Haryana Pond and Waste Water Management Authority

Commemorating World Water Day: “Pathways to a Water Secure Haryana”

Seminar Report

21 March, 2024


ON THE EVE OF WORLD WATER DAY
HARYANA POND AND WASTE WATER MANAGEMENT AUTHORITY
IS ORGANISING A CONFERENCE
"PATHWAYS TO A WATER SECURE HARYANA"
FOR INNOVATIVE SOLUTIONS IN POND MANAGEMENT AND WASTE WATER TREATMENT.
CHAIR
SH. BHARAT BHUSHAN BHARTI
ADVISOR TO CM
SH. DEVENDER SINGH, IAS (RETD.)
ADVISOR TO CM
SMT. KESHNI ANAND ARORA, IAS (RETD.)
CHAIRPERSON, HWRA
SH. P. RAGHVENDRA RAO, IAS (RETD.)
CHAIRMAN, HSPCB
GUIDANCE
SH. PANKAJ AGARWAL, IAS,
C&S, IWRD, HARYANA
SPEAKERS
SH. PRABHAKER KUMAR VERMA
EVC, HPA
DR. SATBIR SINGH KADIAN
CEO, HWRA
PROF. CR BABU
EX PRO VICE CHANCELLOR, DU
SH. R.K YADAV
DIRECTOR, CSSRI
SH. ANUP NAGAR
REGIONAL DIRECTOR (RETD.), CGWB
DR. A. MUKHERJEE
CAWTM, FARIDABAD
SH. BABU RAM
TECHNICAL ADVISOR, HSPCB
PROF. VIJAY SHARMA
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PROF. RAJNI SAGGU
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PROF. (DR.) NARESH KUMAR
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ORGANISING COMMITEE
SH. PRABHAKER KUMAR VERMA
EXECUTIVE VICE CHAIRPERSON
SH. RAVI KANT UPPAL,
TECHNICAL ADVISOR
SH. SURJIT SINGH
AFA
SH. R. K. SHARMA
EXECUTIVE ENGINEER (HQ)
21ST MARCH 2024
9:30 AM
TO JOIN US LIVE SCAN QR CODE
CONFERENCE HALL, HARYANA POND AND WASTE WATER MANAGEMENT AUTHORITY, DHL SQUARE (PLOT NO. - 9)
3RD FLOOR, SECTOR 22, PANCHKULA, HARYANA
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Bharat Bhushan Bharti

Political Advisor to Chief Minister,
Haryana, Chandigarh.

Dated : 25th April, 2024

Message

I am happy to note that Haryana Pond & Waste Water Management Authority (HPWWMA) has compiled the report, "Pathways to a Water Secure Haryana" in commemoration of World Water Day on March 21st, 2024.

I commend the HPWWMA for their dedication in coordinating this important event and for their ongoing efforts to highlight the critical goal of water sustainability. This report serves as a valuable resource, outlining a clear path towards a water-secure future for Haryana.

I am particularly encouraged by the report's focus on Grey Water treatment, Water Logging & Sustainability and Role of Youth in Ponds Management, promoting water conservation practices and fostering collaboration between different departments. This focus aligns perfectly with the state's need for a comprehensive and collaborative approach to water management.

I am confident that the implementation of the recommendations outlined in this report will require the active participation of all relevant departments. I am optimistic that everyone will come forward and collaborate to achieve the shared objective of water security for Haryana.

This report serves as a roadmap for a more sustainable future. I urge all stakeholders to actively engage with the recommendations and work together to ensure a water-secure Haryana for generations to come.

B. B. Bharti

Bharat Bhushan Bharti

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DEVENDER SINGH, I.A.S. (Retd.)

Advisor to Chief Minister, Haryana
Department of Irrigation & Water Resources, C.M. Window and C.M. Announcements

Dated : 25th April, 2024

MESSAGE

I would like to congratulate Haryana Pond & Waste Water Management Authority (HPWWMA) for its ongoing efforts in Water Management and in particular Ponds Management. This compilation "Pathways to a Water Secure Haryana" along with its efforts at commemorating the World Water Day on March 21st, 2024 is a testament to its dedication at achieving a Water Secure Haryana.

I am optimistic that all the departments will work in collaboration for meeting the demand and supply side interventions for reducing the water gap of 14 BCM. Ponds also help in augmenting the supply of water and in particular Ground Water Recharge. Ponds are vital for our environment supporting biodiversity, water security, and recreation. Moreover, the successful implementation of the restoration projects aids in sequestration of CO_2 from the atmosphere.

This report is designed to be a catalyst for collaboration among stakeholder departments. I am hopeful that it will motivate the decision makers to join hands for a unified approach to protecting and managing our water resources, ensuring a sustainable water future for generations to come.

(DEVENDER SINGH)

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Pankaj Agarwal, IAS
Commissioner & Secretary, Govt. of Haryana
Irrigation & Water Resources Department

Message

I extend my heartfelt congratulations to Haryana Pond & Waste Water Management Authority for successfully organizing a seminar on **"Pathways to water secure Haryana"** as a part of commemorating World Water Day, 2024. It is praiseworthy that a galaxy of administrators, policy makers, planners, experts and academicians discussed the different facets of water security of the State at the seminar.

An important role has been played by Sh. Prabhaker Kumar Verma, and his team comprising Sh. Ravi Uppal, Technical Advisor; Sh. Ravinder Kumar Sharma, Executive Engineer (HQ), Sh. Avinash Kumar Sharda, Scientist and Ms. Sakshi Bhutani, Senior Consultant, in compiling this Report. I also appreciate the efforts of other departments including HWRA, IWRD, Forest Department, MICADA, ULB Department, Panchyati Raj Department, Agriculture Department, PHED, CGWB, HSPCB, CSSRI in furthering the agenda of creating a water secure Haryana.

I wish that the report is worked upon and implemented. I convey my best wishes.

Pankaj Agarwal

Sh. Prabhaker Kumar Verma
Executive Vice Chairperson (EVC)
Haryana Pond & Waste Water Management Authority
(HPWWMA)

Foreword

Water is not just a resource, it is the very essence of life. As Executive Vice Chairperson of the Haryana Pond and Waste Water Management Authority (HPWWMA), I am acutely aware of the challenges we face in securing a sustainable water future for our state.

On World Water Day 2024, HPWWMA proudly conducted a seminar titled **"Pathways to a Water Secure Haryana."** This timely event served as a platform for bringing together a diverse group of thought leaders. Policymakers, researchers, leading scholars, and practitioners in water management who exchanged valuable ideas and fostered meaningful dialogue around Reimagining the role of ponds and harnessing their potential for a water-secure future of Haryana through innovative management strategies, Tackling Water logging by Identifying and implementing solutions to address the challenges while ensuring long-term water security and Discussing the role of role of youth in restoring and managing ponds.

We were honoured by the presence of esteemed dignitaries like Sh. B. B. Bharti, Advisor to Hon'ble CM, Sh. Devender Singh, IAS (Retd.) Advisor (IWRD) to Hon'ble CM, Smt. Keshni Anand Arora, IAS (Retd.), Chairperson, Haryana Water Resources Authority (HWRA), Sh. P. Raghvendra Rao, IAS (Retd.), Chairman, HSPCB. Their participation underscored the importance of collective action in achieving water security.

The seminar featured presentations and discussions by prominent experts from various fields. Scientists, CEOs of leading sustainable technology companies, professors from universities, and representatives from key government departments such as HWRA, IWRD, Forest Department, MICADA, ULB Department, Panchyati Raj Department, Agriculture Department, PHED, CGWB, HSPCB, CSSRI, and HPWWMA itself all contributed their valuable perspectives.

A particularly inspiring element of the seminar was the participation of young minds who brought a fresh perspective to the discussion, highlighting the crucial role that youth can play in restoring and managing ponds.

This document serves as a record of the seminar's proceedings. It captures the valuable knowledge and insights shared by the Chief Guests, Key dignitaries, speakers, participants, offering a roadmap for achieving water security in Haryana.

I would like to place on record my appreciation for the mentorship of Sh. Ravi Uppal, Technical Advisor, HPWWMA in leading and supervising the technical team. I also thank Sh. Ravinder Kumar Sharma for coordination and valuable feedback. I would like to acknowledge the efforts put in by Sh. Avinash Sharda, Scientist in providing expertise and guidance in the field of Greywater Treatment. I would like to appreciate Ms. Sakshi Bhutani, Senior Consultant, HPWWMA, who has authored the text of the report for her efforts in meticulously shaping & compiling this document. I would also like to bring on record my appreciation of the IT team, and all my staff for coordinating the event.

I firmly believe that the ideas and solutions discussed at this seminar will pave the way for a water-secure future for Haryana. With collaborative efforts and innovative thinking, we can ensure that our state continues to flourish for generations to come.

Prabhaker Kumar Verma

Executive Summary

Haryana Pond and Waste Water Management Authority (HPWWMA) organized a Seminar for Innovative Solutions in Pond Management, Tackling Waterlogging and Waste Water Treatment on the eve of World Water Day i.e., 21st March, 2024at the Conference Hall of Haryana Pond Authority.

This event themed **"Pathways to a Water Secure Haryana"** brought together **policy makers, researchers, leading scholars, practioners** in water management to foster meaningful dialogue on themes such as Nature based Technologies to Grey water Treatment, Water Logging & Sustainability and Role of Youth in Restoring and managing Ponds.

The **event aimed at** advocating the sustainable management of water resources, and evolving strategies to comprehensively prioritize water use efficiency.

The event was **graced by several dignitaries**, including **Sh. B. B. Bharti**, Advisor to Hon'bleCM**Sh. Devender Singh**, IAS (Retd.) Advisor (IWRD) to Hon'ble CM, **Smt. Keshni Anand Arora**, IAS (Retd.), Chairperson, Haryana Water Resources Authority(HWRA), **Sh. P. Raghvendra Rao**, IAS (Retd.), Chairman, HSPCB and **Sh. Prabhaker Kumar Verma**, Executive Vice Chairperson, Haryana Pond &Waste Water Management Authority(HPWWMA)

Moreover, prominent other dignitaries, key government officials from stakeholder departments including HWRA, IWRD, Forest Department, MICADA, ULB Department, Panchyati Raj Department, Agriculture Department, PHED, CGWB, HSPCB, CSSRI, and from the Haryana Pond &Waste Water Management Authority(HPWWMA) also attended the event including **Sh. Ravi Uppal, Technical Advisor, HPWWMA; Sh. Ravinder Kumar Sharma, Executive Engineer (HQ), HPWWMA.** The session rapporteurs were Ms. Sakshi Bhutani, Senior Consultant, HPWWMA; Mr. Rahul Sharma, Consultant, IWRD; Ms. Neha Pahwa, Sr. Scientific Assistant, HPWWMA. Experts such as **Sh. Avinash Kumar Sharda** (Scientist, HPWWMA); **Mr. Harshvardhan,** CEO, CDD India; **Ms. Shubhi Kesharwani**, CEO, Gurujal; **Dr. Babu Ram**, Technical Advisor- Haryana State Pollution Control Borad (HSPCB) also participated and contributed to the Session on "Nature Based solutions to Grey Water Treatment". Additionally, **Dr. Satbir Singh Kadian** EIC,

IWRD; **Dr, A Mukherjee**, CAWTM,MRIIRS, Faridabad; **Sh. R. K Yadav**, Director- CSSRI Karnal; **Sh. Anup Naagar** (Retd. Regional Director Haryana) CGWB contributed to the Session on "Water Logging and Sustainability". Furthermore, **Prof. Rajni Saggu**, J.C. Bose University of Science & Technology, Faridabad, **Prof. Vijay Sharma, Deen Bandhu ChotuRam University of Science & Technology (DCRUST), Sonipat**; **Dr.Naresh Kumar**also graced the occasion from the universities contributing to the topic "Role of youth in restoring and managing ponds".

A few among the speakers joined through **VC**, while many participants joined through **online live streaming**, which witnessed participation from people belonging to various backgrounds including prominent water sector experts.

During the event, it was brought out that **Greywater/ Wastewater can be a valuable resource** after proper treatment, particularly through Nature Based Solutions like Constructed Wetlands which utilizes plants to remove impurities, offering a cost-effective and eco-friendly alternative. This also allows the treated Greywater to replenish groundwater aquifers creating a readily available resource to address water scarcity concerns in Haryana.

Discussions surrounding **water logging and its sustainable management strategies** were also central to the event. Water logging is a major concern in Haryana's agricultural landscape. The conference acknowledged the detrimental effects of water logging, including reduced crop yields, stunted plant growth, and even salinization of the soil. **Sustainable management strategies** were emphasized to combat this challenge including improving the drainage systems through canals and ditches, allowing excess water to flow away from agricultural fields. Additionally, crop selection and planting techniques were discussed. The conference also explored the potential of bio-drainage, where specific plants are used to absorb excess water and improve soil aeration. By focusing on these sustainable management strategies, Haryana can work towards preventing water logging and ensuring the long-term health of its agricultural land and thereby improve water quality and quantity.

The conference also discussed on the theme "**Crucial role of youth in restoring and managing ponds"** through University Faculty from Kurukshetra University, J.C Bose University, and DCRUST University. Youth engagement can take various forms like organizing **physical restoration, conduct programmes, cleanliness drives, developing educational programs** covering topics like pond ecology, leveraging curious minds to develop innovative technology for

monitoring pond health, or utilizing social media to raise awareness. This way the session aimed at creating a generation passionate about water conservation.

One of the **major milestones** was the commitment to have continued support from all the departments and to constitute a coordination committee of **five departments** comprising **HWRA, HPWWMA, IWRD, Saraswati Heritage Board, and HSPCB** to be chaired by HWRA, which shall meet atleast once a month to strategise and synergise the efforts for water conservation. The committee shall have regular meetings to create a multiplier effect in their efforts at augmenting water supply and managing and meeting water demand.

The event was a great success as it showcased the efforts of the Haryana Pond and Waste Water Management Authority (HPWWMA) under the able leadership of **Sh. Prabhaker Kumar Verma**, **Executive Vice Chairperson, HPWWMA** along with his team to involve and engage several Stakeholder Departments of Government of Haryana in furthering the agenda of Water for all &"**Sustainable Development Goal (SDG- 6): Clean Water and Sanitation**" of the United Nations which is targeted to be achieved by India. It also demonstrated that "**Jan Bhagidari**", is fundamental for such an initiative to be successful. A detailed report of the event is presented on the following pages:-

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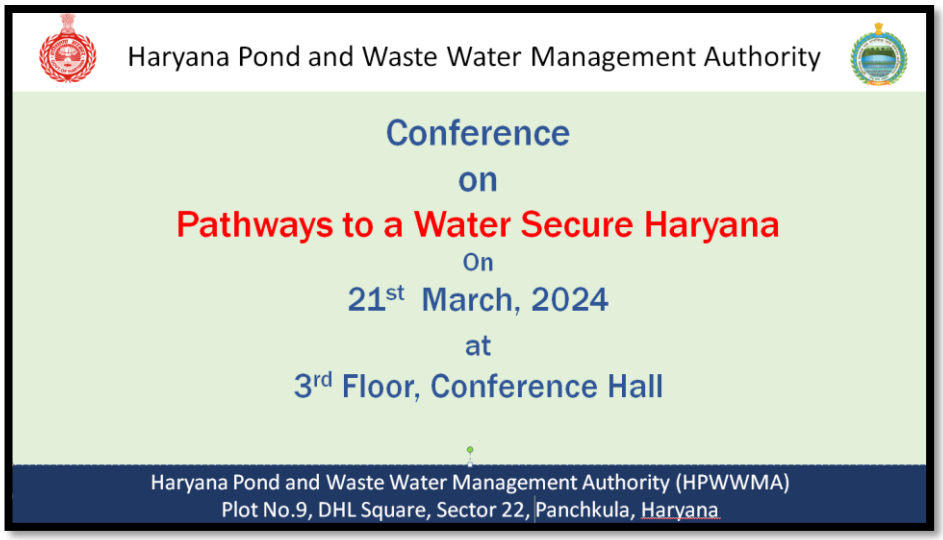
Context

Water is by far the most important natural resource on earth. Today, nearly 2.2 billion people don't have access to it. India is home to 18% of the global population but it has only 4% of the global water resources. Our gathering on the eve of World Water Day, themed **"Pathways to a Water Secure Haryana,"** reflects the critical need for conserving this vital resource. The World Water Day is an internationally recognized event aimed at advocating the sustainable management of water resources. Given Haryana's commitment to water conservation and management, it became imperative to commemorate this global initiative to raise awareness and promote action towards a water-secure future.



Haryana once known for its overflowing canals and **vibrant ponds** currently grapples with a severe water crisis due to several factors like over-extraction & insufficient replenishment of groundwater, climate change, and water logging. The State is, therefore, witnessing the presence of a large portion of water stressed and water parched areas. The ground water levels in Haryana range from 0 – 30 meters. The demand for water (34 BCM) far exceeds the available supply (20 BCM), resulting in a staggering water gap of 14 BCM. This crisis not only threatens our agricultural productivity but also sows the seeds for potential conflict. History teaches us that water scarcity can be a source of tension, both within and between communities.

Thus, with rising concerns over dwindling water resources, the Government of Haryana has undertaken a number of initiatives including the formulation of the Haryana Pond and Waste Water Management Authority in 2018 through the **"Pond and Waste Water Management Authority Act, 2018".** Its vision is to promote/monitor the development, protection, rejuvenation, conservation, construction and management of ponds & utilization of pond water after treatment thereof and for management and utilization of treated effluent of sewage

effluent treatment plants for the purpose of irrigation, thereby reducing stress of over exploitation of ground water and for matters connected therewith or incidental thereto. Its scope is to repair / restore / rejuvenate the ponds along with development of periphery of the pond with greenery and to preserve the aquatic life of ponds for conservation of bio-diversity.

Ponds are vital resources of the environment. They act like sponges, soaking up rainwater and replenishing groundwater reserves. This stored water is a lifesaver during dry

periods and helps communities facing water scarcity. Additionally, during heavy rains, they act as buffers, absorbing excess water and preventing floods that can devastate lives and property. This flood mitigation also protects valuable topsoil from erosion, keeping it fertile for agriculture – the backbone of our rural communities.

These calm bodies of water also provide **Habitat to the Biodiversity**. Plants, fish, insects, and amphibians all call ponds home, making them vital for biodiversity conservation. With healthy pond ecosystems, the nature thrives. The benefits of healthy ponds extend far beyond the immediate surroundings. They provide a **reliable source of water for irrigation**, allowing farmers to grow crops and improve their livelihoods. Additionally, ponds can be used for aquaculture, providing a source of food and income for local communities.

In a nutshell, ponds are nature's way of promoting water conservation, flood control, healthy ecosystems, and thriving communities. They're a powerful tool for achieving the UN's Sustainable Development Goals, particularly **SDG 6:** ensuring clean water and sanitation **for all.**

Henceforth, this year's world water day themed **"Water for Peace"** resonated deeply with our present context. It reminded us that securing our water future is not just an environmental or economic imperative, but a social one as well and this was a shared value among all the participants in the Seminar.

I. Aim

The Seminar was **aimed** at advocating the sustainable management of water resources, and evolving strategies to comprehensively prioritize water use efficiency through discussions by the experts on themes such as Nature based Greywater Management, Water Logging and sustainability, Role of Youth in Restoring and Managing Ponds.

II. Objectives

- To **establish the need and importance of water** in the present contest especially in Haryana using research, analysis, expert opinions.
- To **enhance Water storage and Water Recharge** especially through Ponds as they act as natural reservoirs to store rainwater and replenish groundwater.
- Discuss the **protocols / SoP's** that need to be followed for Nature Based Solutions to Grey water Treatment and the benefits of CWL.
- Discuss the issues of **water-logging** and the need to adopt Subsurface Drainage & Vertical Drainage, Bio-diversification and to utilize excess water for pond protection.
- Devolve the **role of youth** in restoring and managing ponds for a water secure Haryana.
- To create a generation passionate about water conservation.

Inaugural Session

I. Agenda

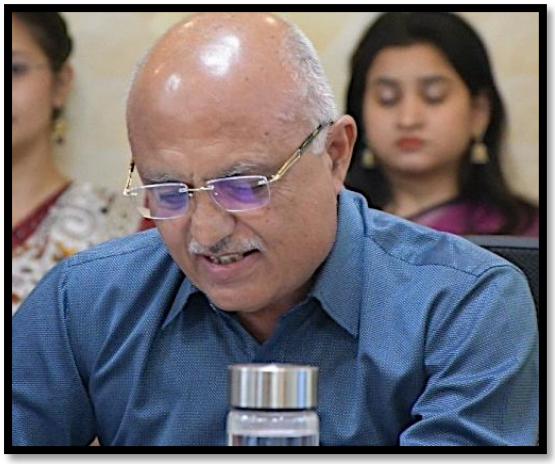
Haryana is facing water stress in several districts coupled with depletion in ground water levels. Accordingly, managing this requires a multi-pronged strategy. **The event aims to bring out** measures to protect the water bodies such as ponds, lakes, promote restoration of Ponds and enhance the capacity of the available water structures by maintaining them appropriately. Additionally, it aims to bring out measures so that the state, revive paleo-channels, manage water logging, bringout strategies of Nature based solutions to waste water treatment, mapping water bodies to prevent encroachment and enhance their management at the level of various departments in a coordinated way, so as to increase the storage capacity of water.

The event focused on leveraging the extensive knowledge of the experts so as to evolve such strategies and solutions which helps in transforming the landscape as it largely depends on water use efficiency and create a positive impact in society.

II. Inauguration

The inaugural ceremony of the Seminar commenced with the **lighting of lamp** by the dignitaries including Sh. B. B. Bharti, Advisor to Hon'ble Chief Minister, Sh. P. Raghvendra Rao, IAS (Retd.), Chairman, HSPCB, and Sh. Prabhaker Kumar Verma, Executive Vice Chairperson, Haryana Pond Authority.

III. Inaugural Address



Sh. Ravi Uppal, Technical Advisor, Haryana Pond & Waste Water Management Authority, formally welcomed all the dignitaries present. He mentioned about the significance of water conservation and restoration. He further informed that they aim to bring together all the stakeholders to create **"Pathways for a water secure Haryana".** He expressed his gratitude to each one present for taking out time which he said is a testament to the urgency of the need to protect our water resources collectively. He informed that this conference therefore aims at bringing out valuable insights on themes such as "Nature Based Solutions to Grey Water Treatment", "Water logging and Sustainability", and "Role of youth in pond management". He further informed that the Pond Authority has lined up an array of presentations, discussions, and networking opportunities that are both productive and inspiring.

IV. Introduction to Pond Authority

The inaugural Session then witnessed an informative presentation by **Sh. Prabhaker Kumar Verma,** the Executive Vice Chairperson (EVC) of the Haryana Pond and Waste Water Management Authority (HPWWMA). He **emphasised the need for conservation and restoration of ponds**. Further, He informed that with the growing concern over depletion in ground water levels and the quality of water, the Haryana Pond and Waste Water Management Authority (HPWWMA) is tirelessly making efforts.

He highlighted on the functioning of the Pond Authority, its objectives, targeted achievements and its present status through a Presentation. Going forward, he, showcased successful works of **restoration of ponds** and activities by the Pond Authority to the Students and Faculty. He further elaborated that Public Participation i.e. **"Jan Bhagidari"** is very crucial as the Pond Restoration translates into an improvement of the environment of both inside and outside the pond. Moreover it enhances the ground water table through Rain Water Harvesting and reduces the water stress along with reducing the problem of runoff, soil erosion

etc.,. This relates to Sustainability and overall improvement of the ecosystem. Therefore, he urged that ponds need protection and water shall be considered as everyone's business.

The Key highlights of his presentation are mentioned below:

- **Institutionalisation of the Authority:**
  To make **"Water available for all",** the Pond Authority, has adopted a multi-pronged strategy at various levels including the Institutionalisation of Haryana Pond and Waste Water Management Authority (HPWWMA) through an Act in 2018. This Authority has emerged as a beacon of hope in tackling the state's water woes. Established with a clear mission, the Authority translates its vision into tangible achievements through its efforts to restore depleting pond resources.

- **Pond Data Management System (PDMS) Portal:**
  An integrated approach to Pond Management is followed through comprehensive Data Compilation based on 21 Parameters of all 19689 Ponds in **Pond Data Management System (PDMS) Portal**, which is available in the public domain as Pond Atlas on the website of the Authority(www.hpwwma.org.in).

- **Geo Mapping and Geo Tagging:**
  While village visits provide first hand understanding of pond conditions, Geo-mapping and Geo-tagging offers a complementary real time data-centric approach on boundaries of ponds, water levels in ponds, water quality of ponds. This data he said **empowers him** to make informed decisions on:
  - Pond maintenance and dredging schedules
  - Strategies for improving water storage capacity
  - Policies for sustainable pond management

  Geo-mapping and Geo-tagging is done of all the pondsincluding those ponds that existed during post-independence time.

- **Water Information Management System (WMIS):**
  This helps track the Physical, Planning and Financial progress of pond restoration and Rejuvenation activities enabling identification of areas for optimizing resource allocation. Additionally, it also helps the executing departments along with the Pond Authority have a common access to the status of such activities. This enables in expediting the restoration and rejuvenation works of the Pond Authority.

- **Digital surveys and Digital Drawings:**

For implementing its Annual Action Plans (AAP's), the HPWWMA gets executed its Restoration works at the site as per the digital drawings which ensures precision, accuracy in estimation, prevention of encroachment and deliver efficiency in the management of ponds.

- **Prioritization of Ponds:**
  The categorization is based on **prioritization** of polluted ones in water-stressed areas followed by ponds along highways and rivers, and thereafter the ponds that are clean and dry. **Annual Action Plans** aims to restore at least half of each district's ponds for equitable distribution

- **Amrit Sarovars:**
  The Authority is also spearheading the **Amrit Mission** under which, it has rejuvenated 1867 Ponds as against a total target of 1650 Ponds. The Amrit mission was Launched by the Government of India (GOI) on "Azadi ka Amrit Mahotsav" to restore 75 ponds in each district of the country. The Pond Authority has given a further impetus to Amrit Mission by introducing **"Amrit+"** and **"Amrit++"** which includes components such as Plantation , Solar Lights, Benches, Waste Water Management and most importantly Income Generation through Pisciculture, Tourism etc.,. which promotes a holistic development at the level of the community itself. As on date, a total of 309 Ponds have been completed as Amrit+ Sarovars and 01 Pond have achieved the status of Amrit ++.

- **Annual Action Plans (AAP's):**

  The state's water landscape is breathing life back into thousands of ponds. Over 6918 ponds have been taken in Annual Action Plan up to **2024-25** including 1282 **Amrit Sarovars** and 5639 model ponds. Out of a total of **3133 polluted ponds** in water-stressed areas, 1921 ponds falling in 1060 villages will be restored as per the 2024-25 Annual Action Plan (AAP).
  From the above mentioned 6918 Ponds, a total of 5224 drawings of 5224 ponds have already been issued to the respective executing departments.

- **Enhancement in water storage capacity and Ground Water Recharge**:
  Expanding water storage capacity and enhancing groundwater recharge are critical endeavors for securing our water future. Improvement in storage and recharge contributes to healthier ecosystems, mitigating floods, sustaining wetlands, and fostering vibrant habitats.

- In the year **2022-23,** there has been a total of 2158 Cr. Ltrs of Enhancement in water storage capacity and 1079 Cr. Ltrs of Enhancement in Ground Water Recharge.
- In the year **2023-24,** there has been a total of 4832 Cr. Ltrs of Enhancement in water storage capacity and 2416 Cr. Ltrs of Enhancement in Ground Water Recharge.
- During the year **2024-25**, the Authority targets to achieve 2801 Cr. Ltrs of Enhancement in water storage capacity and 1400 Cr. Ltrs of Enhancement in Ground Water Recharge.

- **Waste Water Treatment:**
  The HPWWMA has embraced innovative solutions like **Constructed Wetland Technology** (CWL) to treat greywater of Ponds and industrial effluents in Drains, ensuring cleaner water bodies. The constructed wetland technology utilizes systems inspired by natural wetlands, promoting a more environmental friendly approach.

- **Grievance Redressal Mechanism (GRM):**
  The Authority has also established a **Grievance Redressal Mechanism (GRM)** through a Portal. This makes transparency and accountability as cornerstones of the HPWWMA's work.

- **Awareness through Social Media**
  The Authority provides regular updates on social media, keeping the public informed and engaged.

- **Jan Bhagidari:**
  Recognizing the role of **community ownership** as an essential component of Sustained Water Availability, the Authority takes significant steps for community involvement which has manifested through formation of over 783 Sarovar SewaSamuhs (S3) which are community groups. This collaborative approach ensures long-term sustainability by fostering a sense of ownership and responsibility for local ponds.

- **Workshops in Universities, Nukkar, Natak& Ragini, Social media campaigns:**
  The Authority has conducted Workshops in Universities such as **Kurukshetra University, Haryana Central University, Mahendragarh, Deenbandhu Chhotu Ram University of Science and Technology, Sonipat, J.C. Bose University of Science and Technology, Faridabad** for Student involvement as a fundamental pillar of Water conservation and is in the process of reaching out to various other universities. It also conducts Nukkar, Natak& Ragini, social media campaigns, and school discussions regularly to reach wider

audience, educating and inspiring everyone to become water stewards, thereby raising public awareness.

- **Future Plans:**
  The Authority aims to revive lost and encroached ponds, collaborate with universities to spread awareness and foster innovation through field visits and internships. It is also in the process of launching its mobile app, conducting scientific water profiling, treating industrial effluents with CWL technology on a larger scale, and implementing third-party quality assessments. Moreover, it also aims to utilize CSR for holistic village development and tackle polluted ponds in a phased manner.

- **Dedication To Sustainable Practices:**
  The HPWWMA's pioneering spirit and a dedication to sustainable practices, sets it apart. Its success story serves as a testament to the power of collaboration, community engagement, innovation, and **data-driven decision-making** in building a brighter, more water-secure future for all.

  He **concluded** by emphasizing that - ***As the Authority continues to evolve, its dedication to its vision remains unwavering, ensuring a healthier environment and a brighter future for generations to come.***

V. Keynote speech

Thereafter, **Sh. B. B. Bharti, Advisor to Hon'ble Chief Minister,** who also presided all the sessions gave a **Keynote** speech in which he emphasized that Water, is a sacred resource that **unites us all.** However, he mentioned that the 3rd World War which has been anticipated to be for Water is in some way or the other going on in different parts of the world. He described in detail the importance of this vital resource. He narrated that the rivers of India are drying and the rest are getting polluted. The rivers of Haryana, he said have become seasonal. Further, he elucidated that, it is our duty, as custodians of this invaluable treasure, to protect & preserve it and conserve & restore it. He also said

that, the natural gifts received from our forefathers is borrowed from our children and shall be given to our children the way we receive it.

He expressed his concern over the depleting water resources and the need to rejuvenate our ponds. He advocated formulating a **Coordination Committee** comprising of the five departments of HWRA, IWRD, Saraswati Heritage Board, Haryana Pond and Waste Water Management Authority (HPWWMA) and HSPCB to be chaired by HWRA, which shall meet atleast once a month to synergize their efforts for water conservation.

VI. Opening Remarks

The keynote speech was followed by the **opening remarks** from **Sh. P. Raghvendra Rao, IAS (Retd.), Chairman, HSPCB** who discussed that water quality data of rivers (Yamuna and Ghaggar) flowing in Haryana shows that organic and bacterial contamination are becoming increasingly critical in water bodies leading to gradual degradation of water quality. Biochemical Oxygen Demand (BOD) for most of the rivers of India is increasing and exceeding the prescribed water quality criteria. He pointed out that the **Water Day** is commemorated to analyse the problems, prioritize focus areas towards actions that should be taken and generate awareness.

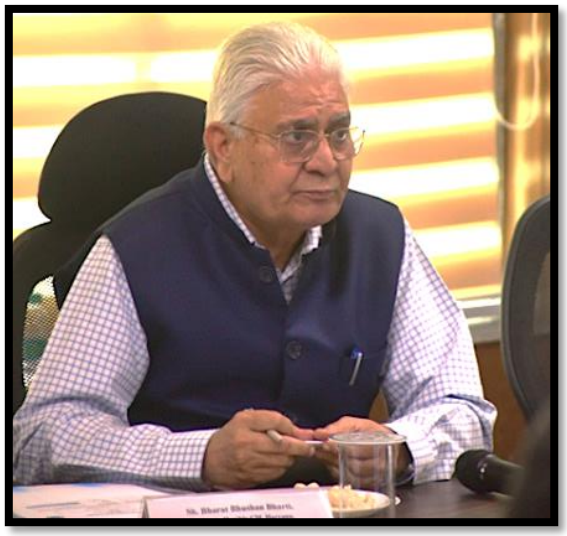
He pointed out that in Haryana Stringent norms for discharge of treated domestic wastewater of mechanized treatment systems, which encompasses 51 parameters, have been applicable for utilization of treated sewage for various non-potable usages. He also acknowledged that Haryana is taking a lead. Besides, 23 parameters have been prescribed for Greywater usages for Irrigation after Natural Treatment. He emphasized that drain Water shall be utilized for Non-potable purposes. He also mentioned that PHED and other executing departments are working seriously to treat wastewater of its towns to meet the stringent norms and within 4-5 months successful results are expected.

He finally opened the sessions for commemorating the World Water Day, themed "Water for Peace, which he said is a global effort for sustainable management of water resources. Therefore, he encouraged all including, the esteemed officials and experts to share their vision for a water secure Haryana and in particular for Pond restoration as it promotes holistic development.

Technical Sessions

The Seminar had three Technical Sessions which are mentioned below as follows:-

1. **Session I:** Grey Water Treatment: Nature Based Solutions to Pond Conservation.
2. **Session II:** Water Logging and Sustainability.
3. **Session III:** Role of Youth in restoring and managing ponds.

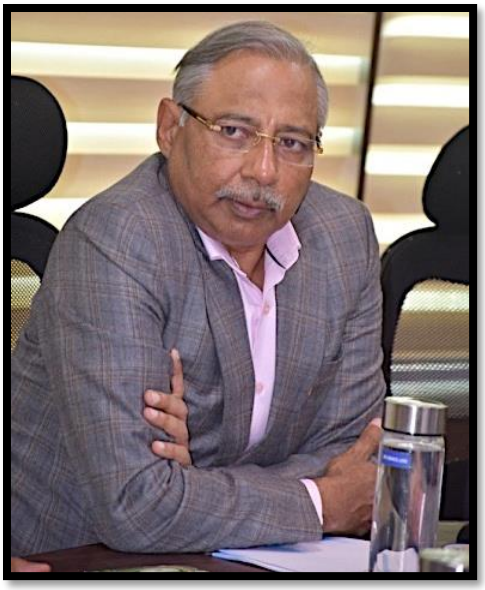


All the three Sessions were presided by **Sh. B. B. Bharti, Advisor to Hon'ble CM**, who expressed that the Haryana Pond and Waste Water Management Authority is a unique and innovative initiative of the Government of Haryana. He mentioned that **Ponds are vital for our ecosystem** and giving its due importance through seminars such as these is well acknowledged. He **underscored** that this day should make an attempt to utilize all the available expertise to make the sessions more meaningful and urged each one to actively participate in it.

He **pointed that** it is to his much satisfaction that students are being actively involved for pond management efforts as they are the future of tomorrow, and when they learn about the urgency of water management, they get connected to their roots and are better able to bring about attitudinal changes in their life.

Technical Session I: Grey Water Treatment: Nature Based Solutions to Pond Conservation.

Sh. Devender Singh, IAS(Retd.) Advisor (IWRD)to Hon'ble Chief Minister graced the occasion as the Session Chief Guest. He drew serious attention of the audience to the fact that According to the **Niti Aayog, by 2030**, the country could face its 'worst' water crisis in history with the demand for potable water rising above supply.



He mentioned that Last year an ambitious target was set to address the pressing water scarcity issues in Haryana for efficient water management through a Conclave which materialized into well-defined Water Resource Action Plan **(IWRAP 2.0).** The IWRAP aims at reducing the water supply gap by more than 49.7% in the next two years (FY 2023-24 & FY 2024-25) through **both demand and supply side interventions** whereby Demand Side interventions include Micro irrigation, Crop Diversification, DSR, Conservation Tillage, Varietal Intervention, Water Efficiency in fisheries. Supply side interventions include Underground Pipelines for Irrigation, Lining of Canals/ Water Courses, Groundwater Recharge, Rejuvenation of Ponds, Surface Water Storages, Reuse of Treated Waste Water.

This has inspired all departments to work together to conserve water resources, which showcases the unwavering commitment and dedication of our administrative secretaries, government officials, and stakeholders.

The Govt. of Haryana to realise the dream of **"Water for All"** has adopted a multi-pronged strategy at various levels including the Institutionalisation of Haryana Pond and Waste Water Management Authority (HPWWMA) through an Act in 2018.

He highlighted that HPWWMA has a significant role in **augmenting the supply of water** during floods by diverting the flood water, through aquifer mapping rejuvenate ponds that have been encroached. He elaborated that precision Agriculture optimizes water usage in farming through data-driven irrigation and crop selection. He also said that there is a need of Greywater treatment using Nature based solutions and appropriate water testing using SOP's.

Thereafter, he opened the Session I for presentations and discussions to take place. The Session started with the Presentations from experts in the area of Nature Based Solutions to Grey Water Treatment in Pond Management and thereafter open discussions took place. There were in all four presentations from **Dr.Babu Ram, Technical Expert, HSPCB; Sh. Avinash Kumar Sharda, Scientist, HPWWMA; Ms. Shubhi Kesharwani, CEO, GuruJal; and Mr. Harshvardhan, CEO, CDD India** who presented on varied topics the details of which are mentioned below:-

i. Impact of Unremediated Rural Wastewater on Ecology and Environmental Compliance

Dr. Babu Ram, Technical Expert, HSPCB gave a presentation titled "Impact of Unremediated Rural Wastewater on Ecology and Environmental Compliance".

Following were the Key highlights of his presentation:-

- Inadequate sanitation poses significant health risks, emphasizing the urgency for remediation.
- Legal frameworks such as The Indian Penal Code1860; Water Act 1974; and environment protection Act 1986 provide avenues for enforcement.
- Greywater technologies like Oxidation pond and Constructed Wetland offer sustainable solutions.
- Examples like the Seenchewal Model showcase effective community-led initiatives.
- Treated sewage and grey water significantly contribute to groundwater conservation.
- Prioritizing biological treatment and disinfection ensures safe irrigation practices.

ii. Grey Water Management

Sh. Avinash Kumar Sharda, Scientist, HPWWMA, gave a presentation titled "Grey Water Management".

Following were the Key highlights of his presentation:-

- Establishing site-specific SOPs for implementation of different Nature Based Technologies (CWLs) is crucial for satisfactory treatment of grey water management.
- Initiating model development in key districts like Ambala, Panchkula, Yamunanagar, and Panipat sets a precedent for implementation of these models in other districts of Haryana.
- Collaborating with esteemed institutions such as IIT Roorkee and DRIIV will enhance the

treatment efficiencies of existing technologies and make lay down roadmap for future innovations.

- Outsourcing water quality profiling and design to private agencies will ensure comprehensive feasibility studies.
- Addressing technical session concerns will inform future strategies and implementations effectively.

iii. Averting Day Zero Scenarios while helping Haryana Become Water Secure

Ms. Shubhi Kesharwani, CEO, GuruJal, gave a presentation titled "Averting Day Zero Scenarios While Helping Haryana Become Water Secure".

Following were the Key highlights of her presentation:-

- Water bodies like ponds reduce the temperature of surrounding areas by 2 to 3 degrees.
- As per an estimate, India has lost ~ 2.2 lakh ponds since independence.
- Current **issues with the ponds** include Rapid Encroachment, Pollution, Running Dry, Disconnect with the Community, Overflowing & flooding, Aesthetically Unappealing, Extremely obnoxious in odour.
- Wastewater treatment, she said, is critical to ensure a perennial supply of clean water to the pond.
- It is essential to establish clear selection criteria for grey water treatment methods to ensure parameters for effective Grey water Treatment
- Gurujal, she said conducts **Appropriate Technology selection** based on the land availability, inlet load, purpose of pond, ground water table, amount of funding available, meets the NGT standards etc., and rapid R&D.
- A methodological pre-assessment and feasibility analysis is done before intervention to optimize outcomes.
- Thorough impact evaluations are done to gauge the effectiveness of chosen methods.
- An integrated approach to project implementation is adopted.
- Prioritizion of communication, technology policy, human resource development, and financing for successful grey water management initiatives is done.
- The **aim** is Ground water recharge, Wastewater treatment, biodiversity zonation, maintaining cultural and aesthetic values.

iv. Nature Based Solutions to Grey Water Management

Mr. Harshvardhan, CEO, CDD India, gave a presentation titled "Nature Based Solutions to Grey Water Management"

Following were the Key highlights of his presentation:-

- 70-80% of Wastewater generated is considered as Greywater (GW).
- In India, several practices such as Open discharge of Black water in storm water drains, Inability to handle energy, extensive complex system, unsafe disposal of faeces into the environment, Intermixing of Black water and Grey water in storm water drains increases water pollution.
- In rural India, about 80% Fresh water turns into used water due to absence of safe water and used water management. Nature based systems shall be adopted instead of complex technologies.
- We should keep reuse in mind and instead of treating nitrogen and phosphorous use it for fertigation.
- Many non-point sources of liquid waste end up in open drains and channels leading to water pollution.
- Growth of Population coupled with urbanisation, industrialization, Climate Change impacts increases Water Consumption and Wastewater Generation.
- Strategies such as Pollution abatement, Green Infrastructure, Desilting, Deweeding, etc., should be adopted for appropriate interventions.
- Methods that can be adopted include Waste Stabilization Process, Dewats, Free Surface Wetlands, Phytorid etc.,.
- Waste water can be treated at Household level, cluster level and also Village level.
- Planning and implementation can be done at different levels depending on site specific conditions.

Conclusion of the Session

Sh. Devender Singh, IAS (Retd.) Advisor (IWRD) to Hon'ble Chief Minister concluded the session whereby he underscored that, various technologies should be used for Greywater Treatment as per the site conditions. He also pointed out that departments such Pond Authority, HSPCB etc, shall have their own fully developed and advanced Laboratory so that it can conduct timely and reliable testing.

He also recommended that a separate Panel should be made which collaborates their research efforts to have elaborate and appropriate technologies implemented wherever required. Finally, He congratulated **Sh. Prabhaker Kumar Verma, Executive Vice Chairperson,** Haryana Pond & Waste Water Management Authority for organising the event.

Technical Session II: Water Logging and Sustainability

Smt. Keshni Anand Arora IAS (Retd.), **Chairperson, Haryana Water Resources Authority**, former Chief Secretary to Govt. of Haryanagraced the occasion as the Session Chief Guest.

In her initial remarks, she apprised that Haryana is the second-largest contributor to the nation's food grain production (16.3 million tonnes). However, the state currently grapples with a **severe water crisis** exacerbated by various factors including over-extraction of groundwater, erratic rainfall patterns, the looming spectre of climate change, and the pervasive issue of water-logging.

She expressed her concern that the demand for water, standing at a staggering 34,962.76 MCM, far surpasses the State's available supply, leaving us with a distressing water **gap of -14,026.78 MCM**. Furthermore, a significant portion of the State's cultivable land, amounting to 9,82,730 acres, she said grapples with the twin demons of waterlogging and salinity, hindering agricultural productivity and exacerbating our woes.

Acknowledging the urgency of the situation, she emphasized that Haryana Water Resources Authority (HWRA), has embarked on a bold and visionary journey towards sustainable water management. One of the **flagship endeavours** in this vision, she said, includes the categorization of villages based on groundwater depletion trends over the past three decades. Additionally, the planning and implementation of Integrated Water Resources Action Plan **(IWRAP) 2023-25** represents a paradigm shift in the State's approach, aiming to address the water challenges systematically and scientifically.

Through the collaborative efforts all water-related departments in Haryana, HWRA she informed, are committed to conserving water through a diverse array of demand and supply-side interventions outlined in the IWRAP. She particularly emphasized the imperative to combat waterlogging and salinity. She touched upon about various, anti-water logging measures such as **Salt-tolerant Fisheries Cultivation, Growing Salt-tolerant Crop Varieties, Surface/Sub-surface/Vertical Drainage, Bio-Drainage, Conjunctive Use of Canal and Saline Water, Gypsum Application, Green Manuring.** Moreover, she informed that the judicious placement of industries in affected areas is being explored. Additionally, she laid emphasis on finding alternate ways of utilizing areas which has medium levels of salinity.

Lastly, she underscored **the need for coordination among all the departments** to address water-logging and salinity to collectively work towards achieving water security and resilience in Haryana through implementing measures such as Vertical and sub-surface drainage.

Thereafter, she opened the Session II for presentations and discussions to take place. The Session started with the Presentations from experts in the area of Water Logging and Sustainability and thereafter open discussions took place. There were in all four presentations from **Dr.Satbir Singh Kadian**, **EIC, IWRD; Sh. R.K. Yadav Director, CSSRI, Karnal, Haryana**,**Sh. Anup Nagar, (Retd.) Regional Director, CGWB, Haryana; Prof. Dr. Arunangshu Mukherjee, Director, Manav Rachna**, who presented on topics the details of which are mentioned below:

i. Water Logging and Sustainability

Dr.Satbir Singh Kadian,EIC, IWRD,gave a presentation titled "Water Logging and Sustainability".

Following were the Key highlights of his presentation:-

- Haryana being the main contributor to the food security of the country, 9% of the cultivable area of State (9,82,730 acres) is suffering from twin problems of water-logging and salinity.
- Waterlogging affects 8.89% of Haryana's geographical area, impeding crop production.
- Factors contributing to waterlogging include intensive flood irrigation and cropping pattern, Limited withdrawal of groundwater due to poor quality, Canal and drain infiltration, Drainage constraints, Lack of interventions
- Government initiatives like groundwater categorization address rising trends in depletion.
- Surface drainage is effective for water levels up to 1.5 m, while vertical drainage is needed for deeper levels.
- Success in anti-waterlogging efforts, like in Jhajjar district, showcases viable solutions and increased farmer yield.
- Reclaiming waterlogged areas promises social, economic, and environmental benefits, including improved soil health and additional income for farmers.

ii. Water Logging and Sustainability

Sh. R.K. Yadav Director, CSSRI, Karnal, Haryana, gave a presentation titled "Water Logging and Sustainability".

Following were the Key highlights of his presentation:-

- About 3.93 lakh ha area was affected by pre-monsoon waterlogging and soil salinity in Haryana in 2020.
- According to Haryana Groundwater Cell, 2021, Critical waterlogged saline area has increased from 49,270 to 69,788 ha from 1998 to 2020.

- Waterlogging is mainly due to inefficient on-farm water management, inadequate drainage capacity, Congestion/blockage of natural drainage due to rapid expansion of infrastructural projects.
- Sustainable drainage systems mitigate excess water and minimize waterlogging risks.
- Technological options to address the waterlogging and soil salinity are: Surface drainage with open drains/pipe drain in both gravity and pump outlets, Sub-surface pipe drainage (SSD), Vertical/tube well drainage, Bio drainage, Saline agriculture/horticulture/agro forestry, Saline aquaculture, saline aquaculture integrated with SSD where outlet is not available.
- Adopting modern soil management practices improves soil structure and water infiltration.
- Subsurface drainage is a technically feasible, cost-effective, and social acceptable operational technology used extensively for reclamation of waterlogged saline soils.
- In vertical drainage, water is pumped through a shallow tube well. Pumped water is used for irrigation and it also lowers the water table, thus making it a dual purpose structure.
- Bio-drainage is a proven technology to arrest salinity build-up in canal commands with growing of suitable tree species.
- Farm Ponds are used for rainwater harvesting for irrigation and polyculture of fish. Storage rainwater can be used to irrigate 80 % of farm land.
- Leveraging innovative technologies for real-time data enhances water use optimization and resilience.
- Developing resilient environments ensures the long-term sustainability of water resources and ecosystems.
- Variable Rate Irrigation optimizes water usage, enhancing resource efficiency and sustainability.
- Waterlogged areas offer untapped opportunities for expanding aquaculture
- Priority for increasing drainage density of surface/pipe drains needs to be given to prevent the expansion of surface waterlogging and soil salinization in south-west districts of Haryana state.
- Priority should be given to reclamation of waterlogged highly salinized areas underlain by saline groundwater in the state through integrated drainage (SSD, surface drainage and salt tolerant varieties) for restoration of productivity of irrigated agriculture.

iii. Groundwater Scenarios, Water Logging and Sustainability

Sh. Anup Nagar, (Retd.) Regional Director, CGWB, Haryana, gave a presentation titled "Groundwater Scenarios, Water Logging and Sustainability"

Following were the Key highlights of his presentation:-

- India Ranks 132 in water availability.
- India is the largest Ground water user in the world with approximately 25 of the global withdrawals, whereby 67% of the irrigation needs and 80% of the drinking water needs are met through Ground Water.
- Sustainability hinges on improving water availability, ensuring river and ecosystem health, and mitigating water-related disasters.
    - Measures like upgrading water infrastructure and lining sewers and drains aid in managing water quality.
    - Promoting **community participation,** incentivizing treated/grey water use, and rainwater harvesting enhances sustainability efforts.
    - Enhancing monitoring mechanisms for groundwater and water quality is crucial.
    - Developing an institutional framework like a unified water framework is essential for effective water management.

iv. A Solution to Urban Water Logging and Ground Water Depletion

Prof./Dr.Arunangshu Mukherjee, Director, Manav Rachna Centre for Advance Water Technology and Management, Faridabad, gave a presentation titled "A Solution to Urban Water Logging and Ground Water Depletion".

Following were the Key highlights of his presentation:-

- Urban water-logging is now recognized as a **new disaster**, exacerbated by rapid urbanization and climate change.
- High groundwater extraction rates in urban areas worsen groundwater depletion.
- Action research by MRCAWTM, supported by DST, offers an eco-friendly solution to address both issues.
- The **solution** involves pre-treating accumulated water, then using it to recharge aquifers rapidly and safely.

- Implementing such solutions is crucial for mitigating urban water-logging and groundwater depletion sustainably.

Conclusion of the Session

In her concluding remarks, **Smt. Keshni Anand Arora IAS (Retd.), Chairperson of the Haryana Water Resources Authority,** emphasized the critical importance of addressing water logging and sustainability as fundamental pillars for ensuring food security, recharge of ground water, safeguarding land health, managing water resources effectively, and adapting to climate change challenges.

She highlighted notable initiatives such as **Integrated Water Resources Action Plan (IWRAP),** construction of 75 ponds and dams on the Aravali range in Gurugram to prevent water flow downhill, illustrating the proactive measures taken to mitigate water-related issues. Furthermore, she underscored the necessity for similar efforts in areas like Faridabad.

Acknowledging the collaborative efforts of all departments involved, she praised **Sh. Prabhaker Kumar Verma**, for having farsightedness in visualizing the need for integrated management of water and his extensive efforts for Ponds Management; **Dr. Satbir Singh Kadian,** for the progress made in implementing vertical drainage solutions. She commended **Sh. Pankaj Agarwal IAS, Commissioner & Secretary, I&WRD** for their extended support which led to significant contributions to land reclamation in District Jhajjar through vertical drainage. Stressing upon the need for integrated approaches, she emphasized that tackling water logging requires coordinated efforts across various sectors, with particular emphasis on the significant roles played by stakeholders such as Agriculture, Irrigation, Forest, and Fishery departments.

She also urged the Central Soil Salinity Research Institute (CSSRI) to actively contribute to achieving water security and resilience in Haryana, recognizing the institute's crucial role in this endeavor.

She emphasized that our achievements are not solitary but are gauged by the tangible benefits we deliver to our communities. Enhancements in groundwater quality, augmented agricultural yields, and bolstered resilience amidst challenges stand as testaments to our dedication to sustainable water resource management.

In advocating for decisive policy actions to effectively combat waterlogging, she concluded by extending her heartfelt **congratulations** to Sh. Prabhaker Kumar Verma, Executive Vice Chairperson of the Haryana Pond & Waste Water Management Authority, for orchestrating

the wonderful event. This gesture underscored the State Government's dedication to collaborative initiatives and the promotion of sustainable water management practices within the State.

In conclusion, she urged all participants to remain resolute in their determination to surmount the obstacles ahead. Through unified purpose and unwavering resolve, the State shall forge a future where water flows abundantly, nurturing life and prosperity for generations to come.

Technical Session III: Role of Youth in restoring and managing ponds

Sh. Prabhaker Kumar Verma, Executive Vice Chairperson, Haryana Pond & Waste Water Management Authority presided the session as the session Chief Guest. He held that Water shortages continue in several regions, and are projected to increase. He emphasized that youth form the backbone for successful implementation of any initiative in water sector.

He informed that therefore Pond Authority engages students by sensitizing them about the status of the dwindling water resources and encourage them to take up innovative and scalable ideas for the restoration of the of the ponds and its ecology.

He briefed that Pond Authority plays a crucial role in leveraging the potential of the youth belonging to various universities. These youth are mobilised, so that they can gain hands on experience through field visits and internships, for which they will be certified by the Authority. This way the students can learn about the grassroots issues in water conservation, pond management, pond rejuvenation, impact on livelihoods from water pollution, impact of climate change on water resources, impact on biodiversity and overall impact on sustainable development.

A brief methodology for engaging the students is mentioned below as follows:-

- Sensitizing the students of Universities for Conservation of Water and Restoration of Ponds.
- Mobilizing interested students for conducting visits.
- Groups of Students are formed to visit villages under the guidance of the Faculties.
- Atleast 5 such groups are formed in each university, who are allotted 5 villages each which makes each university responsible for atleast 25 villages for carrying out studies and organize awareness programs with the villagers with respect to Conservation of Water as well as to keep the restored ponds clean.
- These groups are named on the names of rivers.
- These students take feedback from the villagers about their situation.
- Students also contact the students of schools to sensitize them.

Thi she said is a major contribution to its efforts at creating **"Public Participation"** especially through students for restoring ponds by working at the grassroots level and reaching the masses so that the pond management work is community led and community owned. Not only this, it creates a generation which values water conservation.

He elaborated that **"Jan Bhagidari"** is very crucial as it translates into an improvement of the environment of both inside and outside the pond. Moreover it enhances the ground water table through Rain Water Harvesting and reduces the water stress along with reducing the problem of runoff, soil erosion etc.,. This relates to Sustainability and overall improvement of the ecosystem. Thereafter, he opened the Session III for presentations and discussions to take place.

The Session started with the Presentations from experts in the area of Role of Youth in Restoring and Managing Ponds and thereafter open house discussions followed. There were in all three presentations from different universities including **Prof. Rajni Saggu, J.C. Bose University of Science & Technology; Prof. Vijay Sharma, Deen Bandhu ChotuRam University of Science & Technology (DCRUST), Sonipat; Dr. Naresh Kumar, Chairman, Department of Geology** ;who presented on various topics the details of which are mentioned below:-

i. **Role of Youth in SDG 6:**

Prof. Rajni Saggu, J.C. Bose University of Science & Technology, Faridabad gave a presentation titled "Role of Youth in SDG-6".

Following were the Key highlights of her presentation:-

- World Water Day celebrates water and raises awareness. It is about taking action to tackle the global water crisis.
- According to **UNICEF**, poor sanitation, lack of clean water as well as hygiene has adverse effects on people across the globe.
- Protecting and restoring water related ecosystems and their biodiversity can ensure water purification and water quality standards.
- Without proper water governance, there is likely to be increased competition.
- Youth are playing a crucial role in water management through various initiatives and projects such as conservation campaign, community engagement, technology innovation.
- Their active involvement and innovative approaches have led to significant achievements and positive impact in this field.
- She concluded by quoting:- **"Youths are the missing piece of the puzzle for revolutionary scientific anchor for the current and future water management solutions."**

ii. **Innovative Ways Of Celebrating World Water Day By the Youth Community**

Prof. Vijay Sharma, Deen Bandhu Chotu Ram University of Science & Technology (DCRUST), Sonipat, gave a presentation titled "Innovative Ways Of Celebrating World Water Day By the Youth Community":-

Following were the Key highlights of his presentation:-

- World Water Day, held on 22 March every year since 1993, is an annual United Nations Observance focusing on the importance of freshwater.
- Awareness and Education about individual consumption's impact on water availability are crucial for fostering collective responsibility for water conservation.
- Promoting Sustainable Practices in Supply Chains encourages businesses to adopt sustainable water management practices.
- Aquifer Recharge Techniques replenish depleted aquifers through managed recharge methods and artificial groundwater recharge.
- Youth has an important role to play in working towards safe water and increased water awareness for building a water-secure future for generations to come
- Now it is utmost essential for the youth of India to step out and spread the word, **"Save Water! Save Life!**
- Youth offer new outlooks and creative solutions to water issues by methods such as:-
    - leveraging technology for monitoring, management, and conservation

- Mobilizing communities and advocate for water-related policies.
- Developing new technologies and business models for water sustainability.
- Collaborating with various stakeholders to amplify their impact.

- Six young environmentalists, recognized as *UNEP Young Champions of the Earth*, led by example in reversing pollution, advocating for sustainability, and improving access to clean water; Their efforts demonstrate the importance of youth involvement in addressing water-related challenges globally.
- He concluded by quoting **"When the Well is Dry, We'll know the Worth of Water."**

iii. Student participation in pond rejuvenation practices, in view of Geology of Haryana

Dr. Naresh Kumar, Chairman, Department of Geology (Kurukshetra University) gave a presentation titled "Student participation in pond rejuvenation practices in view of geology of Haryana".

Following were the Key highlights of his presentation:-

- Ponds are important for Biodiversity, Balanced ecosystem, Water quality, Nutrient balance, Hydroperiod modification, Aeration and Algae control.
- Pond rejuvenation helps in Ground water Recharge, improved water quality, increased water storage capacity, better crop productivity, and has overall environmental benefits.
- Several factors need to be considered while restoring ponds including Geological Conditions, Environmental Factors, Soil Conditions, Topography and Slope Stability, Ground Water Conditions, Infrastructure resilience, Climate Change Impacts, Hazard risks of each specific site.
- The University and in particular Department of Geology along with the Haryana Pond Authority aims to Involve its Students in pond rejuvenation practices and waste water management by :-
  - Motivating research scholars to do dissertations and data collection works on pond rejuvenation.
  - Creating a geochemical lab for analysis of water samples.

- Publishing research papers.
- Utilizing the expertise of professors, in groundwater water recharge Techniques, data generation and interpretation.
- Establishing the Geology Department as Nodal Centre for capacity building programs for training of farmers and village Community.

- By actively engaging youth and empowering them as environmental leaders, sustainable development and biodiversity conservation goals can be achieved.

Conclusion of the Session

Prof. Dinesh Kumar, State NSS Officer, Haryana, graced the session as the Session Chief Guest.

He elaborated that Youth can play a vital role in pond management and conservation, contributing to the protection of these valuable ecosystems for future generations. He informed that the world aims to address Water Crisis through Sustainable Development Goal 6 i.e. Clean Water and Sanitation. He further spoke that there is an urgent need to prioritize Pond Management because of the adverse impacts of Climate Change, Growth of Urbanization, etc., as ponds act as cooling Islands during the extreme heat waves experienced in a tropical country like India.

- He explained that Innovative strategies by the youth community can in particular help the generations deal with the imminent crisis. Additionally, he underscored that Young people have the potential to be effective agents of change as they are better equipped to understand and take action on water-related risks.
- He laid emphasis on Spreading awareness in the society about the Water conservation techniques.

Finally, he congratulated **Sh. Prabhaker Kumar Verma, Executive Vice Chairperson,** Haryana Pond & Waste Water Management Authority for organising the event.

Conclusion

Sh. Prabhakar Kumar Verma, Executive Vice Chairman, Haryana Pond & Waste Water Management Authority **concluded the session by Presenting the Synthesis of the Day** through a brief **Presentation** whereby he elaborated that –

World Water Day is an opportunity to learn more about the issues of water and take action to make a difference which includes water scarcity, inadequate water supply, water pollution, lack of sanitation, and the major issue of climate change.

He **pointed out** that, it may be obvious to say that water is the source of all life but as long as both water quantity and quality drop, many fragile and conflict-affected regions will continue to suffer from unrest. Cooperation is essential to treat water as, a need for all.

In regions with low water quality and/ or quantity, climate change can multiply risks. The natural environment e.g. forests, soil, wetlands contribute to management and regulation of water availability and water quality, he informed.

He mentioned that the Haryana Pond & Waste Water Management Authority (HPWWMA) addresses not just water scarcity through pond restoration and improved management, but also tackles wastewater with innovative solutions. He underscored that, the Pond Authority encourages through visits (Jan Samvaad, Jan Chetna, NukkarNatak etc,) social media platforms, etc., to utilize celebrations/occasions for plantation of trees, encourages biodiversity conservation, control pollution. The idea is to create a sense of responsibility towards the environment, this creates a holistic impact on the lives of the people, thereby improving social lives, improving Key development parameters such as health, livelihood, sanitation, wellness, reverse migration trends and promote overall Sustainable Development. Therefore, he said that recognizing the need for community ownership and responsible use of water, the Authority fosters Public participation i.e. **"Jan Bhagidari"** to raise awareness. This pioneering initiative of the Government to formulate a Pond Authority, he informed, is a first of its kind, aiming to secure a sustainable future by revitalizing ponds and managing wastewater comprehensively.

He mentioned that Youth has an important role to play in working towards safe water and increased water awareness and, the conference aims at helping create a generation passionate about water conservation and in particular Pond Management.

Therefore, he held that it is important to lay down strategies and decisions for Water conservation and Management and in Particular Pond restoration and Management and also Greywater Treatment.

Thus, he highlighted the Following "**Points of Action** "to be taken which are mentioned below:-

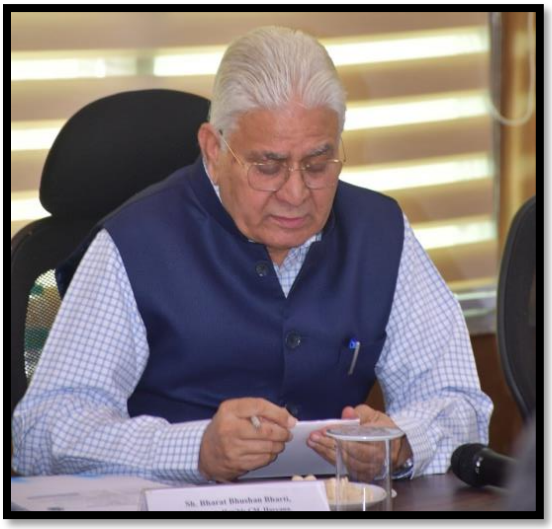
- Pond Authority has a significant role in **augmenting supply** of water by diverting flood water particularly of rivers/tributaries, aquifer mapping, & Rejuvenating ponds that have been encroached.
- The Authority aims to Revive the ponds that have been visualized through Geo-mapping/Geo-tagging, and revenue records which have now been encroached or dried up.
- **It was brought out that there is** an urgent need for integrated approaches to tackle water logging.
- The Authority is in the process of launching its **Mobile App** and the Application has already been sent to the Google for testing.
- The successful implementation of using **CWL for treatment of Drains** carrying Industrial effluents has also paved the way for HPWWMA to use it in other Industrial Drains of the State for treating effluents, which can be used for Irrigation as well. Therefore, the Authority is in the process of implementing this at other sites in the State particularly at those ponds where restoration works are ongoing.
- It was decided that **SOP's** shall be formulated for appropriate and efficient Grey Water Treatment using nature based solutions.
- The Authority aims to expand and strengthen its existing Laboratory to be able to conduct testing to cater to needs of standard parameters prescribed for ponds.
- The Authority is also in the process of **getting 3rd Party Quality Assessment** for its Pond Restoration works.
- The Authority has also sent a proposal to the Government for hiring an **Agency for conducting Water profiling** which includes Site Analysis, Measuring Water Impurities, along with the Restoration Works suggesting suitable Nature Based Treatment Technologies as per the specific site conditions.
- The Authority is in the process of collaborating with various Universities such as **Kurukshetra University, Kurukshetra; Haryana Central University, Mahendragarh;**

Deenbandhu Chhotu Ram University of Science and Technology, Sonipat; J.C. Bose University of Science and Technology, Faridabad in order to engage them as knowledge partners of the Pond Authority and thereby utilizing the expertise of professors and students to innovative and scalable ideas for the restoration of the of the ponds and their ecology.

- HPWWMA is in the process of conducting "Workshops cum Awareness Programs" at Universities such as **Guru Jambeshwar University of Science and Technology, Hisar; NIT Kurukshetra, Shri Vishwakarma Skill University, Palwal; Maharishi Dayanand University (MDU), Rohtak,** etc.,.
- The dedication and **innovative ideas of youth** can be instrumental in reviving and managing ponds, ensuring a sustainable water future for Haryana.
- The Authority aims at creating **Geochemical labs** in various Universities for monitoring and analyzing the water samples for engaging and empowering the students.
- It is proposed that the State Govt. shall add a **curriculum on water awareness in different disciplines of study to mainstream the issue of water scarcity** in schools and universities.
- **NSS volunteers** can take a lead role in promoting awareness on water conservation, pond rejuvenation and sustainable groundwater management.
- Continuous support from HPWWMA to the students of various Universities in getting hands-on experience in the field of water conservation and restoration through field internships for Pond Protection will be ensured
- The Authority is in the process of utilizing the **CSR** component for pond rejuvenation along with a holistic focus on Adarsh Gram Vikas where Complete drainage, Solid Waste Management, Cattle Dung Management, Health, , Education, etc. will be taken care of.
- It was proposed that the Stakeholder Departments shall formulate a **Coordination Committee** of five departments comprising HWRA, HPWWMA, IWRD, Saraswati Heritage Board, and HSPCB to be chaired by the Chairperson of HWRA, which shall meet at least once a month to strategise and synergise the efforts for water conservation.
- The Authority aims for **cross learning** at departmental level as well as learning from best practices from other states, regions or countries that have effectively managed and restored rejuvenated ponds. So, it looks forward to having close collaborations so as to achieve the aim of a water secure Haryana.

Way Forward

Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana delivered the way forward by elucidating the Pathways for a Water Secure Haryana.



He informed that the United **Nations World Water Development Report 2022** has encapsulated global concerns over the sharp rise in freshwater withdrawal from streams, lakes, aquifers and human-made reservoirs, impending water scarcity being experienced in different parts of the world.

By quoting ***"Jal hai toh Hum Hain"***, he pointed that Sustainable management of water resources and access to safe water and sanitation are essential for unlocking economic growth and productivity. There is an imminent need to continuously evolve sustainable policies and practices, especially in the current context of Rapid urbanisation and the adverse impacts of global rise in temperature.

He also emphasised that such Seminars, Conferences, Workshops, Adequate evolution of strategies through Research programs, involvement of Youth and most importantly documenting such efforts is an important step in the direction of water conservation and management. He therefore urged all to comprehensively work in the field of water sector and in particular towards formation of the **Coordination Committee** involving stakeholder departments to inject a Multiplier effect in the ecosystem of Pond Management and overall water management.

At the end, ***he congratulated Sh. Prabhakar Kumar Verma,*** *Executive Vice Chairman, Haryana Pond & Waste Water Management Authority (HPWWMA) for successfully organising the event and appreciated the presenters for their wonderful presentation.*

Vote of Thanks

Sh. Ravinder Kumar Sharma, Executive Engineer, HQ, HPWWMA, from the Organising Committee, expressed his gratitude to the distinguished dignitaries present , whose esteemed presence he said has greatly honoured this event. He also expressed his sincere gratitude to the Chief Guests for gracing the occasion.

Moreover, he thanked the Speakers for sharing their valuable knowledge and expertise through presentations which were truly enriching and fostered engaging discussions.

He extended his heartfelt appreciation to each and every one present for joining the event as their participation he said has made this event a resounding success. Thereafter, he expressed to have such engaging sessions in future as well to continue to make sincere efforts and applauded everyone who made this event possible.

Key Achievements

- Haryana pond and waste water management authority (HPWWMA) successfully organized a day-long conference on **"Pathways to a Water-Secure Haryana"** to commemorate World Water Day on 21 March, 2024.
- The event showcased the efforts of “Haryana Pond and Waste Water Management Authority (HPWWMA)”in furthering the agenda of “Water for all”, which focuses on restoring ponds to make adequate quality of water available for all.
- It showcased the enthusiasm of all the Dignitaries and Participants present in promoting a culture of water conservation and work for overall pond restoration.
- The event brought together **policy makers, researchers, leading scholars, practioners** in water management to foster meaningful dialogue on themes such as Nature based Technologies to Greywater Treatment, Water Logging & Sustainability and Role of Youth in Restoring and managing Ponds.
- The event **culminated into extensive discussions** wherein everyone pledged to make Haryana a **Water Secure State** through making concerted efforts including conducting Research, design such policies and implement water efficient strategies, restore ponds and actively involve the students in the process as they need to be aware and take ownership of the water resources.

Annexure I: Snapshots


अप्सु अन्तः अमृतम्


WORLD
WATER DAY


Registration

Annexure II: Schedule

MINUTE TO MINUTE DETAIL OF THE PROGRAMME 21st March 2024 Pathways to Water Secure Haryana Venue: Conference Hall, The Haryana Pond and Waste Water Management Authority, Plot No. 9, DHL Square, 3rd Floor, Sector-22, HSIIDC, IT Park, Panchkula-134109
Registrations: 9.30 AM to 10.00 AM

Inaugural Session

Timings	Dignitaries	Name / Designation
10:00 - 10:10 AM	Lighting the Lamp	
10:10 – 10:15 AM	Welcome Address	Sh. Ravikant Uppal, TA, HPA
10:15 – 10:25 AM	Documentary	
10:25 – 10:50 AM	Pond Authority: An Overview	Sh. Prabhaker Kumar Verma, Executive Vice-Chairman, HPA
10:50- 11:00 AM	Address by Esteemed Guest.	Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana
11:00- 11:15 AM	Strategic Vision by the Chief Guest.	Sh. P. Raghvendra Rao, IAS (Retd.), Chairman, HSPCB

Technical session I

Theme: Grey Water Treatment: Nature Based Solutions to Pond Conservation (w.r.t specific site conditions like – Suitable site, site with Land Constraints, site with high water level)

Session Presided by:	Chief Guest: Sh. Devender Singh, IAS (Retd.) Advisor (IWRD) to Hon'ble CM, Haryana	

Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana.		
Time	**Title**	**Speakers**
• 11:40 AM - 11:50 AM	• Keynote Address	• **Sh. Devender Singh (IAS Retd.), Advisor (IWRD) to CM, Haryana**
• 11:50 AM - 12:35 PM	• Brief Presentation	• Sh. Avinash Kumar Sharda (Scientist, HPWWMA). • Mr. Harshvardhan, CEO, CDD India • ShubhiKesharwani, Gurujal • Dr.Babu Ram, Technical Advisor- Haryana State Pollution Control Borad.(HSPCB)
12:35 – 12:50 PM	Open House Discussions	
Lunch Break		

Technical session II

Theme: Water Logging and Sustainability

Session Presided by: **Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana.**	**Chief Guest:** **Smt. Keshni Anand Arora, IAS (Retd.), Chairperson, Haryana Water Resources Authority.**	
Time	**Title**	**Speakers**
2:10 PM - 2:20 PM	Keynote Address	• **Smt. Keshni Anand Arora, IAS (Retd.), Chairperson, Haryana Water Resources Authority.**
2:20 PM - 3:20 PM	Brief Presentation	• Dr.Satbir Singh Kadian EIC, IWRD.HWRA • Dr, A Mukherjee, CAWTM,MRIIRS, Faridabad • Sh. R. K Yadav, Director- CSSRI Karnal • Sh. Anup Naagar(Retd. Regional Director Haryana) CGWB
3:20 – 3:30 PM	Open House Discussions	

Technical session III

Theme: Role of Youth in restoring and managing ponds

Session Presided by: **Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana.**	**Chief Guest:** **Prof. Dinesh Kumar, State NSS Officer, Haryana**	
Time	**Title**	**Speakers**
4:00 - 4:10 PM	Keynote Address	• **Sh. Prabhaker Kumar Verma, Executive Vice-Chairman, HPA**
4:10 PM - 5:10 PM	Brief Presentation	• Prof. Rajni Saggu, J.C. Bose University of Science & Technology, Faridabad. • Prof. Vijay Sharma, DeenBandhuChotu Ram University of Science & Technology, Sonipat. • Dr. Naresh Kumar, Chairman, Department of Geology (Kurukshetra University)
5:00 – 5:25 PM	Open House Discussions	

Valedictory Session

Timings	**Dignitaries**	**Name / Designation**
5:25 - 5:35 PM	Synthesis	Sh. Prabhaker Kumar Verma, Executive Vice-Chairperson, HPWWMA
5:45 – 5:55 PM	Way Forward	Sh. B. B. Bharti, Advisor to Hon'ble CM, Haryana
5:55 - 6:00 PM	Vote of Thanks	Sh. R. K. Sharma , EE (HQ), HPA

End of the Conference