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Jalasangvad

A Dialogue on Water

Editors: Dr. Datta Deshkar, Shri Satish Khade

INDIA

Mohenjodaro



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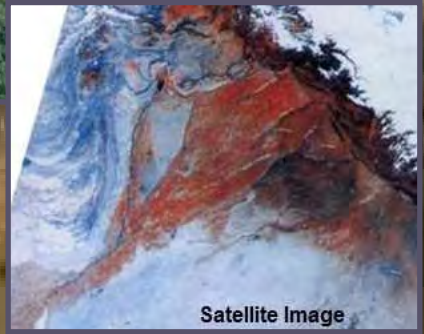
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Cover Story:
River Saraswati flows even today: **Dr D G Deshkar**

Arabian Sea

Famous rivers in the world

(1) Yellow river



(2) Yenisi River



(3) Tigris River



(4) Euphrates river



Jalsamvad



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Mouth Piece of Bharatiya Jala Sanskriti Mandal

■ February 2023

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Development or Disaster ?

Himalayan Ranges are famous for their natural beauty. There are innumerable tourist locations and religious places which are situated in the heart of Himalayas. The only problem with these ranges is that rocks in this region are of recent origin and the hardness is significantly poor. As a result, lot of precaution has to be taken before any development work is undertaken there. For the construction of dams and roads anywhere, blasting is necessary and as the rocks here are brittle the structures erected there upon may not enjoy the required stability.

Climate change has left a huge impact on Himalayan ranges. This region is entirely earthquake prone. Combined effect of these two factors has caused a great worry while taking up any development work in this area. Due to climate change, melting of ice has increased substantially resulting in periodic floods. The soil is made up here from soft stones and sand and when water starts flowing, heavy erosion takes place. Such incidences have increased in recent years and have caused heavy loss to the assets and lives of people residing here.

This issue has come up today again in a new form, that is sinking of land in Joshi math and nearby area. Due to these landslides, huge cracks have developed in the buildings in this area. Out of 4500 properties in this area, 653 buildings are severely affected and have become unfit for human occupation. That has affected the normal life of people. These cracks are being noticed in other parts also like Karnaprayag. Efforts on the part of Government agencies to rehabilitate the affected people are in progress but that will be more or less in the form of patch work.

Right from 1970, deforestation work is undertaken for one or the other development project. The effects are quite apparent. The speed of flow of water has increased causing heavy soil erosion. One environment activist by name Shri Chandiprasad Bhat mobilized the people here to stop this work which gathered good momentum. Once, when all the males had gone for marketing the village products, females heard the sound of cutting the tree. All of them stopped their home work and rushed to the site to stop the cutting of trees. This movement later developed into the famous CHIPKO agitation.

When the work of Tehri dam was in progress, the activists again organized and advocated that such a huge work should not be undertaken on the soft rocks structure existing there. The group advocated that this area is earthquake prone area and if the earthquake takes place that would cause a heavy loss to the life and property. Shri Sunderlal Bahuguna led this agitation right from 1980 to 2004 but this work was undertaken without giving any thought to his arguments.

Climate change has added one more dimension to this issue. Increasing heat, melting of ice, increased floods are the noticeable effects of this climate change. People here are not against the development. They need it but not at the cost of Nature. Natural resources provide the residents here good many employment opportunities and if this destruction takes place, they would be jobless. More than 98 large, medium and small dams are constructed here causing a huge damage to the natural resources. For creating the base to the dams, number of blastings were taken. These blastings have made the soil structure lose and when it rains, heavy erosion takes place. Construction of Char Dham yatra roads has worsened the position still further. People feel that only those development programmes should be taken up which cause less damage to the Nature. People here need Development and not disaster.

Dr. D. G. Deshkar
Editor.

Water And Irrigation Panorama of India - 2

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PART 2: RIVER BASINS OF INDIA

Introduction :

India is blessed with many perennial and seasonal rivers having a total length of more than 250,000 km. The states of Uttar Pradesh, Maharashtra and Jammu & Kashmir have the highest total length of rivers and canals. River basin is the geographical area drained by a river and its tributaries including associated aquifers, that is, the total area within which whatever precipitation or runoff occurs will eventually find its way to the river or one of its tributaries and associated aquifers and terminates generally in to sea or sometimes a sink. First systematic delineation of river basins was done in the year 1949 by the Central Water Commission (CWC). The Commission, using Survey of India (SOI) toposheets and contour maps prepared 20 river basins comprising of major river basins and composite basins. National Commission for Integrated Water Resources Development Plan (NCIWRDP, 1999) classified country into 24 basins. Central Ground Water Board (CGWB, 2006) came up with 34 basins. Each organisation has adopted different methodology and criteria for basin classification and hence arrived at different number of basins and its area. The CWC jointly with the then Ministry of Water Resources and Indian Space Research Organisation (ISRO) developed a Web-enabled Water Resources Information System of India (India-WRIS, 2012) which divided the country into 25 basins and 101 sub basins.

River Basins of India :

River Basin is the basic hydrological unit for water resources planning and management. In this

article, the river basin classification as per the CWC has been presented. Accordingly, the twelve major river basins are: (1) Indus, (2a) Ganga, (2b) Brahmaputra, (2 c) Barak, (3) Godavari, (4) Krishna, (5) Cauvery, (7) Brahmani-Baitarani, (8) Mahanadi, (9) Pennar, (10) Mahai, (11) Sabarmati, (12) Narmada and (13) Tapi. The eight composite river basins are: (6) Subarnarekha, (14) West flowing rivers from Tapi to Tadri, (15) West flowing rivers from Tadri to Kanyakumari, (16) East flowing rivers between Mahanadi and Pennar, (17)) East flowing rivers between Pennar and Kanyakumari, (18) West flowing rivers of Kutch and Saurashtra including Luni, (19) Area of Inland Drainage in Rajasthan Desert, and (20) Minor rivers draining into Myanmar (Burma) and Bangladesh. Figure 1 shows a map of the river basins of India as per CWC.

India-WARIS has recategorized the composite basin of the East Flowing Rivers between Mahanadi and Pennar in to three river basins, East flowing rivers between Pennar and Kanyakumari in to two river basins, while the Minor Rivers draining into Myanmar are further divided in to five river basins. This new categorization has covered all that geographical area of India which was not out falling in any of the existing basins.

The Himalayan rivers (Ganges, Brahmaputra, Indus) are formed by melting snow and glaciers as well as rainfall and, therefore, are called as perennial rivers. As the Himalayan region receives heavy rainfall during the monsoon period, the rivers swell and cause heavy floods too. The larger rivers of the deccan plateau such as Mahanadi, Godavari, Krishna, Pennar and Cauvery draining into the Bay of Bengal in the east, and the Narmada and Tapi flowing into the Arabian Sea in

the west make up most of the southern-central part of the country. Some of these rivers are non-perennial. The coastal rivers, especially on the west coast, south of the Tapi, are short with limited catchment areas, most of them are non-perennial. The rivers of the inland drainage basin in western Rajasthan in the north-western part of the country, towards the border with Pakistan, are ephemeral and drain towards the salt lakes such as the Sambhar, or are lost in the sands.

The spatial imbalance of water resources distribution can be appreciated by the fact that the Ganges-Brahmaputra-Meghna basin, which covers 34 percent of the country's area, contributes annual water resource potential of 56 percent of the total annual renewable water resources and about 40 percent of the total utilizable water resources of India. The Ganga River Basin alone is

the largest river basin in India, covering more than a quarter of country's land area, hosting about 43 per cent of its population and contributing 28 per cent of India's water resources. The Indus basin part of India covers about 10 percent of the total area of India but contributes only 2.3 percent of the total renewable water resources. There are large number of rivers in the western coast. These rivers are small in length but carry a significant amount of water due to very high rainfall in western ghats. They drain only 3 percent of the India's land area but carry 11percent of India's renewable water resources. Brief information of the basin like origin and termination of the river, total length and their respective tributaries, state-wise basin area, average annual rainfall and average water availability is given in Table 1.

River Basin Map of India



Major River Basins:

- 1) Indus, 2a) Ganga, 2b) Brahmaputra, 2c) Barak & Others, 3). Godavari, 4) Krishna,
- 5) Cauvery, 7) Bahmani and Baitarani, 8) Mahanadi, 9) Pennar, 10) Mahi,
- 11) Sabarmati, 12) Narmada, and 13) Tapi

Composite River Basins:

- 6) Subarnarekha. 14) West flowing rivers from Tapi to Tadri, 15) West flowing rivers from Tadri to Kanyakumari, 16) East flowing rivers between Mahanadi and Pennar, 17) East flowing rivers between Pennar to Kanyakumari, 18) west flowing rivers of Kutch and Saurashtra including Luni, 19) Area of inland drainage in Rajasthan, and 20) Minor rivers draining into Myanmar

TABLE 2 . Details of the basin, state-wise share of the basin area, average annual rainfall and average water availability

Sr. No.	Name of the River basin and its geographical area in India	Origin/ total length/ drains into / major tributaries	State-wise basin area (%)	Av. annual rainfall over the basin area (km ²)	Av. water availability (km ³)
1	Indus (within India) 9.7 %	The basin extends over China, India, Afghanistan and Pakistan. The river originates in Himalayas nearby Mansarovar lake in Tibet / 2,880 km (1,114 km in India)/ Arabian Sea/ Jhelum, Chenab, Ravi, Beas and Satluj (from India side)	Jammu & Kashmir (60%); Himachal Pradesh (16%); Punjab (15.96%); Rajasthan (5%); Haryana (3%); and Chandigarh (0.04%)	330	45.53
2a	Ganga 25.6 %	The basin is spread over India, China, Nepal and Bangladesh. It originates in Gangotri glacier in the Himalayas in the Uttarkashi district of Uttarakhand / 2,525 km/ Bangladesh/ Yamuna, Son, Ramganga, Ghaghra, Gandak, Kosi, Betwa, Mahananda, and Chambal	Uttar Pradesh (28%); Madhya Pradesh (21.01%); Rajasthan (13%); Bihar (11%); West Bengal (8.3%); Uttarakhand (6.1%); Jharkhand (5.85%); Haryana (4%); Chhattisgarh (2.07%); Himachal Pradesh (0.5%) and UT of Delhi (0.17%)	914	509.52
2b	Brahmaputra 5.9%	The basin spreads over China, Bhutan, India and Bangladesh. The river originates at Kailash ranges of Himalayas (China)/ 2,900 km (916 km. in India)/ Bangladesh /Lohit, Dibang, Subansiri, Jibharali, Dhansiri, Manas, Torsa, Sankosh, Teesta, Burhidihing, Desang, Dikhow, Dhansiri and Kopil	Assam (42%); Arunachal Pradesh (36.3%); West Bengal (6.4%); Meghalaya (6%); Nagaland (5.6%) and Sikkim (3.7%)	495	527.28
2c	Barak and others 2.6%	Manipur hills in Senapati district of Manipur / 564 km/ Myanmar, Bangladesh / Jiri, Chiri, Modhura, Jatinga, Harang, Kalain, Gumra, Dhaleswari, Singla, Longai, Sonai and Katakhal	Meghalaya (26%); Manipur (23%); Mizoram (21%); Assam (17%); Tripura (11%) and Nagaland (2%)	134	86.67
3	Godavari 9.5%	Trimbakeshwar in the Nashik district of Maharashtra / 1,465 km. Bay of Bengal/ Pravara, Manjra, Purna, Penganga, Wardha, Wainganga, Indravati and Kolab	Maharashtra (49%); Erstwhile Andhra Pradesh (23.39%); Chhattisgarh (19%); Madhya Pradesh (5.6%); Karnataka (1.6%); Puducherry (1.4%) and Odisha (0.01%)	365	117.74
4	Krishna 7.9%	Western Ghats near Jor village of Satara district of Maharashtra/ 1,400 km./ Bay of Bengal / Ghatprabha, Malprabha, Tungabhadra, Bhima, Musi and Munneru	Karnataka (44%); Erstwhile Andhra Pradesh (29%) and Maharashtra (27%)	226	89.04
5	Cauvery 2.6%	Talakaveri on the Brahmagiri range near Cherangala village of Kodagu district of Karnataka./ 800 km./ Bay of Bengal/ Harangi, Hemavati, Shimsha, Arkavati, Lakshmantirtha, Kabbani, Suvamavati, Bhavani, Noyil and Amaravati	Tamil Nādu & Puducherry (54%); Karnataka (42%) and Kerala (4%)	81	27.67
6	Subernarekha 0.8%	The Subernarekha and the Burhabalang forms the major river systems in the basin. The Subernarekha rises from Nagri village in the Ranchi District of Jharkhand. Burhabalang rises from Simlipal village in the Mayurbhanj district of Odisha and flows for a length 164 km./ Bay of Bengal/ Kanchi, the Karkari and the Kharkai	Jharkhand (47%); Odisha (41%) and West Bengal (2%)	40	15.05

7	Brahmani-Baitarani 1.6%	The Brahmani, known as South Koel in its upper reaches and as Maipura at the tail reaches, rises near Nagri village in Ranchi district of Jharkhand/ 799 km. The Baitarni River rises at the hill ranges of Kendujhar district of Odisha./ 355 km/ /Bay of Bengal/ . The river is known as Dhamra in its lower reaches.	Odisha (67%); Jharkhand (30%) and Chhattisgarh (3%)	83	35.65
8	Mahanadi 4.4%	Originates from a pool, 6 km from Farsiya village of Dhamtari district of Chhattisgarh/ 851km. /Bay of Bengal	Chhattisgarhi (52.96%); Odisha (46.32%); Jharkhand (0.45%), Maharashtra (0.17%) and Madhya Pradesh (0.1%)	200	73.00
9	Pennar 1.7%	Aka the Uttara Pinakini rises in the Chenna Kasava hill of the Nandidurg range, in Chikkaballapura district of Karnataka/ 597 km./ Bay of Bengal.	Erstwhile Andhra Parses (87%) and Karnataka (13%)	40	11.02
10	Mahi 1.2%	Mahi is one of the major interstate west flowing rivers of India. It originates from the northern slopes of Vindhya at an altitude of 500 m near village Bhopawar, Sardarpur tehsil in Dhar district of Madhya Pradesh. The total length of Mahi is 583 km.	Rajasthan (47%); Gujrat (34%) and Madhya Pradesh (19%)	35	14.96
11	Sabarmati 1.0%	Sabarmati originates from Aravalli hills at an elevation of 762 m near village Tepur, in Udaipur district of Rajasthan. The total length of river from origin to outfall into the Arabian Sea is 371 km	Gujarat (81%) and Rajasthan (19%)	25	12.96
12	Narmada 3.0%	Maikala range near Amarkantak in Anuppur district of Madhya Pradesh/1,312 km./ Arabian Sea	Madhya Pradesh (86.2%); Gujarat (11.5%), Maharashtra (1.56%) and Chhattisgarhi (0.7%)	108	58.21
13	Tapi 2.0%	Near Multai reserve forest in Betul district of Madhya Pradesh/ 724 km/ Arabian Sea	Maharashtra (79%); Madhya Pradesh (15%) and Gujarat (6%)	59	26.24

14	West flowing rivers from Tapi to Tadri 1.8%	The various rivers in the basin flow independently and drains directly into the Arabian Sea. These rivers are Purna, Ambika, Damanganga, Vaitarna, Ulhas, Amba, Savitri, Vashishti, Kajvi, Vaghotan, Gad, Mandavi, Kalinadi, Gangavali (Bedti) and the Tadri	Maharashtra (58.22%); Gujarat (17.3%); Karnataka (17.06%); Goa (6.45%); Dadra & Nagar haveli (0.87%) and Daman & Diu (0.1%)	161	118.35
15	West flowing rivers from Tadri to Kanyakumari 1.7%	The major rivers flow independently and drain into Arabian Sea. These are Varahi, Netravati, Payaswani, Valapattanam, Chaliyar, Kadalundi, Bharathapuzha, Periyar, the Muvattupula, Minachil, Pamba, Achankovil, Kallada and Vamanapuram	Kerala (63%); Karnataka (28%); Tamil Nadu (8%) and Puducherry (1%)	151	119.06
16	East flowing rivers between Mahanadi and Pennar 2.5%	It comprises of three river systems viz., (1) between Mahanadi and Godavari (2) between Krishna and Pennar and (3) between Godavari and Krishna These rivers are Rushikulya, Bahuda, Vamsadhara, Nagavali, Sarada, Varaha, Tandava, Eluru, Gundlakamma, Musi, Paleru and Manneru. These rivers flow independently directly draining into Bay of Bengal.	Erstwhile Andhra Pradesh (70%) and Odisha (30%)	97	26.41
17	East flowing rivers between Pennar and Kanyakumari 3.5%	The basin comprises of two river systems viz., (1) between Pennar and Cauvery, and (2) between Cauvery and Kanyakumari. These independently flowing rivers are- Kandleru, Swamamukhi, Arani, Korttalaiyar, Cooum, Adyar, Palar, Gingee, Ponnaiyar, Vellar, Varshalei, Vaigai, Gundar, Vaippar and the Tambraparni. All these rivers directly drain into Bay of Bengal.	Tamil Nadu (77.52%); Erstwhile Andhra Pradesh (16%); Karnataka (6%); and Puducherry (0.48%)	98	26.74
18	West flowing rivers of Kutch and Saurashtra including Luni 5.9%	Luni originates from western slopes of the Aravalli ranges in Ajmer district of Rajasthan / 511 km. Other independent rivers of the basin are Shetrunji, Bhadar, Machhu, Rupen, Saraswati and Banas. The Shetrunji drains into the Gulf of Khambhat, the Bhadar outfalls into Arabian Sea, and the Machhu, the Rupen, the Saraswati and the Banas drains into Little Rann of Kutch.	Rajasthan (60.09%); Gujarat (39.9%) and Diu (0.01%)	100	26.93
19	Area of inland drainage in Rajasthan desert 4.4%	Small rivers draining into the basin are Kantu, Kakni, Ghugri and the Sukri. Indira Gandhi Nahar Pariyojna (IGNP) Stage -I & II are the major irrigation projects in this basin area.	Rajasthan and Haryana	49	Negligible
20	Minor rivers draining into Myanmar and Bangladesh 1.0%	The Imphal is the main river of the basin and it rises near Kangpokpi in Senapati district of Manipur. Its tributaries are Iril and Thoubal, Khuga, (aka Manipur River below its confluence) and Chakpi. The river falls into the Chindwin River of Burma.	Manipur (40%); Mizoram (39%); Nagaland (15.5%) and Tripura (5.5%)	61	31.17
	100%			3880*	199.20

*Including 27 Km³ of Leh Ladakh

The National Water Policy of India (2002) recognizes that development and management of water resources need to be governed by national perspectives and aims to develop and conserve the water resources in an integrated and environmentally sound basis. It emphasizes development of our water resources by intensifying research efforts with use of space technology and developing an information system.

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जलसंवाद हे मासिक मालक व प्रकाशक डॉ. दत्ता
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'Ma-guru' in Chhattisgarh forests

Indrashekhas Singh

'Ma-guru' in Chhattisgarh forests: How a spiritual leader turned barren red laterite rocks into a biodiversity paradise



Image of "Ma-guru" Sambhav Baba's Ashram. (Image shared by the author)

Tucked between ancient Gondwana yellowstone hills and verdant forests of Jashpur, Chhattisgarh lies the lonely hermitage of Sambhav Baba, a spiritual leader who performs miracles. Don't expect water turning into wine, but through his hard work and vigour has grown tea & coffee plantations in bauxite laden red soil (A novelty in Chhattisgarh and an agricultural miracle). His life's work is agriculture, and I travelled to his ashram to know how he has converted barren red laterite rocks into a biodiversity paradise.

Apart from agriculture, his organisation holds the national and Guinness records for running the largest free leprosy medical camps and continues to run an indigenous fakiri/ayurvedic medical centre. His spiritual order, dedicated to public welfare, also had a tryst with Indian politics.

The ashram has photos and a hundred stories floating around. Some of them featured Indira Gandhi, who visited Sambhav Baba's predecessor Bhagwan Ram for spiritual advice.



Record worthy contributions. (Image shared by the author)

The Journey :

Cool breezes and green crops spread across the plains. I was on a dusty bumpy road from Ranchi. Wild castor and corn greeted me on the way and as Jashpur neared, the landscape began to change. Little rivers started to giggle, and giant rock mountains preened in the sunlight.

The smell of marigolds and carnations in the ashram's driveway evaporated my weariness.

The white walled ashram was surrounded by crop fields and a government school. I was welcomed in and led to Sarveshwari temple and then to Baba.

While waiting, I noticed cardamom, paan, and a variety of indigenous spices and medicinal plants grew right around Baba's residence. It was a biodiversity heaven, a vatika with thousands of trees from Sal, mango, litchi, kiwi, loquat, and 9-acre tea and coffee plantation. From spice to headaches, Baba's garden had a plant for everything. Although a man, people around him often said, "baba's love for us is like a mother, hence he is our Ma-Guru".



"Ma-guru" Sambhav Baba. (Image shared by the author)

He met me around mid-day, after his pooja. Dhوتي-clad Baba was surrounded by devotees and visitors. After greeting me, he didn't talk much, but affectionately said, "first go see the place". At this point, I looked straight into his eyes, they conveyed nothing but depth. Baba's eyes were very non-

revealing, serious and yet affectionate.

But the tea plantation awaited me and my guide was a young devotee Manas Singh. He explained Baba's life and ashram. As he was talking, I noticed that the tea plantation has very thin topsoil. Manas smiled and explained, "All the land you see here was barren bauxite ore rocks. It had no topsoil. Baba together with devotees, dug out and then blasted the rocks. All the biodiversity you see around here was planted by Baba himself. When he came here, all this was a jungle with only one or two trees on the ashram property."

Manas was right, it's quite rare to have a tea garden surrounded by varieties of indigenous lemon, oranges, rare flowers, et al. Ashram also had a mini-tea factory processing green and black tea.

Intercropping, crop pairing, organic farming, permaculture design, Baba's ashram manifested most principles of sustainable farming. I was taking meticulous notes on his methods of water conservation and agriculture. But during the day, it became clear that Sambhav Baba led a very different life before he joined his guru. Born to the king of Narsinghgarh, MP, he joined his spiritual guru at 22. He was pursuing history at Ramjas College, Delhi and when asked about the transition, he said, "One has a sanskar, I was supposed to be here, so I came here," he stoically said.

But his spiritual order had a different story. Manas told me, "A few generations ago, the order's guru Aghoreshwar Bhagwan Ram was invited by then Jashpur King to spread dharma, public welfare and help stop the Christian conversions. Over time his order centred around three villages – Gumariya, Sogra, & Narayanpur, managed to spread among the people and gained their love and respect. Conversions also stopped eventually."

By the time our walk ended, it was raining hard. Tired, I lay down on the common room mattress. The skies were thundering, often illuminating the trees from the window. The rest was silence and rain, and then distant drums were heard, the conch shell sounds harmonising with the rain, creating a melody for the black, scythe sword carrying deity – Sarveshwari Mata.

Day deux, the sun shined brightly, as if nothing had happened the previous night. I woke up at 6 am and headed straight to the tea gardens. To my surprise, Baba was exercising in the fruit orchard.

For the rest of the morning, I got a crash course on tea at the tea factory. Here I discovered that mostly adivasi women are employed at the ashram. Ashram for long has helped the local population. Many villagers help during the picking season (May to mid-September), gathering as much as 9 quintal leaves per week from the 8-acre farm.

As the sun was almost overhead, we left to see the Narayanpur ashram, where elephants had recently caused some damage. The second ashram boosted wild biodiversity, indigenous crops, and some commercial varieties too. Although the agriculture is mostly organic, the ashram does use agri-chemicals when needed. They also breed seeds for the government as a way to ensure stable incomes for the farming operation. I toured the ashram, chatted with the people, ate a fiery chicken curry served for lunch and returned to Sogra ashram by nightfall.

Finally, it was day three and quite misty at 5:52 am. Apart from an occasional dew on my shoulder, it was all grey green and silent. The tea leaves were still dreaming, as mother branches were trying to awaken them, but my mind was still on the interview. Baba had hardly spoken, but he was an action oriented person. He had ensured I spent enough time outdoors around his work, with an occasional meeting with him here or there. My mind was filled with questions. And it was only this morning that it struck me, all of Baba's answers lay before me – the tea, fruit vatika, coffee, and the story of his blood and sweat all written across the ashram, etched in trees, soil and crops.

The real test :

The real test of a writer is how to interview a man who is averse to media, videos, photos or audio recordings, and doesn't even want to talk about himself. It took me three days to get him to speak on agriculture. He had a child-like glitter

when we spoke about the plants and forest. So why did he farm and dedicate himself to agriculture?

"We have the land to feed people, so I started." His answers were always to the point, and yet very warmly stated. I still couldn't get why tea and coffee. Baba explained, "After people started coming to the ashram, they wanted to drink tea too, so we said to ourselves- let's grow tea and then coffee. We got the first saplings from Jharkhand and then some even from Darjeeling and started here. We had to dig by hand first, and then got JCB to help out. Overtime, we did this so other people in the area can also see our model and help themselves and their families by working with nature.



Sustainable agriculture in the ashram. (Image shared by the author)

But was agriculture viable?

"Who runs an ashram just on agriculture. Everyday it's becoming more and more difficult," Baba replied. He was also deeply concerned about

the destruction of forests and nature around him. "When we came here, elephants used to come to our property, now illegal logging and other factors have driven the wildlife and caused the change in climate too. It's getting very hot here now."

As we were conversing, many people had come and gone, while others were waiting to speak to him. I quickly asked my last question- how is all this happening?

"With government collusion, there is environmental degradation. If the governments are strict and enforce the law, no one breaks the laws. Either criminals change their profession or leave the place. For example, look at the Yogi

government. Some criminals changed professions, while others simply vanished from UP."

My time was done, and the cab to Ranchi was waiting. I thanked Baba and left with a feeling of having met an agrarian saint who through labour provides nutrition and sustenance to ashram dwellers and seekers, a "Ma-guru" indeed.

The author is an independent agri-policy analyst and former director – Policy and Outreach, National Seed Association of India. He tweets at @Indrassingh. Views are personal.





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Organization - India Development and

Relief Fund (IDRF)

Shri Vinod Hande - (M) 9423677795



IDRF is a Maryland, US based non profit organization that support deprived people in India, Nepal and Sri Lanka. IDRF's main goal has been to put power and not charity in the hands of needy people. IDRF's programs are spread all over India from Jammu Kashmir to Tamil Nadu, and from Gujarat to Arunachal Pradesh. Since it's commencement from 1988 organization has disbursed \$34 million grant to various development programs pertaining to education, health, women's empowerment, eco friendly development and disaster relief.

IDRF was founded in 1988 by Dr. Vinod Prakesh. He was former World Bank development economist. He also worked as a volunteer for IDRF since it's foundation. DR. Vinod and his wife Sarla always have a strong desire to give back to their motherland i.e. India. This motivated them to establish NGO in India. The belief of IDRF is, a lasting change in region can happen only when local people take charge and lead the change. IDRF also beliefs that every person has a right to survive and prosper with dignity.

Since it's foundation from 1988 IDRF has,

- Raised \$36 million and disbursed \$33.69 million
- 2130 Women's self help group supported in 333 villages of Haryana, Maharashtra and West Bengal.
- 2500 private toilets constructed for rural poor in Gujarat, West Bengal and Tamil Nadu.
- Helped 10000 students in 9 states across India.
- 27000 students in 400 schools trained to be responsible citizen across 12 cities in India.
- 48 Gram Panchayat in 10 dist. of Bihar & Jharkhand trained to access government programs and fight corruption.
- Supported disaster relief program for India

floods, Nepal earthquake, Tsunami, Gujarat earthquake, Odisha Supar cyclone, Kargil war and Lature earthquake.

Little about founder Dr. Vinod Prakesh. DR. Prakesh migrated to U.S. in 1960. He said, along with his wife he came to US for higher studies with intention to settle there. Though they have connected emotionally, rationally and spiritually connected to US but their roots were in India. They consider themselves privileged because they had opportunity to receive an education in India while millions of Indian children were still deprived of education. On the basis of this education they could get chance to study in MIT (Massachusetts Institute of Technology) and also got opportunity to work in World Bank to lead a comfortable life. He wanted to give back to Indian society by making difference in the lives of less privileged people of society. In lieu of his decision he decided to retire in 1987 from World Bank and established a charitable



organization called 'India Development and Relief Fund' (IDRF). It was approved in 1988 as a tax exempted public charity under IRS Code (c)(3). IDRF expended its program and built partnerships with donors in US. Dr. Vinod Prakesh is a founder and CEO of IDRF.

Two decades ago IDRF felt the urgent need of medical facilities in the interior of India, when they saw four people taking a sick patient on cot for miles to a clinic. Since then IDRF has funded 30 mobile medical clinics in 15 states for the rural and tribal communities. IDRF joins hands with local NGO's to empower people with resources, skills and confidence.

IDRF knows that eliminating poverty means addressing many different needs of each community. Their programs are multidimensional to address these needs. For giving back, there programs are focussed on six areas and they are,

- Education,
- Women's Empowerment,
- Eco friendly Development,
- Health,
- Good Governance,
- Disaster relief and Rehabilitation Education

In 2015 IDRF started its partnership with Bodh Shiksha Samiti to provide free education to children from various urban and rural areas living in slums of Jaipur. Manas Ganga is girl's school from sixth standard onwards. School provides quality education with hostel facilities. To enhance the skill of girls school covers academics, arts, sports and vocational education. For 2015 batch IDRF supported 13 girls student's expenses for boarding, food educational. That way girls from poor families not only received education about self confidence also. They have been able to mobilize other girls for community for their big dream and education. The school drop out rate for girls also decreased to less than 15 percent.

IDRF is working with partner, Society for Welfare of the Handicapped in Punjab for empowering deaf, Blind and deaf children by

providing education and life skill. The school for deaf, blind and deaf in Patiala provides free tuition and hostel to 350 students with 280 staying in the hostel. IDRF has been supporting the operational funds for hostel and education of 27 students. Till date IDRF has taken various educational programs with NGO's in different location of Karnataka, Chhattisgarh, Andhra Pradesh, Rajasthan, Tamil Nadu, Maharashtra, Nepal, Gujarat etc.

Women's Empowerment

Women's Empowerment is to educate and train women with a skill and confidence necessary to earn a livelihood and lead a healthy dignified life. Education helps women to raise their level of health and nutrition and also reduce fertility rates. When women have the authority to make their own decision regarding the use of their resources, their families and communities also prosper. IDRF started three year (2017-19) training program to educate women on new and efficient agriculture practices to grow vegetables. This education covers land use efficiency, high quality production, production efficiency and water and energy efficiency. By the end of training more than 2000 farmers of 10 villages of Alwar dist. of Rajasthan were expected to be benefited with an increase in their household income.

Similar program was taken up successfully in Haryana for formation of self help group. 821 self help groups are formed with 11588 rural women members. In training record keeping, banking skill modern technology like phone messaging were also taught to them. Area covered are Haryana, Maharashtra, West Bengal, Rajasthan, Madhya Pradesh, Karnataka, Sri Lanka etc.

Eco friendly Development (Safe Drinking Water and sanitation for Villagers)

Eco friendly means friendly to earth or not harmful to the environment. This also refers to conserve resources like water and energy. Eco friendly products prevent polluting of air, water and land and having a positive impact on health and well being of society. About 68 percent of India's population lives in villages and their livelihood tied to natural environment.

After IDRF's successful project on water harvesting in areas of Gujarat, the drinking water harvesting program has been expanded in eight hilly places of kabirdham dist. of Chhattisgarh. Rainfall in this area is erratic and inadequate. Scarcity and poor quality of water force women to walk down miles to fetch drinking water. Shortage of water also affects agriculture and that leads to malnutrition and mortality rate. IDRF supported Samerth Charitable Trust who provides spring management at 2 locations, 4 rain roof water harvesting structures and 8 earthen check dams for water conservation. One person has been trained as "jaldoot" to implement the principles of groundwater management, conservation and efficient utilization. This project provided clean water to 1956 people of 511 families.



IDRF works closely with India communities in United States and offers them a platform to

support a cause of their choice in India. One such donor couple (not wish to declare name) supporting of IDRF since last fifteen years and donated \$1.5 million for various projects of IDRF in India.

Since 2003 they have supported Clean India Mission for ending open defecation in rural India. They have aided the construction of toilets in primary schools, public places and 1707 personal toilets for poor rural people of Gujarat. This benefited girls, women and older people. In addition they have also supported the program of providing safe drinking water and rain water harvesting in arid area of Gujarat by digging dug wells and check dams. This increased water level in wells, increased crop yield and migration of people by 50 percent. This couple also supported IDRF in rehabilitation program for floods in Surat, Uttarakhand and super cyclone in Odisha. To 10000 villagers of Kutch IDRF provided access to safe drinking water.

Under their Eco-friendly project they have taken up rural sanitation program for clean India Mission. They have constructed 509 toilets for BPL (Below Poverty line) families of West Bengal. Similarly from grant of IDRF and with help of SVRDS toilet-cum-bathroom were constructed for 36 rural families of Tamil Nadu to end open defecation.

Village Energy Program

IDRF and SVRDS(Swami Vivekanand Rural Development Society) are partners since 1996. In 2017 they they started a program to provide eco-friendly electricity generated from solar energy to 100 villages in Kanchipuram dist. of Tamil Nadu. People in these villages have limited or unreliable access to electric power. IDRF jointly worked with SVRDS installed 45 Solar system to light up single teacher school to enable them to conduct evening schools and five individual houses in the villages. The modern and efficient energy solution made villages independent.

Health

IDRF supports projects that provide healthcare in rural area, towns and cities to those who can't afford it. IDRF is working in Nepal with

partner PHECT(Public Health Concern Trust, Nepal). They have conducted free surgeries for women with severe genetic prolapsed. With grant from IDRF 39 patients were operated with post operative care.



IDRF has also taken up program to reduce morbidity and Mortality in children under age of five. Programs were taken up in tribal villages of Nandurbar dist. of Maharashtra and Dang dist. of Gujarat. Such projects were implemented in Uttar Prades, Maharashtra, Nepal, Uttarkhand, Karnataka, Tamil Nadu, Rajasthan, Arunachal Pradesh ect. IDRF has supported mobile medical clinic and treatment centers hospitals in deep interior villages.

Good Governance

Good governance is the key to any nation’s progress. Good governance means simplified procedure and process so that entire system can become transparent and faster for welfare of common citizens. IDRF’s various strategic programs are building honest relationships between local official marginalized poor rural and tribal people. IDRF had three years (2016-19) program for enhancing women’s participation in discussion and decision making at the “Gram

Sabha” in karnal of Haryana state. This helped promotion of development programs in village through participatory planning. Training programs were organized for procedures and benefits of Gram Sabha in 100 villages and were attended by 1300 women. Similar awareness of Good Governance and fighting corruption were conducted in Bihar and Jharkhand. An aim of this program is to raise awareness among 7500 poor and illiterate families about their legal rights and entitlements.

Since 2012 IDRF has under taken program to empower and transforming quality of life of urban areas citizens in the states like Rajasthan, Jharkhand, Karnataka, Punjab

and Uttar Pradesh.

Disaster relief and Rehabilitation

IDRF has been very active in rebuilding communities in the aftermath of various natural and man made disasters. In 2017 heavy monsoon rains caused flooding in several parts of India. Many people were killed thousands became homeless. IDRF sent relief to victims through their NGO’s partners. 400 relief kits were disbursed in Bihar, Gujarat, Uttar Pradesh and West Bengal. Relief



includes flour, rice, oil, pulses, sugar, containers, water filters, mosquito nets and hygiene kits. The beneficiaries were briefed on healthy hand hygiene habits and encouraged to use toilets in order to prevent the spread of water borne diseases. IDRF has started the rehabilitation program by providing rehabilitation kits to victims potters wheel, masonry and agriculture kits, sheep, goats, buffaloes fodder, milk cans, sewing machine etc.

In the same year i.e. in 2017 massive storm in Malda dist. of West Bengal hundreds of lives in nine villages were devastated in just 22 minutes. 69 houses were damaged and crop destroyed and livestock drowned. IDRF immediately sent help to assist victims to start up again. 31 damaged houses reconstructed, 38 houses were repaired and new livestock were provided to 69 families.

IDRF completed projects in Maharashtra through following NGOs,

NGO	Project title
Babasaheb Ambedkar Vaidyakiya Pratishthan Trust	Dr. Hedgewar Hospital Shri Guruji Rughalaya BHIM -Better Health Intervention for Reducing Morbidity & Mortality in Malnutrition
Chaitanya Trust	Livelihood Enhancement Action Program for Women (LEAP)
Lila Poonawalla Foundation	Scholarships
Sewa Bharti Madhya Bharat	Patient Assistant Course
Mata Balak Utkarsh Pratishthan	Arogyadoot – Mobile Medical Care

Future Projects of IDRF

- Mobile clinic for slums in Aurangabad, Maharashtra
- Fighting Malnutrition among women and children in tribal villages, Arunachal Pradesh.
- Integrated Development Centers and Expansion of Patient Attendance Course, Maharashtra. .
- Musahar(most socially and economically marginalized communities in North India)

Empowerment and Livelihood Project, Uttar Pradesh.

For their dedication and work done for the upliftment of people across India IDRF has been awarded with so many awards. Few of them are listed as below,

- 4 out of 4 stars by Charity Navigator.
- 2018 Great Nonprofits.
- 2018 Lead India Foundation and United National Diversity Coalition of America.
- 2013 Social Service Award.
- 2012 Dharma Seva Award.
- 2007 Distinguished Social Service Award for Sustained Contribution to Company.



- 1994 Community Service Award. Etc.

IDRF raise funds to provide grants to selected grassroots NGO’s which work to improve education, women’s empowerment, eco-friendly development, health, anti corruption and disaster rehabilitation and meet following criteria,

- Managed by dedicated people with low overhead.
- Demonstrate past success.
- Comply with Indian law.
- Serve people by not considering religion and cast.

IDRF accepts donation from donors to put power, not charity in the hands of rural and tribal people. Donation acts like catalyst for sustainable development. 95 percent of each \$1 goes to project 0.5 percent for administrative work.

India Development and Relief Fund

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Historic nehers of Aurangabad now make it to list of Jal itihas of India

Aurangabad : The ministry of Jal Shakti has selected Neher - e - Ambari and Neher - e - Panchakki from Aurangabad in the list of 75 most significant Water



Heritage Structures in India.

Neher - e- Ambari, Aurangabad

The inclusion of 400 year old heritage water systems in Aurangabad will pave way for the preservation of these unexpected to attract much-needed international attention and importance,



the civic authorities said.

Baramotichi Vihir, in Satara district

Dhamapur lake in Sindhudurg district, Baramotichi Vihir, a stepwell in Satara district, and Raigad Fort in Raigad are the other water heritage structures from Maharashtra on the list.

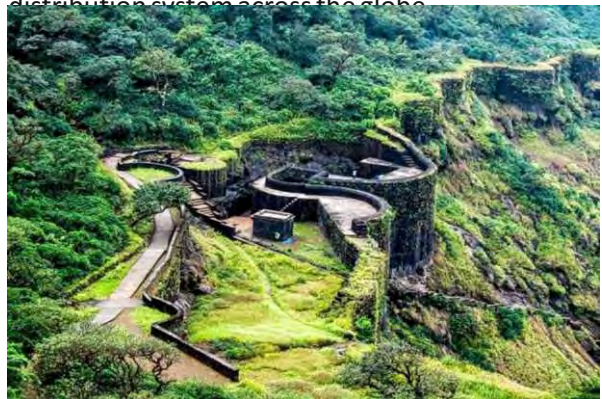
Aditya Tiwari, assistant project Manager with Aurangabad Smart City Development Corporation Limited (ASCDCL) said the Government has formally recognized the nehers of Aurangabad as part of Jal Itihas in official portal of



the Water Resources Information System (WRIS).

Neher-e-Panchakki, Aurangabad

The architectural marvels in the form of nehers of Aurangabad were not owned officially so far, but now the Centre will be the caretaker of the structures now. With this, we can plan effective rejuvenation of these ducts by involving experts from India and abroad, he said. Tiwari said each neher is a one-of-its-kind advanced water distribution system across the globe.



PMC plan will kill rather than rejuvenate rivers

Dr. Gurudas Nulkar

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Not a single rupee is being spent on treating sewage or improving water quality to support its ecosystem

River is not just a flow of water, but also a flow of energy. This energy facilitates the exchange of matter and energy between the water, the land, and the biotic elements along the river. In a pristine river, this exchange generates various ecological services such as photosynthetic food production, nutrient transport, decomposition, seed dispersal, groundwater recharge, and others. These are the life sustaining services of the planet, they are the reason why the human race is alive. These services are not just for humans, but every organism is entitled to benefit from them. No government has ever paid a single penny to avail of the services.

Rivers are important components of the hydrological cycle and are vital for the survival of freshwater organisms like us. And yet, in our enthusiasm to beautify them, we completely disregard the riverine ecosystems and spend money on reducing the ecological productivity of the river, The River Front Development (RFD) project undertaken by the Pune Municipal Corporation (PMC) is destined to do just that - degrade the ecosystem functioning of the river.

The proposed project has plans to bind the rivers with constructed embankments and create artificially manicured landscapes. The project proposes concrete ghats, build channels, walkways, and parks, each of these elements will destroy the natural banks, arrest the exchange of matter and energy, and reduce the river to a channelized flow of polluted water.

Surprisingly, not a single rupee is being

spent on treating sewage or improving the water quality. The primary, non-negotiable condition of ecological productivity is that of clean water. If this is not fulfilled, the river ceases to exist. The Environmental Impact Assessment (EIA) done by the State Environment Impact Assessment Authority (SEIAA) clearly says that water quality must be improved. Yet it has not objected to the zero budgeted allocation to water quality improvement.

The detailed project report (DPR) is full of such plans that will not allow the river to function like an ecosystem. The vision of the project (mentioned in the DPR) is to create a Safe, Clean, Beautiful and Integrated River edge for Pune. The objectives do not mention riverine vegetation, aquatic life forms, the river as an ecosystem, or ecosystem services. The DPR proposes constructed embankments using stone, tar, plastic and cement which are titled riparian embankments. This is a misuse of the term riparian, as none of these designs can scientifically be described as riparian. The DPR proposes such embankments of a total bank length of 88 kms, which will be artificially built. The embankments will use compacted soil, but there is no mention of where the soil will be sourced. The list of plants (Page 187, DPR) neither proposes all native vegetation, nor habitat - specific riparian vegetation. River banks must have habitat - specific vegetation for ecosystem functioning.

Another example is the proposed construction of four barrages on the river. There is no consideration of how they will obstruct the free movement of aquatic fauna and floating aquatic vegetation and neither is there any attempt by the SEIAA to probe the effect of these barrages on

aquatic life. Moreover, the DPR proposes changing the naturally jagged edges of the river banks and fattening the river bed in some places. This is another attempt to change the river into a channelized flow of water.

If the DPR is followed to the dot, the rivers will be devoid of the diversity of physical habitats and this would inevitably lead to the decline of bio diversity of the ecosystem. The proposed built structures will reduce natural habitats of fauna, breeding grounds of aquatic life, and floral diversity. This will degrade the riverine ecosystem, and consequently its ecological productivity declines.

Unique physical diversity can be found upstream of Vitthalwadi. Here, the river has grassy clumps, pebbles, cobbles, sand deposits, rocky potholes, freshwater springs, marshlands and a canopy of trees. They provide perching places, breeding habitats, food zones and safe rooting sites for fauna. This physical diversity leads to a thriving biological diversity and a natural food web is established in the river.

This contributes significantly to ecosystem services. The primary condition for this is clean water, which has healthy dissolved oxygen. Such areas must be protected, old grown trees must be retained and the jagged banks must be preserved.

Every river, so endowed, can purify water as it travels, however, the scale of sewage that Pune puts into the river is monstrous. Without treatment, this can never be assimilated by the

river.

Artificial embankments can restrict groundwater percolation and block the natural springs that feed the rivers. The relationship between surface water (rainfall) and groundwater, in rivers, is complex. There is no consideration of this in the DPR and the project does not mention what will be done with the natural springs. Puneites are fortunate that Mula, Pawana and Mula - Mutha still have many ecologically rich area, despite many interventions. The DPR does not identify such sites, and a drawing board treatment is given throughout the river.

There is no substitute for a healthy, intact river or stream, where no portion of the ecosystem is impaired. When planning for a natural ecosystem the first responsibility of planners is to preserve water quality, hydrology, riverbanks and riparian vegetation with buffers that will protect the river or stream from the damaging effects of new development. Unfortunately, the PMC intends to spend over Rs. 4727 crores on infrastructure that will degrade the ecosystem, wear it away from other life forms and turn it into a recreational infrastructure. This might be good to look at, but in the long term, will certainly leave Puneites with a much poorer natural environment.



Rivers are an important part of hydrological cycle and are vital for survival of freshwater organisms like us

Saraswati River flows even today

Dr. Datta Deshkar, Pune

(M) : 9325203109



Some years before, I visited Allahabad with my family. There, I heard the story of three rivers meeting together. That spot is known as Triveni Sangam. In reality, there were only two rivers- Ganga and Yamuna but the people there were talking about Saraswati river which was not seen there. They said, it had become extinct. Even after leaving Allahabad, this story was lingering in my mind as to how a river can disappear from the scene. That time, I thought it to be a fantasy, hear say, passed on by people generations after generations.

But after reading some literature, I could notice a reality in the story. It was not only in existence but lot of social, economic, religious events were associated with this river. I decided to go deep in the story and whatever I could gather, is presented in this article.

Rigveda is supposed to be base of our religion. In Rigveda lot of information is available about Saraswati river. It was the practice that time, to offer Godliness to innumerable things which proved to be a blessing to the Society. Rivers were also some of them. Saraswati river like other rivers, was revered as God. In different ruchas (shlokas) we find a praise or appreciation of this river at least 75 times. It was described as Athang (abyssal), having a very speedy flow which was there all the twelve months. It naturally means that this river must be originating in Himalayas. All the rivers originating in Himalayas like Ganga, Yamuna, Ghaggar, Brahmaputra have a flow round the year. It appears from the ruchas that the flow was so fast and heavy that it used to cause harm to the people living on the banks. In the prayers, there is an

appeal to the river requesting it not to cause any harm to the people, also requesting not to have any inimical relation with the bhaktas. They also requested the God river not to challenge their existence itself. They wanted blessings of the river. As you know that Vedas were not written by one person but generations contributed to this document. At one place they call this river as Saptasindhu, meaning thereby that six rivers had contributed to its strength. Are they not Sindhu, Satlaj, Bias, Ravi, Chinab and Zelam? At some places, this river was named as Bharati also. Is it not because of this, we call our country as Bharat? In Yajurveda, the story continues but with less importance. Out of six rivers stated above, the number diminishes by two. Is it that Sindhu and Zelam rivers were dropped from the list? The vast delta created while meeting the sea, it is stated that it was divided in five major flows. Here are only 68 ruchas where the mention of this river is noticed. In Samveda and Atharva Veda there is a significant decrease in the ruchas. It means that stage by stage this river had started disappearing.

In Ramayana also we find the mention of Saraswati river. This mention is on two occasions. Once, when messengers were sent to Kaikeya (motherland of Maharani Kaikeyi) to inform Bharat (that time Bharat had gone to his mother's kingdom) the sad news of the death of his father Dasharatha it is mentioned that they crossed the river Saraswati. Secondly, after listening the sad news Bharat started coming back to Hastinapur and while crossing the river Saraswati he offered prayers there. This is just a description without any special mention of the reverence of the river. It

means that by that time this river had lost all the earlier glory.

In Mahabharata also there is a detailed mention of the river Saraswati. Rishi Vyas describes Mahabharata equal to all the ancient literature including Vedas. Mother of Vedas, leader of all the rivers, successful river, best river are some of the adjectives offered to this river in Mahabharata. It is stated that when Pandavas spent their time in Vanavasa, they stayed in this valley of Saraswati for quite a long time. Mahabharata also describes the historical and geographical condition of Saraswati valley prevailing that time.

Balaram, brother of Lord Shri Krishna, did not like the politics of his brother and to avoid bitterness he left the Kingdom on a maha yatra. He covered this yatra in 42 days. During this yatra, it is said that he visited many holy places located on the river bank of Saraswati. He started this yatra from Prabhas, the place where Saraswati met the sea. On his way he visited Udapan, Vinashana, Pohova, Kapalmochan, Bramhasar, Sthaneshwar, Vyas Ashram and ended his yatra at Plakshaprastravan, the origin of River Saraswati in Himalayas. Astonishingly, all these places exist even today. If they are plotted on a map we can ascertain the flow of this river. It has also shown the area where the river flows under the ground.

We have taken a brief review of ancient literature like Rigveda, Yajurveda, Atharva Veda, Samaveda, Ramayana and Mahabharata to show that we have a sufficient evidence to prove that there was one river by name Saraswati which was flowing in our country. From this discussion we observe that :

- (1) There was one river by name Saraswati flowing from Himalayan ranges to Rann of Katccha.
- (2) The important holy places by which side the river was flowing exist even today.
- (3) While flowing, it enriched many of the lakes in North western India.
- (4) This river flow passes in between Satlaj and Yamuna rivers.
- (5) The flow of this river is very much affected by the Natural calamities the country was required to

face.

(6) It is said that half of the flow of this river merged into Yamuna river and the rest comes down to Rann of Katccha passing through Rajasthan.

(7) In recent excavations in Rajasthan, it was observed that there are some sand particles in its riverbed similar to the sand found in Ganga and Yamuna. It means that this flow had come directly from Himalayas.

(8) I was lucky enough to listen to one lecture delivered by Shri Jagdish Gandhi who has spent precious 60 years of his life to the study of this river. In his lecture he stated that due to some tectonic movements in North India the flow of this river was divided in two parts. One part merged with Yamuna river and the second one moved to Gujarat via Rajasthan. He gave many proofs to what he said.

It is not Sindhu Culture but Saraswati Culture:

The culture which existed in ancient India bears the name of Sindhu river. We call it Sindhu Sanskriti. Sindhu river is unnecessarily taking the credit of this culture. In fact, it is Saraswati Culture. After the disappearance of this river, the normal life of the people living in Saraswati valley was totally disturbed. Heavy migration took place in this area. Some groups migrated to Afganistan and Baluchistan, some to Haryana, Garhwal, Gujarat and even to southern parts of the country. But while doing so they carried the sweet memories of this river with them. Wherever they crossed any new river, they started naming it as Saraswati. You would find many rivers in the country bearing this name. I learn that in Afganistan also there is one river bearing similar name.

In search of Saraswati River :

This river was the pride of our country. It would be criminal on our part just to forget it. Our scientists and technocrats have accepted this challenge and by using the available modern gadgets, they are tracing the routes of this river. The ground water in Rajasthan finds its source from this hidden river. Past Director of CWC Dr. Shrinivasan has stated that even if more than 10,00,000 tube wells are dug in this area, they would get enough of water. Institutions involved in the study of

Saraswati river are Bhabha Atomic Research Institute, Indian Space Research Organization, Central Arid Zone Institute, Rajya Jal Parishad and Central Remote Sensing Institute. Governments of Harayana, Rajasthan and Gujarat have shown active interest in this study. Universities and IITs also are taking part in these studies. ISRO has prepared a map of this river with the help of remote sensing technique and it is displayed in the Office of our beloved Prime Minister.

As time passes, some more truths would be revealed by these studies. We wish all luck to them!

NEW DELHI : Engineering and construction behemoth Larsen & Toubro (L&T) on Tuesday said its Water & Effluent Treatment Business has bagged repeat orders from the Government of Madhya Pradesh.

The order is to execute two lift irrigation projects to irrigate 2,05,000 Ha of culturable command area covering more than five hundred villages of Dewas & Dhar districts in the state of Madhya Pradesh on a turnkey basis, the company said in a statement.

The scope includes Survey, Design, Engineering,

Procurement, Construction of Pump Houses, Laying of Rising & Gravity Mains, Distribution Network and SCADA for controlling & regulating the entire system.

The micro irrigation projects will lift 60 cumecs of water from the Narmada River to irrigate the farmlands benefitting 3,00,000 farmers in the process.

The state-of-the-art automation system with field instruments and automated valves will ensure round the clock supply of water during the Rabi season.

The company said that this order reaffirms its credentials in the irrigation sector and reinforces customer trust in the firm's capability to aid the development of agriculture in the state.

According to the statement from L&T, the project is a major order, which has an estimated cost between ₹5,000 crore and ₹7,000 crore.

Larsen and Toubro is an Indian multinational engaged in engineering, procurement and construction (EPC) projects, hi-tech manufacturing and services. It operates in over 50 countries worldwide.

The EPC major's consolidated net profit rose 22.5% to ₹2,228.97 crore on 23% rise in net sales to ₹42,762.61 crore in Q2 FY23 over Q2 FY22.



**

World Water Day-2011

Water for Cities: Responding to the Urban Challenge

Shri. Gajanan Deshpande, Pune -(M) : 9822754768



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

On the occasion of World Water Day 2011, a special theme, "Water for Cities: Responding to Urban Challenges," was adopted to focus international attention on the consequences of environmental issues such as global population growth, industrial expansion, climate change, and global warming. A major objective was to encourage governments, communities, individuals, etc. to actively participate in tackling the challenges of urban water management.

In the future, climate change will affect every aspect of the hydrological cycle and is said to have already begun, due to which there are more severe droughts and floods in some places. Climate change is increasing the frequency and intensity of droughts as well as floods and storms, along with rising sea levels. Warm air holds more moisture than cold air; as a result, rising temperatures lead to the absorption of more water into the air from oceans, lakes, soils, and plants and increase the aridity of the area, negatively impacting drinking water supplies. Since all of these are related to water, it is one of the most affected resources.

Extreme weather, which has been compounded in recent times by increasing population and social and economic stress, poses major challenges to the world in finding solutions to reduce these stresses. However, it is definitely possible to find solutions to these challenges. This has to be seriously considered everywhere now. We first need to update our understanding of the water-related problems posed by climate change

and devise effective strategies to mitigate the foreseeable risks. Also, their strict implementation and compliance will be necessary.

On the one hand, climate change is creating water scarcity problems, and on the other, due to population growth and the expansion of industries, water consumption is also increasing on a large scale. However, the availability of water from nature will remain the same. Of course, this will put a huge strain on the overall capacity of the water supply.

चला जलसाक्षर होऊ या
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Many regions of the world are already experiencing severe water scarcity, which is creating huge problems for the local population and society as a whole. Water resources have already degraded in some water-scarce regions. It is degrading both the quantity and quality of the water. This also increases water scarcity, which in turn hampers industrial, urban, and tourism development.

The pace of urbanisation is increasing tremendously. 93 percent of the world's total urbanisation is occurring in developing countries, and the population density is increasing in small areas of the cities. Therefore, many issues stand in the way of sustainable water development in cities, like providing sufficient water to the growing population, avoiding large-scale wastage of water, recycling and reusing wastewater in urban and industrial sectors, etc.

Industrial development is impossible without water. The development of industrialization is also an important aspect of social and economic development, as well as reducing unemployment. Every product needs water. Some industries require a lot of water, while others require less. Keeping this in mind, it will be necessary to promote industrial products according to the availability of water in that region.

A June 2018 report of the "Niti Aayog" projected that about 21 cities across India will face water droughts in the coming years, and since then there has been talking that our cities are also heading towards aridity.

While finding the necessary measures to overcome this situation, we have to reduce the use of fresh water and increase the use of treated water. Most of the water we use in the city goes through sewers. Processing centres should be set up in different parts of the city to process it and make it reusable. If such small-scale recycling plants are set up, it will be possible to distribute the water obtained from it to the surrounding areas for consumption. Thus, we have to get used to using the processed purified water by reducing the use of fresh water.

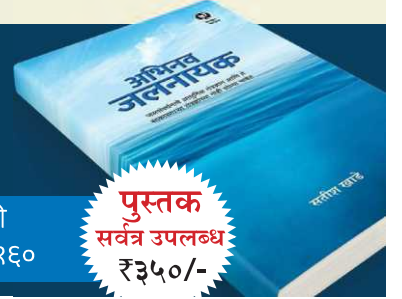
अभिनव जलनायक सामाजिक कार्यकर्त्यांनी का वाचावे ?

१. ओढ्यात, बंधान्यात, तळ्यात पाणी साठवले, पण त्या साठवलेल्या पाण्याचे अचूक व्यवस्थापन करण्यासाठी लागणारे विविध तंत्रज्ञान.
२. गावचे सांडपाणी ओढ्यातच करा नैसर्गिक पध्दतीने शुद्ध ! ट्रीटमेंट प्लांटचा मोठा खर्च, वीज, केमिकल्स, मनुष्यबळ यापैकी काहीही लागत नाही अशी दौन तंत्रज्ञान. ओढे नाले स्वच्छ झाले की नद्या ही होतील अमृतवाहीन्या !
३. आरे प्लांट पेक्षा कितीतरी स्वस्तात पाणी निर्जंतुक करणारी ओझोन टेक्नॉलॉजी ची माहिती.
४. कचऱ्याचे डोंगर वेगाने खतात रूपांतर होण्यासाठीचा मंत्र आणि तंत्र.
५. कचऱ्याची दुर्गंधी पूर्ण थांबवली पुणे महानगरपालिकेने, काय केले त्यांनी ? त्याची माहिती.
६. बंद पडलेल्या बोअरवेल साठी जमिनीतच असणारे पाणी शोधून बोअरवेल भरण्याची किमया
७. बारा गावांचा गट करतो भूजल व्यवस्थापन व नियोजनाचे यशस्वी प्रयत्न.
८. दुर्गम भागात पिण्याचे पाणी शुद्धी करण्यासाठी मोबाईल फिल्टर
९. गावच्या तळ्यातले पाणी भिजवते दुष्पट क्षेत्र या तंत्रज्ञानाने
१०. बंधान्यातून, तळ्यातून, जमिनीतून होणाऱ्या पाणी गळतीला थांबवण्याचे उपाय. ही सर्व तंत्रज्ञाने सोप्या शब्दात वाचा या पुस्तकात.

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To address the water crisis, Tamil Nadu has decided to prioritise the addition of two new desalination plants to the existing two projects to desalinate sea water. From this, they will be getting 150 million liters of water per day.

All in all, if we as citizens do not take initiative in all these issues today, our future generations will have to wade in search of water. "I pay the municipality for water; so, I should get as much water as I want!" Some of us have this understanding; they need to come to their senses now. Everyone should first understand that water is for everyone and that water has value, so water wastage in cities should be stopped.



India needs a food systems approach -

a unique one best suited to its requirements

The conventional Western model of a 'Food System' relies on a Production-Processing-Value Chain-Markets linkage. When Inclusiveness, Health & Nutrition and Sustainability pillars are introduced into this model, the model begins to crack! Understandably, one global system will not work in the world; one single system may not work in India as well. Indian food systems are unique for their diversities — of production, consumption, trade, cultural and environmental challenges. India's food system, therefore, will have to draw upon global best practices and redesigned accounting for regional variations and innovations.

The United Nations Food Systems Summit in 2021 did not make any big waves. Some critics went to the extent of saying it fizzled out. It was a global event of scale that failed to excite member countries to start designing transformative 'food systems'. Probably, the concept itself was not fully understood, and not properly explained.

Transforming existing food systems is akin to repairing and remodelling a sailing ship! Holes need to be plugged, interiors refurbished and engine capacity augmented; while the ship remains afloat and continues on its journey. Does this mean that existing systems are fine and nothing needs to change? Definitely not! What seems to intimidate policymakers is the sheer challenge of the 'how'. Not attempting the transformation, in my view, is not an option, though inertia is convenient.

It was in this background that Bharat Krishak Samaj organized a 'Food Systems Dialogue' trying to take the first shot at changing the narrative in favour of a systems approach as different from the current silos approach. The dialogue (15-16 November 2022) had ten major

tracks all piloted by reputed expert organizations, national and international. It was designed as a 'dialogue', and not as a conference or a summit. It was about listening and learning. It was about understanding the various dimensions of any transformation, trade-offs in these actions, possible impacts and about effective and least harmful pathways. This article, however, is not about the 'dialogue', but about the need for a unique, India-specific food system.

The conventional Western model of a 'Food System' relies on a Production-Processing-Value Chain-Markets linkage. When Inclusiveness, Health & Nutrition and Sustainability pillars are introduced into this model, the model begins to crack! Understandably, one global system will not work in the world; one single system may not work in India as well. Indian food systems are unique for their diversities - of production, consumption, trade, cultural and environmental challenges. India's food system, therefore, will have to draw upon global best practices and redesigned accounting for regional variations and innovations. No doubt, it is a daunting task and hence the reluctance to even accept the need for a change! Continuing with the existing system built on the 'green revolution model' is bound to run into 'rough weather' given the climate variability scenario. Add to this, concerns of farm incomes, depleting natural resources and challenges of under-nutrition. The need for changes in the existing system is obvious. What, then, could be the main pillars on which such a transformation can be built?

**Seven broad areas deserve immediate attention:
Address concerns around food and nutrition,
livelihoods and resilience in agriculture :**

India needs healthy and affordable diets for its people. Food security initiatives have been based on intensive production, extensive procurement and efficient distribution. This model did ensure that there is enough (and more) rice and wheat for our people. Continuing on this track with the same over-emphasis on wheat and rice is unlikely to give better nutritional outcomes. Given the twin constraints of limited cultivable land and depleting natural resources, a shift in focus to nutri-cereals, pulses, fruits and vegetables, dairy, poultry, etc. is critical from both nutrition and livelihood perspectives. Though agriculture has so far withstood the impact of natural calamities at the macro level, livelihood security and rainfed agriculture have been under severe stress whenever weather events occurred. Given the increasing climate variability, more resilience has to be built in through necessary changes in policy and

instruments of intervention.

Build sub-systems for climate adaptation :

Climate variability has become the biggest challenge to farmers. While our policy responses largely focus on macro-level food security concerns, the livelihood security of farmers in the distressed regions has not received the attention it deserves. To reduce inequality, policies need to shift from the National Food Security focus to farmer-centric livelihoods and micro-level food security with concomitant allocations in the budget. This is particularly relevant for rainfed area farmers. Our sub-systems — technical support and extension systems, input planning, market support and risk mitigation — do not respond adequately to weather-induced challenges. This has to do with two factors: centralized planning and inadequate response/mitigation mechanisms. These need urgent attention.

Conserve natural resources and incorporate time-tested traditional practices :

The Green Revolution remained a success



story, thanks to some parts of India, in terms of meeting the food security needs of the country. Over a period of time, unsustainable use of natural resources aided by misplaced financial incentives has created pressure on the existing natural resources — soil, water, and agroecology, to name a few — and has placed a big question mark on the sustainability of such operations. Policies that were good ‘green revolution’ continued largely because of an apprehension that any change may affect the food security of the country and create unhappiness among those farmers who have benefited from these policies. However, there were a large number of other resource-poor farmers who practised natural farming (by whatever other names it may be called) that were left out of the benefits of the ‘incentives regime’ of the Government since they did not use any of the inputs in the ‘Green Revolution’ model: water, fertilizers, hybrid seeds or pesticides. Farmers who conserve natural resources need to be incentivized in some form: collective or individual.

Reduce food loss and waste :

The quantity of food lost and wasted is unacceptably large. While different estimates are available for food loss and waste, all of them indicate unacceptably large numbers. Food loss, to me, is a bigger challenge in terms of technology, transport, storage and management. Any intervention to reduce food loss will have to be crop- and geography-specific. It will be a win-win for all, particularly for farmers. Food waste requires a behavioural change and, if required, some penal provisions as well.

Create circular food chains instead of linear systems:

A lot of theory exists about circular food systems. Circular food systems do save time, energy and money. The starting point has to be local loops of production and linkage to local markets. This has the advantage of creating demand for local produce, thereby contributing to local prosperity. Current policies do not encourage such a system.

Ensure sustainable incomes for farmers :

Farming continues to lose its economic importance in the share of GDP, but continues to support about 50 per cent of the population. For the farmer on the ground, it is increasingly becoming unprofitable and unpredictable. Many of them remain farmers for want of any other option. If farming does not provide a dignified livelihood to the people involved in it, there is no way healthy and nutritious food can be produced for the people. A concerted effort and a well-thought-out policy prescription to sustainably increase farmers’ incomes need to be ‘grounded’ at the earliest. Such a plan should not be subject to ad hoc reactions to consumer price inflation and urban consumer prejudices.

Focus on governance :

A transformed food system requires a new governance architecture. Discussions on food and agriculture often ignore governance issues. Knowledge, skills and capacities at the local level have not received the attention required for an effective locally relevant innovative system. A transformative arrangement involving the strengthening of local-level institutions would require much more. Ignoring governance issues in the overall food system architecture can lead to major failures.

Undoubtedly, India needs to transform its food system. How the transformation pathways are designed will decide its success.

(T Nandakumar is a former Secretary, Food & Agriculture, Government of India. The views expressed here are his own.)



Stockholm Water Prize-2009

Dr. Bindeshwar Pathak, India

Shri. 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.)

As the founder of Sulabh International Social Service Organization, Dr. Bindeshwar Pathak is recognised worldwide for his extensive work in the field of sanitation in promoting public health, social progress, and human rights in India and other countries. His work in healthcare, education, sanitation technology, and social initiatives has been a boon to millions of people in India and is seen as a model for social organisations in public health initiatives worldwide.

Dr. Pathak has stated numerous times that providing clean toilets for the common man is one of civilization's most significant advances. Since founding the "Sulabh Swachhta Movement" in 1970, Dr. Pathak has been instrumental in changing the social attitudes towards unsanitary toilets in poor communities across India, in slums, rural areas, and densely populated cities. Through those efforts, he developed a cost-effective toilet system to improve the daily lives and health of millions of people. This also created an economic opportunity for the ex-sweepers and their families. He worked tirelessly to end the traditional practise of sanitation workers in India cleaning toilets by hand and carrying filth from the head with a bucket, all while ensuring the right to a decent standard of living and social dignity. Dr. Pathak's tireless effort is one of the most amazing examples of how one person's efforts can make a positive impact on the health of millions. Dr. Pathak's world leadership in achieving socio-environmental outcomes has been universally recognized.

The "Sulabh toilet" systems, like the twin

pit and pour-flush systems he has developed, are now in use in more than 1.2 million households and buildings in India. This technology has been declared by the United Nations Habitat and the Centre for Human Settlements as the best technology in global use and recommended for use by more than 2.6 billion people worldwide.

Based on this public system providing accessible toilets and bathing facilities, 7500 such facilities have been constructed as of 2009, benefiting more than 10 million people every day. These pay-and-use public facilities provide economically sustainable, environmentally sound, and culturally acceptable solutions to sanitation problems in congested public spaces or slum communities.

Accessible toilet systems have introduced technology that minimises water consumption. A traditional toilet uses at least 10 litres of water. But a simple toilet requires only 1.5 litres of water to flush. This has significant additional benefits for health and quality of life in rural water-poor regions. Ecosystem-based and ecologically balanced businesses, such as aquaculture, that provide economic opportunities to rural poor communities are emerging from wastewater treatment programs. Technology is being used to convert the air produced from toilet faeces into biogas, which is used for cooking and generating electricity.

A self-described "action sociologist," Dr. Pathak has been at the forefront of social initiatives for decades. He has combined business best practises and principled activism to advance their work towards better sanitation, social change, and quality of life. In 1970, he founded the Sulabh

International Social Service Organization, an NGO promoting sanitation and social change across India. As of 2009, more than 50,000 associate members were providing their voluntary services through Sulabh. The organisation has recently started operations in Bhutan and Afghanistan. In collaboration with UN Habitat, Sulabh has trained engineers, architects, planners, and administrators from 14 countries in Africa. Sulabh is now planning to start operations in Ethiopia, Cambodia, Laos, Angola, Madagascar, the Dominican Republic, Tajikistan, and other countries.



Through Sulabh, Dr. Pathak has done away with the decades-old practise of scooping human excreta by hand from simple toilets and carrying the filth on one's head, prevalent in most parts of India. The simple toilet concept was developed out of his concern for the plight of the untouchable scavengers and his eagerness to change this situation. Over the years, he has spearheaded several initiatives for social dignity, economic justice, and freedom from the caste-based system for the untouchable scavengers and their families. The Sulabh International Institute of Health and Hygiene, established by Dr. Pathak, has developed an effective health model by creating sanitation and health educators for urban slums and rural villages and leading them through NGOs and the government sector. In collaboration with other organizations, it has developed hygiene courses for

young schoolchildren and their teachers, provided hygiene and health training for volunteer teachers in the slums, and opened basic health care centres for the urban poor in accessible community toilet complexes.

While working with the Indian Ministry of Environment and Forests, Dr. Pathak has established an accessible Environmental Information System Center for collecting and disseminating environmental information related to sanitation and wastewater processes for researchers, academicians, policy makers, and students.

Dr. Pathak first became aware of the plight of the scavengers in 1968, when he joined the Bhangi-Mukti Cell of the Bihar Gandhi Centennial Celebration Committee. During that time, he travelled across India as part of his Ph.D. research, living with the families of Bhangi workers, and decided to take social action based on that experience. Not only out of sympathy for the scavengers but also because of the inhumane practise of carrying manual excrement on the head, which would have a devastating effect on modern Indian society, he founded Sulabh International Social Service Organization in 1970, combining technological innovation with humanitarian principles and starting a unique movement from it.

Born in 1943 into a Brahmin family and brought up in the Indian state of Bihar, Dr. Bindeshwar Pathak studied at Patna University, where he did an MA in Sociology, an MA in English, and obtained a Ph.D. in the topic of "Liberation of Scavengers through Low-Cost Sanitation." He holds a Doctorate of Literature on "Sanitation and Environmental Sanitation Eradication in India: A Sociological Study." He lives on the "Sulabh campus" in New Delhi.

A great speaker Dr. Pathak has written extensively, and there are many books in his name. The most famous of them is "The Road to Freedom." He regularly and actively participates in global conferences on sanitation, health, and social progress around the world.

India Could Soon Experience Heat Waves

By Craig Duggan - BBC Wales news



Could slurry be turned into a way of saving farmers lots of money?

Aberystwyth University: Duckweed could feed cows and save rivers

Scientists are hoping duckweed and slurry could help farmers "make money from muck".

A new project hopes to provide low-cost animal feed while stopping livestock waste polluting rivers.

Duckweed, a protein-rich water plant, has been described as a "miracle plant" as it is one of the fastest growing on the planet.

There are around 500,000 dairy cows in Wales which excrete about 50kg (110 pounds) of waste each per day.

The project is a partnership between Aberystwyth University and the University College Cork in Ireland. The storage of this slurry is costly and closely regulated as it can cause environmental damage if it enters a watercourse.

But using it to grow duckweed could solve a number of problems and be beneficial to farmers according to Dr Dylan Gwynn-Jones, who is leading the project at Aberystwyth University.



Dr Gwynn-Jones has been looking into potential uses for slurry

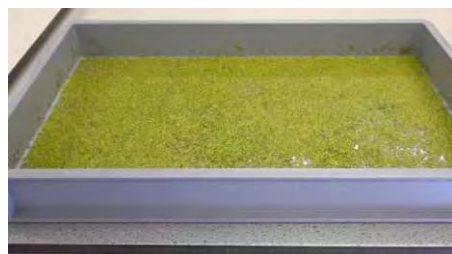
"Native duckweeds can make slurry a valuable resource," he said.

"They are amongst the fastest growing plants, they are tolerant of ammonium, which is found in slurry, and they produce valuable essential amino acids that make it a promising feed-stock.

"By helping the agricultural industry develop technology to produce valuable green protein from waste, the research effectively allows farmers to make money from muck."

The vision of the project is for a "win-win scenario" for the environment and farmers.

By growing duckweed on the farm, waste nitrogen and phosphates are taken out of the water, cleaning it and meaning it could potentially be safely released.



The £1m project, called Brainwaves, has been part-funded by the European Regional Development Fund

The nutrients in the waste water also lead to quicker growth of the duckweed which could be used as a protein-rich feed for livestock.

Hywel Dafis, who has 400 dairy cows on a farm in Talgarreg, near Llandysul, in Ceredigion, said farmers were always looking for sustainable sources of protein for their livestock, especially at a time of huge cost increases.

"Grass is one way but that isn't available all year round, so we need to have something during the winter, in addition to the grass, as a source of protein and this project could provide a solution," he said.

"I think there are definitely advantages for farmers."

He added: "We have to buy protein in to the farm, so to have an extra source of protein and that it comes from a plant that can also clean water, it sounds promising."



Farmers have been invited to take part in the project

Until now, the project has studied the growth of duckweed in laboratories and in tanks on land owned by the universities.

Now researchers are appealing for farmers in Wales to take part in the research on their own farms.

Dr Gwynn-Jones said: "We are very keen for farmers and the wider agriculture sector to get involved in the project.

"With expected increases in global food production, there is a pressing need for agriculture to be carbon-friendly, while protecting water quality and biodiversity."

Rotary India water conservation Trust

Rahul Pathak from Pune (Entrepreneur & Industrialist) has responded more than 50 disasters & served for community. He is one of the well experienced 'WASH' trainer

Save Water Save Planet!

Post by Satish Khade 9823030218

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.

Famous rivers in the world

(5) Yukon river



(6) Sao Francisco River



(7) Savern River



(8) Trent river



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