

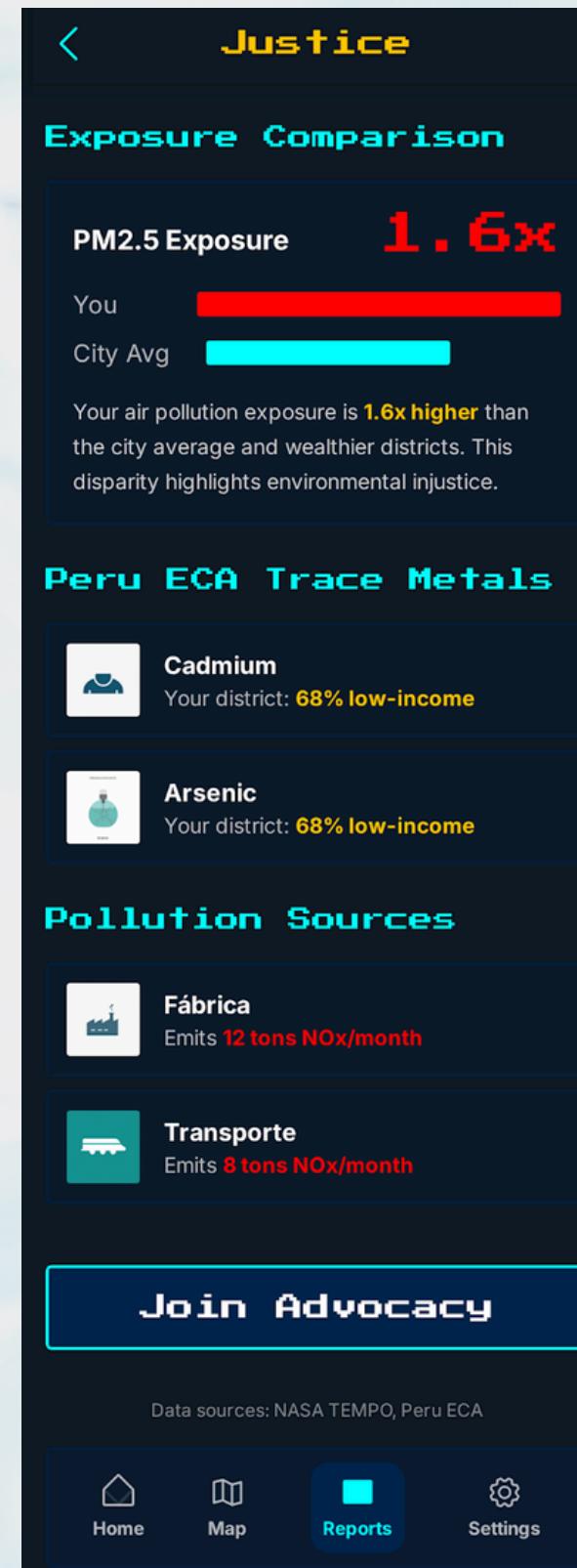
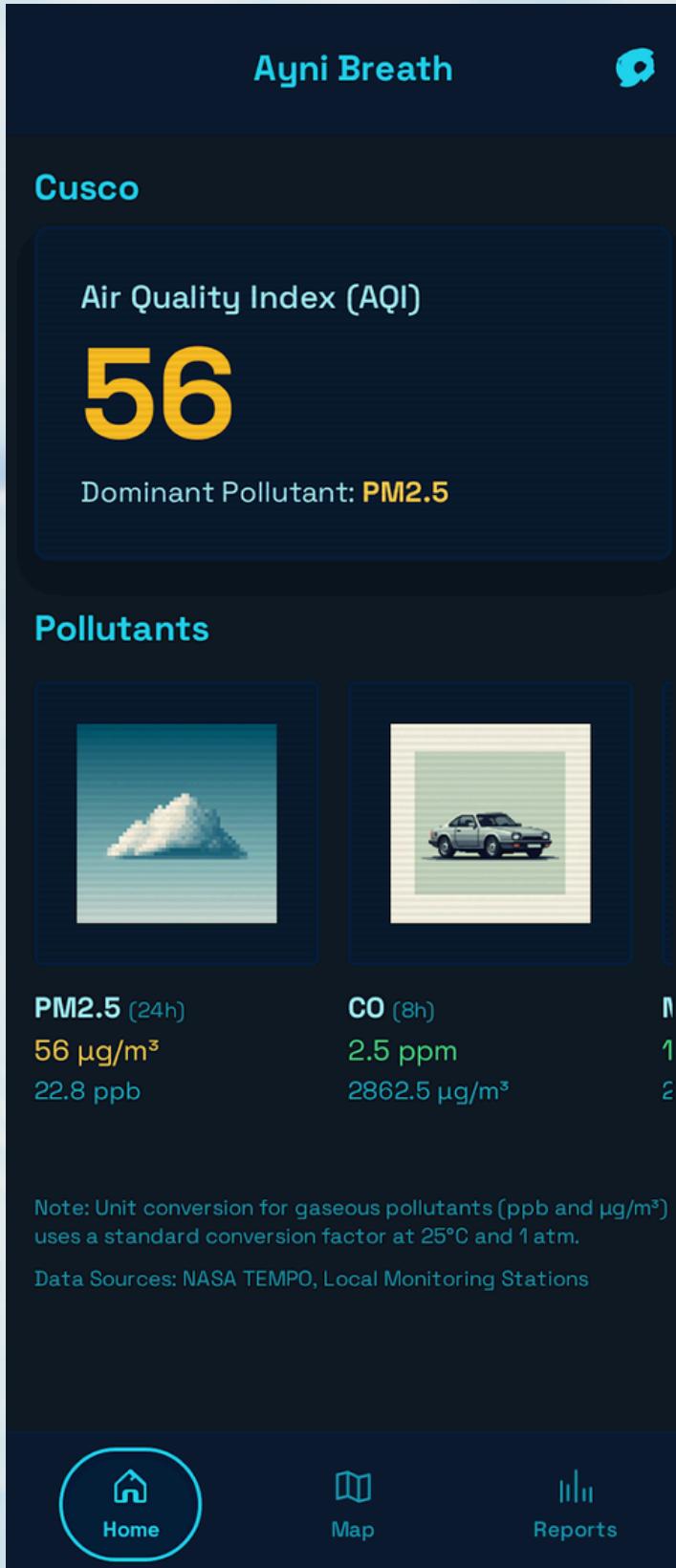
Ayni Breath: Mobile app that alerts about air quality in the area

From late warning to preventive action for clean air

The Problem

- Limited access to real time air quality information, especially in areas without monitoring stations.
- Lack of integration between satellite, meteorological and local data, which makes it difficult to anticipate pollution episodes.
- Absence of accessible predictive tools for citizens and authorities to prevent health risks.

The solution Ayni Breath



Ayni Breath is a next-generation air quality app built for fusing NASA's TEMPO satellite data with ground-based sensor networks (OpenAQ, EPA AirNow) and real-time meteorology to deliver hyperlocal, scientifically rigorous air health insights no guesswork, no oversimplification.

Ayni Breath calculates the true Air Quality Index (AQI) using the exact US EPA methodology:

- Truncation before interpolation (e.g., PM2.5 = 12.09 → truncated to 12.0)
- Dynamic unit conversion from ppb to $\mu\text{g}/\text{m}^3$ using real-time temperature and the NASA-derived formula:
$$\mu\text{g}/\text{m}^3 = (\text{ppb} \times 12.187 \times M) / (273.15 + T)$$
- Correct averaging times: 1-hour for NO_2 , 8-hour for O_3 , 24-hour for PM2.5

Our retro 2D interface inspired by the spirit of ayni (reciprocity) doesn't just show you the air. It shows you why it matters:

- Who's polluting near you?: By overlaying TEMPO's NO_2 plumes with EPA's ECHO facility registry, we identify likely industrial sources power plants, refineries, ports so you know who's accountable.
- Justice Lens: Compare your exposure to city and national averages because clean air shouldn't depend on your ZIP code.

Benefits

01. Prevention:

Anticipates air pollution episodes.

02. Public health:

Reduces population exposure to polluted air.

03. Environmental awareness

Informs and empowers users about air quality.

04. Accessible technology

Real-time monitoring from anywhere.



Strategic Impact

- **Public health:** Alerts aligned with the WHO (AQG 2021) to reduce exposure to PM_{2.5}, NO₂ y O₃.
- **Management and oversight:** Georeferenced technical inputs compatible with the ECA (DS N°003-2017) for MINAM/OEFA.
- **Health response:** Activates DIGESA protocols and communications for preventive actions.
- **Policy and reporting:** Metrics compatible with international standards for planning and compliance.

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