

# Improving Water Efficiency in the Coffee Sector in the Magdalena region

## Project overview

The "Improving Water Efficiency in the Coffee Sector in the Magdalena region" project, funded by the Government of the Netherlands through the Partners for Water (PfW) programme, aims to enhance water efficiency and biodiversity conservation in Colombia's coffee sector. As consortium of three partners, led by AidEnvironment, with Fundación Herencia and Deltares we will work on the the Aracataca and Fundación river watersheds in the Sierra Nevada de Santa Marta (SNSM). The area covers 18,000 hectares of coffee plantations managed by over 5,000 smallholder farmers. The project addresses the balance between the local coffee economy and the preservation of downstream ecosystems, particularly the Ciénaga Grande de Santa Marta (CGSM), a UNESCO biosphere reserve. We take a catchment approach to water resources management and biodiversity, linking upstream issues and options to the potential impact in the CGSM.

## Context and challenges

Climate change has reduced annual rainfall by up to 30mm since 1981, leading to water scarcity that threatens both coffee farming and the biodiversity of the CGSM wetlands, which rely on consistent upstream water flows. Rising temperatures and shrinking water availability, particularly during dry seasons, threaten this fragile ecosystem.

The coffee sector also faces significant water management challenges, with traditional wet-processing methods and agrochemical use contributing to water pollution and inefficiency. This intensifies stress on both surface and groundwater resources, highlighting the need for innovative solutions to sustain coffee production while safeguarding biodiversity.

## Outline of the project

The project is structured in two key stages. In the first stage, the focus will be on researching and identifying innovative water-saving and decontamination technologies that are well-suited to the local context. Through field surveys and engagement with local farmers, the project will assess current water usage, irrigation practices, and agricultural waste management. Technologies such as green filters for water decontamination, methods for reducing agrochemical runoff, and innovative post-harvesting techniques designed for water-scarce conditions will be explored.

What sets this project apart from other regional initiatives is the focus on knowledge development and innovation. Where other projects, such as the GEF-funded initiative led by INVEMAR, are focussing on implementing known technologies, this project aims to work with farmers to research and evaluate new, innovative solutions for wider adoption. This complementary focus ensures the project aligns with broader regional sustainability efforts while generating new insights into water and biodiversity management.

The second stage involves the practical implementation of the selected technologies on a pilot farm. This pilot project will focus not only on technical solutions but also on community engagement and roll out methods, ensuring the innovations are both socially and culturally appropriate.

The interventions are linked to the wider catchment environment by treating each farm as a micro-watershed. In this micro watershed we can enhance water retention, reduce runoff, and improve soil health. Local farmers will be trained in these sustainable methods, which are designed to reduce reliance on chemical inputs and improve overall water management.

## Monitoring and Evaluation

A robust monitoring and evaluation framework will be established to track the benefits of the implemented technologies. Key indicators will include water availability, soil moisture, and biodiversity health, which are critical to understanding the long-term impact of the interventions. Although the pilot projects will be short-term, the lessons learned will provide a foundation for scaling these practices across other coffee-growing regions in Colombia, supporting broader environmental and economic sustainability efforts.

## Conclusion and Future Directions

By the project's conclusion, the goal is to have developed best practices for water and biodiversity management in the coffee sector in Aracataca and Fundación. These practices will be not only technically feasible but also aligned with the local socio-cultural context. The findings will be shared with other regional initiatives to facilitate broader adoption, ensuring that the project's emphasis on research, testing, and alignment with ongoing efforts has a meaningful and lasting impact.