

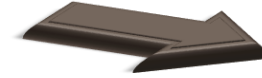
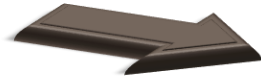
# FOG CATCHER SYSTEMS IN THE DESERT OF LA GUAJIRA (COLOMBIA)

ANALYSIS OF THE WATER SUPPLY CHAIN DISRUPTION CAUSED BY COVID-19

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# THE REGION REPRESENTED: The desert of La Guajira - Colombia



Colombian population: aprox. **50'300.000**

La Guajira population: aprox. **825.364**

Wayuu population in La Guajira: aprox. **380.460**

The Wayuu community represents 46% of the total population of La Guajira and they reside in an area of **10,803 km<sup>2</sup>**, approximately the total area of Connecticut



Ranchería



Wells (Windmill pumping)



Jagüey



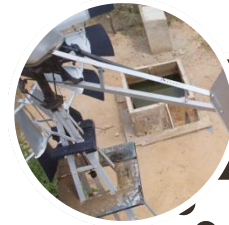
Economic activity

## WAYUU COMMUNITY AND WATER PROCUREMENT

# PROBLEM OUTLINED



Distribution by tank trucks



Wells (Windmill pumping)



High Cost, limited routes, lack of cover



Salty water and depends on the wind



## WATER SUPPLY CHAIN

"A highly fragile and vulnerable supply chain"



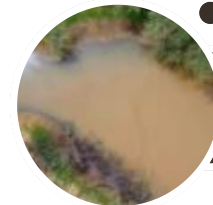
Only to areas of influence



Unsanitary water and fit for animals



Supply by mining companies



Jagüey

# SUSTAINABLE DEVELOPMENT GOALS (SDGS)



*“Improving lives for a better future of the Wayuu Community”*

# BEFORE COVID-19



**2.2 BILLION PEOPLE**

Lack safely managed drinking water  
[United Nations, 2017]



**TWO IN FIVE**

Health care facilities worldwide have  
[United Nations, 2017]



**47 % OF SCHOOLS WORLDWIDE**  
lacked hand-washing facilities with soap  
and water

[United Nations, 2017]



In La Guajira, only 4% of the rural  
population has access to drinking  
water and only 26% of its  
population has access to water fit  
for human consumption

[Ministry of Housing of Colombia, 2020]

# COVID-19 IMPLICATIONS

## COVID-19 IMPLICATIONS



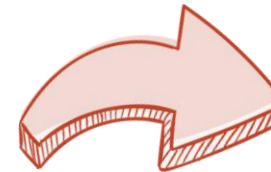
**3 BILLION  
PEOPLE WORLDWIDE**

**LACK BASIC HANDWASHING  
FACILITIES AT HOME**



**THE MOST EFFECTIVE METHOD FOR  
COVID-19 PREVENTION**

[United Nations, 2020]



Increase of water demand



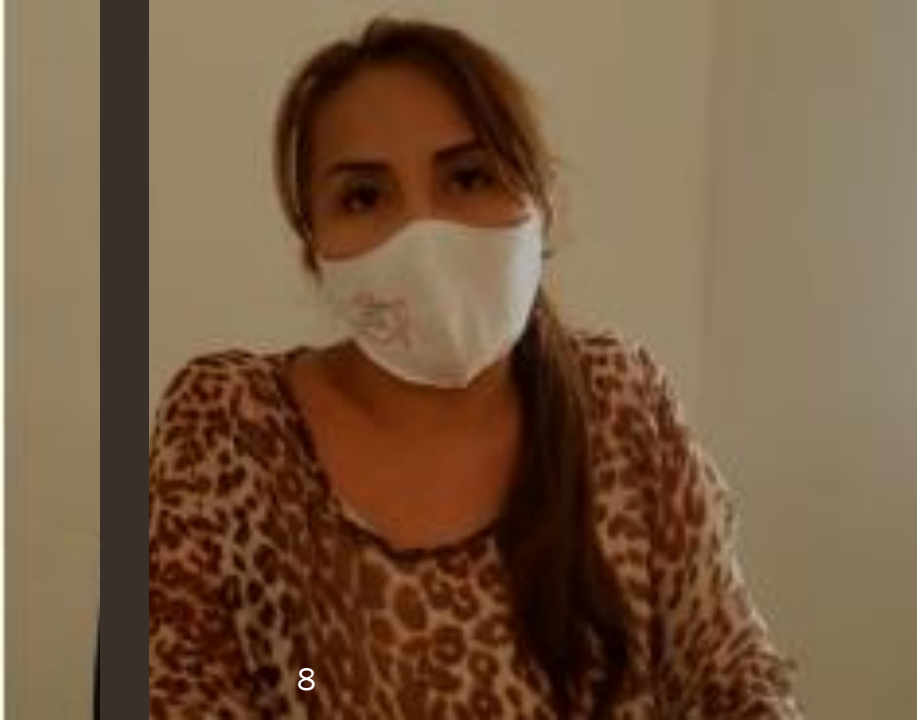
COVID-19 IMPACT ON LA GUAJIRA (COLOMBIA)  
~10.444 CASES



## PROOF OF RESEARCH

“Due to covid-19, tank trucks did not reach us, we did not have drinking water, we had to drink salty water from the wells, and we got sick. We could only eat once a day and sometimes we even went to sleep with empty stomach.”

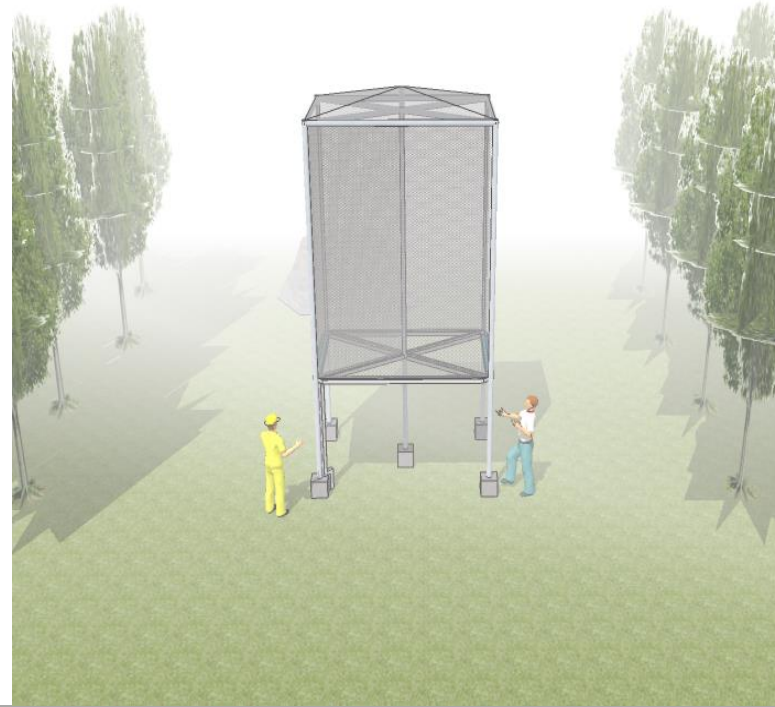
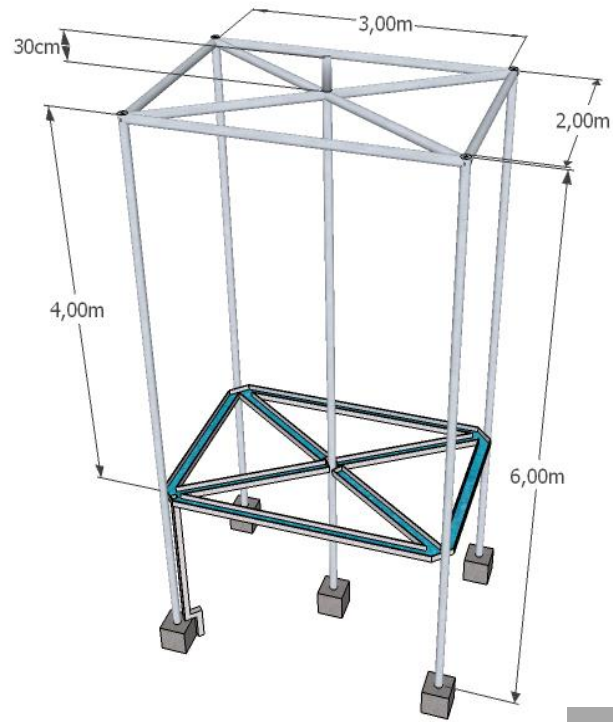
- *María Ines (Wayuu Indigenous from Urraichirujunai).*



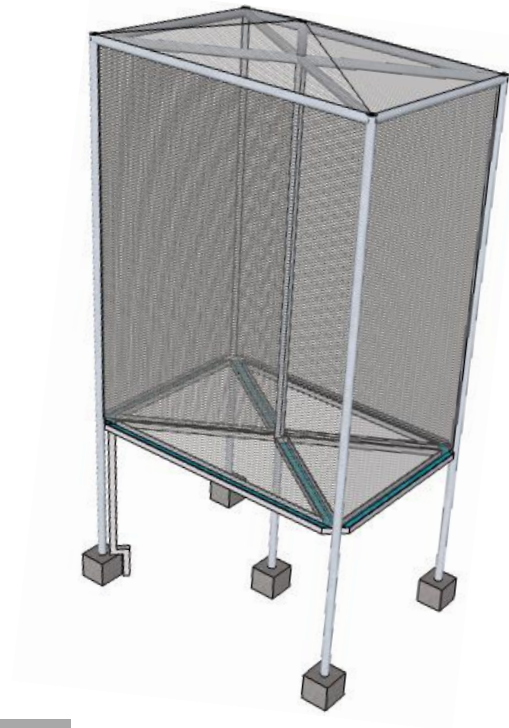
“The malnutrition is our scourge for many years, it affects the population under 5 years of age and nursing mothers, specially of Wayuu community. Besides the social problems, it has the important problem of not having access to clean water, which causes acute diarrheal disease and acute respiratory infections to the children, as well as intestinal parasite infections. All these diseases lead to cases of iron-deficiency allergies and nutritional anemia.”

- *Claudia Henriquez, Secretary of Indigenous Affairs of La Guajira, Physician and Wayuu member.*





Prototype of fog catcher. Source: own elaboration. (Google SketchUp 8)



# THE SOLUTION AND IMPLEMENTATION PLAN

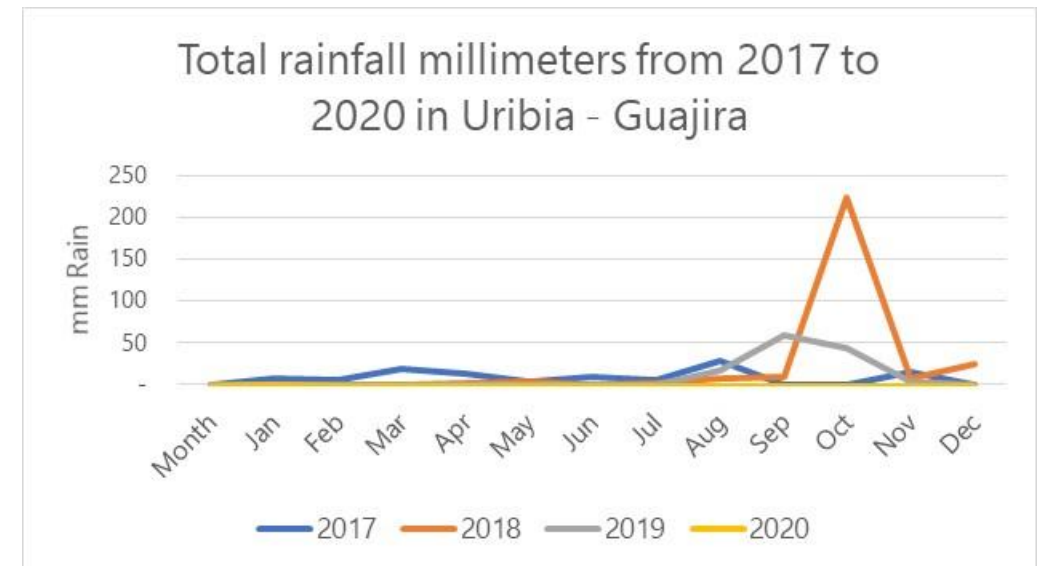
# THE SOLUTION AND IMPLEMENTATION PLAN

- Carlos Espinosa who donated the patent in the 1980s to the UNESCO (Emis University, 2020).

Municipality	% Averg. Moist. Relative	% Máx. Moist. Relative/day	mm - Averg. Rain	mm - Rain Max/day	°C Averg. Temp	°C Temp Max/day
Albania	61.64	100	0.02	35.74	33.87	39.20
Manaure	77.12	100	n.a.	n.a.	35.88	41.20
Riohacha	73.16	100	5.65	139.50	33.14	38.80
Uribe	71.94	100	0.01	25.10	33.91	38.20
Total	70.96	100	1.89	139.50	34.20	41.20

Data: 01 jan 2017 to 31 oct 2020

Climate records 2017 to 2020 of meteorological station.  
Source: own elaboration (IDEAM records).

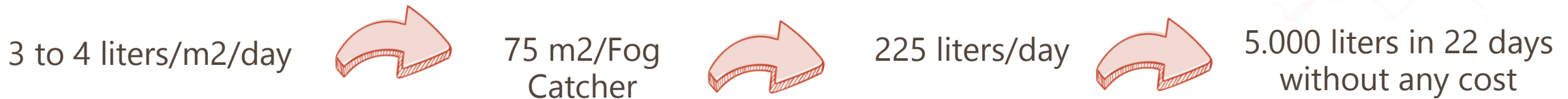


Total rainfall millimeters from 2017 to 2020 in *Uribe* – Guajira. Source: own elaboration (IDEAM records).

# FEASIBILITY STUDY



# ESTIMATED COLLECTION\*



\* during the usage average of a year

## PILOT IMPLEMENTATION

Variable	Short term	Medium term	Long term
Units	1 Fog Catcher	2 Fog Catcher	4 Fog Catcher
Water Collection	5.000 L / 22days	10.000 L / 22days	20.000 L / 22days
Impact	1 Community	1 Community	2 Communities
Cost	1.600 USD	3.200 USD	6.400 USD



THANK YOU



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