

Implementation of Safe Water Practices to Improve Public Health

Engagement Scholarship Consortium
Denver, Colorado

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- Spring 2019 project leader



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- Master's student in Environmental and Ecological Engineering (EEE) at Purdue University
- Project team member for 2.5 years
- Traveled to the DR in May 2019
- Current project leader



Workshop Objectives

1. Define the **motivation** for and **mission** of your project and your **approach** to achieving these goals
2. Provide guidelines for the preparation of **evaluation and assessment** materials for your project
3. Use your assessment materials to determine the probability of your project's **sustainability and economic success**



Motivation, Objectives, and Approach



Project Motivation



785 MILLION
PEOPLE REMAIN
WITHOUT EVEN

**BASIC
DRINKING
WATER**

SERVICES (2017)

6 CLEAN WATER
AND SANITATION



2 OUT OF **5**
PEOPLE

WORLDWIDE

DO NOT HAVE

= A BASIC =
HANDWASHING
FACILITY WITH
SOAP AND WATER
AT HOME (2017)

673 MILLION
PEOPLE (9% OF THE
GLOBAL POPULATION)
STILL PRACTISE
OPEN DEFEICATION
(2017)

THE MAJORITY OF THEM
ARE IN SOUTHERN ASIA



1 OUT OF **4**

HEALTH-CARE FACILITIES
WORLDWIDE LACK BASIC
DRINKING WATER SERVICES
(2016)



2 BILLION PEOPLE LIVE
IN COUNTRIES EXPERIENCING
HIGH WATER STRESS

BY 2030,
700 MILLION
PEOPLE COULD BE
DISPLACED BY
INTENSE
WATER SCARCITY



Access to safe drinking water was declared as a **basic human right** by the UN in 2010

Project Objectives

Implement water treatment systems in rural communities of the DR to provide:

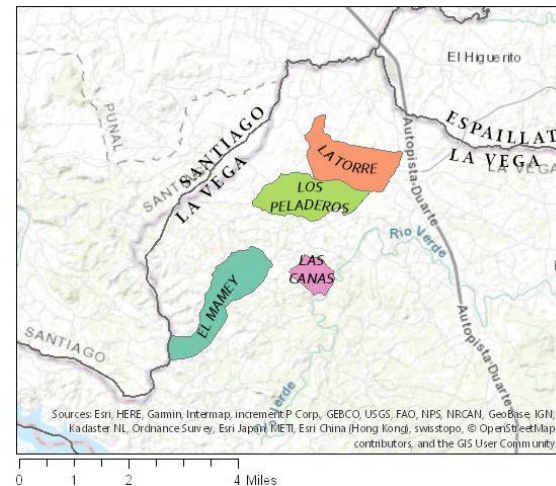
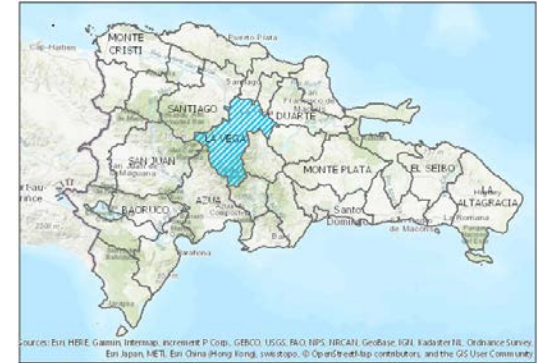
- Access to safe, potable water
- Water, Sanitation, and Hygiene (WASH) education
- Water security and ownership by local communities
- Business opportunities

Provide Purdue students and faculty:

- Experiences in global learning
- Opportunity to gain cultural awareness
- Work in interdisciplinary teams to create and implement solutions

Project Objectives

- **Mission:** Provide rural communities in the Dominican Republic safe water access as a means to improve public health through implementation of sustainable, community-scale water treatment systems.
- **Key Values**
 - Interdisciplinary
 - Student-led
 - Service-Learning
 - Holistic approach
 - Cultural engagement



Holistic Approach

Design

System installation
and maintenance,
technical training

Communications

WASH education,
contact community partners,
update social media

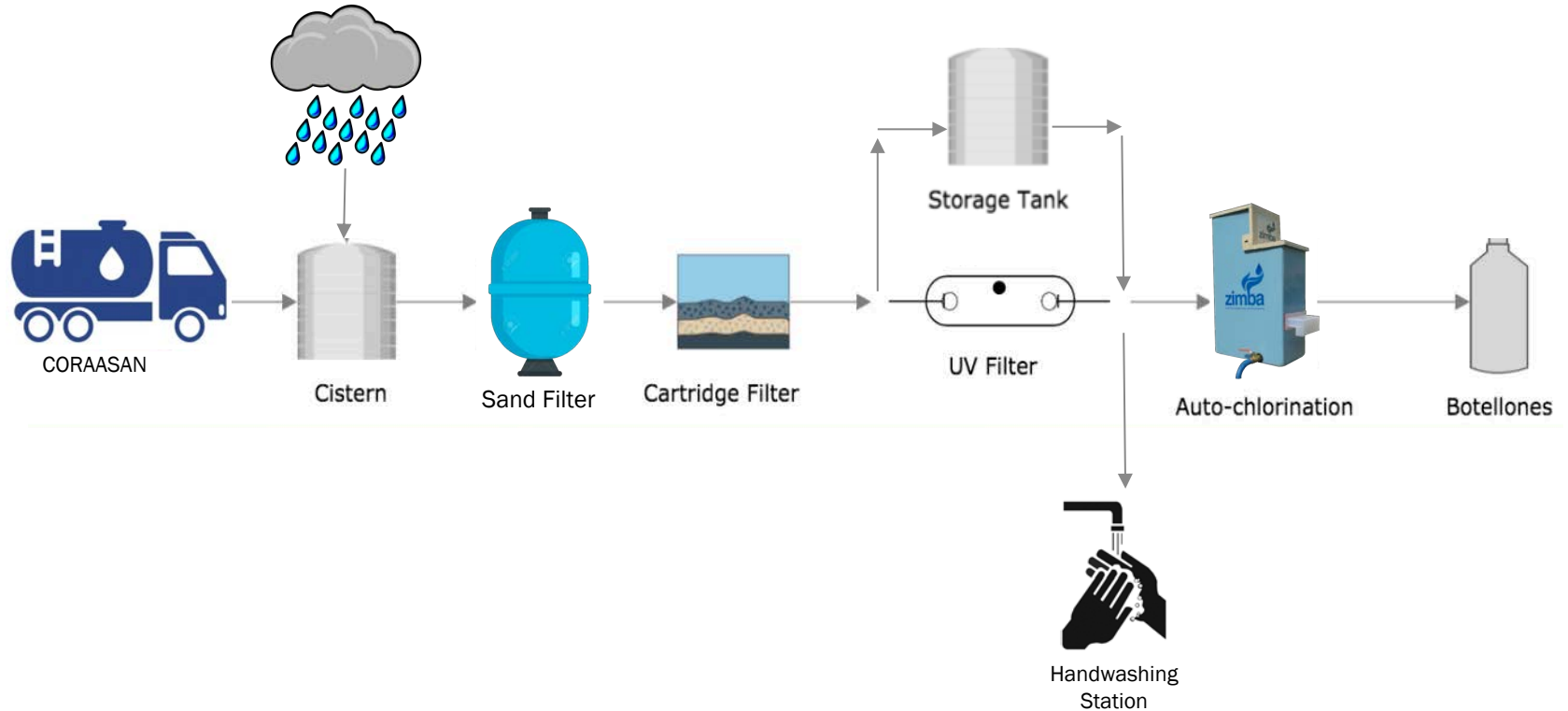
Entrepreneurship

Ensure sustainability
through business models
and partnerships

Monitoring, Evaluation, and Publication (MEP)

Evaluate project success,
collect data, publish data

Water Treatment Systems



WASH Education

- Provide interactive lessons for the teachers to present
- Paint the walls around the system and a mural at the handwashing station
- Supply classrooms with a “textbook” including lessons and activities for handwashing, filtration, and disinfection



Motivation, Objectives, Approach

What was/is your **motivation** for pursuing a service-learning project?

What is the **mission statement** for your project?

What **short- and long-term goals** can you set to help you achieve your mission?

Establish a **reasonable timeline** for these goals.

Outline your **approach** to meeting these goals.



Evaluation and Assessment



Focus Groups and Surveys

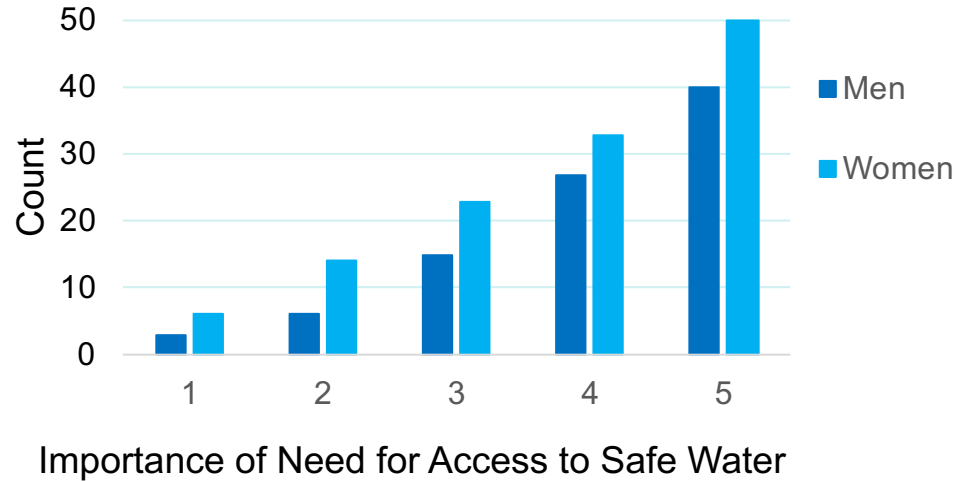
Community Baseline Surveys

Focus Groups

Observational Studies



Survey of DR Community Members



Community Baseline Surveys

Demographics

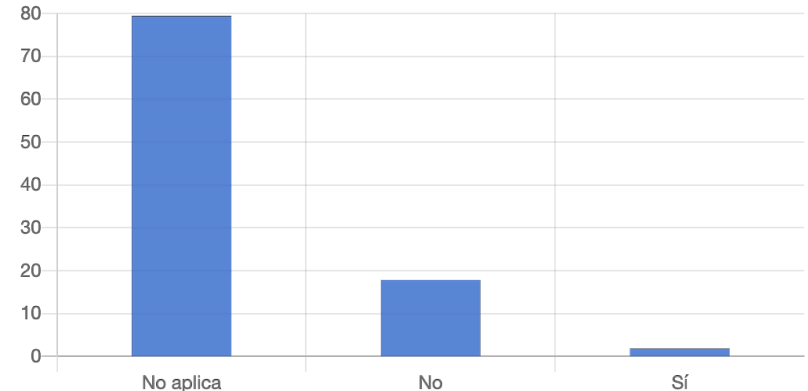
- Gender, Age, Occupation
- How many members of your household work?
- Primary material of home?
- What is your main method of transportation?

Ranked Necessity of:

- Infrastructure
- Potable Water
- Access to Health Services
- Economic Opportunities
- Resources for Children

Water-Specific Questions

- Main source of water during the dry season? Rainy season?
- Have your children had diarrhea in the past three weeks?



Focus Groups, Observational Study

Focus Groups

- Ask specific questions to help interpret the data collected during baseline surveys
 - Clarify why diarrhea is “not applicable” to children
- Ask additional questions to determine best methods of increasing project success
 - How do you communicate information within the communities? What about public health information?

Observational Studies

- Observe handwashing, sanitation, and clean water practices
- Bathroom – did they wash their hands? Soap? How did they dry their hands?
- Kitchen – source of water for cooking? Did they boil it?
- Cleaning – source of water? Did they add a cleaning solution?

Water Quality Monitoring

- Apera Test Meter (pH, Conductivity, Temperature)
- Turbidity
- UV Transmittance
- Free and Total Chlorine
- MPN of E. coli



Evaluation and Assessment

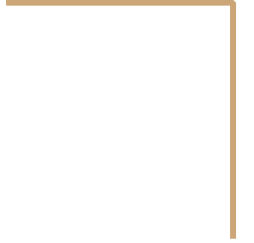
How can you **evaluate your project** to determine its impact?

How can your partners help you **identify impact**?

What **data** can you collect to verify impact?

What can you do if you are **not meeting your goals**?

Project Sustainability



Current Project Status

- Las Canas
 - Groundwater vs. Rainwater
 - Unreliable electricity
- Los Peladeros
 - Paint runoff from roof
- El Mamey
 - Desires government approval
- La Torre
 - Inefficient gutters
- Desecho
 - Difficult to access



Entrepreneurship



Building partnerships

Full-time entrepreneur

Create a small business



PURDUE
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INventure Business Planner
Agricultural Economics

Project Sustainability

Is your project capable of having **long-term impact**?

What **data or information** provides support for this claim?

How do you **define sustainability** for your project?

How can you **increase project sustainability**?

Lessons Learned

It is easier to succeed when a community is willing and eager to work with us.

Open and constant communication is crucial.

DR student involvement helps increase understanding of the system.

Systems must satisfy community needs and preferences.

Next Steps

- Resolve current community issues
- Perform focus groups and observational studies to improve our approach
- Form partnerships in the DR
- Install a 5th system in Desecho



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THANK YOU

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