

# *From The Brink* revival stories of our freshwater bodies

**“Conserving Water Resources for a Climate Resilient Future”**

**A participatory and solution-oriented approach towards  
rejuvenation of aquatic ecosystems and restoration of water bodies**

**Strategic Alignments:**

**| National Water Mission |**

**| SDG 6: Clean Water and Sanitation | SDG 13: Climate Change |**





**Water is crucial for our development. We have  
to understand our collective responsibility  
towards its conservation.**

**— *Shri Narendra Modi, Hon'ble  
Prime Minister of India***



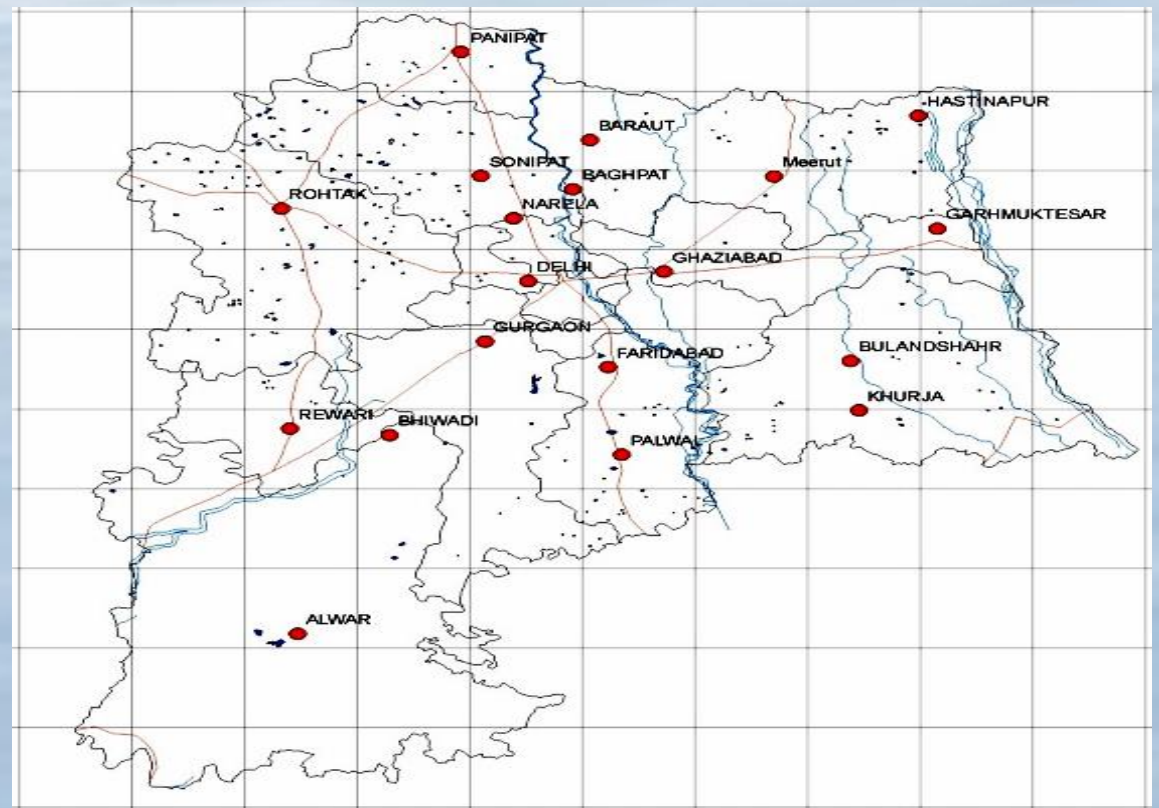
India is a unique country with rich and diverse cultural and natural heritage. However, owing to growing population and its escalating needs, pressure on natural environment has been increasing day by day.

While the water bodies are equipped with self-cleansing abilities, growing load of pollution emanating from a number of sources, however makes it difficult for them to function properly. This in turn, compromises water bodies' ability to support biodiversity.

Conventional water treatment technologies are expensive, require high maintenance and are also energy intensive, thus low-cost sewage treatment systems are becoming popular across various parts of the world.

Both in urban and rural areas, surface water bodies including ponds are dying and disappearing really fast owing to pollution, mismanagement, exploitation, over-extraction and encroachment. The process of revival of fresh water bodies needs several measures in combination.

The water scenario for most cities today is grim, a study conducted by IIT Delhi indicates – about 40% of Delhi NCR's water bodies lost between 1972 and 2014 due to rapid urbanization.

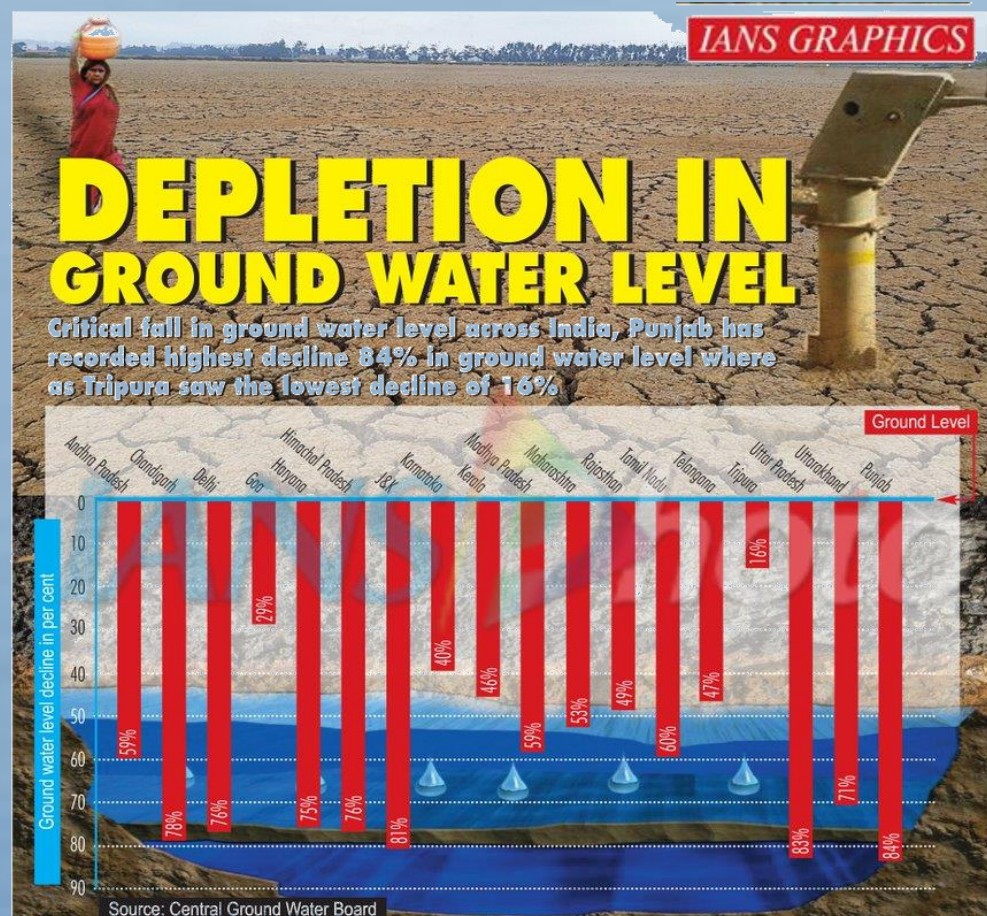


**Map 01: Fresh Water Bodies of Delhi NCR (NCRPB)**

With rapid developmental transformation taking places in most places, both availability and quality of water are getting compromised. Meeting urban water demand is now a bigger challenge with swelling human population in cities.

Delhi NCR's water resource is fascinatingly widespread with MoEF&CC, GoI data showing a total wetland area of about 2556 ha. covering some 573 lakes/ wetlands (Map01).

As per NITI Aayog report, India is facing its 'worst' ever water crisis in history and the demand for potable water is likely to outstrip supply by 2030 if timely and appropriate steps are not taken.



These figures however vary from agency to agency. INTACH's blueprint for water augmentation (1998) identified some 44 lakes & 355 village ponds as major sites for water storage and recharge locations (Earthatch & FICCI, 2014).

Studies further indicate, if the water crisis continues unabated, there will be a 6% loss in the country's Gross Domestic Product (GDP) by 2050.

Our groundwater resources account for 40% of India's water supply and it is getting depleted at "unsustainable" rates.

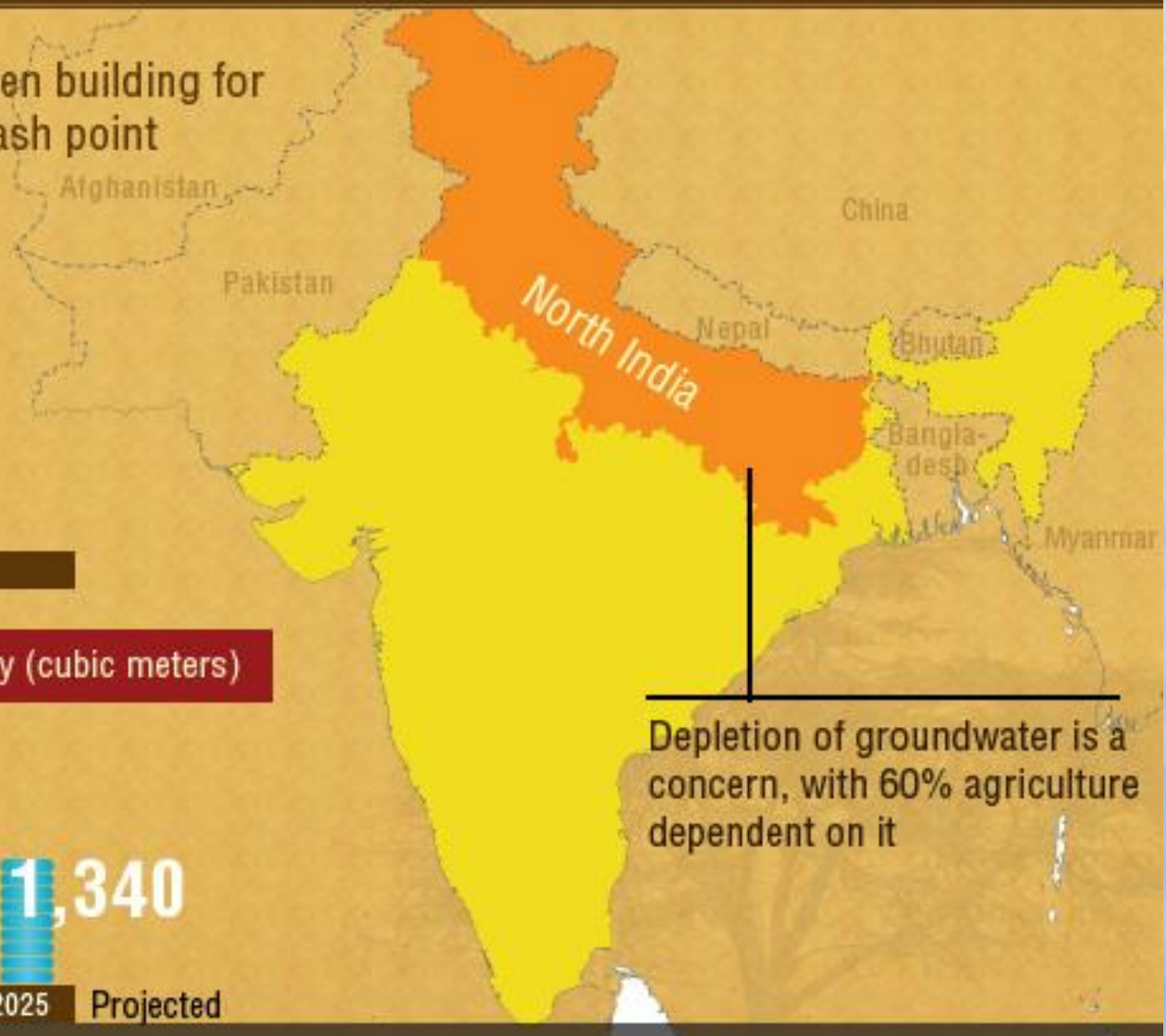
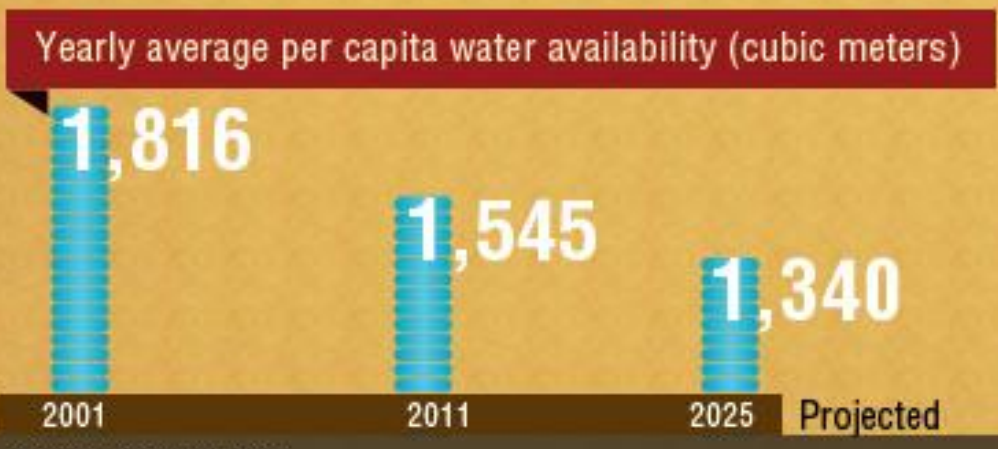
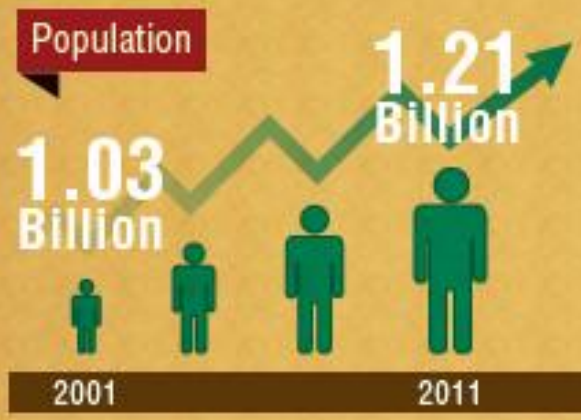
Increased population pressure along with competing demand for water from different sectors (drinking, agriculture, industry and energy).



# Water Crisis around the world

## INDIA

India faces a water crisis that's been building for decades, and may soon reach a flash point



© MapsofWorld 2014

**Figure 01: Per Capita Water Availability in India 2001-25**  
Source: <https://www.insightsonindia.com/>

India's growing water crisis necessitates decentralized conservation of waterbodies whether large or small and flowing or stagnant everywhere possible.

Environmental goods and services provided by a freshwater body is immense and many a times irreplaceable. With ponds, lakes and wetlands deteriorating rapidly as a result of human activities, diverse life forms dependent on these ecosystems likely to get endangered sooner in times to come.

Certain difficulties associated with shortage of water are imminent that will begin with

drought and shrinking per capita water availability (Figure 01).

On road to the recovery of our water resources, ponds are the softest target and easiest to restore because of their simpler form, size, access.

Among stagnant water bodies, ponds constitute essential freshwater ecosystems for biodiversity conservation. Due to their heterogeneity and the varied network of habitats they provide, they often support higher diversity than more permanent and large freshwater habitats and act as stepping stones for the dispersal of species (Ewald et al, 2010).

Ponds are important hotspots for biodiversity. Collectively, they support more species, and more scarce species, than any other freshwater habitat (Céréghino et al. 2008).

To promote decentralized approach in conservation outside the protected area network and in sync with the OECM concept i.e. Other Effective area-based Conservation Measures, these smaller pockets of water can be very well considered as micro biodiversity spots. And hence their identification, demarcation and even notification, become critically important to protect their cumulative ecological value.



Keeping this in view and given the urgency of preserving the remnant blue spaces of the region & restoring the ones fully or partially lost, there is a need to adopt a sustainable water conservation approach founded on eco-technology based solutions.

As a first step, depending on the physical condition of a water body, certain physical restoration measures including

cleaning, de-siltation, repairing of embankments, etc. are undertaken followed by ensuring continuous flow of good quality water (Figure 01).

In absence of a freshwater source, ponds those are surviving only on domestic sewage, need immediate attention as ponds contribute to aquifer recharge. Hence, it is essential that the water flowing into them, is purified

in a best possible manner.

There has been a growing appreciation for technologies such as Subsurface Horizontal Flow Constructed Wetland, which is a structurally manmade treatment system available to treat waste water without electricity. This technology is low-cost, highly efficient and sustainable.

Constructed Wetland is a prov-



Figure 02: Process of Pond Rejuvenation

-en technology meant to treat sewage for reuse of water in various domestic activities including irrigation. Constructed Wetland is a structurally manmade semi concrete depression vegetated with riparian plants on a permeable bed of river gravels and other mediums. It promotes sub-surface flow allowing the sewage to pass through the plants enabling

the roots to absorb the contaminants.

Sewage water coming into the water body is passed through an artificially created wetland vegetation, which uses natural process of exchange between vegetation (comprised plants known for absorbing pollutants efficiently) and soil including micro-organisms present in the soil environme-

-nt to remove the organic and inorganic pollutants from the sewage water.

Basic interventions and some additional measures of aerata-tion and purification measures (though plantation of Vetiver Grass) enable improvement in Dissolved Oxygen level and reduction in Nitrate/ Phosphate/ organic matter contents in the water, thereby



re-establishing a waterbody as a healthy ecosystem capable of supporting life once again with water quality fit for ground water recharge in a short duration.

To increase the sustainability potential of the project & to

allow secondary level of filtration, floating islands are also developed in the ponds. Floating Islands is an artificial floating platform vegetated with aquatic plants known to purify water by absorbing various pollutants.

This paper presents our collective efforts towards rejuvenating ponds across various parts of the country, which have yielded positive gr-

ound result and public support besides developing a pond conservation support group comprised wide-ranging stakeholders.

There is both need and urgency to put-together many such pond rejuvenation projects besides identifying and geo-tagging, across India before they cease to exist and to ensure a water secure nation. Our pond database also required to be updated with inclusion of minor waterbodies scattered around the country waiting to be discovered and notified.



**Pic 04**

भारतीय उद्योग परिषद की मदद से 'से अर्थ' संस्था ने तालाब को पुनर्जीवित करने का काम किया

## 40 वर्षों बाद पुनर्जीवित हुआ गाजीपुर तालाब

**पर्यावरण संरक्षण 1600** वर्ग मीटर से अधिक जगह पर खोदा गया तालाब

नई दिल्ली | अमित कसाना

राजधानी में 40 साल पुराने गाजीपुर तालाब को पुनर्जीवित किया गया है। करीब तीन एकड़ की इस जगह पर ऊपर कूड़ा डालने से इसका अस्तित्व ही मिट गया था। दो माह पूर्व पर्यावरण पर काम करने वाली संस्था 'से अर्थ' ने तालाब को पुनर्जीवित करने का काम शुरू किया था। करीब 1600 वर्ग मीटर से अधिक जगह पर तालाब खोदा गया। पिछले कुछ दिन हुई बारिश के बाद यहां करीब पांच फीट से अधिक गहरा पानी भर गया है। इससे फिर यहां तालाब बना है। तालाब के आसपास जमीन पर पार्क को विकसित किया जाएगा। पार्क की पूरी जगह को इस तरह बनाया गया है कि उसका ढलान तालाब की तरफ रहे। इससे पूरे पार्क में पड़ने वाला वर्षा का पानी तालाब में पहुंच सके। जल्द ही पार्क की चारदीवारी के लिए लोहे के तार से बाड़ु बनाई जाएगी। तालाब में बतख समेत मौसम अनुकूल प्रजाति के पक्षी भी लाए जाने की योजना है। पूर्वी दिल्ली में यह अपने तरह का पहला तालाब है। यहां घोपल, नीम, जामुन, बबूल, महूआ, शीशम समेत अनेक प्रकार के पेड़-पौधे लगाए जाएंगे।

**भूजल स्तर में इजाफा होगा :** तालाब बनने से यहां के भूजल स्तर में इजाफा होगा। साथ ही, स्थानीय लोगों को सैर करने के लिए प्राकृतिक वातावरण मिलेगा। 'से अर्थ' संस्था के संचालक रामवीर तंवर के मुताबिक, पूर्वी निगम ने एनजीटी के निर्देश पर लापता तालाब को जगह तलाशी थी। फिर उन्होंने तालाब खोदकर इसे पुनर्जीवित किया है।

**Revival Story:** Rejuvenating a pond that was lying dead since last 40 yrs in Gazipur area of Delhi.

**Pic 01, 02, 03 (a&b) & 04.**



**Revival Story:** As part of Pond Recovery Mission of Ghaziabad Municipal Corporation Morta Pond was brought to life in a quick span.

**Pic 05, 06, 07 & 08.**



**Eco-technology at work:  
Developing Phytoid based  
Constructed Wetlands for Sewage  
Treatment at JNTU Hyderabad**

**Pic 09, 10, 11 & 12.**



**Work in Progress:  
On-going restoration work at Nayphal  
in Ghaziabad with active corporate  
participation**

**Pic 13, 14 & 15.**



**Employee Volunteering:  
Pond Clean-up drive along with  
corporate volunteers at Jaunapur  
Village Pond, South Delhi**

**Pic 16, 17 & 18.**



Alien invasive species such as Water Hyacinth *Eichhornia* spp. is a cause of serious concern in water body management. Most of the aquatic ecosystems today are infested by uncontrolled growth of this flora that leads to major ecological and social consequences.

As an effective management measure, we offer a range of community based solutions that focus on skill training for water hyacinth based alternative livelihood options. Water hyacinth make a viable raw materials for handicraft, pulp and paper products (including bio-degradable cutleries) and organic manure.

## भिंडावास में मिलेंगे आसाम के आकर्षक बैग और हैट

वन्य प्राणी विभाग की ओर से ग्रामीण महिलाओं को दिलाई जा रही बनाने की ट्रेनिंग

प्रमोद सैनी | इज्जर

भिंडावास आने वाले समय में ओर अधिक आकर्षण का केंद्र होगा। सर्दियों के मौसम में विदेशी पक्षियों की कलकल के साथ आसाम की आकर्षित हैट पहनकर फोटो ग्राफी भी हो सकेंगी। आसाम की तर्ज पर भिंडावास में आकर्षित बैग, बास्केट व हैट तैयार करने के लिए ग्रामीण महिलाओं को ट्रेड किया जा रहा है। खास बात यह है कि इस को बनाने में जल खुंभी का ही इस्तेमाल होगा। जिसको अभी तक झील में आने वाली पक्षियों के लिए समस्या समझा जाता रहा है। भिंडावास झील वीकेंड पिकनिक मनाने वालों, पक्षी प्रेमियों, फोटोग्राफरों और वीडियोग्राफरों के लिए एक प्रदेश ही नहीं दिल्ली एनसीआर का आदर्श स्थान है। इसे हरियाणा का सबसे बड़ा जल क्षेत्र यानि वेटलैंड माना जाता है। 1985 में करीब 15 किमी क्षेत्र में फैला को वन्यजीव अभ्यारण घोषित कर दिया गया था। इस क्षेत्र में नवंबर से मार्च के बीच हजारों की संख्या में विदेशी पक्षी पहुंचते हैं।



भिंडावास झील पर बैग बनाने का प्रशिक्षण लेती महिलाएं।

### झील में जल खुंभी की

**बहुताएं :** वाइल्ड लाइफ इंस्पेक्टर श्रीनिवास ने बताया कि भिंडावास में बहुताएं में जल खुंभी मिलती है। इसको समय-समय पर बाहर निकलने के लिए लाखों रुपए का बजट खर्च किया जाता है। जल खुंभी का यहां अर्थ वांच इंस्टीच्युट इंडिया नामक संस्थान ने विकल्प दिया है।

■ भिंडावास में वीक एंड पर कई आईएस, आईपीएस सहित दूसरे सीनियर अधिकारी व दिल्ली से पर्यटक आते हैं। आसाम के बैग-बास्केट आदि तैयार करने की तमाम संभावनाएं हैं।  
डॉ. प्रणव ट्रेनर

### कैसे अस्तित्व में आई यह

**झील :** भिंडावास झील एक मानव निर्मित झील है, जिसका निर्माण यहां पास से गुजर रही जवाहरलाल नेहरू केनाल के अतिरिक्त पाने से हुआ। दरअसल पास ही में यहां अकेडीमदनपुर में देश के कुछ चुनिंदा सबसे बड़ा लिफ्ट इरीगेशन सिस्टम बना है। जहां 22 सौ से अधिक क्यूबिक पानी को एक साथ लिफ्ट किया जाता है। लिफ्ट सिस्टम में किसी प्रकार की तकनीकी खराबी आने पर पानी के बड़े बहाव को कैसे रोका जाए। इसके लिए भिंडावास में रिंग बांध बनाया गया था। पानी को ड्रेन आठ के माध्यम से यमुन नदी की ओर भेजने की व्यवस्था है। पानी की उपलब्ध के कारण यहां विदेशी पक्षियों का आगमन शुरू हुआ और क्षेत्र को बर्ड सैन्चुरी घोषित किया गया।



Pic 20



Pic 21



Pic 22



Pic 23



Pic 24



Pic 25



Pic 26

### Skill Development:

Livelihood opportunity on Water

Hyacinth based products for local women

### Pic 19, 20, 21, 22, 23, 24, 25 & 26.

Community based and participatory conservation is not new in the field of environment. Community mobilization can play a critical role in conservation work, the success of any such initiative depends on people of varied

socio – economic background coming together to deliver results that can help achieve environmental benefit, social and economic empowerment of local communities. As communities and women around waterbodies work tog-

-ether towards skilling and local enterprise development, setting up sustainable supply chain and creation of market linkage for them to sell their products uninterrupted in national and international markets becomes even easier.



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Citizen Reporter Schools & Colleges Weather Pollution News UP Elections

# How household wastewater has brought life back to dead ponds in Greater Noida

harmila Bhowmick | TNN | Updated: Oct 26, 2020



The pond's condition before the revival process started.

Managing rural water waste where several dead ponds were once a common sight. Ramveer Tanwar, a Greater Noida-based environmentalist, has turned polluted and toxic ponds into usable water bodies using reverse osmosis method. He has also used reverse osmosis and filtration method to clean water, making it suitable for pond recharge. These ponds...

## THREE STAGES TO TREAT

**What is the process:** It is a three-stage process that treats domestic effluents and makes water reusable.

**How it works:** First, waste water is collected in an open chamber. In the next step, it is channeled into a small area filled with water hyacinth and canna plants. The plants help remove effluents and chemicals. In the third stage, water is passed over a mesh that removes sediments before it goes to a pond.

\* Random tests are carried out to check if the water meets safety standards  
\* Process supported by Global Foundation for Environment and Human Wellness

**Why the need:** Recharging water bodies from external sources since the water table has gone down due to construction activities, Ramveer Tanwar, a water conservationist, says.

Pranab J Patar, of Global Foundation for Environment and Human Wellness, said that one needs to be vigilant about the pond water as it can affect the water quality. He said that the pond water is safe. While the colour of the water is green, we ensure its quality to be nontoxic at this stage.

The Chauganpur pond revival is being supported by the Global Foundation for Environment and Human Wellness. Ramveer Tanwar, an engineer-turned-conservator, has been working on this project from Uttar Pradesh regarding the conservation of water resources.

## अमरउजाला

सोमवार 09.11.2020

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# Hindustan Times

## In Haryana's Jhajjar, villagers turn an invasive weed into handicraft

Water hyacinth is a weed that reproduces at a fast rate and is a threat to wetlands. Bhindawas wetland is spread over 1,000 acres in Jhajjar district in Haryana.



In order to train villagers, a 10-day skill development programme was conducted under the supervision of master craftsmen from Assam. So far, people from 10 villages have completed basic training and will now undergo advance training to learn product designing. Hindustan Times Photo

Published on Mar 03, 2019 04:57 AM IST

Water hyacinth is a weed that reproduces at a fast rate and is a threat to the Bhindawas wetland is spread over 1,000 acres in Jhajjar district in Haryana. "The wetlands and lakes perform vital ecological functions and support essential environmental services. Recharging water bodies from external sources since the water table has gone down due to construction activities, Ramveer Tanwar, a water conservationist, says.

**DELHINCR NEWS**

HOME DELHINCR STATES SCIENCE/TECH. ENVIRON. INDUSTRY WELLNESS CAMPUS GOVT. (OTHER)

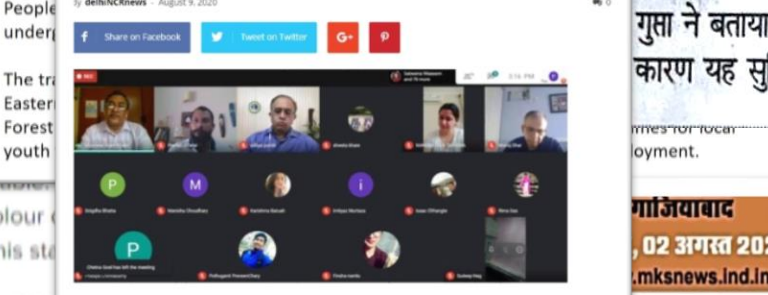
ENVIRONMENT

CHINAR, Global Foundation host webinar on nature-based solutions to address climate change

By delhincrnews August 9, 2020

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## CHINAR, Global Foundation host webinar on nature-based solutions to address climate change



CHINAR, a Himalayan Based NGO along with Global Foundation organized yet another important Web-Dialogue, focusing on "Nature based Solutions to fight Climate Change in the Urban context. Changing climate is one of the pressing environmental challenges of our times, to be able to overcome the ill-effects of climatic change, a host of mitigation and adaptation measures are being positioned world-wide. To discuss nature-based solutions to counter impact of climate change in urban areas, a galaxy of subject matter experts and practitioners were invited. The session was facilitated by environmentalists duo, Dr Pranab J Patar and Dr Pradeep Mehta.

## अमरउजाला

सोमवार 09.11.2020

**अमरउजाला**

सोमवार 09.11.2020

www.amarujala.com

कृत्रिम तालाब का उद्घाटन

नोएडा। सेक्टर-137 मेट्रो स्टेशन के सामने पार्क में कृत्रिम तालाब का पर्यावरणविद् डॉ. प्रणब जे पातर ने उद्घाटन किया। हैदराबाद में प्रगति नगर झील की सफाई में महत्वपूर्ण भूमिका निभा चुके प्रणब ने बताया कि उन्होंने जेएनटीयू में केंस्ट्रक्टेड वेटलैंड्स की स्थापना भी की थी। टीम वालंटियर्स-137 के अभीष्ट गुप्ता ने बताया कि तालाब बनाने का मकसद गिरते भूजल स्तर को रोकना है। ब्यूरो

**The Tribune**

VOICE OF THE PEOPLE

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HARYANA TRIBUNE

**Making a living from water hyacinth**

The overgrowth of hyacinth in the wetland of the Bhindawas Bird Sanctuary in Jhajjar district has been taking a toll on the arrival of migratory birds.

Updated At: 09/11/2020 10:00:00 AM



## सेक्टर-137 में कृत्रिम तालाब का उद्घाटन



## लोगों का कहना है कि भविष्य में ऐसे और तालाब बनाएंगे

**■ एनबीटी न्यूज, नोएडा**

जलस्तर गिरने से रोका जा सके और इसका सौंदर्यकरण किया जा सके। इस काम में कई सोसायटी के लोग शामिल हैं। भविष्य में कुछ और ऐसे तालाब बनाने की योजना है। इस तालाब का पानी सेक्टर 137 में पैरामाउंट फ्लोरविले के एसटीपी के पानी से दिया जाएगा। इस कृत्रिम तालाब का उद्घाटन पर्यावरणविद् डॉ. प्रणब जे ने किया।

they are working to develop skill among villagers to teach them how to make products from water hyacinth. This will have a sustainable livelihood option, he says.

गाजियाबाद 02 अगस्त 2020

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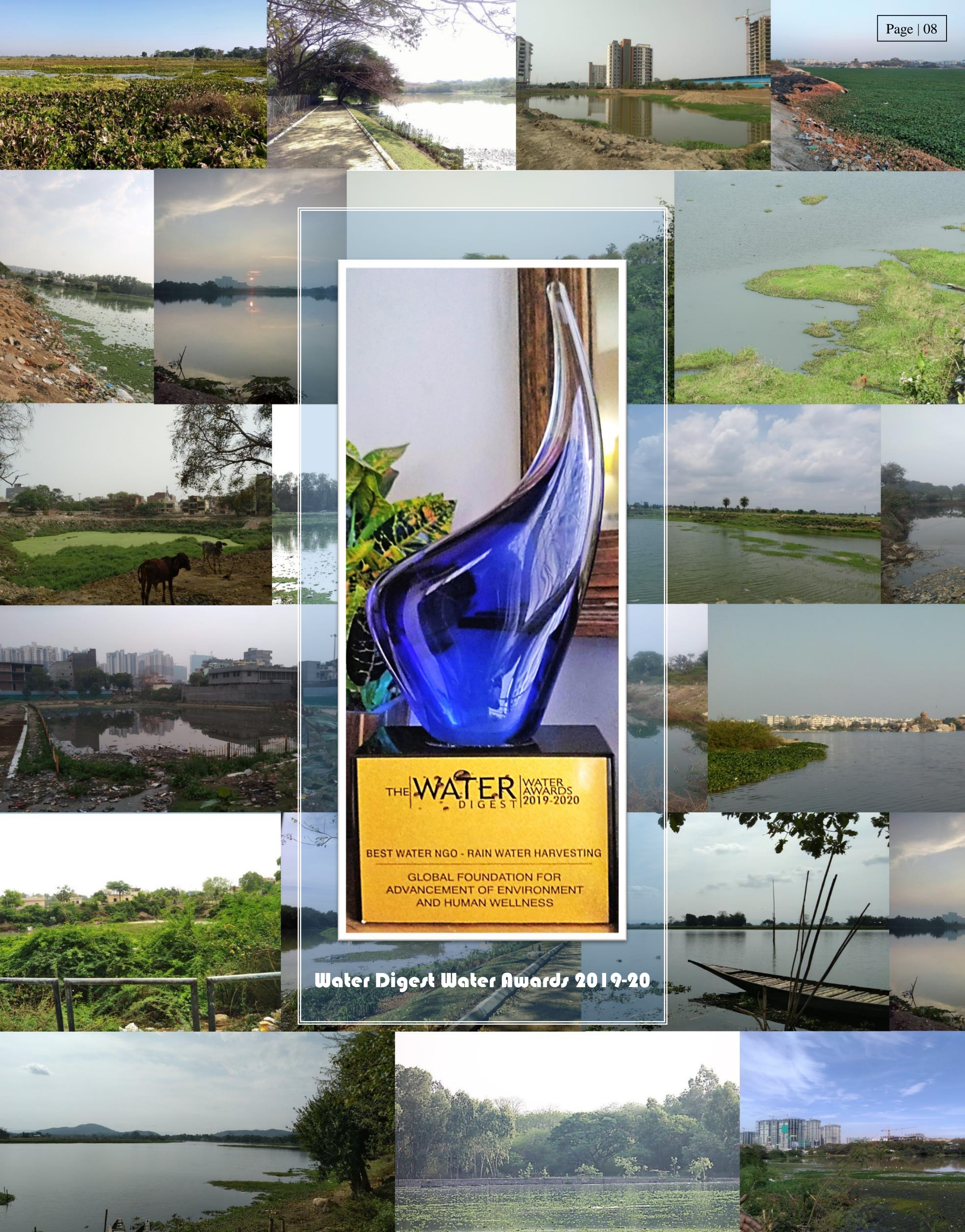
राष्ट्रीय हिन्दी दैनिक मुरादनगर की शान 3

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## वैश्विक फाउंडेशन उपयुक्त तकनीकी के द्वारा वर्षा जल संचयन को बढ़ावा देने के लिए e-मीटिंग का आयोजन हुआ।

ग्लोबल फाउंडेशन के मुख्य कार्यकारी और पर्यावरण विशेषज्ञ डॉ. प्रणब जे पातर ने कहा, भारत आज विश्व में भूजल का सबसे बड़ा उपभोक्ता है। भारत वैश्विक स्तर पर निकाले गए कुल भूजल का लगभग 25% खपत करता है, जिसमें से 60% से अधिक का उपयोग कृषि में होता है। कुल शहरी पानी का माँग का लगभग 40% जमीनी स्रोतों से पूरा होता है। भूजल स्रोत, जो प्राकृतिक साधनों के माध्यम से रिचार्ज होता था, कई कारणों से नहीं हो रहा है। इस अनमोल संसाधन को सुरक्षा को हमारी नैतिक और पर्यावरणीय जिम्मेदारी है। यह हमारी प्राकृतिक विरासत है और हमें इसकी रक्षा करनी ही होगी। और इसके लिए रैन वाटर हार्वैस्टिंग से बेहतर और उपाय नहीं हो सकता। उन्होंने कहा कि वर्षा जल संचयन को बढ़ावा देने के लिए वैश्विक फाउंडेशन उपयुक्त तकनीकी सहमता देने के लिए तैयार है। सत्र के मुख्य वक्ता प्रो. गिरिश, जो खटखट हैदराबाद के प्रोफेसर और जल संसाधनों के केंद्र के प्रमुख हैं, ने वर्षा जल संचयन के फायदों के बारे में विस्तार से बात की। अपने अनुभव के बारे में साँझ करते हुए, प्रोफेसर गिरिश ने बताया कि कैसे वर्षा जल संचयन का उन्नत मॉडल से परियोजना स्थानों में पानी के टैंक में संचयन लाने में सक्षम हुए। उन्होंने अपने प्रेजेंटेशन में खटखट कैम्प में स्थित अपनी पहल का विस्तृत ज्वारा दिया। उन्होंने यह भी बताया कि वर्षा जल संचयन प्रणाली को स्थापित करना किनना आसान है।





**Water Digest Water Awards 2019-20**



## A Collaborative Approach Towards Conserving India's Rich Natural Heritage

**Global Foundation** (Global Foundation for Advancement of Environment & Human Wellness), which is a Delhi based environmental charity & **Say Earth** (an NGO with a difference founded by Pond Man Shri Ramveer Tanwar to engage local communities for conservation of water resources, have been working together with a shared mission of realising a **Water Secure India**.

These two organisations working on water body rejuvenation projects jointly as a mean to promote **Nature-based Solutions (NbS)** towards building **Climate Resilience** through multi-stakeholder and hands-on approach.

### Well-wishers & Collaborators



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### **Disclaimer**

*This document captures our collective experience in conserving / restoring fresh water bodies. The information compiled here, can be used for general reference only and not as an ultimate guide.*

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