

Lack of Clean Water Access in Rural Schools in Northern Argentina: Air Humidity Water Collection and Dust Filtration Technology to Obtain Clean Water

UNIVERSIDAD TECNOLÓGICA NACIONAL – FACULTAD REGIONAL PARANÁ

Students of Civil Engineering

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English II – 2023

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INTRODUCTION

Water is an essential element for human health, hygiene and well-being.



INTRODUCTION

Ensure hygiene in rural schools

Clean and potable water is the key to students' proper hygiene and to ensure quality education.



INTRODUCTION

NORTHERN ARGENTINA

This region is one of the most affected by lack of clean water access.

These rural areas are affected by poverty.



INTRODUCTION

**WE WILL
INVESTIGATE**



Lack of water rural schools in northern Argentina

How it affects students and teachers of Argentine rural schools in the north of the country.

Reduce rural school dropout rates and improve education quality

Propose two solutions

Achieve a positive and sustainable impact



INTRODUCTION

1

**IMPACT OF
THE WORK**

Water scarcity
and its causes

2

**PROBLEM
DESCRIPTION**

Water scarcity
and its causes

3

**PROBLEM
APPROACH**

Solution to the
water scarcity
problem by means
of Fresh Water
Ecco System and
P&G purifier

packets

4

**FEASIBILITY
ASSESSMENT**

Discussion about
the suggested
solutions in terms
of advantages
and disadvantages

IMPACT OF THE WORK

**To provide
insight into
this topic**

**To raise
awareness**

**To understand
deficiencies
in Argentina**



PROBLEM

DESCRIPTION

PROBLEM DESCRIPTION

Rural areas challenges

GEOGRAPHICAL AND LOGISTICAL CHALLENGES



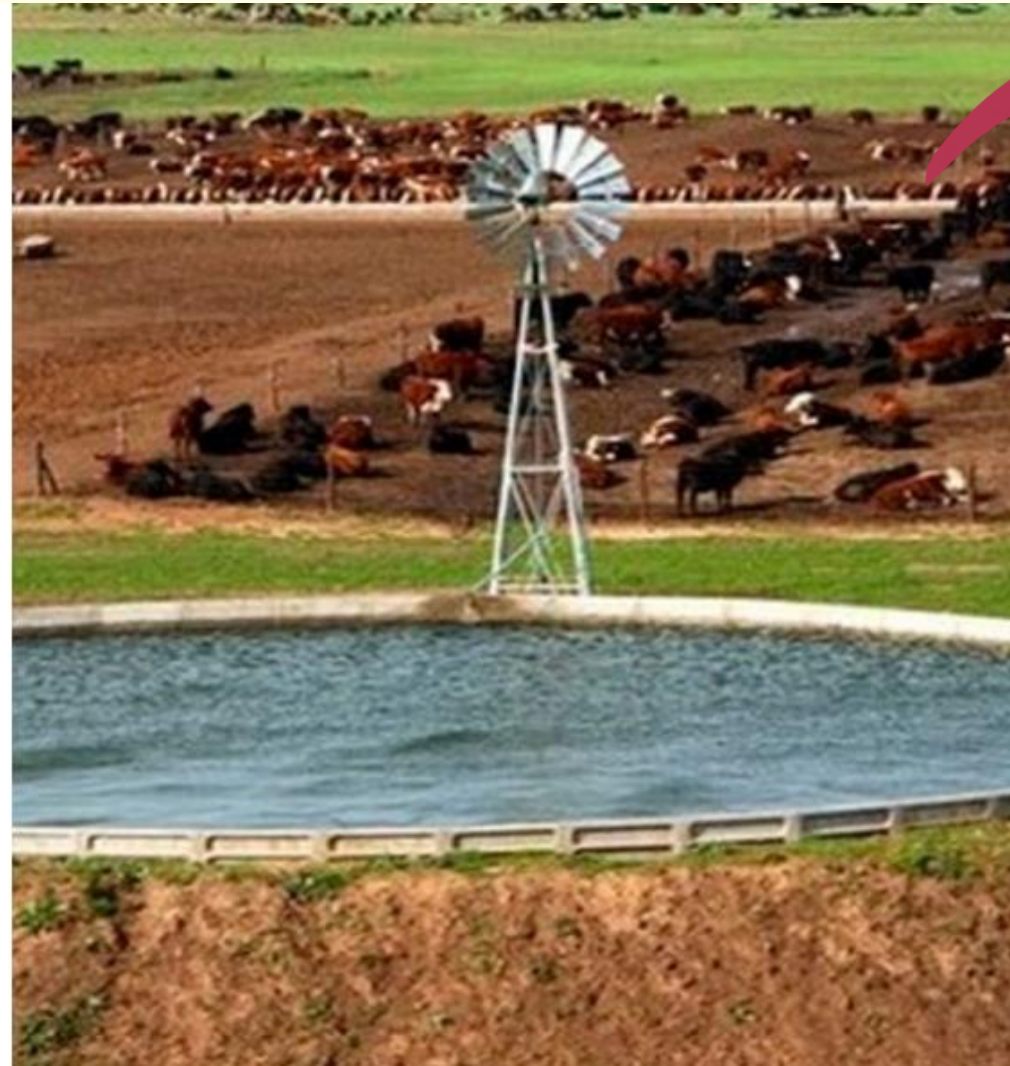
Rural school in Argentina

Remote areas

PROBLEM DESCRIPTION

Rural areas challenges

**LIMITED FINANCIAL RESOURCES
AND INFRASTRUCTURE
LIMITATIONS**



**Infrastructure in
rural areas is
poorer than in
cities.**

PROBLEM DESCRIPTION

Rural areas challenges

**LIMITED FINANCIAL RESOURCES
AND INFRASTRUCTURE
LIMITATIONS**



PROBLEM DESCRIPTION

Rural areas challenges

ALTERNATIVE WATER SOURCES AND WATER CONTAMINATION



well



PROBLEM DESCRIPTION

Rural areas challenges

**WATER IS IMPORTANT IN SCHOOLS
FOR:**

COOKING

**Many children in
Argentina eat at
school.**



PROBLEM DESCRIPTION

Rural areas challenges

**WATER IS IMPORTANT IN
SCHOOLS FOR:**

HYGIENE AND
SANITATION



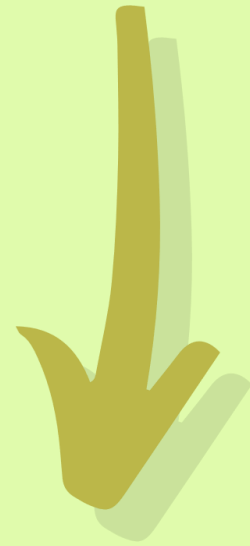


PROBLEM

APPROACH

PROBLEM APPROACH

PROPOSED SOLUTION



Proposed Technologies



There are several solutions implemented for both harvesting and filtering water on the market.

Fresh Water Ecco System

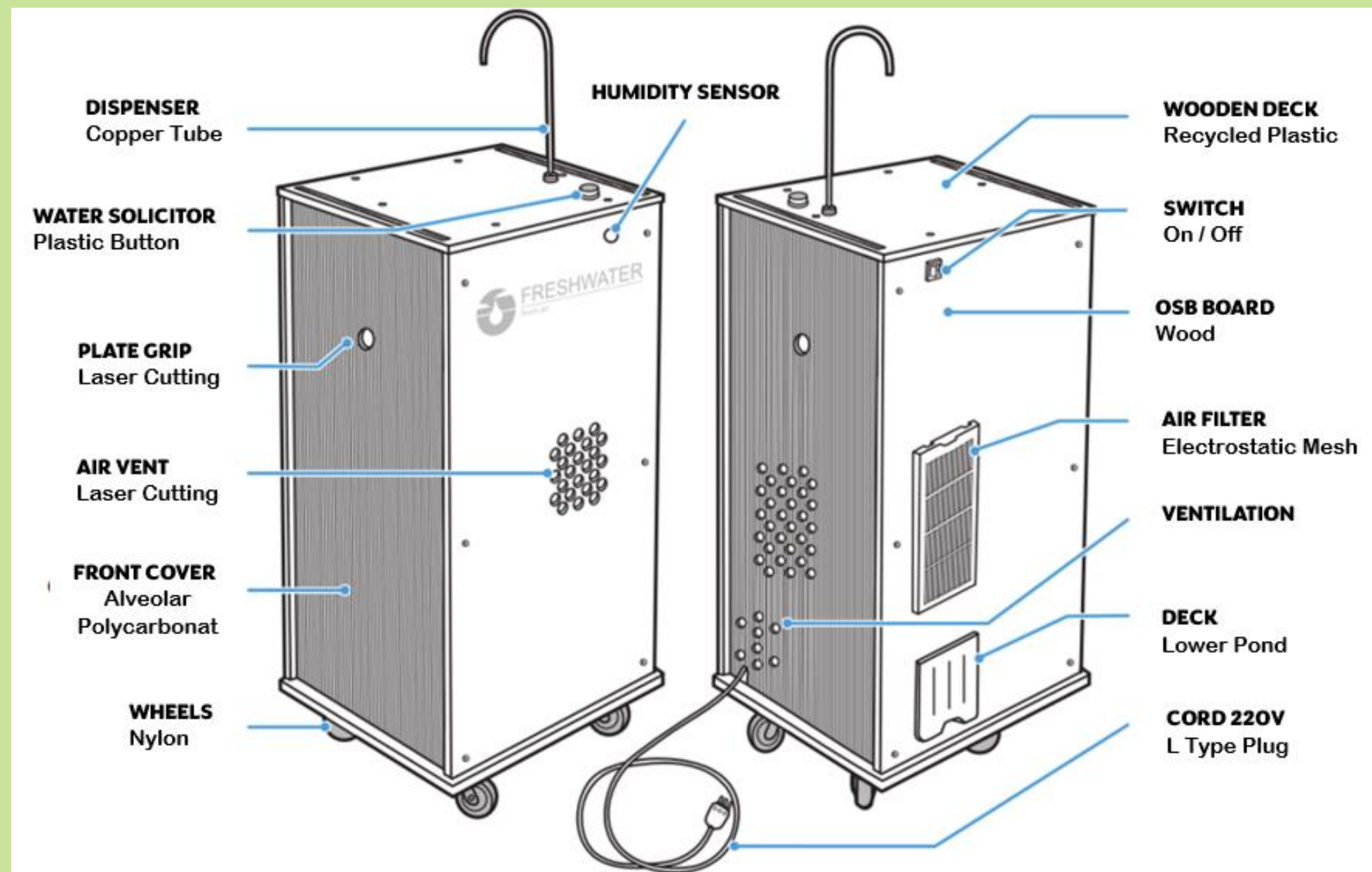
P&G Purifier Packets

Fresh Water Ecco System

It is capable of recovering water suspended in the air by condensating, collecting and filtering it.



Fresh Water Ecco System



It contains a water dispenser, wheels and it works using electricity.

Work range

15°C to 40°C with R.H. from 35% to 95%.

It can store 12 liters of water.

P&G Purifier Packets



A powdery material that is able to chemically react with water to obtain clean water



PROBLEM APPROACH

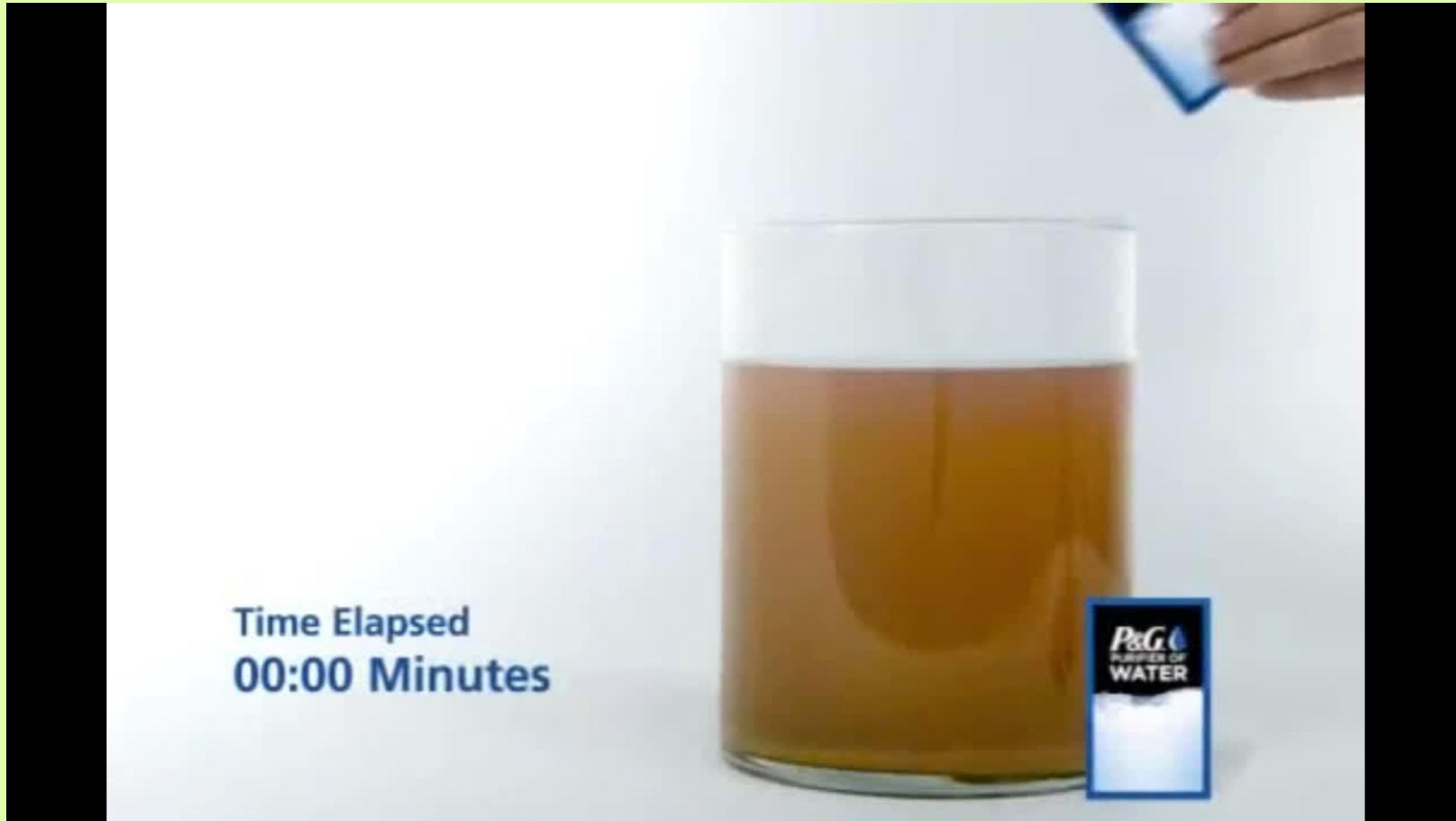
P&G Purifier Packets


- POUR
- STIR
- SETTLE
- FILTER
- OBTAIN CLEAN WATER



P&G Purifier Packets

PROBLEM APPROACH





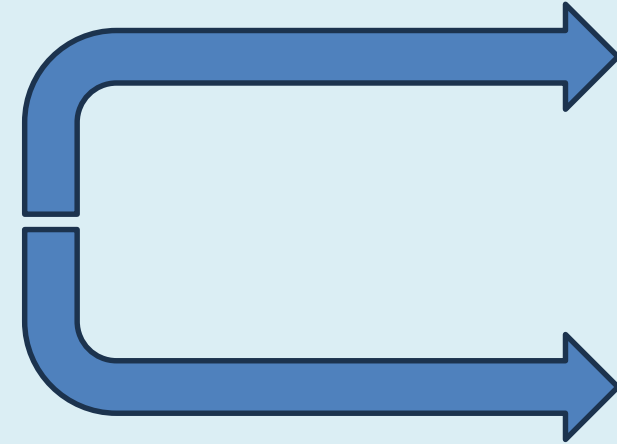
FEASIBILITY ASSESSMENT

PROPOSED SOLUTION



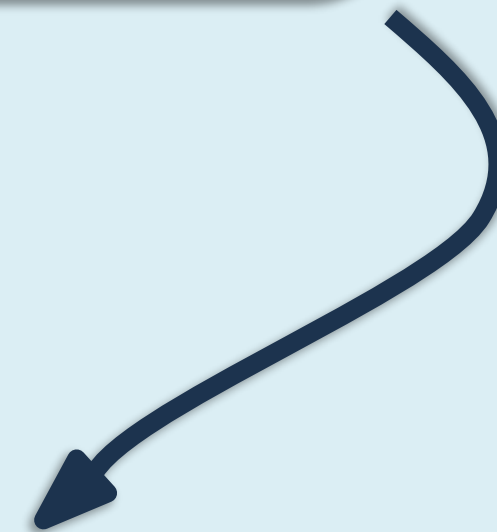
SYSTEMS

FEASIBILITY ASSESSMENT



Fresh Water Ecco System
P&G Purifier Packets

Advantages, disadvantages and Feasibility Assessment



FEASIBILITY ASSESSMENT

CONDITIONS THAT DETERMINE THE METHOD TO USE

Energy access



Economic resources



Number of students



FEASIBILITY ASSESSMENT

FRESH WATER ECCO SYSTEM

ADVANTAGES

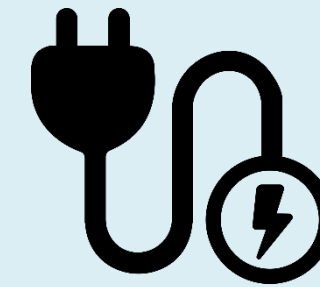


**Autonomous operation with
no human intervention**

**Water filtration and
disinfection**



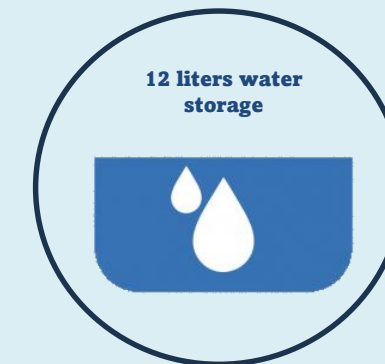
DISADVANTAGES



Electricity required



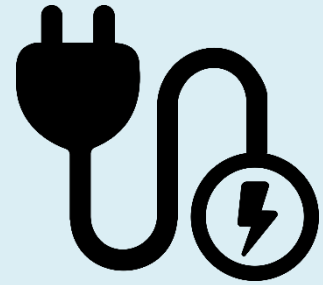
**24 hours required to produce 8
to 12 liters of water depending
on weather conditions**



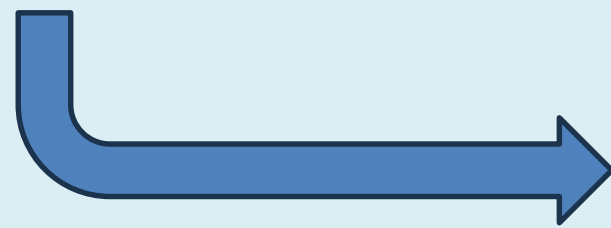
Capacity limitations

FEASIBILITY ASSESSMENT

FRESH WATER ECCO SYSTEM



**Electrical energy
required**



**Solar panel use if
the school does not
have electrical grid**



FEASIBILITY ASSESSMENT

P&G PURIFIER PACKET

ADVANTAGES



It is a fast dirty water cleaning method that uses only one packet.

It cleans 10 liters of dirty water.

It is easy to teach how to use it.

DISADVANTAGES



It requires human effort for pouring, stirring and filtering water.

The method does not produce clean water by itself.

FEASIBILITY ASSESSMENT

FEASIBILITY

FRESH WATER ECCO SYSTEM



Recommended for schools with financial resources and electrical grid or solar panel access

P&G PURIFIER PACKETS



A great option for schools with low financial resources, without electrical grid access or which use well water

CONCLUSION



REFERENCES

- [1] Nu. CEPAL. “The 2030 Agenda and the Sustainable Development Goals: An opportunity for Latin America and the Caribbean”: Available: https://www.cepal.org/sites/default/files/events/files/2030_agenda_and_the_sdgs_an_opportunity_for_latin_america_and_the_caribbean.pdf (accessed, June 4th, 2023)
- [2] INDEC - National Institute of Statistics and Censuses from Argentina. “Informe tecnico sobre la incidencia de la pobreza y la indigencia en 31 aglomerados urbanos”. Available: <https://www.indec.gob.ar/indec/web/Nivel4-Tema-4-46-152> (accessed, June 4th, 2023)
- [3] Public Works Ministry. “Índice de vulnerabilidad por déficit de agua y saneamiento”. Available: https://www.argentina.gob.ar/sites/default/files/indice_de_vulnerabilidad_por_deficit_de_agua_y_saneamiento_-_documento_metodologico.pdf (accessed, June 4th, 2023)
- [4] UNICEF – “Water and Hygiene in Schools”, Available: <https://www.unicef.org/argentina/agua-ehigiene-en-mas-escuelas> (accessed June 4th, 2023)
- [5] UNICEF – Press Release - “More Than One Million Children and Adolescents Are Deprived Of a Daily Meal Due To Lack Of Resources”, Available: <https://www.unicef.org/argentina/comunicadosprensa/mas-de-un-millon-de-ninas-ninos-y-adolescentes-se-privan-de-una-comida-diaria> (accessed June 4th, 2023)
- [6] Fresh Water Ecco Syste. Technical data about the product. Available: <https://freshwatersolutions.org/ecco/> (accessed July 11th, 2023)
- [7] P&G Purifier Packets Product. Information and commercial presentation Available: <https://businessconnectworld.com/product/pg-purifier-of-water/> (accessed July, 11th, 2023)
- [8] Cawst Technical Information. Technical data about the product and instructions for use Available: <https://www.hwts.info/products-technologies/e0baff7f/pandg-purifier-of-water/technical-information> (accessed September 12th, 2023)

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