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WATER INSTITUTE

Confederation of Indian Industry

Compendium on

Water for Climate Neutrality

Good Practices by India Inc

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Compendium on

Water for Climate Neutrality

Good Practices by India Inc

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Prologue

The world is facing an imminent water crisis. Today, two billion people around the world are living in water-stressed areas with freshwater demand expected to outstrip supply, by, 40 percent within next 10 years.

The challenge is further getting exacerbated by climate variability and change. Water and climate change are inextricably linked. Rising temperatures are altering the water cycle with rainfall becoming more unpredictable, while droughts and floods become more severe and frequent.

The Intergovernmental Panel on Climate Change (IPCC) Assessment report 2021 emphasized how global warming is projected to intensify the global water cycle, "including its variability, global monsoon precipitation and the severity of wet and dry events". The world is likely to experience more water-related disasters and more pressure on food and freshwater as the climate crisis worsens. This has far-reaching impacts, testing society's ability to continue doing business-as-usual. Climate change not only has implications on the availability of freshwater—but can also stress infrastructure and systems used to treat, deliver and manage water resources.

The IPCC calls for an immediate and complete transformation of every sector of society. Emissions must peak by 2025 to achieve the 1.5° target as agreed in the Paris Agreement, and to reach the goal to halve greenhouse gas emissions by 2030 (UNFCCC 2015). Consequently, countries and companies are pledging to reach 'net-zero greenhouse gas emissions', in line with the 1.5° target. IPCC has identified numerous climate mitigation measures that can provide a pathway to achieve rapid transition to net-zero emissions. **Many of these measures have a direct link to freshwater (SIWI 2023).**

Many of the transformations needed to reach net zero emissions target, depend upon a reliable access to freshwater while they are likely to have a significant impact on freshwater resources and/or ecosystems. At the same time, the water sector itself offers untapped mitigation potential: climate smart water management, for instance, can significantly avoid and reduce emissions of carbon, methane, and nitrous oxide, emanating from urban water and wastewater management, and mismanaged or drained wetlands (SIWI 2023).

The critical role of water in climate action is often overlooked. A primary barrier is knowledge gaps of the direct and indirect interrelations between freshwater and climate mitigation at global, national, and local levels. Knowledge or information gaps can lead to water-related risks and impacts not being considered at all, or only partially, in actions.

One of the pathways for ensuring that climate action is long-term effective and successful for both humans and nature is to make it water-smart and inclusive. This publication, a compilation of good practices undertaken by the Indian industry for overcoming the climate change crisis, aims to enhance the understanding on the subject, unleashing opportunities for a transformational change. It attempts to reinforce and re-ignite the climate change conversations as an important means to enhance knowledge for a better water future.

Foreword

In the face of escalating climate change challenges, the imperative for prudent water management has never been more urgent. Holistic water resource management is a pre-requisite for the development of a nation.

CII's Centre of Excellence on Water, CII-Triveni Water Institute, through its unique services and state of art digital tools, WATSCAN, Water Audits, Water Neutrality, Blue Rating System, and Water Awards, is extensively engaging with stakeholders to enable water security across the country and beyond.

Prudent stewardship of water resources can pay large dividends and can go a long way towards neutralizing the adverse impact of climate change on water. This Compendium on "Water and Climate Neutrality – Good Practices by India Inc" carries a wealth of case studies and good practices drawn from diverse sectors, illustrating how industry leaders are forging pathways towards water efficiency and resource sustainability.

As we navigate the complex nexus of water, climate, and development, let this Compendium serve as a guidepost for action. Together, let us harness the power of water as a force for sustainable growth, prosperity, and resilience.

I hope that the publication will catalyse stakeholders to think strategically about future water management practices and undertake collective actions towards a water secure future.

Nikhil Sawhney
Chairman
CII-Triveni Water Institute

Foreword

The global climate crisis impacting local water systems has led us into a new era of environmental urgency. As we delve into the heart of the climate crisis, we find that water is a crucial factor, influencing issues like shortages, changes in rain as well as aquatic life.

Recognizing this nexus offers us an important perspective on pathways to innovative solutions for both mitigating climate change and adapting to its inevitable repercussions. Only through concerted, collective action can we forge a sustainable future for generations to come.

CII's dedicated Centre of Excellence on Water charts new techniques and water management strategies, incorporating operational, technological and behavioural changes to reduce waste and improve the water scenario. The Institute, through its innovative tools and techniques, assists industries analyzing water usage and identifies cost-effective measures for attaining water use efficiency, both within the plant and at the watershed level.

We strongly believe that corporate sector engagement in climate change adaptation is vital for achieving the Sustainable Development Goals (SDGs). Indian industry has been taking concerted steps to improve the availability and quality of water for communities, businesses and the environment by engaging, networking and partnering with diverse stakeholders.

This Compendium, '**Water for Climate Neutrality**,' is a collection of case studies on industry best practices from various sectors. It offers stakeholders insights into how and where they can adopt some of these practices. The strategies shared in the Compendium range from low to medium cost and are easily adaptable and scalable.

I am confident that the knowledge presented in this publication will inspire stakeholders to think innovatively about adopting and implementing sustainable water management practices in the country.

Chandrajit Banerjee
Director General, CII

Message

Water lies at the heart of sustainable development, as it plays a crucial role in facilitating social-economic progress, maintaining healthy ecosystems, and ensuring human survival. However, the impacts of climate variability are increasingly affecting quantity and quality of freshwater resources, posing a challenge to economies, societies, ecosystems and livelihoods.

To address these challenges, it is imperative to implement proactive climate-resilient water management measures. CII's National Committee on Water acts as a catalyst in promoting excellence in water management by facilitating self-sufficiency in water at the state and national levels. Over the years, the Committee has taken impressive strides towards creating greater awareness and helping industry achieve momentum in water management.

"Water for Climate Neutrality: Good Practices by India Inc" showcases exemplary initiatives undertaken by the industry to respond to the emerging water challenges emanating from rising climate variability. The Compendium serves as a repository of scalable and replicable water related adaptation and mitigation strategies to address impacts of climate change on water security.

I am sure that the publication will inspire stakeholders to strategically think over their approaches to water management for building resilience on climate change and encourage collective action towards building a water-secure future for all.

Rajesh Sharma
Chairman
CII National Committee on Water

Message

The impact of climate variability is affecting availability and quality of freshwater resources, impacting businesses, lives and livelihoods.

As we strive to address climate change, it is crucial that we integrate water considerations into our strategies for climate action. Water must be at the forefront of our efforts to enhance ecosystem resilience, preserve biodiversity, and develop regenerative food and energy production systems. In short, water security must be a cornerstone of our climate resilience endeavours.

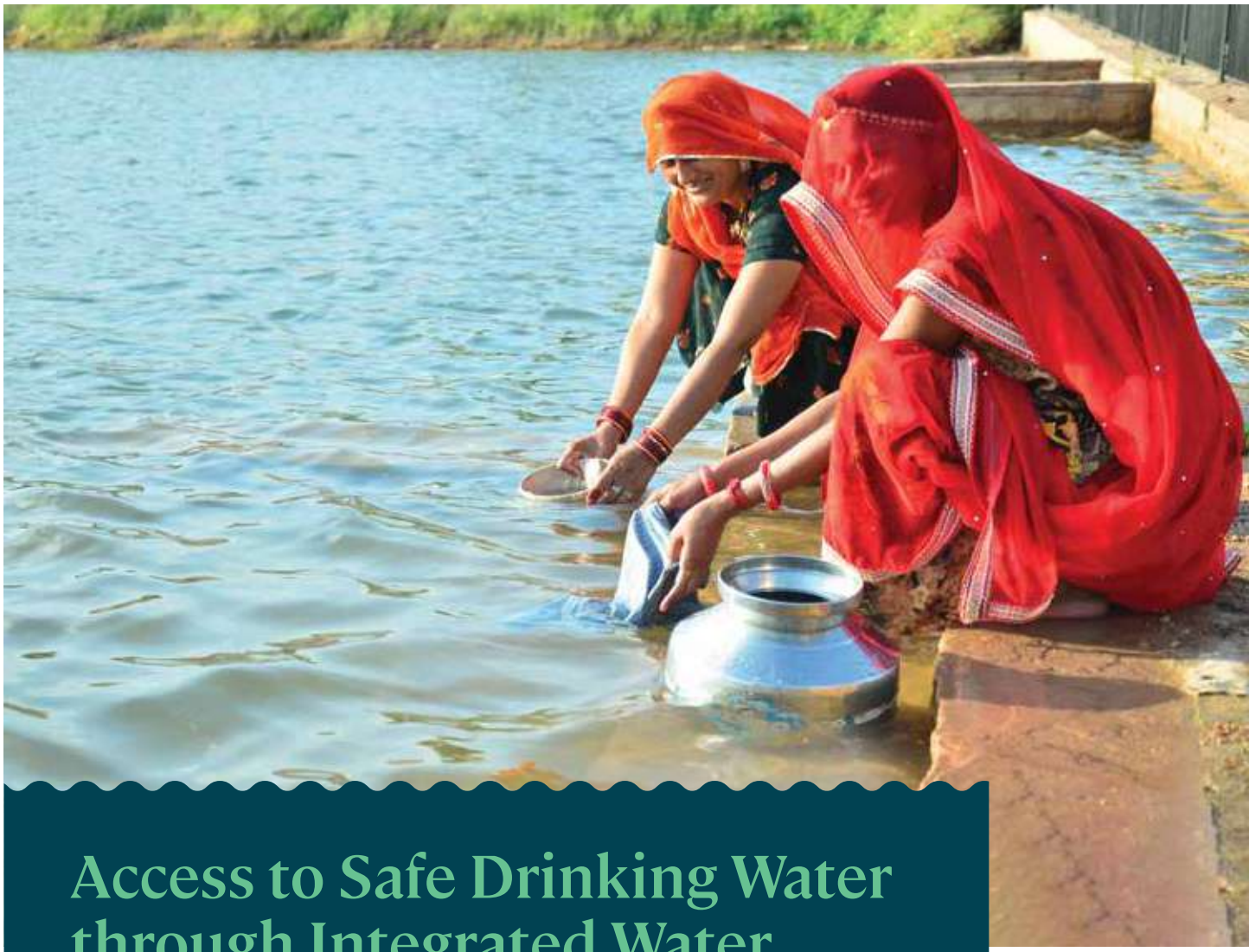
With the right blend of vision, commitment, and collaboration, we can pave a path towards water resilience and climate neutrality.

Recognizing this imperative, the Core Group on Climate Change and Water, as part of CII's National Committee on Water (NCW), has compiled successful case studies of water stewardship by Indian industry in this Compendium, "Water for Climate Neutrality - Good Practices by India Inc."

From innovative water reuse, recycling systems for reducing freshwater consumption, to restoration of water bodies, adoption of water demand strategies the Compendium demonstrates immense potential for collective action to a positive change. These are not only stories of inspiration, but actionable insights for policymakers, businesses, and communities.

I am sure the readers will find this publication useful in accelerating the movement on water management.

Deepak Kumar Arora
Chairman, Core Group on Climate Change and Water
CII National Committee on Water



Access to Safe Drinking Water through Integrated Water Resource Management

Ambuja Foundation

Project Location

Rabriyawas (Pali), Marwar & Mundwa (Nagaur), Rajasthan

Project Timeline

2005 - ongoing

Manoj Agarwal
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Objective

Check dam constructed by Ambuja Foundation at village Roopnagar.

The state of Rajasthan frequently experiences meteorological and agricultural droughts, impacting both population and livestock's access to drinking water, food, and fodder. Groundwater remains the primary dependable water source in the state. Ambuja Foundation's current project aims to address this challenge by developing drinking water infrastructure and sanitation in villages across Rabriyawas in Pali district, Marwar Mundwa in Nagaur district to address the chronic water issues. The project seeks to achieve the following objectives:

- Ensure availability of drinking water to households
- Reduce the burden on women and children to fetch potable water from distant sources
- Mitigate the risk of waterborne diseases by improving access to safe drinking water and sanitation facilities
- Revival of village pond for availability of water for livestock

How Achieved

The project enhanced access to safe drinking water through various initiatives, including promotion of individual Roof Rain Water Harvesting Structures (RRWHS), community-based RRWHS, establishment of Drinking Water Distribution Systems, installation of water storage tanks, and revival of handpumps, open wells and revival of ponds.

Prior to project initiation, a Participatory Rural Appraisal (PRA) was conducted to identify the specific water-related needs and challenges of the community.

Capacity-building activities and exposure visits were organized to empower the community and enhance their understanding of water management practices.

Safe drinking water availability was enhanced through:

Revival of village ponds

- Desilting and revival of existing ponds was undertaken to enhance their water storage capacity
- Implementation of water quality monitoring systems was carried out to guarantee safe drinking water

Roof Rain Water Harvesting System (RRWHS)

- Awareness campaigns were conducted to promote installation of rainwater harvesting systems on rooftops
- Financial incentives and subsidies were offered to households to encourage adoption of rainwater harvesting practices
- Groundwater recharge and soil moisture conservation measures undertaken

Community-led water literacy program and awareness

- Water literacy programs were initiated to educate the community on the importance of water conservation

Awareness campaigns

- Community events, workshops, and media platforms were utilized to raise awareness about efficient water use

Rain water for drinking purpose harvested by villagers in their houses

Impact

Drinking water structures established under the project have benefited approximately **6000** households in the project region by area

A total of **5752** individual RRWHS have been constructed, resulting in an estimated water storage capacity of approximately **8166.96** cubic meters

38 community RRWHS providing approximately **380** cubic meters of water storage capacity have been constructed

592 defunct hand pumps have been revived till date

The interventions have resulted in increase in drinking water availability from 2 to 4 months earlier to 8 to 12 months post-intervention

With improved water availability, sanitation has also improved. Compared to open defecation, access to water has helped improve the safety of women with higher levels of privacy

Improved availability of water has helped reduce drudgery for women who had to fetch water from a distance. This has also empowered them to use the time saved for children's education or other productive activities, thereby contributing to economic and social development

Water availability for livestock has been enhanced, which enables people to sustain their livelihoods

Link for more information - www.ambujacementfoundation.org

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Community-based Interventions to Offset Impacts of Climate Change on Ecosystem

Ashok Leyland

Project Location

Alwar, Rajasthan

Project Timeline

2018 to 2021

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Objective

Empowering Women : Women volunteers from each village trained to become 'water leaders' calling them 'Sujal Jankars'

Alwar, is a semi-arid region, experiencing water concerns. Rainfall is erratic and unevenly distributed, leading to water scarcity issues, during dry periods. Climate change is further exacerbating the problem. Groundwater tables in the region, are reported to be declining over time (by a meter a year). With no perennial rivers, groundwater recharge is of utmost importance to maintain the water balance in the area. Bamboli cluster, in Alwar, experiences similar concerns, where Hinduja Foundation has been working in 13 villages to improve water scenario. The focus is on:

- Encouraging adoption of environmentally friendly, water-efficient technological solutions to enhance water conservation in cluster settlements
- Promote appropriate sanitation habits and environmental hygiene through behavioural and sanitary reforms
- Establish and strengthen institutional community systems for equal access to water
- Foster a supportive atmosphere amongst communities for women to take up leadership roles

How Achieved

Participatory Rural Appraisal (PRA) undertaken for need assessment in the area through partners (Ambuja Cement Foundation (ACF) and Village Development Committees (VDC))

PRAs identified key water-related needs and challenges in 13 project villages that included:

- Over Irrigation - over pumping was a common practice
- Limited water storage structures

Interventions

Water management through adoption of climate smart irrigation and water storage structures. These included:

- Adoption of mini-sprinklers, (efficiently deliver water to plants), pipe sprinkler (optimal water distribution across agricultural fields) creation
- Revival of farm ponds (to collect rainwater for ensuring water availability throughout the year

Women were empowered through Water – Sujal Jankars. This included:

- Movement to build a women-centric, bottom-up approach for bringing in grassroots-level change. Sujal Jankar movement mobilised women to discuss water issues faced in communities
- Women volunteers from each village were identified and trained to become 'water leaders' calling them 'Sujal Jankars' to drive the cause
- The group, collectively addressed issues on water scarcity, personal hygiene and was responsible for creating larger awareness on the efficient use of rainwater; promote installation of Rooftop Rainwater Harvesting Systems (RRWHS); monitor quality of water to ensure safe drinking water access; and available government schemes
- Sujal Jankar members conducted regular meetings with SHG members, to provide women with accurate information on the above issues and project interventions

Impact

427 individual rooftop rainwater harvesting structures have been created till January 2024

28 community rooftop rainwater harvesting structures have been created till January 2024

Water storage capacity of **6480** cubic meters has been created through individual RRWHS and around **703** cubic meters through community RRWHS structures benefitting around **700** households.

Around **14198** cubic meters of ground water recharged

265 toilets constructed till January 2024, benefiting **265** households and **1590** villagers

Adoption of water efficient irrigation methods (22 mini sprinklers and 235 pipe sprinklers), covering **280** hectares, has increased crop area, with cultivation of 2 or more crops with improved incomes

Sujal Jankars have conducted over 200 trainings, which have raised awareness among over **3300** women about safe drinking access, menstrual hygiene management, and other women's rights

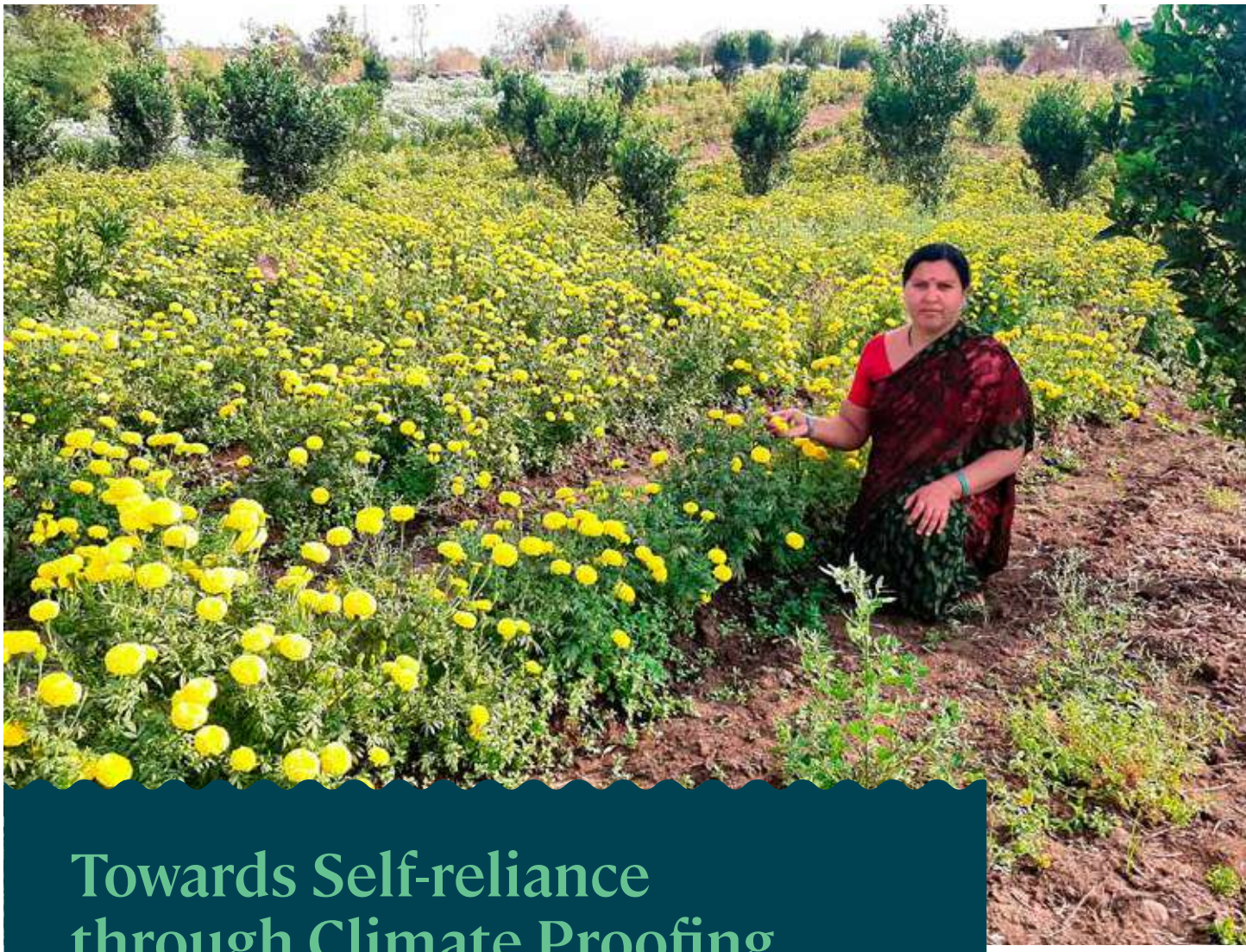
Improved water availability has reduced drudgery on women leading to improvement in their quality-of-life and providing time for other productive activities

Overall project covering **13** villages has impacted around **4469** households covering **26730** population

Link for more information - www.ambujacementfoundation.org

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Towards Self-reliance through Climate Proofing Agriculture

Bajaj Foundation

Project Location
Wardha District, Maharashtra

Project Timeline
2017-18 to 2021-22

Haribhai Mori
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Objective

Farmers Training on promotion of climate resilient crops at village Salai

Wardha district, in Maharashtra's Vidarbha region, relies predominantly on agriculture for livelihoods, facing risks due to rising climate variability. Soil erosion on sloping lands and declining water tables have further heightened these risks. Bajaj Foundation, in collaboration with NABARD, initiated interventions in villages Rahati and Salai (Pevat) in the district to address these challenges. The project aimed to:

- Raise awareness on climate change impacts and available solutions
- Improve livelihoods and boost the village economy

How Achieved

Water Resource Development

The project facilitated:

- Recreation of farm bunds, incorporating stone outlets to control soil erosion and channelize runoff water effectively
- Conversion of rainfed farming areas into protectively irrigated lands, integrating recharge pits for enhanced groundwater replenishment
- Encouragement of farmers to establish bori bunds to boost groundwater recharge rates, complementing government-built check dams

Addressing the problem of soil erosion and low productivity

- Construction of water absorption trenches (3000 meters) and Continuous Counter Trenches (1200 meters) to mitigate soil erosion
- Planting stumps of fodder trees to stabilize gullies and prevent soil runoff
- Siltation of check dams in streams to capture eroded soil, which was then used to replenish farming land, restoring check dam capacities and reclaiming eroded farmland
- Support farmers to undertake deep ploughing interventions, enhancing soil's water harvesting capacity and disrupting soil-borne pests' life cycles
- Motivation for farmers to apply tank silt to improve soil fertility

Capacity Building Measures:

- Organization of *Kisan Pathshala* to educate farmers on benefits of crop diversification and adoption of natural farming practices
- Establishment of agriculture tool banks to improve timely availability of tools for farmers
- Establishment of Village Knowledge Centres (VKCs) in each watershed area, providing farmers with a platform to consult and gather information from available resource materials
- Facilitation of women to form self-help groups and establish income-generating activities. Additionally, guidance provided on conserving indigenous seed varieties to foster self-reliant farming

Soil and water conservation measures carried at village Salai to demonstrate its importance.

Impact

Availability of water in village streams has extended from **8 to 12** months

Construction of recharge pits has efficiently recharged water tables, increasing availability in farm wells between March and the next rainfall

Adoption of sprinkler irrigation has expanded irrigated land from **150 hectare to 415.75 hectare**

Capacity building efforts have diversified cropping patterns, reducing the risk of crop failure and ensuring food security while providing year-round employment and increased incomes for landless families

Adoption of natural farming has increased average net profit in over 200-hectare area (from **INR 14,275 to INR 45,975** per acre), with additional income for the Gawali community

Digital advisory messages on natural farming practices and crop diversification have enhanced farming profits through timely adoption

Deep ploughing measures have effectively controlled pests on over **140** hectare of land

Fertilization of about **90** hectare area with green manure and biofertilizers, along with planting **13,500** fodder trees to stabilize gullies, has expanded cultivation area and improved net profits

Soil health cards of **348** farmers indicate improved soil health

Over the past decade, the village has seen a substantial increase in earnings, totalling approximately **INR 12,60,000** in village Rahati, and about **INR 4,38,31,855** in village Salai due to increased agricultural output

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Improved Land Management Practices for Building Climate Resilience - Disnau Watershed Project

Bajaj Foundation

Project Location

Sikar District, Rajasthan

Project Timeline

2021 to 2023

Haribhai Mori
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Objective

Farm Tank provides support irrigation to protect crop during rabi season

The project aims at improved land management through adoption of climate resilient measures and community participation.

Specifically, the project intends to:

- Implement sustainable agriculture practices
- Transform wasteland into cultivatable area through adoption of soil moisture conservation measures
- Create green cover through horticulture and forest development
- Improve pastureland and protect livestock
- Improve livelihood practices through micro-entrepreneurship development

How Achieved

The project involved implementation of various demand and supply side water management measures in village Disnau, District Sikar, Rajasthan. These included:

- Land levelling practices to transform wasteland into cultivable land
- Soil conservation activities such as earthern bunds, grass seeding, bund plantation for soil moisture conservation. Further, demonstrations on bioformulation such as Jeevamrut, Beejamrut, Dashparni at farm level, creation of indigenous seed bank at village level and promotion of natural farming practices to improve soil health were promoted
- Construction of Roof Rain Water Harvesting Structures (RRWHS) and farm tanks to meet water requirements at farm level
- Orchard development with micro-irrigation facilities and water tanks

- Introduction of different grass varieties such as Napier grass, stylo-hamata in the pasture land and at farmland
- Organisation of animal health camps to protect livestock from lumpy virus
- Encouragement to small farmers for direct selling of farm produce to the customer, establishment of small shops of cattle feed, grocery shops to generate additional income to the landless families
- Awareness creation and exposure visits for widespread adoption of good practices of water management, agriculture practices and livelihood generation


Landlevelling encourage farmers to adopt crop diversification


Vegetable cultivation in project village

Impact

32.22 hectare of wasteland transformed into cultivable land, yielding profits to the farmers **(INR 15,000 to INR 25,000)**

200 hectare of land developed as pastureland, covered under different varieties of grasses and forest plantation

Gram Jal Grahan Kshetra Vikas Samiti collected **INR 9,24,278** for sustainability of the project post-management activities

50 farmers undertook crop diversification with vegetable cultivation with the produce sold directly to the customers

68 hectare of land covered under earthen bunds, and bund plantation and grass seeding

39 hectare of land covered under orchard development through drip irrigation system

15 women started their business; women Self Help Groups availed benefit of credit linkage

1.26 million litres of water harvesting capacity created through **45** RRWHS and **18** farm tanks to meet the water requirement

25,997 saplings planted, improving green cover, managed by the community

Link for more information - http://www.bajajfoundation.org

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Project Unnati Mango - Addressing Climate-Nutrient-Water Nexus Challenges for Mango Value Chain

The Coca-Cola Foundation (TCCF)

Project Location

Districts of Lucknow, Barabanki, Unnao, Sitapur, Hardoi, in Uttar Pradesh

Project Timeline

2023 to 2025

Rajesh Ayapilla
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Objective

Celebrating a decade of success: Unnati, India's pioneering Fruit Circular Economy Project

Project Unnati Mango, led by The Coca Cola Foundation (TCCF) in collaboration with the Government of Uttar Pradesh and the 2030 Water Resources Group, is dedicated to addressing the challenges at the intersection of climate, nutrients, and water in the mango value chain of Uttar Pradesh.

The project aims to ensure water security by protecting water sources, promoting micro-irrigation for improved efficiency, and enhancing soil carbon through agronomic and mechanization interventions, bringing economic benefits to the mango value chain in UP. This initiative aligns with Coca-Cola's vision of establishing a Fruit Circular Economy under its Unnati Program. The project aims to introduce sustainable agricultural practices, including ultra-high to high-density fruit plantations and modern Package of Practices at the farm level. Specific objectives:

Enhancing Nutrient and Water Productivity

- Increase farm productivity for 50,000 farmers through micro-irrigation in mango plantations
- Achieve efficiency, emphasizing on more crop per drop and improved economic productivity (value per drop)

Mechanization and Digital Technology Adoption

- Boost adaptation of mechanization and digital technology, contributing to decarbonization and increased value addition in the mango value chain across target districts

Decarbonizing the Value Chain in Target Districts

- Utilize voluntary carbon markets to generate carbon credits
- Facilitate payments for mango growers adopting low-carbon agronomic practices and Renewable Energy-based farm technology

How Achieved

Technical Assistance for Mango Growers

- Create technical resources for an enabling ecosystem to facilitate expansion of climate-resilient value chain activities within and beyond Uttar Pradesh

- Harness Information and Communication Technology (ICT), including Voice SMS and Artificial Intelligence, to enhance crop management practices

Multi-Sectoral Partnerships Strengthening

- Actively cultivate partnerships across diverse sectors to unlock potential of value chain investments
- Facilitate public-private convergence for a unified and sustainable approach

Ultra-high-density plantation (UHDP) technique in practice

Impact

10337 mango farmers mobilized and registered through **165** community meetings

- Farmer Interest Group (FIG) meetings and capacity building workshops organized for 3160 farmers
- Enhanced awareness amongst project farmers on importance of formation of collectives i.e. Farmer Producer Organization (FPOs) and scope of collective marketing

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information - https://www.coca-cola.com/in/en/sustainability

Project Jaldhara

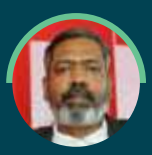
The Coca-Cola India Foundation

Project Location

Kolar district in Karnataka, Anantapur district in Andhra Pradesh

Project Timeline

2018 to 2021



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Objective

A transformed water tank in Kolar bringing fresh possibilities and sustaining communities

Project Jaldhara is a CSR initiative by Coca-Cola India Foundation that focuses on replenishing groundwater and improving farmers' livelihoods across 11 villages in Kolar, Karnataka, and Anantapur, Andhra Pradesh.

Targeting groundwater over-exploited zones, the project strategically addresses water challenges in identified regions, emphasizing on sustainable practices, improved agricultural productivity, and community involvement. The objectives collectively contribute to environmental resilience and socio-economic development. Specifically the objectives are:

- Improve groundwater levels through strategies that enable recharging in over exploited areas
- Construct storage structures for capturing runoff, improved recharge and water conservation
- Desilt and rejuvenate traditional water tanks to enhance storage and recharge capacity
- Conduct sensitization and training sessions promoting good agricultural practices, improved water use efficiency, and enhanced crop productivity

How Achieved

Water management and infrastructure development through locally designed approaches to expand water holding capacity, enable effective percolation, and improve groundwater levels.

- 5 check dams constructed in Anantapur to facilitate water replenishment in villages Koduru-Subbaraopeta, Muddapalli-Thimmadipalli, Madhurepalli-Kandurparthi, and Nallapareddy Palli
- 5 water tanks desilted and 6 feeder channels in Kolar for access to clean and safe water

Awareness, Community Mobilization, and Empowerment

- 7 Water Management Committees (WMC) and 4 Tank User Groups (TUG), formed and capacitated
- Capacity Building initiatives undertaken in both districts, engaging communities, conducting sessions to enhance knowledge about cost-effective agricultural practices

- IEC material prepared and disseminated for building awareness and community mobilization
- Social capital built for effective water resource management

Improvement in agricultural productivity through, enhanced water availability and water use efficiency optimization

- Increased silt application for soil enrichment
- Provided scientific inputs for enhanced crop productivity

Flourishing fields in Anantapur- Transforming agriculture through water conservation practices

Impact

Created water replenishment potential of over **6,85,000** cubic meters, benefiting over **1500** households in the region

Improved access to irrigation due to groundwater recharge with a **90%** increase in borewell water levels in Kolar and **35%** increase in area brought under irrigation in Anantapur

Improved livestock health and the availability of good-quality fodder contributed to an increased adoption of progressive animal husbandry practices. A **40-50%** increase in animal husbandry observed due to improved livestock health, generating additional income for farmers

By bringing more land under irrigation, usage of high-quality silt and increased availability of irrigation water led to improvements in soil health and higher crop production. Farmers in both Kolar and Anantapur reported an increase in crop production, by 50% to 70% (within time span of 5 years from 2017-2018 to 2022-23). 3-5 crops per season were cultivated compared to 1-2 crops before the intervention

Awareness and training sessions acted as a catalyst, enabling farmers to adopt soil and water conservation techniques, and maintain water tanks independently in the long term

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information - https://www.coca-cola.com/in/en/sustainability

Natural Resource Management for Building Climate Resilience

Dalmia Bharat Sugar and Industries Limited

Project Location

Ramgarh, Uttar Pradesh

Project Timeline

2017 to 2022

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Objective

Defunt borewells converted into recharge pits for under ground water recharge

Ramgarh, in Uttar Pradesh has been witnessing rising water related concerns amplified by climate variability.

To overcome the challenges, Dalmia Bharat, undertook the project with the objective to:

- Promote source sustainability through measures for combating declining groundwater in the area (supply side measures)
- Capacity building of the stakeholders against non-judicious water use (demand side conservation)

How Achieved

Established Scientific Baselines:

- Identified problematic practices through scientific assessments
- Conducted water quality testing for identification of safe drinking water sources

Interventions

Augmentation of Resources

- Repurposed defunct borewells for groundwater recharge in the area
- Water harvesting structures have been built using low- cost locally available material with a simple and robust design for a long life
- 5 demo farms have been set up in the area to help farmers learn and adopt the techniques of sustainable agriculture

Demand Management

- Land brought under mulching practice to prevent water evaporation
- Adopted innovative irrigation methods such as the trench method and plastic pipes

Monitoring and Evaluation

- Implemented a robust framework with benchmarking, key performance indicators, and regular review meetings

- Utilized monthly Management Information Systems (MIS) reports for tracking progress
- Conducted scientific data collection and third-party impact assessments for accountability


Desilting of village pond

Impact

Quantitative Impacts

Conserved 34.9 lakh KL of water through diverse interventions

Treated 1250 hectares of land through trash mulching

Achieved a water harvesting capacity of 34.9 Lakh KL.

Qualitative Impact

Reduction in waterborne diseases and improved overall community health

Community awareness regarding water conservation, hygiene, and responsible water use

Social Impact

Qualitative Impacts

Improved access to clean drinking water, quantitatively reducing waterborne diseases

Enhanced overall community health with increased community awareness on water use and hygiene practices

Quantitative Impact

1300 farmers sensitized on water conservation techniques and 200 farmers trained on sustainable natural farming techniques

100 youth trained on under leadership training program

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information - www.dalmiasugar.com

Khushali Paryavaran: An Environmental Sustainability Initiative

DCM Shriram Foundation

Project Location

Kota District, Rajasthan

Project Timeline

2021 – ongoing

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Objective

Waste weir construction at Foota Talab in Mohanpura for efficient water management and preventing excess overflow

Ladpura block, located in the southwestern part of district Kota, Rajasthan, exhibits topography with elevations ranging from 228 m to 517 m above mean sea level (amsl), significantly affecting water availability. The topography facilitates easy water runoff, causing low groundwater recharge, rendering traditional rainwater harvesting structures ineffective.

Further, deteriorating groundwater resources in Ladpura block have resulted in dried borewells reaching depths of up to 1000 feet, leading to water scarcity, impacting agricultural productivity with farmers struggling to harvest two seasons due to water scarcity.

Given this context, the primary objective of this program is to:

- Ensure sustainable water security in project villages through strategic implementation of rainwater harvesting and community-driven water resource management
- Improve farmers' livelihoods and increase income generation by enhancing water and agriculture management practices
- Cultivate informed and water conscious village communities to collectively manage water resources sustainably and restore ecological balance in the region

How Achieved

Implementation of Water Conservation and Livelihood Initiatives

- **Construction and Renovation of Rainwater Harvesting Structures:** 13 structures spread across targeted areas capture and store rainwater for various purposes, aiming to enhance water availability during dry periods to mitigate water scarcity impact on agriculture and community livelihoods
- Sprinkler Systems Installation: Adoption of efficient irrigation technologies to optimize water usage in agriculture has been undertaken. Installation of 50 units of sprinkler systems promoted water-efficient farming, reducing wastage, enhancing crop productivity, and contributing to sustaining livelihoods dependent on farming activities

Mobilization and Training Strategies for Farming Communities in Water Resources Management

- **Kisaan Jagriti Shivir:** These camps or workshops are tailored to educate and empower farmers in water resource management. They serve as platforms for knowledge dissemination, sharing best practices, and fostering community engagement in sustainable water usage

- **Exposure Visits:** Organized trips for farmers to witness successful water management practices firsthand, inspiring innovation and promoting adoption of effective conservation techniques

- **Village Water Councils:** These Councils facilitate local governance and decision-making regarding water resource management. Community members, stakeholders, and experts collaborate to develop and implement tailored water management plans, serving as platforms for dialogue and coordination at the grassroots level

Widening and deepening efforts at Foota Talab in Mohanpura village to enhance groundwater recharge, restoring water carrying and percolation capacities

Community sensitization for promoting ownership of provided resources and empowering sustainable water management practices

Impact

3000+ individuals mobilised through various community mobilization activities

10+ villages have been enabled as water secure, impacting **20,000** people and **13,000** animals

Over **50** farmer families equipped with sprinkler irrigation technique to promote water-use efficiency in agriculture

3.9 Lakh cubic meter of additional water storage created

60+ wall murals have helped to promote water literacy

900+ calendars distributed to raise awareness on water conservation

400+ school students sensitised towards the importance of capturing rain

Link for more information
https://www.dcmshriramfoundation.org/programs/khushali-paryavaran

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Climate Resilient Practices for Source Protection and Source Sustainability

Diageo India (United Spirits Limited)

Project Location

Alwar, Rajasthan

Project Timeline

2021 - ongoing

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Objective

Plantation of 2 Lakh trees under Trees Outside Forest Area in Rajasthan (TOFR) initiative at Alwar

Alwar region in Rajasthan is a dry region of India, where the significance of a good rainfall season is paramount. With limited water resources the ongoing initiative has been working on the objective of water source protection and source sustainability of Ruparail River Basin in Alwar, through adoption of a multi stakeholder collective action approach.

How Achieved

The project involved the following steps at the Ruparail River Basin level

Planning

- Identified shared water risks, challenges, and opportunities through a series of stakeholder consultations with 10 village panchayats via Gram Sabhas, interactions with farmers, and engagement with local NGOs
- Conducted a hydrological study to assess surface water flows, along with comprehensive mapping of water sources

Implementation of identified strategies

- Water replenishment projects - construction of check dams, pond desilting, tree plantation undertaken to protect water sources and ensure sustainability
- Water, Sanitation, and Hygiene (WASH) projects undertaken by installing drinking water RO systems and constructing toilets in schools for tribal communities
- Local WASH Committees with 50% women representation at the panchayat level established

Measuring impacts, evaluation, and disclosure

- Monitoring and evaluation process to track impacts (improved water availability) formulated for disclosure across key stakeholders

WASH Committee members at Alwar, Rajasthan

Impact

Impact at the catchment level at Ruparail River Basin

Implementation of rainwater harvesting structures, (**4** check dams, **4** ponds desilted, and rooftop rainwater structures in schools), significantly improved water holding capacity and recharge potential

Increased water availability for farmers resulted in doubling their income from cash crops like onion, vegetables, and cotton seed

Plantation of more than **2** lakh trees established a green cover, enhancing biodiversity in the region

Constructed over **100** toilets and provided **2** RO systems to schools, for improving access to clean drinking water and sanitation which has enhanced the health and hygiene standards

Replenished more water than consumed in operations, exceeding **65,000** cubic meters through various replenishment projects, leading to improved water table and availability, especially during dry months

Established a robust governance mechanism through Water and WASH committees with more than **50%** women representation

Link for more information -
https://www.diageoindia.com/en/news-and-media/press-releases/2023/diageo-s-distillery-in-alwar-rajasthan-becomes-the-first-spirit-distillery-in-asia-to-receive-alliance-for-water-stewardship-aws-certification-core

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Demand Driven Distribution System for Rural Water Distribution in Karaikal

Grundfos Pumps India Private Limited

Project Location

Karaikal, Puducherry

Project Timeline

January 2022 - ongoing

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Objective

Demand Driven Distribution system civil work at site

Karaikal, Puducherry faces serious challenge of availability of potable water. Rural villages in Karaikal, Puducherry such as Nedungadu, Akkampet, and Mudalimedu face daunting challenge of water scarcity, relying on water tankers and saline groundwater despite having pipes installed.

The overall project objective is to provide access to clean, reliable, and uninterrupted source of drinking water to the community. It aims to improve traditional water distribution systems with advanced water distribution systems that involve efficient use of pumps with Demand Driven Distribution (DDD) drives.

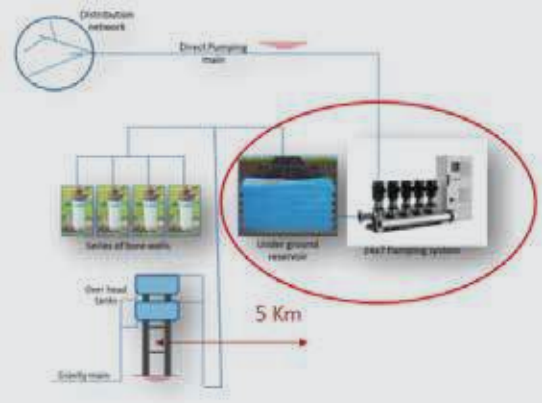
How Achieved

- The area has been dependent on a distant water source a 2,000KL overhead tank situated 10km away. Grundfos proposed a new water supply system that can effectively manage pressure, while reducing Non-Revenue Water (NRW) and increased saving on pumping energy.

- Grundfos' Demand Driven Distribution (DDD) solution intends to eliminate the need for construction of three intermediate water tanks as planned by Public Works Department, while ensuring continuous water supply.

- The Installation is in progress. It is expected that the project with reshape the region's water landscape, and also pave way to change the overall framework of water management in the State.

Grundfos Proposed Water Supply System



Impact

The project is currently under implementation. The expected impact will be:

Water access for **20,000** rural people at three locations of Nedungadu, Akkampet, Mudalimedu

Reduction in construction cost of intermediate water tanks by **60%**

Reduction in overall project cost by **25%**

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information -
https://www.grundfos.com/content/dam/local/en-in/page-assets/about-us/documents/Droplet-India%20Sustainability%20Newsletter%202024.pdf

Climate-Food-Livelihood Nexus for a Better Future of Tribal Communities

Grundfos Pumps India Private Limited

Project Location

Tapi district, Gujarat & Palghar district, Maharashtra

Project Timeline

September 2023 - ongoing

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Objective

Bee keeping session for farmers

Tapi district of Gujarat and Palghar district of Maharashtra have a significant tribal population and below poverty line (BPL) households, with traditional agriculture, as the mainstay of 85% population. Characterized by poor soil, low level of inputs, lack of awareness, uncertain rains and lack of irrigation facilities the area experiences poor crop yields.

Grundfos in collaboration with Under the Mango Tree (UTMT) Society, is working in these 2 districts to develop a replicable approach for promoting sustainable livelihoods for tribals through integration and blending of tested processes that revolve around beekeeping with indigenous bees.

The project aims to:

- Create a cadre of beekeepers to increase pollination cover for 8 villages while simultaneously being able to increase yields of their crops and neighbours crops
- Improve seasonal bee flora cover in the villages to increase the green cover

How Achieved

The project adopts a holistic approach, focusing on developing a skilled cadre of beekeepers capable of expanding pollination coverage across own and neighbouring villages. The project involves the following steps:

- Assessment of villages (in terms of their suitability for beekeeping) for project implementation
- Increased awareness about roles of bees and elimination of unsustainable practices like honey hunting
- Farmers selection for basic training in beekeeping
- Handholding support to trained farmer beekeepers in beekeeping. Training imparted on beekeeping techniques such as colony spotting and natural colony transfer
- Procurement of beekeeping starter kits for farmers trained in beekeeping

- Bee-flora intervention with project farmers
- Identification of Master trainers and development of material
- Strengthening Beekeeping Resource Centre established in the district


Women bee Keepers understanding bee box maintenace

Impact[1]

4200 individuals will be impacted (ongoing)

2,160 acres Biodiversity will be restored (ongoing)

New livelihoods generated locally by beekeeping value chain. This will also arrest migration in the area

Average **30% - 60%** increased yields from agriculture depending upon crop

Average **20% - 30%** additional income to farmers through better agricultural yields and honey

Increased savings (financial inclusion) and spending on health and education

Increased honey production

Increase in income through selling of surplus of bee-flora produce

Improved green cover in **8** project villages through bee flora intervention

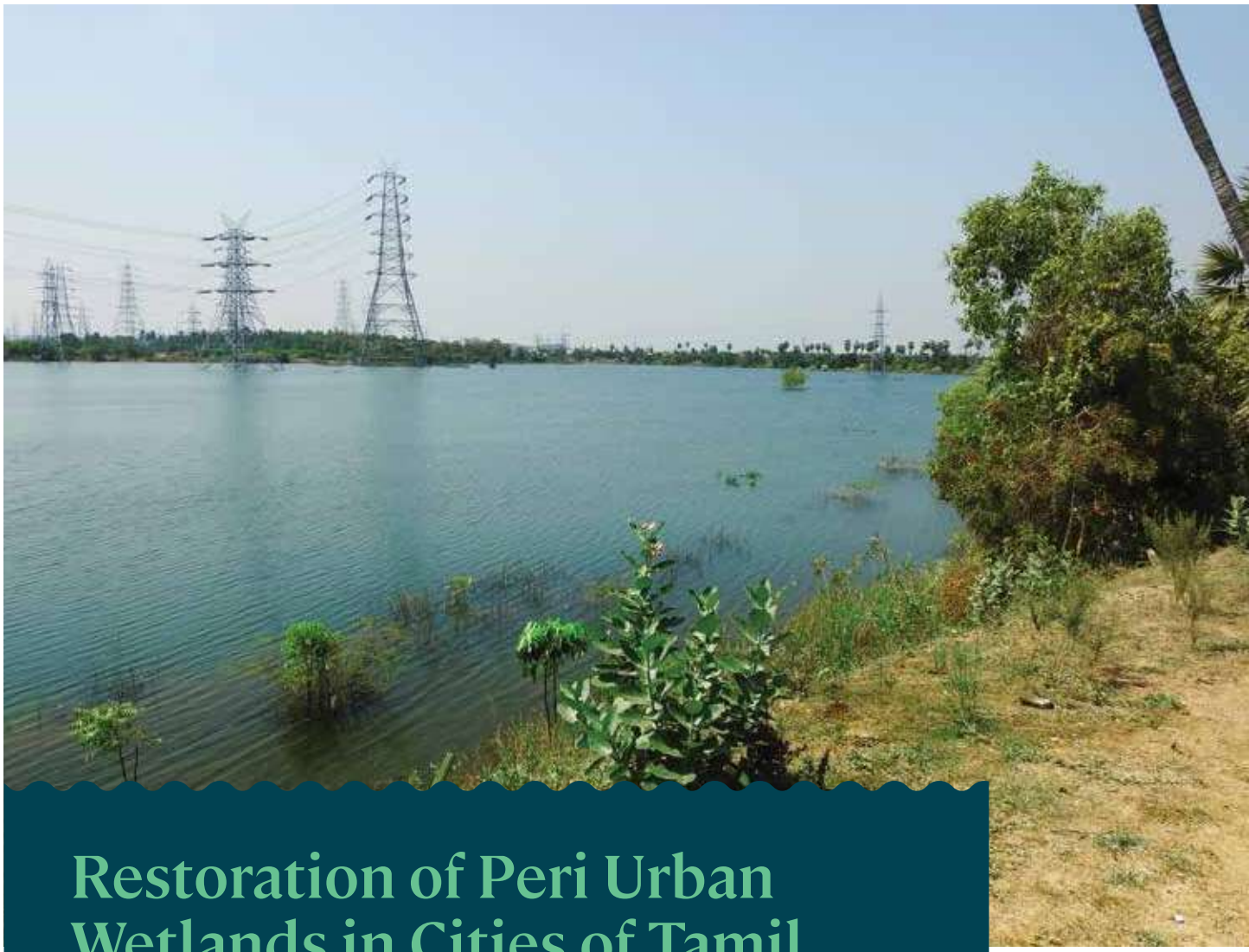
Provide an alternative livelihood option but also help to reduce levels of migration

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information on the project-
https://www.grundfos.com/content/dam/local/en-in/page-assets/about-us/documents/Droplet-India%20Sustainability%20Newsletter%202024.pdf

[1]*Based on the impact assessment by NGO partners*



Restoration of Peri Urban Wetlands in Cities of Tamil Nadu

Hinduja Foundation / Hinduja Leyland Finance Limited/ Care Earth Trust

Project Location

Chennai and Tirunelveli, Tamil Nadu

Project Timeline

2018 to 2020 (Chennai project), 2022 (Tirunelveli project)

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Objective


Rear slope of bund after restoration

Wetlands play an important role in water resilience. As a site for many nature-based-solutions, wetlands provide multiple benefits, including filtering and storing water, safeguarding communities from flooding, sequestering disproportionate amounts of carbon, and supporting climate mitigation and adaptation. This project aimed to:

- Restore and conserve wetlands in 2 cities of Tamil Nadu
- Evolve the wetland as learning centres for water management for schools
- Foster responsible use and management of water resources in local communities
- Evolve a model for replication of wetland restoration to other parts of the State

How Achieved

The project involved a science-based approach for ecological restoration of wetlands in two cities of Tamil Nadu, i.e., Chennai and Tirunelveli, located in the northern and southern parts of the State, both cities being vulnerable to the impacts of climate change.

Activities under the project included:

- Preparing baselines and restoration plan based on surveys of hydrology, biodiversity and socio-economic characteristics along with a participatory review process involving of local communities and stakeholders
- Stakeholder engagement helped in finalising the metrics for measuring the efficacy of the project. Government departments were also apprised of the initiative for securing necessary approvals

The project involved:

- Grid based dredging and desilting, strengthening of bunds and repair of hydrological structures
- Eradication of Invasive Alien Species of plants using mechanical and biological methods
- Bioremediation of stored water through an organic method developed by Care Earth
- Establishment of public space highlighting biological diversity of the wetland with involvement of local residents, educational institutions and traders as custodians
- Handover of the restored area to the concerned department and local body for sustaining the efforts post exit

Thalambur wetland Chennai post restoration

Impact

Wetland area of about **55.4** hectares completely restored under the project. With restoration wetlands were able to withstand 2023 floods in Chennai

Water holding capacity increased by **22.5** million cubic feet (i.e. 0.63 million cubic meters)

Establishment of over **2500** m of super structure bund and restoration of **2000** m of canals leading in and out of the wetland

The restored wetland area has developed into a site for many nature-based-solutions and is increasingly used by local communities for walking and community events

Creation of **2000** m of green area. Restored wetland has evolved into a local biodiversity refugium with **93**% survival rate of plantations and new species notably mammals colonizing the area

Link for more information - www.youtube.com/careearthtrust

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Recharging Himalayan Springs for Improving Water Security through Springshed Management and Afforestation Initiatives

Hinduja Foundation
(Ashok Leyland and Hinduja Renewables)

Project Location

Nainital District, Uttarakhand; Shimla & Kullu districts, Himachal Pradesh

Project Timeline

2019 to 2025 (ongoing)

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Objective


Rainwater harvesting tank at school

Himalayan springs are major sources of water to nearly 90% of communities in the Indian Himalayan region. Yet, communities residing in the region face a major challenge accessing them. The Himalayan states of Uttarakhand and Himachal Pradesh (HP) face severe water scarcity, especially in peak summer, exacerbated by scanty rainfall and drying up of springs.

The houses in the hills are traditionally scattered and residents have to reach the water sources to fetch water for their domestic needs. The task is stressful and involves drudgery, especially for the women.

Hinduja Foundation, with support of its group companies viz. Ashok Leyland, Hinduja Renewables collaborated with Central Himalayan Rural Action Group (CHIRAG) worked on the initiative to revive these water sources in the 2 states.

The ongoing project aims to:

- Enhance water security for spring-dependent 85 villages in districts Nainital (Uttarakhand), and Shimla and Kullu districts (HP) through springshed management approach
- Reduce drudgery for women involved in fetching water through improved harvesting of rainwater and using renewable energy (solar) for lifting water closer to the households
- Preserve and restore forest ecosystem to improve resilience and adaptability to environmental changes
- Train local youth for ecosystem sustainability

How Achieved

The project follows a systematic approach. The process includes:

- **Conducting technical assessments** of water bodies, designing feasible engineering interventions based on local geology, and involving native communities in their implementation for rejuvenation
- **Springshed-based approach** was adopted that recognizes the interdependence of forests and water within a given geographical area
- **Water Resource Conservation:** Recharge and restoration of spring sources, rainwater harvesting, using solar lifting schemes, periodic water quality testing and treatment, developing protocols for sanitation, hygiene and perpetual management of catchment zones were considered
- **Community Engagement and Livelihoods:** The project made a conscious effort to develop alternative livelihood opportunities for communities dependent on natural resources by promoting plantation of high economic value saplings, saving time involved in fetching water through solar lifting schemes. Dedicated training and capacity building programs were carried out

- **Multi-Stakeholder Collaboration:** Frequent Liaoning programs with the government at block level, district level and convergence with the horticulture department, bee keeping board, Pantnagar agricultural universities helped to assist communities' avail larger benefits


Community mobilization for awareness generation

Impact

31,425 individuals have directly benefited from the project

149 critical springs successfully revived. **222** rainwater harvesting tanks integrated with rooftops to reduce pressure on springs

1,04,296 saplings of economic value planted with a survival rate of 92% as recorded in Year 3. These saplings created a potential economic benefit of INR **49.5** million

Additionally, **8.88** million litres of rainwater harvested in the tanks integrated with the rooftops

INR **1,10,65,195** worth of direct livelihood generated for communities

77 Water User Groups constituted to safeguard future operations and maintenance

106 million litres of water per annum enhanced through treatment of catchment area

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information -

Compendium of success stories:
https://drive.google.com/file/d/1E9IbS2r8U_5BJ_vZtMUVJKUwmgCJ6H2f/view?usp=sharing

Video Documentary of the project:
https://drive.google.com/file/d/1UxudYvMR1KTiBQZ1QrRy3BlDTQ5aEd7z/view?usp=sharing

Climate Resilient Practices for Watershed Development and Management

Hinduja Foundation and, Gulf Oil Lubricants India Ltd (Hinduja group company)

Project Location

Chennai, Tamil Nadu

Project Timeline

March 2021 to December 2021

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Objective

Sunken wells to help treat impure water

Northern Chennai has long been synonymous with its extensive industrial presence, evident in every direction one looks. Similarly abundant, yet often overlooked, are the lakes and ponds that dot the landscape. Unfortunately, despite their ubiquity, these water bodies frequently languish in obscurity and neglect, devoid of the attention they rightfully deserve.

Located within the industrial pockets of Manali, Chennai, the Sathangadu Lake plays a major role as a source of water for the region and as a biodiversity hotspot. The lake surrounded by industries, was found to be deteriorating as overgrown shrubs and inflow of sewage had started to take over the lake making it unfit to host life.

A collaborative conservation effort between the Greater Chennai Corporation, Gulf Oil India, Hinduja Foundation, under the Jal Jeevan Initiative, undertook the lake restoration project with the view to:

- Strengthen blue-green infrastructure of a city to tackle climate change and urban heat island effects
- Improve flood resilience of the lake
- Improve holding capacity of the lake

How Achieved

- **Removal of Invasive weeds and garbage:** The invasive species and solid waste of 30 tonnes has been cleared from the site. The cleared waste has been taken by the municipality to a near-by dumping site
- **Removal of sediments along the periphery of the bund:** The removal of excessive silt and nutrient-rich sediments i.e. dredging and de-silting undertaken. An average of 3-4 feet worth of silt has been removed for the construction of earthen bunds
- **Construction of dual-embankment bund and strengthening:** The two-step bund helps in the prevention of soil erosion and improves its resilience in the advent of floods. A total of 2045 m of bunds were newly constructed at the lake to ensure water retention
- **Creation of sunken wells:** To treat sewage and industrial waste flowing into the lake, gravity-based sunken wells were established
- **Inlet-Outlet Regulation:** The inlet and outlet of the lake has been regulated to ensure proper inflow and outflow

- **Construction of nesting islands:** The creation of 18 islands in the lake allows for ideal nesting spots for birds

- **Fencing and native species plantation:** The lake was fenced to mitigate further human intervention. 750 native trees were planted along the bunds to enhance biodiversity

An overview of lake post restoration

Impact

Direct impact on **30,000 - 45,000** residents

Indirect impact on nearly **2,22,000** residents

Desilting the lake by 3-4 feet has increased the storage capacity by **24%**

Groundwater recharge has significantly improved through increasing the water holding structure of the lake, strengthening the embankments and regulating the inlet-outlet points of the lake

Establishment and strengthening of bunds have improved flood resilience of the lake, the restoration of this lake did not flood the area in the recent floods that hit Chennai in 2023

Preservation of native trees and construction of nesting island has enhanced the biodiversity

Reduction in breeding of mosquitoes has reduced the spread of waterborne diseases

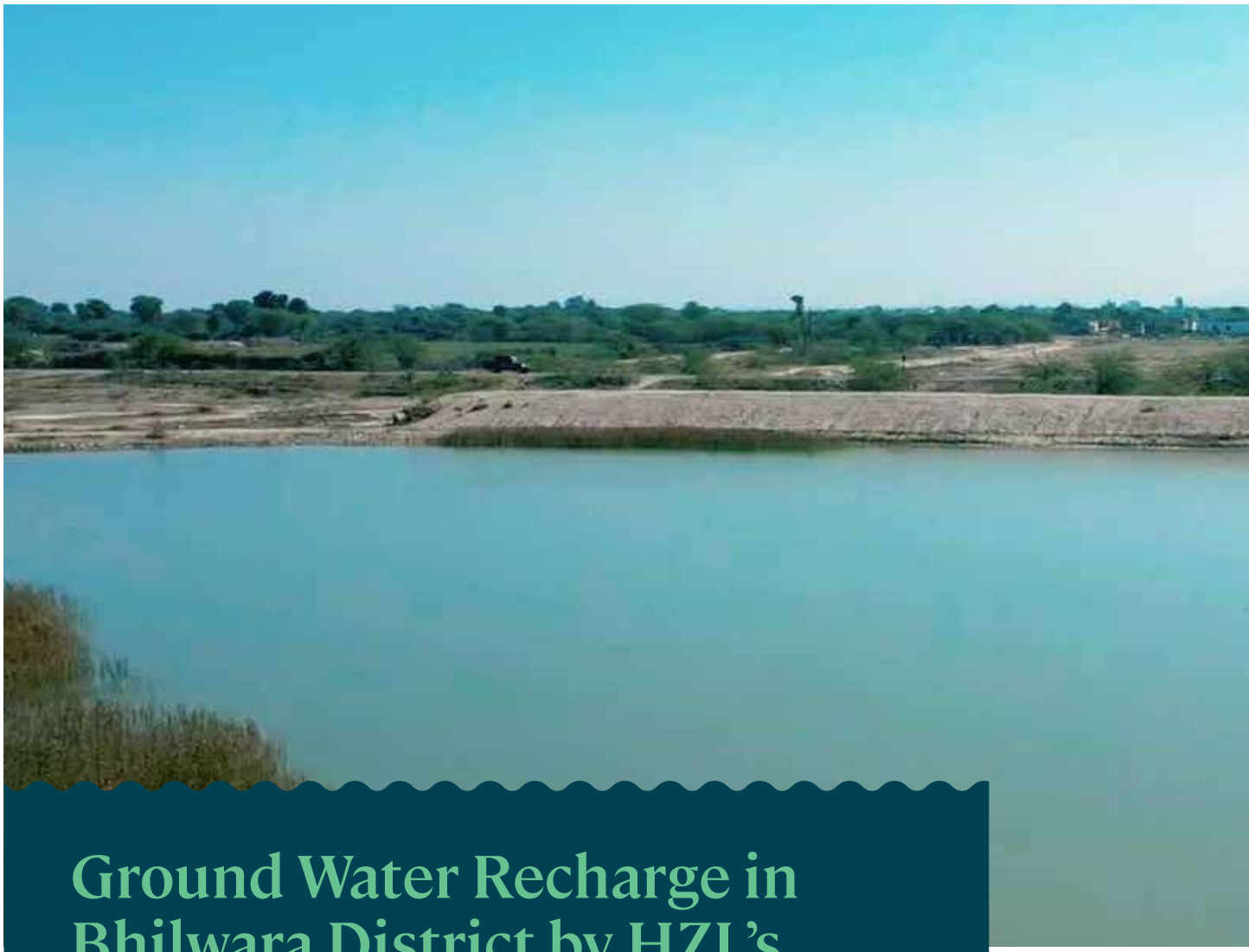
Access to clean water for local residents

Restoring the water body has improved the micro-climatic condition of the area

Aesthetic development of the region

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Ground Water Recharge in Bhilwara District by HZL's Rampura Agucha Mine

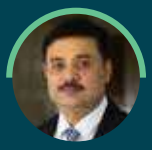
Hindustan Zinc Limited (HZL)

Project Location

Four blocks of Bhilwara District (Hurda, Shahpura, Kotri and Jahazpur), Rajasthan

Project Timeline

2021



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Objective

Rainwater harvesting structure constructed at Hurda block of Bhilwara District, Rajasthan

Hindustan Zinc Limited, Rampura-Agucha Mine Bhilwara, Rajasthan implemented a groundwater recharge intervention in Hurda, Shahpura, Jahazpur and Kotri blocks of Bhilwara district, Rajasthan.

The project intended to:

- Provide improved quality of water to the existing population of selected blocks
- Increase supply and availability of water in the selected blocks
- Increase the overall crop production by improving supply of water for agricultural purposes
- Create a positive impact on livelihoods, directly and/or indirectly for communities dependent on agriculture-based income sources

How Achieved

A scientific approach was carried out to ensure enhancement of pond storage capacity and installation of recharge shafts for groundwater recharge (with about 8.7 MCM/annum recharge potential achieved).

Pond selection was based on their storage capacity, leading to the inclusion of 84 village ponds in this project. Notably, 358 recharge shafts were installed across these ponds. The recharge scheme involved desilting the ponds, strengthening their embankments, and drilling and constructing recharge shafts to enhance water storage capacity.

Process

- Identification and site selection based on catchment area and submergence area of ponds through satellite imagery
- Geophysical survey to assess potential zone for recharge undertaken to ascertain the location and depth of recharge shafts
- Pre & post excavation survey and creation of Digital Elevation Model (DEM)

- Preparation of excavation plan with respect to maximum submergence area
- Desilting (excavation to remove the silt from the pond) as per excavation plan
- Demarcation of suitable location (after evaluating geophysical aspects)
- Drilling and lowering of slotted UPVC pipes
- Conducting recharge tests for each recharge shaft
- Installation of recharge pit
- Pouring of filter media as per the scientifically evaluated plan

Rainwater harvesting structure constructed at Jahazpur block of Bhilwara District, Rajasthan

Impact

Estimated recharge potential of about **8.7** Million Cubic Meter (MCM)/annum created, calculated based on average annual rainfall received in the selected blocks

Ground water availability improved in the area which has resulted in improved water availability for communities, enhancing the standard of living for the villagers

About **70,000 – 75,000** people benefited in the area, due to improved crop yields

The recharge potential for all four blocks are as follows:

Blocks	No. of Ponds	No. of Recharge Structure	Recharge Potential
Hurda	13	61	1.423
Shahpura	22	112	2.696
Jahazpur	29	105	2.53
Kotri	20	80	2.05
Total	84	358	8.70 MCM

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

60 MLD Sewage Treatment Plant at Udaipur, Rajasthan (Industry-Municipal Interface)

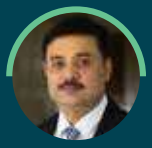
Hindustan Zinc Limited

Project Location

Udaipur, Rajasthan

Project Timeline

2014 (20 MLD), 2018 (25 MLD), 2020 (15 MLD)



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Objective

Udaipur Sewage Treatment Plant (STP)

HZL's Rajpura Dariba Complex has two lead-zinc mines, with smelting facilities, 75 kms from Udaipur. It was dependent on Matrikundiya and Mansiwakal dams on River Banas for their water requirement, both sources being rainfed.

To explore an alternative water source, HZL approached the Udaipur Municipal Corporation with the proposal of building a sewage collection and treatment system as a win-win opportunity. This initiative aimed to resolve the city's pollution issues while HZL utilized treated water for its plant operations, reducing its freshwater dependence.

The project intended to:

- Reduce overall dependency on freshwater sources
- Increase freshwater supply to communities
- Develop alternative source of water for industrial use while conserving potable water

How Achieved

In May 2012, HZL signed an MoU with Udaipur Municipal Corporation and Rajasthan State-Owned Urban Improvement Trust to build the city's first Sewage Treatment Plant (STP) to satisfy demand of water in our operations at Rajpura Dariba Complex and Zinc Smelter Debari.

HZL in June 2017, entered into an agreement with Udaipur Smart City Limited (USCL) for design, construction, supply, installation, testing, commissioning and operation of cumulative sewerage treatment capacities of another 40 MLD.

In second phase of expansion at Eklignapura Facility, HZL commissioned 25 MLD of sewage (December 2018), 10 MLD was commissioned in March 2020 at a separate location and another 5 MLD commissioned in December 2020.

Process

- STP is based on the Sequential Batch Reactors (SBR) technology and MBBR (Moving Bed Bio Reactor) technology using Cyclic Activated Sludge processing
- Udaipur produces about 60 million litres of sewage water daily
- Sewage water generated in Udaipur city is transported to the STP through a pipeline network and treated water from STP is transferred to Rajpura Dariba Complex and Debari Zinc Smelter through a dedicated pipeline

Impact

Ecological stability of the local lakes

Water quality improvement

Reduced health-hazards from open sewage disposal

Improved tourist appeal of the area

Augmented aesthetic value of lakes in Udaipur City

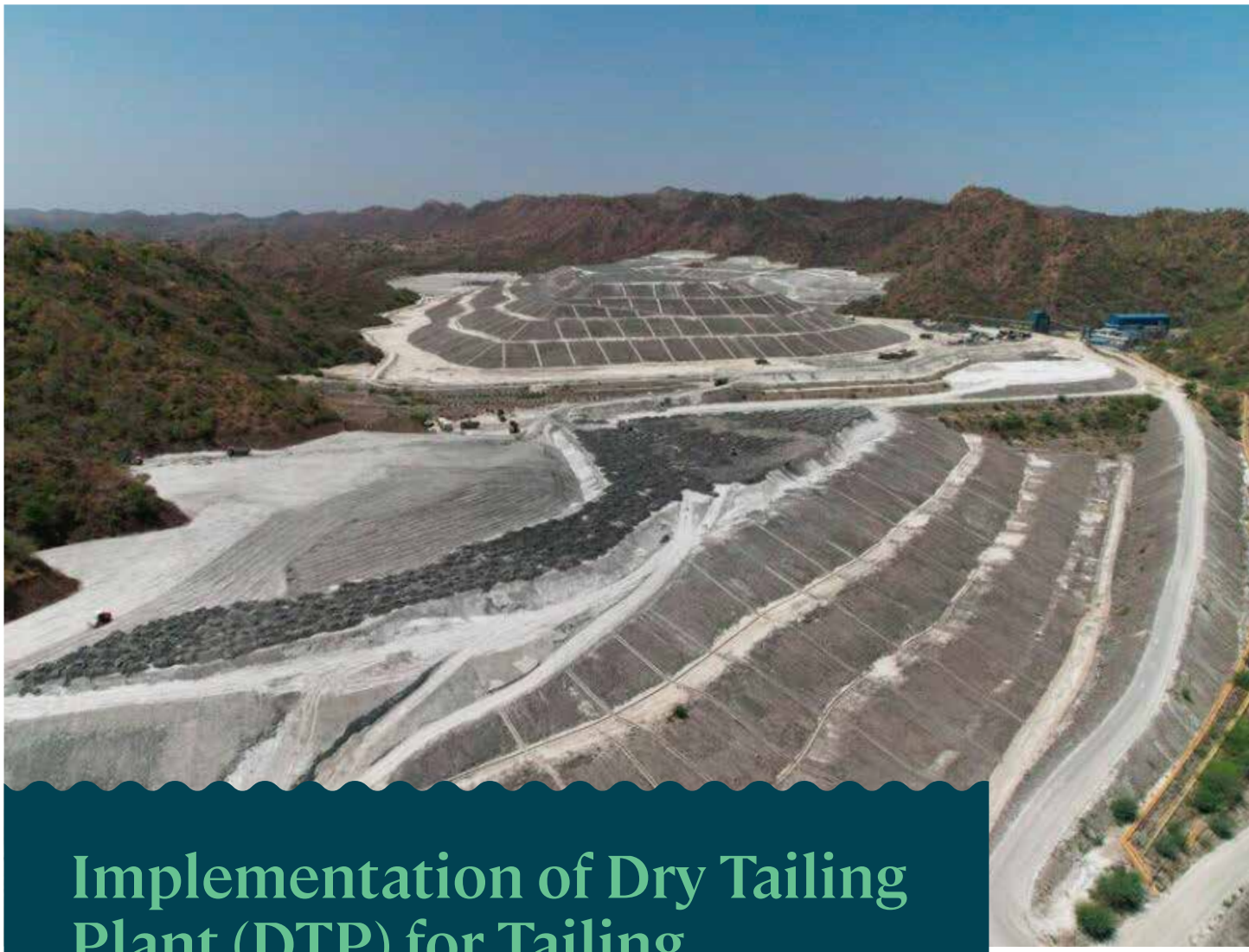
Reduction in Fresh water consumption at HZL

70-80% reduction of freshwater at Rajpura Dariba Complex & Zinc Smelter Debari

Economic benefits to farmers by using dry sludge as manure

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Implementation of Dry Tailing Plant (DTP) for Tailing Management

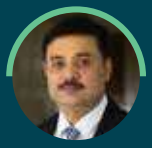
Hindustan Zinc Limited

Project Location

Udaipur (Zawar), Rajasthan

Project Timeline

Project commissioned in 2020



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Objective


Beneficiation Plant & Thickener

Tailing is waste material generation from the beneficiation plant, stored in tailing storage facility. Mine tailings and tailings facilities can have impact on the environment and nearby communities if mismanaged. Conventional wet tailings deposition poses a higher risk of tailing dam failure, which when replaced with Dry Tailing technology can arrest some of the impacts.

Dry Tailing technology involves creating a small dry-stack tailings area with minimised environmental and physical footprint along with a method to backfill the mine using an adjusted dry filter cake mix. This can also help in recovering >80% of water from the tailings.

The project intended to:

- Decrease the risks related to tailing dam failure
- Recover maximum amount of water (> 80%) from tailings
- Increase stability of Tailings Storage Facility
- Increase availability of freshwater stored in Tidi Dam (15 km from Zawar Mines) by utilizing recovered water from the Dry Tailing project by the HZL plant. This will increase availability of water and supply water to nearby villages and towns

How Achieved

The Dry Tailing technology is based on separating water from tailings slurry, which is generated in the beneficiation process.

The tailings materials and waste rock are repurposed as backfill to stabilise underground mining operations, while the remaining tailings are then placed in a specially designed tailings storage to minimise environmental, social and economic risks.

Process

- Feed slurry from beneficiation plant is introduced into the trash screens which separates the trash from feed slurry
- Trash screen underflow slurry is fed to thickener via thickener feed box by gravity. Thickener systems consist of rake mechanism and the flocculent dosing system which in turn separates the process water from feed slurry thereby increasing the slurry concentration by 50-70% by gravity separation method

- Water recovered from thickener is collected in separate tank and reused in the milling operations
- The thickener underflow high dense material is pumped to filter feed tanks that later feed into filters
- The filtrate flows through the filter media by pressure differential. It then passes through the drying zone
- The air pressure exerted on the underside of the cake releases the cake from the cloth, thus facilitating final cake discharge
- The final dry cake which contains 15% moisture is discharged at the stockpile is finally transported to deposition area at Tailing Storage Facility (TSF)


Beneficiation Plant & Thickener

Impact

Key benefits of dry tailing technology include recirculation of more than **80%** of process water present in tailings. The water removed is then used in operations, reducing dependency on freshwater sources (improved specific water consumption)

This project enables a faster rehabilitation and restoration of storage site

Reduction in waste disposal area as dry stacking results in storage of high volume per unit of land

Existing tailing dam reduces the requirement of waste storage facility

Key aspects covered

- Behavioural Change
- Capacity Building
- Community involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Prabhat Jal Sanrakshan Pariyojana Project

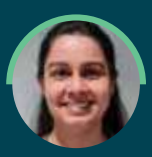
Hindustan Unilever Limited

Project Location

Buldhana District, Maharashtra

Project Timeline

March 2019 to May 2023



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Objective


village, district Buldhana, Maharashtra

HUL's Khamgaon factory is located in Buldhana district of Vidarbha region in Maharashtra receiving annual average rainfall of around 700 mm. The area experiences very high vulnerability to drought and water scarcity according to Central Research Institute for Dryland Agriculture.

Prabhat, the sustainable community development initiative of HUL, is undertaking a water project in the area to support scalable solutions that can help address water challenges - specifically for rural communities that intersect with agriculture.

The objectives of this project are:

- Implementation of supply side measures for water conservation - water recharge structures that will help villages achieve water security
- Demand side measures that can catalyse large-scale adoption of improved agricultural practices to reduce overall water demand for agriculture,
- Enable villages to balance their water budget through appropriate interventions
- Sustainable livelihood development of community to deliver positive environmental and social impact through water centric community actions that can reduce climate change impacts

How Achieved

A fourfold strategy - Planning, Implementation, Maintenance, and Sustenance was adopted to achieve the desired results.

Participatory Village Development Approach

The journey commenced with a thorough need assessment in the villages identified, basis which, the program was designed and implemented. A participatory village development plan was prepared in collaboration with the community and the project implementation partner.

The program aimed at thrust in increasing water potential through demand and supply side measures.

Demand Side Interventions

Focused on adopting modern and smart agriculture practices for saving water. These included improved variety seeds, soil health management, slope sowing, intercropping, micro irrigation such as sprinkler systems and rain pipe technology.

Supply Side Interventions

Focused on water conservation structures such farm bunding, water absorption trenches, continuous contour trenches, nala deepening, loose boulder structure, gabion structure, nala bunds, de-siltation of check dams, farm pond and line ponds.

Capacity building for sustainability

The project adopted the approach of "in the community, for the community and by the community", with sustainability being the key element. Several initiatives like training of paraprofessionals, water user groups, exposure visits, KVK scientist visits, field visit by HUL leadership team were taken to build capacity of the community to ensure the project sustainability post HUL's exit.

Impact

Water Conservation: 15.14 billion litres of water potential created (295 structures were created to conserve and create water potential)

Over **1500** farmers across **11** villages have benefited so far through adoption of sprinkler systems, rain pipe technology, adoption of water saving and farming practices

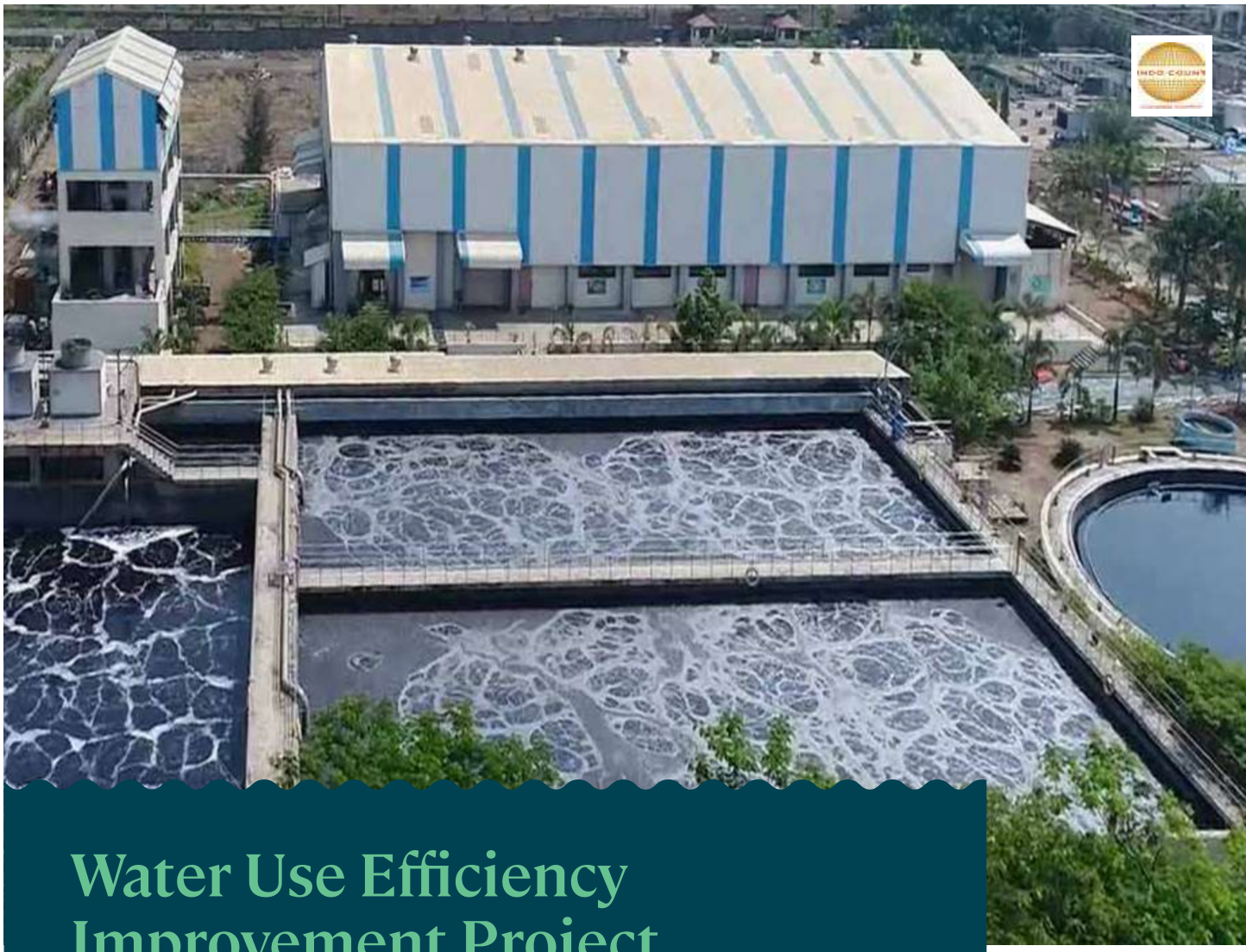
Adoption of demand management practices have reduced water demand, improved crop yields and reduced costs of cultivation. Additional agriculture production of up to **6000** tonnes has been generated

Livelihoods: Over **2.43** lakh person-days of employment have been created though water conservation and increased agriculture production

Outreach: 7500 farmers (37 community programs and trainings undertaken benefitting 5000+ farmers)

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Water Use Efficiency Improvement Project

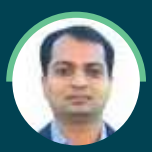
Indo Count Industries Limited

Project Location

Kolhapur, Maharashtra

Project Timeline

2022 to 2023



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Objective


Caustic Recovery Plant, Indocount

Indo Count Industries initiated a project aimed at enhancing water use efficiency at their Caustic Recovery Plant (CRP).

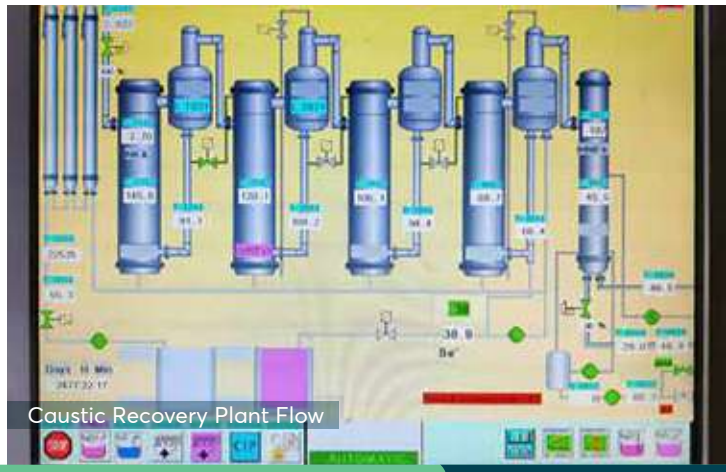
CRP uses multiple effect evaporation to concentrate weak lye, generating water vapour condensate as a byproduct. Through rigorous analysis and team collaboration, modifications were identified to optimize water usage within the existing infrastructure, contributing to improved water usage in the operations.

How Achieved

The project followed the Define, Measure, Analyse, Improve and Control (DMAIC) methodology.

- **Define:** Set out to reduce soft water usage in CRP operations by a minimum of 5% from the baseline year Financial Year 2021-2022 average by June 2022.
- **Measure:** Data was collected in log sheets on daily basis and monitored to understand the pattern involved in quantum of water vapour condensate being drained to ETP. (Initial baseline: 16.5 m^3 per hour vapour condensate generated was directly drained to ETP equalisation tank for further treatment).
- **Analyse:** Quality of water vapour condensate was tested continuously. It was found that TDS values ranged between 300-1000 mg/l. Based on machine design and parameters it was deduced that up to 600 mg/l water can be reused and equivalent water recycling can be eliminated permanently.
- **Improve:** pilot trials were undertaken with line modifications to segregate water vapour condensate into two categories based on TDS values with and out of tolerance. The initiative resulted in reduction of CRP vapour condensate water going to ETP from 16.5 m^3/hour to 6.5 m^3/hour (10 m^3/hour water saved and reused in production.

- **Control:** Continuous monitoring of the changes implemented has been done and results are well established. Modified system has been taken in full operational mode and is successfully yielding desired results.


Caustic Recovery Plant Flow

Impact

Steps were identified for efficient use of water vapour condensate, which was collected, tested and analysed.

- In case TDS exceeded 600 mg/l then the vapour condensate water was diverted to ETP for treatment
- In case TDS was less than or equal to 600 mg/l then vapour condensate water was diverted to a tank for reuse directly

The project enabled reusing approximately **10** m^3 per hour of vapor condensate, resulting in reduction in water recycling quantity by **70,000** m^3 per year. The installation of conductivity-based TDS meters and automated diversion valves ensured efficient monitoring and control of water quality, enhancing watershed management practices

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

ITC's Water Stewardship Programme in District Coimbatore to Ensure Water for All – Today and Tomorrow

ITC Limited

Project Location

Coimbatore, Tamil Nadu

Project Timeline

2016 – ongoing

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Objective


Farmer Field School on Coconut

Coimbatore falls under tropical zone with an annual average rainfall of 950 mm from both north-east and south-west monsoon. Due to erratic rainfall pattern and poor crop water demand management, available water resources in the project area (catchment) were not adequate to meet the demands. To overcome the challenge, ITC embarked on an initiative for water security in Upper Bhawani river basin to create a positive water balance benefiting the stakeholders in the basin.

Objectives and key components included:

- Ensuring water positive river basin round the year through interventions balancing supply and demand
- Improving supply augmentation (rainwater harvesting, groundwater recharge) & biodiversity conservation
- Reducing demand by promoting water use efficiency in agriculture whilst improving yields and incomes

How Achieved

ITC's Coimbatore unit depends on Upper Bhavani River basin, a tributary of River Cauvery. As part of ITC's sustainability commitments, to ensure 'Unit Water Security' it has set a goal to achieve water-positive status for Upper Bhavani river basin, spanning across 51,772 acres by 2024-25. A comprehensive study jointly undertaken by ITC and WWF India in 2016, assessed the basin's water balance targets, identified potential stresses, and evaluated risks. The study revealed an annual deficit of 26.5 million cubic meters of water for the study area, while also highlighting climate change-induced heavy rainfall, albeit for short durations, adversely affecting groundwater resources. Subsequently, both supply and demand side measures were undertaken. These were:

- Adopting Managed Aquifer Recharge (MAR) to accelerate recharge by constructing structures in fractured zones
- Constructing water harvesting structures to improve surface and soil moisture storage and conserve biodiversity

- Reducing agriculture water demand (37% of total demand) by promoting water efficient and climate smart practices

Actions

- Capacity building and community involvement
- 306 recharge structures and 610 water harvesting structures constructed
- 6,000 acres covered under biodiversity conservation
- Micro irrigation, crop residue mulching, ring bunds, windbreakers promoted in 18,522 acres for 3 crops (73% of total cropped area)
- Engagements with Tamil Nadu Agricultural University, and Agriculture, Forest & Irrigation departments

Impact

24.38 million cubic meters (MCM) of total water storage and savings potential already generated till December 2023 against the water balance gap of 26.5 MCM in 2016

Supply side intervention contributed to **1.02** MCM of water storage potential till December 2023

Demand Management practices contributed to potentially reducing **23.36** MCM of water consumption in 2023-24 compared to conventional practices

Practices promoted reduced cultivation costs by 25% to 30% and improved yields by 12% to 15% compared to conventional practices, as estimated by TNAU

Internal estimates, validated by TNAU, show improvement in water level in wells from 30.96 feet to 12.87 feet with water availability in wells improving from 3 to 10.5 months

4,100 farmers across **149** villages, in the basin area benefited

Scalability

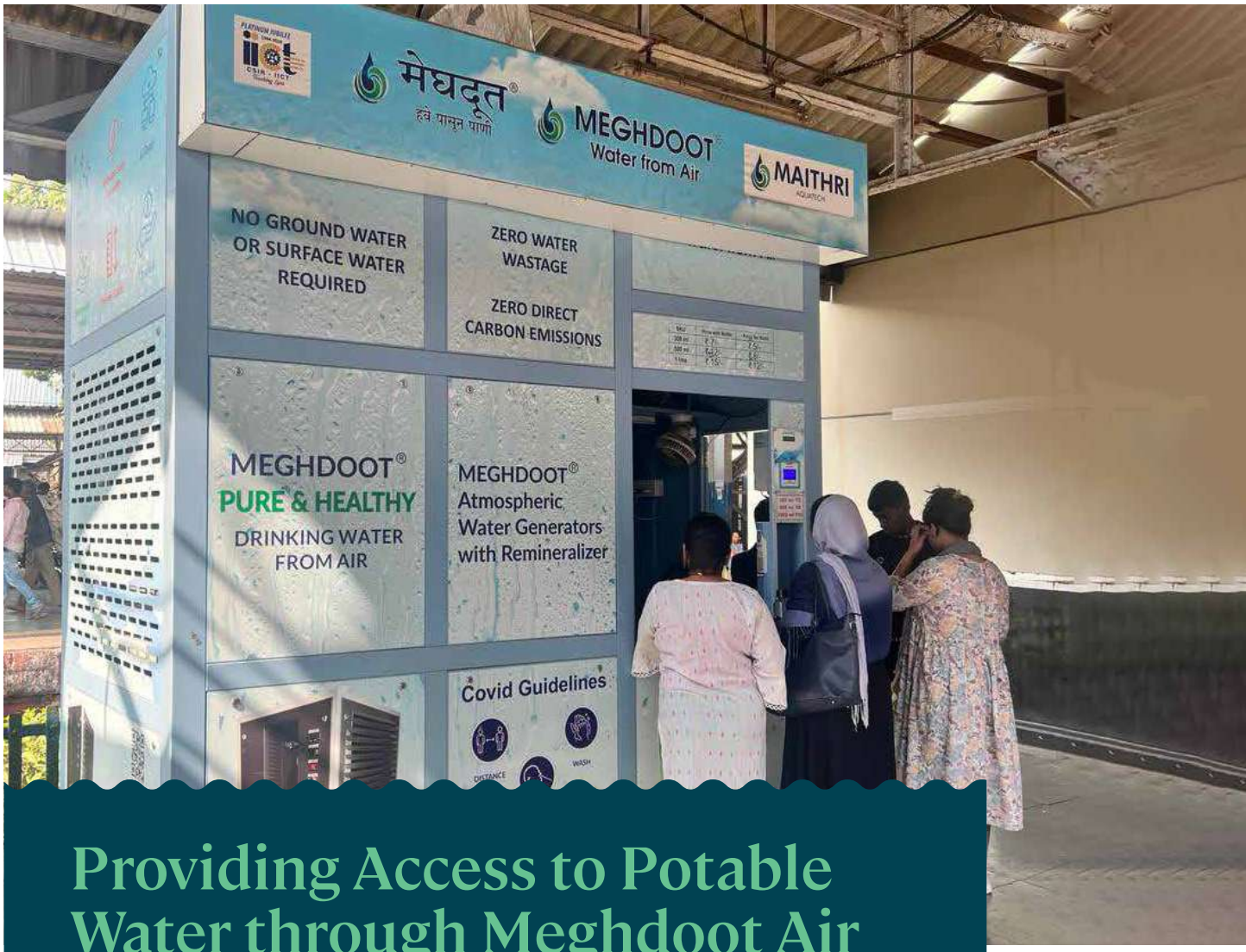
The river basin level water security programme has since been expanded also to South Pennar in Karnataka, taking the total so far to 5 basins

ITC's Coimbatore Unit has been awarded **Platinum rating** by Alliance for Water Stewardship standards in the year 2019. It is the First Paper Mill in India and second globally to achieve this rating.

Link for more information - https://www.itcportal.com/ITC-Water-Stewardship-Mission.pdf

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Providing Access to Potable Water through Meghdoot Air Water Plants

Maithri Aquatech Private Limited

Project Location

Central Railways, Mumbai Division, Maharashtra

Project Timeline

2022 - ongoing

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Objective

Commuters at CSMT station experience the future of hydration with the Meghdoot Air Water Plant

The initiative intends to reduce dependency on ground and surface water by tapping into alternate sources of water

It also intends to ensure clean, safe, mineral-enriched water accessible to Mumbai's railway commuters.

How Achieved

Meghdoot, an Atmospheric Water Generator (AWG), is a device that extracts water from ambient air based on the science of condensation.

Maithri Aquatech partnered with Central Railways, Mumbai Division, in a Public-Private Partnership (PPP) initiative for improved water accessibility for railway commuters. Meghdoot Air Water Plants were established at 6 pivotal railway stations in the Mumbai Division of Central Railways- Chhatrapati Shivaji Maharaj Terminus (CSMT), Dadar, Thane, Kurla, Vikhroli, and Panvel- spanning 17 strategic locations identified for supply of potable water among railway commuters.

The plants (17) have annual water generation capacity of up to 6.3 million litres, meeting requirements of domestic consumers.

Impact

Water Conservation: Generation of water from air, has yielded dual benefits:

- For every litre of air-water produced, two litres of ground and surface water resources are conserved (a RO system typically generates rejects operating at 50% efficiency)
- **7** million litres have been generated till date

Climate Change Mitigation: Third-party analysis indicates roughly **70%** reduction in CO_2 concentration levels between air intake and released air from Meghdoot Air Water plants, directly contributing to efforts to mitigate climate change

Public Health Enhancement: By delivering clean, safe, microbe-free, and mineral-enriched water, the initiative has significantly enhanced public health for railway commuters, improving overall quality of life

Reduced Plastic Dependency: The project has diminished reliance on single-use plastics by facilitating **24/7** water dispensation through QR codes, promoting the use of personal bottles, thus aligning with global endeavors to combat climate change

Empowerment through Employment: The establishment of kiosks has created employment opportunities for women and marginalized communities. About **90%** of women comprise work force

Scalability: The installation of Meghdoot Air Water Plants at Mumbai's railway stations is beginning of a larger vision to further expand the network to **1,000** kiosks nationwide over the next few years

Key aspects covered

- Behavioural Change
- Capacity Building
- Community involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information - https://www.maithriaqua.com/

Project Gram Samruddhi

Nayara Energy Limited

Project Location

Jamnagar and Devbhumi Dwarka, Gujarat

Project Timeline

2016 to 2026 (ongoing)

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Objective


Farm Pond at Bharana

Jamnagar area in Gujarat, witnesses low and irregular rainfall. To overcome the water demand and supply gap, exacerbated by climate variability, Nayara Energy has taken up the Gram Samruddhi project that aims to,

- Improve water resource management in project villages ensuring sufficient water for drinking and irrigation
- Foster climate-resilient livelihoods in rural areas of Jamnagar, through climate-smart agriculture, improved livestock management, and water resource techniques

How Achieved

Participatory Rural Appraisal (PRA)

- Participatory Rural Appraisal (PRA) undertaken, to assess community needs, followed by scientific studies
- Village level micro-plans targeting irrigation and household water needs, with a 10-year perspective plans prepared

Implementation of water storage, recharge, and moisture conservation measures in the project villages undertaken.

Ground water monitoring

- Conducted aquifer mapping and monitoring utilizing 165 observation wells
- Installed recharge bores strategically in recharge zones. Utilized bore charger technology for groundwater recharge
- Implemented artificial groundwater recharge techniques like injection bore wells in streams and water bodies; low-cost arch dams
- Implemented soil aquifer recharge methods to replenish the upper layer of subsoil

Irrigation water use efficiency

- Utilized IoT technology for monitoring soil moisture levels and determining irrigation requirements
- Implemented sprinkler and drip irrigation systems to optimize water usage
- Employed flow meters to measure water use efficiency and raised awareness among the community

Soil management

- Demonstrated and promoted adoption of new technologies for in-situ moisture conservation such as Ridge & Furrow, Broad-Based Furrow Seed Drill, Sub-soiler, plastic mulching, and straw mulching
- Provided soil health information to farmers through soil sample testing. Introduced in situ mobile soil testing kits for on-farm soil analysis

Support to farmers

- Implemented crop diversification strategies, by integrating livestock and adopting value addition practices
- Encouraged and facilitated farmers to insure their crops, mitigating vulnerability to climate shocks and disasters
- Established yield guarantee insurance programs with WRMS (Weather Risk Management Services)
- Developed community of volunteers, Bhujal Jankar (ground water management extension worker) Pashu Sakhis (women veterinary extension workers) and Krishi Sakhis (women agriculture extension workers) in each village

Weather monitoring and Advisory

- Installed 3 automatic weather stations to provide crop weather advisory services to farmers

Impact

The project benefited about **10,000** people across villages.

Impact of water conservation interventions

Water storage and recharge measures, resulted in the creation of additional water storage capacity of **17.89** MCM

Over **1** lakh meters of farm bunds, erected leading to conserving soil moisture across **970** hectares of land

Soil health across **3,000** hectares improved through application of tank/pond silt

1,244 hectares (2016) area under irrigation expanded to **5,716** hectares (March 2023)

Link for more information - https://youtu.be/kJBrEXRufDg?si=oq55GlTqtbWKEDb5

Impact on farmers and community

20% increase in agricultural production achieved with reduced cultivation costs by **8-13%**, and additional income of INR **60** million (2022-23)

Increased green fodder production in **325** hectare farm land and **100** hectare in community land. Over **1,300** farmers have been linked to a mobile-based voice messaging system

Created local pool of resources, *pashu sakhis, Krishi sakhis* in each village, to be scaled up in the district thus ensuring the program's self-sustainability

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Improved Water Use Efficiency through Recycling and Reuse

Pernod Ricard India Private Limited

Project Location

Nashik district, Maharashtra

Project Timeline

Completed in October 2023 (within 3 months post initiation)

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Objective

Utilization of glass bottle cleaning DM water to Boiler by advanced water treatment

Pernod Ricard has been undertaking various water use efficiency improvement measures to reduce freshwater consumption, an important indicator for mitigating risks arising from increased climate variability. Some of the key measures implemented are:

- Recycling of DM water used for glass bottle cleaning to Boiler post water treatment (RO) & utilisation of RO reject in Cooling Tower (CT) make up
- Recycling of filter backwash water

How Achieved

Recycling of DM water used for glass bottle cleaning to Boiler post water treatment (RO) & utilisation of RO reject in Cooling Tower (CT) make up

Demineralized (DM) water is used in bottle cleaning for washing glass bottles before filling. This process generates bottle rinsed water, which was being sent to the Effluent Treatment Plant (ETP) for treatment and used for gardening post treatment at ETP. The bottle cleaned water was found to be of good quality (TDS ranging between 8 -12 mg/l), which can be reused post filtration and Reverse Osmosis (RO) treatment.

Water from bottle washing area was collected and passed through screen chamber, and then through the Oil and Grease separator. This was then collected in a collection tank, disinfected, filtered by Bag Filter, Multi Grade Filter (MGF), Activated Carbon Filter (ACF), Micron Cartridge Filter (MCF).

Post Filtration, the filtered water is treated with advanced treatment – Reverse Osmosis (RO) to generate the desired water quality with TDS < 3 mg/l, to be reused in boiler for the steam generation as per the requirement basis. RO reject was connected to a collection tank, from where it is sent to CT.

The plant has cooling towers (CTs) where TDS needs to be maintained <1500 mg/l. To maintain this level of TDS concentration, filter water top up is undertaken.

With RO reject water (TDS of 50 mg/l), can be directly used in CTs to improve the Cycles of Concentration (CoCs), thereby reducing frequent blowdown, and eventually water saving.

Recycling of filter backwash water

Fresh water is passed through Multi Grade Filter (MGF), Activated Carbon Filter (ACF) and sent for demineralization (DM), with the filters required to be backwashed on daily basis. The backwash water generated was sent earlier to ETP and then used for gardening.

The filter backwash water from DM plants is collected in a tank, where it is being settled. The supernatant water is then pumped to the next treatment process of chemical coagulation and flocculation.

Flash mixer is present where chemicals are dosed for coagulation and then sent to tube settler for settlement of the suspended particles. Finally, this water is treated by passing through Multi Grade Filter (MGF). The treated water is then finally stored and utilized as filter water.

Impact

Recycling of DM water used for glass bottle cleaning to boiler post water treatment (RO) and utilisation of RO reject in Cooling Tower (CT) make up

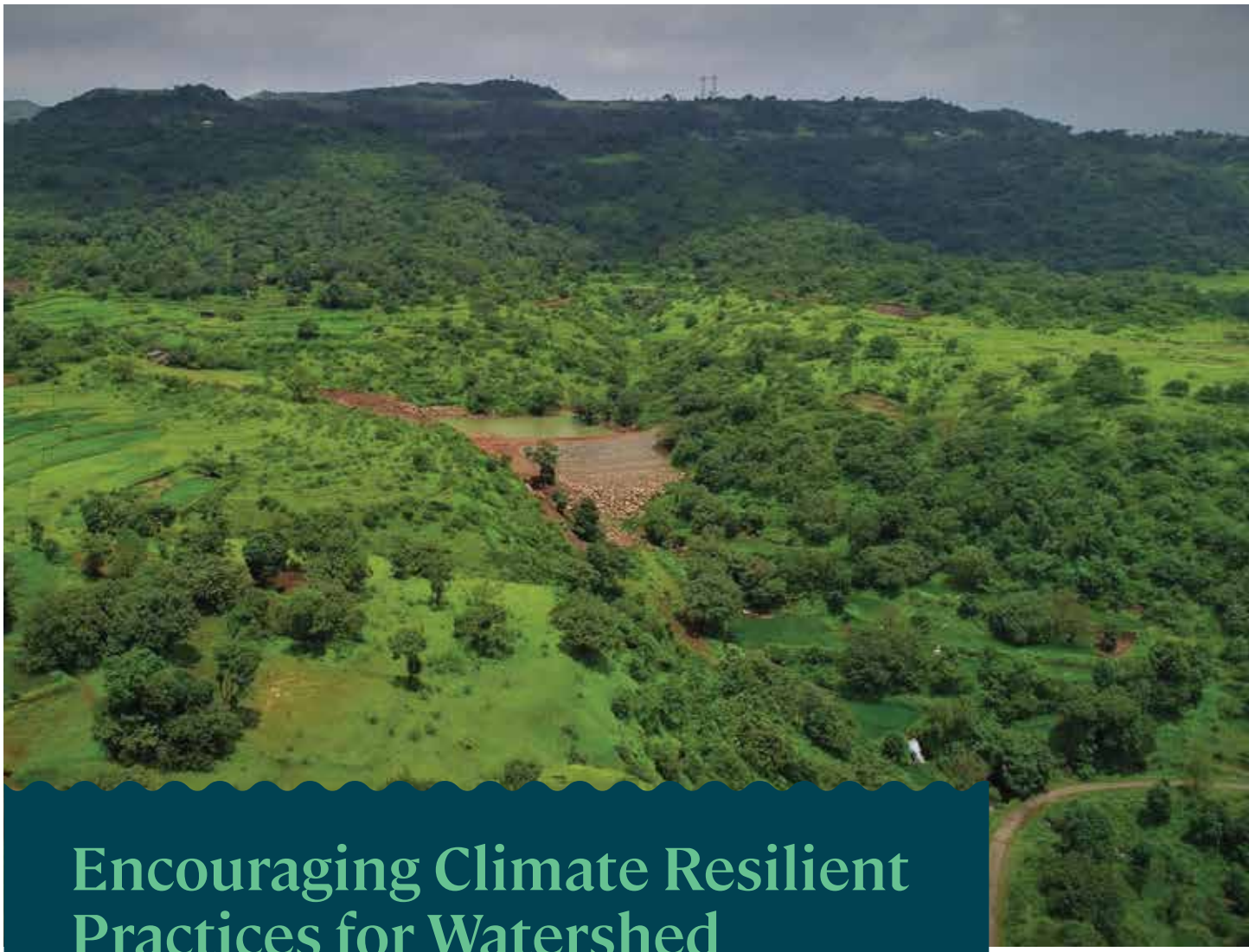
- This project has increased the plant water recyclability and saved freshwater by about **46,200** KL/annum
- The project has enabled annual cost savings of INR **92,40,000** per annum
- Water use ratio has changed from 12.79 KL/KLAA to **10.10** KL/KLAA (AA stands for Absolute Alcohol)

Recycling of filter backwash water

- The project relates to direct recycling of filter backwash water the annual freshwater savings of **11,020** KL.
- The project has resulted in annual cost savings of INR **22,04,000**
- Implementation of this project has resulted in Water usage ratio reduction by **0.09** KL/KL

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability



Encouraging Climate Resilient Practices for Watershed Development

Skoda Auto Volkswagen India Pvt. Ltd. with International Association for Human Values (IAHV)

Project Location

Naiphad village, Khed Taluka, Pune, Maharashtra

Project Timeline

2020 to 2022

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Objective


View of the Earthern Nall Bund in village Naiphad during construction in 2021

Pune region in Maharashtra is largely rainfed, experiencing drought-like conditions, especially during periods of insufficient rainfall. With increasing frequency of extreme events, the area experiences acute water shortage for crops, livestock and human consumption.

Post need analysis and surveys, a village namely, Naiphad in Khed Taluk, of Pune was selected for an Integrated Watershed Development Program (2020-22). The objectives were to:

- Increase the availability of water for crops, livestock, and human consumption in the watershed area through climate-resilient measures such as demand-side management and the augmentation of water supply through on-ground interventions.
- Sensitize the local community towards community-led development for an improved water scenario

How Achieved

An integrated ridge-to-valley watershed approach was designed addressing various constituents: water *(jal)*, forest *(jungal)*, land *(jamin)*, animals *(janwar)*, and people *(janta)*, focusing on both area and the community. Key interventions were:

- Construction of watershed structures
  - Three Earthen Nalla Bunds, a drainage line treatment to create water storage
  - 5 km of Very Deep Trench (VDT), area treatment to help in water and soil conservation
- Treatment of around 1559 hectares which helped conserving an estimated 200 thousand cubic meters (TCM) of water
- Agro-forestry for supplementing agricultural income and preventing soil erosion. 9,000 fruit-bearing trees were planted in the watershed area with community support

- Sensitization of more than 200 people to community-led development processes and watershed management techniques

- Training of 26 local youths on Art of Living's Youth Leadership and Training Program (YLTP) to facilitate sustainability efforts


Community sensitization and awareness program in village Naiphad in 2020


Aerial view of Very Deep Trench during construction in village Naiphad in 2021

Impact

More than **8,000** people in the watershed area have benefitted with increased availability of water

During the pre-project phase, the area experienced water scarcity that extended beyond December. Post interventions, (as on February 2024), despite below-average rainfall in 2023, water availability found to have improved

600 TCM of rainwater harvested during 2022 monsoon (as per the estimation)

Farmers in the area have started cultivating double crops, including paddy and onion/jowar, compared to earlier single cropping system (paddy)

Around 15% of 350 farmers in Naiphad are already witnessing benefits. Before intervention, farmer income was between INR 25,000 to 50,000 which has now doubled to INR **50-000 to 1,00,000**

Water augmentation measures have helped recharge of wells that have been found to contain water, reducing burden on women

Average water level monitored through observation wells, before intervention (February) was at 10 ft which now has increased to **15** ft after intervention

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Improving Water Availability Using an Integrated Village Development Model/ Participatory approach

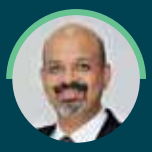
Tata Consumer Products Limited

Project Location

Paonta Sahib, Himachal Pradesh

Project Timeline

Phase I: 2019-21, Phase II: 2022-25



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Objective

Trainings on horticulture development

Jalodari is water management and security program in Uttarakhand, aiming to Improve water sustainability and sanitation in 30 villages of Paonta Sahib and Nahan blocks of Sirmaur district through integrated village development model.

The project involves multi-sectoral interventions that integrate livelihood with water and food security, sustainable agriculture, sustainable forestry, and renewable energy into the community development paradigm.

The broad objectives of the Program include:

- Creating sustainable water sources in the watershed
- Provision of water and sanitation infrastructure
- Promotion of sustainable agricultural practices to strengthen the watershed ecosystem

How Achieved

Pre Project phase

- Hydrogeological surveys were undertaken to generate hydrogeological data for the project area. Aquifer mapping, including groundwater surveys, exploration, and monitoring, was undertaken, and completed for the local aquifer system
- Project area was divided into nine zones based on hydrogeological characteristics

Participatory Approach

- Forest Development Councils (FDCs) were established with the support of the Forest Department, Himachal Pradesh to undertake water recharge activities which were carried out by the FDCs with technical support from the Himmotthan Society

Interventions identified and executed under Phase I and II

- Water quality samples were collected from 24 locations and tested in a NABL accredited laboratory

- A total of 5 rain gauges were installed in different locations, and rainfall data was collected by volunteers/FDC members

Capacity Building

- Various Information Education and Communication (IEC) as well as Behavior Change Communication activities were regularly undertaken to mobilize the local community on water management


Gabion Structure

Impact

The implementation of spring-shed management initiatives has strengthened water security in the Himalayan region, ensuring reliable access to water for drinking, domestic, and agricultural purposes.

Through a community-centric approach, this collective action has not only addressed immediate water-related concerns but has also empowered local communities and fostered citizen engagement, laying the foundation for sustainable water management practices in the region supporting approximately 2.5 million people across 4,500+ households.

Under Phase I and II interventions implemented, impacts achieved:

Vegetative measures

- Fuel Fodder Plantation: **21** hectares
- Horticulture: **15** hectares
- Grass land: **15** hectares
- Nursery: **2** hectares

Engineering Measures

- Water ponds: **293** Nos
- Gabion: **21** Nos
- Percolation pit: **150** No
- Trenches: **899** Nos

Particulars

- Biogas: **15** Nos
- Individual Sanitation units: **26** Nos
- School WaSH: **6** Nos
- Compost Pit: **23** Nos

The Forest Development Committee (FDC) has been formed which will ensure maintenance of the engineering measures created in the forest area in coordination with government officials.

The other vegetative measures and interventions at the family level are expected to be maintained by the owners.

All the peripheral activities like biogas, vermicompost, toilet repair work, and Water, Sanitation & Hygiene in schools are expected to be sustainable as the community is well-oriented.

Key aspects covered

- Behavioural Change
- Capacity Building
- Community Involvement
- Governance
- Innovation
- Lives and livelihood
- Scalability

Link for more information -
https://www.tataconsumer.com/sustainability/better-planet/project-jalodari

Participatory Community-based Water and Sanitation Programme

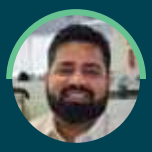
Titan Company Limited

Project Location

Tehri, Uttarakhand

Project Timeline

2017 to 2021



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Objective


Recharged trench after rainfall

Uttarakhand, rich in water resources with glaciers, rivers, and good annual rainfall (average annual rainfall for Tehri 1400 mm), faces a paradox. While the state supplies water to northern Indian states, its own residents, grapple with drinking water challenge due to hilly and uneven terrain, which makes the situation complicated in terms of water availability, especially in rural and remote areas.

The area is increasingly witnessing changing patterns of precipitation, with episodes of extreme events rising, implying the need for undertaking increased climate resilient strategies in the area. One of the areas is improving availability of water for sanitation and hygiene (WASH).

The non-availability of water has a direct bearing on sanitation, leading to lack of hygienic practices being followed by the community.

In the above context, the project focused on:

- Adoption of a demand driven and participatory approach, with community involvement; project contribution towards building ownership
- Enhanced capacity building of the community for management of project structures
- Ensuring 100% operation and maintenance cost coverage

How Achieved

- An institutional model involving partnership between village communities under the leadership of Gram Panchayats (GPs) and User Water Sanitation Committees (UWSCs - known as Village management Committees) was designed to serve as a vehicle for the community-based, demand responsive approach for project
- A pre-feasibility exercise to delineate water-scarce villages was conducted, and each village, through its GPs prepared a Detailed Technical Report (DTR) for selection and implementation of appropriate water management strategies
- The program initially focused on ensuring sanitation and catchment protection for water security. Subsequently, construction and augmentation of drinking water supply schemes was carried out, guided by Community Action Plans (CAP)
- During the second year of the project, Operation and Maintenance (O&M) systems were established
- GPs and Village Management Committees, were responsible for planning, designing, executing, constructing, operating, and maintaining all project assets

- An Implementation Phase Completion Report (IPCR) was prepared by GP along with implementing partner of the project, Himmotthan Society which included VMC byelaws, scheme-specific engineering guidelines, O&M financial and institutional guidelines, and documents related to water charge collection, receipts, payments, and minutes of the GP meeting etc.


Potable water at Village Doni

Impact

Overall, **1600** households spread in the 26 remote villages of Uttarakhand have benefited from the interventions undertaken under the project ranging from improved water and sanitation facilities, improved water management through spring catchment protection

Availability and use of water in beneficiary villages has increased from 17 litres per capita per day (lpcd) to **55** lpcd. This has led to higher per-capita consumption at the household level and high user satisfaction with the water services provided

Sanitation profiles in project villages have significantly improved, with cleanliness in and around villages, along with positive changes in sanitation behaviour

Catchment protection work has led to a **60%** increase in lean-season spring discharge

Adoption of safe hygienic practices, such as handwashing before eating (pre: 26%, post: **98%**) and after defecation with soap (pre: 40%, post: **99%**), has visibly increased. This, coupled with increased water availability, has led to an annual household saving of around Rs. **3,200** against waterborne diseases

Practices like keeping drinking water utensils and cooked food covered have seen substantial increases (pre: 29% to post: **98%** for utensils, pre: 51% to post: **96%** for food)

Utilization of sanitation units and proper disposal of infant faeces have also improved significantly (pre: 59% to post: **100%** for sanitation unit usage, pre: 46% to post: **98%** for disposal)

Reduction in women's drudgery and time spent fetching water. Time saved averaged around 20 minutes compared to over 5 hours previously

Link for more information - https://drive.google.com/file/d/1EcMiZk2A67QZii9x4f6r8DgeLICOCyoH/view

Key aspects covered

- Behavioural Change
- Capacity Building
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Notes

Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society, through advisory and consultative processes.

For more than 125 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. With its extensive network across the country and the world, CII serves as a reference point for Indian industry and the international business community.

As India strategizes for the next 25 years to India@100, Indian industry must scale the competitiveness ladder to drive growth. CII, with the Theme for 2023-24 as 'Towards a Competitive and Sustainable India@100: Growth, Livelihood, Globalisation, Building Trust' has prioritized 6 action themes that will catalyze the journey of the country towards the vision of India@100

Confederation of Indian Industry

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CII-TRIVENI WATER INSTITUTE

One among CII's 10 acclaimed Centers of Excellence, CII-Triveni Water Institute, (CII-TWI), is a unique institution established in 2012, where government, industry and civil society have partnered to address water related issues in a holistic manner. The Institute works exclusively on water and wastewater management. CII-TWI, is a unique institution, with its headquarters in New Delhi. It works closely with the government, industry and civil society on providing integrated solutions to various water related challenges. Key services rendered by the Institute include, comprehensive water audits, hydrological evaluations for watershed level planning using state-of-the-art tools and techniques, trainings, capacity building and outreach activities.

Vision
To enable India make substantial progress towards achieving water security.

Core Purpose
The purpose is to transform water conservation and management practices in India by changing the mind-set and behaviour of stakeholders resulting in more effective and sustainable water management practices at the grassroots level.

Services

- Advisory Services: Water Audits for industry; Water PINCH, Blue Rating System
- Projects & Policy: Water Resource Evaluation applying WATSCAN, Water Neutrality Certification, Hydrological and Hydrogeological Assessments.
- Events & Conferences: Water Innovation Summit; Water Tech Summit, Sectoral Events, National Awards for Excellence in Water Management.

CII-Triveni Water Institute (CII-TWI)

Confederation of Indian Industry

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