An aerial photograph of a dense urban neighborhood, likely Cascais, Portugal, with a semi-transparent orange overlay. The buildings are multi-story and packed closely together. The text is centered over the image.

# Smart Used Cooking Oil Collection System Cascais' Circular Economy Model

CASCAIS Para toda  
a vida

Cascais Ambiente is the brand encompassing all services provided by EMAC - Empresa Municipal de Ambiente de Cascais, E.M., S.A., whose shared capital is held entirely by Cascais Municipality.

**1040**

Direct employees

**~215.000**

Inhabitants served



# Operational Areas



Urban  
Cleaning



Separate and Unsorted  
Waste Collection



Ecological  
Management



Urban Green Space and  
Agricultural Ecosystem  
Management

# WHY improve used cooking oil collection in Cascais?

1

Only 8-10% of the cooking oil purchased and used in households is deposited in specific collection equipment.

2

The remaining used cooking oil end up in the wastewater system or in the unsorted solid waste system.

3

Used cooking oil contaminate wastewater, making it more difficult to treat and increasing the cost of treatment.

4

Used cooking oil in the wastewater network attracts other solid waste and clogs pipes, leading to costly maintenance and dissatisfaction among residents.

5

Waste of resources: used cooking oil can be reintroduced into the economy and used to produce biofuels, detergents, and molds for industry.

6

The spillage of used cooking oil on public roads and outside the collection containers contributes to poorer urban cleanliness.

# WHAT do we do?



Making our daily  
lives easier



Improve and increase the  
number of oil collection  
points in Cascais



Increase collection  
capacity and efficiency



Integrated technology:  
fill sensors, geolocation



Maintaining Door-to-door  
awareness service quality

# HOW do we innovate?

With our experience of green bags for bio-waste, we have found that the more convenient and simpler the system is to explain, the more people sign up to it.

We sought out partners with innovative solutions: we didn't want to invest in models that don't work – we wanted to get it right the first time.

We involve academia to analyze principles, compare options and inform future choices.

We have launched a pilot project in Cascais (Carcavelos-Parede parish) that will serve as a basis for the final decision for the municipality.



# Pilot Project

SIX GROUPS with different approaches

Control group - does not receive kit, message, or approach from narrator

Treatment group 1 - receives only the kit

Treatment group 2.A - receives kit + message (printed on the kit)

Treatment group 2.B - in the first phase, receives kit + message (printed on the kit) and, in the second phase, receives only the kit

Treatment group 3.A - receives kit + message (printed on the kit) + approach from the narrator

Treatment group 3.b - in the first phase, receives kit + message (printed on the kit) + approach from the narrator and, in the second phase, receives only the kit

Distribution of a box containing information on the separation of used cooking oil and an easy-to-use solidification kit



Door-to-door awareness raising

## PARTNERS

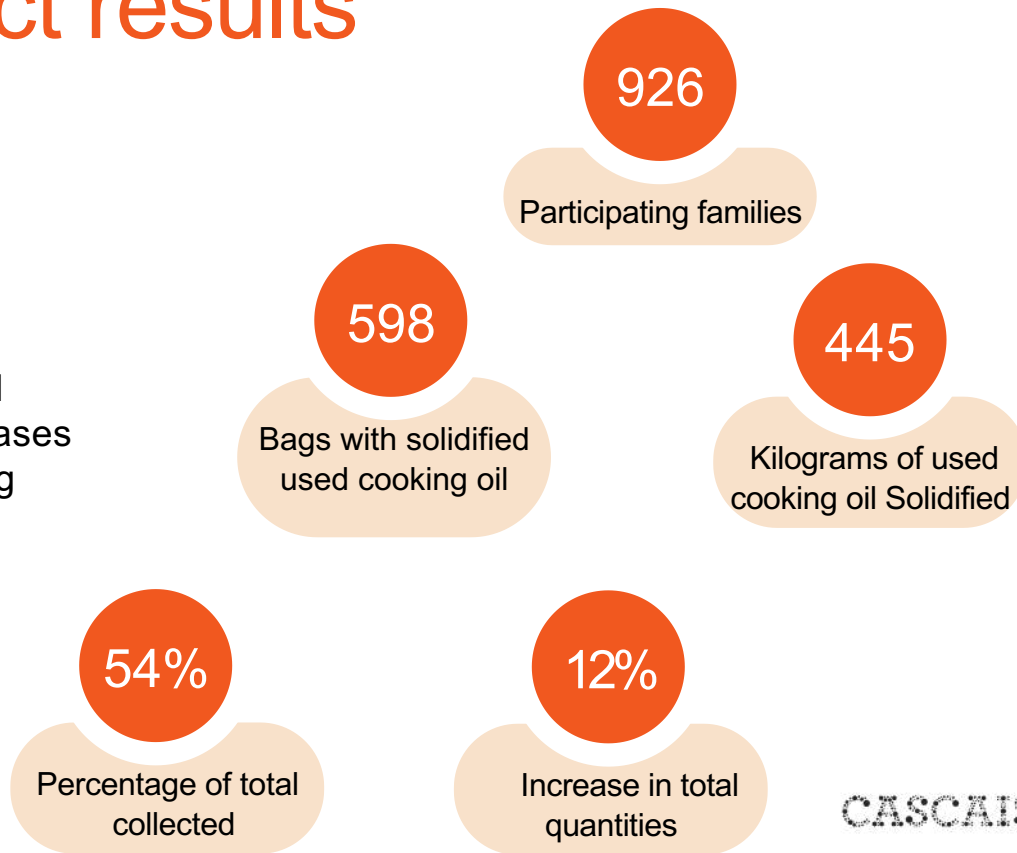
- Cascais Ambiente
- Greencatch
- NOVA School of Business and Economics
- Department of Economics, University of Warwick
- UCL Behavioral Environmental Economics Team (BEET)

# Pilot project results

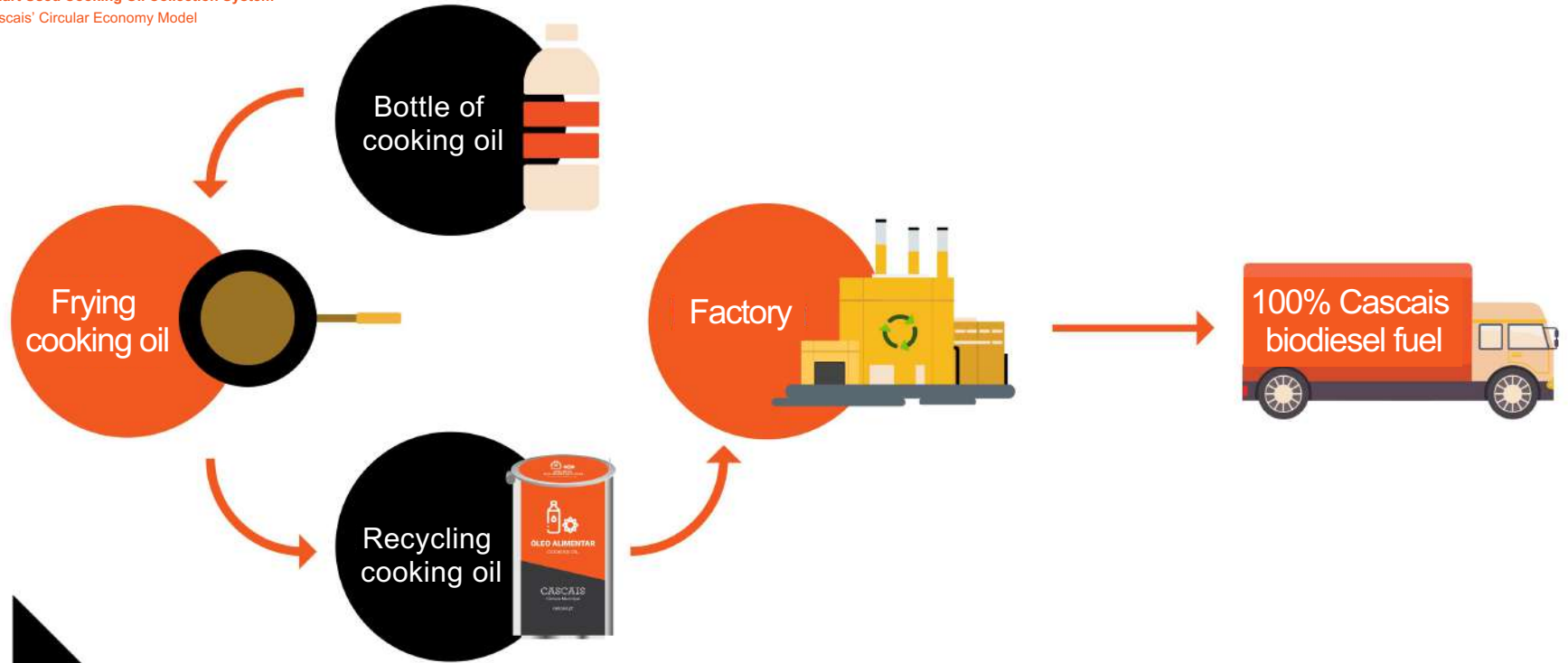
From 26 November 2024 to 15 January 2025

## CONCLUSIONS:

The solidification of used cooking oil increases convenience, which increases people's participation in the recycling and subsequent recovery process.



Notes: comparison with 2 months of collection in 2024



# Recycling process

# Implementation

Extend the strategy to the entire municipality:

- Contracting through public tender of a specialized supplier for collection, according to fill levels;
- Automated data communication for collection and information to residents;
- Delivery of used cooking oil to advanced biofuel producers;
- Transformation of used cooking oil into biodiesel, HVO (green diesel) or SAF (green aviation fuel) for incorporation into fuel;
- Supply of 100 new oil collection points placed in strategic locations;
- Equipment and communication line consistent with that existing in Cascais.



Cascais was awarded the Political Innovation Award in the Circular Economy category at the 2025 Innovation in Politics Awards.



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cascais.pt

