

Atmospheric Water Generation (AWG) Hub: Climate Resilience and Social Sustainability at the Port of Surigao

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INNOVATIVE WATER SOLUTIONS SUPPORTING
RESILIENT COASTAL COMMUNITIES

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PROJECT OVERVIEW



AWG Hub Project Introduction

Innovative Water Generation

The AWG Hub converts ambient air humidity into safe, potable drinking water using advanced technology.

Addressing Climate Challenges

The project tackles water scarcity and health risks exacerbated by climate change and El Niño conditions.

Health and Productivity Benefits

Providing chilled, medically certified water reduces heat stress, dehydration, and improves worker productivity.

Disaster-Resilient Water Source

The AWG Hub offers an independent water supply that remains operational during municipal failures or disasters.

Executive Summary of the Initiative

Response to El Niño Impact

The initiative addresses freshwater scarcity and worker safety challenges caused by the 2026 El Niño climate event.

Atmospheric Water Generation

A high-tech atmospheric water generator produces hundreds of liters of potable water daily from humid air.

Sustainable Water Supply System

The project ensures sustainable, independent water supply reducing reliance on municipal and groundwater sources.

Health, Safety, and Governance

Operational protocols and biosecurity controls ensure water safety and compliance with drinking water standards.



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CONTEXT AND CHALLENGES

Climate and Water Scarcity Challenges

Climate Vulnerability and Drought

The Philippines faces severe drought and water scarcity driven by El Niño and climate variability, impacting communities and industries.

Infrastructure Challenges in Surigao

High population density and aging water infrastructure in Surigao worsen water supply interruptions during dry spells and disasters.

Typhoon Odette's Impact

Typhoon Odette caused extensive damage in Surigao, resulting in acute potable water shortages and highlighting vulnerability.

Innovative Atmospheric Water Solution

The AWG Hub provides climate-resilient water by harvesting atmospheric moisture, ensuring reliable supply during droughts and crises.





Occupational Health Risks for Dockworkers

Heat-Related Health Risks

Dockworkers face heat exhaustion, dehydration, and heat stroke due to intense heat and humidity during El Niño periods.

Importance of Hydration

Access to safe, cold drinking water is critical to mitigate health risks and maintain worker productivity and morale.

Worker Welfare and Port Resilience

Prioritizing occupational health and guaranteed hydration supports safer working conditions and sustained port operations.

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THE AWG SOLUTION AND OPERATIONS

Innovative Technology: Harvesting Water from Air

Atmospheric Water Generation

The AWG Hub converts atmospheric humidity into clean, drinkable water using advanced condensation and filtration technology.

Ideal Climate Conditions

Surigao City's tropical climate with 60-80% humidity provides optimal conditions for efficient water harvesting from air.

System Capacity and Storage

The system produces 250-300 liters of water daily, supported by a 500-liter storage tank and backup generator for continuous operation.

Climate-Adaptive Technology Impact

This technology transforms humidity into a renewable water source, showcasing practical climate adaptation in industrial settings.





Water Quality, Safety, and Operational Protocols

Initial Water Quality Assessment

Testing revealed elevated bacterial levels due to stagnant moisture during transport and storage of water.

System Rehabilitation and Flushing

Engineers flushed and chemically treated all system pipes and tanks to remove contaminants and improve quality.

Daily Operational Protocols

Strict daily flushing and controlled dispensing ensure continued water safety and zero waste irrigation.

Biosecurity and Compliance

Measures guarantee compliance with national drinking water standards and maintain public trust and safety.

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SUSTAINABILITY, IMPACT, AND ALIGNMENT



Environmental and Social Sustainability Impact

Independent Water Generation

AWG Hub reduces reliance on stressed city water by independently generating water for port operations.

Circular Economy Water Reuse

Flushed water reuse for watering plants exemplifies sustainable resource management and circular economy principles.

Social Health and Well-being

Free safe drinking water and chilled water improve worker health, comfort, and reduce heat-related illnesses.



SDG and WPSP Alignment and Conclusion

Sustainable Development Goals Alignment

The AWG Hub advances SDG 6, 8, and 13 by ensuring clean water, decent work, and climate adaptation.

World Ports Sustainability Program

The project demonstrates integration of environmental stewardship, social responsibility, and resilient governance in ports.

Innovative Climate Adaptation

The AWG Hub converts atmospheric humidity to water, transforming climate challenges into sustainable advantages.

Replicable Sustainability Model

The project offers a model for other ports to address climate adversity with innovative solutions.