

BRAVE BLUE WORLD

Lighthouse Awards



aarhusvand



PEPSICO

POUL DUE JENSEN GRUNDFOS
FOUNDATION

LIGHTHOUSE LEADERSHIP AWARDS 2023

The Lighthouse Awards were launched by the Brave Blue World Foundation in December 2020, following the release of its documentary Brave Blue World, which highlights the urgency of the global water crisis and the pioneers who are building sustainable solutions.

The winning Lighthouse organisations, named so because they are shining a light for others to follow, have developed new ways of utilising technology, finance or partnerships, including circularity in their practice, to reduce their impact in water stressed regions, or build resilience of their local water systems. We honour these pioneers and visionaries, both corporates and utilities within the water sector.

Using our platform to honour them enables us, as a water community, to celebrate each other's successes and to learn from the challenges encountered along the way. It is also an opportunity for us to raise greater awareness of the remarkable work happening globally, to ensure the world's population has access to clean water and safe sanitation services.

The achievements of our 2023 recipients show us what is possible when bold ambitions are supported and enabled. We are proud to celebrate the stories of these visionaries who are showing us the way to a sustainable water future.

The recipients of the Lighthouse Awards 2023 are:

- **Ecopetrol**
Reuse of produced water from the oil and gas industry in agroforestry and livestock activities
- **Grundfos Foundation**
Into Dust: A compelling cinematic journey into Karachi's water scarcity struggles
- **100+ Accelerator**
Fueling entrepreneurial spirit for breakthrough advancements in water stewardship
- **Aquatech**
Pharmaceutical company ACG recovers more than 95% of the water at its plant in India through Aquatech's Zero Liquid Discharge solutions
- **Pepsico**
Water recycling in potato chip production process
- **Walmart**
Digital technology for stormwater management through partnership with Opti
- **Aarhus Vand**
Redefining the water resource recovery facility through procurement innovation



Ecopetrol

Project: Reuse of produced water from the oil and gas industry in agroforestry and livestock activities

Produced waters from the Orinoquía region are an alternative and safe source of water for crop irrigation, which could solve the problems of seasonal variability in this region. This solution would generate benefits to Ecopetrol (as a generator, due to the enabling of oil production), to farmers (as receivers, which would count with a guaranteed and constant supply of water throughout all year), and to the environment since this volume of water would no longer be extracted and/or discharged, improving the water security in the region. Ecopetrol has demonstrated its benefits in the Agroenergy Sustainability Area, where nature and oil and gas production coexist in harmony. After lab-scale research, followed by an experimental pilot, and the current operation of the ASA, no evidence of negative effects on soils, crops, or livestock have been found; on the contrary, crops have even increased biomass growth index when compared to reference data. With these results, Ecopetrol expects to scale this solution with a multisectoral approach in the region and is looking for natural persons or companies near to its operations that could be interested in this circular economy model. Ecopetrol is also working on new techniques for water treatment, to improve quality of treated produced water (water polishing) destined to external reuse in Castilla, but also for those assets with produced water with higher levels of salinity (desalination).

The scalation of the ASA project will also leverage the achievement of Ecopetrol's commitment to reach Water Neutrality by 2045, as an alternative for offsetting the remaining water footprint in hydrographic basins of the Orinoquía region.



Grundfos Foundation

Project: Into Dust: A compelling cinematic journey into Karachi's water scarcity struggles

INTO DUST is a collaboration between the Grundfos Foundation, Academy Award-winning filmmaker Orlando von Einsiedel, and the Karachi-based NGO Orangi Pilot Project. The scripted film is based on the true and extraordinary story of Perween Rahman, a courageous woman who sacrificed everything to provide Karachi's poorest communities with clean, safe water. This important story aims to raise awareness about the pressing issue of water scarcity and the devastating impact it has on communities around the world, while also bringing attention to the value of water by celebrating those who work relentlessly and selflessly to secure the necessary solutions.



100+ Accelerator

Project: Fueling entrepreneurial spirit for breakthrough advancements in water stewardship

- AB InBev's 100+ Accelerator was established in 2018 with the goal of connecting with innovative entrepreneurs that are working to develop solutions to key sustainability issues. With the support of the programme, which also includes corporate partners Unilever, Colgate-Palmolive and Coca-Cola, startups can test their product or service within corporate operations and, if successful, scale globally. The 100+ accelerator provides size and scale to assist entrepreneurs in bringing their ideas to market faster and works with companies from Seed to Series B stage. The 100+ Accelerator provides six months of online programming and training and a pilot/alliance with partner companies to boost cooperation and growth. Startups also receive mentorship, a global team champion, and up to \$100K for pilot implementation.



Aquatech

Project: Pharmaceutical company ACG recovers more than 95% of the water at its plant in India through Aquatech's Zero Liquid Discharge solutions

ACG, the world's largest integrated supplier of pharmaceutical empty capsules, granulation, tablet coating, capsule filling and packing films, partnered with Aquatech, an industrial wastewater treatment specialist, to implement a zero liquid discharge (ZLD) plant at one of their facilities in Dahanu, Maharashtra, India. Aquatech has delivered and implemented a sustainable solution for the treatment of complex effluent streams with high organic loads. A 350m³/d zero liquid discharge (ZLD) plant was developed in-house by Aquatech using a combination of advanced wastewater treatment technologies, including expanded granular sludge bed treatment, anoxic treatment for denitrification, membrane bioreactor, and high-recovery reverse osmosis, with the addition of proprietary membrane distillation technology and agitated thin film dryer for dewatering. This unique combination of advanced vacuum membrane distillation, biological wastewater treatment, and membrane treatment recycles and recovers more than 95% of starting water representing an industry-changing move by ACG and Aquatech. As well as choosing membranes as a lower energy distillation alternative, the overall system generates 400kWh/d through biomethane production to be used within the plant. Furthermore, the project contributes towards ACG's goal to reduce water consumption by 50% in the next 4-5 years. This project has set the stage for similar developments across multiple other ACG locations as water stress rises globally.



PEPSICO

Pepsico

Project: Low-carbon sustainable agriculture

PepsiCo's R&D team has developed a technology that recovers up to 60% of water used in the potato chip manufacturing line at a plant in Kolkata, India, which can be reused. During potato chip manufacturing, the steam from the fryer is captured, condensed, and treated to remove fats, oils, and greases, allowing the water to be reused for future potato chip manufacturing operations. The full-scale system in Kolkata is estimated to save 60 million liters of water per year, and the technology is being adapted for similar use in PepsiCo's plants across the globe, with 30 manufacturing plants in high water risk areas set to implement this technology by 2030. This effort is in line with PepsiCo's goal to become Net Water Positive by 2030, replenishing more than 100% of the water used at company-owned and third-party sites in high-water-risk areas.



Walmart

Project: Digital technology for stormwater management through partnership with Opti

The Smart Ponds project is a collaborative effort involving the State of Maryland, The Nature Conservancy's Brightstorm program, Opti and Walmart aimed at improving water quality by reducing pollutants discharged from stormwater retention ponds. In 2021, Brightstorm retrofitted three Walmart-owned stormwater ponds with real-time monitoring and control systems to achieve this goal. This initiative was prompted by U.S. EPA regulations to restore clean water in Chesapeake Bay.

The project's launch hinged on the establishment of an unique public-private partnership. To meet regulatory obligations, the Maryland Department of Transportation (MDOT) became the nation's first Department of Transportation to purchase water quality credits derived from making existing infrastructure smarter. Brightstorm provided Walmart a complete turn-key solution for compliance by financing, constructing and maintaining the projects, while advancing the resiliency of Walmart's operations and providing benefits to the surrounding community.

The smart ponds were outfitted with technology developed by Opti, a company that specializes in stormwater management. The technology includes sensors and actuated valves, controlled remotely by cloud-based software that analyzes weather forecasts and then manages discharge before, during and after storms. Combined, the three ponds treat runoff from more than 80 acres of impervious surface. These "smart ponds" are now discharging approximately 77 percent less sediment, 60 percent less phosphorous and 39 percent less nitrogen into local streams and ultimately Chesapeake Bay.

The Conservancy's Brightstorm program plans to retrofit thousands of ponds across the U.S. over the next few years by working with large asset owners, like Walmart, which has more than 5,000 ponds on its properties nationwide, and by increasing the potential to use technology to make existing infrastructure more climate resilient.

aarhusvand

Aarhus Vand

Project: Redefining the water resource recovery facility through procurement innovation

Aarhus Vand, a Danish water utility company, is working on a new wastewater treatment plant called Aarhus ReWater, which aims to be a resource-efficient facility. Rather than building a traditional wastewater treatment plant, the project opted for converting it into a water resource recovery facility, which can recover resources such as biofuels, biochar, and soil conditioner from wastewater.

The project began in 2016 with the establishment of an innovation strategy. The tendering process was based on an innovation partnership, and the market was approached with the speed dating concept. A pre-qualification tender process based on innovative partnership was utilized for the turnkey contractor team instead, allowing room for innovation and development, flexible team formation, and optimal technology selection. Companies were invited for the innovation partnership contract. A client consultant was tendered separately, followed by an architect, and then a process consortium for technology selection.

During the innovation phase, companies were invited to provide preliminary proposals for the innovative approach, and after evaluation, a team was selected to proceed with the next phase of planning. The environmental impact assessment was carried out in consultation with municipalities and authorities. In the design phase, Aarhus Vand used tools such as the technology radar and resource maturity index evaluating the resource recovery potential and underwent an independent review to ensure they are adapting the newest technology. Securing that the plant will be flexible and adaptable for upcoming new solutions and technologies for integrated wastewater treatment and resource recovery.

The project is now in the second phase, where the preliminary design is being developed, with a focus on setting up a resource recovery plant that can adapt and develop over time. The facility will be capable of accommodating an organic load of 480,000 PE in 2040 and 600,000 PE in 2050.