

TerraGreen

₹70



Subscriber's copy

VOLUME 14 | ISSUE 12 | March 2022

SPECIAL HIGHLIGHTS

Climate Action

Human—Wildlife Conflict

TERRA YOUTH

Importance of Constructed Wetlands

IN CONVERSATION

Amit Bhatia

Founder, Aspire Circle and Aspire Impact

Water Crisis in India

The World's Largest
Groundwater User



teri

THE SUSTAINABLE HABITAT HANDBOOK



Key Features:

- Indigenous rating system
- Adoption of holistic approach towards sustainability
- Process driven and performance oriented
- Integrated team approach

- ISBN: 9788179936870
- Print / eBook Subscription Price: ₹1100 ₹9990 (with free shipping in India)
- Avail special 15% discount on order of more than 10 copies
- Perpetual Price: on request

The manuals provide a comprehensive understanding of the 5th updated version of GRIHA rating system, with introduction to concepts like life cycle cost analysis, life cycle analysis, and water performance index, etc., with an aim to build more sustainable physical assets and infrastructure services, while enhancing the livability and workability of the occupants included in its underlying criteria, rating process, strategies for compliance, and the documentation and evaluation procedure.

For any query or to avail bulk purchase discounts please write us at:

The Energy and Resources Institute
Attn: TERI Press
Darbari Seth Block
IHC Complex, Lodhi Road
New Delhi – 110 003/India

Tel. 2468 2100
Fax: 2468 2144
India +91 • Delhi (0)11
Email: teripress@teri.res.in
Web: <http://bookstore.teri.res.in>

Bank details for NEFT:
The Energy and Resources Institute
A/c Number: 62002345487
IFSC Code: SBIN0020511

EDITORIAL



“ On this World Water Day (March 22), with the theme ‘Groundwater—Making the Invisible Visible’, let us all pledge that we will try our best to save as much water as we can at our homes and offices. ”

Each year on March 22, World Water Day is celebrated as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. The idea is to inspire people around the world to learn more about water-related issues and to take action to make a difference. This day emphasizes on taking action to tackle the global water crisis, in support of Sustainable Development Goal (SDG) 6: water and sanitation for all by 2030.

As groundwater resources come under increasing pressure due to over-reliance and unsustainable consumption, wells, ponds and tanks dry up. This has worsened the water crisis and placed an even greater burden of accessing water. India is already water-stressed due to changing weather patterns and repeated droughts. This month’s cover story delves into the issue of water crisis in India, as providing clean drinking water is becoming a critical challenge with population growth in the country. Amidst the worrying situation, Jal Jeevan Mission (JJM) of the Government of India comes as a silver lining to provide safe drinking water to all rural households by 2024. The central government has approved ₹3.6 trillion for providing piped water supply to every household. The Mission also involves the development of infrastructure for piped water supply, reliable supply sources, water quality, treatment plants, training, and R&D. The Central and State Governments have provided potable tap water connections to about 8.69 crore rural households under the Mission.

The sustained success of JJM is good news indeed; but unless every individual conserves water and protects water sources, it would be a difficult situation for posterity and better living conditions. As climate change gets worse, groundwater will become more and more precarious. We need to work together to sustainably manage this invaluable resource, as life cannot be sustained without groundwater. In fact, many arid areas of the world depend completely on groundwater. Groundwater supplies a large proportion of the water we use for drinking, sanitation, food production, and industrial processes. Exploring, protecting and sustainable use of groundwater will be central to surviving and adapting to climate change and meeting the needs of growing population. On this World Water Day (March 22), whose theme is ‘Groundwater—Making the Invisible Visible’, let us all pledge that we will try our best to save as much water as we can at our homes and offices.

A handwritten signature in black ink that reads "Vibha Dhawan".

Vibha Dhawan
Director-General, TERI



I liked reading the February 2022 issue of *TerraGreen*. The cover story is particularly very apposite article. The author very rightly says that resource efficiency and circular economy can reduce the pressure on mineral resources through structural changes and technology while maintaining the growth potential. Life cycle management addresses the renewability of minerals and associated environmental issues during extraction, production, use, and waste management. Closing the resource loop through recycling, remanufacturing, slowing the resource loop through reuse, narrowing the resource flow through increased material productivity, improving assets, and changing the individual behaviour is necessary for the protection of virgin resources and efficient management of supporting resources. I also agree with the author of the feature article who says that with the monumental demand surge for electric vehicles that is headed our way, lithium production might as well be labelled an environmental nightmare. Overcoming

the lithium crisis within the next two decades will by no means be easy, but it is certainly achievable if given enough attention and resources.

Manish Singh
Dehradun, Uttarakhand

I liked reading the Special Report article published in the February 2022 issue of *TerraGreen*. It was nice reading about the floating solar power stations at Banasura Sagar Dam in Kerala. I was very happy to read that soon, travelers to Kerala will arrive at Kochi international airport, the first-of-its-kind to fully function on solar energy. They may take a solar-powered tourist boat on a journey on Vembanad Lake. They could reach districts Alappuzha and Kottayam via India's first solar ferry boat, Aditya, and Banasura Sagar, along with many other floating solar stations, will attract nature-loving tourists. The Pioneer article is also very informative one in which the author says that greenhouse gas emissions are categorized into three groups or scopes by the most widely-used international carbon accounting tool, the Greenhouse Gas (GHG) Protocol. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain. Some companies focus on Scope 3, which is very hard to control and track, as it requires an understanding of suppliers or customers' carbon footprints. But what companies can control is their own operations.

A K Yadav
Mumbai, Maharashtra

Editor-in-chief
Ajay Mathur

Editorial Board
K Ramanathan
S K Sarkar
Suneel Pandey

Publishing Head
Anupama Jauhry

Editorial Team
Abhas Mukherjee
Sachin Bhardwaj

Design & Illustration
Santosh Gautam
Vijay Nipane

Production
Aman Sachdeva

Marketing, Sales & Distribution
Sanjeev Sharma
Nand Kumar Yadav
Alok Bhushan Singh

Head office
TERI

Darbari Seth Block, IHC Complex
Lodhi Road, New Delhi – 110 003
Tel. +91 (11) 2468 2100 or 7110 2100
Fax +91 (11) 2468 2144 or 2468 2145

Regional centres

Southern Regional Centre
TERI, CA Site No. 2, 4th Main, 2nd Stage
Domlur, Bangalore–560 071
Email: terisrc@teri.res.in

North-Eastern Regional Centre
Chachal Hengrabari, Express Highway
Guwahati- 781 036
Tel: 0361-2334790, Fax: 0361-2334869
Email: terine@teri.res.in

Western Regional Centre
House No. 233/GH-2, Vasudha Housing Colony,
Alto-St Cruz, Tiswadi, Goa-403 202
Tel: 0832-2459306, 2459328
Email: teriwrcc@teri.res.in

Overseas representation

TERI Japan
C/o IGES
Nippon Press Centre Building (8th Floor)
2-2-1, Uchisaiwai-cho, Chiyodi-ku
Tokyo, Japan - 100-0011, E-mail: teris@iges.or.jp

Published by Dr Ajay Mathur on behalf of The Energy and Resources Institute, Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi – 110 003. Editor-in-chief Dr Ajay Mathur

© The Energy and Resources Institute. All rights reserved.



<http://www.terragreen.teriin.org>

Contents

VOLUME 14 • ISSUE 12 • MARCH 2022

4	NEWS	30	SPECIAL REPORT
8	TERI ANALYSIS		Human–Wildlife Conflict
	Propelling Sustainable Cooling	34	GREEN CHALLENGES
10	ENVIRONMENTAL RESEARCH		Judicious Use of Water
	Effects of Noise on Marine Life	37	TERRA YOUTH
12	FEATURE	46	WILDLIFE
	Climate Action		Planet in Crisis
18	IN CONVERSATION	48	MANEKA SPEAKS
	Amit Bhatia	50	PIONEER
	Founder, Aspire Circle and Aspire Impact	53	SPECIAL FEATURE
22	COVER STORY	56	FIGHT CORONAVIRUS TOGETHER
	Water Crisis in India		

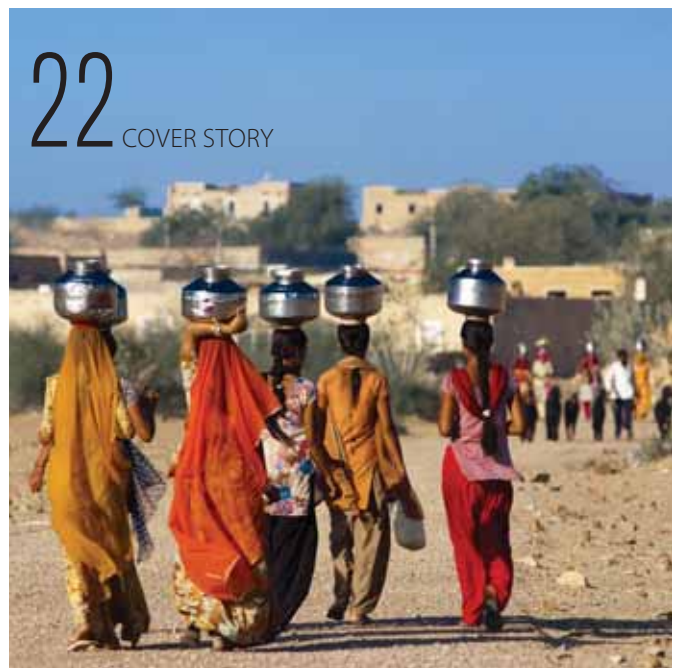
12
FEATURE



30
SPECIAL REPORT



22
COVER STORY



10 ENVIRONMENTAL RESEARCH



37 TERRA YOUTH





Water Crisis in India

The World's Largest Groundwater User

In this article, **Anita Khuller** says that with increasing news of areas facing water shortages and drought, saving water and using it more efficiently has become the need of the hour. Globally, providing clean drinking water is becoming a bigger challenge with population growth. To avert this challenge, the Government of India launched the Jal Jeevan Mission (JJM) in August 2019 to provide safe drinking water to all rural households by 2024. JJM focuses on 1592 water-stressed blocks in 256 districts. The programme will also implement source sustainability measures as mandatory elements, such as recharge and reuse through grey water management, water conservation, rainwater harvesting. Read on to know more...



Earth is the only known planet in the universe that has water and life. But even though 70 per cent of the planet is covered with water, only 1 per cent is easily accessible. Given that all life forms are dependent on water; its importance cannot be understated for domestic and agricultural use. In addition, water is used to produce power and in process industry.

With increasing news of areas facing water shortages and drought, saving water and using it more efficiently has become the need of the hour. Globally, providing clean drinking water is becoming a bigger challenge with population growth.

Facts and Figures

As per Dr Rajiv Kumar, Vice Chairman, National Institution for Transforming India (NITI) Aayog in August 2021,¹ in India the annual available water after evapotranspiration is 1999 billion cubic metres (bcm), of which the utilizable water potential is estimated at 1122 bcm. India is the largest groundwater user in the world, with an estimated usage of around 251 bcm per year, more than a quarter of the global total. With more than 60 per cent of irrigated agriculture and 85 per cent of drinking water supplies dependent on it, and growing industrial/urban usage, groundwater is a vital resource. It is projected that the per capita water availability will dip to around 1400 cum in 2025, and further down to 1250 cum by 2050.

A report titled "Composite Water Management Index (CWMI)", published by NITI Aayog in June 2018, mentioned that India was undergoing the worst water crisis in its history; that nearly 600 million people were facing high to extreme water stress; and about 200,000 people were dying every year due to inadequate access to safe water. The report further mentioned that India was placed at the rank of 120 amongst 122 countries in the water quality index, with nearly 70 per cent of water being contaminated. It projected the country's water demand to be twice the available supply by 2030, implying severe scarcity for hundreds of millions of people and an eventual loss in the country's GDP.

The CWMI was conceptualized as a tool to instill a sense of cooperative and competitive federalism among the states. This was a first-ever attempt at creating a pan-India set of metrics that measured different dimensions of water management and use across the lifecycle of water. The water data collection exercise was carried out in partnership with the Ministry of Jal Shakti, Ministry of Rural Development, and all the States/Union



Territories (UTs). The report was widely acknowledged and provided guidance to States on their success areas, absolutely and relatively, and on recommendations to secure their water future.

CWMI 2.0, released in August 2019, ranked various states for the reference year 2017–18 as against the base year 2016–17. Gujarat held on to its first rank in 2017–18, followed by Andhra Pradesh, Madhya Pradesh, Goa, Karnataka, and Tamil Nadu. Amongst North Eastern and Himalayan States, Himachal Pradesh was adjudged on top. The UTs submitted their data for the first time, with Puducherry declared the top ranker. In terms of incremental change in index (over 2016–17), Haryana held the first position in general States and Uttarakhand amongst North Eastern and Himalayan States. On an average, 80 per cent of the states assessed on the Index over the last three years have improved their water management scores, with an average improvement of +5.2 points.

But worryingly, 16 out of the 27 states still score less than 50 points on the Index (out of 100), and fall in the low-performing category. These states collectively account for ~48 per cent of the population, ~40 per cent of agricultural produce, and ~35 per cent of the economic output of India. Uttar Pradesh, Rajasthan, Kerala, and Delhi, 4 of the top 10 contributors to India's economic output and accounting for over a quarter of India's population, have scores ranging from 20 points to 47 points on the CWMI. Food security is also at risk, given that large agricultural producers (states) are struggling to manage their water resources effectively. This is troubling given that assessment on almost half of the Index scores is directly linked to water management in agriculture.

On the positive side, greater focus on water governance and increased data discipline amongst states is building a pathway for driving long-term success.

¹ Source: Compendium on Best Practices in Water Management 2.0 (Oct 2021)

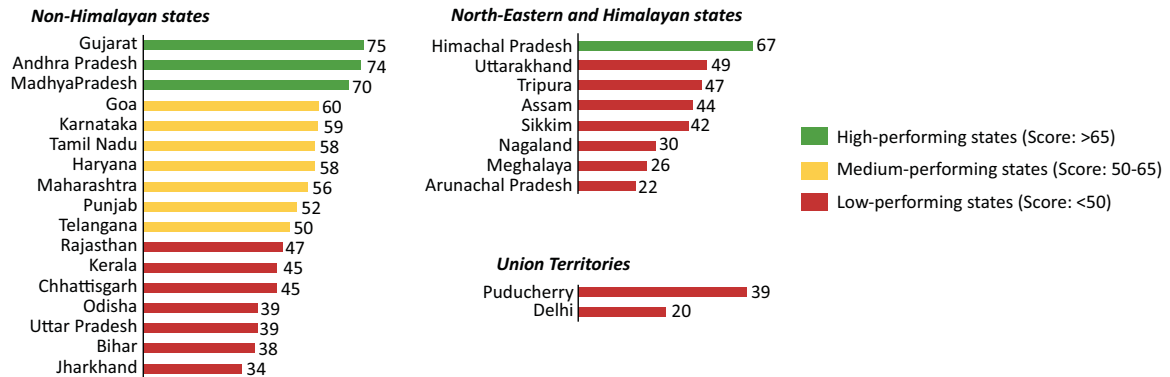
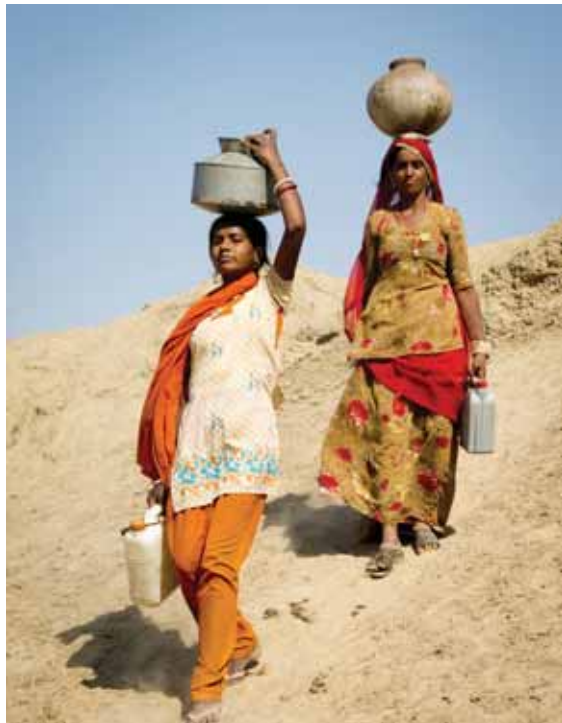


Figure 1: State-level performance on water resource management

Source: CWMI Report, Aug 2019



Taking Action

Scientific management of water was increasingly recognized as being vital to India's growth and ecosystem sustainability. This led to the creation of the Ministry of Jal Shakti in May 2019 under the guidance of Prime Minister Shri Narendra Modi, to consolidate interrelated functions pertaining to water management, as formed by the merger of the Ministry of Water Resources, River Development & Ganga Rejuvenation, and Ministry of Drinking Water and Sanitation.

On July 1, 2019, Jal Shakti Abhiyan—a campaign for water conservation and water security—followed, along with the Jal Jeevan Mission (JJM) launched in August 2019 to provide safe drinking water to all rural households by 2024. JJM focuses on 1592 water-stressed blocks in 256 districts. The central government has approved ₹3.6 trillion for providing piped water supply to every household. The Mission also involves the development of piped water supply infrastructure, reliable supply sources, water quality and treatment plants, training and R&D. On March 22, 2021 the second phase of JJM was launched with special emphasis on rainwater harvesting.

JJM (Urban), launched under the Union Budget 2021–22, aims to provide universal coverage of water supply to all households through functional taps in all 4378 statutory towns, while sewerage/septage management in 500 Atal Mission for Rejuvenation and Urban Transformation (AMRUT) cities is the other focus area. The total outlay proposed for JJM (Urban) was ₹2.87 trillion, which included ₹100 billion for AMRUT Mission. For UTs and North Eastern/Hill States, there will be 100 and 90 per cent Central funding, respectively. Meanwhile, Central funding will differ for cities, depending on their population size.

The Union Housing and Urban Affairs Ministry on February 16, 2021 launched a survey to collect data on drinking water in 10 cities under JJM (Urban) through a pilot 'Pey Jal Survekshan'. Data on drinking water, wastewater management, non-revenue water, and condition of water bodies in the cities, is being collected through interviews with citizens and municipal officials. On the basis of learnings of the pilot survey, the exercise will be extended to all AMRUT cities.

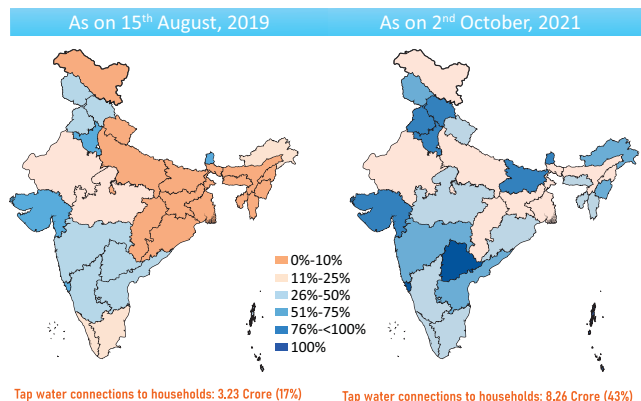
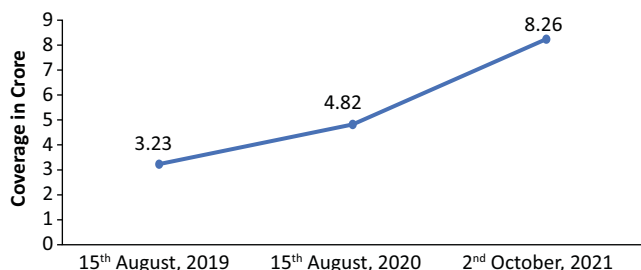


Figure 2: Coverage of tap water connections since announcement of JJM (August 15, 2019 to October 2, 2021)

Source: JJM Progress Report, Oct 2021

A status report shared by the Jal Shakti Ministry in December 2021 said the JJM had already met 45.2 per cent of its target, with states such as Goa, Telangana and Haryana ensuring 100 per cent tap water connections for all rural households. The Centre and state governments have provided potable tap water connections to about 8.69 crore rural households under JJM.

Water–Health Nexus

Other problems such as water-borne diseases had to be tackled as well. Acute Encephalitis Syndrome



(AES) due to Japanese Encephalitis Virus (JEV) was clinically diagnosed in India for the first time in 1955 in Tamil Nadu. During 2018, over 10,500 AES cases and 632 deaths were reported from 17 states (mainly from Assam, Bihar, Jharkhand, Karnataka, Manipur, Meghalaya, Tripura, Tamil Nadu, and Uttar Pradesh) to the National Vector Borne Diseases Control Programme in India, with a case fatality rate of around 6 per cent.

So, the JJM focused on providing safe tap water supply to more than 97 lakh households in five priority states—Assam, Bihar, Tamil Nadu, Uttar Pradesh, and West Bengal. It envisages the supply of 55 litres of water per person per day to every rural household through the Functional Household Tap Connections scheme by 2024. By working together with the health, education, social justice and housing ministries, the Water Ministry hopes to reduce AES morbidity and mortality.



Figure 3: Water quality management information system

Source: JJM Progress Report, Oct 2021

JJM Highlights

As per a comprehensive report released on October 2, 2021, the following are the major achievements since 2019:

- 8.26 crore (43 per cent) rural households (in over 1.16 lakh villages and 79 districts) are getting tap water supply in their homes
- 5.03 crore tap water connections provided since the JJM launch
- Goa, Haryana, Telangana, A&N Islands, Daman & Diu, Dadra & Nagar Haveli, and Puducherry have achieved 'Har Ghar Jal'
- 1.22 crore (36.09 per cent) households in socio-economically backward districts are getting tap



water supply in their homes, that is, about four times increase in coverage since JJM was announced

- 1.15 crore (37.83 per cent) households in 60 identified JE/AES endemic districts are getting tap water supply in their homes, that is, about 15 times increase in coverage since the announcement of JJM
- 3.43 lakh Village Water Sanitation Committees/Pani Samitis constituted/made functional
- 2.86 lakh Village Adoption Programmes by the National Institute of Food Technology Entrepreneurship and Management students, prepared and approved in different villages
- 7.93 lakh (76.93 per cent) schools and 7.65 lakh (68.21 per cent) Anganwadi Centres provided with tap water connections.

As per MoneyControl, on February 1, 2022, India's Finance Minister in the 2022–23 budget, earmarked ₹60,000 crore for the JJM that aims to provide potable water to 3.8 crore households in 2022–23. This was higher than the allocations of ₹115 billion in 2020–21 to ₹500.11 billion in 2021–22.

Skilling

JJM provides huge employment opportunities in villages, to successfully implement the Mission and ensure long-term operation and maintenance of in-village water supply systems. To meet this present and future requirement, skilling is a major component to produce a good number of masons, plumbers, electricians, pump operators, etc. Development partners are being engaged by states to prepare modules for

sensitization and capacity building in villages. Also, the COVID-19 pandemic has led to reverse migration of skilled and semi-skilled human resources, which can be turned into a mutually beneficial opportunity for the programme and employment opportunities in rural areas.

Among the technological interventions, a modern, public, online 'JJM— Integrated Management Information System' has been set up for day-to-day planning, implementation, monitoring, and reporting of the national/State/UT/district/village-level progress. Furthermore, to ensure transparency and modern fund management, a Public Finance Management System





has been made compulsory under JJM.

In December 2020, the Ministry recommended the adoption of Internet of Things-based JanaJal Water on Wheels (WOW) to States and UTs. Monitored by GPS, JanaJal WOW is a battery-operated three-wheeler with zero carbon emissions. It also uses an innovative anti-counterfeiting technology-based solution to prevent unauthorized refilling of water and ensures delivery of safe drinking water complying with the Bureau of Indian Standards and World Health Organisation standards. The Ministry also claims that untreated water remains one of the major causes of COVID-19 and hence, availability and access to safe drinking water has become a necessity. At present, the JanaJal manages over 750 water ATMs and safe water points in association with other agencies.

Success Story

Many success stories have been highlighted over the past few years. One such example is Rajasthan, the largest state of the country with very little rainfall. It has an area of 343 lakh hectares, of which 168 lakh hectares is arable land. The Thar desert occupies around 60 per cent of the state.

The state's Mukhya Mantri Jal Swavlambhan Abhiyan, launched in 2016, is a multi-stakeholder programme that aims to make villages self-sufficient in water through a participatory water management approach. It focuses on converging various schemes to ensure effective implementation of improved water harvesting and conservation initiatives. Use of advanced

technologies such as drones to identify water bodies for restoration is one unique feature of the programme. Gram Sabhas in villages are responsible for budgeting of water resources for different uses, providing greater power to the community members in decision-making.

After the first phase itself there was 56 per cent reduction of water supply through tankers and an average rise in the groundwater table by 4.66 feet in 21 non-desert districts of the states. 50,000 hectares of additional land had been made fit for cultivation in the districts and 64 per cent of the installed hand-pumps had been rejuvenated.

Conclusion

In rural areas in India, out of total available freshwater, about 5 per cent is used for drinking and domestic purposes, 10 per cent for industrial, and 85 per cent for agricultural purposes. All water is received from precipitation during limited rainy days or snowfall, and this water is stored either over- or underground. To achieve water security, there is no choice except to focus on rainwater harvesting, recharge of aquifers, proper storage, and efficient utilization.

This conscious thought-process is to be developed in all stakeholders through education and awareness, working from schools and villages upwards. In this regard, a compendium was released by NITI Aayog in October 2021 on the role of communities in water management, and lists out best practices on: agriculture; groundwater management; watershed development; water infrastructure; and climate risk and resilience.

We also need to learn from other countries' successes, such as Israel—it has turned a water crisis into an opportunity even though it receives one-fourth of the rainfall we get in India. Israel is now water secure and its groundwater level is also increasing, due to the adoption of new techniques.

Unless every person conserves water (which will also reduce electricity) and protects our water sources, our future generations will not survive. Whether it is simple conservation methods at home or while farming; let us all pledge to share this responsibility and take action, particularly on this World Water Day on March 22, before it is too late. ■

Anita Khuller has over 22 years of experience in technical writing/editing, new business development, communications/training, and capacity building in multi-national non-profit and consultancy sectors in South and Southeast Asia, in the clean energy, waste, environment, infrastructure, rural development and education areas.

Connecting people with water-related issues

Early Bird
Special Price
₹110



- Focuses on SDG6, Clean Water and Sanitation
- Highlights issues related to water scarcity and impacts around the world
- Educates children about reuse and reclamation of wastewater.
- Informative, educational and thought-provoking with child-friendly text and graphics
- Each chapter comprises illustrations, activities, case studies and tasks

Ages: 12+ years • ISBN: 9788195077625 • Price: ₹225

Reclaiming the Blue Earth aims to generate awareness and develop consciousness about the use, reuse, and reclamation of water. The book also makes the readers realize their strength and role; change their thoughts, perspectives, and attitude towards the use and misuse of water. Contents are developed to sensitize people towards the use and reclamation of wastewater through critical thinking and problem-solving. The text has been supplemented with simple solutions for effectively dealing with potential problems related to water at homes and in the community at large. Let us take a step forward to save water for our future generations.

For any query or to avail bulk purchase discounts please write to us at:

The Energy and Resources Institute
Attn: TERI Press
Darbari Seth Block
IHC Complex, Lodhi Road
New Delhi – 110 003/India

Tel: 2468 2100 or 4150 4900
Fax: 2468 2144 or 2468 2145
India +91 • Delhi (0)11
Email: teripress@teri.res.in
Web: <http://bookstore.teri.res.in>

Bank details for NEFT:
The Energy and Resources Institute
A/c Number: 62002345487
IFSC Code: SBIN0020511

Fight Coronavirus Together

We all can fight coronavirus together by following these measures:

- Wash your hands with soap and water frequently for 20 seconds or use alcohol-based hand rub. Do not touch your eyes, nose, or mouth if your hands are not clean.
- Cover your nose and mouth with a disposable tissue or flexed elbow when you cough or sneeze.
- Practice social distancing and avoid close contact with people who are unwell.
- Avoid mass gathering and crowded places.
- Get yourself and family members vaccinated at the earliest.



Sneeze inside the corner of elbow



Stay at least 6 feet from others



Use alcohol-based hand sanitizers



Wash hands frequently with soap



Wear face mask outside



Avoid social gatherings

TerraGreen



FEEDBACK FORM

PLEASE TICK YOUR CHOICE.

1. Which section(s) did you find the most interesting?

- TERI Analysis Environmental Research Feature
 In Conversation (Interview) Cover Story Special Report
 Green Challenges Terra Youth Review

2. In your opinion, which section(s) need(s) improvement?

- TERI Analysis Environmental Research Feature
 In Conversation (interview) Cover Story Special Report
 Green Challenges Terra Youth Review

3. What do you think about the look and feel of TerraGreen?

- Brilliant Design is not a priority, content is
 Average Needs improvement

4. In your opinion, what aspect(s) of TerraGreen need(s) improvement?

- Choice of stories Handling of issues Language
 Design Presentation

5. Please rate TerraGreen on a scale of 1–5 (5 being the best).

- 1 2 3 4 5

6. What issues would you like TerraGreen to cover?

.....

7. Which other environmental magazine(s) do you read?

..... None

8. Any further suggestions?

.....

YOUR DETAILS

Name:

Profession:

Tel.:

E-mail:

The most innovative suggestion will get a surprise gift.

The Energy and Resources Institute
 Attn: TERI Press
 Darbari Seth Block
 IHC Complex, Lodhi Road
 New Delhi – 110 003/India

Tel. 2468 2100 or 7110 2100
 Fax: 2468 2144 or 2468 2145
 India +91 • Delhi (0)11
 Email: teripress@teri.res.in
 Submit online: <http://bookstore.teri.res.in/terragreen>



ADVERTISE IN...

TERRAGREEN

Circulation information

Industries, Ministries, PSUs, Corporates, Multi and Bilateral Agencies, Universities, Educational Institutions, and Research professionals. Readership of 40,000

Technical specifications

Finished size:	20.5 cm × 26.5 cm
Non-bleed ad size:	17.5 cm × 23.5 cm
Half page ad size:	17.5 cm × 11.75 cm
Bleed size (3 mm bleed on all sides):	21 cm × 27.5 cm
Artwork preference:	Print ready, minimum 300 dpi (tiff, eps, pdf, or cdr) files with all fonts with high quality print proofs and progressives for colour reference.

General information

- Monthly
- All colour
- Matte paper
- Number of pages: 56



Advertisement tariffs (₹)

Position	Card rate for single issue(INR)	quarter contract (3 issues) (INR)	bi-annual contract (6 issues) (INR)	annual contract (12 issues) (INR)
Advertorial (per page)	100,000	255,000	480,000	900,000
Back Cover	100,000	255,000	480,000	900,000
Inside Back Cover	75,000	191,250	360,000	675,000
Inside Front cover	75,000	191,250	360,000	675,000
Inside Full Page	50,000	127,500	240,000	450,000
Inside Half page	30,000	76,500	144,000	270,000

GST & taxes additional as applicable

Subscription

One year ₹840 / \$122 • Two years ₹1680 / \$234 • Three years ₹2520 / \$302

ENERGY FUTURE

Circulation information

Industries, Ministries, PSUs, Corporates, Multi and Bilateral Agencies, Universities, Educational Institutions, and Research professionals. Readership of 25,000.

Technical specifications

Finished size:	20.5 cm × 26.5 cm
Non-bleed ad size:	17.5 cm × 23.5 cm
Half page ad size:	17.5 cm × 11.75 cm
Bleed size (3 mm bleed on all sides):	21 cm × 27.5 cm
Artwork preference:	Print ready, minimum 300 dpi (tiff, eps, pdf, or cdr) files with all fonts with high quality print proofs and progressives for colour reference.

General information

- Quarterly
- All colour
- Matte paper
- Number of pages: 96



Advertisement tariffs (₹)*

Ad location	Back cover	Inside back cover	Inside front cover	Inside full page	Inside half page	Inside quarter page	One-sixth page
Single issue	60,000	50,000	50,000	40,000	20,000	12,000	7,000
Two issues	114,000	95,000	95,000	76,000	38,000	22,800	13,300
Three issues	171,000	142,500	142,500	114,000	57,000	34,200	19,950
Four issues	228,000	190,000	190,000	151,000	76,000	45,600	26,600

Subscription

One year ₹800 / \$80 • Two years ₹1600 / \$160 • Three years ₹2400 / \$240

Contact details

Sanjeev Sharma

Email: sanjeev.sharma@teri.res.in
<Extn 2579>

Bank details for NEFT:

The Energy and Resources Institute
Bank: State Bank of India
A/c Number: 62002345487
IFSC Code: SBIN0020511
Website: <http://bookstore.teri.res.in/TerraGreen>



The Energy and Resources Institute

Darbari Seth Block, IHC Complex
Lodhi Road, New Delhi - 110 003
Tel: 011 2468 2100 / 7110 2100
Fax: 011 2468 2144 / 2468 2145
Website: <http://bookstore.teri.res.in>

OPEN YOURSELF TO A WHOLE NEW WORLD OF ENVIRONMENT INTELLIGENCE!

**ORDER
YOUR COPY
TODAY**

PRESERVE • CONSERVE
INSPIRE • LEARN

ENVIRONMENT STUDIES AND SUSTAINABLE DEVELOPMENT

LIFE SCIENCES

ECOLOGY, ENVIRONMENT, AND FORESTRY

SUSTAINABLE ARCHITECTURE

ENVIRONMENT ENGINEERING

ENERGY

CHILDREN BOOKS

TERI publications also available at



For more information, log on to <http://bookstore.teri.res.in>