

**Medellín**

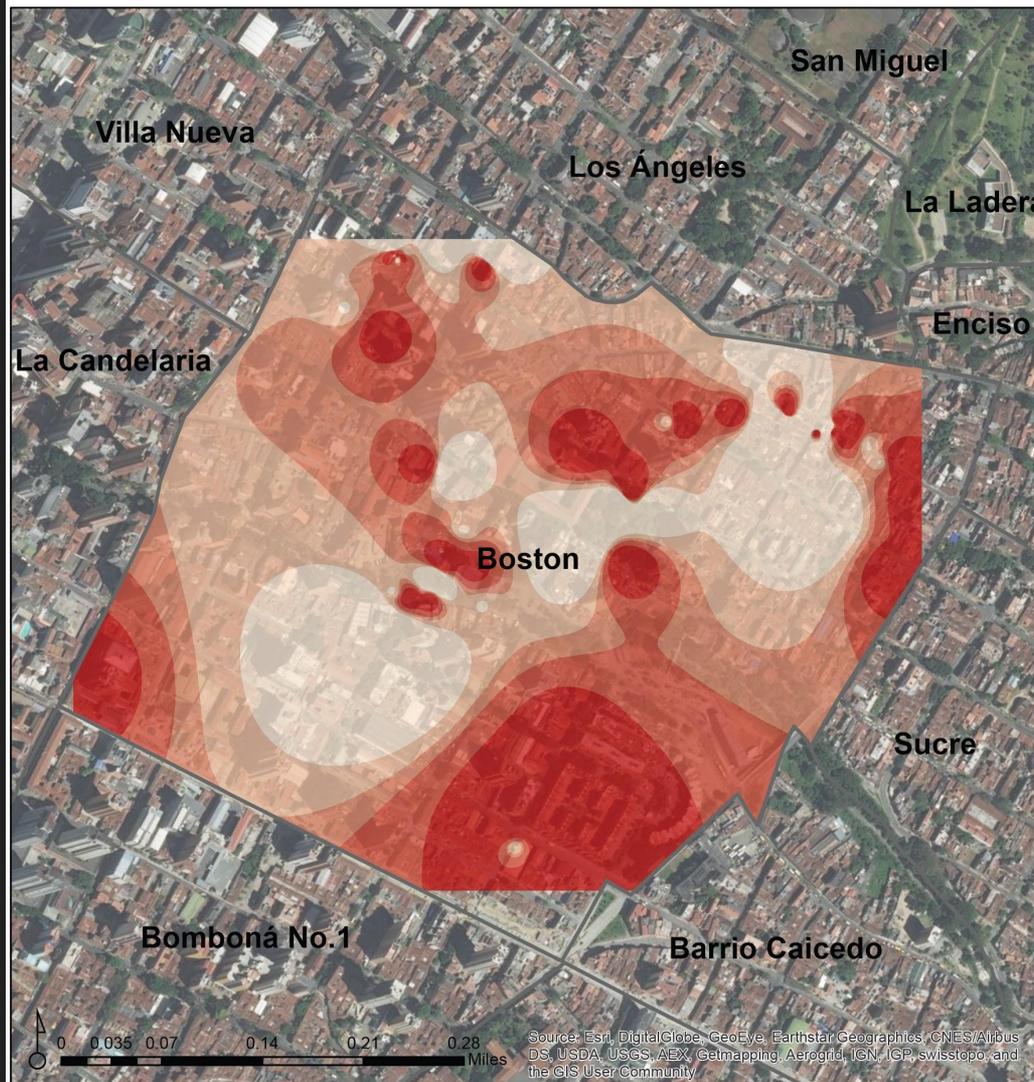
Secondary Cities Project Outcomes Map Book

Phase II - 2017

2C teamed with their on the ground implementer, Ecocity Builders (ECB); the Medellin Planning Department (MPD); Medellin's largest University of EAFIT and their urban studies department, URBAM; and the community-based non-profit organization, Low Carbon Cities (LCC). Together these parties worked under the 2C project to collect, document and map important disaster planning information within a city-center neighborhood called Boston. EAFIT, ECB, the MPD and LCC selected the Boston neighborhood for its centrality in the city. It is a neighborhood of mixed income, in the center of town, that struggle with waste issues. Waste piles high in the streets, litters a neighborhood park and waterway, and is not properly sorted for recycling or safe disposal. LCC and EAFIT pulled together a group of professionals who work throughout the city in the municipal offices, in nonprofit organizations, in neighboring municipalities and more to participate in the Phase II, 2017 implementation of the 2C project and 2C Course at EAFIT University. The 2C Course participants separated into research groups and investigated materials and waste in the Boston neighborhood utilizing 2C tools and standards. The course participants collected community data on the ground and in the field. The following maps, videos and infographics were created as a result of this 2C project implementation. Each of the maps is available for viewing in shapefile format on the [2C Geoexplorer](#) , a curated map viewing experience developed by the ECB team for each of the Latin American 2C projects that they lead on behalf of the 2C program..



Students worked in ArcGIS to stylize the quality of life responses collected from community members of the Boston neighborhood of Medellin for the isolated questions to understand the geospatial distribution of responses throughout the community.



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[SecondaryCities.state.gov](http://SecondaryCities.state.gov)

**ECO CITY BUILDERS**

**UNIVERSIDAD EAFIT**

Alcaldía de Medellín  
**Cuenta con vos**

¿Se siente generalmente seguro y experimenta ausencia de violencia?

Do you generally feel safe and experience no violence?

**Legenda / Legend**

**Barrio / Boundary**

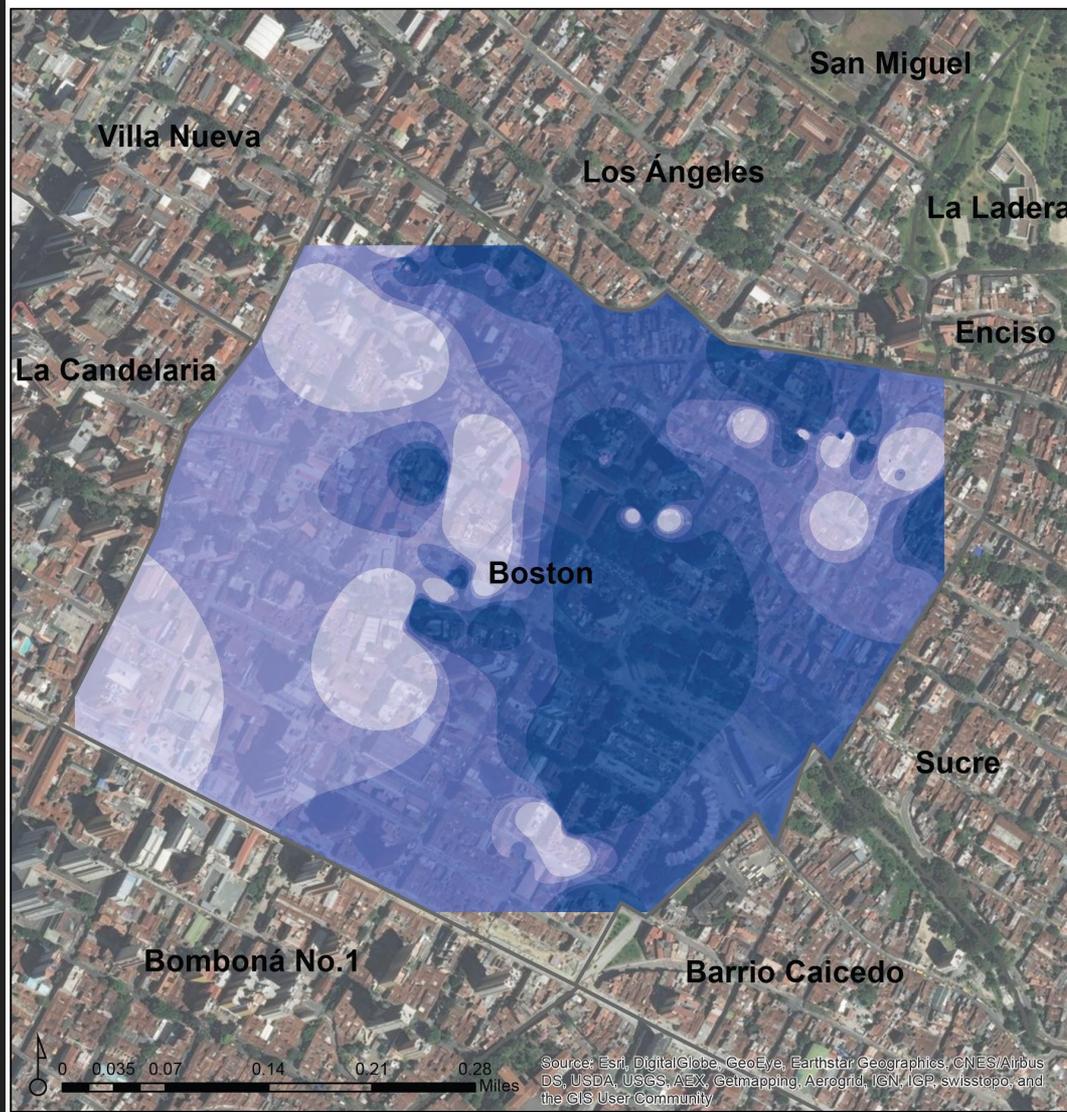
□ Barrio / Boundary

**Percepcion de seguridad / Safety Perception**

- Muy Malo / Really Bad
- Malo / Bad
- Regular / Regular
- Bueno / Good
- Excelente / Excellent

**Interpolation Method: IDW**  
**Classification Method: Quantile**

Students geospatially visualized the community members' responses to a Quality of Life survey question about the quality of the environment surrounding their homes. A next step could be to integrate this map with the community-sourced map layer which indicated trash piles and informal dumping sites within the community.



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**ECOCITY BUILDERS**

**UNIVERSIDAD EAFIT**



Alcaldía de Medellín  
**Cuenta con vos**

¿Considera que tiene un buen ambiente alrededor de su casa

Do you consider that you have a good environment around your home?

**Leyenda / Legend**

**Barrio / Boundary**

Barrio / Boundary

**Percepciones del entorno físico/ Perceptions of the physical environment**

- Muy Malo / Really Bad
- Malo / Bad
- Regular / Regular
- Bueno / Good
- Excelente / Excellent

**Interpolation Method: IDW**  
**Classification Method: Quantile**

In this maps, students visualized the geospatial responses



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¿Tiene una asistencia sanitaria adecuada y acceso a los servicios de salud?

Do you have adequate health care and access to health services?

**Leyenda/ Legend**

**Barrio/ Neighborhood**  
 Barrio/ Neighborhood  
 Res: 1 : 0.000

**Servicios de Salud Adecuados**

- Muy Malo/ Really Bad
- Malo/Bad
- Regular/ Regular
- Bueno/ Good
- Excelente/ Excelent

This map is a visual representation of a Quality of Life survey question about the community members' experience of non-discrimination. It is a first step to understanding if there is any correlating factors through geospatial investigation.



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¿Experimenta y aplica la no discriminación y el respeto en su vida diaria?

Do you experience and apply non-discrimination and respect in your daily life?

**Leyenda/ Legend**

Barrio/ Neighborhood

**Discriminacion/ Discrimination**

Res: 1 : 0.413

<VALUE>

- Muy Malo/Really Bad
- Malo/ Bad
- Regular/ Regular
- Bueno/ Good
- Excelente/ Excelent

**Buenos Aires**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

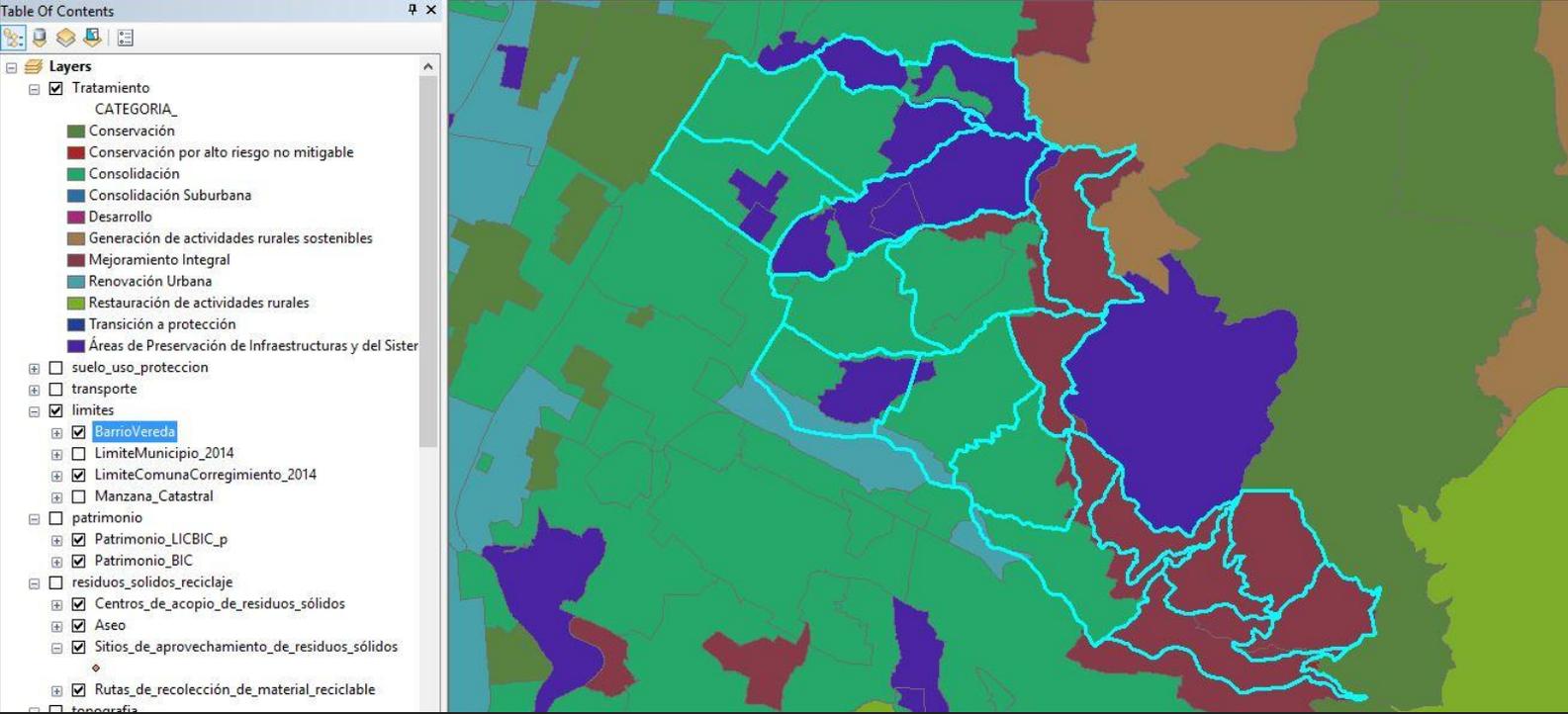
This map is the outline of the Boston neighborhood overlaid on the Medellín Planning Department treatment polygon map.

Treatment polygons are the Medellín version of ECB's neighborhood archetypes. The polygons were developed using GIS layers such as population density, economic class, building heights, building materials, access to infrastructure and so on. ECB and the Medellín Planning Department are currently working to integrate the two approaches to plan for the next 2C focal neighborhood. As can be seen here, the Boston neighborhood falls primarily in the Consolidación category.

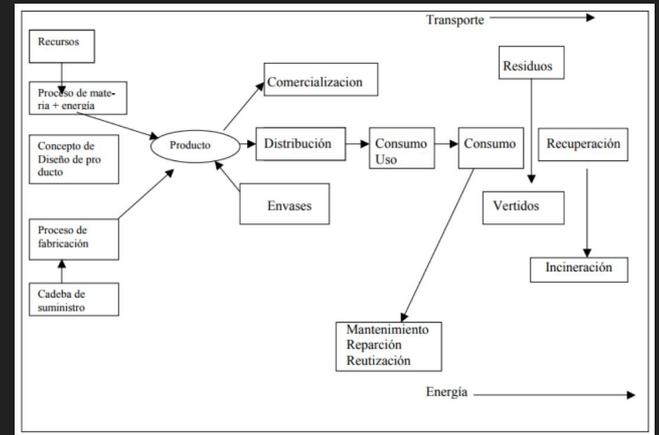
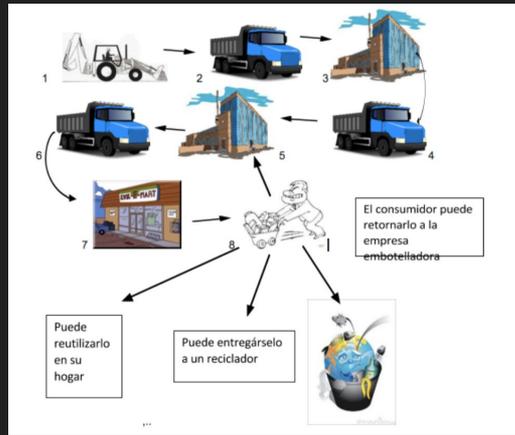
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CATEGORIA_	
<input type="checkbox"/>	Conservación
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Similar to the previous map, this map is an overlay of neighborhood boundaries atop Medellín's treatment polygon map layer. In this map, however the neighborhoods outlined are those in Comuna 8. In Phase I of the 2C project in Medellín, the local 2C team collected community data from the various neighborhoods within the Comuna 8. As can be seen here, the Comunas in Medellín, are clusters of several neighborhoods and house several polygon categories.



2C Course Participants in Medellín divided into six separate materials research groups which directly align with the ECB urban metabolic information system (UMIS) for materials: plastics (plasticos), papers (papel y carton), organics (organicos), glass (crystal/vidrio), mixed material waste (ordinarios) and used oils (aceite). Each group researched the metabolic flow from source, to demand, to sink. They course participants then developed analytical maps to propose an intervention to the existing resource flow through the Boston neighborhood and/or Medellín. Below are some of the metabolic flow charts that 2C course participants developed.



2C Course participants made several educational materials with the information that they gathered through their course investigations. Here is a sample of posters and videos that were shared with community members in the Boston neighborhood of Medellin.

2C Project Video Links:

[How to Dispose Used Oils from your Home](#)

[How to Reduce Plastic Waste](#)

**Los residuos ordinarios nos ahogan, es urgente saber que consumimos**

Desechables	Alternativas
Pañales	Pañales de tela
Toallas y tampones	Copa menstrual
Empaques de alimentos de icopor	Empaques de alimentos degradables

**Animate a intentarlo**

**¿SABÍAS QUE?**

**1 LITRO DE ACEITE** CONTAMINA 1000 LITROS DE AGUA

**Solo en Colombia cada año son desechados 56 millones de litros de aceite de cocina a través de sifones y tuberías.**

\*Cifras obtenidas de ecogras y cálculos propios.

**ACTUAR ES FÁCIL**

- Una vez que decidas NO UTILIZAR MAS el aceite de cocina, deja que se enfríe.
- Con la ayuda de un embudo, vierte el aceite en una botella vacía hasta llenarla.
- Lleva la botella al punto de recolección mas cercano o busca información de recolectores autorizados como Ecogras y grupo eco-lógica.

**RECICLANDO 8 BOTELLAS DE VIDRIO** REDUCES EN 1 KILO LAS EMISIONES DE CO2 A LA ATMÓSFERA

**+ ecodiseño - plástico EN BOSTON**

**Problema**  
Alta generación de residuos plásticos y desconocimiento sobre el adecuado reciclaje y reutilización del material.

**Solución**

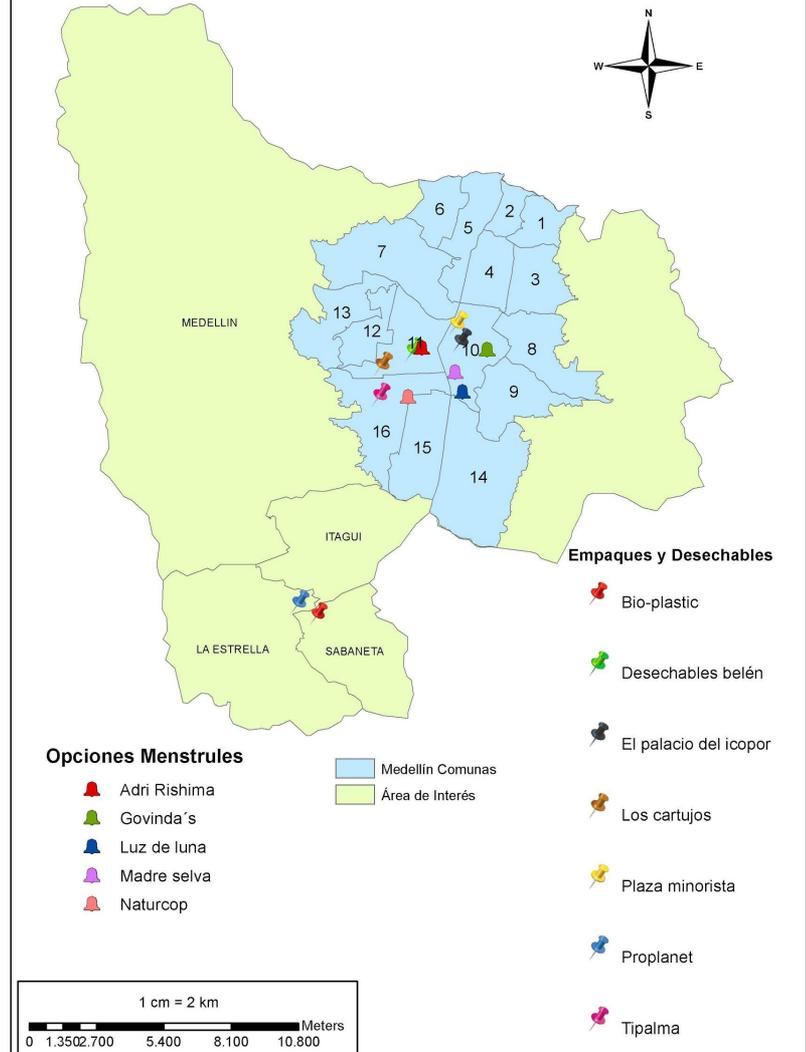
Realización de talleres de ecodiseño para sensibilizar a las personas sobre reciclar, reducir y reutilizar los residuos plásticos. Combinando la reutilización del material con la seguridad alimentaria y la calidad del aire; fomentando la creatividad, el trabajo en equipo, la cohesión social y la conciencia sobre los desechos que producimos.

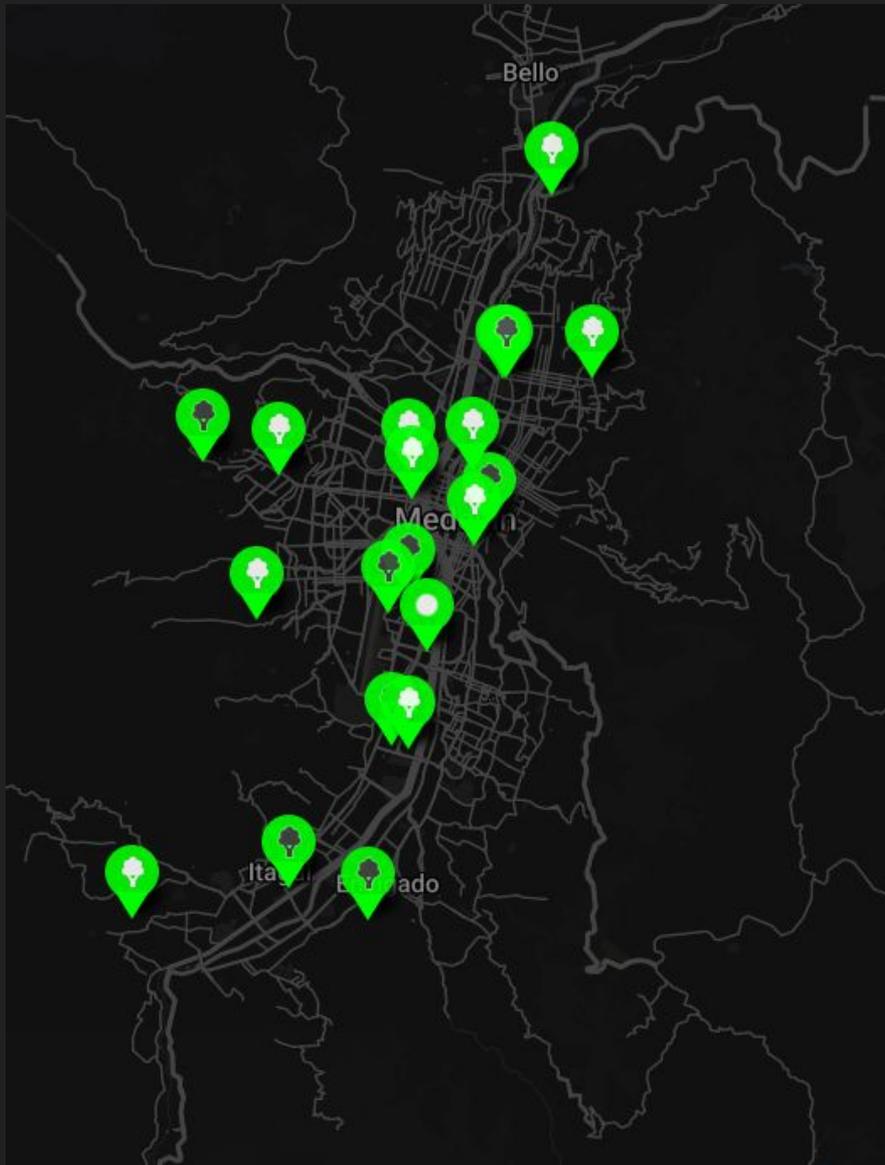


This map indicates locations throughout the Boston neighborhood where used cooking oil and hazardous waste can be disposed of safely.

This map was made by the ordinarios research group. Ordinarios is Spanish for mixed material waste. This classification makes up the majority of overall material waste in Medellin. Ordinarios cannot be reused or recycled. They pose a challenge to urban waste reduction efforts. The ordinarios research group identified ordinarios that are majorly represented in overall waste for the city and then moved on to identify alternative products that are available in Medellin. They then mapped the locations where these products could be purchased throughout the city.

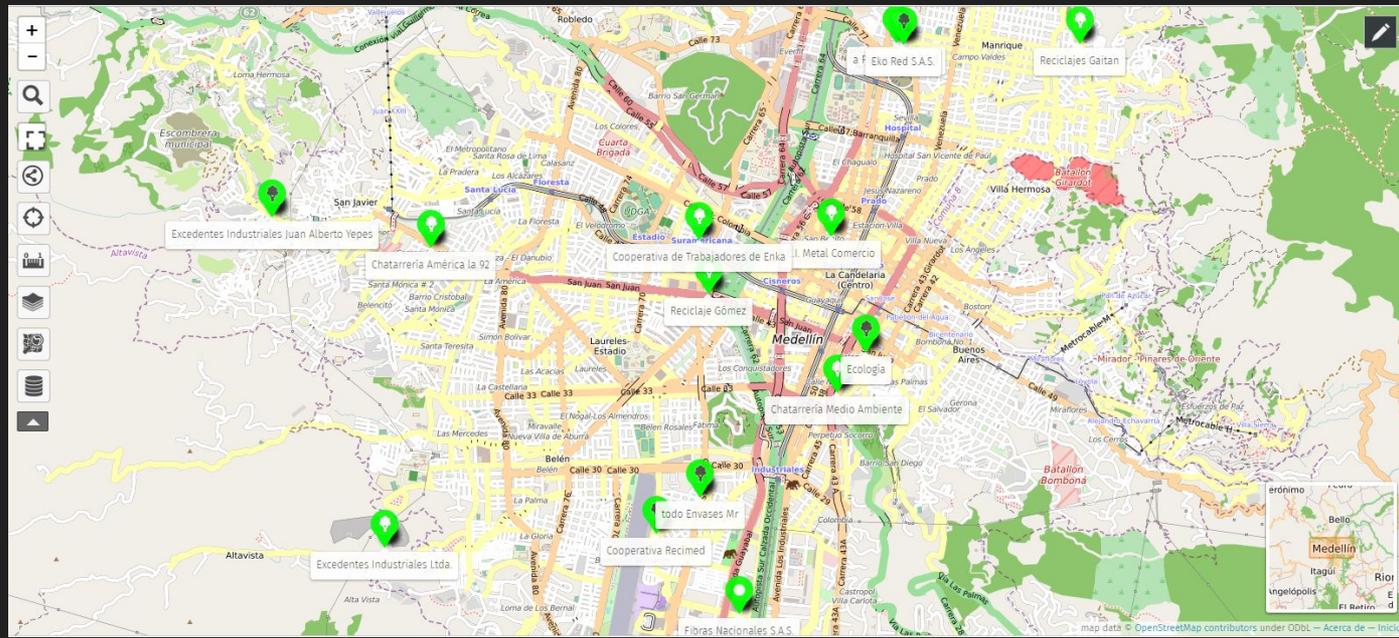
## ALTERNATIVAS DE CONSUMO ECOLÓGICAS



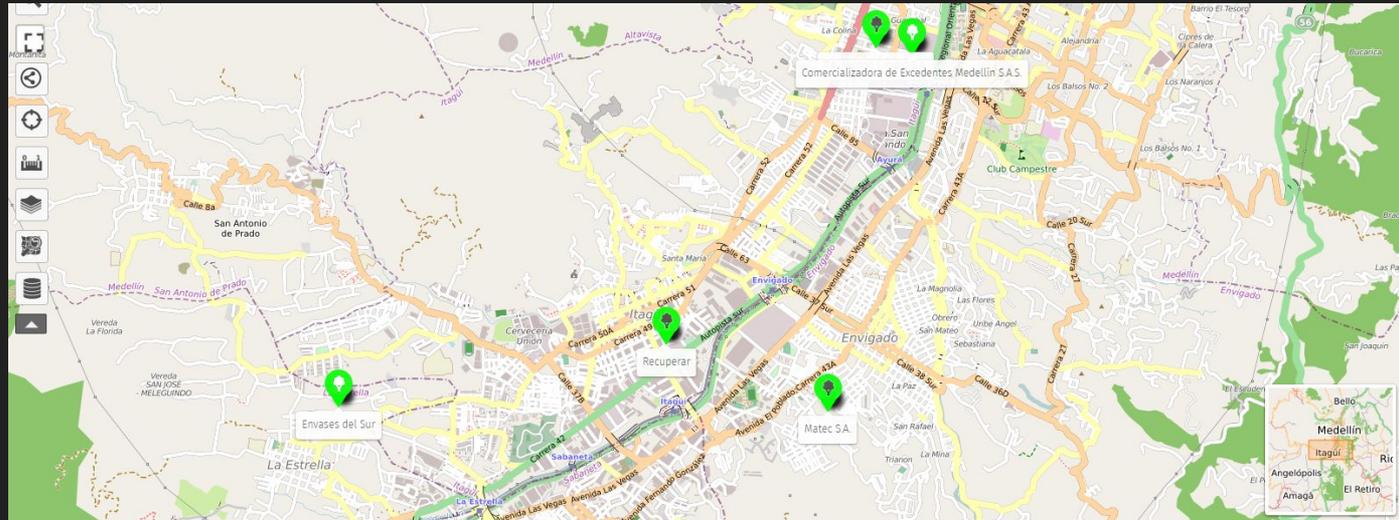


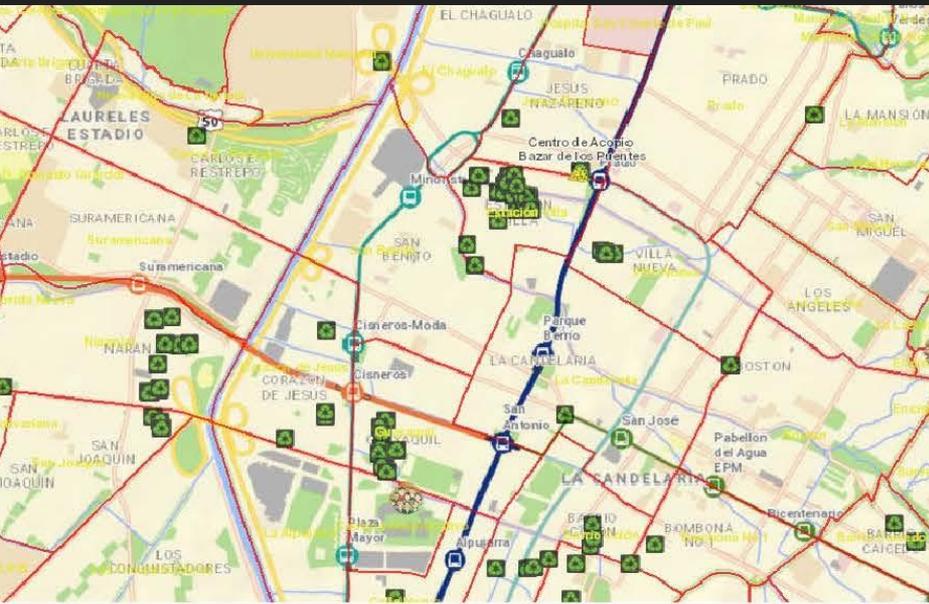
This map was created by the paper research group. They located all formal recycling centers throughout the city of Medellín and developed an original map that includes all of these centers by georeferencing the centers in OpenStreetMap. This map shows that there are 20 points of formalized recycling collection and distribution in the City. This does not include the individual recycler businesses that speckled throughout the communities of Medellín, but eventually all recyclables make their way to these formalized recycling centers or processors. This map was very welcome within the Planning Department, as this information has not been geospatially referenced before and can be used to establish city-wide recycling services. The points on this map represent companies dedicated to the collection, reception, processing and distribution of recyclable, solid waste throughout Medellín. At each point, the Contact of each company is embedded in the metadata. This map can be accessed online: <Http://u.osmfr.org/m/157130/>

These maps are two zoomed in viewers of the previous map. They were developed using OpenStreetMap and include much more information than the previous map such as location titles, street name and other types of context information.

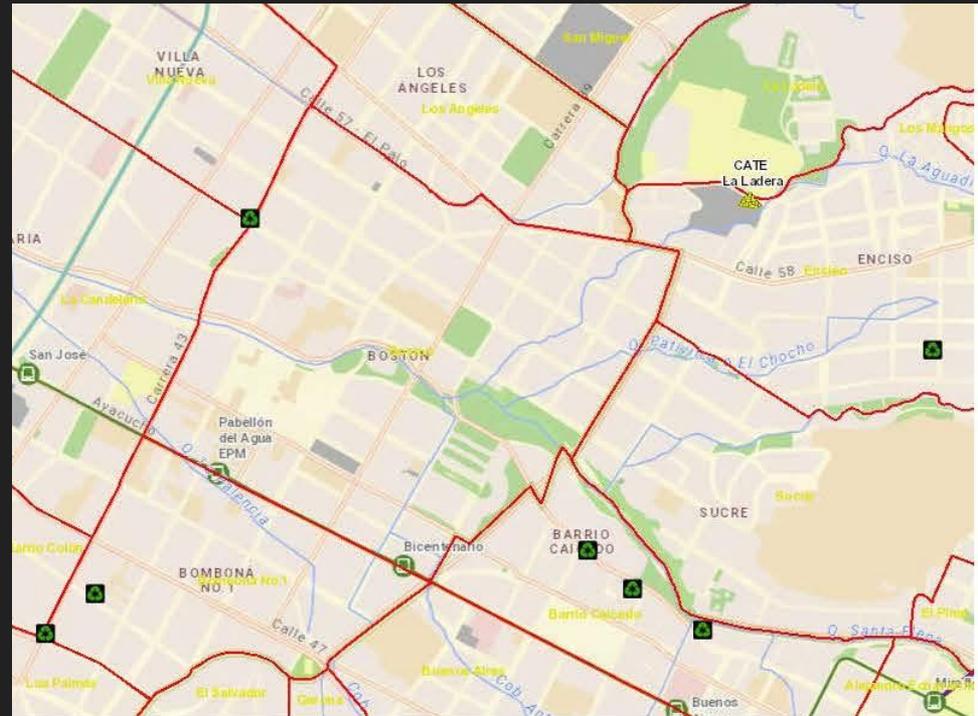


These maps are both accessible on OpenStreetMap: [Http://u.osmfr.org/m/157130/](http://u.osmfr.org/m/157130/)





These maps were created by the glass research group and they communicate two items: 1. points within the Bostón neighborhood where recyclables could be bought 2. points within the Bostón neighborhood where recyclables could be sold.



The plastic group researched all informal dumpsters and post baskets (a common alternative to public garbage cans - posted on light and electricity poles) throughout the neighborhood of Boston and georeferenced these points using ArcGIS. This original 2C map on the right locates informal waste dumps and waste bins that have been nailed to electric posts throughout the Boston neighborhood.



They also researched and georeferenced distributors of plastic throughout the neighborhood of Boston in ArcGIS. This information can be seen in the map to the left which identifies all plastic distributors throughout the neighborhood of Boston.