EcoLogistics

Low carbon freight for sustainable cities

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

ICLEI Local Governments for Sustainability

Bogota's zero emission vehicle and operational models

The city is implementing four operations models to assess the performance of zero-emission vehicles for last-mile distribution in different city zones with challenges of air quality and GHG emission reduction.

www.bogota.gov.co

Colombia
Bogotá DC,
Cundinamarca

1.775 km²
Total Area

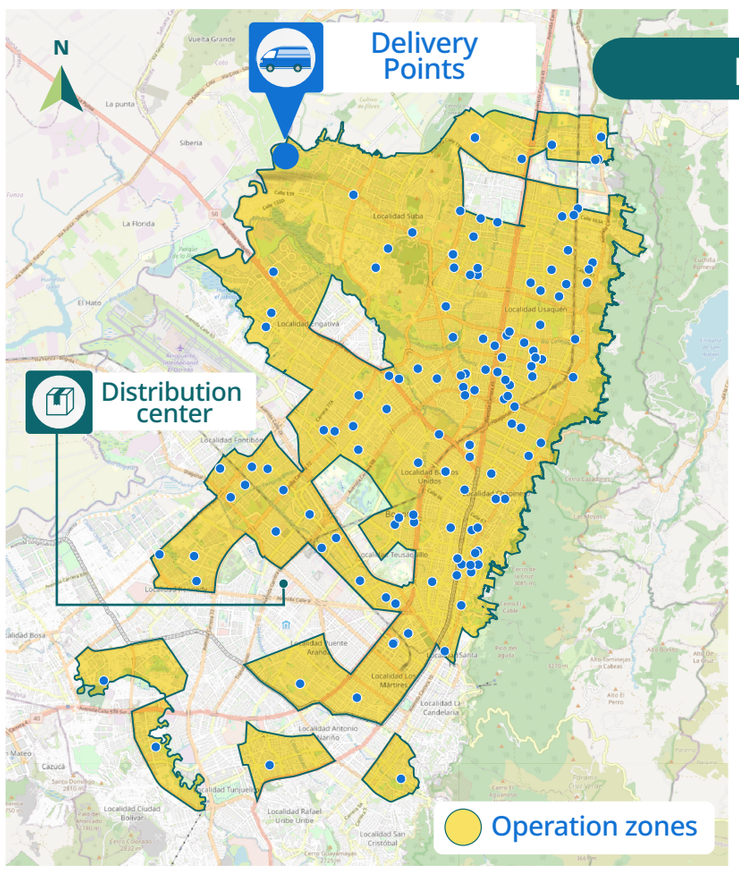
7.834.167 (Bogotá District Planning Secretariat)
Estimated Population in 2022

28,5 billion COP
Municipal Budget

This project generated relevant information for decision-makers on which type of vehicle is best suited for different operational and geographic conditions. Therefore, it showed areas of the city in which electric vehicles are efficient for freoght and distribution operations.

The analysis of the four models as a whole allows a comparative evaluation between different types of vehicles under different geographic and operational conditions.

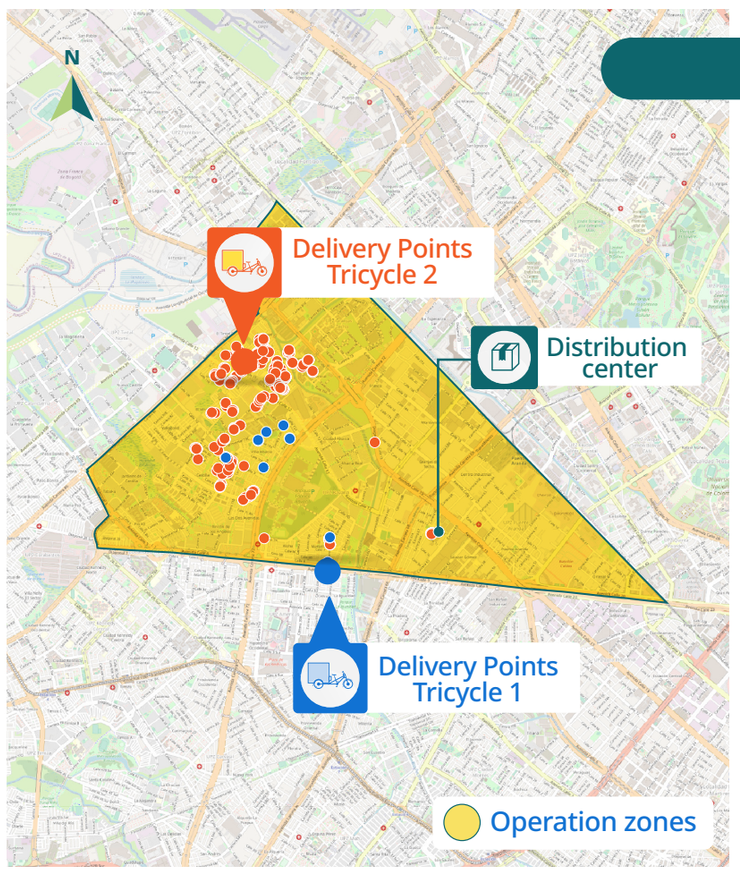
Model 1



Power: 60 kW / 40 HP
Autonomy: 230 km (in optimal conditions)
Performance: 6,0 km / kWh
Capacity: 1.000 kg
Freight generator: Comercial Nutresa
Vehicle supplier: Transportempo
59 days of operation

Pilot from Sept 27 to Dec 30, 2022

Model 2



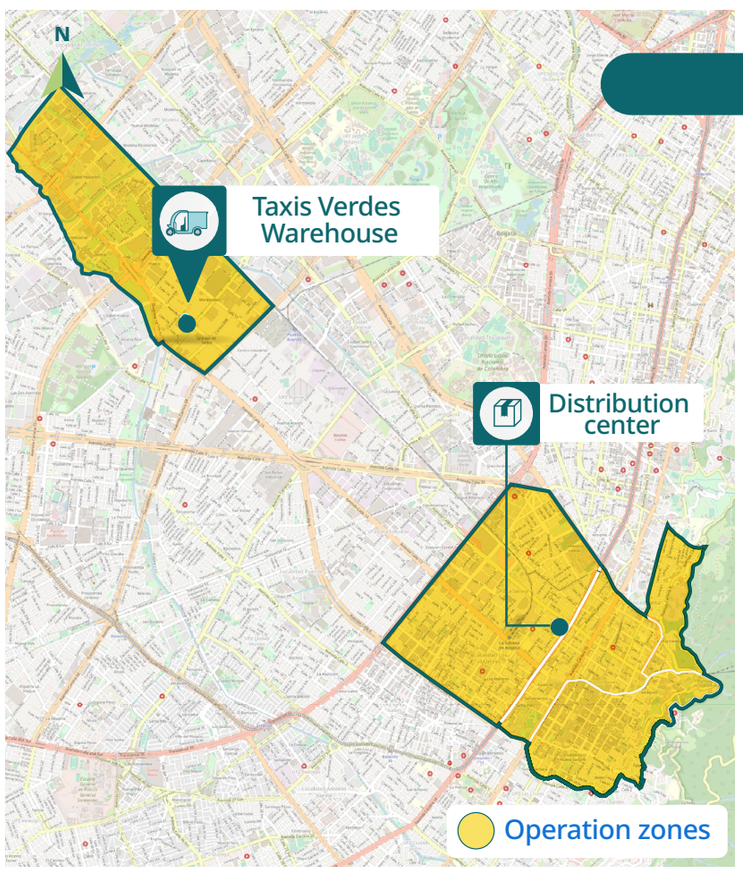
Power: 750 W (Nominal) – Limited 500 W
Loading time: 4 to 6 hours
Performance: 35 km per battery charge
Payload: 250 kg (not including the driver)
Freight generator: Comercial Nutresa
Vehicle supplier: Lola Te Mueve
Logistic Operator: Líder Aliado
25 days of operation of two e-trikes

Pilot from Oct 4 to Oct 29, 2022

Model 1, one diesel combustion truck, was replaced by one electric van, delivering packaged food throughout the city from a distribution center in Puente Aranda, which is one of the city districts with air quality problems and high industrial activity.

Model 2, one gasoline-powered van was replaced by two electro-assisted tricycles delivering packaged food throughout an area that does not exceed a 3 km radius of operation.

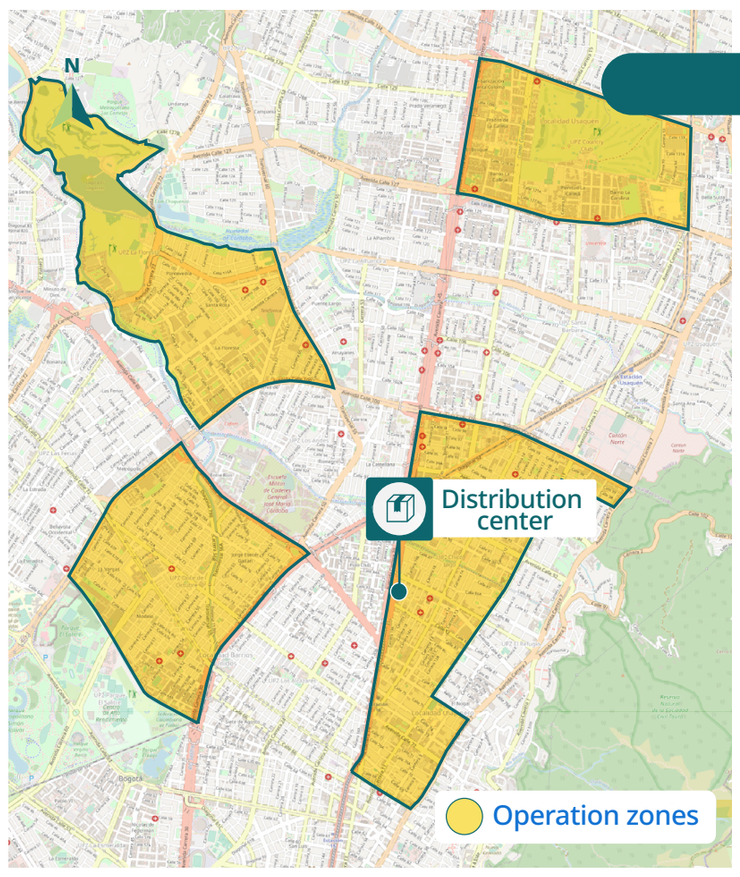
Model 3



Power: 1.000 W
Autonomy: 40 to 50 km
Payload: 400 kg
Freight generator: Taxis Verdes
Vehicle Provider: EcoTriciclos
25 days of operation

Pilot from Nov 1 to Dec 30, 2022

Model 4



Power: 1.000 W
Autonomy: 40 to 50 km
Payload: 400 kg
Freight generator: Quick
Vehicle supplier: EcoTriciclos
25 days of operation

Pilot from Nov 1 to Dec 30, 2022

Model 3, one gasoline-powered motor truck, was replaced by one electric three-wheeler distributing and collecting goods, mainly parcels.

Model 4, two gasoline-powered motorcycles were replaced by one electric three-wheeler, distributing medical devices in a specific area of operation. This model allows assessing the possible trade-offs between electric vehicles with higher load capacity versus low autonomy ones.

Partners

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Results *

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Environmental Impact

	Model 1	Model 2	Model 3	Model 4
CO_2-eq emissions per kilogram transported *(kg CO_2 eq/kg)*	0,049	0,002	0,006	0,003
CO_2-eq emissions per delivery *(kg CO_2 eq/delivery)*	3,3	0,005	0,182	0,111

Logistics Performance

	Model 1	Model 2	Model 3	Model 4
Average kilograms of goods delivered per kilometer by vehicle *(kg / km)*	7	4	9	20
Average distance traveled per hour in route *(kg / hour)*	10	5	9	10
Average number of deliveries that a vehicle can accomplish per hour in route *(deliveries / hour)*	1	9	2	3
Average number of deliveries a vehicle can accomplish per kilometer *(total deliveries / km)*	0,09	2,25	0,27	0,3
Average kilograms delivered per operating hour *(kg / hour)*	65	18,3	62,2	195

Economic Impact

		Model 1	Model 2	Model 3	Model 4
Operation cost per month of zero or low-emission vehicles	*COP*	$ 355.470	$ 4.970	$ 36.132	$ 2.231
	USD	$ 74,1	$ 1,04	$ 7,53	$ 0,47
Operation cost of transporting one kg of product per kilometer traveled in zero or low-emissions vehicles	*COP kg/km*	$ 0,55	$ 27,86	$ 0,39	$ 32,65
	USD kg/km	$ 0,00011	$ 0,0058	$ 0,00008	$ 0,0068

Social Impact

Perception of the project direct beneficiaries (community, neighbours, shopkeepers, merchants, clients) around the areas of the project implementation

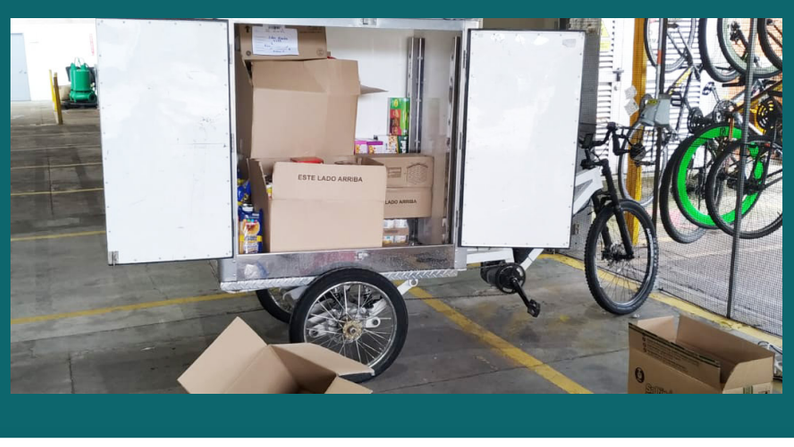
95% of **citizens support** the use of **electric vehicles** for **last-mile** distribution

Perception of satisfaction of drivers and employees of the freight companies/bussiness involved in the project in the operation of zero-emission or low-emission vehicles

100% of the drivers are **Satisfied** or **Very Satisfied** with their work

50% of the **employees** of the companies involved in the project are **"Satisfied"** or **"Very Satisfied"** with the pilot

* The results reported here were obtained on the dates on page 1 for each model and refer to the total number of operational days on which these models were performed



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