GLASS RECYCLING IN CAÑO MARTÍN PEÑA

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PRESENTATION OVERVIEW

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PROJECT OVERVIEW

The goal of our project is to research the feasibility of glass recycling in Caño Martín Peña, specifically on the north side of the canal. Recycled glass has many possibilities and uses that we believe could be beneficial to ENLACE and the Caño Martín Peña area.
PROJECT OBJECTIVES

Understand the recycling conditions in Caño Martín Peña

Explore potential uses for recycled glass

Estimate the number of glass bottles sold per week via surveys

Provide a deliverable to support implementation of glass recycling
RESULTS AND FINDINGS

What we aimed to achieve:

- What recycling conditions are in the Caño Martin Peña area
- How many glass bottles were sold in the north of the Caño Martin Peña per week
- Business's willingness to recycle
- Incentives to encourage businesses to recycle
- Possible uses for recycled glass
INTERVIEW WITH MIGUEL NAVEIRA: COORDINATOR AT MARTÍN PEÑA RECICLA, INC.

Martín Peña Recicla, INC. has been recycling cardboard, paper, plastics, and aluminum since 2011, but has never recycled glass in the Martín Peña area.

The image to the left shows MPR's recycling process to motivate the community to recycle.
Bloques Caribe Inc. produces cement blocks with 10-12% weight glass aggregate. They shred glass bottles from the surrounding community using an Andela glass pulverizer.

This glass pulverizer would cost $38,450 to purchase and deliver to San Juan.

Bloques Caribe Inc. sold 9.7 million cement blocks last year across Puerto Rico.
Reciclaje del Norte recycles 12 different materials from the Caño Martín Peña area and surrounding communities.

They used to recycle glass, but now only collect and export it.
INTERVIEW WITH
REBECCA POPOWSKY
FROM OLIN LABS

OLIN Labs has been researching the soil-less soil for four years.

With sand and soil becoming more scarce, OLIN has developed a way to use glass as a substitute for sand to create soil.

The composition is made of a 60/20/20 ratio of sand, compost, and natural soil respectively. They've experimented with substituting parts of the sand with glass in different ratios.
Measuring the number of glass bottles sold, business's willingness to recycle, and their opinions on recycling incentives.
This map indicates the businesses and restaurants our team surveyed throughout the north side of the Caño Martin Peña.

**MAP KEY**

Number of glass bottles sold per week

- **100-250**
- **250-500**
- **1000-1250**
- **1250+**

Markets and Liquor Stores

Bars
SURVEY RESULTS

Average number of bottles sold by establishment per week in the north side of the Caño Martín Peña

- El Retomo: 0
- La Esquina de Ella: 0
- La Milagrosa: 200
- Father and Son: 1000
- Colmado Chulianda: 1200
- Colmado and liquor store Cibao: 1500
- Agencia Hipica 217: 500
- Copa del Chevare: 100

- 0% of businesses surveyed currently recycle.
- 100% of businesses surveyed are willing to recycle and promote recycling in their establishments.

4 of the 8 businesses surveyed would prefer business promotion over a monetary incentive for recycling their glass waste.
GLASS WASTE DATA FROM SURVEYED BUSINESSES

4,264 bottles
Estimated total weekly glass bottles sold

221,728 bottles
Estimated total yearly glass bottles sold

44.35 tons
Estimated metric tons of glass bottles thrown away yearly
DATA ANALYSIS

How much would it cost to send the surveyed glass to a landfill?

The cost to send material to the San Juan landfill is $42/ton

$1,863/year

Does not include the collecting costs

How much money does Bloques Caribe save from substituting limestone with glass?

11% cement block in weight is glass

8"x8"x16" block
1496 grams is made of glass

$0.05 of limestone is saved per block

$507,892 cost savings in raw materials from using glass for the year
What would it cost to buy an Andela GP-Mini glass pulverizer?

$38,450
Includes Shipping costs!

What is the electric operating cost and environmental impact of the Andela GP-Mini glass pulverizer?

4.1kW $0.24 $1024 1.8 tons

to run the pulverizer per kWh cost of electricity yearly
Commercial Rate of electricity in San Juan per year (assuming 20 hr weeks, 52 weeks a year) CO2 emissions
CONCLUSIONS

- Businesses and residents around the Caño Martín Peña are **willing to recycle** if they **understand the purpose** behind it and the process is feasible.
- Recycling in Puerto Rico **relies primarily on non-profit organizations and/or environmental groups** because there is a **lack of support from the local government**.
- Glass recycling is **arduous to implement** since, unlike plastics and metals, **unrecycled glass has no monetary value**.
RECOMMENDATIONS

Glass Recycling Next Steps

We recommend that ENLACE encourages businesses in the Caño Martín Peña area to recycle their glass bottles through an incentive program.
RECOMMENDATIONS

Glass Recycling Next Steps

We recommend that ENLACE and Bloques Caribe Inc. come to an agreement to recycle glass from the Caño Martín Peña area.

- Established Framework
- Short-term solution
We recommend that ENLACE collects glass waste from businesses around the canal and starts a potential micro-business. This business would include a glass pulverizer and exploring the potential uses for glass cullets.
Our team has prepared a guidebook to lay out the steps we have completed to result in the previously mentioned recommendations.

This guidebook has been translated to Spanish as well to provide accessibility to Spanish speakers at ENLACE.
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THANK YOU!
QUESTIONS?
COMMENTS?