



WRI INDIA

Cities4Forests

JURY HANDBOOK

TheCityFix™
Labs

ACCELERATING
Nature BASED
SOLUTIONS



SEWAGE
TREATMENT



GROUNDWATER
RECHARGE



About TheCityFix Labs India Accelerating Nature-Based Solutions

#CityFixLabsIndia is a platform that brings together entrepreneurs, investors, technical experts and the public sector to implement Nature-based Solutions (NbS) on ground. The Delhi NCR edition of the Lab seeks to address pressing challenges concerned with water security and scarcity in Panipat. Enterprises that emerge from the Lab will get the opportunity to pilot their solution. They will also get to refine their solutions and evolve business models, through mentorship and technical expertise, that will enable private financing and scaling up.

To know more: <https://bit.ly/TheCityFixLabs2023>

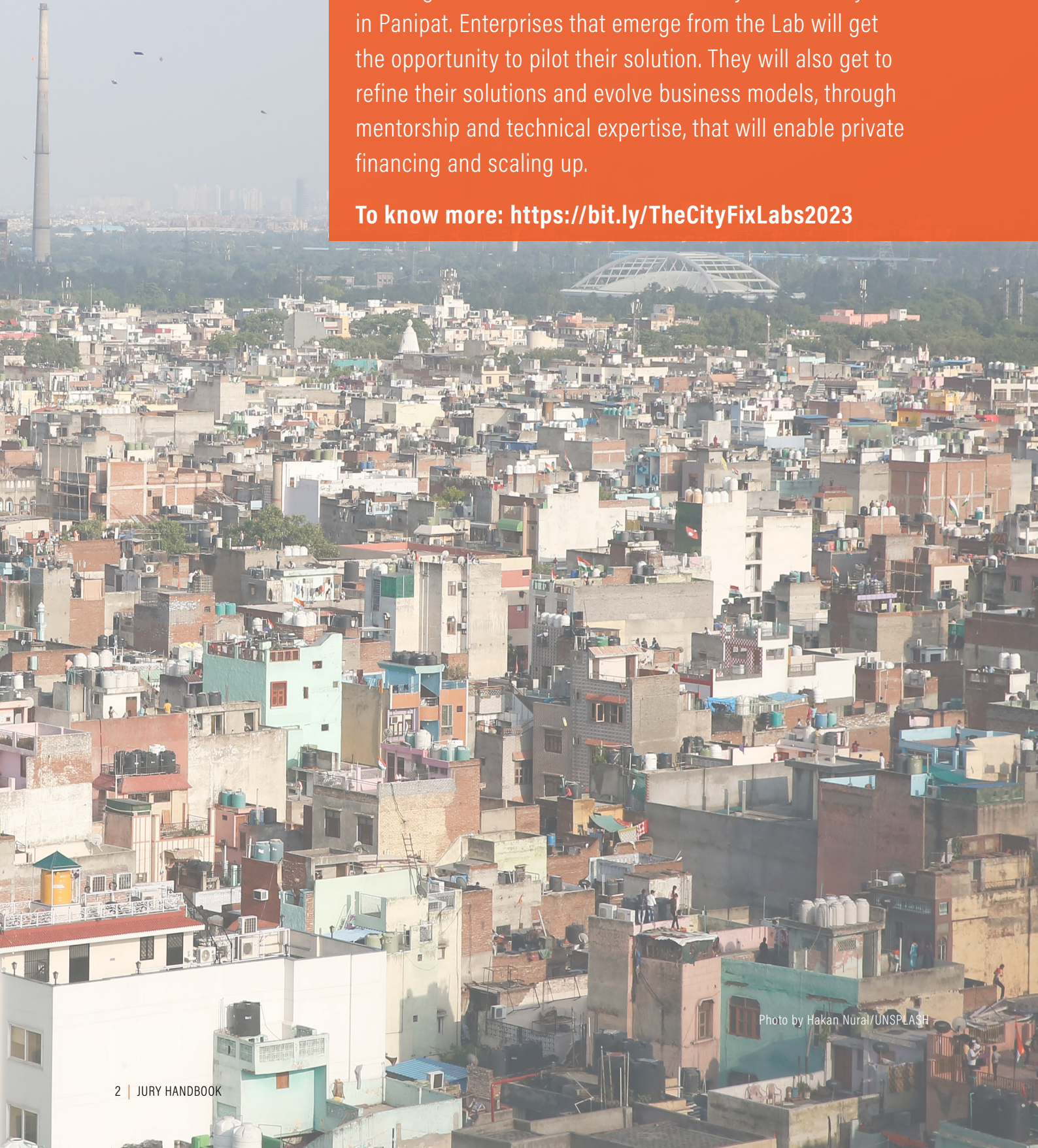


Photo by Hakan Nural/UNSPLASH

PRESENTS


ACCELERATING
Nature BASED
SOLUTIONS

Supported by



In partnership with



An initiative by



WRI INDIA

41

APPLICANTS

21

CITIES REPRESENTED

BENGALURU, KOLKATA, DELHI, EDINBURGH, GHAZIABAD, BENGALURU, GUWAHATI,
HYDERABAD, INDORE, JODHPUR, KAMPALA, KANGRA, KOLLAM, LUCKNOW, MUMBAI, NAVI
MUMBAI, NEW DELHI, NOIDA, PALAKKAD, SRINAGAR, VELHA

CATEGORIES

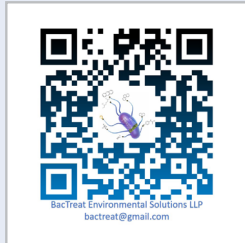
SEWAGE TREATMENT / GROUND WATER RECHARGE

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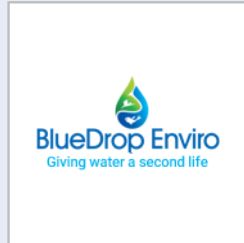
SHORTLISTED

BacTreat Environmental Solutions LLP | BlueDrop Enviro Pvt. Ltd. | Caliche Pvt. Ltd.
| GuruJal (Abhipsa Foundation Initiative) | iSenses | Organic Solutions |
Padma Clean Environs Pvt. Ltd. | Sustainable Water Technologies Pvt. Ltd. |
Vision Earthcare Pvt. Ltd.

SHORTLISTED ORGANISATIONS



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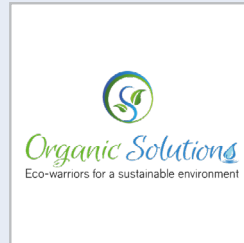
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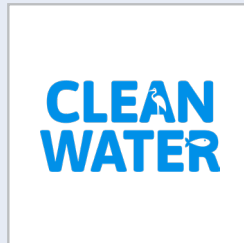
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BacTreatEnvironmental Solutions LLP

CATEGORY: SEWAGE TREATMENT

LOCATION: Velha, Goa

YEAR FOUNDED: April 2015

WEBSITE: www.bactreat.com

ELEVATOR PITCH

We implement **vertical flow constructed wetlands** for wastewater treatment and have set this up for single households, hostels, community toilets and a wholesale fish market, as part of river cleaning projects and at schools. We are currently implementing our solution at an open nallah in Hubli. The main advantage of this system is that it is low-maintenance, nature-based and offers high quality treatment and output.

IMPACT

Constructed wetlands (CWs) are engineered systems that utilize wetland vegetation, soil, and associated microbial assemblages to treat wastewater. They mimic the functions of natural wetlands by capturing storm water and by providing suitable habitats for various plant, bird, and animal species. While CWs are home to birds and aquatic creatures they also allow macroinvertebrate species and microbial communities to thrive.



BlueDrop Enviro Pvt. Ltd.

CATEGORY: SEWAGE TREATMENT

LOCATION: Hyderabad

YEAR FOUNDED: January 2017

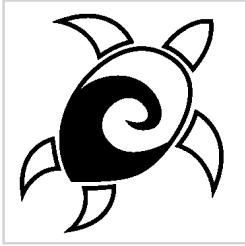
WEBSITE: www.bluedropwetlands.com

ELEVATOR PITCH

BlueDrop brings reliable and economical nature-based solutions to treat sewage, industrial effluents and polluted waterbodies. Our **Aerated Treatment Wetlands** Systems injects small quantities of air in a uniform pattern in the wetland bed. The oxidation process is carried out using only a small fraction of the energy required by conventional sewage treatment plants (STPs). The system consumes low energy, requires very little manpower and can cater to varying loads of sewage.

IMPACT

One of our plants at Bhavanipuram (1.2 Sewage Treatment Plant + Effluent Treatment Plant) has led to (a) the saving of 2.7 lakh kwh/ year as against a conventional system, (b) creation of 2000 sq. m. green cover and (c) the saving of 310 MLD/year fresh surface water. Apart from this, the Aerated Wetland System can sequester atmospheric carbon dioxide and enhance the biodiversity in its surroundings.



Caliche Pvt. Ltd.

CATEGORY: SEWAGE TREATMENT

LOCATION: Guwahati

YEAR FOUNDED: June 2018

WEBSITE: www.calicheglobal.com

ELEVATOR PITCH

Our system purifies wastewater through natural processes, combining **constructed wetlands, reed beds, filtration media, and micro-waterfalls for aeration**. Wastewater flows through a canal into a reed bed with filtration media that offers the ideal environment for waste-degrading microorganisms. Next, the water enters a constructed wetland, strategically located on underutilized land, that filters for water-table recharge. Waterfalls, both natural and constructed, provide essential aeration in the stream. Depending on the wastewater's characteristics, advanced biological oxidation processes can also be incorporated.

IMPACT

Our waste-water treatment system enhances water, and soil quality by naturally filtering pollutants and promoting nutrient recycling. It also provides carbon sequestration through the growth of wetland vegetation. We use inert inorganic waste in the filtration media and focus on sustainable sourcing as part of our supply chain, thereby further reducing our solution's environmental impact.



GuruJal, Abhipsa Foundation Initiative

CATEGORY: SEWAGE TREATMENT

LOCATION: Gurugram

YEAR FOUNDED: June 2019

WEBSITE: www.gurujal.org

ELEVATOR PITCH

GuruJal blends environmental care with community growth to shape a better Gurugram. We tackle groundwater depletion with rainwater harvesting methods – by involving communities, using modern technology such Automatic Water Level Recorders, building long-term water solutions. Our focus areas are water security, improved biodiversity, local job creation, improved health outcomes that clean water brings, environmental learning within the community and access to healthy, green spaces for all. Our projects also serve as models that can affect a cultural shift in communities inspiring similar projects in other regions.

IMPACT

We are setting up a **75 KLD sewage treatment plant and a groundwater pond** that can store up to 40,000 litres. Along with this, we are planting 50 trees in the periphery and expect to offset 3.5 tons of CO2 in the next ten years. The treated water will support plant growth and save on freshwater usage.



iSenses

CATEGORY: GROUNDWATER RECHARGE

LOCATION: Jodhpur

YEAR FOUNDED: June 2014

WEBSITE: www.isenses.eu

ELEVATOR PITCH

With the concerning water situation in the north and northwestern States, the Central Ground Water Board's simulation suggests that **artificial recharge of groundwater** can alleviate water shortages. Between 2021 and 2023, we successfully carried out two artificial recharge pilot projects in the States of Chhattisgarh and Punjab using grey/sewage water as the source. Our solution is unique and innovative as it lowers the burden on centralized WTP, promotes on-site reuse and ensures groundwater sustainability. Expertise in water resources engineering, hydrogeology, water auditing, groundwater targeting, etc. makes iSenses Inc. best positioned to implement the pilot project in a timely manner.

IMPACT

The environmental impacts range from improvement of soil, hydrology, people's use of the water resources, and associated ecosystems. By adding to the groundwater storage, artificial recharge modifies the hydrologic cycle. The groundwater table rises, water quality improves and base flow of streams increases thus helping to sustain associated wetland environments. An indirect environmental impact may result from the fact that as ground water heads are raised by artificial recharge, less energy is used to pump a given quantity of water. This may result in a net savings in energy needs.



Organic Solutions

CATEGORY: SEWAGE TREATMENT

LOCATION: Gurugram

YEAR FOUNDED: January 2002

WEBSITE: www.organicsolutions.in

ELEVATOR PITCH

Advanced Eco Reactor (AER) Sewage Treatment Plant engages nature's most effective decomposers – microbes and earthworms to achieve cost effective sustainability minus the daily sludge, noise or widespread odour. This is a highly efficient and green sewage treatment system based on the natural principles of constructed wetland, vermifiltration and probiotic fermentation.

IMPACT

Harnessing nature's genius in treating waste-water, the sewage treatment plant (STP) is developed as a human centric biophilic structure and integrates well with the existing landscape. Capable of processing millions of litres per day, the AER uses up to 70% to 80% less energy than conventional systems to deliver treated water which meets latest Central Pollution Control Board/National Green Tribunal standards for reuse. The system also generates worm castings that can be utilised as a nutritious soil amendment.



Padma Clean Environs Pvt. Ltd.

CATEGORY: GROUNDWATER RECHARGE

LOCATION: Hyderabad

YEAR FOUNDED: April 2017

WEBSITE: www.cleanenvirons.com

ELEVATOR PITCH

Innovative Sustainable Drainage System (SuDS) is designed for nature-based treatment of municipal waste water and percolation of treated waste water into aquifers. This is an economical and environment friendly system. SuDS can be replicated anywhere even when land is scarce. It's scalable and adaptable to any conditions of run off. SuDS rapid infiltration pits are multi-layered and permeable. Engineered soil and sub-strata help to store water in natural contours and allow the water to soak (infiltrate) into the ground naturally to recharge aquifers.

IMPACT

The average cost saving is 80% of the project cost as compared to groundwater recharge systems like injection well, sprinkler system etc. Moreover, it replenishes ground water aquifers with zero adverse effects on the environment, Increasing the height of the ground water table and improving the quality of the soil.



Sustainable Water Technologies Pvt. Ltd.

CATEGORY: SEWAGE TREATMENT

LOCATION: Indore

YEAR FOUNDED: March 2017

WEBSITE: www.clean-water.co.in

ELEVATOR PITCH

Our proposed concept for sewage treatment consists of a **sequential pond system with a real-time water quality monitoring and bioremediation system deployed on floating islands**. The treatment method is divided into seven steps. The most distinct part of the process is the use of floating islands. These contain native wetland plants for effective reduction in eutrophication accompanied by biofilm technology for removal of organic pollutants and biochar for the removal of inorganic components like heavy metals.

IMPACT

The combinatorial effect of the plants and microbes, as part of the system, decreases treatment time and reduces the emissions of methane by reducing the Chemical Oxygen Demand/Biochemical Oxygen Demand of the water. The floating islands serve as important artificial ecosystems, providing habitats for zooplanktons, birds, and several other organisms and significantly beautifying the surroundings. The system also reduces the amount of algal blooms and infestations of water hyacinths, duckweed etc. in the polishing pond/main lake. Furthermore the ponds are equipped with water quality sensors with Internet of Things(IoT) capabilities that transmit real-time information about water quality.



Vision Earthcare Pvt. Ltd.

CATEGORY: SEWAGE TREATMENT

LOCATION: Mumbai

YEAR FOUNDED: December 2004

WEBSITE: www.visionearthcare.com

ELEVATOR PITCH

Our **Compact Acarine Mite Utilizing Soil (CAMUS) biotechnology** (Patent 414339) is poised for scale due to its low space footprint (0.4sqm~0.6sqm/KLD) and high water quality (meets Indian 2017 NGT norms of COD<50, TSS<10, BOD<10). CAMUS out performs other competing nature based solutions particularly due to its 1) Low space and volume footprints 2) NGT norm meeting high treated water quality attained without tertiary treatment like activated carbon etc 3) Low operating costs and aerobic nature which prevents greenhouse gases like CH₄ from releasing into the atmosphere.

IMPACT

CAMUS technology is essentially aerobic and does not generate greenhouse gases as compared to most wetland technologies or other nature based technologies. The energy consumed in the CAMUS process is 1/3 to 1/5th of commonly accepted conventional aerobic treatment technology such as Activated Sludge Process or Sequencing Batch Reactor. Most of the materials used are locally available and have lower inherent energy as compared to competing technologies. 80% of the project can be converted to green space and can be used to harvest CO₂ via bamboo or other fast growing plants with a program for creating biochar if required.



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