



CityCatalyst

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Introduction

About us



Open Earth Foundation

Open Source to fight climate change



Evan Prodromou

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Technical lead

CityCatalyst – Greenhouse Gas Inventories for Cities

The screenshot displays the CityCatalyst web application interface. The top navigation bar includes the CityCatalyst logo, the name "CityCatalyst", and links for "Dashboard" and "Learn". On the right, there is a language selector set to "EN" and a user profile for "Evan Prodr...".

The main content area features a large blue header with the "Rio de Janeiro" city profile. To the left of the city name, there are two key statistics: "355.3 ktCO₂e" (Total Emissions in 2022) and "6.2M" (Total Population). To the right of the city name is a map of Rio de Janeiro. Below the city name, a dropdown menu is open, listing several cities: Montreal, Canada; Rio de Janeiro, Brazil; Trieste, Italy; Mendoza, Argentina; Rio Branco, Brazil; Camaçari, Brazil; Corumbá, Brazil; Caxias do Sul, Brazil; and an option to "Add a new city".

At the bottom of the interface, there are two white boxes with green borders. The left box is titled "Add data to inventory" and contains a green icon of a document with a plus sign. The right box is titled "Download & share" and contains a blue icon of a document with a download arrow.

Add data to inventory
Upload data or connect third-party data to complete the GPC Basic Emissions Inventory

Download & share
View and download your inventory data in CSV or GPC format and share your progress

What is a greenhouse gas inventory?

Accounting

For all greenhouse gases emitted by or within a city

Purpose

Ordered

By sector, gas, scope

Hierarchy

Standard

GHG Protocol for Cities

Format

Why it matters

Measurement leads to climate action

Cities that track emissions are more likely to act

Necessary for investment

Grant-makers require an inventory

Coordination with other actors

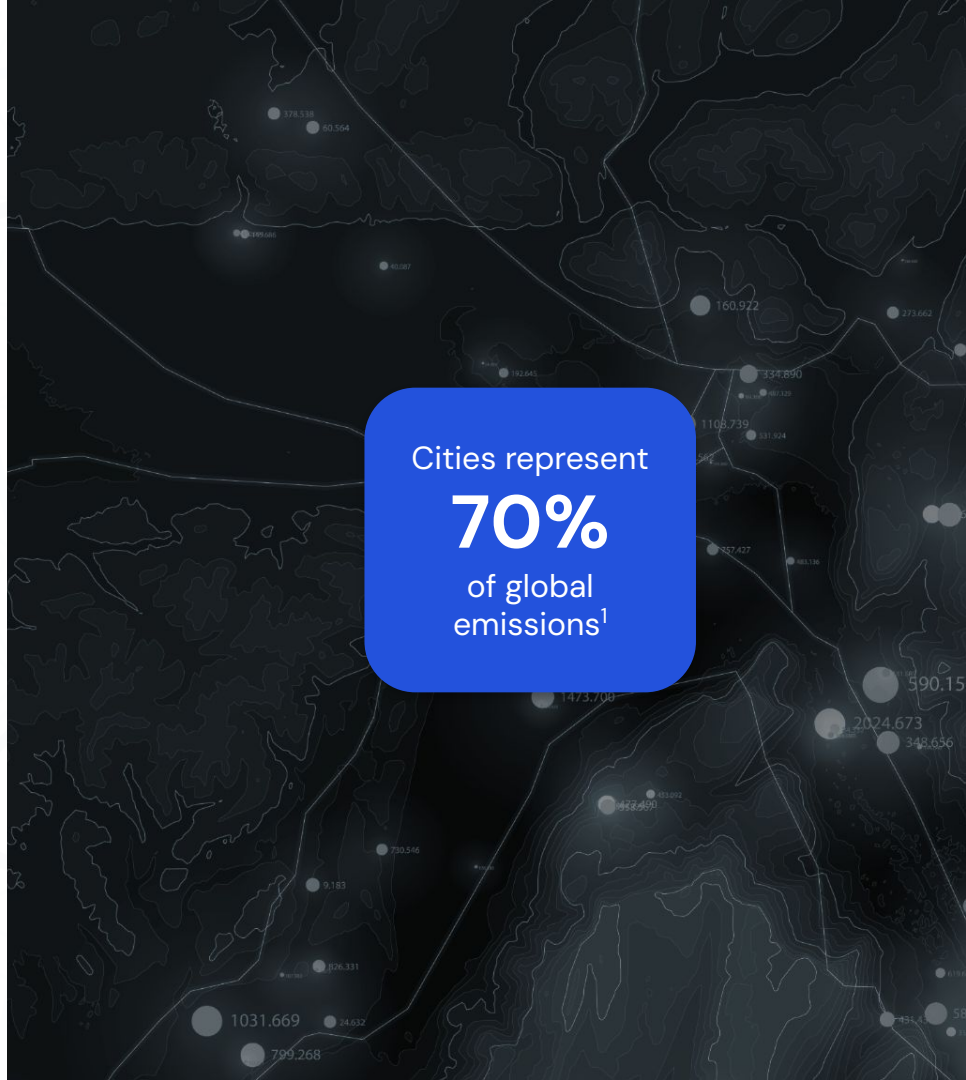
Regional, national, corporate

Transparency for citizens

Holding city governments accountable

Cities represent

70%
of global
emissions¹



Challenge

Only 5% of Cities Have a Greenhouse Gas Inventory

Data

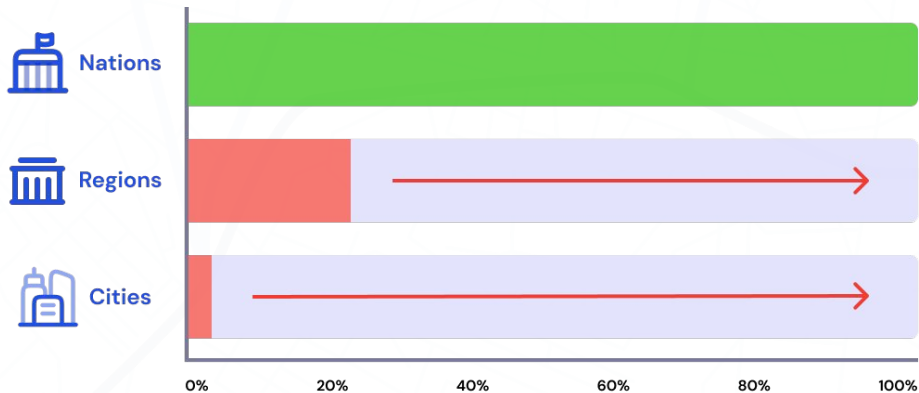
For every sector

Access

Personnel

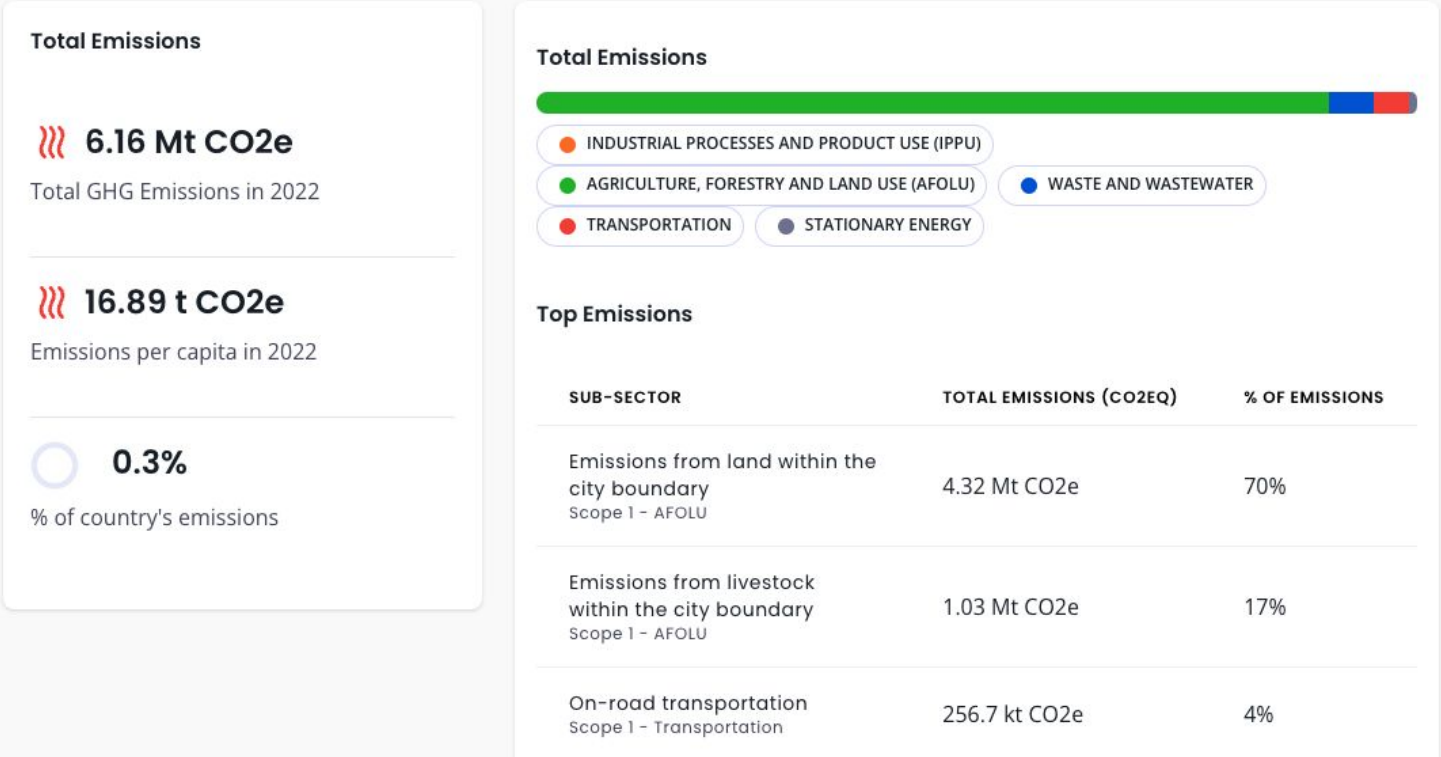
Of input and output

Reliability



Web App For GHG Inventories

See your city's emissions totals for the year



Global Data Warehouse For Easy Integration of Data

Add Data to Complete Your GHG Inventory

Add data or connect third-party data for your city and complete your city's emission inventory using the GPC Basic+ methodology. [Learn more](#) about GPC Protocol

Select Sector

Select and fill in the necessary data for the relevant sector to build a comprehensive GHG inventory.



Stationary energy

This sector deals with emissions that result from the generation of electricity, heat, and steam, as well as their consumption.

Scope Required for Basic+ GHG: 1, 2, 3

+ ADD DATA



Transportation

This sector deals with emissions from the transportation of goods and people within the city boundary.

Scope Required for Basic+ GHG: 1, 2, 3

+ ADD DATA



Waste and wastewater

This sector covers emissions generated from waste management processes.

Scope Required for Basic+ GHG: 1, 3

+ ADD DATA



Industrial processes and product use (IPPU)

This sector covers GHG emissions from industrial processes that transform materials, such as in steel production and chemical manufacturing.

Scope Required for Basic+ GHG: 1

+ ADD DATA



Agriculture, forestry and land use (AFOLU)

This sector covers emissions from agriculture, forestry, and land use changes, including livestock, land clearing, and activities like fertilizer application and rice cultivation.

Scope Required for Basic+ GHG: 1

+ ADD DATA

ASK AI

Guided data input for locally-sourced data

Add emission data

×

Building Type

Commercial / Institutional

▼

Fuel Type

Natural Gas

▼

Total fuel consumption

32,180

Liters (▼

Select emission factor type

IPCC Emission Factor Database (EFDB ▼

Emissions factor values

CO2 emission factor

514.08

kg/m3

N2O emission factor

0.3

kg/m3

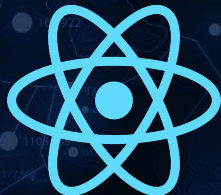
CH4 emission factor

0.8

kg/m3

How we built it

NEXT.js



chakra



FastAPI



- Built using React, TypeScript, NextJS, ChakraUI, Postgres, Sequelize, AuthJS, Nivo, Pigeon Maps, Zod, i18next, decimal.js, ...
- Separate API for accessing data sources that different instances can connect to (because the individual data sources are very large) built on Python, FastAPI
- Data pipeline with Python, Pandas, and Mage AI to process large data sets into GPC standard and group by individual cities

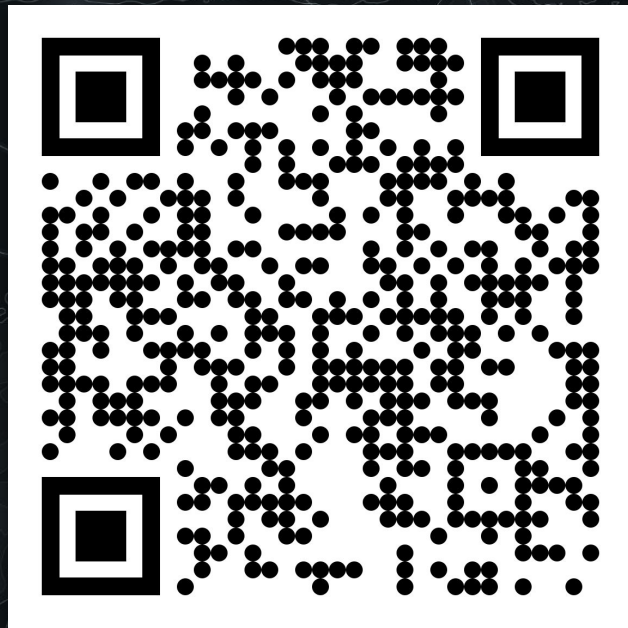
Brazil Pilot Project

- 50 cities in Brazil are getting a climate inventory (GHGI), climate action plan (CAP) and climate change risk assessment (CCRA) in this pilot project
- Collaboration with [I Care Brasil](#) for attaining the relevant data sources to supplement the publicly available ones
- 5 cities have been completed, the remaining ones are being finished in the next 2 months

How to **contribute**

- Create issues to report bugs or propose features
- Open pull requests
- Reach out to us

<https://github.com/Open-Earth-Foundation/CityCatalyst>





CityCatalyst

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