterious and captivating natural features on our planet. These lakes, often formed by ancient geological processes, boast staggering depths that plunge far beneath the water's surface. Their profound depths contribute to unique ecosystems, climate influences, and even scientific research.

Among these lakes, each possesses its own remarkable characteristics and stories. Lake Baikal in Siberia, for example, is not only the deepest lake in the world but also the oldest and contains about 20% of the world's unfrozen freshwater. Lake Tanganyika, situated in East Africa, is renowned for its biodiversity and significant depth, which influences local climate and ecology.

Exploring the depths of these lakes unveils a world of scientific interest and natural wonder. Their depths can harbor ancient species, influence global water cycles, and reveal insights into Earth's geological history. Understanding these lakes sheds light on both the mysteries beneath the surface and

their broader impact on our planet.

The deepest lakes in the world, such as Russia's Lake Baikal and Africa's Lake Tanganyika, are geological marvels, plunging over a mile deep. They hold vast quantities of freshwater, harbor unique ecosystems, and offer insights into Earth's climatic and geological history. Explore the list of the deepest lakes worldwide and its depths.

Rank	Name of the Lake	Country	Depth (in meters & feet)
1	Baikal	Russia	1642 meters (5387 feet)
2	Tanganyika	Africa	1470 meters (4823 feet)
3	Caspian Sea	KazakhstanRussiaIran Turkmenistan Azerbaijan	1025 meters (3363 feet)
4	Viedma	Argentina	900 meters (2953 feet)
5	Vostok	Antarctica	900 meters (2953 feet)
6	O'Higgins	San Martin	836 meters (2742 feet)
7	Malawi	ChileArgentina MalawiTanzania	706 meters (2316 feet)
8	Issyk Kul	Mozambique	668 meters (2192 feet)
9	Great Slave	Kyrgyzstan	614 meters (2015 feet)
10	Crater	Canada United States	594 meters (1949 feet)

List of the deepest lakes in the world



Lake Baikal, Russia

Lake Baikal in Siberia, Russia, is renowned not only for its great depth but also for being the largest freshwater lake in the world, holding 20% of the Earth's freshwater. It is home to a myriad of animal and plant species, including the unique Baikal Seal, also known as Nerpa.

Lake Tanganyika, Africa



Located at the border of four African countries—Tanzania, Zambia, the Democratic Republic of Congo, and Burundi—Lake Tanganyika is the second-largest freshwater lake in the world. Since the Stone Age, local communities have relied on the lake for fishing. It boasts a diverse range of species.

Caspian Sea, Eurasia



The Caspian Sea, the world's largest saltwater lake, lies between Europe and Asia, bordered by Azerbaijan, Russia, Kazakhstan, and Iran. Its northern third is shallow, while the southernmost part reaches an average depth of

1,000 feet (300 meters). Commercial fishing and tourism are significant economic activities around the lake, which spans five countries.

Lake Viedma, Argentina



Named after the explorer Antonio de Viedma, who reached its shore in 1783, Lake Viedma is an elongated trough lake formed from the melting Viedma glacier. Ice scouring has left the lake with little to no vegetation.

Lake Vostok, Antarctica



Lake Vostok is a unique subglacial lake buried under nearly 2.5 km of ice, making it the largest of its kind. In 2012, researchers drilled to the lake's surface, discovering many new forms of bacterial life.

Lake O'Higgins San Martin, Chile and Argentina

Straddling the borders of Chile and Argentina, this lake is known as Lake O'Higgins in Chile and Lake San Martin in Argentina. It is characterized by its milky turquoise waters, resulting from high concentrations of rock flour suspended in the glacial waters.



Lake Malawi, Africa



Lake Malawi boasts one of the highest concentrations of freshwater fish diversity in the world. It supports local communities through tourism and the economy and is home to around 1,000 species of cichlid fish, contributing to its astonishing beauty.

Lake Issyk Kul, Kyrgyzstan



Situated at an elevation of 5,270 feet in the Tien Shan Mountains, Lake Issyk Kul is one of the

largest and deepest alpine lakes globally. The name translates to "hot lake," indicating its unique characteristic of never freezing. Nearby, archaeologists have discovered gold and bronze artifacts from the Scythian people.

Lake Great Slave, Canada



Named after the Slave (or Slavey) group of Athabaskan-speaking Indigenous people, Great Slave Lake is North America's deepest lake and the second-largest in Canada. During winter, the lake's ice becomes thick enough to support trucks and cars, with hundreds of vehicles using an ice road daily to travel between Yellowknife and the community of Dettah.

Lake Crater, United States

Located in Oregon's Cascade Range, Crater Lake is



the deepest lake in the United States. It is relatively young, having formed approximately 7,700 years ago after the collapse of Mount Mazama following a massive eruption. Visitors are often captivated by its strikingly deep blue color, which is due to the lake's depth and the clarity of its water, which contains very little sediment.

The Pioneer of Modern Economics – Dr. Babasaheb Ambedkar

(Part - 2) Dr. Dattatrya Gaikwad

(Translated by) Smt. Nilam Pandit, (M) : 9823948048

If one closely examines Dr. Babasaheb Ambedkar's journey from 1924 to 1956, it becomes evident that he was a staunch advocate of democracy in politics and held a great admiration for parliamentary democracy. Economically, he embraced socialist ideologies, urging the Constituent Assembly to strive for a socialist economy as an integral part of Indian governance. Dr. Babasaheb Ambedkar not only shaped economic development but also pioneered the conceptualization of the human development index in modern times. He advocated for governance interventions in economic development processes, believing that human worth should be determined by merit rather than birth. His ideology envisioned a society founded on principles of freedom, equality, and fraternity. As an economist, Dr. Babasaheb's contributions deserve to be imparted to future generations.

1. During his student years, Dr. Ambedkar's thesis depicted the economic exploitation of India by the East India Company and the British.
2. He proposed a society based on three core values: freedom, equality, and fraternity, and to achieve this, he introduced the concept of state socialism.
3. A new perspective was introduced regarding farmers and agricultural productivity.
4. He emphasized the economics relating to public finance and the development of human resources.
5. Alongside economic development, he emphasized a justifiable social distribution of the increasing income gained through the development process, thereby adding value to the field of welfare economics.
6. He placed the common people at the centre of all economic activities, examining their impact and

prioritizing their interests.

7. The post-World War II period of 1942-46, fundamental ideas were introduced that laid the foundation for power generation, distribution, roads, water transport, and water supply schemes.
8. He advocated equality of opportunity, equal pay for equal work for both men and women, and the idea of gender equality.
9. He emphasized the importance of equality in social and economic realms for political democracy to thrive.

Dr. Babasaheb completely disagreed with the notion that class hierarchy is the only root cause of the exploitation of the masses. According to his views, exploitation is rooted in multiple dimensions such as economic, social, and religious factors. Dr. Ambedkar's stance was that within the Indian context, social and religious exploitation are equally severe as economic exploitation. He stated that Marxism advocates a comprehensive revolution rather than reconstruction. Its ultimate aim is to establish a monopoly of power by the people. To achieve this, communism approves of adopting any tactic, including negotiation, corruption, punishment, and even division among people. Marxism accepts bloodshed if necessary, showing little regard for human life.

Dr. Ambedkar, a staunch advocate of democracy, never endorsed any form of authoritarianism. Instead, he advocated for societal reconstruction through constitutional provisions and democratic processes. Dr. B.R. Ambedkar fought battles for self-awareness and self-respect.

His journey includes significant milestones: the burning of the Manusmriti in 1925, the Mahad

satyagraha for access to the Chavdar tank in 1927, the Pune Parwati Satyagraha in 1929 and the Satyagraha of Kalaram Temple in Nashik in 1930, this continued for 5 years, 7 months, and 11 days, culminating on 2nd March 1935. Subsequently, Dr. Ambedkar made submission on Constitutional reforms in 1928 before the Indian Statutory Commission, also known as the 'Simon Commission'. The Simon Commission's reports led to the three roundtable conferences held between 1930, 1931 and 1932, where Dr. Ambedkar was invited to present his views. Additionally, he participated in the Pune Pact negotiations in 1932 and declared his conversion to Buddhism in Yeola in 1935. In 1936, he founded the Independent Labour Party and played a pivotal role in establishing the All India Scheduled Castes Federation in 1942. Throughout these endeavours, he waged his fight for human liberation in a highly constructive manner within a democratic framework, without resorting to violence.

Dr. Babasaheb strongly advocated socialist democracy with his ideas transcending individual classes or national boundaries. This perspective has firmly established Dr. Babasaheb Ambedkar as a preeminent global thinker of the 20th century.

At the national level, Dr. B.R. Ambedkar stressed the importance of state socialism, considering it indispensable for the holistic social and economic reconstruction of independent India. He posited that economic stability was a prerequisite for political independence, thereby advocating for governmental involvement in economic endeavors to implement necessary reforms. Through this lens, his promotion of state socialism encompassed initiatives such as 'collective farming.'

In conclusion, Dr. Babasaheb Ambedkar emerged as a profound thinker in India. Born into an oppressed community, he forged his own path amidst numerous humiliations and challenges. Despite facing extreme poverty and opposition, he rose to prominence through his unwavering pursuit of knowledge, establishing himself as one of the greatest figures in the nation's history. Even in the

most adverse circumstances, he acquired knowledge and disseminated his principles on the global stage.

Similarly, he devoted his entire life to shaping modern India, offering a guiding vision for ideological advancement across Economics, Sociology, History, Legal Science, Anthropology, Religion, and Philosophy. His substantial contributions to these varied fields garnered global recognition, leaving a profound and lasting impact on the international stage. Dr. Ambedkar established himself as a multifaceted thinker whose influence remains unmatched. His diverse ideas continue to serve as guiding principles that compel ongoing reconsideration.

Dr. Ambedkar's Economic Literature and Thoughts

Economics, as a social science, offers insights into the production, distribution, and consumption of goods and services, crucially studying the wealth of nations or countries. Adam Smith, hailed as the 'Father of Modern Economics,' cemented his legacy with the 1776 publication of 'The Wealth of Nations,' considered the cornerstone of modern economic thought. This seminal work delves into economic issues impacting individuals, families, and financial institutions, evolving over time into the realm of welfare economics. This branch aims to maximize benefits while minimizing costs, encompassing a detailed examination of economic behavior, material well-being, and wealth distribution.

In today's modern welfare state, a new economic policy is being implemented. Amidst the drive for internal development and competition, several critical questions emerge: Who benefits, and to what end? How are these goals pursued? Despite advancements, inequalities persist across all sectors. Hence, it becomes imperative to amplify the voices of numerous intellectuals advocating for change. Every activist dedicated to achieving equitable development and eliminating poverty must collaborate effectively. Organizational unity has now become an urgent imperative.

The new economic policies are causing distress among workers, farmers, and the

agricultural sector, leading to a rise in farmer suicides and widespread unemployment. These challenges have thrust the issues faced by farmers, agricultural laborers, and workers into the spotlight, affecting both rural and urban areas. Consequently, social sector workers must engage in awareness campaigns and constructive advocacy efforts. The strong resistance from farmers against the agricultural bills underscores the gravity of the situation.

Humans are inherently driven by economic motivations, continuously seeking increased material comfort. It is within this pursuit that technology emerged, catalyzing the discovery of new production machinery. Subsequently, a social framework evolved, structured around an economy that fosters technological advancement. Emerging social structures are shaped by current social ideologies, with economic factors serving as the primary catalyst for societal transformations. As a result, every branch of economics engages in ongoing reflection on evolving circumstances. Naturally, economics intertwines various disciplines including politics, religion, and ethics, embodying a diverse spectrum of ideas and perspectives.

Encouraging such economic thinking necessitates robust economic research. Institutions such as the Reserve Bank of India, Planning Commission, Indian Statistical Institute, Indian Society for Agricultural Research, Institute of Economic Growth, National Council of Applied Economic Research, and Institute for Manpower Planning play pivotal roles in advancing this research. Similarly, significant emphasis is placed on research and activities addressing economic challenges.

Globalization has permeated into every household today, often unnoticed by its residents. It manifests in various forms such as computers, laptops, mobile devices, flyover bridges, express highways, escalators, malls and hotels, among others. Consequently, governmental authority is waning while the influence of contractors and agents is on the rise. This underscores the critical

need to address privatization. Elevating the standard of living for ordinary people has become an increasingly pressing concern. While globalization is often portrayed as accelerating national development, it also appears to foster economic exploitation. The narrative promoting capitalist economies is becoming more apparent, prompting the emergence of economists critical of this trajectory. In India, efforts are underway to contextualize economics through the lenses of Karl Marx's scientific socialism and Gandhi's ideals of human welfare.

The shift from feudalism to capitalism and eventually, to communism seems inevitable. To chart a different path, we must adhere to the principles outlined in the Constitution. It is imperative to mold our economy in accordance with the values of liberty, equality, fraternity, and justice that are enshrined within it.

Putting aside ideologies such as Marxism, Gandhism, Jinnahism, Naxalism, Socialism, Savarkarism, and others, we must unite under the banner of the Constitution. Embracing constitutional values and addressing the urgent need for social justice, we must formulate a plan to eliminate caste disparities. This was the position championed by Dr. Babasaheb Ambedkar, and his contributions in this regard are priceless. Dr. Ambedkar advocated for a socialist economy, and it is essential to accurately represent his economic framework.

Dr. Ambedkar's Revolutionary Economics

From his early student days, Dr. Babasaheb Ambedkar demonstrated a steadfast dedication to scholarship and research in economics. Born into an ostracized community that endured the harsh realities of slavery, he witnessed firsthand the political, religious, social, and economic oppression faced by his community, particularly in the Konkan region of Maharashtra. The Mahar community, to which Babasaheb belonged, bore the brunt of severe servitude, laboring in fields and serving as night watchmen in villages. Despite these adversities, the Mahars, renowned for their courage, also made significant contributions on the

battlefield when called upon. Dr. Babasaheb's childhood was marked by frequent relocations due to his father's military service, living in Pune, Gwalior, Mhow, Satara, and Baroda, where his father served as a subhedar.

Amidst this context, Bhimrao, as Dr. Babasaheb was known, passed his B.A. examination in 1913. During this period, the Baroda state planned to send a select group of students to America for higher education. Bhimrao's exceptional command of the English language and his impressive handwriting caught the Maharaja's attention. In conversations with Bhimrao, the Maharaja expressed a keen interest in sociology and economics, particularly in 'Public Finance,' and his desire to contribute to societal advancement.

On April 4, 1913, the Maharaja awarded Bhimrao a monthly scholarship of eleven and a half pounds. Unlike requiring a bond, Bhimrao only needed to sign a contract. The scholarship was valid from June 15, 1913, to June 14, 1916. Bhimrao enrolled in Columbia University's Department of Political Science for three years, from July 1913 to 1916. His primary focus was economics, with sociology, history, philosophy, anthropology, and politics chosen as minor subjects (Khairmode, Volume 1, p. 78). This decision underscored his commitment to studying economics, a subject of profound personal interest.

In recent years, India has garnered global recognition as a prominent provider of outsourcing services worldwide. It remains celebrated as the largest exporter of highly skilled technologists globally, a distinction it maintains to this day. Furthermore, India's progress is evident across rapidly expanding sectors such as manufacturing, pharmaceuticals, biotechnology, nanotechnology, telecommunications, shipbuilding, aviation, and tourism.

Outsourcing has facilitated the globalization of numerous services. Initially recognized as a business strategy in 1989, by the 1990s, it had evolved into a foundational component of economies worldwide.

The present economy is progressively tilting towards capitalism. Essential services like railways, postal services, banking, and telecommunications are undergoing privatization and commercialization. This trend spans various sectors, resulting in the outsourcing of numerous services and office tasks to external entities. Many companies reduce expenses by engaging contract-based workers with specialized skills from external sources, a practice commonly referred to as outsourcing. However, this shift has erected substantial barriers to access for the general public, diminishing government accountability and affecting consumers. Economic capacity has become critical for accessing these services, which are no longer universally accessible.

Dr. Babasaheb Ambedkar: Writing and Speeches, Volume 6, was initially published by the Maharashtra government through the Dr. Ambedkar Research Institute in Nagpur. The editor responsible for its creation was Vasant Moon, and the original volume was first released on May 15, 1915.

Economic Policies of the East India Company

An in-depth examination of the financial operations of the East India Company from 1792 to 1857 provides profound insights. Dr. Babasaheb Ambedkar compellingly illustrated how the British imposed economic injustices on Indians by analyzing the revenue and expenditure records of the Company government during this period. Over these 66 years, the Company recorded profits in 36 years and losses in 30 years. However, the cumulative profits significantly outweighed the losses. Dr. Ambedkar highlighted that these profits were not retained in India but were instead remitted to England under the guise of dividend payments to Company shareholders, effectively acting as a form of exploitation. To facilitate this practice, a firm named 'Public Firm' was established in India, seemingly to augment the existing cash flow for dividend payouts.

The shift in governance led to the exploitation of the Indian people, causing harm

while disproportionately benefiting the British. The enactment of the Act of 1834 signaled the conclusion of the East India Company's role as a trading entity. The company's movable and immovable assets were liquidated, with preferential treatment given to the British in the allocation of funds. Notably, 15 percent was earmarked for England as territorial surcharge, 12 percent for repaying home loan bonds, and 13 percent for reimbursing the Company's share capital.

The East India Company was dissolved in 1858, raising the question of who would shoulder the debt incurred by Indians during that time. Dr. Ambedkar highlighted that the public debt accrued during the Company's tenure was primarily due to war expenditures. He cited Major Wigent's statement in support of this assertion.

According to Major Wigent, "The British spent substantial sums on wars to expand and defend their colonies outside India, without investing in the development and reform of the Indian Empire. Instead, India regularly contributed to the British treasury through administrative charges. The British governed India similarly to other conquered territories, a fact acknowledged by the British Parliament and civil servants themselves. The accumulation of Indian debt was a consequence of British governance. Therefore, how can they absolve themselves of responsibility for Indian debt?"

In conclusion, Ambedkar asserts that neither legal nor moral arguments proved effective in this regard. The British Parliament declined to accept responsibility for its portion of the Indian debt, thereby leaving the entire burden of the East India Company's unproductive debts on the impoverished and unfortunate natives.

Similarly, the capital of the East India Company faced a similar fate. Despite its legal dissolution, the already burdensome public debt was further augmented to cover it. As a result, the East India Company continued to receive dividends in the form of interest paid from Indian revenues. This policy resulted in gains for the British at the

expense of losses suffered by Indians.

In conclusion, Dr. Ambedkar asserts that India gave generously to England but received almost nothing in return. While these statements may appear startling, they are indisputable from an economic standpoint. Dr. Ambedkar also acknowledged, "We should appreciate the British for their non-economic contributions, such as establishing law and order, introducing Western education and universities, and setting up modern judicial and administrative institutions." However, he leaves it to discerning readers to ponder whether "enduring economic degradation in exchange for these benefits justifies silent acceptance."

Other Literature in Economics

Dr. Babasaheb Ambedkar authored numerous books in English that illuminate various facets of economics. He produced seminal works addressing both theoretical concepts and practical economic issues. His MA and PhD theses exemplify his scholarly prowess in economics. For his MA degree, he penned a dissertation titled "Ancient Indian Commerce," which later evolved into the publication "The Evolution of Provincial Finance in British India" (1924). In this influential work, Ambedkar illustrated how British economic policies were structured to favor British industries. He argued that while it is common for certain classes to face injustice in any country, this should not justify denying political rights to the nation as a whole. Such logical reasoning permeates his writings.

When discussing economic discourse, numerous authors have extensively cited Dr. B. R. Ambedkar's economic literature. Dr. Narendra Jadhav prominently mentions it in the introduction of Part (A) of Volume Two of 'Pradnya Mahamanavachi.' The authors of this book gratefully acknowledge his endorsement. As a distinguished economist, Dr. Ambedkar's insights and explanations remain highly pertinent, encouraging readers to revisit his work. Similarly, Dr. Indrajit Alte, an Ambedkarite thinker, scholar, and former Principal, has authored 'Arthshashtrdnya Dr. Babasaheb (Economist Dr.

Babasaheb Ambedkar), published by Babasaheb Ambedkar Knowledge Mission, Aurangabad. In chapter three of the book, Alte delves into comprehensive aspects of Ambedkar's economic philosophy.

Changdev Bhagwanrao Khairmode discussed in his Volume 1 on page eighty-four in chapter seven of 'Dr. Bhimrao Ramji Ambedkar Charitra'. In it, Khairmode recounts, "From 1765 to 1914, Dr. Bhimrao meticulously studied all available books and government reports on economic issues in Hindustan, as well as the entire literature housed in Columbia University's library, to prepare his thesis. Eventually, he authored and presented a thesis titled 'The National Dividend of India: A Historical and Analytical Study.' This marked the completion of his

doctoral (Ph.D.) studies. However, the degree was not conferred immediately. Columbia University had a requirement that accepted theses be published in book form with copies provided to the university. Although Bhimrao's thesis was

accepted by the examiners, he lacked the funds to print and publish it. Nevertheless, the university granted him the title of Doctor and permitted him to use it professionally. He titled the thesis 'Evolution of Provincial Finance in British India,' published by the renowned publishing company King & Co in 1927. Some copies were subsequently released by the University on June 8, 1927."

Following this, Dr. Ambedkar authored research essays on Maharashtra's social conditions, producing hundreds of books that reflected his profound interests in sociology, anthropology, and history. His perspectives on water socialism and water culture are extensively explored in one of his books.

Water is essential for human survival; it is life itself. Recognizing its role in sustaining, preserving, and enriching human society

underscores its profound significance. The enduring relationship between humanity and water spans throughout history. Despite water covering only three percent of the Earth's surface, its conservation remains crucial. Therefore, thoughtful water management is indispensable for all individuals. Across the globe, human settlements have historically flourished near ponds and rivers. The stability provided by riverbanks marked a pivotal shift from the nomadic lifestyles of early humans, catalyzing the emergence of civilizations along rivers such as the Indus, Nile, and Euphrates.

However, it is crucial to comprehend the water cycle and its sources. The current imperative is to achieve a balance between water supply and demand, capture every drop of water and facilitate

its absorption into the soil, harness and store flowing water, and safeguard and conserve our water resources. Given the inevitability of future conflicts over water, it is incumbent upon everyone to conduct awareness programs



conservation. Water is vital for sustaining all life on Earth, often referred to as life itself.

Has the slogan 'Sab ka Saath, Sabkaa Vikas' truly permeated every corner of the country? Even today, farmers, laborers, agricultural workers, and women remain far from benefiting from many improvements. Do water, land, forests, and animals belong to everyone? Are they equitably distributed? Who owns these natural resources? It is the state's responsibility to ensure their fair distribution. Ensuring equitable distribution of food, water, and land is imperative. There is an expectation that the rivers of the country, their water, water management, conservation, and utility rules and schemes should be planned and distributed within the community. Rivers should flow freely without commercialization of water. The government bears the responsibility to prevent

International Sustainability Conference'

Paris, France

Communityization of water is the only way to make the world watery.

river revived landscape, Parbati, Nehro, Tewar river is visible. Now India also has to make all its rivers in this way continuous, clean and sacred.



19 July 2024 travel reached the bank of the Lanzo Terra River in Water Village, Paris. Here, the waterman told that, this is a small river which is flowing continuously clean. This river is telling that all the rivers of the world should have the same water flow. There is no soil cut and no crowd in such rivers. Biodiversity is rich all around it. In India, all the similar rivers used to flow. Now there are very few rivers left in India.

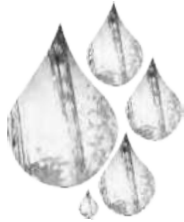
Happy to see this river because the rivers which Tarun Bharat Sangh has revived; those rivers are initially as small and thin line up and grow bigger by going down. Seeing this river, Maheshwar

Furtherly told that the people here are learning a lot from the revived rivers in Chambal. That's why news of rivers of Chambal is published in some national newspaper daily. The rivers of Chambal are making the center of their learning to learn from these rivers. France needs to learn from India and India can also learn from France.

More than 25-30 thousand people here in France came to the movement for the continuity of rivers. They demand water graving (absorption) from the mega basin should be stopped with immediate effect. Many youths from around the world joined the demonstration on this issue. I didn't join the demonstration because before the demonstration was talking about, if the police do violence, we will also do violence. I have been anti-violence theoretically but I have moral support with them. These people should learn from Gandhi ji that we can win non-violently. This movement is also very surprising why India has not been able to collect 20 thousand people together for water in so many years. This movement is amazing in itself.

After this, the waterman held a meeting with Paris Deputy Mayor and President of Paris

Water Company Chan Lex. Along with him, waterman Rajendra Singh ji raised the talk of stopping the privatization of water and doing socialization. Waterman said, I support the fight against water privatization. I've worked for water communityzation all my life and that's the way to make the world water.



Oxygen in air and water will decrease due to

the bad condition of Ganga

By Aman Vishwakarma

Ganga: Oxygen in air and water will decrease due to the bad condition of Ganga, river scientist did research; Read- why it is getting so hot

Summary :

Varanasi News: The water of Ganga is receding. Sand is visible on the beaches in many districts. Due to this, the environment in the Ganga basin is changing rapidly. River scientist Prof. UK Chaudhary did research on oxygen and other changes in the Ganga. His research revealed many serious results.

Expansion

The environment in the Ganga basin is changing rapidly due to the exploitation of the Ganga. The environment is getting hotter year after year. As the condition of the Ganga worsens, the amount of oxygen in the air and water will also decrease. The heat in the country will become stifling. If we do not pay attention to this in time, the situation will become even more horrific in the coming years.

This is the statement of BHU's river scientist Prof. UK Chaudhary. Citing his report on the Ganga river, he has said that the form of the Ganga has changed rapidly in the last 50 years. This is the reason why this time the Ganga basin area was the hottest.

Gangajal contains 16 ppm oxygen which is not found in any other water in the world. Prof. UK Chaudhary, who was a member of the Tehri Dam Committee, says that when Ganga leaves Gomukh, the oxygen level in it is up to 16 ppm and by the time

it reaches Banaras, it reaches 4-6 ppm.

Ganga is the largest river basin of the country but at present, less than half of the total capacity i.e. 41.2% water is present here. Ganga river provides irrigation and drinking water to about 2.86 lakh villages in 11 states, but now this quantity is decreasing. He has written a letter to Prime Minister Narendra Modi and requested to save Ganga river.

Increased commercialization on the banks of Ganga is the biggest cause of pollution.

Prof. UK Chaudhary says that Banaras is situated on the bend of the river Ganga. Centripetal and centrifugal force works on the bend. Because this side is high and made of soil. The velocity of the length direction in the river is less than the other side. Here, the velocity of the width direction is towards the city. Therefore, the sewage flowing from the city into the river spreads slowly along the banks.

The minimum temperature of the Ganga basin is increasing.

In the last decade, winters have started becoming warmer in the Ganga basin and summer is also increasing rapidly. The average maximum temperature in the basin is 32.3 degrees Celsius in summer and 23.1 degrees Celsius in winter. The average minimum temperature in the basin is 21.5 degrees Celsius in summer and 6.4 degrees Celsius in winter.

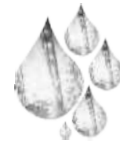
The pre-monsoon season is the hottest in the Ganga basin, with an average temperature of 33.4 degrees Celsius. The minimum temperature is increasing in every season in the Ganga basin. The minimum temperature in winter has increased by up to 0.7 degrees Celsius.

The amount of water in the Ganga basin has decreased due to heat and exploitation

According to the Central Water Commission, the amount of water in the Ganga basin has decreased from 525.02 BCM (billion cubic meters) in 1993 to 509.52 BCM. This means that water availability has decreased by 16 BCM. The amount of water has decreased due to groundwater exploitation and evaporation due to rising temperatures. The

catchment area of the Ganga basin has come down to 8 lakh 38 thousand 803 square kilometers, which was 8 lakh 61 thousand 452 square kilometers in 1993. Between 1985 and 2015, the Ganga basin received 914 BCM rainfall, while between 1965-1984, the Ganga basin received 947 BCM rainfall.

This figure is now gradually decreasing. One BCM contains one thousand billion liters of water. According to the data of the Meteorological Department, an average of 0.23 percent rainfall is being recorded in every decade.



Note : While designing the issue of Jalsamvad - English we find very interesting news, information and articles specially on water and its management. That tempts us to include the same in our issues. Getting formal permission for this inclusion is that way difficult. Therefore our effort is to print them as it is in our magazine. We may kindly be excused for such inclusions. We express a deep sense of gratitude to the original writers.

Thanks.



World Forest Report 2024

State of the World's Forests 2024: Global efforts curb deforestation, but threats to forests from wildfires and pests remain

A new report released by the Food and Agriculture Organization (FAO) of the United Nations on July 22, 2024 has brought both relief and concern regarding the state of the world's forests. While the rate of deforestation has slowed down globally, the report warns that the escalating impacts of climate change continue to pose a significant threat to these vital ecosystems.

The report, titled The State of the World's Forests, provides a comprehensive analysis of forest conditions and trends. It highlighted a decline in deforestation rates compared to previous decades, with several countries showing significant improvements. However, the data also reveals a disturbing picture of the challenges forests face due to climate change.

In 2020, the global forest covered approximately 4.1 billion hectares (ha), or 31 per cent of the land area. The Russian Federation, Brazil, Canada, the United States of America, and China account for 54 per cent of the global forest area, in descending order.

Another 10 countries, including Australia, the Democratic Republic of Congo, Indonesia, Peru and India, contribute about two-thirds of the global forest area.

The report estimated that between 1990 and 2020,

approximately 420 million ha of forest were converted to land use. However, deforestation rates fell from 15.8 million ha per year between 1990 and 2002 to 10.2 million ha between 2015 and 2020.

Deforestation rates in Africa were 4.41 million ha, 2.95 million in South America and 2.24 million in Asia.

"Globally, the net rate of change in forest area, which is the difference between forest expansion and deforestation, is estimated at -4.7 million ha per year in 2010-2020. This was significantly lower than in the two previous decades (-7.8 million ha per year in 1990-2000 and -5.2 million ha per year in 2000-2010)," the report observed.

It also noted 10 countries recording annual gains in forest area in 2020, which include China, Australia, India, Chile, Viet Nam, Turkey, the United States of America, France, Italy and Romania.

The report also discovered that preliminary data from the Global Forest Resource Assessment (2025) show an 8.4 per cent decrease in deforestation in Indonesia for 2021-22 compared to 2020-21, the lowest since 1990. The overall reduction was recorded to be 90 per cent.

Brazil, too, registered 50 per cent decrease in deforestation in 2023 compared to 2022 in the Legal Amazon region that amounts to about 60 per cent of the total area of the country.

Africa also showed a decrease in annual

deformation rates compared to 2016-19 and 2020-22 across subregions and the continent as a whole.

Regarding mangroves, it was noted that the global mangrove area was recorded to be 14.8 million ha, out of which South and Southeast Asia contributed almost 44 per cent of the total global area.

The rate of gross global mangrove loss decreased by 23 per cent between the two recent decades (2000-2010 and 2010-2020) and the rate of gain in mangrove area also decreased slightly, the report said.

Asia was the major contributor to mangrove loss and gains owing to aquaculture, natural retraction, conversion to oil-palm plantations, rice cultivation and other agriculture uses.

It said extreme weather events due to climate change and sea-level rise threaten mangroves and make the local communities vulnerable to

disasters.

“Although the net change in mangrove area globally was negative between 2000 and 2020, the extent of natural expansion surpassed the area lost to natural causes by a substantial margin (63 per cent or 294,500 ha compared with 186,200 ha),” it noted.

The report observed the change as resilience of the mangroves.

But despite positive signs, it is estimated that about 340-370 million ha (equivalent to less than half the land area of Australia) of the earth’s land area is impacted by annual fire.

Satellite data estimated that about 383 million ha of land were affected by fire in 2023 alone. But the actual area is likely to exceed the number, as technical challenges could not detect small fires linked to temporal coverage and cloud cover.



It noted that the increasing intensity and frequency of wildfires are having impacts at local, national and global levels. For instance, the boreal fire in 2021 contributed to about 10 per cent of global carbon-dioxide emissions.

But the fires exacerbated the impact due to the extended drought in the region, increasing its severity and fuel consumption, accounting for almost one-quarter of total wildfire emissions.

It was noted that 6,868 fires burnt in Canada in 2023 smoked 14.6 million ha of land — five times more than 20 year average. Satellite data revealed that total fires in 2023 emitted 6,687 megatons of carbon dioxide globally.

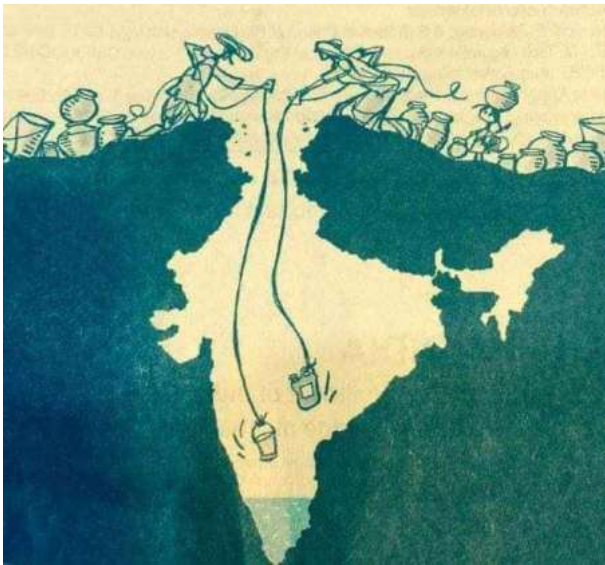
These emissions were more than double the emissions contributed by the European Union by burning fossil fuels, generating 2.6 billion tonnes of carbon dioxide emissions.

The report also found that forests experience threats from pests. Noting an example of pine wood nematode, it said that forests in China, Japan and the Republic of Korea saw significant damage to native pine forests.

According to Korea Forest Service, 12 million pine trees were lost between 1988 and 2022. Insects and disease are estimated to cause losses exceeding 20 per cent of the host tree basal area over 25 million ha of forest land in the United States of America through 2027.

The report warned that monitoring of forest degradation and outbreaks of insect pests and disease is at an early stage across the world.

It found it challenging to quantify the economic cost in terms of timber loss, cost of tree replacement and the ecosystem services offered by trees and its socioeconomic value to local communities.



Bill in the Assembly to stop theft of water from canals

Amended Bill proposes two-year jail term, fine of ₹2 lakh for illegal drawing of water from irrigation canals

Bill tabled in the Legislative Assembly to stop theft of water from canals; irrigation court resolves disputes.

Unauthorised use of water from canal includes drawing water from it by artificial means, through a tampered pipe or equipment. | Photo Credit: file photo

Deputy Chief Minister and Water Resources Minister D.K. Shivakumar on Monday tabled the Karnataka Irrigation (Amendment) Bill, 2024, in the Legislative Assembly to prevent illegal tapping of water from irrigation canals and ensuring water reached the end users in irrigation schemes and canals maintained by the department.

Unauthorised use of water from canal includes drawing water from it by artificial means, through a tampered pipe or equipment. It also includes drawing water from the canal for purposes other than authorised and for areas other than for which supply of water from the canal was authorised.

Within 500 metres :

The Bill envisaged granting of permission to extract and use groundwater within 500 meters from the centre of the lift irrigation scheme and irrigation canal.

Taking into consideration the purpose for use of

water, the irrigation officer would be granting permission to drill, dig a well or create an artificial pond or any sort of water storage on both sides of the canal up to 500 metres from the centre of the canal, as notified by the zonal chief engineer.

Last week, Mr. Shivakumar said that the new law aimed to stop theft of water from irrigation canals by using bores or motors.

He termed the water theft in canals as “a major problem” in Mandya, Hassan, Bagalkot, Vijayapura, Kalaburagi and other districts having irrigation projects.

Many tail-end farmers were not able to receive water for their crops. He would pilot a Bill in a week’s time, Mr. Shivakumar said.

Whoever uses the groundwater from the centre line of the canal in violation of the law would be liable for punishment of imprisonment of two years or fine of ₹2 lakh or both, the Bill said.

For violation of any other clause of the Act, there would be imprisonment of one year and fine from ₹50,000 to ₹1 lakh or both.

Besides mentioning the purpose of use of water such as industrial, agricultural and domestic, the applicant should obtain no objection certificate from the executive engineer before applying for power connection for use of water. However, beneficiaries of the Ganga Kalyan scheme were not eligible to extract and use groundwater.

The Bill said that all existing users of groundwater within 500 metres from the center line of the canal should apply to the irrigation officer for grant of a certificate of registration recognising the users' existing use of water within six months from the commencement of the Karnataka Irrigation (Amendment) Act.

Irrigation court :

An irrigation court would be set up and an irrigation officer would inquire into or decide the dispute between the government and the person/parties involved. Irrigation officer not below the rank of superintending engineer had the power to summon persons involved in the dispute.

The irrigation court should dispose of all proceedings, including appeals filed before it within six months from the date of initiation of the proceedings.

The irrigation officer should forward the information regarding water rates due by persons to the concerned authorities of the Revenue Department to record in column no. 11 of the RTC. The applicant should submit the No Objection Certificate from the irrigation officer to the Escoms for withdrawal of water to the irrigation work.

The Bill also inserted "the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013, (Central Act 30 of 2013) instead of the Land Acquisition Act, 1984, (Central Act 01 of 1994).



An advanced civilization built this step well, over 1000+ years ago in the Abhaneri village of Rajasthan, (India).

64 ft deep,
13 floors,

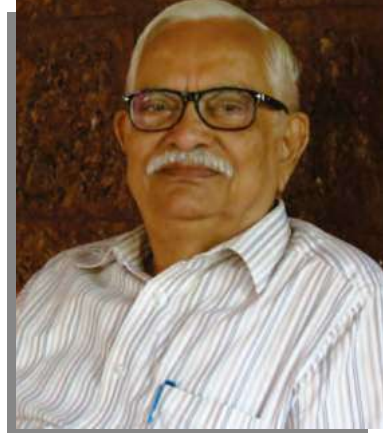
And has 3,500 narrow steps arranged in perfect symmetry!

The Chand Baori is one of the largest stepwells in the World and also one of the most beautiful ones, and has one of the most marvelous architecture.



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- (१) चला, जलसाक्षर होवू या.
- (२) संकल्पना शाश्वत शेतीची.
- (३) चला , जलपुनर्भरण करू या.
- (४) पाण्याचे गणित.
- (५) बळीराजा सावध हो, दुष्काळ भेडसावतोय.
- (६) वनशेती. (*)
- (७) शेततळी. (*)
- (८) पाणी वापरा, पण जरा जपून. (*)
- (९) हिसाब, किताब, पानीका.
- (१०) चला, जलसाक्षर होवू या (चित्रमय पुस्तिका)



(*) ही पुस्तके महाराष्ट्र सरकारच्या प्रौढ शिक्षण संस्थेने प्रकाशित केली आहेत.

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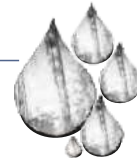
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