CII-TRIVENI
WATER INSTITUTE

Confederation of Indian Industry

OUR CUP OF JOY

INDIA'S BEST PRACTICES ON WATER

VOLUME 2

"Our Cup of Joy is a unique compendium showcasing some of the best practices in water and wastewater management by India Inc. The compendium captures the prevailing good practices with respect to various industry led initiatives towards water and waste water management. The format is easy to understand and thought provoking. I am sure the case studies presented will provide inspiration for promoting mass awareness on water conservation practices in the country."

Mr U P Singh

Secretary
Ministry of Water Resources, River Development and Ganga Rejuvenation,
Government of India.

OUR CUP OF JOY

India's Best Practices on Water

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FOREWORD

MORE THAN 70% of India is vulnerable to extreme conditions of droughts and floods. More than 80% of our river basins are water stressed as water demands surpass limited and shrinking supplies. Deteriorating water quality is an add-on stressor with impacts on human health and ecosystems. High spatial variability in rainfall and increasing inter annual variability in availability of water, would lead many parts of our country to suffer huge economic hits. The scenario therefore calls for immediate actions towards identifying and implementing appropriate strategies for an improved water scenario, water security and sustainability.

CII's Centre of Excellence on Water, CII-Triveni Water Institute, through its unique services, WATSCAN, Water Audits and Water Awards is engaging with various stakeholders for enabling water security in the country.

This Compendium of Best Practices, a sequel to the earlier publication, *Our Cup of Joy* captures the prevailing good practices with respect to various industry led initiatives towards water and waste water management. These practices can be categorised into 3 key areas – Industry Initiatives Within the Fence; Industry Initiatives Beyond the Fence and Industry Innovative Initiatives.

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

Dhruv Sawhney
Chairman, CII-Triveni Water Institute
Past President, CII

FOREWORD

PROMOTING WATER USE efficiency in industry holds immense promise for curtailing national water stress. The need to scale up good water management practices in the country has gained added significance after prolonged years of droughts and floods. Industry has been evolving ways of effectively managing water resources through engagement, networking and partnering with diverse stakeholders. Indian industry has undertaken action to improve availability and quality of water for communities, business and environment.

CII's dedicated Centre of Excellence on Water forges innovative water management strategies for various stakeholders, thereby making water everyone's business and enabling progress towards achieving water security and smart water use. The CII Foundation too works with industry and NGOs on water solutions through different models. CII's initiatives such as India@75, Aspirational District development and enterprise competitiveness programs also intervene in water initiatives. These actions are part of CII's endeavor to accelerate India's transformation into an economically, socially and technologically vibrant nation by 2022.

Our Cup of Joy, a compendium of India's best practices on water, is a flagship publication of the Water Institute. It curates and compiles best practices and case studies from multiple sectors – agriculture, industry, buildings, municipality and rural water supply – to help others in the space understand how they can adopt some of these practices. The second edition of the compendium highlights scalable and innovative initiatives taken by industry and will promote new thought on water use efficiency and management.

All sections of society will benefit from using and sharing knowledge available in this book. Improved water efficiency needs to become the new Business as Usual.

Chandrajit Banerjee
Director General, CII

MESSAGE

I AM HAPPY that *Our Cup of Joy* – a compendium of India's best industry practices on water is now available as a resource book for stakeholders working to build a sustainable water future for the country.

This publication puts together some of the best practices from multiple sectors- agriculture, building, industry, municipality and rural water supply – in a manner that is easy to comprehend. Most of these practices have emerged after careful short-listing and ground verification of information received from Industry under the CII's National Awards for Excellence in Water Management. Readers will find it enjoyable to identify themselves with similar situations and use the experiences shared.

As can be seen, our industry is taking initiatives both within the fence as well as outside. While industry efforts to spread this movement and improve the performance even further must continue, industry work beyond the fence is beginning to make impact in other sector of water use. Scale up of such experience could have much bigger impact on the overall water sustainability in the country.

The country today is facing a severe water crisis situation and solutions are needed at various levels – policy, technology, governance, infrastructure, and for catalysing change in mind-sets and behaviour. It is important to take small but focused measures such as the ones compiled and documented in this book.

Water efficiency needs to become a way of life. Every drop counts.

Dr Anil Kakodkar
Chief of Jury, CII National Awards for Excellence in Water Management
Member, Advisory Board, CII-Triveni Water Institute

MESSAGE

THERE IS AN URGENT need for water management in the country. Increasing variability in water availability, regional droughts, urban floods, depleting and deteriorating surface and groundwater sources, wastewater generation are adding to the water stress felt by the geographies and every stakeholder on a day-to-day basis.

We need to come together to leverage our water resources wisely and strategically and industry needs to play an important role as a key community participant. There is a need to move towards opportunities to conserve, reduce, reuse and recycle treated water and wastewater through good governance.

In light of the above, CII has formulated the National Committee on Water, to act as a catalyst in promoting excellence in water management by facilitating policy reforms for achieving self-sufficiency in Water at the state and national levels. Over the years the Committee has made impressive strides in terms of creating greater awareness, achieving momentum among industry towards water management and greater alignment of water government.

I hope this publication can excite, enthuse, and create a behavioural change among stakeholders to embark on good management of the scarce and diminishing natural resources.

Dr Ramesh Datla
Chairman, CII National Committee on Water

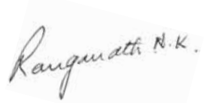
MESSAGE

INDIA NEEDS TO address its water situation on a war footing as water demand will outstrip supply by 2030 if we do not act now.

Undoubtedly there is much that needs to be done at policy, governance and infrastructure level. But while we wait for a larger strategic movement to gather momentum, there is potential to identify and convert efficiency opportunities available today for some quick gains. Our Cup of Joy – a compendium of India's best practices on water is a step in this direction. The book has been designed for a variety of stakeholders who are keen to practice water efficiency but do not know where to begin. This book lists best practices and case studies from multiple sectors – agriculture, building, industry, municipality and rural water supply – which can help others understand how and where they can adopt some of these practices.

The strategies in these book range from low to medium cost and can be easily adapted as well as scaled to size. They can help narrow demand supply gap by about 30%. Readers will benefit by incorporating some of the strategies listed in the book into their water efficiency blueprint.

I strongly urge all stakeholders, especially Industry, to be both active advocates of water efficiency and lead by example.



N K Ranganath
Co-Chair, CII National Committee on Water
Member of the Jury, CII National Awards for Excellence in Water Management
Member, Advisory Board, CII-Triveni Water Institute


INDUSTRY
INITIATIVE
BEYOND
THE FENCE

ENSURING WATER USE EFFICIENCY FOR SUSTAINABLE AGRICULTURE

Ambuja Cements Limited
Kodinar, Gujarat

OBJECTIVES

- Promote judicious use of groundwater through micro irrigation system in the coastal villages, keeping a check on salinity ingress.
- Increase agricultural productivity through optimal use of inputs, improving profits to farmers.
- Sustain farmers' livelihoods by promoting climate smart farming system in salinity affected areas through adaptation and mitigation approach.

RESULTS

- 9.54 million m^3 water saved through use of drip irrigation in one-crop season (30-49% in 2017).
- Farmers reaping three crops in a year which was earlier limited to only one.
- 22% average increase in agricultural income by use of drip, in 2017.
- Consumption of electricity reduced by 40%.

HOW ACHIEVED

- Efficient water use technique :
  Farmers have been regularly educated to install and use efficient micro-irrigation systems such as drip and sprinkler irrigation. Successful models of drip irrigation, organised field demonstrations for better adaptability of the system created. Drip/sprinkler irrigation installed in nearly 10,900 acres of land.
- In situ moisture conservation :
  By promoting traditional knowledge and latest techniques focuses on in situ moisture conservation that includes drainage line treatment, construction of nalaplugs, farm bunds, mulching, etc. Over 730 farm ponds constructed.
- Promote fertigation :
  To reduce overuse of fertilisers, we promote the optimum usage by introducing fertilisers in the crops though drip irrigation.
- Promote climate smart farming :
  Build farmers' capacity to practice integrated crop management. Farmers are also encouraged to practice crop diversification to hedge risk in agriculture and minimise any adverse effects of erratic climatic conditions.

To know more, contact:

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Sprinkler irrigation, Kadodara, Kodinar Taluk, Gir Somnath District, Gujarat

Sprinkler irrigation 2

IMPROVING ACCESS TO DRINKING WATER IN COASTAL REGION

Ambuja Cements Limited
Kodinar, Gujarat

OBJECTIVES

- Improve access to drinking water in salinity hit region of Kodinar.
- Reduce women's drudgery.
- Reduce water borne diseases.

RESULTS

- Up to seven hours of time is being saved through the initiative. Girls are now attending schools.
- Annual expenditure on health ailments reduced by 35%.
- Increased income and reduced expenditure (on health ailments) has improved the socio-economic status of the community.

HOW ACHIEVED

- Promotion of Roof Rainwater Harvesting Structure (RRWHS) :
  RRWHS adopted as an effective technique for securing drinking water for families, which is also financially viable. 3,837 RRWHS constructed.
- Established drinking water networking system in coordination with partners :
  The project involved formation of *panisamiti* in each village. *Panisamiti* has played a key role in effective planning, implementation and managing of assets and schemes. Formation of village water committee to manage equitable drinking water. Implemented village drinking water distribution network in 57 coastal villages covering 17,446 households.
- Promote shallow drinking water wells :
  Sealing bottom of wells prevented saline water from entering into the wells.
- Reach out to economically poor families through RRWHS :
  To make the RRWHS facility available to extremely poor section, the company changed its beneficiary selection criteria to address the needs of marginal farmers, landless people, handicapped, widows, etc. Design customized for construction of low cost structures.

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Rooftop rainwater harvesting,Vasoj, Una Taluk, Gir Somnath District, Gujarat

Construction of drinking water well, Math, Kodinar Taluk, Gir Somnath District, Gujarat

ENHANCE WATER RESOURCES AVAILABILITY AND AGRICULTURAL PRODUCTIVITY THROUGH LOW COST RAINWATER RECHARGE/HARVESTING STRUCTURES IN SIX VILLAGES AROUND ASIAN PAINTS PLANT

Asian Paints Limited
Patancheru, Sangareddy, Telangana

OBJECTIVES

- Create low cost rainwater recharge structures to increase water availability (surface and groundwater) in six selected water scarce villages.
- Enhance capacity of existing water harvesting structures by silt removal.
- Enhance agricultural productivity through land, water and nutrient management interventions.

RESULTS

Water Availability

- Close to 1 lakh kl of rainwater recharge potential has been created through these low-cost structures since 2015 which has contributed to 6.05 lakh kl of rainwater recharge into the ground. Out of this 2.29 lakh kl was recharged in FY 17-18 alone.
- Water levels in 2014 used to be 53 metres below ground level on an average which has increased to 35 metres below ground level as per the most recent data (and as high as eight metres during monsoon).

Soil Fertility Management

- Soil fertility management approach and resulting interventions along with water availability have resulted in 15-25% overall increase in grain yield (eg. maize, chickpea, pigeon pea).
- Reduction in expense on chemical fertilizers by ₹450 / ha.

HOW ACHIEVED

Water Availability

- Over 250 low cost structures have been created since 2014. These include check dams, open wells, borewell recharge structures, loose boulder structures, etc.
- These structures are created in consultation with the village community (watershed committees) at common lands. While the funding for construction is provided by Asian Paints the discipline around withdrawal of water is maintained by the community itself. In fact, these structures will be maintained by the villagers post completion of five year term of this project.
- Well loggers have been installed downstream of each of the check dams.

Soil Fertility Management

- Soil sample analysis for macro and micronutrients.
- Distribution of soil health cards to villagers containing information on location of farm, status of macro and micronutrients, and crop wise fertilizer recommendation for the major crops based on fertility status.
- Micronutrients and improved seed varieties then provided to the farmers along with demonstrations of improved agri-practices on farms.

To know more, contact:

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Earthern check dam, Ghanapur, Patancheru

Check dam Nandigama, Patancheru

GROUND WATER RECHARGE AND CREATING FACILITY FOR IRRIGATION THROUGH CONSTRUCTION OF CHECK DAMS

Bajaj Corp Limited
Wardha District, Maharashtra

OBJECTIVE

- To increase water storage in stream for irrigation and ground water recharge.

RESULTS

- 1 million m^3 water conserved per year from the structure created benefitting 3,354 farmers.
- 4,287 hectares of land brought under irrigation.
- Total Benefit : ₹34.63 crore in 2015-16 (cotton, pigeon pea and wheat crops).
- Return on investment 37.54%.
- 635 wells benefitted with increased water table by 6 feet.

HOW ACHIEVED

- 96 check dams constructed. The construction of check dams achieved with 10% cash contribution from the user groups.
- Total Average Investment 2015-16 was ₹7.20 crore.
- The user group formed for the check dam are responsible for execution of the activity.
- The user groups are responsible for the operation and maintenance of the structures.
- The exposures visit and interaction with beneficiaries of previously constructed check dam helped in boosting the confidence of farmers.

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Check dam, Gaurkheda

Check dam at Shedgaon, Samudrapur, Wardha, Maharashtra

IMPROVING THE LIVES OF FARMERS THROUGH ESTABLISHMENT OF SMALL LIFT IRRIGATION SCHEMES

Bajaj Corp Limited
Wardha District, Maharashtra

OBJECTIVE

- To provide direct irrigation water by lifting it from water source to fields of farmers.

RESULTS

- 7,742 hectares of land brought under irrigation benefitting 6,907 farmers.
- In case of cotton income doubled from ₹24,000 per acre in 2015 to ₹48,000 in 2017.
- In case of soyabean it increased from ₹15,000 per acre in 2015 to ₹24,000 in 2017.

HOW ACHIEVED

- Established 91 small lift irrigation schemes.
- Groups of 4 – 6 farmers with no irrigation facility identified for small lift irrigation schemes. Each scheme caters to 35 to 40 acres of land in a group.
- 75% community contribution achieved under the scheme.
- Identified farmers are inducted as member of lift irrigation user group.
- Various training and exposure visits undertaken for farmers.
- The user group actively involved in conflict resolution during the execution of the schemes.
- The regulation for irrigating each group members field are discussed with them and accordingly rules are laid down.

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Additional area brought under cultivation, Wardha District

Lift irrigation scheme at Ashti, Wardha District

A lift irrigation scheme at village Zadgaon in Wardha

REVIVING FARMERS' LIFELINE THROUGH REJUVENATION OF RIVERS AND STREAMS

Bajaj Corp Limited
Wardha District, Maharashtra

OBJECTIVE

- Improving carrying capacity of the streams.

RESULTS

- 0.72 million m^3 ground water conserved per year.
- 23,709 hectares of land of 11,980 farmers were benefited.
- 6,264 hectares of water logged land brought under cultivation.
- 4,098 irrigation wells benefitted.
- Increased farm yield and income by over 50% since 2017 (cotton, soybean, pigeon pea crops).
- River flow increased from 4 months (seasonal) to 8 to 10 months.
- Government of Maharashtra adopted the River Rejuvenation model in collaboration with Kamalnayan Jamnalal Bajaj Foundation (KJBF) under Jalyukta Shivar initiative which would benefit 2,17,000 acres of land of 24,000 families.

HOW ACHIEVED

- 181 rivers / streams partially rejuvenated over a length of 450 km through consultation with community.
- Achieved 15% financial community contribution through group of local community.
- Farmers' user groups formed following appropriate steps for operations and maintenance of the assets created.
- Soil erosion controlled by cultivating crops and planting trees on the bunds of the streams.

To know more, contact:

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Check dam made functional at village Kawatha on Yashoda river, Wardha, Maharashtra

Rejuvenated Yashoda river, Kawatha, Wardha, Maharashtra

Rejuvenation of Bhadadi River

REGENERATION OF THE NATURAL RESOURCES THROUGH PARTICIPATORY WATERSHED DEVELOPMENT IN THREE VILLAGES: CHANDRAPUR, KHAPRALE AND JAMGAON

Hindustan Coca Cola Beverages Private Limited
Nasik, Maharashtra

OBJECTIVES

- To enhance the agricultural productivity through watershed treatments and irrigation development by ensuring in-situ soil and moisture conservation measures.
- To reduce soil erosion and loss of moisture on watershed principles.
- Bring 100 hectares under double cropping by harvesting rainwater through various water harvesting structures.

RESULTS

Since the inception of the project in 2015.

- Irrigated area increased from 136 hectares to 216 hectares.
- 0.7 to 2.2 feet rise in ground water level in peak summer between year 2015 and 2017.
- 129 hectares of rain-dependent, single-crop farms converted to double-crop irrigated farms.
- Diversification of mono-cropping (cereals) to mix-multiple cropping (vegetables, pulses etc.)
- All three villages have become 'tanker free' with drinking water available throughout the year.

HOW ACHIEVED

- Hindustan Coca-Cola Beverages Pvt. Ltd., joined hands with NGO partner WOTR-SIED to implement the project in 1,624 hectares, covering 297 household with population of 1,767.
- 438 hectares cultivable land treated with repair and construction of farm bunds to enhance the soil moisture.
- 81 hectares of waste land rejuvenated with forestry and pasture development.
- 6 dug wells excavated to ensure drinking and irrigation water.
- 63 loose boulder structures in upper reaches to reduce runoff velocity and trap silt flowing with the water.
- Other construction work: 16 gabion (wire mesh), seven cement check dams, 16 farm pond.
- 30 Community Based Organisations formed and capacitated.
- An automated weather station installed to disseminate crop specific advisory to farmers and village specific advisory:
  - crop specific advisory: sowing, inter-cultural operations, nutrient, pest, disease and irrigation management, harvesting techniques.
  - village specific advisory: weather forecast and crop advisory according to sowing time.

To know more, contact:

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Community dug well

Farm bunding, Khaparale

Rejuvenation of percolation tank, Chandrapur

Construction of check dam, Jamgaon

NIRMAL BHARAT ABHIYAN

GMR Warora Energy Limited
Chandrapur, Maharashtra

OBJECTIVE

- Access to potable drinking water supply by installation of RO water ATM in 10 villages in Warora Taluka, Chandrapur District, Maharashtra.

RESULTS

- Availability of water for community purchase at the rate of 30 paise per litres.
- Benefitting 2,200 families in 10 villages.
- Provided more than 6,000 litres of safe drinking water / day / village.

HOW ACHIEVED

- Partnered with Panchayat and Buldana Urban Cooperative Credit Society (BUCCS) for technology, installation and operation and maintenance of water ATM.
- Installation of 10 RO ATM units in 10 villages.
- Panchayats provided space, electricity connection and water for RO plant along with security.
- All plants managed by BUCCS and generated income is being used to operate the plants.
- Fortnightly monitoring of water quality and quantity of water dispensed.
- Feedback from users on water quality and reliability of supply.

To know more, contact:

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Reverse Osmosis water ATM plant, Majra Rai, Chandrapur District

Reverse Osmosis water ATM plant, Majra Rai, Chandrapur District

COMMUNITY INITIATIVE FOR ADOPTION OF DRIP IRRIGATION SYSTEM FOR EFFICIENT USE OF IRRIGATION WATER

Lupin Limited
Buchkewadi, Junnar Block, Pune District
Maharashtra

OBJECTIVE

- Improved water management through adoption of drip irrigation system.

RESULTS

- Drip irrigation system adopted on 44.53 hectares by 65 farmers in last four years (2013-17) and more farmers are coming forward gradually.
- Water losses reduced by 30% which has helped to bring additional area under irrigation.

HOW ACHIEVED

- Lupin has implemented watershed development program in the village with financial assistance from NABARD, which has helped to bring 246 hectares land under assured irrigation.
- Farmers are sensitized to adopt drip irrigation for increasing water use efficiency.
- Drip irrigation promoted on PPP mode by involving Canara Bank for the loan, Lupin Human Welfare and Research Foundation (LHWRF) motivating the farmers to go for drip and Gram Panchayat Buchkewadi (GP) for assurance of loan repayment.
- Gram Sabha has resolved to adopt drip irrigation by each farmer on at least one acre of land.
- Demonstration of drip irrigation system on 4.94 hectares land under NABARD sponsored UPNRM program. Looking at its benefits in production and considerable water savings, more farmers were gradually inclined to adopt this system. Now farmers are irrigating vegetable crops like tomato, potato, onion and marigold by using drip irrigation method which has resulted in more water being saved.
- Canara bank, Narayangaon, that gave loan to the village farmers, has really helped to scale up the system on 44.53 hectares. Loan recovery assurance is given by GP and LHWRF.

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Drip irrigation for mango cultivation, Buchkewadi

Drip irrigation for pomegranate cultivation, Buchkewadi

Drip irrigation for marigold cultivation, Buchkewadi

LONG-TERM SUSTAINABLE SUGARCANE DEVELOPMENT UNDER FARMER SUPPORT PROGRAMME 'MADHUSHREE'

Olam Agro India Private Limited
Barwani, Madhya Pradesh

OBJECTIVE

- Increase in farm productivity and optimize water productivity in sugarcane cultivation.

RESULTS

- 8 billion litres per year of water use avoidance in sugarcane cultivation.
- Additional ₹3.12 billion income due to productivity improvement.
- Farm productivity increased by 28% in plant crop and 13% in 2nd crop (Ratoon from baseline in three-year platform).
- Irrigation water use avoidance of 25 billion litres in three-year crop rotation.

HOW ACHIEVED

- Sugarcane sustainability initiatives adopted by the growers include:
  - » Varietal balance by planting high yield sugar varieties.
  - » Soil health and nutrition management.
  - » Water use avoidance technique namely :
    - ~ Low cost solution like furrow and skip furrow irrigation, trash mulching, application of FYM / compost / press mud.
    - ~ Micro irrigation – drip, sprinkler, and gated pipe.
  - » Promotion of companion cropping.
- Implemented in 6,500 hectares sugarcane crop area.
- Pest management – IPM, use of biocontrol agents, use of guard crop.
- 360 degree mechanization of sugarcane cultivation.
- Dissemination of technology through field and classroom training, workshops, use of mobile video theatres, trails, and demonstrations at farmers field. Dissemination material developed for sugarcane and distributed among the growers.
- Partnership developed with IFC, Solidaridad, CNH, HUF, Mahindra and Mahindra.

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Drip irrigation and companion crop with sugarcane

Trash mulching

Reversible mould board plough

Inter row rotary weeder

ENABLING COMMUNITY LED WATER CONSERVATION

Reliance Limited
Bidar, Karnataka

OBJECTIVE

- To achieve water security in a semi-arid region by empowering the local community to plan and implement a strategy for water conservation and management.

RESULTS

- Over 3.3 billion litres / year of rainwater conservation capacity created habitations in 14 villages made secure for drinking water.
- ₹17 crore of additional annual agricultural income generated compared to pre-intervention period (increase of over 178% in annual agricultural income).
- Improvement in ground water level.
- Increase in water availability for at least 9 months.
- Increase in crop intensity to 170%.

HOW ACHIEVED

- 22 village associations formed, one in each project village.
- Over 4,000 rural households enrolled.
- 828 structures including dug wells and farm ponds constructed.
- Improved cultivation practices introduced in 367 hectares of waste land.
- Community members were trained and empowered to come out with village development plans and village action plans with support of Reliance Foundation team.
- Water conservation plan formulated depending on the topography and geo-hydrological conditions of the region.
- Community sensitized on water conservation practices and community Water User Groups were formed for optimal utilization of water.
- Partnerships with government and non-government organizations formed.
- A substantial 45% of total investment by Reliance in the project was towards providing irrigation support.
- ₹11.5 crore worth of funds leveraged from various government schemes such as Krishi Bhag Yojana, Watershed Development Scheme, Ganga Kalyan Scheme etc. to ensure the supply of quality seeds, construction of check dams and setting up of bore wells.

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Community led planning meeting, Nagoor M, Bidar, Karnataka

Field irrigated by dug well Shembelli, Bidar, Karnataka

Revival of river Manjara, Bidar

Farm pond, Bogri, Bidar

ACCESS TO SAFE AND CLEAN DRINKING WATER

YES BANK
Maharashtra, Karnataka, Goa, Gujarat, Madhya Pradesh

OBJECTIVE

- To provide access to safe and clean drinking water to rural and semi-urban communities.

RESULTS

- Provided access to over 90 million beneficiaries.

HOW ACHIEVED

- Innovative membrane based technology installed which does not require electricity or chemical-dosing for purification and results in zero water wastage during the purification process.
- Partnered with Indian Railways to adopt 1000 D and E category railway stations for installation of water purification units.
- Water purification units installed at 681 D and E category railway stations and 155 community locations with limited access to drinking water covering Maharashtra, Karnataka, Goa, Gujarat and Madhya Pradesh.
- Installed water meters in all water purification units to monitor dispensation of water.
- Regular maintenance and replacement of required consumables of all installed units
- Periodic water testing carried out at NABL accredited laboratory.
- Third party monitoring to ensure functionality and maintenance of the systems undertaken.

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Drinking water system installed at Hamaal Panchayat Kashtkari School, Pune

Drinking water system installed at D and E category railway stations

EFFICIENT WATER MANAGEMENT IN SUGARCANE THROUGH GOOD AGRICULTURAL PRACTICES IN MID-GANGA BASIN

DSCL Sugar
Hardoi, Uttar Pradesh

OBJECTIVE

- Saving irrigation water through large-scale adoption of Good Agricultural Practices (GAP).

RESULTS

- Water saving of 117.59 billion litres in 91,171 hectares in last two years (2016 and 2017).
- Yield increase by 51% (from 473 Q/ha to 714 Q/ha) over the last three years (2015 TO 2017).
- Reducing ground water pollution by promoting the use of bio-pesticides and bio-fertilizers in 36,000 hectares.

HOW ACHIEVED

- Capacity building of 1,60,000 farmers through unique extension service model led by 8,000 lead farmers and 300 extension staff.
- Implementing water saving practices such as trash mulching, furrow irrigation, drip irrigation, press mud/compost application, trench planting, wide row-spacing, green manuring and laser leveling.
- The vibrant multi-stakeholder partnership of DSCL, IFC, Solidaridad, Coca-Cola and farming communities.
- Demonstration plots established in 2,500 hectares playing a key role in enhancing large-scale adoption among farmers.
- Awareness generation on GAP and health and safety (folk theatre group and movies shown through mobile van theatres).
- A comprehensive package of practices was developed including water-use efficiency, soil health enhancement, and integrated pest management considering agro-climatic and the socio-economic status of the small farmers.
- Enhancing the availability of bio-agents in the Command Area.

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Trash mulching

Furrow irrigation

Drip irrigation

Green manuring

MECHANIZATION FOR IMPROVING WATER MANAGEMENT IN SUGARCANE CULTIVATION

DSCL Sugar
Hardoi, Uttar Pradesh

OBJECTIVE

- Minimizing water losses through mechanization in sugarcane cultivation.

RESULTS

- Water saving of 49.20 billion litres in 31,251 hectares (over two crop seasons: 2016 and 2017).
- Laser land leveling : 1.45 million litre / ha.
- Trench planting : 1.59 million litre / ha.
- Enhanced water storage capacity by improving soil water infiltration through deep ploughing / sub-soiling in 276 hectares.

HOW ACHIEVED

- Entrepreneurship model engaging rural youth enhancing access of smallholder farmers to mechanization services.
- Mechanization services including laser land leveling, trench-planting, trash-shredding and deep-ploughing to improve infiltration and minimize run-off losses.
- Popularizing trench-planting technique facilitating furrow irrigation method.
- Bank loan linkages, government subsidies and subsidies from DSCL extended to entrepreneurs.
- Facilitating payments through cane price tagging to entrepreneurs.

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Laser land leveler

Trash shedder

Trench planter

Deep ploughing

PARTICIPATORY WATER STEWARDSHIP PROGRAMME (WSP) IN VILLAGES OF RAJASTHAN

ITC Limited
Rajasthan

OBJECTIVE

- Water Stewardship Programme (WSP) aims at ensuring 'Water for All – Today and Tomorrow', in line with ITC's commitment to sustainable development and Triple Bottom Line performance.

RESULTS

- Land under irrigation increased by 80% and erstwhile un-irrigated land reduced by three times, leading to four-fold increase in the net cropped areas during 2013-14 in Bhilwara district project.
- Yield improved by 33% for soya, 25% for wheat and 20% for maize in Bhilwara district project.
- Average crop productivity for Kharif crops increased by 32% and 13% in Bhilwara and Pratapgarh districts.
- In Bhilwara district, an increase of 35.5% in water depth in wells during pre-monsoon period was observed, as result of watershed development.

HOW ACHIEVED

- Community driven approach where in water user groups were formed, who participated in implementation, contributed for work and have taken over maintenance of structures.
- Thrust on partnerships, with five NGOs partnered for implementation, 16 PPP's with Government and NABARD, for resource convergence, and technical partnerships with reputed institutes like CGIAR, CAZRI, etc.
- Focus on revival of commons for the benefit of poor and marginalized through eco-restoration of village commons with social commitment.
- 1,126 minor and major water harvesting structured constructed/renovated creating additional water storage potential of 46.37 lakh m^3.
- 47,649 hectares of area protected from erosion and created irrigation source for 7,895 hectares of command area.
- 3,374 hectares of pastureland area developed in 148 plots through in situ regeneration and community protection.
- 292 Water User Groups (WUGS) formed with a membership base of 2,783 members, having a maintenance fund of ₹3 lakhs.
- 282 villages and 58,583 farmers benefitted till date.

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Catchment treatment, Jhalawar District

Check dam, Shrinagar, Bundi District

EFFECTIVE MANAGEMENT OF LAND AND WATER FOR IMPROVING WATER AVAILABILITY

Hindalco Industries Limited
Renukoot, Uttar Pradesh

OBJECTIVE

- Increase water availability in 30 villages through optimal utilization of land and water in Renukoot, Uttar Pradesh.

RESULTS

- 1.8 crore litres of water has been stored through construction of 10 check dams.
- 67 hectares of wasteland has been rendered productive through social forestry from 2015-2018.
- 80 acres of land comes under horticulture development from2015-2018.
- 1,758 acres of land irrigated through 111 lift irrigation units.
- 324 acres of land irrigated through construction of 4 bawali and 28 irrigation wells.
- Adequate food availability from 2nd crop for all 12 months in 30 villages.
- Farmers income increase from ₹40,000 per annum to ₹72,000 per annum between the period 2015-2018.

HOW ACHIEVED

- Community awareness programme on rainwater conservation and better agriculture practices.
- Agricultural expert interaction with farmers for crop selection.
- Construction of water channels, irrigation wells, rainwater harvesting structures and ponds.
- Farmers adopted organic farming to increase the water retention capacity of soil.
- Formation of water committees for maintaining resources and its utilization.
- Total investment: ₹12.9 million.

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Check dam with Lift Irrigation

Check dam, Muripur

TUSHAR SAMRUDDHI : INTEGRATED WATERSHED MANAGEMENT

CII Maharashtra
Aurangabad, Maharashtra

OBJECTIVE

- To increase the ground water table and increase income from agriculture by rejuvenation of defunct water structures.

RESULTS

- Additional 22 crore litres of water was made available for irrigation.
- Soil fertility increased with deposited silt on agricultural land.
- 50% increase in income from agriculture for marginal farmer families due to the project.
- 143 million litres of water harvested.
- 171 acres of pomegranate orchards were provided irrigation.
- 275 farmer families benefitted.

HOW ACHIEVED

- Defunct percolation tank (with heavy silt deposition and leakages from the body wall) was rejuvenated.
- Cut-off trench and filling it with black cotton soil to prevent the leakages.
- Excavated silt deposited on agricultural land which had less fertility.
- Agriculture extension programs.

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KT Weir Chartha - Shelud Village in Aurangabad

TUSHAR : DESILTING AND SUPPORT TO JALYUKT SHIVAR ABHIYAN

CII Maharashtra
Aurangabad, Maharashtra

OBJECTIVE

- Rejuvenation of defunct water structures for water sustainability.

RESULTS

- Defunct Kohapur Type Weirs (KT Weirs) were rejuvenated.
- Additional 10.8 crore litres of water made available for irrigation every year.
- Average Irrigated area increased from 20.6% to 45%
- Soil fertility increased with deposited silt on agricultural land.
- Increase in annual Income from agriculture for two villages from two crore to eight crore from two village.

HOW ACHIEVED

- Repairing of six KT Weirs from both village.
- De-silting of deposited silt from the water storage area of six KT Weirs.
- Excavated silt deposited on agricultural land which had less fertility.
- Agriculture extension programs.

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Desiltation site at Jalkawadi Reservoir

Desiltation site at Sanjul reservoir

RENOVATION OF TRADITIONAL WATER HARVESTING STRUCTURES : NADI

Cairn Oil and Gas
Vedanta, Barmer, Rajasthan

OBJECTIVE

- Optimize usage of rainwater, reduce dependency on ground water.

RESULTS

- 1,500,000 m^3 rainwater harvested every year.
- Reduction in cost for water if sourced from water tankers – ₹10.5 crore.
- Dependency of 51 villages for drinking water throughout the year.
- Reduction in 500 m^3 of groundwater utilization.
- Has brought back biodiversity and migratory birds in region.

HOW ACHIEVED

- 12 nadis renovated benefitting 15,000 farmer families.
- Setting up of village water management committee under gram panchayat for managing natural resources in village.
- Use of contributory model for increasing ownership and sustainability.
- *Shramdaan* during the entire renovation phase.
- Previously deposited nutrient rich silt carried by farmers to their farms for recycling of nutrients.
- Use of traditional community wisdom and modern engineering for locating correct catchment area.
- Partnership developed with CAZRI Jodhpur, KVK Barmer with NGOs and Government for execution of work.

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Pre-intervention – Baap Nadi

Post rain Baap Nadi, Bandra Gram Panchayat, Barmer, Rajasthan

Renovation of Baap Nadi, Bandra Gram Panchayat, Barmer, Rajasthan

TRADITIONAL SYSTEM OF SOIL AND MOISTURE CONSERVATION – KHADIN

Cairn Oil and Gas
Vedanta, Barmer, Rajasthan

OBJECTIVE

- Optimum utilization of rainwater through storage and planned utilization of natural resource base – water and soil through structures requiring minimum maintenance post project completion.

RESULTS

- 1,132,000 m^3 water harvested in 2017.
- 43,610 tons of soil conserved every year.
- 289 hectares of uncultivable land turned into agricultural land.
- ₹4,465,000 additional income generated through project annually.

HOW ACHIEVED

- 625 individual and community khadins constructed benefitting 700 farmers families.
- Use of contributory model in partnership with beneficiaries for increasing ownership.
  - Labour requirements met by beneficiary whereas Cairn provided mechanical implements, technical advisory and strengthening of structure.
- Structures created will require no maintenance cost.
- Use of traditional community wisdom for locating correct catchment area and alignment of farms for determining route of water flow.
- Use of existing knowledge on presence of gypsum underneath soil to improve percolation along with retention.
- Partnership with NGOs and Government for execution of work.
- Use of demonstration models to encourage beneficiaries.

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Khadin post rain, Jelala, Barmer, Rajasthan

Khadin post rain, Jelala, Barmer, Rajasthan

Bajra cultivation in Khadin, Barmer

GRAVITY BASED DRIP IRRIGATION IN AGRI-HORTI UNITS (WADI)

Cairn Oil and Gas
Vedanta, Barmer, Rajasthan

OBJECTIVE

- Promotion of horticulture farming in arid zone through minimum use of water.

RESULTS

- 210 hectares of unutilized land turned into agri-horti area in the last four years (2014-2018).
- Reduction in 64,680,000 litres of groundwater use in last four years (2014-2018).
- Production of 250,000 kg of fruit, developing economy and local nutritional requirement every year since 2016.
- Income of farming community enhanced by ₹10,000,000.

HOW ACHIEVED

- 1,114 number of wadis developed benefitting 1,114 farmers families.
- Intensive need analysis on interest and potential of horticulture farming.
- Exposure visits in tie up with agriculture institutes (ICAR-CAZRI Jodhpur) to boost confidence in the model.
- Planning done upon traditional livelihood practice of farming and increasing its efficacy.
- Use of contributory model in partnership with beneficiaries for increasing ownership.
  - » Used a 60:40 (company to beneficiary) cost model at individual farmer level.
  - » 40% cost incurred is locally sourced and mostly inexpensive except for one component – overhead tank for running the drip system.
- Handholding until gestation period provided (3 years).
- Partnership with NGOs and Government for execution of work.
- Use of demonstration models to encourage beneficiaries.
- Tie ups with premier agricultural institutions ICAR – CAZRI, KVK for capacity building both on Farmer Field School Model as well as exposure visits.

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Gravity based drip, Bandra Talar, Barmer, Rajasthan

Gravity based drip, Bandra Talar, Barmer, Rajasthan

Gravity based drip on Ber (Jujube), Kaukheda, Barmer Rajasthan

ROOFTOP RAINWATER HARVESTING

Cairn Oil and Gas
Vedanta, Barmer, Rajasthan

OBJECTIVE

- Optimization of collection of fluoride free rainwater for drinking purposes at school level through rooftop rainwater harvesting and storage.

RESULTS

- 704.1 m^3 water harvesting capacity every year.
- ₹ 704,100 saved every year.
- Caters drinking water throughout the year in 75 schools of Barmer since 2015.

HOW ACHIEVED

- 76 number of RWH constructed in schools benefitting 11,400 students.
- Construction of school-based rooftop rainwater harvesting system with Tanka (under ground water tank).
- Natural filtration to remove impurities through sand-charcoal filtration apparatus.
- Structures created require very little maintenance cost.
- Partnership with NGOs, Gram Panchayat, School Management Committees and Government.

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Roof water harvesting structures at Adarsh Dhunda School

Roof water harvesting structures at Adarsh Dhunda School

School Roof top RWH in Khariyatala, Barmer

WATER FOR PUBLIC GOOD : INFLUENCING PRACTICE AND POLICY – DEVELOPING COMMUNITY GOVERNANCE AND BEHAVIOUR CHANGE

Hindustan Unilever Limited
Dangs, Gujarat

OBJECTIVE

- Enhancing surface water availability in rain-fed and hilly terrain and building community processes to sustain and manage resource.

RESULTS

- 4.83 billion litres of water harvested.
- 2,343 hectares of area stabilized through land treatment work.
- 2,216 tons of additional agriculture and biomass production.

HOW ACHIEVED

- 2,223 people trained on good agricultural practices.
- 10,2770 person-days generated through watershed work.
- Assessment on non-functionality or semi-functionality of existing irrigation infrastructure and created surface water storage.
- Developed community water and agri institutions for collective governance – Gram Vikas Mandals, Kisan Clubs and Water Users Associations.
- Developed capacity of youths to scale up demonstration models and build behaviour change on good agri practices and soil moisture conservation.

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Check Dam, Barmiyavad

Gabion, Susarda

LIVELIHOOD AND SUSTAINABLE ECOSYSTEMS THROUGH WATERSHED MANAGEMENT BASED INTERVENTIONS

Ultratech Cement Limited
Neemuch, Madhya Pradesh

OBJECTIVES

- Promoting overall socio-economic conditions by developing degraded lands and water management.
- Mitigating the adverse effects of uncertain monsoons through water harvesting.
- Sustained community action for ownership and continuity.

RESULTS

- Increase in income of farmer by 30-40% from 2016.
- Single to double cropping pattern (402 hectares).
- Increased crop per hectare : 25% (hectares) and Rabi crop 25% to 30% in 2016.
- Water holding capacity increased by 3.02 million m^3.
- Increase in groundwater table by 1.5 to 2.0 metres from 2014.
- Water positivity.

HOW ACHIEVED

- Dovetailed the Government Watershed Management Programme.
- 65 check dams constructed.
- 400 hectares contour trenches and plantation in 21 hectares.
- Productivity enhancement through foundation seeds.
- Bio gas plants and vermicompost units.
- Improved agricultural implements to 706 participants.
- Training and exposure visits.
- 52 Self Help Groups with income generating activities and 65 user groups.
- Community based user groups.
- Total Investment : ₹310 lakhs (Government : ₹265 lakhs, Company : ₹45 lakhs, Community : ₹ 2.08 lakhs).

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Check Dam, Barmiyavad

RAINWATER HARVESTING

Tata Steel Limited
Joda, Odisha

OBJECTIVES

- To increase availability of domestic water for the economically weaker sections residing at Joda, Keonjhar Bachu Hatting area by augmenting the availability of groundwater.
- To enhance quality and quantity of ground water around for domestic consumption.
- To improve the flora and fauna and greenery of area.

RESULTS

- 81,000 m^3 per annum rainwater is recharged to aquifers.
- 5,000 community members are benefitting with increased domestic water.
- TDS of ground water in the adjacent areas of RWH pond was reduced.

HOW ACHIEVED

- Identified favorable areas for water harvesting.
- Economically weaker section of the community members developed skill in specialized jobs and obtained job opportunities.
- Involved community opinion leaders and members for the project construction.
- Excavated the site area for the development of pond. Capacity : 27,000 m^3.
- Resorted to innovative method of garlanding the excavated pit and dewatering to control high seepage in the marshy land at pond site.
- Project cost : ₹38 million

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Storage cum percolation tank, Joda, Odisha

IMPROVED GROUND WATER RECHARGE THROUGH RAINWATER HARVESTING

Fiat India Automobiles Private Limited (FIAPL)
Dhamari, Shirur Taluka, Pune District
Maharashtra

OBJECTIVE

- Ground water recharge through watershed program at village Dhamari, Maharashtra.

RESULTS

- Rainwater Harvesting potential created : 40,500 m^3.
- Direct Irrigation benefit to 110 hectares of land.
- In-direct Irrigation benefits to additional 260 hectares of land.
- Dhamari village became tanker free from year 2016.
- Increase in ground water table (down-stream of dam) by 4 – 5 meter since 2016.
- Over 370 hectares of land benefited due to direct and in-direct irrigation.
- Increase in bio-diversity of the region – birds and reptiles.

HOW ACHIEVED

- FIAPL supported the Government of Maharashtra 'Jalyukt Shivar Abhiyan' and undertook water conservation activities in water catchment area of Ganga Sagar Dam.
- It is a participatory project, wherein involvement of all stakeholders – government authorities, district administration, village community and FIAPL employees etc. is ensured.
- The additional RWH capacity created is 40,500 kilo litres.
- Rainwater harvesting structures includes – di-silting and widening of river tributaries and percolation pond, construction of earthen bunds.
- De-silting and widening of 4.5 km river tributaries (by FIAPL) and de-silting of village Percolation Pond – Ganga Sagar Dam (by village community). Connecting all the small rivulets via main stream for entire stretch of 4.5 km to Ganga Sagar Dam.
- Project has been handed over to people. The village community has taken the ownership and undertaking periodic maintenance; de-silting of the percolation tanks to ensure water conservation on sustainable basis.
- Later Government of Maharashtra also constructed a CNB 1 km upstream to the dam, which has resulted in additional RWH of 25,000 m^3 / year.
- Control of soil erosion through earthen bunds and tree plantation by village community.
- Total cost of the project : ₹2.2 million.

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Before: Ganga Sagar dam (Percolation tank) Dhamari Site

After: Ganga Sagar dam (Percolation tank) Dhamari Site

Cement Bandhara, Dhamari

IMPROVED GROUND WATER RECHARGE THROUGH WATERSHED PROGRAM IN DROUGHT HIT AREAS

Fiat India Automobiles Private Limited (FIAPL)
Latur, Maharastra

OBJECTIVE

- Ground water recharge through watershed program at Nilanga, district Latur, Maharashtra.

RESULTS

- Rainwater harvesting potential created : 1,34,000 kilo litres at 15 sites
- 3,000 farmers benefitted.
- Over 490 hectares of land has benefited due to indirect irrigation in project area.
- Direct irrigation Benefits : 300 families.
- Indirect Irrigation benefits : 1,500 families.
- Increase in groundwater table in watershed : average 8 – 9 meter near percolation structures (CNB) and 4 – 5 meter away (at 1.5 km) from percolation structures.
- Due to the increased water table, the farmers are able to cultivate crops in two seasons since 2017.

HOW ACHIEVED

- Construction of 15 Cement Nalla Bunds and de-silting of 7.5 km river tributaries. It is people participatory project, wherein involvement of all stakeholders – government authorities, district administration, village community and FIAPL employees etc. are ensured.
- Rainwater harvesting structures includes de-silting and widening of river tributaries and construction of Cement Nalla Bunds (CNB) in watershed approved by Ground Water Survey and Development Agency (GSDA), Government of Maharashtra.
- FIAPL initiated Water Partnership Project with 3M company in project area. Wherein FIAPL is creating RWH structures at 18 sites and 3M company at 7 sites.
- These projects have been handed over to people. The village community has taken the ownership and undertaking of periodic maintenance – de-silting of the percolation bunds to ensure water conservation on sustainable basis.
- Control of soil erosion through planting of trees on bunds – up stream.
- Counselling of farmers to adopt advanced irrigation methods such as drip irrigation. And discouraging cultivation of water intensive crops such as sugarcane.
- Total cost of the project : ₹25.3 million.

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Construction of Cement Bahndhara and desilting of stream, Latur

Water level in well along the stream, Latur

Construction of Cement Bahndhara and desilting of stream, Latur

GROUND WATER RECHARGE AND CROP PRODUCTIVITY ENHANCEMENT THROUGH INTEGRATED WATERSHED MANAGEMENT PROGRAM

Mahindra and Mahindra Limited
Auto, Farm and Agri Sector
Phanda Block, Bhopal
Madhya Pradesh

OBJECTIVES

- Soil and water conservation.
- Crop productivity enhancement.

RESULTS

- 460 hectares additional area brought under irrigation.
- Monocropping pattern has been converted in to multiple crops by introducing crops like maize, pigeon pea, green gram, pumpkin, floriculture and vegetables under crop diversification.
- With availability of water and different agriculture interventions average annual income has been raised from ₹19,523 in 2014 to 70,617 in 2018.
- Increase in ground water level by 1.80 m since 2014.
- 1,055 million litres rainwater harvested per year.

HOW ACHIEVED

- Project implemented in Public Private Partnership mode with government, Mahindra and Mahindra Limited (AFS) and community.
- Implemented in 35 villages on area of 10,760 hectares.
- 39,200 metre farm bunds and 52 Gabion structures controls soil erosion to great extent.
- 75 farm ponds, 47 stop dam structures, 4 recharge shafts, 3 dykes completed followed by revival of 13 defunct water bodies benefitting 4,060 farmers.
- Seed replacement, availability of quality inputs, trainings, exposure visits and handholding by agricultural experts.
- Total cost of the project invested by government and M&M is approximately 50:50.

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Revival of old village water tank, Jhagariakhurd, Bhopal

Farm Pond, Phandakala, Bhopal

Stop dam, Phandakala, Bhopal

Increase in water level of well, Jhagariakhurd, Bhopal

MAHINDRA 'ADARSH GRAM PROJECT'

Mahindra and Mahindra Limited
Igatpuri Block, Nashik District
Maharashtra

OBJECTIVE

- To provide safe drinking water and improve water storage facilities in the village for irrigation purpose and drinking water for human beings and livestock.

RESULTS

- Two rainwater harvesting tanks constructed i.e. one in Awalkhed village benefiting 180 households and one in Chinchale khaire village benefiting 165 households.
- One RO system has been installed in Bhavli Khurd benefiting 335 households.

HOW ACHIEVED

- Need assessment conducted to understand existing water situation in the three villages by involving local community.
- Collective decision-making approach on most suitable options for water conservation and utilization.
- Collectively decided location of RO system and rainwater harvesting tanks.
- Identified the roof top rainwater harvesting tanks and water connection and electricity facility for RO system.
- Obtained consent and NOC from Gram Panchayat to undertake the activities and regular update to concern government machineries
- Implementing partner – Dilasa Janvikas Pratisthan.

Collecting RO Permeate water

Rainwater tank, Awalkhed, Igatpuri, Nashik

RO Plant, Bhawli,Igatpuri, Nashik

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SUSTAINABLE SMALL WATER ENTERPRISES FOR SAFE AND AFFORDABLE DRINKING WATER FOR PUBLIC HEALTH

Safe Water Network India

OBJECTIVES

- Developing healthy communities, managing their own sustainable supply of safe water.
- Generate livelihoods and improve public health.

RESULTS

- Direct water access to more than 800,000 through our +250 iJal water stations.
- Livelihood to ~700 local women and youth.
- Inclusion of Small Water Enterprises in the city's planning by Ministry of Housing and Urban Affairs.
- Key inputs to the Ministry of Drinking Water and Sanitation to achieve the goal 'Har Ghar Jal' by 2030.

HOW ACHIEVED

- iJal station initiative facilitates sustainable access to safe and affordable drinking water to communities by empowering SHGs / local entrepreneur to own and operate enterprise.
- This is achieved by mobilizing elected representatives and key opinion leaders and seeking their endorsement to create a self-serving ecosystem of reliable safe water delivery, backed by trainers for skill building and technicians for repair and maintenance.
- Powering these iJal stations with remote monitoring on cloud technology and data analytics derived from IoT-based parametric monitoring to achieve sustainability and reliability of operations.

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Operator training of SHGs

Financial literacy of Self Help Group

Consumer prepaid RFID card

SUSTAINABLE WATER RESOURCE DEVELOPMENT AND MANAGEMENT

PepsiCo India Holdings Private Limited
Nelamangala, Bangalore
Karnataka

OBJECTIVE

- Enable groundwater recharge at the watershed level.
- Boost the local economy with intensification in agriculture and allied livelihood activities.

RESULTS

- Ground water recharge of 1.27 million litres across three rainwater harvesting ponds in 2017.
- Positively impacting catchment area of more than 1800 hectares.
- Benefitted agricultural area of around 250 acres.
- Improved groundwater recharge, positively impacting 350 households
- Enabled farmers to grow a second crop.
- Increase in crop yields and farmer incomes.
- 500 annual person days of training for farmers and women.
- 178 women members organized into 13 SHGs now economically independent.
- Obtained loans exceeding 29 lakhs and saved more than 15 lakhs in nationalized banks; for income generation activities.

HOW ACHIEVED

- Participatory based watershed management approach.
- Entire model is planned in alignment with the village level local institutions.
- Desilting, bunding and clearing of catchment area of the ponds.
- Community members trained on water conservation, maintenance of water bodies, measurement of rainfall and groundwater.
- Self Help groups and water user groups formed.
- Regular monitoring and maintenance of the existing structures.
- The local village level trainings on alternate livelihoods for women and sustainable agriculture practices.
- Alternative Development Initiative (ADI) provided technical support for designing the implementation plan and PepsiCo provided funds for project implementation.

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Pond pre-monsoon 2017 : Tonchikuppa, Nelamangala, Bangalore

Pond post monsoon 2017: Tonchikuppa, Nelamangala, Bangalore

Rejuvinated community pond

WASHE : SOLAR WATER ATMS

Standard Chartered Bank
India

OBJECTIVE

- Providing access to safe water, sanitation facilities and education to adolescent girls in municipal schools and disadvantaged communities at large, since 2011 under the flagship program – WASHE
- Provide sustainable water solutions to those lacking access to safe drinking water through solar water ATMs in partnership with Piramal Sarvajal.

RESULTS

- 14 solar power water ATMs, set up since 2017, spread across 7 states of Rajasthan, Maharashtra, Gujarat, Odisha, Bihar, Uttar Pradesh, and Madhya Pradesh
- Each ATM caters to 250 households. ATMs attract tech-savvy youth and promote entrepreneurship by providing them with an opportunity to run the water service franchise.

HOW ACHIEVED

- Provision of decentralised water filtration plants in partnership with Piramal Sarvajal in communities which are not connected to municipal water supply.
- The purification plant, is a five stage water purification plant equipped with reverse osmosis and ultra violet technology with filtration capacity of 500 litres an hour. It is linked to a water ATM which is solar powered, cloud-connected, wall-mounted, smartcard enabled, and with automatic water vending machine.
- Cashless transactions, pay-per-use methodology, 24 × 7 service availability, user-level transaction mapping and real time impact monitoring enable quality control, operational accountability and price transparency.
- These water ATMs eliminate the hassle of queues for women or skipping school for children.
- Awareness on the benefits and use of the water ATMs is spread through practical water demonstration sessions using the total dissolved solids meter and electrolyser at multiple levels – households, shops, schools and anganwadis.
- The project involves village panchayat and Sarpanch at every level of decision-making and communication to build community-level commitment, and increase the utilisation of services.

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Women get a quick refill of drinking water from the water ATM at Bakoda, Odisha.

Inauguration of the new water filtration plant

INDUSTRY INITIATIVE WITHIN THE FENCE

REDUCTION IN EVAPORATION LOSSES LEADING TO CONSERVATION OF FRESH WATER

JK Tyre and Industries Limited
Kankroli, Rajasthan

OBJECTIVE

- Reduction in evaporation losses leading to conservation of fresh water.

RESULT

- Reduction in fresh water consumption for plant process: 2830 m^3 / year.

HOW ACHIEVED

Initiated activities to reduce evaporation losses in various plant processes.

Intervention 1

- The AHU (Air Handling Units) used for plant air cooling was based on water spray type cooling. In this process the consumption of water sprayed was higher due to drift losses, spillages and uncontrolled evaporation.
- The spray type mechanism was replaced by cellulose pad and it gave better control of water evaporation, with better cooling efficiency.

Intervention 2

- The TCU (Temperature Control Unit) used for four roll calender equipment was open loop type design, consisting an open tank for storage of heated water at atmospheric pressure. As the temperature needs to be maintained at 90° C, it was causing water evaporation losses.
- The TCU was modified with close zone type water circuit, with controlled heating. The open tank was eliminated from the circuit, resulting in reduction of large volume of water and corresponding evaporation losses.

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Water circulation tank

Cellulose Pad

OPTIMIZATION OF CYCLE OF CONCENTRATION (CoC) IN COOLING WATER BY USING THE 'POLYMER TECHNOLOGY'

Vidarbha Industries Power Limited
2 × 300 MW, Butibori, Nagpur
Maharashtra

OBJECTIVE

- Reduction in Specific Water Consumption by increasing Cycle of Concentration (CoC) of cooling water.

RESULTS

- Plant was designed for CoC of 6.0.
- However, it was operating with CoC of 5 – 5.5 for the last four years.
- CoC was increased to 6.85, after bringing change in chemical dosing regime.
- Water saving quantity 28 m^3 / hr per unit, total 1,344 m^3 / day for two units.
- Specific Water Consumption reduced to annual average 2.40 m^3 / MWH from 2.78 m^3 / MWH.

HOW ACHIEVED

- Maintaining high CoC involves additional expenses for water treatment.
- VIPL has been operating at CoC between 5 – 5.5 since initial stages of operation.
- However, with the usage of latest polymer technology and water treatment chemicals, VIPL has achieved highest CoC of 6.85, against the design value of 6.
- This has reduced water consumption by 1,344 m^3 / day.

To know more, contact:

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Cooling tower using polymer technology

Polymeric dispersant dosing system for polymer technology

OPTIMIZATION OF SLURRY CONCENTRATION IN HIGH CONCENTRATION SLURRY DISPOSAL (HCSD) SYSTEM FOR WATER CONSERVATION

Vidarbha Industries Power Limited
2 × 300 MW, Butibori, Nagpur
Maharashtra

OBJECTIVE

- Maximizing the slurry concentration for reduction in water consumption required for fly ash disposal.

RESULTS

- 46% reduction in water consumption.
- Reduced land requirement for disposing same quantity of ash slurry.

HOW ACHIEVED

- At VIPL, the HCSD pumps used to operate between 50 – 55% slurry concentrations with slurry density of 1.34-1.38 g/cc.
- VIPL carried out the rheological study with CSIR laboratory (GoI) Bhubaneshwar for optimization of water requirement in HSCD system.
- Based on lab report, slurry density was increased up to 1.48 – 1.53 g/cc with 65% slurry percentage (±1%) for fly ash of specific gravity 2 to 2.1, as the ash percentage in slurry depends upon the specific gravity of fly ash.
- This resulted in 46% decrease in water consumption required for disposing same quantity of ash.

To know more, contact:

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Silo

Agitator assembly

HCSD pump

WATER MEASURING AND MONITORING FOR OPTIMIZATION OF WATER RESOURCES

Tata Motors Limited
Pantnagar, Uttarakhand

OBJECTIVE

- Water monitoring, conservation and arresting leakages.

RESULTS

- Arrested underground water leakages.
- Reduced water consumption by 65,000 m^3 / year.
- Reduction in water, energy and GHG emission.

HOW ACHIEVED

- Total 42 flow meters in manufacturing and non-manufacturing areas and shops.
- Installation of flow meters helped determine water balance of fresh water withdrawn from bore wells for consumption and wastewater received back to ETP and STP for treatment.
- After this, treated effluent is either used in horticulture activities or recycled through RO for reuse in process in paint and other shops.

To know more, contact:

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Flow meter at New Compressor House-Process

Flow meter Drinking

Flow meter Process and Drinking

IMPROVEMENT IN RECOVERY OF WATER FROM SLIME DAM AT NOAMUNDI IRON MINES

Tata Steel Limited
Nouamundi Iron Mine, Jharkhand

OBJECTIVE

- To improve recovery of water from slime dam by enhancing the release of water from the slime thereby also increasing the capacity of the slime pond.

RESULTS

- Improvement of water recovery by 58% and consequent increase in slime dam life by 40%.

HOW ACHIEVED

- Earlier the slime generated in the processing plant was directly discharged to the slime dam. The natural process of release of water from the slime was very slow resulting in lesser water recovery from the slime dam which also adversely affected the capacity of the dam.
- To improve the release of water from the slime, we tried releaser and binders for compaction of slime at the discharge point in the dam, which marginally improved the recovery of water from 60 m^3 / hr to 90 m^3 / hr.
- To further improve the recovery, a customized polymer product 'Watershed 82258' of NALCO was used which enhanced the release of entrapped water from the slimes to achieve maximum compaction. The product after preparation, when applied with necessary dilution, forms a strong aggregate with the iron ore slimes through binding mechanism.
- Once aggregates are formed, it settles down by gravity thus squeezing out the entrapped water to the maximum thus improving higher recovery of water from the slime dam.
- Through use of this chemical the recovery of water further improved to 143 m^3 / hr.

To know more, contact:

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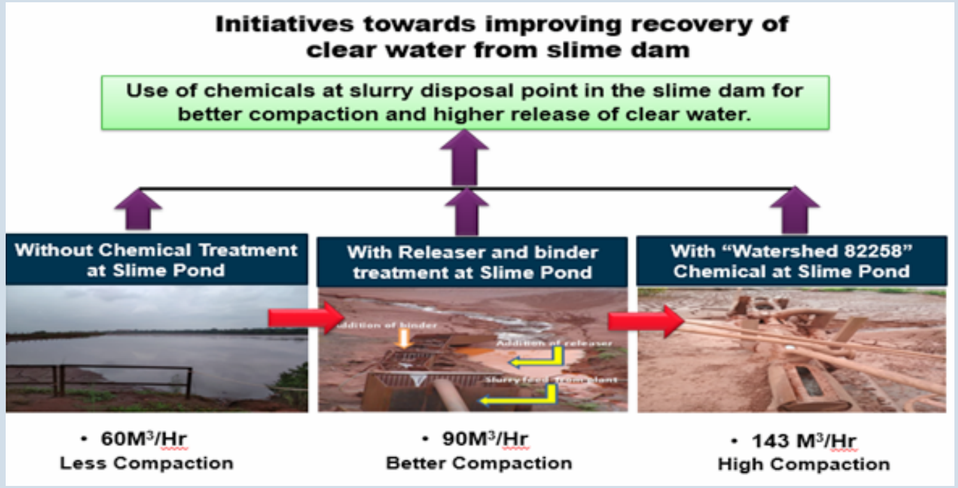

Water recovery at slime pond through improved chemical treatment

RECYCLING OF TREATED EFFLUENT DURING WATER CRISIS PERIOD

Tamil Nadu News Print Limited
Coimbatore, Tamil Nadu

OBJECTIVE

- Mitigate water crisis arising due to low flows in river Cauvery.

RESULTS

- Mill production was achieved during April – June 2017 by recycling of treated wastewater in paper machine and drinking plant.

HOW ACHIEVED

- Stored treated effluent in the Balancing Reservoir No: 2 (BR#2).
- Water was processed in Water Treatment Plant available in TNPL Mini Cement Plant and usage of the same in the process for effective utilization of wastewater during water crisis period of 2017.
- The stored effluent in Balancing Reservoir No: 2 (BR#2) was pumped to flash mixer and then taken into a clarifier where Poly Aluminum Chlorides was added in the clarifier to settle the sediments. The underflow was pumped to Effluent Treatment Plant. The overflow was pumped to sand filter, activated carbon filter followed by two-stage micron and Reverse Osmosis unit. The output of RO was pumped to water collection tank named BR3 Sump. From BR3 Sump the water was pumped for process usage.

To know more, contact:

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Recycling of treated effluent to replace process water using membrane technology

Membrane technology

RECHARGING OF THE GROUND WATER AND COLLECTION OF RAIN WATER

Bajaj Auto Limited
Waluj, Maharashtra

OBJECTIVE

- Achieve water conservation and water positive status.

RESULTS

- Annual water consumption: 0.246 million m^3 / year. Estimated annual ground water recharge: 0.8 million m^3 / year. Thus achieving the water positive plant status.

HOW ACHIEVED

- Objective achieved by management commitment, policy, awareness to employees, water saving measures, recycling in process, technical improvements, rainwater harvesting – ground recharge by Kedia pattern, recharge pits, water storage ponds.
- Kedia Farm Pattern (KFP) is an eco-friendly, low cost, common solution to depleting well water, drying aquifer and farm waterlogging. KFP (patented) – Rainwater Harvesting provides water security for thirsty farms and drinking water for villages, independent of erratic rain.

To know more, contact:

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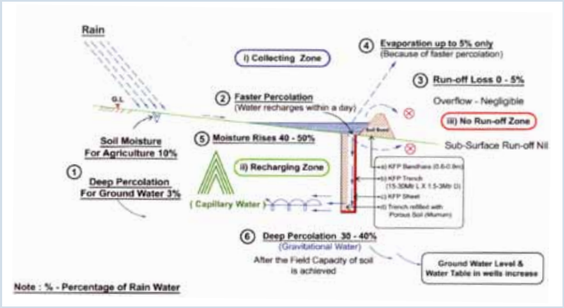
Rainwater harvesting pond



Kedia Farm Pattern

MOVING TOWARDS BECOMING WATER SELF-RELIANT PLANT

Mahindra and Mahindra
Igatpuri, Maharashtra

OBJECTIVE

- Overcome water scarcity and reduce dependency on external water.

RESULTS

- Reduction in daily water consumption : 41%.
- Reduction in external water consumption : 43%.
- Reduction in water consumption in m^3 / equivalent engine : 26%.

HOW ACHIEVED

- Mapping of water distribution system
  - » Implementation of efficiency improvement projects.
- Behavior based water management system.
- Implementation of breakthrough projects like rainwater harvesting and elimination of cooling tower.
- Daily water monitoring system.
- Real time water monitoring.
- Recycle, reuse of treated water.
- Micro irrigation for gardening.

To know more, contact:

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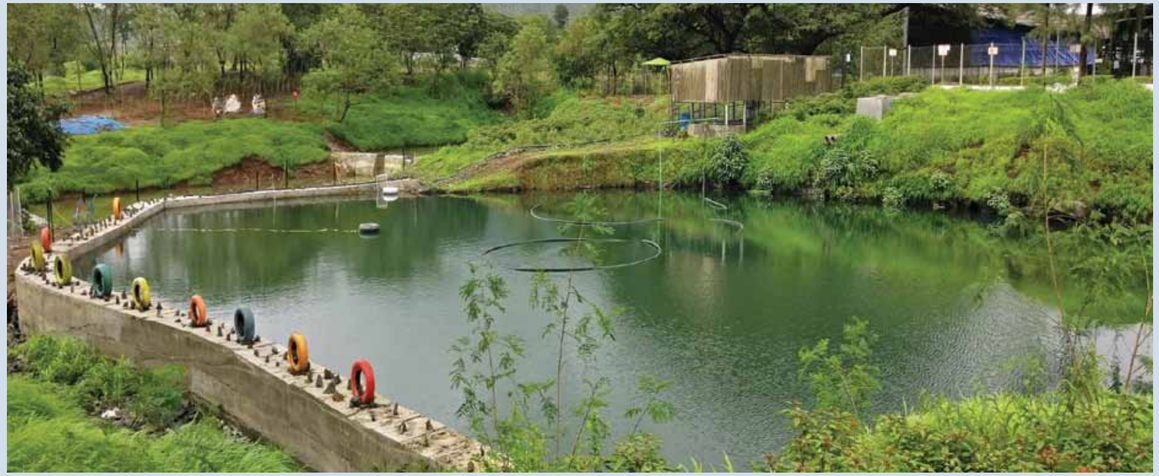
Farm pond

Farm pond



Bolero dam

ZERO LIQUID DISCHARGE IN THE SUPER CRITICAL THERMAL POWER PLANT

Talbandi Sabo Power Limited (3 × 660 MW)
Mansa, Punjab

OBJECTIVE

- Reduction in specific fresh water consumption by recycling effluent and using as cooling tower makeup.

RESULTS

- Water savings of 0.38 million m^3 / year.
- Saving of ₹0.82 million/year.
- Reduction in specific water consumption by 0.04 m^3 / MWH.

HOW ACHIEVED

- Recycling of Central Effluent Monitoring Basin (CEMB) water after treatment in Zero Discharge Unit (ZDU).
- One pipeline required to be laid from CEMB recycle pump to ZDU.
- Cost of the project : ₹0.08 million.
- Annual cost saving : ₹0.80 million.
- Payback period : < 2 months.

To know more, contact:

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Natural Draft Cooling Tower

Water Treatment System

OPTIMIZATION OF CHEMICAL CONCENTRATION AT GENSET PRE TREATMENT LINE (PROCESS OPTIMIZATION)

Kirloskar Oil Engine Limited
MIDC Kagal, Kolhapur, Maharashtra

OBJECTIVE

- Reduction in water consumption at Genset Pre-treatment (PT) line by reducing PT line chemical concentration.

RESULTS

- Water savings of 3,600 m^3 / year.
- Cost Saving of ₹ 0.16 million / year.

HOW ACHIEVED

- Chemical Concentration reduced from 4% to 2%.
- Total Alkali volume reduced from 50 to 25 ml.
- Chemical GC 4292 A reduced by 320 kg.
- Other chemical GC 4292 B/1 reduced by 32 litres.
- Cost of the project: ₹ 0.00 million.
- Annual cost saving: ₹ 0.16 million.
- Investment : Zero.
- Payback period : immediate.

To know more, contact:

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Dip in degrease tank

Dip in KOD Tank

USE OF AIR-COOLED CONDENSERS IN THERMAL POWER PLANTS

Aban Power Limited
Thanjavur, Tamil Nadu

OBJECTIVE

- Eliminate fresh water consumption using air-cooled condensers in place of conventional cooling towers.

RESULTS

- Water savings of 2 million m^3 / year.
- Saving of ₹63 million / year.
- Reduction in water consumption by 2.4 m^3 / MWH.

HOW ACHIEVED

- Installed air-cooled condensers in place of conventional cooling towers.
- Cost of the project : ₹150 million.
- Annual cost saving : ₹64 million.
- Payback period : 28 months.

Air-cooled condensers

To know more, contact:

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FRESHWATER RECYCLING AND IMPROVEMENT IN WATER REUSE EFFICIENCY

Wipro Limited
Chennai and Bangalore

OBJECTIVE

- Improvement in water re-use efficiency, including elimination of salt in the treatment process.

RESULTS

- 41% water requirement in FY18 met through reuse as against 32% in FY16.
- Elimination of salt in the treatment process to the extent of 370 metric tons per year.

HOW ACHIEVED

- We launched an ambitious project of treating waste water to higher purity for improved reuse and also of replacing the conventional softening process, requiring large amount of salt (370 metric tons per year), with nanofiltration.
- Adoption of ultrafiltration, nanofiltration and Reverse Osmosis (RO) projects for STP treated water at three of our large locations has led to significant reduction in freshwater use by over 100 million litres annually. In the next year (FY19), we will be commissioning three more locations.
- The quantity of water recycled increased to 1.045 million m^3 in FY18 from 0.884 million m^3 in FY16. Applications for re-use of treated water include : HVAC, landscape, and flushing.

To know more, contact:

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Water treatment plant, Reverse Osmosis

Water treatment plant, chemical dosing

Water treatment plant, ultrafiltration

INTERVENTIONS TO CONSERVE GROUND WATER THROUGH RAIN WATER HARVESTING

Pernod Ricard India Limited
Behror, Rajasthan

OBJECTIVE

- Conservation of ground water through rainwater harvesting.

RESULTS

Recharge of 2,804 m^3 rainwater within factory premises in FY 2016-17

HOW ACHIEVED

- Based on rainfall data of IMD, the average rainfall of Behror Block is 580 mm / year.
- A wise, viable and an important intervention to sustain ground water is to collect the precious water drops falling from the sky and divert maximum possible water to the ground water regime.
- Inside our factory premise, 20 recharge wells are constructed including 12 recharge wells for roof top rainwater harvesting and 8 recharge wells for storm water harvesting along with 1 piezometer. The rainwater harvest infrastructure has recharge potential of 14,883 m^3 / year (rooftop : 5,738 m^3 / year and storm : 9,145 m^3 / year).
- The total cost to construct the water harvesting system inside the premises was ₹ 60 lakhs and ₹15 lakhs invested for periodic maintenance. We have also equipped digital water level telemetry system for monitoring.
- In the year 2016-17, our ground water abstraction for the site was 11, 938 m^3 / year and we have recharged 2,804 m^3 / year i.e. 23% of the total water abstraction.
- Based on geomorphic and hydrogeological studies, it was found that the existing 13 ponds at 11 villages outside the plant premises in Behror Block were suitable for harvesting additional rainwater runoff. The total recharge potential developed is 4,15,296 m^3 / year in these 11 villages by constructing 41 recharge well along with 3 piezo wells.

Rainwater harvesting

Rainwater harvesting

To know more, contact:

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PROJECT JEEVAN

Pernod Ricard India Limited
Nashik, Maharashtra

OBJECTIVE

- Optimize Water consumption and create recharge facilities

RESULTS

- Water consumption reduced by 38% over the last three years.
- Water replenishment by creating rainwater harvesting facilities having potential to recharge 0.588 million m^3.

HOW ACHIEVED

By adopting the principle of 4R: *Reduce, Reuse, Recycle, Recharge*.

Reduce : Increased focus on minimizing losses by means of :

- Arresting leakages.
- Installing sensor based taps.
- Optimization of the rinse water pressure for all SKUs.
- Use of aerated taps for reduced water consumption.
- Level sensors in water storage tanks to avoid overflow.
- Sprinklers and drip irrigation for green belt.

Reuse :

- Use of RO reject at toilets, Gardening and floor washing.
- Use of rinsing water for AHU, cooling towers, etc.
- Use of ETP, STP and tertiary treated water for gardening.

Recycle :

- Recycling of Empty Bottle Rinsing water up to 80%.

Recharge :

- Constructed 13 rainwater harvesting structures.
- 13 check dams.
- 40 recharging wells
- One water pond.
- 16 desilting projects of check dams for rainwater harvesting resulting in the recharge potential of 0.588 million m^3.

To know more, contact:

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Hand Wash station

Rainwater harvesting

Water recycling plant

INNOVATIVE INITIATIVE OF INDUSTRY

MITIGATING SALINITY INGRESS IN COASTAL REGION

Ambuja Cements Limited
Kodinar, Gujarat

OBJECTIVES

- Reverse salinity ingress by improving groundwater regime.
- Raise groundwater table and improve water quality in coastal aquifers.
- Adopt and implement various water management. measures to harvest and store available water thus ensuring its easy accessibility throughout the year.

RESULTS

- TDS level has reduced in the range of 500-5000 ppm and water table has improved in the range of 2-12 metres.
- Created 300 MCFT of water storage capacity by converting mined out pits to reservoir benefiting farmers in 3-5 km radius.
- In 2016-17 the program in Kodinar generated a true value of ₹6,961 million.
- Independent study conducted by Sustainable Square Private Limited reported 13 times social return on investment through water resource management program in Kodinar.

HOW ACHIEVED

- Detailed need assessment :
  Detailed need assessment undertaken through participatory process, found water crisis as the most pressing problem.
- Water recharge measures :
  Surface water harvesting structure, groundwater recharge and In-situ moisture conservation undertaken.
- Recharging of mined out pits :
  As an innovative approach, converted mined out pits into water reservoir.
- Build strong partnerships :
  Strong partnerships developed with community, government and like-minded organisations immensely helped in mitigating the salinity ingress in the region.

To know more, contact:

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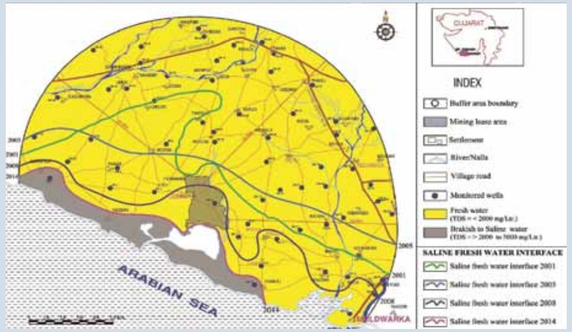
Bhekleswar Dam, Ronaj village, Kodinar Taluk, Gir Somnath District, Gujarat

Recharging of mined out pits, Vadnagar, Kodinar Taluka, Gir Somnath District, Gujarat



Reversing tide-impact of water harvesting on salinity

ZERO LIQUID DISCHARGE CITY : JAMSHEDPUR

Jamshedpur Utilities and Services Company
Jamshedpur, Jharkhand

OBJECTIVE

- Make Jamshedpur the first city in India to recycle 100% of the sewage collected.

RESULTS

- 100% recycle and reuse of treated sewage water.
- 40 MLD of less fresh water intake.
- Cost saving due to less water tax.

HOW ACHIEVED

This project is in two phases :

- The secondary treated sewage from Kharkai STP post disinfection is collected in a reservoir from where it is pumped to Jayanti Sarover which is the intake for horticulture needs (5 MLD of water) of the town. The remaining water is sent to River Pump House (RPH) for industrial use. This whole system has thereby successfully reduced daily fresh water intake by 10 million litres.
- The second phase includes the installation of ultra filtration membranes as a part of tertiary treatment unit that will further treat the presently secondary treated waste water. The treated water is being taken in into the clarified water network at RPH and is being utilised for industrial purposes. This has further reduced the fresh raw water intake by 30 MLD.

To know more, contact:

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Jayanti Sarobar storage treated water

Sewage pumping station

Reservoir treated water

PROMOTING WATER MANAGEMENT THROUGH REAL TIME MONITORING USING DATAMATRIX TECHNOLOGY

Lupin Limited
Buchkewadi, Junnar Block, Pune District
Maharashtra

OBJECTIVE

- Metering of water and energy consumed by each agricultural pump for identifying opportunities for resource optimization on a real time basis using Data Matrix technology.

RESULTS

- Improved water availability for effective utilization by 71% and immediate energy savings of 27.57%.
- Compensation in the form of Carbon Credit for reducing 35 tons of CO_2 @ 0.65 ton / MW is estimated to be ₹23,508 / annum at today's market value.
- Enabled bringing 'transparency' to the operation of the Water User Groups on the minor irrigation tank.
- Enabled monitoring, discussion and validation of the rotation of irrigation turns to different members.
- Robust decisions such as rationing of water and closure during peak crisis made possible.
- Facilitated auto adjustments and corrections to enable improve energy and water use efficiency.
- Meter Monitor Audit and continuously optimize water and energy use.

HOW ACHIEVED

- Data Matrix technology adopted on minor irrigation tank located in Buchkewadi village of Pune District under the NABARD supported grant to Green Energy Foundation under Farming Innovation Project Fund.
- Data Matrix technology helps radically to improve the energy and water efficiency.
- Initially the site survey was conducted in the village to capture the data of pumps which were installed on MI tank to lift the irrigation water.
- The pumps in service were hooked on to the Data Matrix technology for capturing real time data during rabi crops.
- Water and energy scenario of the entire village simulated using this technology, using the supply conditions and usage pattern captured by the system.

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Data Matrix unit

REAL TIME MONITORING OF DISTRIBUTED WATER USAGE IN THE PLANT THROUGH WATER SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM

GMR Warora Energy Limited
Warora, Maharashtra

OBJECTIVE

- Area-wise accounting of water consumption and monitoring of localized water consumption trends and patterns.

RESULTS

- Area-wise water consumption and cost.
- Distributed water usage pattern.
- Water consumed per unit of product (specific water consumption).
- Leak identification (unaccounted flow)

HOW ACHIEVED

- Identification of water distribution and consumption points throughout the plant by Cross Functional Team (CFT).
- Installation of flowmeters at identified points.
- Communication of flowmeters with Centralized Water SCADA system.
- Alarm and trend configuration, report generation and dashboard designed in Water SCADA.
- Monitoring of real-time and historical water flows through Water SCADA.
- Taking corrective actions whenever gaps identified.

To know more, contact:

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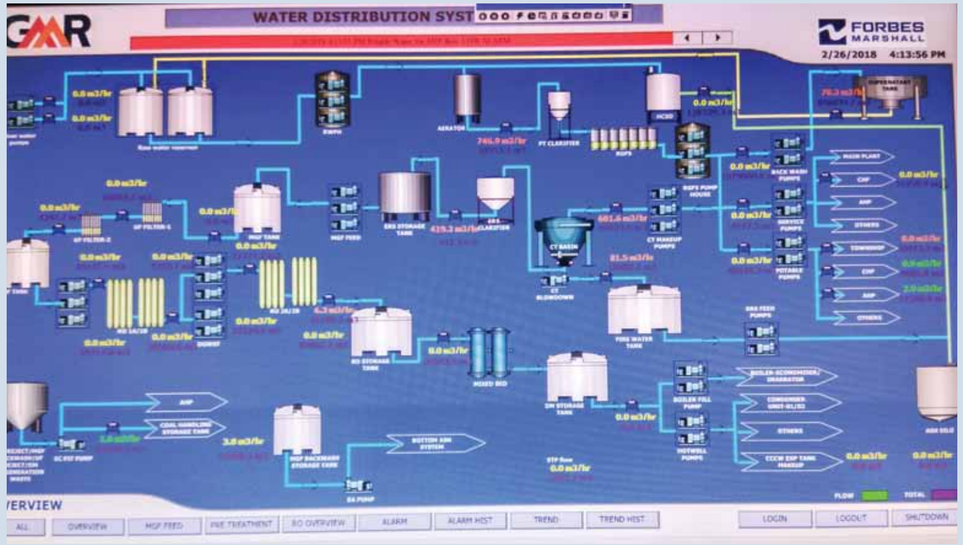

SCADA System

Flow Meter

UDAIPUR'S FIRST SEWAGE TREATMENT PLANT UNDER PPP (PUBLIC PRIVATE PARTNERSHIP) PROJECT

Hindustan Zinc Limited
Udaipur, Rajasthan

OBJECTIVE

- Recycling of the treated sewage for low/high end applications in Hindustan Zinc mining and smelting operations.

RESULTS

- Fresh water savings of 7.3 million m^3/year.
- Segregation of sewage through separate dedicated pipeline from city and reaching STP without entering the water body.
- First of its kind in Rajasthan state under Public Private Partnership (PPP) model.

HOW ACHIEVED

- Recycling of municipal sewage after treatment through Moving Bed Bio-Reactor (MBBR) process.
- On an average, Udaipur generates about 70,000 m^3 of sewage per day and handling this sewage was one of the major concerns.
- Currently, most of the sewage is being discharged into Ahar River leading to Udai Sagar lake, resulting in negligible dissolved oxygen, foul odour, presence of faecal coliforms and eutrophication in the water bodies and thereby affecting overall aquatic life and aesthetic look.
- STP has been constructed on 'Design Build Own Operate and Transfer' basis.
- Helps in making Udaipur's water bodies (Udai Sagar, Ahar River) free from contamination to a great extent (around ~30% reduction in total sewage flow into river/lakes).
- After successful implementation of Phase I, Hindustan Zinc is increasing the capacity of Sewage Treatment Plant from 20,000 to 45,000 m^3 of sewage per day. Expansion project is under progress and shall be commissioned by December 2018.

To know more, contact:

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Sewage Treatment Plant using MBBR technology

CII-TRIVENI WATER INSTITUTE

CII-Triveni Water Institute

One among CII's 9 acclaimed Centers of Excellence, CIITriveni Water Institute, (CII-TWI), is a unique institution established in 2008, where government, industry and civil society have partnered to address water related issues in a holistic manner. The Institute is headquartered in Gurugram (National Capital Region).

Vision

To enable India make substantial progress towards achieving water security by 2022.

Core Purpose

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

Partners

The Institute engages with diverse stakeholders for result oriented outcomes. These include national partners such as State and Central Government, Public Sector Undertakings - Steel Authority of India (SAIL), Indian Oil Corporation Limited (IOCL), Indian Railways, HPCL, BPCL; International partners that include, World Resources Institute (WRI), Washington, World Business Council for Sustainable Development (WBCSD), USAID India, GIZ, Institute for Sustainable Communities, Washington D.C., Johns Hopkins University, USA, NASA, USA; and Indian industry.

Services

- Advisory Services: Water Audits for industry, buildings, irrigation; Water Smart Rating System – WatSmart at both plant level and watershed level assessment; Water Pinch analysis
- Projects & Policy: Application of WATSCAN Tool for Water Resource evaluation, Drought proofing of districts, Urban Floods, Watershed assessments for Smart city and infrastructure projects, Coastal districts – sea water ingress, prioritising CSR investments in water.
- Training, Education and Capacity Building Wastewater operator training programs, water resources evaluation for planners
- Events & Conferences: Flagship Programme, Water Innovation Summit; National Awards for Excellence in Water Management

http://www.cii-twi.in/

CII

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.

CII engages closely with Government on policy issues and interfaces with thought leaders to enhance efficiency, competitiveness and business opportunities for industry through a wide portfolio of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues. Extending its agenda beyond business, CII facilitates corporate initiatives for integrated and inclusive development across diverse domains.

As a developmental institution working towards India's overall growth with a special focus on India@75 in 2022, the CII theme for 2018-19, **India RISE : Responsible. Inclusive. Sustainable**. Entrepreneurial emphasizes Industry's role in partnering Government to accelerate India's growth and development. The focus will be on key enablers such as job creation; skill development; financing growth; promoting next gen manufacturing; sustainability; corporate social responsibility and governance and transparency.

Founded in 1895, India's premier business association around 9000 members, from the private as well as public sectors, and an indirect membership of over 300,000 enterprises from around 265 national and regional sectoral industry bodies. With 65 offices, including 9 Centres of Excellence, in India, and 10 overseas offices in Australia, China, Egypt, France, Germany, Singapore, South Africa, UAE, UK, and USA, as well as institutional partnerships with 355 counterpart organizations in 126 countries, CII serves as a reference point for Indian industry and the international business community.

Confederation of Indian Industry

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