



biome
environmental trust

RIPPLES TO WAVES

Biome Environmental Trust's Journey So Far





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Biome Environmental Trust

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MESSAGE FROM OUR TRUSTEE

Vishwanath Srikantaiah
Founder - Trustee

If climate change is about carbon gases in the atmosphere, its impact is all about and on water. The hydrological cycle is disrupted; increased intense rains and droughts occur simultaneously in a year. In a society still dominantly agrarian in livelihoods and rural in character, struggling to get equity and employment for all, it is important that when we build resilience and sustainability around water, we put livelihoods at its heart.

When Biome works on the ground to find local solutions, it is predominantly women from the Dalit community who are involved in lake rejuvenation efforts, it is well-diggers who are digging new recharge wells and cleaning old wells to rejuvenate them, it is fishers who will keep lakes free of water hyacinth and plastics. The team works in a democratic manner, always willing to listen to the grassroots but also engaging with policymakers. Nudge CSR funding towards local, decentralized solutions, build awareness and agency in government schools say, but also work on large infrastructure projects to push towards learnings from the ground to be absorbed.

This is an endless and fascinating journey, and the engagement is the joy. We thank all our partners who have enriched us with their company on this journey.

WHO WE ARE

At Biome Environmental Trust, our team members come from diverse backgrounds with varied interests but are united by a common goal: to work together on projects that will benefit ideas around sustainable water and land management.

A foundational value that anchors our work and organisational culture, is the respect for knowledge generated by lived realities – social, ecological, and economic – of people and communities. Conversations with the farmer, the water-tanker wala, and the well-digger under a tree next to the lake become the university.

Our endeavour is to bring to bear informal forms of knowledge to strengthen and empower people's agency to positively help themselves and their ecology. Equally, our endeavour is to inform more formal forms of knowledge with the insights of such "living knowledge in action" and contest ossified wisdom. In this process, we come across or generate ideas that we try and incubate with their co-creators – the "stakeholders on the ground". We try and spread these ideas when we find them worth spreading. And we engage with the State to connect this practice to policy.

It is the love of such exploratory, socially driven learning-by-doing that has drawn all of us here at Biome together. All of us in the team have started off as friends exploring a neighbourhood lake or a well or as volunteers (as the 'social sector' calls it). We have then continued to explore, discover and reinvent ourselves through these explorations. We come from diverse backgrounds and disciplines, but it is the questions that the lives in our city generate, that form the common thread that binds us. For us, Biome has been a platform to grapple with these questions – and to contribute to answering them or to render them irrelevant by contesting how they are framed. It is with this spirit that we work, holding ourselves accountable to the honesty these questions demand and to the people who support and nurture these explorations.



Biome team, 2022

OUR APPROACH

The Trust has engaged with various people and institutions – families, residential colonies, apartment complexes, the hospitality industry, services industries, educational institutions, and government institutions – on land use and WatSan issues.

Water and sanitation are essential to an economy that is climate resilient, ecologically caring, and socially just. Our mission is to create systemic solutions that support this vision through the development of robust tools and strategies for decision-making about water use, management, and governance.

The Trust's overall approach is solution-centric, one of knowledge-based activism, focusing on creating nature-based systems, ensuring livelihoods, and establishing community participation so that there is ownership and involvement in taking care of these resources. The Trust believes that by providing access to information about how these resources can be used to their full potential, we can create a healthier environment for everyone.

“ **creating nature-based systems,
ensuring livelihoods, and establishing
community participation...** ”



Vishwanath interacting with a well owner

At Biome, the foundational value that anchors our work and organizational culture is the respect for knowledge generated by lived realities – social, ecological, and economic – of people and communities.

Our Vision

**Climate resilient,
ecologically caring, and
socially just knowledge-based
water systems for all biomes**

Our Mission

**Facilitating
livelihood-centred
sustainable water and
sanitation systems**



More than 100 houses draw 5-10 KL of water every day from this 50-year-old well. The community around the well prefers to withdraw water manually instead of using a motor pump to avoid excess usage and wastage of water.

OUR WORK

Over the years, the trust has engaged in several areas of work, which has had positive impacts on the environment and those dependent on it. Here are the four areas that the Trust focuses on:



01. Reimagining the role of shallow aquifer for towns and cities

Empowering well-diggers to play a vital role in revitalising and sustaining shallow aquifers for urban water needs.



02. Fostering water literacy through school partnerships

Educating and engaging children in water conservation and sustainability efforts through activity-driven and experiential projects.



03. Redefining wastewater use as a climate mitigation strategy

Including farmers and informal sector workers in resource recovery from wastewater and faecal sludge reuse.



04. Encouraging public involvement in water management

Empowering citizens to actively participate in water management and conservation initiatives to create a sustainable and water-resilient society.



Fishermen at a lake

01

Reimagining the role of shallow aquifer for towns and cities



Well diggers digging a recharge well

Photo Credit: Sayan Hazra

There is a great diversity of urbanisation today in the country, from the metropolitan city to the census town. A common thread in this urbanisation is the critical role groundwater plays in the emergence and evolution of urban areas.

The Kuls and Stepwells of Western India, the Ahar Pynes and Baolis of the Indo-Gangetic Plains, and the Kalyanis and Pushkaranis of South India stand testimony to the civilisational heritage that the shallow aquifer represents in India. We also have living knowledge of groundwater in the livelihoods of well-diggers and stone workers – the Mannu Vaddars and the Kallu Vaddars – of the country. Yet as the country urbanises, our open wells fall into disrepair, fill up with garbage and lose their existence to real estate pressures.

Our vision is simple. We want cities to understand what is happening beneath their feet and take ownership of their own water resources. We have been working with well-diggers to contemporise this heritage, reimagine the shallow aquifers' role in the city, reclaim open wells, and dig new recharge wells, to integrate them into the water supply for our towns and cities.

An open well, full of safe water, is a vision of a well-managed city - as this represents our heritage, and our ability/responsibility to manage water. Not only is it indicative of how well we manage our water, but it also has the lowest economic cost, with the least carbon emissions, and uses only a tenth of energy leading to increased savings. Therefore, we see open wells as a solution and strategy to mitigate adverse climate changes.

“ Earlier, people from every household would get a well dug. This has decreased now. This has pushed us to go from house to house seeking work.
— Ramakrishna, well-digger ”







Well-diggers cleaning and restoring an open well in Hunasamarahalli Town

Photo Credit: Sayan Hazra

The humble recharge well (structurally no different from the open well) becomes a tool to work towards this vision of filling up our shallow aquifer and thus enable safe access to underground supplies without risking depletion (depending on the rainfall) and pollution. The recharge well, when adopted by each and every household, also mitigates flooding in the city. Our **"Million Wells for Bengaluru"** campaign, aims precisely to work towards this vision by helping communities – citizens and institutions alike – develop a sustainable approach to managing groundwater resources through education and outreach programs.

**POLICYMAKERS TAKE INSPIRATION FROM THE
MILLION WELLS CAMPAIGN**



-  TACKLES THE IMPACTS OF UNEXPECTED & INTENSE RAINFALL
-  REDUCES WATER SCARCITY
-  MORE RAINFALL PERCOLATION = RECHARGED LAKES
-  REDUCES ENERGY CONSUMPTION & CARBON EMISSIONS
-  RECHARGES THE GROUNDWATER TABLE
-  MITIGATES URBAN FLOODING

Million Wells 2.0

As part of AMRUT 2.0, a pilot project is planned for 10 cities on shallow aquifer management, initiated by the Union Ministry of Housing and Urban Affairs. The project has identified recharge wells as key to improving groundwater availability. It covers **Chennai, Dhanbad, Gwalior, Hyderabad, Jaipur, Kolkata, Rajkot, Thane, Pune, and Bengaluru**. The project is led by the National Institute of Urban Affairs, a national think-tank on urban planning and development. Biome Environmental Trust and Advanced Centre for Water Resources Development and Management (ACWADAM) are the technical experts.

WHY SHOULD YOU SUPPORT THE MILLION WELLS CAMPAIGN?

Project impact

SOCIAL - ENVIRONMENTAL - ECONOMIC



LIVELIHOOD SUPPORT FOR TRADITIONAL WELL DIGGERS & RING MAKERS



LOW ENERGY & LOW COST OF OPEN WELL WATER



REDUCED COSTS OF FLOOD MANAGEMENT FOR THE CITY



REDUCED COSTS OF SEEPAGE MANAGEMENT



STORM WATER & FLOOD CONTROL



IMPROVED WATER QUALITY



BETTER SOIL & LAKE HEALTH



INCREASED GROUNDWATER TABLES



MEETING WATER DEMAND



RECONNECTING TO OUR OPEN WELL HERITAGE

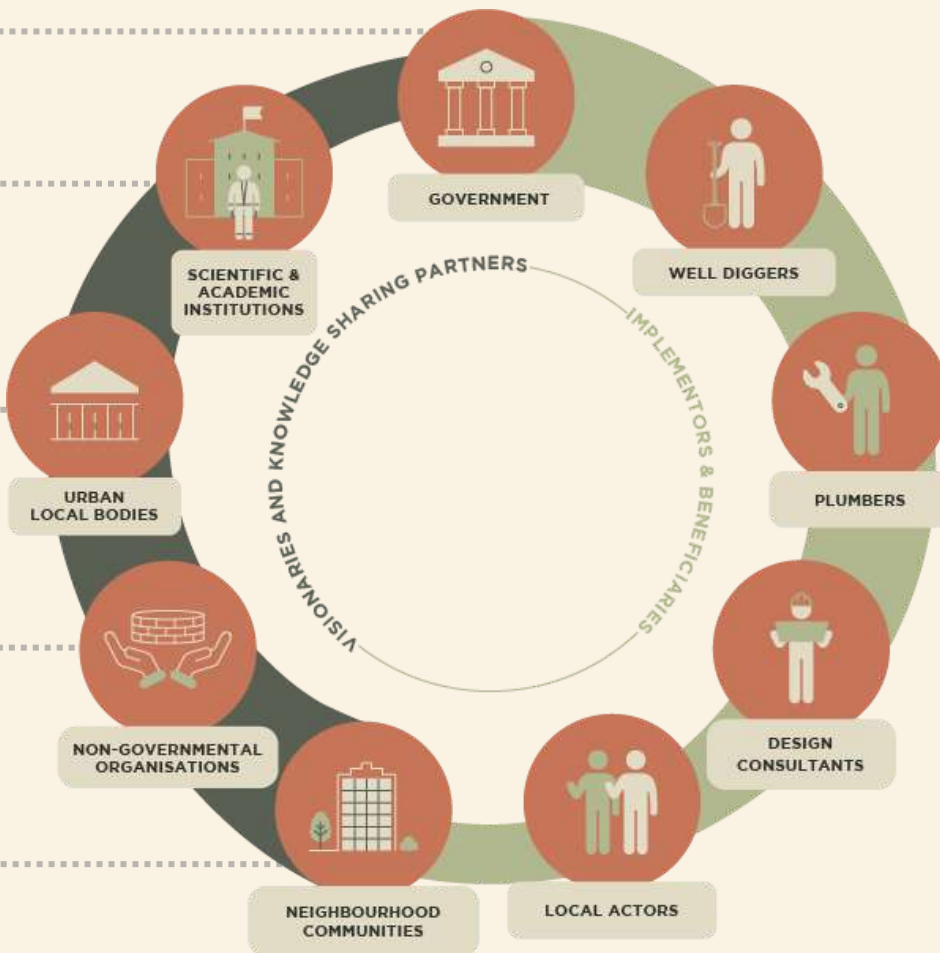


EMPOWERMENT OF WELL-DIGGERS



COMMUNITY-MANAGED RESOURCE

Stakeholders



The idea is to build a water culture in the city by bringing YOU, as a citizen, together with several other stakeholders.



By channeling a fraction of the 3.0 million liters of per-acre rainfall into groundwater, the city's water needs could be met, **decreasing reliance on the Cauvery River.**



Open wells water costs around **1% of the cost of Cauvery water.** This is a far more **affordable** option.



Moving towards water sensitivity - the story of Cubbon Park, Bengaluru

Cubbon Park, situated in the heart of the city, is an icon of Bengaluru, and a much sought-after green space. With several interventions, the park is now a model that has demonstrated how the management of the shallow aquifer at a park can be a way to meet its water requirements. In this case, open wells at the park provide water, and recharge wells and ponds replenish the aquifer. The park can recharge up to 100 million litres annually as a result of the work that has been done.

The park hosts nearly 6,000 trees and plants, which makes water an indispensable resource for its upkeep. Seven open wells were desilted in 2018. These wells were then found to yield up to 60,000 litres of water daily. The water from these wells is used for watering the gardens.

To manage the shallow aquifer and to compensate for the extraction of water from these wells, 73 recharge wells of 3ft diameter and up to 15ft depth were dug and two ponds were rejuvenated. These are expected to recharge groundwater and serve the purposes of recreation, flood control, climate control, and an increase in urban biodiversity.

In collaboration with the artist community of Bengaluru, a series of art installations and events were conducted at the Cubbon Park metro station to allow for widespread communication and understanding of the shallow aquifer in Bengaluru. A mural was created with mud obtained from the wells at Cubbon Park. The mural tells the story of the well-digging community (Bhovi / Mannu Vaddar) in Bengaluru.



Reviving Cubbon Park's open wells and digging recharge wells was carried out by Friends of Lakes (a citizens' movement), Biome Environmental Trust, India Cares Foundation, and the State Government's Horticulture Department. The mural was done in collaboration with the Srishti Institute of Art, Design and Technology and Bengaluru Metro Rail Corporation Limited.

02

Fostering water literacy through school partnerships



Students understanding how a rainwater filter works

Water literacy is a critical skill for children. It is important to engage with children and expose them to activities that increase their understanding of the basics of water management: how it flows, how they can conserve it in their daily lives, what happens when it is polluted or overused, and how they can help and protect themselves and the environment from natural disasters like floods and droughts, which are becoming more frequent as our climate changes.

Biome has been working with rural and peri-urban government schools and urban private schools to implement ecological water practices, simultaneously achieving education goals, environmental goals, and goals of resource security for the schools. This engagement with schools is done in various activity-driven and experiential ways - through RWH implementation in schools, training, internships, and volunteer work - to help students gain an understanding of how they can become responsible stewards of the environment. The projects span schools in Karnataka, Tamil Nadu, Madhya Pradesh, Arunachal Pradesh, Meghalaya, and Tripura.

The intent of implementing rainwater harvesting in schools is not only to provide additional water and secure supply but also to engage with the students and teachers to create awareness of the immediate water issues in their surroundings, to instil values of water conservation, and ensure complete ownership of the rainwater harvesting system and its appropriate use. In the rural context, it also serves as an excellent entry point to water and sanitation issues in the villages. This holistic approach contributes to creating a more water-resilient and environmentally conscious community.

The program approach has to be as 'local' and 'participatory' as possible. The work is carried out by local service providers and in collaboration with the teachers and students of the school.



Session on water literacy and maintenance of RWH infrastructure, Marasur School

Asking the right questions to understand the water context of your school will help make your campus more water sustainable.

In this image, a typical school's water sources, use and disposal processes are numbered.

Local Water Context



1 Where does our school's water come from?

- ▶ Borewell
- ▶ Tanker
- ▶ Rainwater
- ▶ Lake

2 Where is our school's water stored?

- ▶ Over head tank
- ▶ Sump
- ▶ Water barrels or drums

3 Where can we access our water?

- ▶ Through many taps

4 What do we use the water for?

- ▶ Handwashing
- ▶ Kitchen
- ▶ Washing vessels
- ▶ Drinking
- ▶ Toilets
- ▶ Gardening
- ▶ Cleaning the school

5 Where does the water go?

- ▶ Into the open drain pipe
- ▶ Into the septic tank

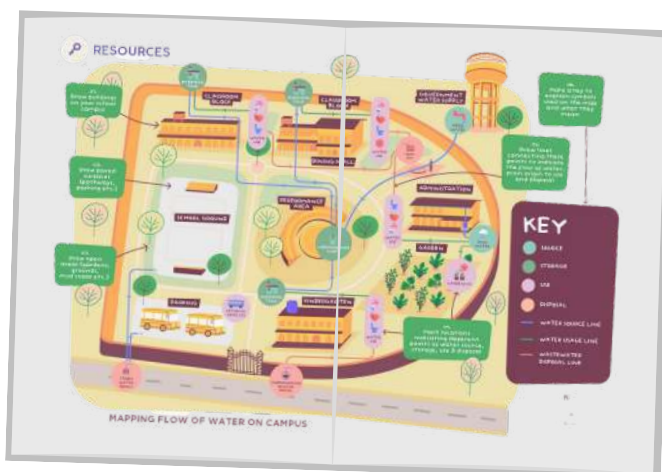
Local Water Context

Biome has also developed education modules, posters, videos, and short movies to emphasize the importance of water and sanitation. Under Wipro's sustainability program for schools and colleges, Biome has designed the **Earthian Booklet** on water and sustainability, a set of 10 activities to help understand local water resources and draw connections with our ecology and society, which is now being used by 5000+ schools across the country.

“

Biome has beautifully put together the Wipro Earthian Water Booklet. All the topics related to water that have been introduced in the booklet are current and nuanced, and have elevated the learning experience for the students and teachers by several levels. The activities are fun, exploratory and bring out the creative side of students. At the same time, they push them to think about relevant and pressing issues concerning water both locally and globally.

Both teachers and students have enthusiastically embraced the booklet's content. Numerous educators have expressed how the activities are clear and engaging, proving to be an excellent in-class and extracurricular tool that brings an enjoyable aspect to learning about water and its significance.



— Arathi Hanumanthappa,
Program Manager, Wipro Earthian



Activities conducted in schools, as part of the Earthian Water Project



Harvesting Hope - learnings from Sonnappannahalli School's experience

Biome has worked in Hunasamarannahalli TMC, Yelahanka Taluk, Bangalore North, which is under severe water stress and has been classified as overexploited by the Central Groundwater Board. This situation has had a particularly high impact on the government schools in the region, which go through a daily struggle to access water.

Puravankara Limited, ITC Limited, and Athaang Toll Plaza, in partnership with Biome, have embarked on a project to implement rooftop rainwater harvesting and improve water infrastructure in several government schools in this area.



Rainwater harvesting in Sonnappannahalli Higher Primary School and Anganwadi

Rooftop rainwater harvesting has been implemented in the Government Higher Primary School, including an Anganwadi, by creating a 12 KL storage sump, whose overflow is directed into a recharge well for groundwater augmentation.

A large open well (16.5 feet in diameter and 25 feet deep) present on the school premises was also rejuvenated with the help of well-diggers, from which the water is presently used for gardening needs.

Going beyond the initial mandate of rainwater harvesting, Biome also reviewed and helped upgrade the school's overall water and sanitation infrastructure. For example, aerators/flow restrictors were installed on all the taps in the handwash area, which saves up to 55-75% of water for every handwash.



Students and teachers carefully watching a demonstration

To ensure ownership of their water infrastructure, a water literacy activity was conducted, covering topics like the local water cycle, water demand calculation and management, RWH system maintenance, and more. Furthermore, a water quality learning centre has been set up, and students received training to conduct quality tests on different types of water available in the school like borewell water, rainwater, water from the RO filter, lake water, etc. A rain gauge also has been installed on the campus to precisely measure the rainfall received by the school.



Session on Water Quality by Kiran Kumar and team from INREM

In collaboration with ITC Limited, Biome organised an exhibition called **Parisara Habba**, focusing on water, waste, and biodiversity. This event involved participation from government agencies, NGOs, students, and citizens. As part of the exhibition, a drawing competition was held for the students on the theme of Environment Conservation, and all participating students were rewarded for their efforts.



Students at the Parisara Habba exhibition interacting with visitors and displaying their drawings

During the above engagements, the Biome team discovered other dilapidated open wells in Hunasamaranahalli TMC, Yelahanka Taluk, which could be revived and integrated into the water supply system. With funding support from Puravankara CSR, the team has **revived six open wells**. Approximately 300 KLD of water is pumped from three open wells, which are being metered. In the case of the three other open wells, water is being drawn manually and used by a few households to prevent over-extraction and wastage. This serves as a case study to realise the importance of shallow aquifers and their potential contributions to achieving water security.



More than 50 houses draw around 5-10 KL of water from this well daily, since the panchayat water supply is insufficient. At 2 wells the local community has insisted the authorities NOT to install electrical pumps as that often results in water wastage, leaving them without water during summer when it is needed most.

03

Redefining wastewater use as a climate mitigation strategy



Harvesting dried sludge from the STP, Jakkur

Cities are not just densely populated urban areas engaged in non-agricultural activities, they also play a significant role in the broader water flow arrangement. Unfortunately, they are often perceived as unsustainable and highly polluting due to their energy and water demands, with wastewater generation seen as a major problem. However, Biome's **research study** has explored an alternative perspective, viewing wastewater reuse as a climate mitigation strategy that contributes to the water and nutrient cycle, effectively making cities net producers.

While the importance of resource recovery and public health in wastewater management cannot be understated, it is equally crucial to address the challenges faced by livelihoods in the informal sectors of water, sanitation, and hygiene (WASH). Given inadequacies and gaps in municipal service provision, informal enterprises like water tankers and vacuum trucks play a crucial role in providing services and facilitating resource recovery through wastewater and fecal sludge reuse as fertiliser.

In crafting solutions for sanitation, it is essential to incorporate a component that strengthens livelihoods, in addition to safeguarding public and environmental health. The study emphasizes the pivotal role of the informal sector in urban sanitation and the necessity to bolster sanitation services. However, to address existing risks in the system and protect public health and the environment, Biome advocates adopting the **World Health Organisation's Sanitation Safety Plan (SSP) tool**, to improve sanitation systems incrementally. This involves prioritising interventions and investments to create robust risk barriers before major investments in drainage systems and treatment plants are made.



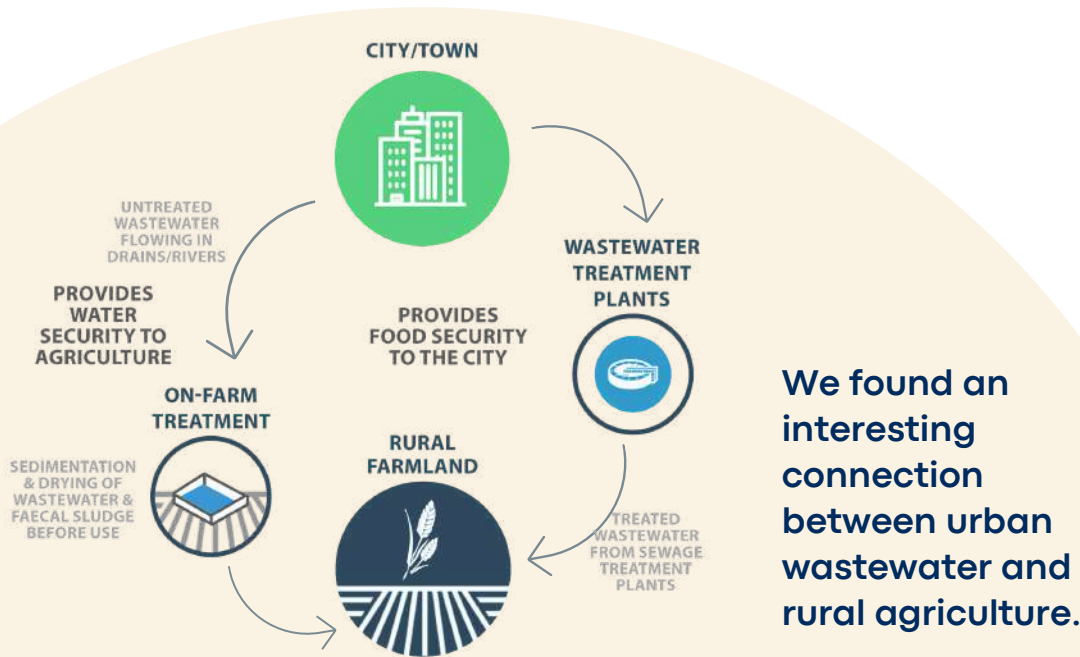
A vacuum truck (honey sucker) clearing a sewage pit

The research study has also shed light on the potential of wastewater reuse as a climate mitigation strategy, particularly in cities like Bengaluru. While the city enjoys a perennial water supply, its surrounding agricultural hinterlands, such as Kolar and Chikkaballapur, grapple with a state of permanent hydrological drought, relying heavily on the monsoon for irrigation and domestic water needs. However, in light of the hinterland's vulnerability to climate change, wastewater can be transformed into a perennial resource for agriculture, safeguarding farmers' livelihoods and bolstering the city's food security.

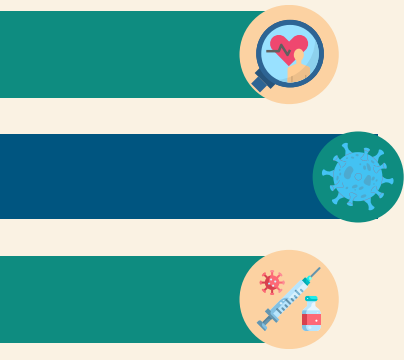
Biome's research endeavours are centred on comprehending the status of wastewater reuse in agriculture, assessing associated health and environmental risks, and identifying policy and investment directions for improved wastewater management, adhering to "fit-for-purpose" standards. Collaborating with various esteemed organizations like NIUA, Megh Pyne Abhiyan, People In Centre, LeDeG, and BORDA, Biome has extended its research efforts to several towns and cities across India.

The Trust's efforts have significantly influenced the Karnataka State Wastewater Policy and contributed to the formulation of Karnataka Aayoga's new State Water Policy. The Trust has also contributed to the WHO's Sanitation Safety Planning manual.

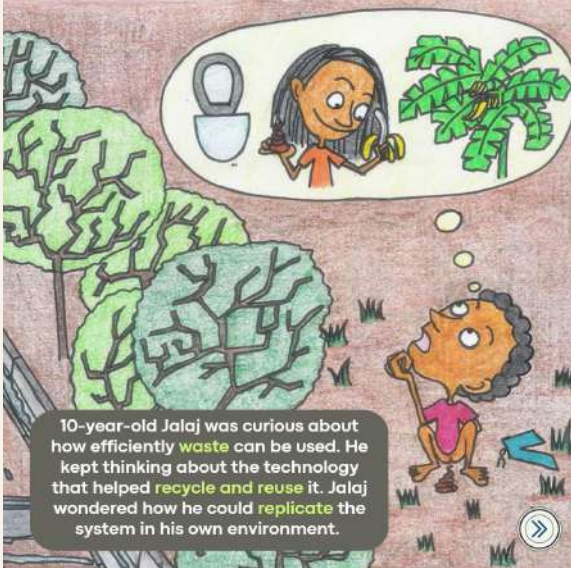
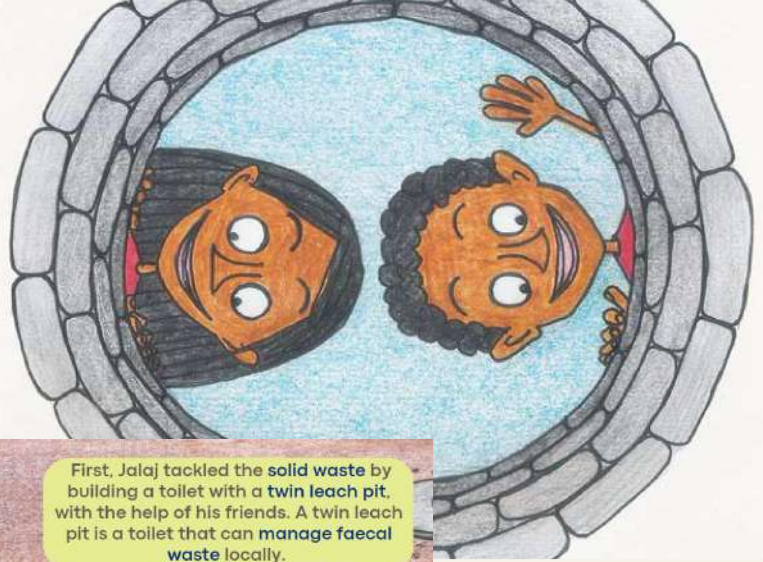
Overall, Biome's collaborative research and partnerships with various organisations aim to bridge the data gaps concerning the health impacts of wastewater reuse and inform policies that drive sustainable water and environmental management practices in India.



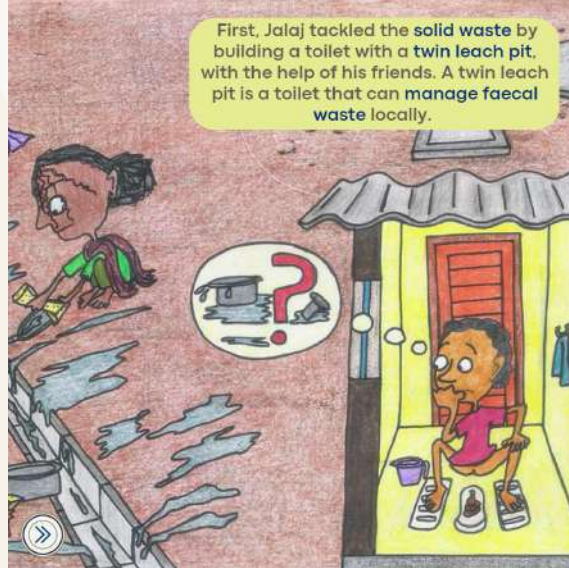
Wastewater contains valuable nutrients that can reduce the need for fertilisers in farming. However, there is a lack of organised data on the health impacts of untreated wastewater and faecal sludge reuse. Important parameters to assess water quality and safety, such as heavy metal levels, pharmaceutical drugs, and pathogens, remain unknown. Biome is collaborating with organisations like the Tata Institute for Genetics and Society and Molecular Solutions Care Health, to address this gap, inform health, water, and environmental policies, as well as antibiotic prescription practice.



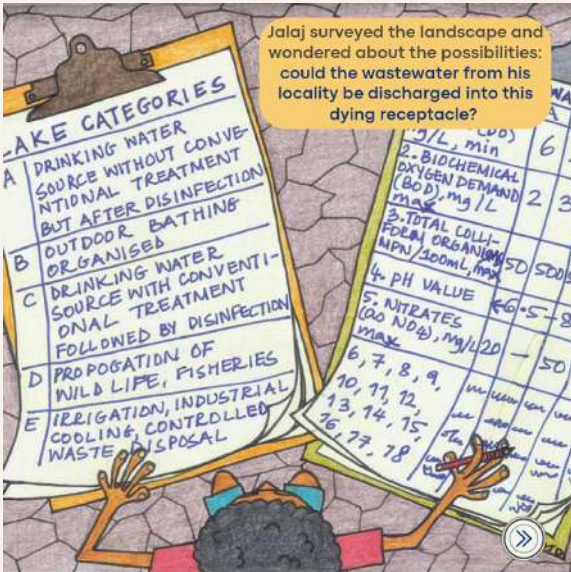
Snippets from the comic book
**“Neera, Jalaj and the
 Case of Untreated Waste”**
 that tell us how we can achieve
 sustainable waste management!



10-year-old Jalaj was curious about how efficiently **waste** can be used. He kept thinking about the technology that helped **recycle and reuse** it. Jalaj wondered how he could **replicate** the system in his own environment.

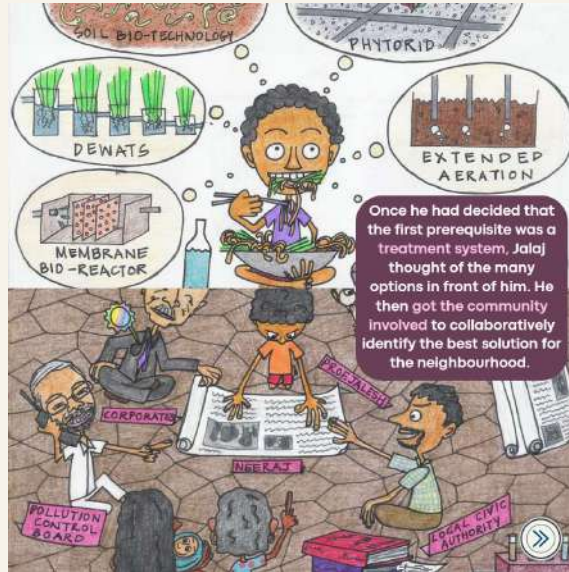


First, Jalaj tackled the solid waste by building a toilet with a twin leach pit, with the help of his friends. A twin leach pit is a toilet that can manage faecal waste locally.

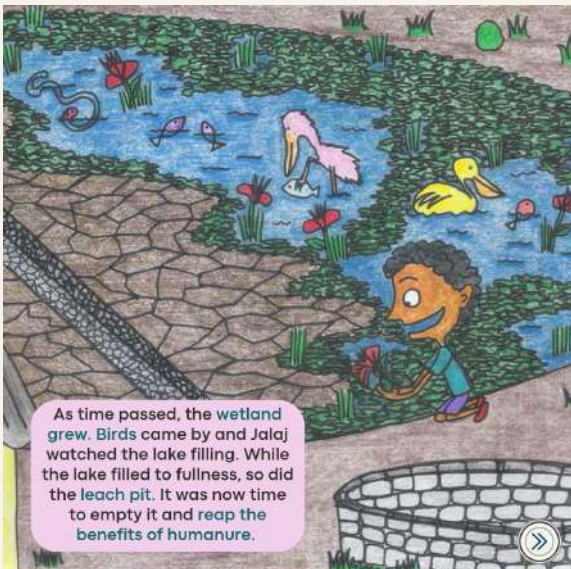


Jalaj surveyed the landscape and wondered: could the wastewater from his locality be discharged into this dying receptacle?

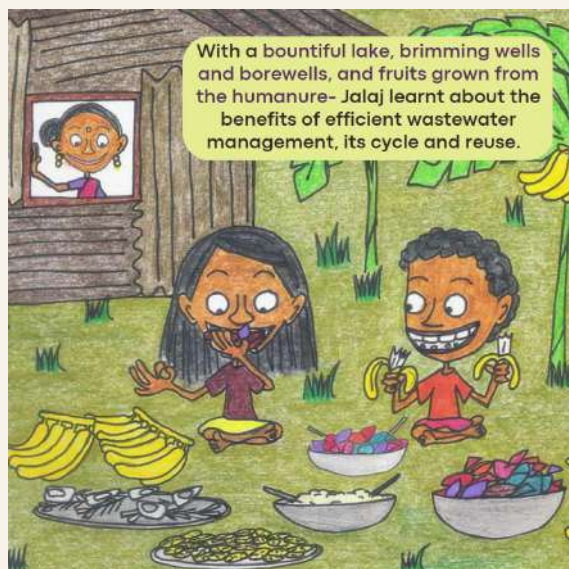
LAKE CATEGORIES	1. TDS, mg/L, max	2. BIOCHEMICAL OXYGEN DEMAND (BOD), mg/L, max	3. TOTAL COLIFORM ORGANISM (MFC) /100ML, max	4. PH VALUE	5. NITRATES (NO ₃ -N), mg/L, max
A DRINKING WATER SOURCE WITHOUT CONVENTIONAL TREATMENT BUT AFTER DISINFECTION	6	2	3	5-8	50
B OUTDOOR BATHING ORGANISED					
C DRINKING WATER SOURCE WITH CONVENTIONAL TREATMENT FOLLOWED BY DISINFECTION					
D PROPOGATION OF WILD LIFE, FISHERIES	6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18				
E IRRIGATION, INDUSTRIAL COOLING, CONTROLLED WASTE DISPOSAL					



Once he had decided that the first prerequisite was a treatment system, Jalaj thought of the many options in front of him. He then got the community involved to collaboratively identify the best solution for the neighbourhood.



As time passed, the wetland grew. Birds came by and Jalaj watched the lake filling. While the lake filled to fullness, so did the leach pit. It was now time to empty it and reap the benefits of humanure.



With a bountiful lake, brimming wells and borewells, and fruits grown from the humanure- Jalaj learnt about the benefits of efficient wastewater management, its cycle and reuse.



Integrated Rural Development with Arohana Grameenabhivruddhi Samsthe

Kolar district, located on the southern plains of Karnataka, falls in the eastern semi-arid zone and faces a severe shortage of water sources. Supported only by small and seasonal tributaries, it is among Karnataka's six permanently drought-prone districts and has experienced hydrological drought in the years 2007, 2009 and between 2011-2016.

The agricultural sector, being heavily dependent on the monsoon, is chronically affected by water scarcity, drought and climate variability, leading to poverty, high migration and vulnerability to climate change impacts.

In response to the water crisis in Kolar, the Karnataka government introduced the KC Valley project. This project aims to lift 440 million litres of secondary treated wastewater per day from the K & C treatment plants of the Bangalore Water Supply and Sewerage Board (BWSSB) and pump it to 134 lakes in the drought-prone districts of Kolar and Chikkaballapur. The objective is to replenish the depleted groundwater by allowing the treated water to percolate down from the lakes and tanks, making it available to farmers through open wells and borewells for irrigation.

This presents a unique opportunity to understand and implement the local responses that are necessary to leverage a state-wide intervention for benefits to accrue to local populations as well as the natural environment, thus making life and livelihoods resilient and viable for them. By approaching the project through community engagement, more opportunities for social equity and distribution of the benefits can be captured.



Arohana team on the field

Local non-governmental organisations (NGOs) can play a vital role in leveraging the programs initiated by the local government, to create sustainable livelihood opportunities. By doing so, they foster a sense of ownership among the villagers, empowering them to utilise their local resources effectively. Water becomes a transformative instrument, not only ensuring livelihood security but also driving the overall development of the community.



Team cleaning up the feeder channels of a lake



Biome has been working with Arohana Grameenabhivruddhi Samsthe - a women-headed NGO based in Kolar. They have vast experience in rural development and are working towards women's empowerment, environmental protection, and child development through strengthening the Gram Panchayat.



Celebration of 'World Nature Conservation Day' in Pichguntlahalli village

Arohana has been working on water management in the 13 villages of O Mittur Panchayat. Many activities have been initiated in the past year, which include mapping 22 lakes in the Panchayat, setting up rooftop rainwater harvesting systems in three schools, tree plantation drives, and documentation of the rejuvenation work done.

04

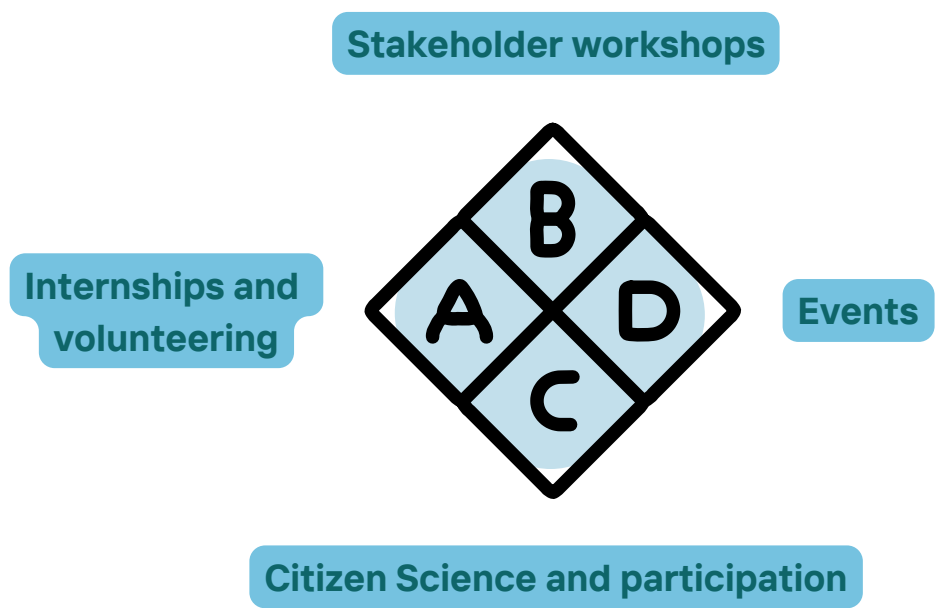
Encouraging public involvement in water management



Government Officials meeting Citizens at Jakkur Lake

Biome emphasises the importance of engaging various stakeholders and facilitating cross-pollination of ideas. We provide technical assistance and knowledge training to empower stakeholders in developing locally relevant solutions based on their own values and priorities. This approach aims to foster sustainability and adaptability in addressing evolving challenges. Biome offers volunteering/internship opportunities, along with events, workshops, and a citizen science platform to encourage active participation, knowledge sharing, and constructive discourse for positive and inclusive outcomes.

Biome's diverse engagement initiatives are:



Workshop participants observing trenches being dug

A. Internships and volunteering

Biome regularly offers internships and collaborates with students from various universities, such as the University of Washington's Grand Challenges Impact Lab, Wipro's Earthian, CEPT Ahmedabad, Leaders' Quest, and other organisations. These internships provide participants with hands-on experience and a deeper understanding of water-related issues while also allowing Biome to spread awareness about their work. The **interns' blog** serves as a platform for interns to document their assignments and share their perspectives on water-related topics.



Interns examining the open well at Sonappanahalli School in Devanahalli



Interns at a kere (lake) in Honnasetthalli village, understanding the components of a lake-based irrigation system

“

My internship with Biome Environmental Trust was an eye-opening experience in sustainable water management. I had the privilege of exploring innovative ideas on groundwater management, through the Million Wells campaign and lake documentation projects. Field research allowed me to interact with stakeholders, including farmers and grass-cutters, providing valuable insights.

Mapping wells, lakes, and water bodies using QGIS and Google Earth Pro allowed us to trace progress and advocate for urgent action to address water stress in Karnataka.

I'm grateful to my mentors, Ms Fawzi and Ms Shubha, and to the TERI School of Advanced Studies, Wipro, and Biome for this opportunity to tackle one of the pressing issues of our time – groundwater depletion.

— Farha Khan
MBA Sustainability Management (2021-23),
TERI School of Advanced Studies

B. Stakeholder workshops

Biome conducts annual workshops on water conservation for diverse groups, including students, faculty, RWAs, corporates, and government officials. These workshops cover technical and awareness-related aspects, addressing sustainable water management practices, rainwater harvesting system design, and wastewater management. Field visits to project sites provide participants with an in-depth understanding of the political, technical, and socio-economic dimensions of water management. This experiential learning approach enables participants to bridge theory and practice, empowering them to take practical actions for personal and community-level water conservation.

“

Our friend, Lakshmaiah, has brought us to this plumbers' training program. I'm very happy to be a part of this training program. There are so many things in our society which we can learn about - rainwater harvesting and how we can use it without wasting it. In this modern world, due to man's greed and overexploitation of water, the level of groundwater is decreasing. We are using water from below 1000 feet, people are suffering from many bone-related diseases. The use of fluoride-containing water is affecting health badly. To avoid all these health issues, harvesting rainwater, filtering, and consuming it is the best solution. The government has also made RWH compulsory for any new construction, and is spreading awareness about the uses of RWH. This kind of workshop helps in clarifying doubts and correcting mistakes. I really feel blessed to be part of this training program.

— Narayan Murthy
Local plumber, Bagalur



Narayan Murthy speaking during the training program

C. Citizen Science and participation

Water bodies serve diverse functions such as domestic use, wastewater dilution, flood control, green space management, groundwater recharge, biodiversity support, and temperature regulation. Biome and ATREE collaborated on a multi-year project called **Citizen Science** to create a scientific understanding of lakes and engage citizen groups in reimagining their uses and values. Biome conducted events and workshops to educate citizens about their lakes, while also developing a **Lake Vision Document (LVD)** that outlines strategies for lake revival and restoration, incorporating community inputs and serving as a basis for a technical working plan.



Lake walks



Exposure events on groundwater for citizens

“

The workshop helps enthusiasts to get started with understanding diversity and connect and share the same with people. For those who already have experience, the workshop expands their knowledge and helps in better engaging citizens with biodiversity.

— Chandu Bandi
Naturalist, Bengaluru

D. Events

Events and outreach activities play a crucial role in advancing the discourse on environmental sustainability. Biome Environmental Trust, as a thoughtful "do" tank with its practice-to-policy bridge approach, has organised and participated in numerous events, both online and offline.

These initiatives serve as platforms to engage with diverse stakeholders, exchange ideas, and foster collaborations. By bringing together experts, policymakers, communities, and individuals, these events contribute to raising awareness, sharing knowledge, and finding practical solutions for pressing environmental challenges.

The Trust's commitment to these activities reflects its dedication to creating a positive impact on the environment and society at large. Here are a few events we have organised and participated in:

Urban Waters Forum March 2019 | March 2023

Biome, in partnership with Wipro Foundation and ACWADAM, organized the Urban Waters Forum (UWF) in 2019 and 2023, bringing together over 60 water practitioners from across India.

The forum aimed to promote knowledge sharing and explore advancements in topics such as local water resource management, including the city's shallow aquifers, used water management, and the city's connection with the monsoon.



Wells of India March 2022 | April 2022

In line with the UN's theme for World Water Day, **"Groundwater: Making the invisible visible,"** Biome Environmental Trust hosted two webinars titled 'Wells of India.'

The aim was to shed light on the significance of groundwater and its sustainable management.

Bringing together experts and practitioners from various cities and states across India, the event provided a platform for speakers to share their experiences and insights on engaging with groundwater-related projects.



Namma Ooru Namma Neeru November 2021

The Namma Ooru Namma Neeru event, organised by Art in Transit and Biome Environmental Trust, celebrated the traditional well-digging Mannu Vaddar Community and their vital role in Bengaluru's water management.

Held on Nov 20, 2021, the event featured an evening of **poetry by Kaavya Sanje** and a **virtual tour of the mural at the Cubbon Park metro station**.

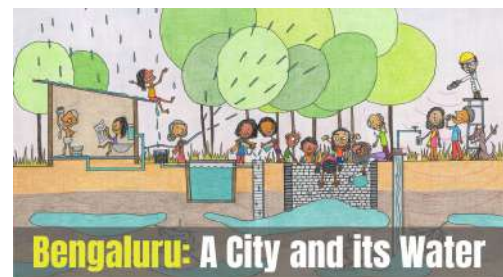


TEDxBiomeEnvironmentalTrust October 2020 | October 2021

Biome organized two TEDx events in 2020 and 2021 on the themes '**Bengaluru - A City and its Water**', and '**A City and its Used Water**'.

The events featured speakers from various backgrounds, including residents, entrepreneurs, government agencies, and experts, who shared insights on water management at different levels, from individual households to the entire city.

One noteworthy aspect of the second event was the focus on the role of women in wastewater management and the need for gender-inclusive approaches to water management.



Past, Present and Future

Hear from the people of the city

Samaaj
Citizens, RWAs, NGOs
Sarkaar
Experts, Policy makers
Bazaar
Entrepreneurs, Service providers

JOIN US FOR COUNTDOWN EVENT
OCT 17, 2020 ONLINE AT 11 AM

To Register: <https://zoom.us/joining/register?fbclid=IwAR1vG8tFC0ut>

A City and its Used Water

Hear from

Samaaj
Listen to steps taken by citizens and RWAs to achieve water sustainability by treating and reusing their wastewater
Sarkaar
Listen to policy makers and experts share their vision and ideas on the best wastewater management and monitoring practices
Bazaar
Listen to entrepreneurs and service providers talk about latest technologies of treating wastewater

Rainwater Harvesting Theme Park July 2020 | November 2021 | February 2022

Biome, in partnership with Bangalore Water Supply and Sewerage Board (BWSSB) and Citizen Matters, initiated a series of three webinars that spotlighted the pivotal role of BWSSB's Rainwater Harvesting Theme Park.

The events took place on July 10, 2021, titled **Catch the Rain, Bengaluru**; on November 20, 2021, titled **Namma Neeru Namma Javabdaari (Our Water Our Responsibility)**, and on February 26, 2022, titled **Well Connected - Groundwater and Wells**.



OUR FUNDERS

Our deepest gratitude for your unwavering support and generous contributions to the Biome Environmental Trust and its critical work in advancing environmental sustainability. Your invaluable support has been instrumental in enabling us to pursue our mission as a thoughtful "do" tank and bridge the gap between practice and policy in the realm of environmental sustainability.

As we continue our journey, we remain committed to delivering impactful and meaningful outcomes. Your continued support is vital in driving positive change and creating a lasting impact on the environment and society as a whole.



Seeing beyond

OUR PARTNERS

We've been fortunate to collaborate with remarkable individuals, organizations, and communities who share our environmental passion. At Biome, we firmly believe in collaborative impact, and your expertise and enthusiasm have enriched our initiatives, moving us closer to our collective efforts in creating climate-resilient, ecologically conscious, and socially just water systems.



+ volunteers and well diggers

AWARDS & RECOGNITIONS

- Million Wells for Bengaluru campaign wins the **Transformative Cities People's Choice Award 2021-22 in the water category**
- Shubha Ramachandran from Biome is a **winner at the BENGALURU WOMAN ACHIEVERS AWARD 2022**
- Biome Trust gets **second place in FICCI Water Awards**
- Won the **Impactathon 2019 for problem solving using tech innovations**
- Kiran Kumar Sen and Shreyas S of Biome won the **Wipro Sustainability Seeding Fellowship for 2017**
- Vishwanath Srikantaiah: **Rainwaterclub won the Namma Bengaluru award in 2010** in the category of Private Institutions

Glimpses of more events!



Bhoomi workshop centred around inspiring an application-oriented approach. Students discussed problems that were contextual to their cities, towns and villages.



Well-diggers meeting to learn from their experiences on groundwater firsthand. An exercise to mark the wells they have dug on a printed map of the city



The Arohana team celebrated 'World Environment Day' at Pichhaguntlahalli village, by conducting plantation drives around lakes and in homes.



Stakeholder meeting for Yelahanka Taluk to discuss a water security plan, and to include shallow aquifers and their potential contributions to achieving water security

FINANCIALS

2019-2020

Biome Environmental Trust

#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097

Income & Expenditure Account For The Period Ended 31st March 2020

PARTICULARS	Schedule	Current Year	Previous Year
		31/3/2020	31/3/2019
INCOME			
Donations Received	10	39,56,162	12,89,853
Balance No Longer Payable		-	29,124
Interest on FD		1,32,658	1,90,922
Interest on IT Refund		17,260	3,377
Reimbursement Income		1,97,844	-
Total Income		43,03,924	15,13,276
EXPENDITURE			
Administrative Expenses	11	1,98,714	4,85,708
Project Expenses	12	41,44,973	43,99,548
Depreciation	2	21,653	25,689
Total Expenditure		43,65,340	49,10,945
Surplus / (Deficit)		(61,416)	(33,97,669)
Provision for Taxation		-	-
Surplus / (Deficit) (Carried to Balance Sheet)		(61,416)	(33,97,669)

Significant Accounting Policies & Notes to Accounts

13

For Biome Environmental Trust



Trustee



Trustee



As per Our report of even date
For Ramesh Ashwin & Karanth
Chartered Accountants,




Prashanth Karanth
Partner

M No. 214235

F.R No. 010680S

Place : Bangalore

Date : 21.11.2020

FINANCIALS

2019-2020

Biome Environmental Trust

#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097

Balance Sheet As At 31st March 2020

PARTICULARS	Schedule	Current Year 31/3/2020	Previous Year 31/3/2019
<u>FUNDS AND LIABILITIES</u>			
Non Corpus Fund	1	27,27,062	27,88,479
Total Liabilities		27,27,062	27,88,479
<u>PROPERTY & ASSETS</u>			
Fixed Assets	2	1,22,196	1,43,850
<u>Current Assets, Loans & Advances</u>			
Fixed Deposits	3	17,20,412	21,26,024
Loans & Advances	4	12,000	12,000
Sundry Debtors	5	-	54,000
Other Current Assets	6	1,94,742	3,21,341
Cash and Bank Balance	7	9,18,473	2,60,878
Total Current Assets		28,45,627	27,74,243
<u>Less : Current Liabilities & Provisions</u>			
Provisions	8	2,20,415	78,062
Other Current Liabilities	9	20,346	51,552
Total Current Liabilities & Provisions		2,40,761	1,29,614
Net Current Assets		26,04,866	26,44,629
Total Assets		27,27,062	27,88,479

For Biome Environmental Trust



Trustee



Trustee



As per Our report of even date
For Ramesh Ashwin & Karanth
Chartered Accountants,




Prashanth Karanth
Partner

M No. 214235

F.R No. 0106805

Place : Bangalore

Date : 21.11.2020

FINANCIALS

2020-2021

Biome Environmental Trust

#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097

Income & Expenditure Account For The Period Ended 31st March 2021

PARTICULARS	Schedule	Current Year	Previous Year
		31/3/2021	31/3/2020
INCOME			
Donations Received	11	50,19,705	39,56,162
Interest on FD		1,00,330	1,32,658
Interest on IT Refund		-	17,260
Reimbursement Income		-	1,97,844
Total Income		51,20,035	43,03,924
EXPENDITURE			
Administrative Expenses	12	94,568	1,98,714
Project Expenses	13	40,65,354	41,44,973
Depreciation	2	18,305	21,653
Total Expenditure		41,78,228	43,65,340
Surplus / (Deficit)		9,41,807	(61,416)
Provision for Taxation		-	-
Surplus / (Deficit) (Carried to Balance Sheet)		9,41,807	(61,416)

Significant Accounting Policies & Notes to Accounts

14


For Biome Environmental Trust


Trustee


Trustee



As per Our report of even date
For Ramesh Ashwin & Karanth
Chartered Accountants,


Prashanth Karanth
Partner

Place : Bangalore
Date : 15.02.2021

M No. 214235
F.R No. 0106805

FINANCIALS

2020-2021

Biome Environmental Trust			
#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097			
Balance Sheet As At 31st March 2021			
PARTICULARS	Schedule	Current Year 31/03/2021	Previous Year 31/03/2020
<u>FUNDS AND LIABILITIES</u>			
Non Corpus Fund	1	36,87,164	27,27,062
Total Liabilities		36,87,164	27,27,062
<u>PROPERTY & ASSETS</u>			
Fixed Assets	2	1,03,891	1,22,196
<u>Current Assets, Loans & Advances</u>			
Fixed Deposits	3	16,82,675	17,20,412
Loans & Advances	4	12,000	12,000
Other Current Assets	5	2,84,305	1,94,742
Cash and Bank Balance	6	18,68,988	9,18,473
Total Current Assets		38,47,968	28,45,627
<u>Less : Current Liabilities & Provisions</u>			
Advances Received for Project	7	3,689	-
Trade Payables	8	34,294	-
Provisions	9	2,10,861	2,20,686
Other Current Liabilities	10	15,851	20,075
Total Current Liabilities & Provisions		2,64,695	2,40,761
Net Current Assets		35,83,273	26,04,866
Total Assets		36,87,164	27,27,062


For Biome Environmental Trust


Trustee


Trustee



As per Our report of even date
For Ramesh Ashwin & Karanth
Chartered Accountants,







Prashanth Karanth
Partner

Place : Bangalore
Date : 15.02.2021

M No. 214235
F.R No. 0106

FINANCIALS

2021-2022

Biome Environmental Trust			
#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097			
Income & Expenditure Account For The Period Ended 31st March, 2022			
PARTICULARS	Schedule	Current Year	Previous Year
		31/03/2022	31/03/2021
INCOME			
Donations Received	11	133,45,459	50,19,705
Interest on FD		61,968	1,00,330
Interest on IT Refund		-	-
Other incomes		3,689	-
Total Income		134,11,116	51,20,035
EXPENDITURE			
Administrative Expenses	12	4,59,793	94,568
Project Expenses	13	97,36,826	40,65,354
Depreciation	2	15,504	18,305
Total Expenditure		102,12,123	41,78,228
Surplus / (Deficit)		31,98,993	9,41,807
Provision for Taxation		-	-
Surplus / (Deficit) (Carried to Balance Sheet)		31,98,993	9,41,807
Significant Accounting Policies & Notes to Accounts	14		
For Biome Environmental Trust		As per our report of even date For Ramesh Ashwin & Karanth Chartered Accountants,	
 Trustee	 Trustee		 Prashanth Karanth Partner
Place : Bangalore			M No. 214235 F.R No. 010680S
Date : 28-09-2022			

FINANCIALS

2021-2022

Biome Environmental Trust			
#264, 6th Block, BEL Layout, Vidyaranyapura, Bangalore - 560097			
Balance Sheet as at 31st March, 2022			
PARTICULARS	Schedule	Current Year	Previous Year
		31/03/2022	31/03/2021
FUNDS AND LIABILITIES			
Non Corpus Fund	1	68,86,157	36,87,164
Total Liabilities		68,86,157	36,87,164
PROPERTY & ASSETS			
Fixed Assets	2	88,387	1,03,891
Current Assets, Loans & Advances			
Fixed Deposits	3	27,21,128	16,82,675
Loans & Advances	4	-	12,000
Other Current Assets	5	2,97,847	2,84,305
Cash and Bank Balance	6	48,97,499	18,68,988
Total Current Assets		79,16,474	38,47,968
Less : Current Liabilities & Provisions			
Advances Received for Project	7	-	3,689
Trade Payables	8	1,73,367	34,294
Provisions	9	8,88,641	2,10,861
Other Current Liabilities	10	56,696	15,851
Total Current Liabilities & Provisions		11,18,704	2,64,695
Net Current Assets		67,97,770	35,83,273
Total Assets		68,86,157	36,87,164

As per our report of even date

For Biome Environmental Trust

Trustee

Trustee



For Ramesh Ashwin & Karanth
Chartered Accountants

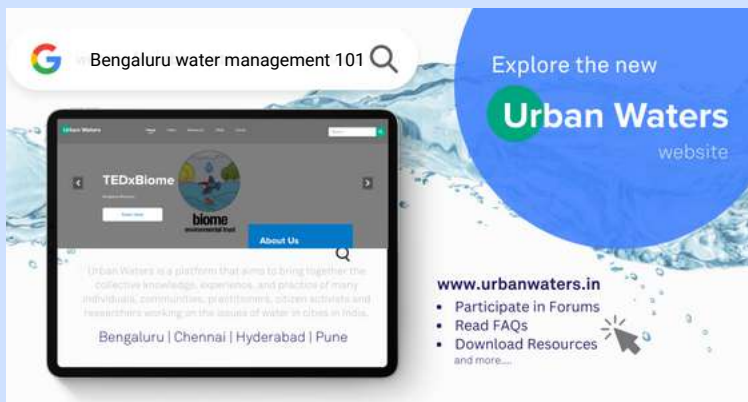


Prashanth Karanth
Partner

Place : Bangalore
Date : 28-09-2022

M No. 214
F.R No. 010. 39

urbanwaters.in is a web space that seeks to inform, guide, and provide resources to make us water-literate, solve our individual or community water problems and act responsibly by taking care of our common urban water resources. It seeks to help make us a part of the solution rather than part of the problem.



**WATER MANAGEMENT
MADE EASY ON URBANWATERS.IN**



Biome Environmental Trust's website:
biometruster.org

Knowledge dissemination products on:
biometruster.blogspot.com
and **urbanwaters.in**

Compliance & Statutory details

Item Head	Details
Pan Number	AABTB5517E
12A	AABTB5517EE20096, issued on 23/09/2021
80G	AABTB5517EF20219, issued on 23/09/2021
CSR-1	CSR00001605, issued on 10/04/2021
Founder Trustee Managing Trustee	Mr.Vishwanath Srikantaiah Mrs.Chitra Vishwanath



The team at Biome Trust, along with well-diggers, inside an open well, in Lalbagh, Bengaluru

Content : Biome Environmental Trust
Design : Ekta Sawant

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Biome Environmental Trust

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biome
environmental trust