



AquaGuardian

Ceramic Water Filtration and Storage with
IoT based Water Quality Monitoring System

AquaGuardian (Philippines)

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Project Background and Context

Project Location:

Irawan Watershed - Brgy Irawan, Puerto Princesa City, Palawan Province Philippines

Main Beneficiary:

The local household residents in the coast of Brgy. Irawan Puerto Princesa Palawan

Problem Statement:

Dry season in the Philippines results in insufficient water production capacity and increased risk of water sedimentation of the Irawan watershed causing Water supply shortage and Water quality degradation in Puerto Princesa City, Palawan.

Project Objectives

Vision Statement:

To ensure reliable and clean water supply for coastal residents of Barangay Irawan through innovative integrated systems, fostering community collaboration for a sustainable future.

Objective/Goals:

1. Design and construct a storage facility to collect and store water from Irawan's main waterline.
2. Create a specialized, eco-friendly cost-efficient water filtration system.
3. Develop a real-time monitoring and communication system to detect pH, turbidity, conductivity, and TDS TSS levels.
4. Deploy and integrate the developed device with incorporated systems (Storage, Filtration and Water Quality Monitoring Systems)

Project Approach and Methods

Water Storage Facility Development

- Keeping water from the main waterline in a 2500L storage tank to store water.

Ceramic Water Filtration System

- The filtration system consists of Calcium Silicate (Ca_2SiO_4) from Calcined Snail Shells, powdered transparent glass bottles, activated carbon from Charcoal, and palm fibers that will filter harmful water contaminants.

IoT Based Water Quality Monitoring System

- The IoT Based Water Quality Monitoring System can detect the following parameters: pH, Total Dissolved Solids and Total Suspended Solids. The sensor data will be stored in the cloud and shared thru government water agencies for data-driven output through descriptive analytics in water quality and filtration system.



Facebook Reels showcasing Puerto Princesa's beauty and culture
 Inspiring Filipino youth to engage in water issue solutions
 Video challenge promoting glass bottle collection for filtration system
 Project journey and impact documentation through Reels

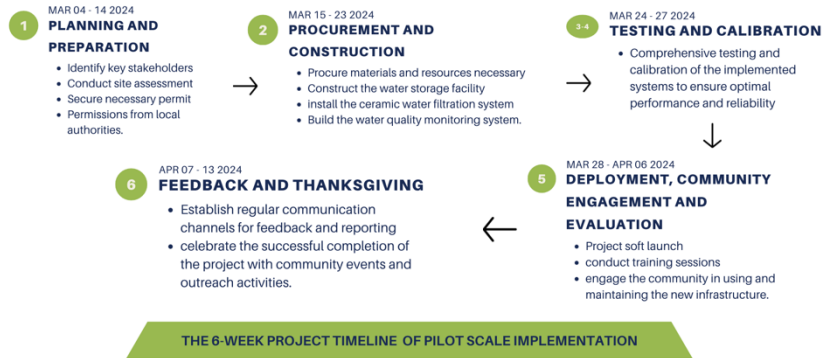
Project Impact

 <p>6 CLEAN WATER AND SANITATION</p> <ul style="list-style-type: none"> • Reliable water supply • Water quality improvement • Water scarcity mitigation • Water filtration system 	 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p> <ul style="list-style-type: none"> • Sustainable consumption and production • Recycling waste materials • Waste reduction • Environmental awareness • Community engagement • Sustainable behaviors 	 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> <ul style="list-style-type: none"> • Promotion of sustainable industrialization • Development of Sustainable Infrastructure • Adoption of Clean Technologies
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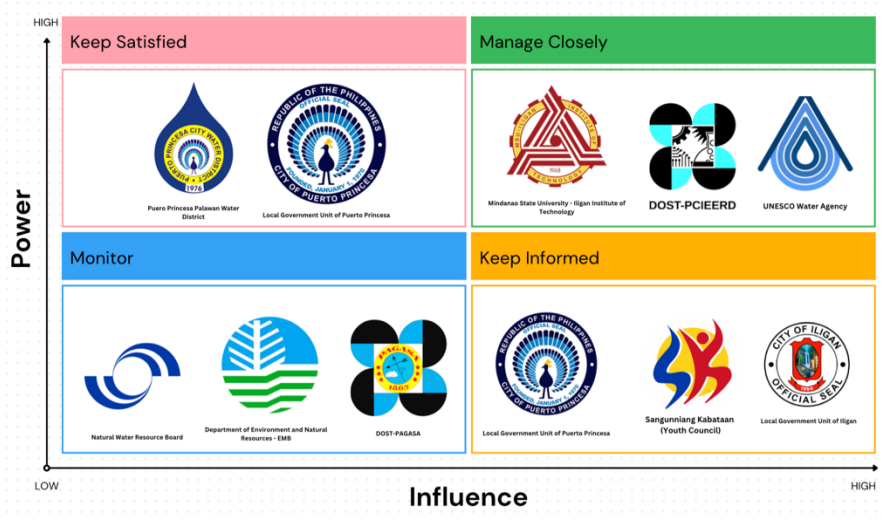
The Pilot

The water management project in Barangay Irawan, Puerto Princesa City, Palawan, Philippines, encompasses the construction of a water storage facility, installation of a ceramic water filtration system, integration of an IoT-based water quality monitoring system, and subsequent provision of secure water supply and improved quality for coastal residents, sustained through training, social media engagement, and ongoing monitoring.

Pilot Project Timeline



Stakeholder Mapping



Budget Plan

Item	Expenditure
Prototyping	
Product Structure	300 USD
Filter Components	150 USD
Electronic Components	150 USD
Operation	
Accommodation and Consumables	135 USD
Transportation	120 USD
Community Engagement and	70 USD
Evaluation	
Contingency Fund	75 USD
TOTAL COST	1000 USD