The UPSURGE Project Final Conference

Guiding Cities to Deliver Regenerative Urban Transformation

UPSURGE innovations for a holistic NBS environmental sensing and effectiveness monitoring

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OpenContent SCARL

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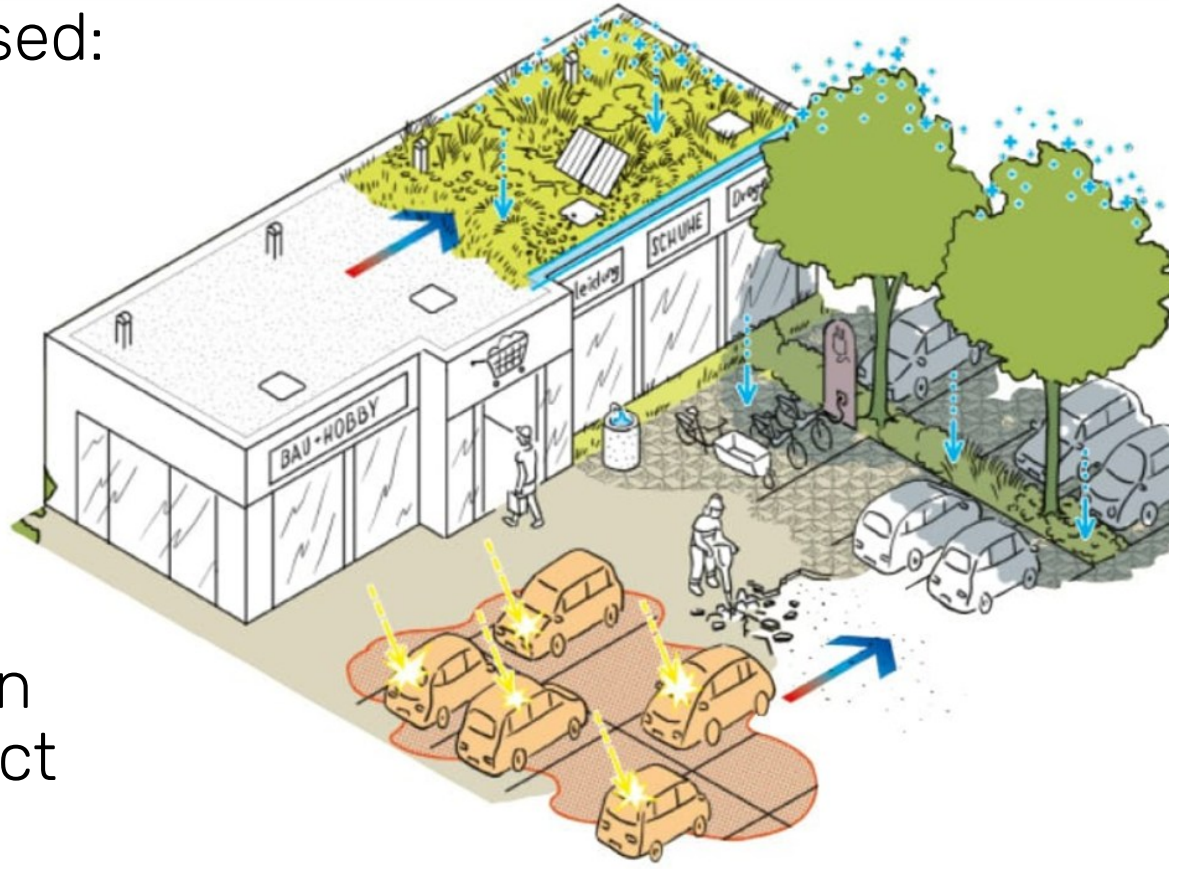
This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003818

Giving feedback on the interventions

With regards NBSs, so far we've discussed:

- choosing;
- implementing and scaling; and
- engaging with communities



But we need a way to get better data on the needs of the cities and on the impact of our interventions…

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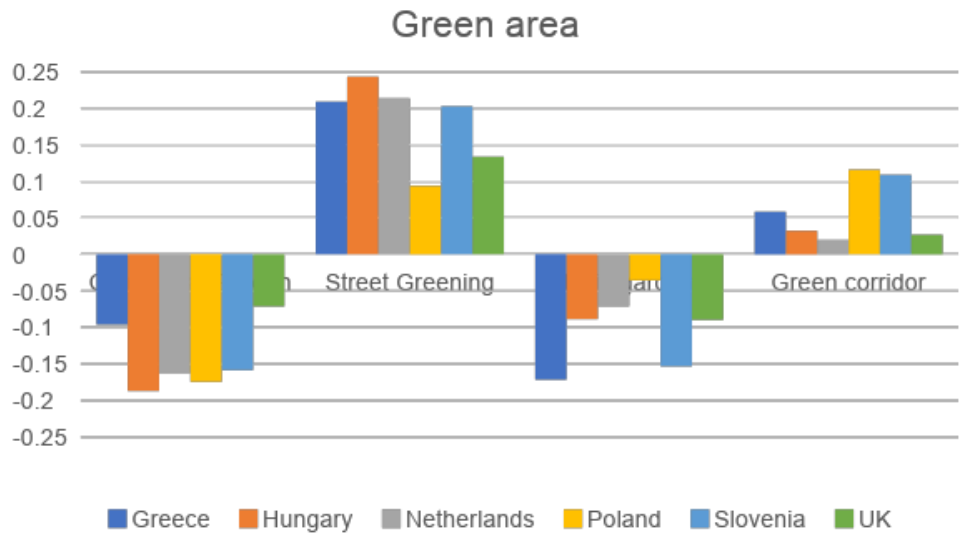
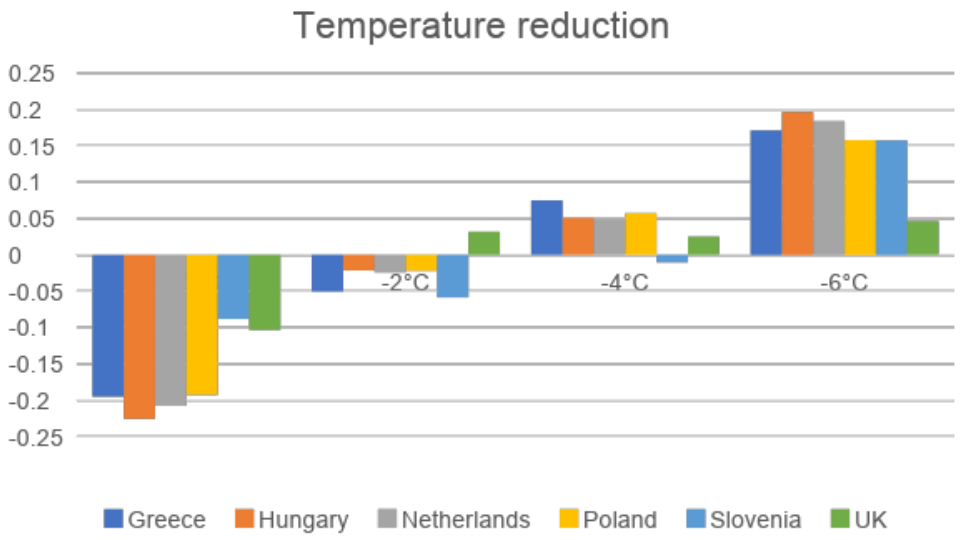
There are no one-size-fits-all solutions

A cross-country partner survey[1] organized at the start of the project revealed that different situations, cultures and social classes may react differently to the same interventions





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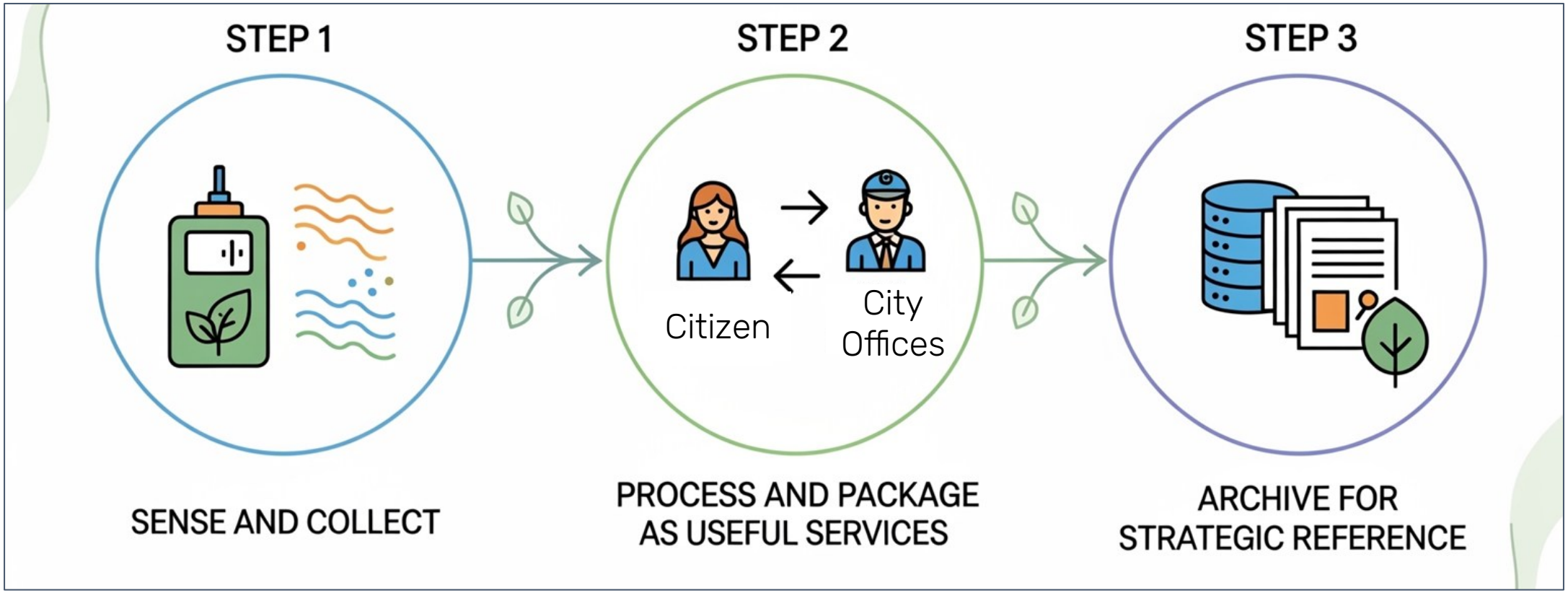
Our sensing for feedback approach in a nutshell



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1. Sense and collect

Data is collected from sensors installed in each of the cities

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Collection of data start per city

BUDAPEST	2024-01-01
KATOWICE	2024-03-04
BREDA	2024-03-14
MARIBOR	2024-09-27
BELFAST	2024-03-09

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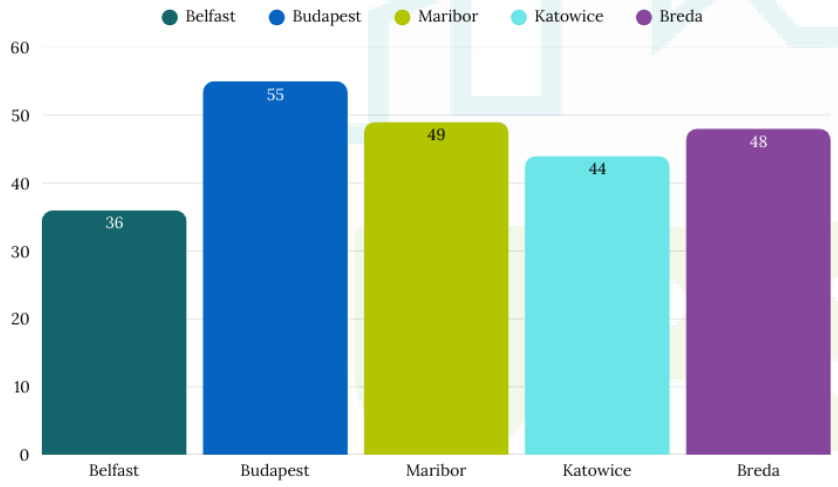
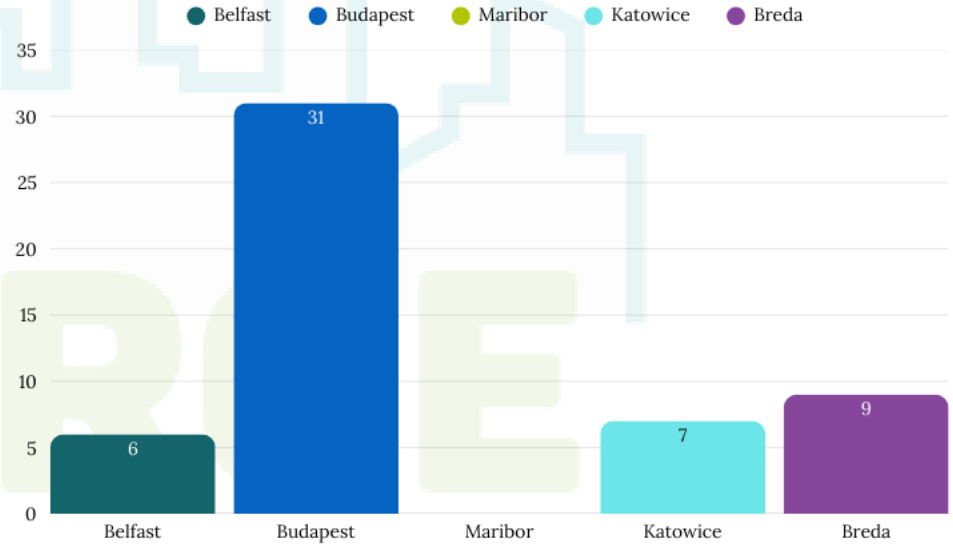
Sensors Deployed

- Budapest: Airqino + Atmotube
- Breda: Airqino + Atmotube
- Maribor: Airqino + Atmotube
- Katowice: Atmesys + Atmotube
- Belfast: Airqino + Atmotube

Active Sensors





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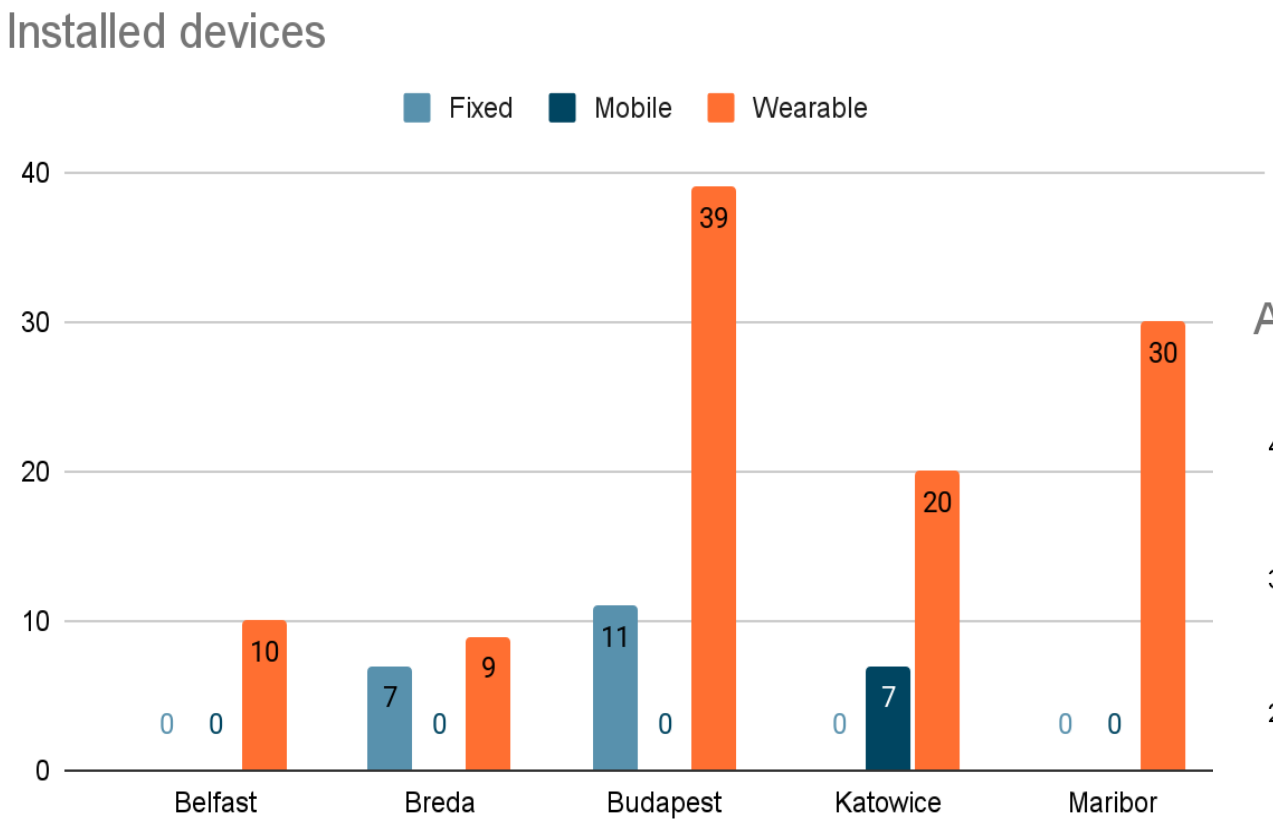
Deployment System

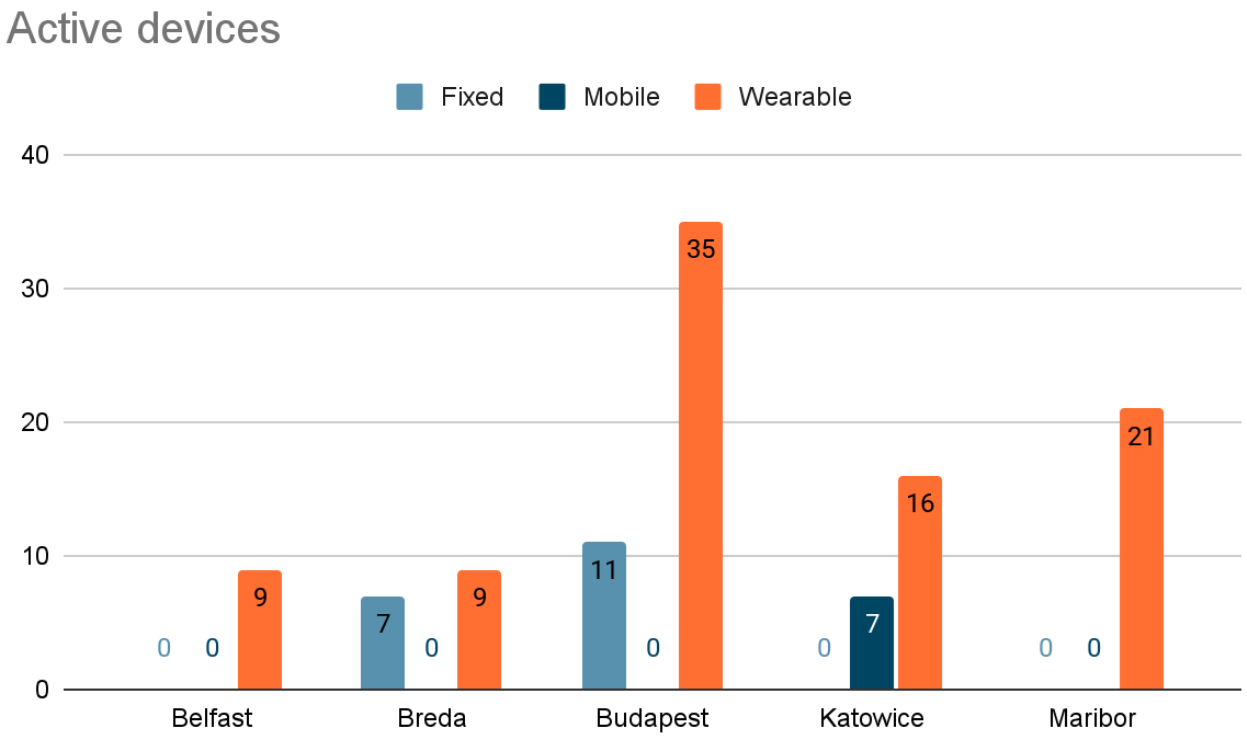
Data collected report @ 30/01/2026

Installed devices: **133**

Active devices: **115**

Collected records: **2,604,190**





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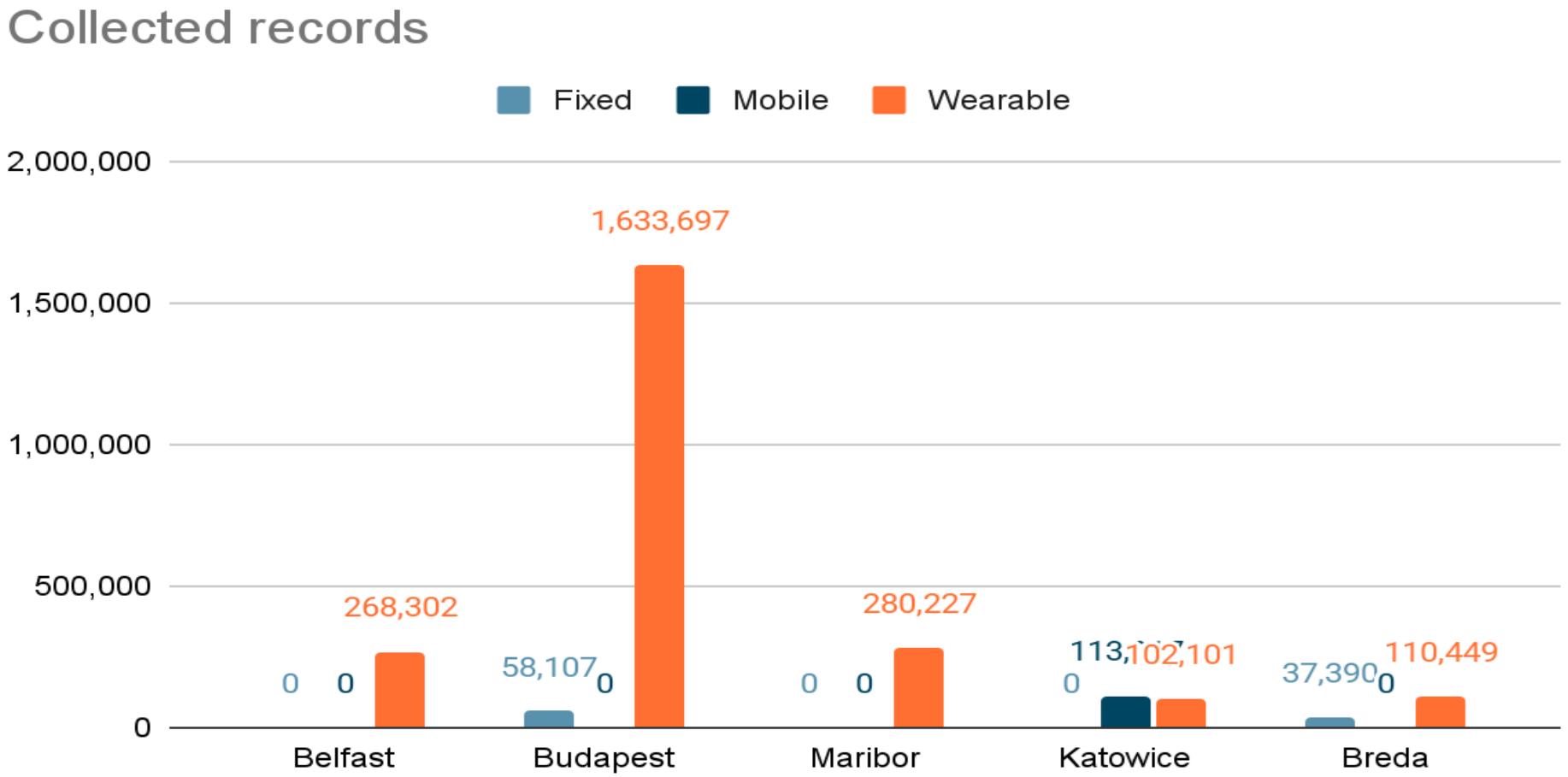

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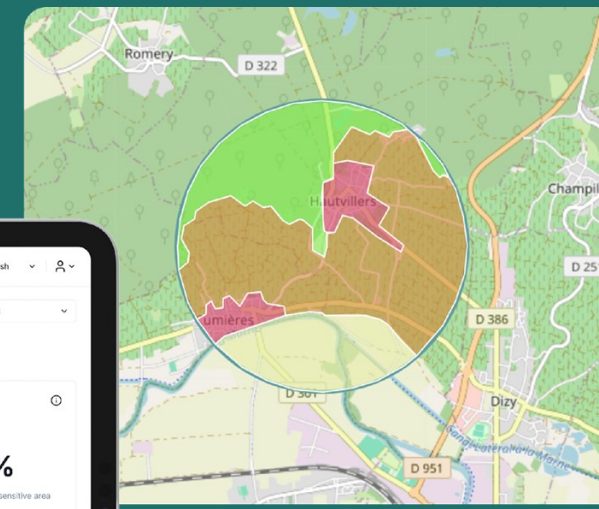
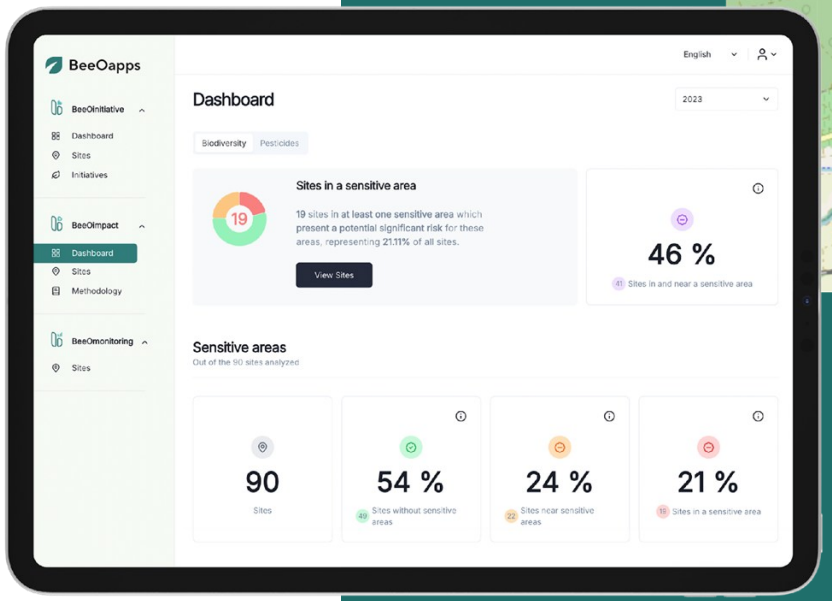
BeeOmonitoring

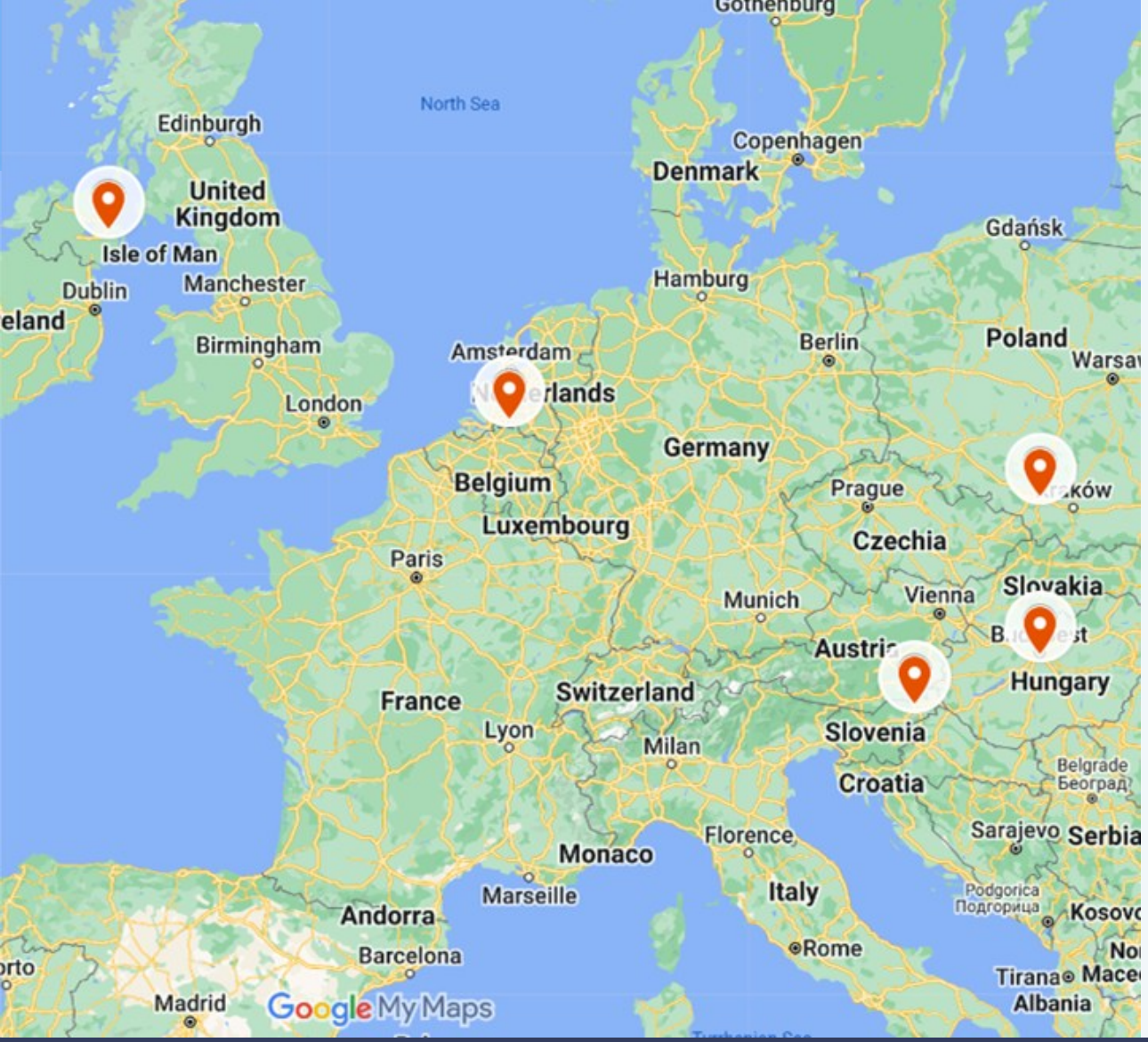
Analyzing pollen to measure biodiversity and pollution levels.

- **Agri Pollution**
  >510 pesticides, nitrates,...
- **Pollution**
  Heavy metals, PAH, Dioxins, Furans, PCBs, PFAs, ...
- **Biodiversity**
  Plant species & birds, insects, ecosystem
- Measure pollution & health impact
- Trace origin of pollution
- Identify lack of biodiversity

The bees, acting like natural drones, collect samples of pollen over large areas.







Scope of the mission

- **5 STUDY AREAS**

2023/P1	Budapest Breda Katowice
2023/P2	Maribor
2024/P1	Belfast
2025/P2	PROJECT END

Timeline...

mid-April — P1 — end of May — P2 — mid-July — P3 — end of August — P4 — mid-October

Summary

1

Plant diversity

2

Pesticides

3

Metal elements

Example: Budapest executive summary

Results 2023/P1 - 2025/P2

	2023				2024				2025
	P1	P2	P3	P4	P1	P2	P3	P4	P2
Plant diversity									
Pesticides									
Heavy metals									

BeeOdiversity creates value by providing data, measurement solutions, actions and strategic advice to help companies and public entities become leaders in biodiversity and gain economic, environmental and social value out of it.

+100

CLIENTS

in diverse sectors incl. food & beverage, nature restoration, industries, real estate; public authorities

+25

COUNTRIES

with activities on 4 continents

+10

AWARDS

for our platforms and work

+35

EMPLOYEES

Experts, Consultants, IT team, Business developers

2. Process and package as useful services

The captured data is meant to be processed and converted into human-facing services for its use and enrichment.

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Data processing

Once the provider of sensors in near real-time relays the data to our platform, Operate cloud must be able to support:

- **Ingestion**: Saving raw data (data lake layer)
- **Data normalization**: The data is also normalized, and invalid outliers are eliminated, which can
sometimes arise from sources such as uncalibrated or faulty monitoring stations.
- **Enrichment**: Enrich raw data with third-party data such as weather data (more have to be defined)
- **Data aggregation:** such as organising data insights and data time series (aggregation layer)
- **Exposing** the data via webapi (API layer)

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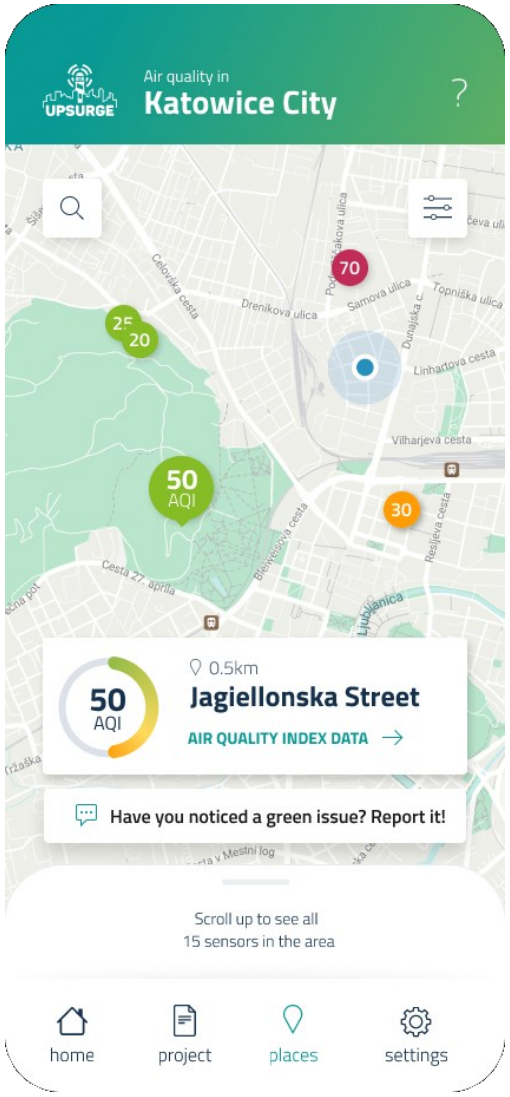
Citiair: Citizen services and sensing

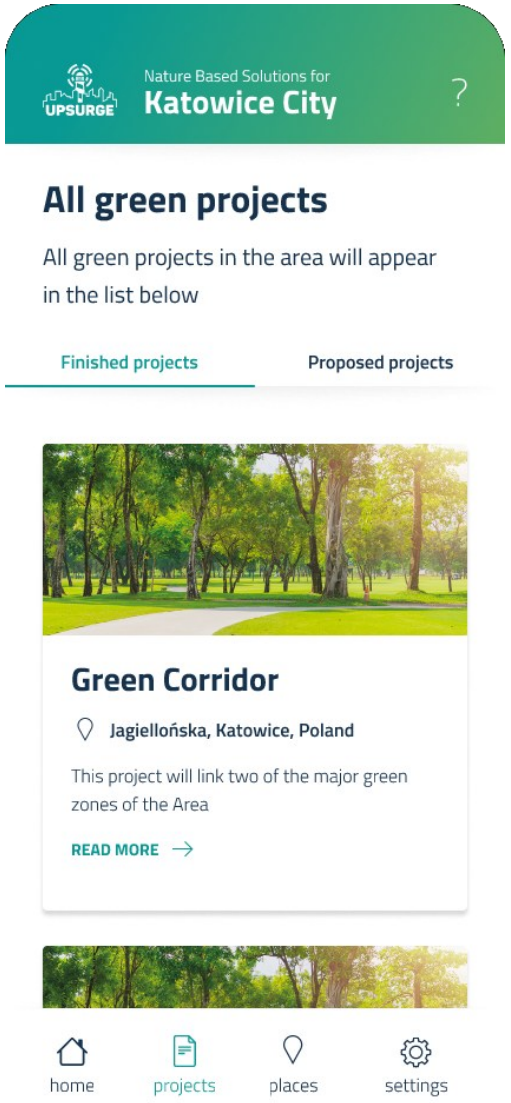
What is it?

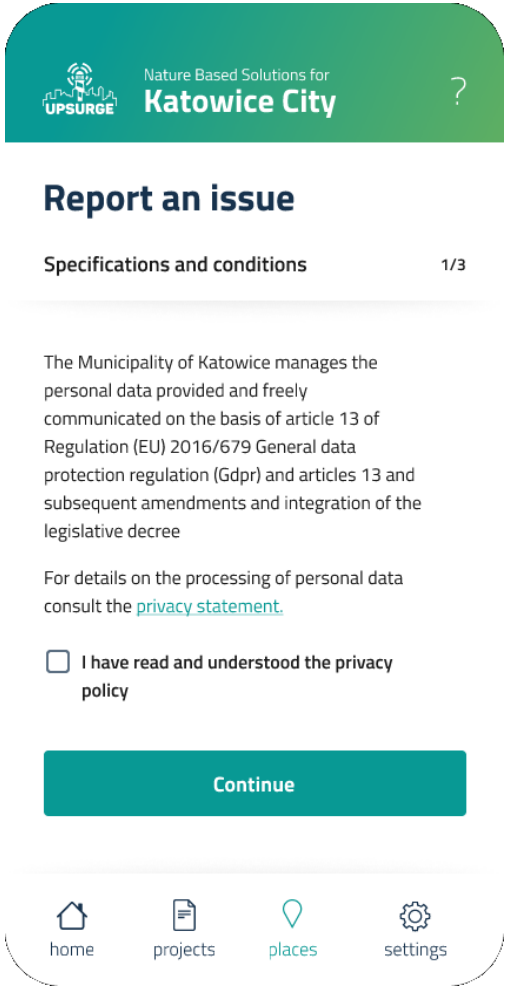
- A mobile application designed to provide air quality information to citizens
- Provides health recommendations and localized air quality forecasts.
- It also allows citizens to provide feedback and vote on NBS initiatives

For who?

- For individual citizens concerned about air quality and, in general, with the ecological state of their city.







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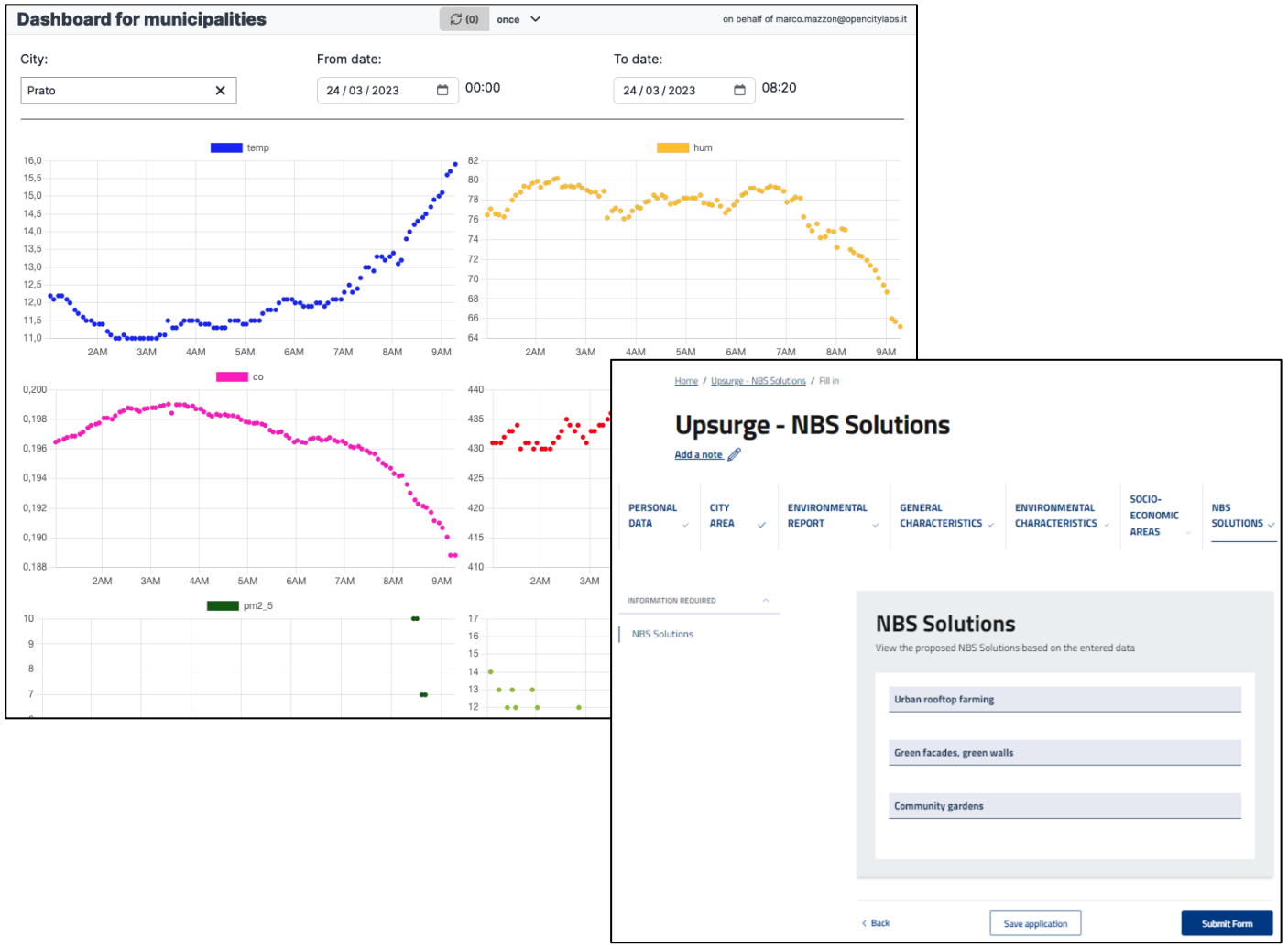
Stakeholder Dashboard: feedback+services for cities



What is it?

- A companion website to the CitiAir app, it features
  a. a real-time air quality dashboard,
  b. a catalog of Nature-Based Solutions (NBS) and feedback provided by users through the app
  c. a matchmaking tool for NBS recommendations, and partner finding.

For who?

- For stakeholders involved in managing and improving air quality at a city-wide level

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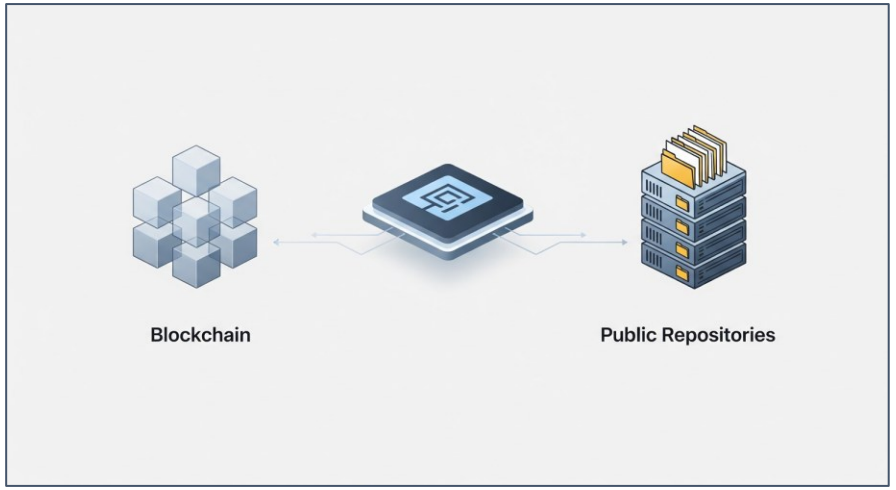
3. Archive for strategic reference

The final objective of all data captured and enriched with multiple data sources and citizen interactions is meant to be archived becoming strategic data for the cities

1. A summary of the data is stored in blockchain store to warrant its immutability and preservation
2. An expanded selection is stored in public repositories, which could also be leveraged for research and strategic analysis



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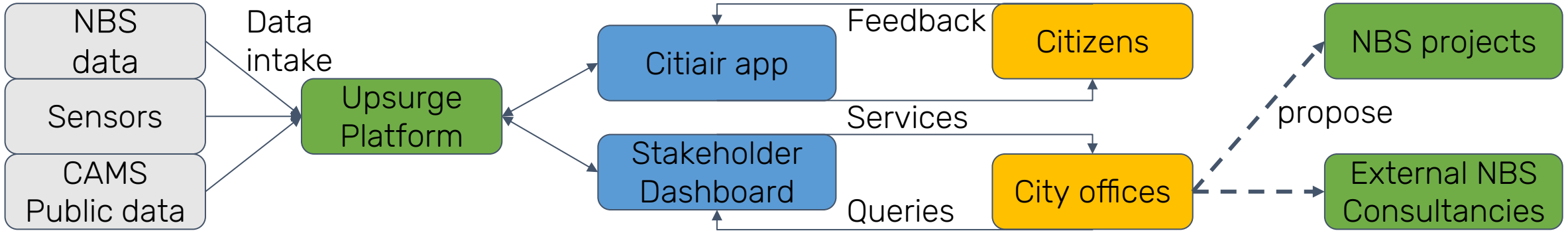
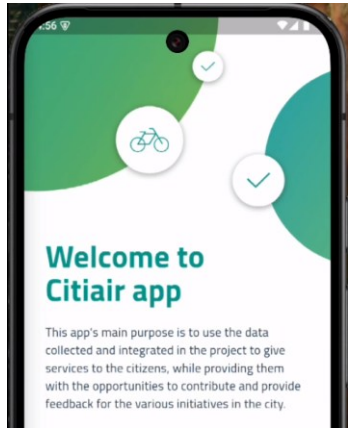
A quick summary before the end



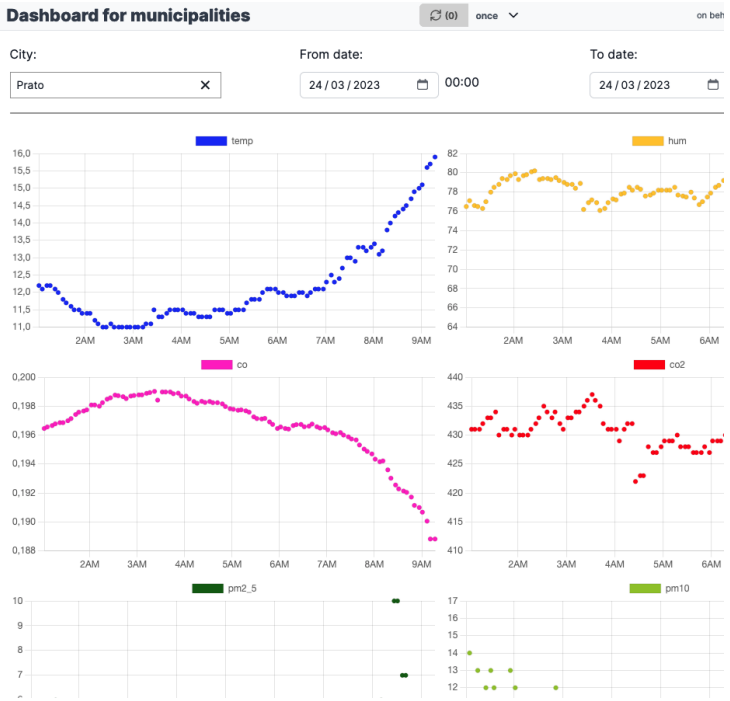
The Citiair app and Stakeholder Dashboard leverage the know-how, the air quality and NBS data produced in the project into:

- Services that the citizens can use
- Intelligence data that the city officers can use to inform policies and new projects



GET IT ON Google Play

Download on the App Store



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City-centered approach to catalyze nature-based solutions through the EU Regenerative Urban Lighthouse for pollution alleviation and regenerative development

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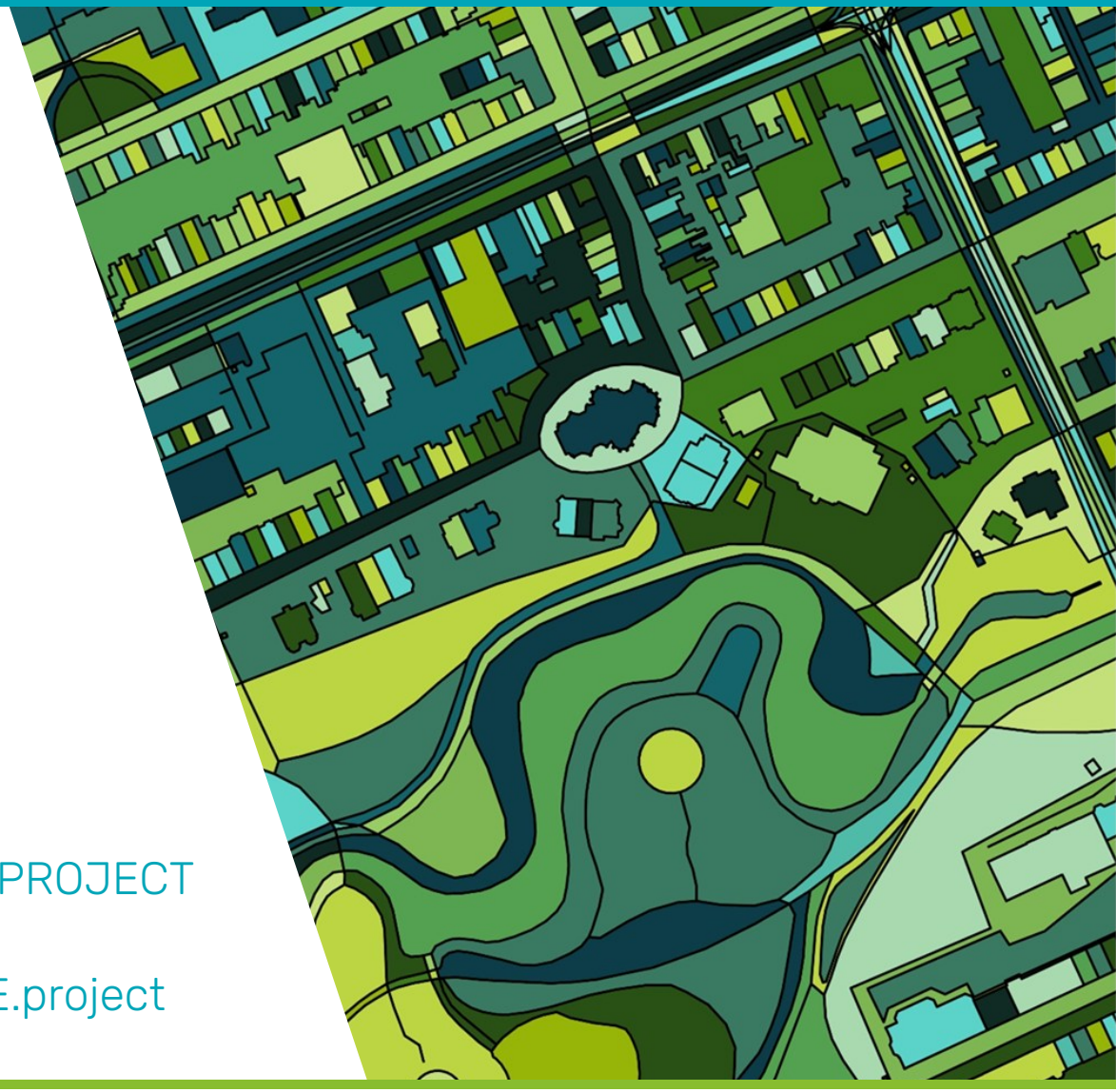

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