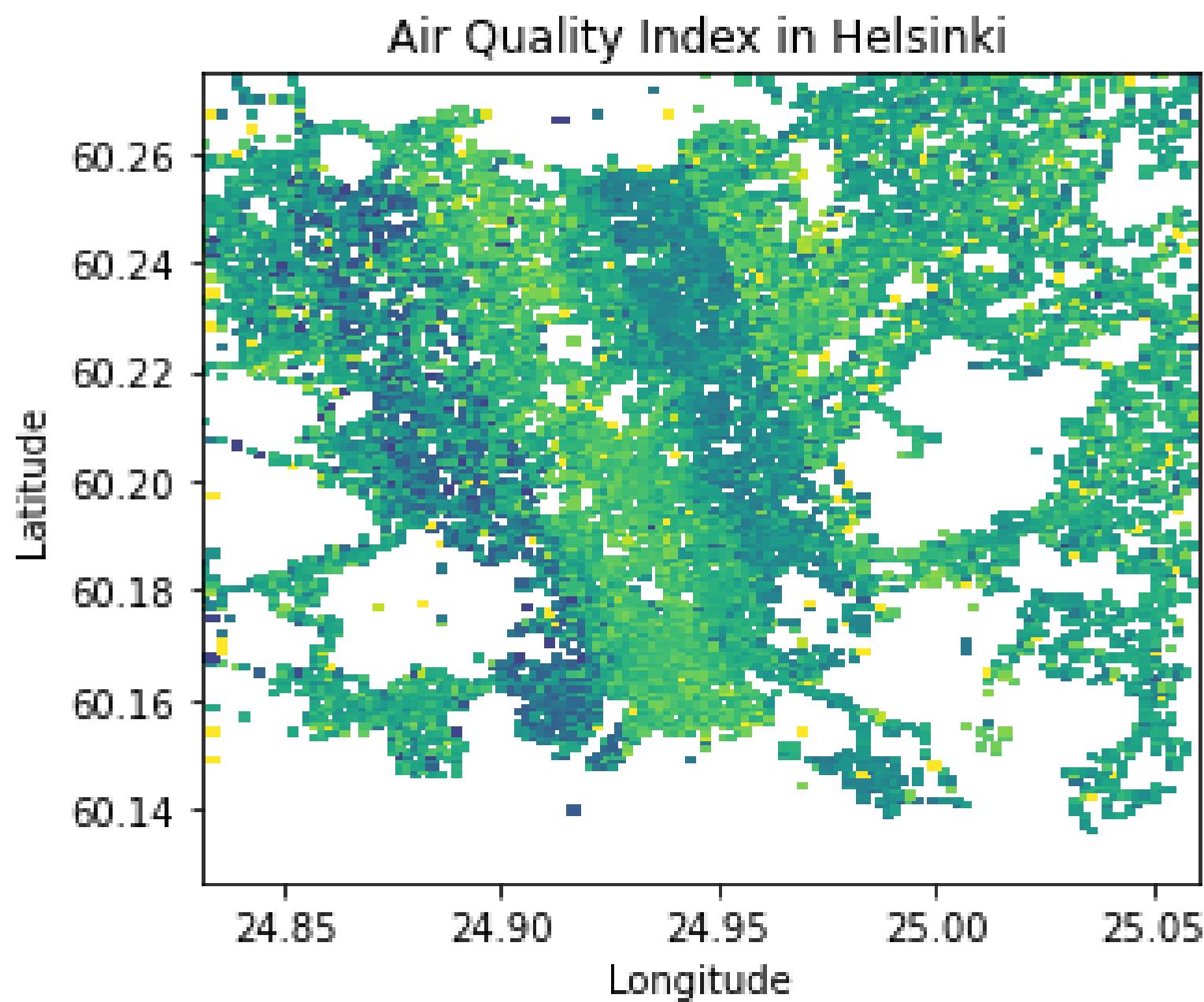


**9 out of 10 people worldwide  
breathe polluted air  
(WHO, 2019)**

Background recreated using Megasense data of  
PM2.5 at downtown area of Helsinki

# HOW IS THE SITUATION IN HELSINKI



53.55%\* of Helsinki territory has regular and bad air quality\*\*.

48.96%\* and 32.25%\* of the locations in Helsinki have levels of PM2.5 and PM10 above the recommended value defined by the EEA\*\*\*.

This represents a public health problem: High levels of PM2.5 and PM10 increase respiratory and cardiovascular morbidity and mortality in the population.

\*Using Megasense Air Quality Index of the city of Helsinki  
{3 months data}.

\*\*Using {3.0} as threshold value.

\*\*\*European Environment Agency.

# WHAT DOES THE DATA TELL US

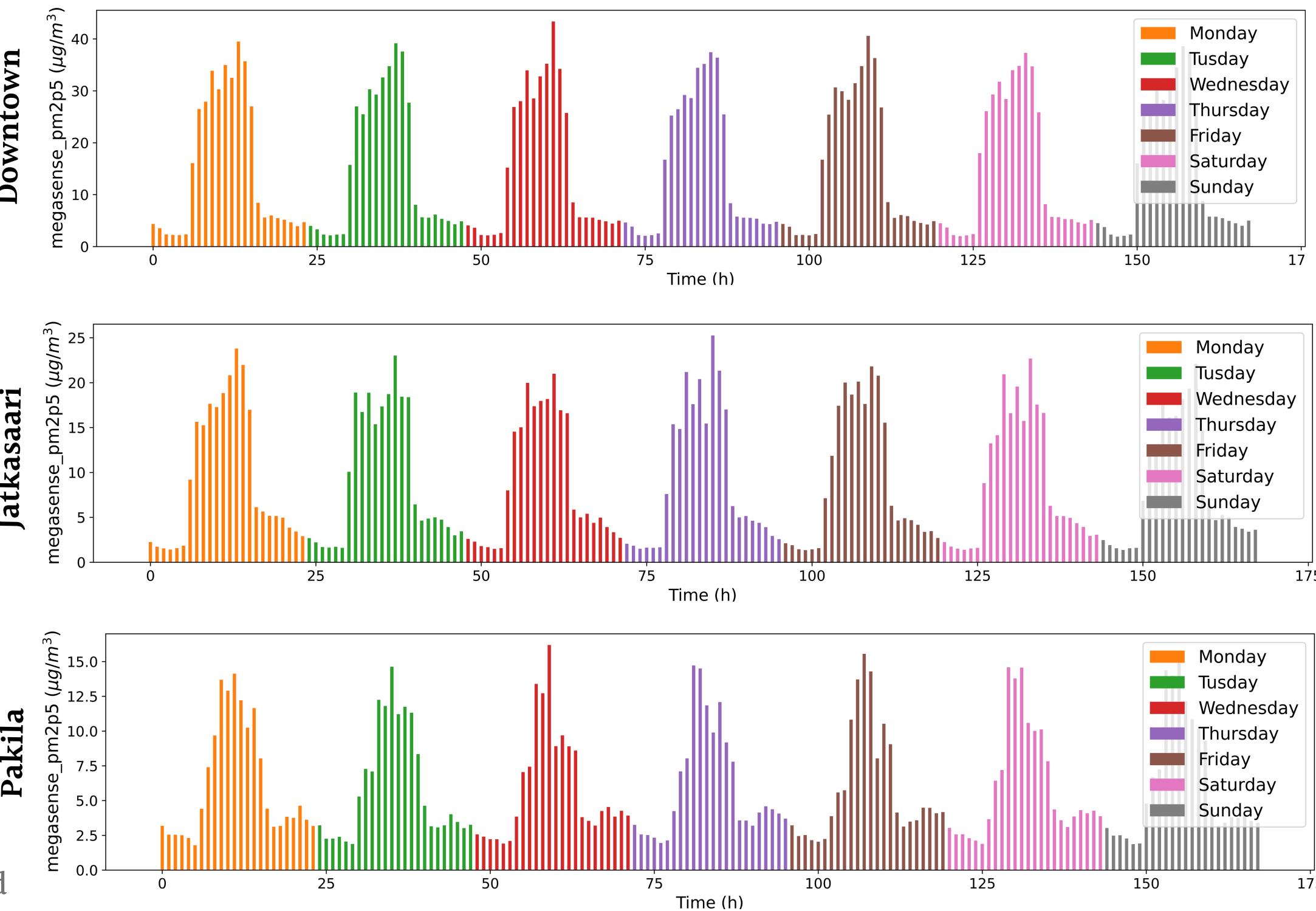


It is a regional problem: Downtown and Jatkasaari are the regions that are facing the highest concentration levels of PM2.5 and PM10\*.

Variations through the day:  
Concentration levels become unsafe from 8:00 until 16:00 for Downtown and from 12:00 until 14:00 for Jatkasaari\*\*.  
Besides, Pakila never reaches the unsafe threshold.

\*Using Megasense Air Quality Data of Downtown, Jatkasaari and Pakila {7 days data}.

\*\*Using {20ug/m<sup>3</sup>} for PM2.5 as threshold value.



# HOW CAN WE OVERCOME THIS ISSUE?

## PM2.5/PM10 Purification towers

### Technology:

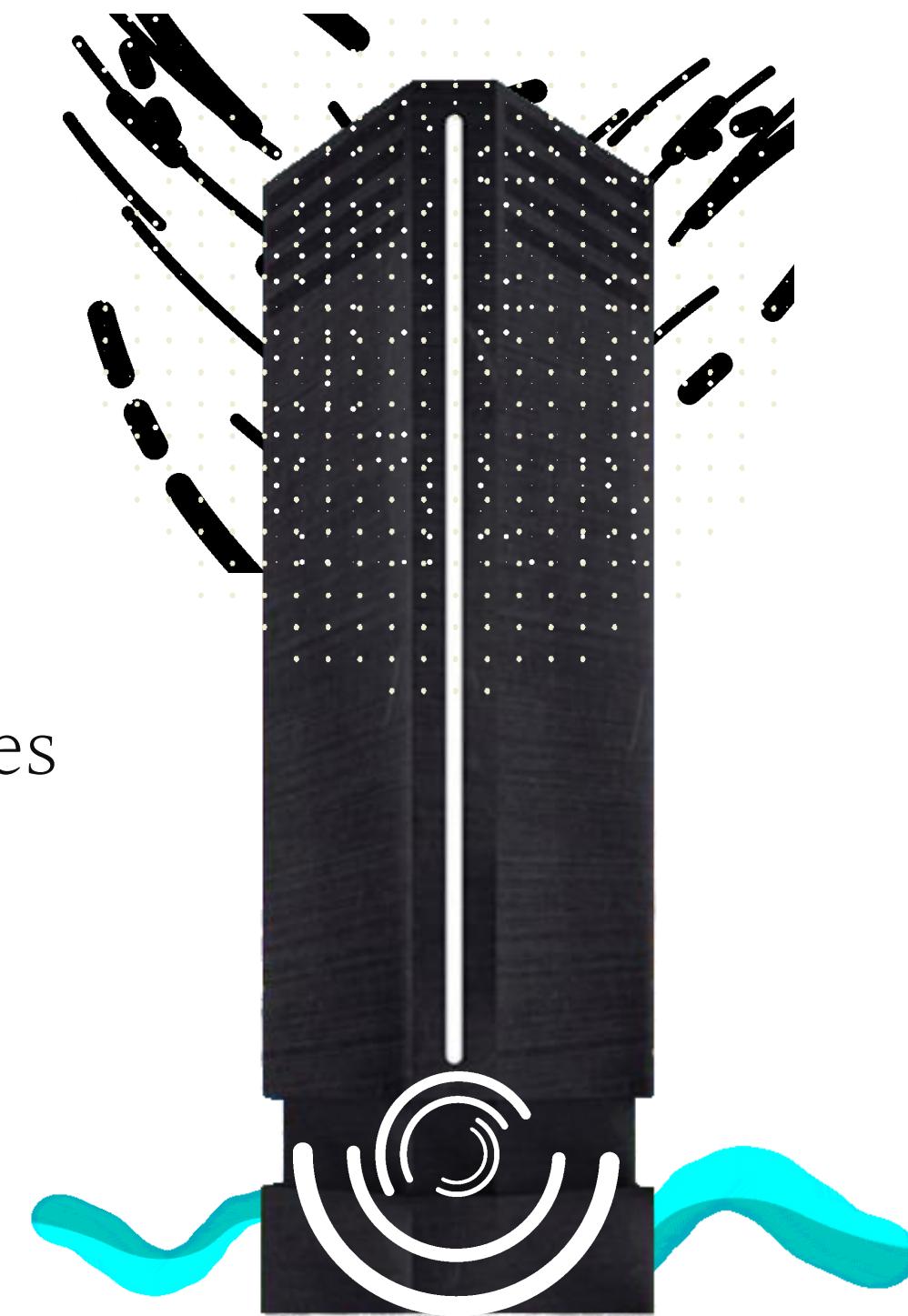
- Silent air turbine.
- Purification process based on Corona discharge\*.
- Steel plates to attract electrical charged particles.
- Low energy consumption LED displays for advertising purposes (2.25 KW/day).
- High air refinement guaranteed by internal sensing.

### Special Features:

- Dimensions of 5M Height x 1.5M Width.
- Daily filtering capacity of 500.000 m<sup>3</sup>.
- Design for effortless and lowcost maintenance.
- AC compatibility \*\*.

\* Electrical discharge caused by the ionization of a fluid such as air surrounding a conductor carrying a high voltage.

\*\*Optional feature to bring clean air to polluted indoor areas.



Prototype developed and tested by Anthraka  
at the National University of Colombia

# SOLUTION

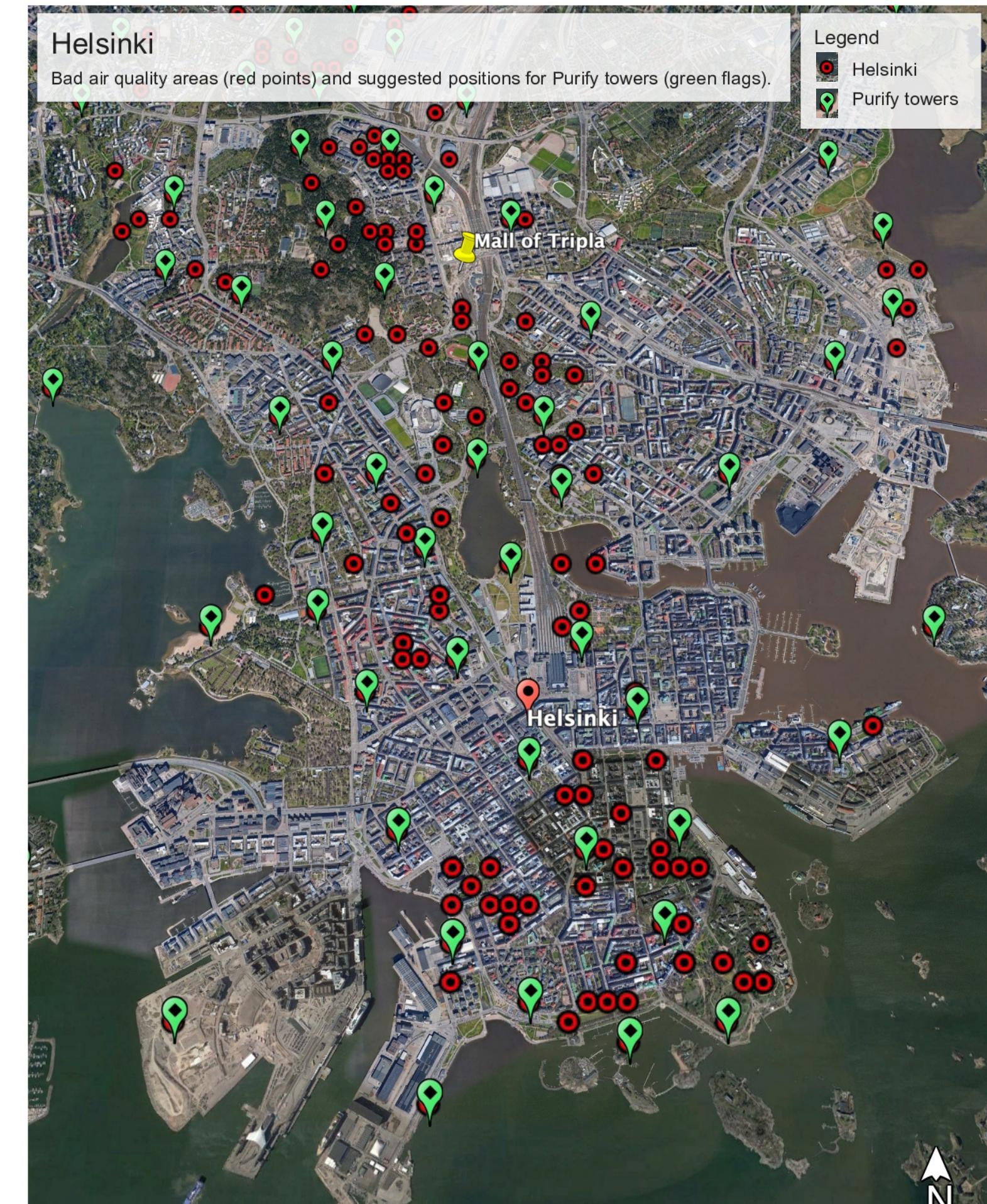
## Personalized for Helsinki

### A regional problem

- Strategical location of purification towers in Downtown and Jatkasaari area.
- Location based on computational geometry optimization models and considering the capacity of each tower (Approx. 500 meter radius).
- We located 195 spots in Helsinki to place Purify towers\* and propose a first year pilot program with 10 outdoor towers (including one near Mall of Tripla) for an initial gross profit of 322K USD\*\*.

\*See appendix for full list of locations: <https://drive.google.com/file/d/1-AW9GSZFItpw3Ga10S5HBcbZ3QC-c-7/view?usp=sharing>

\*\*Not including only-advertising business. For forecast detail, please check the file "Forecast Plan.xls"



Tailored solution for Helsinki based on Air quality index, PM2.5 and PM10 Megasense data.

# SOLUTION

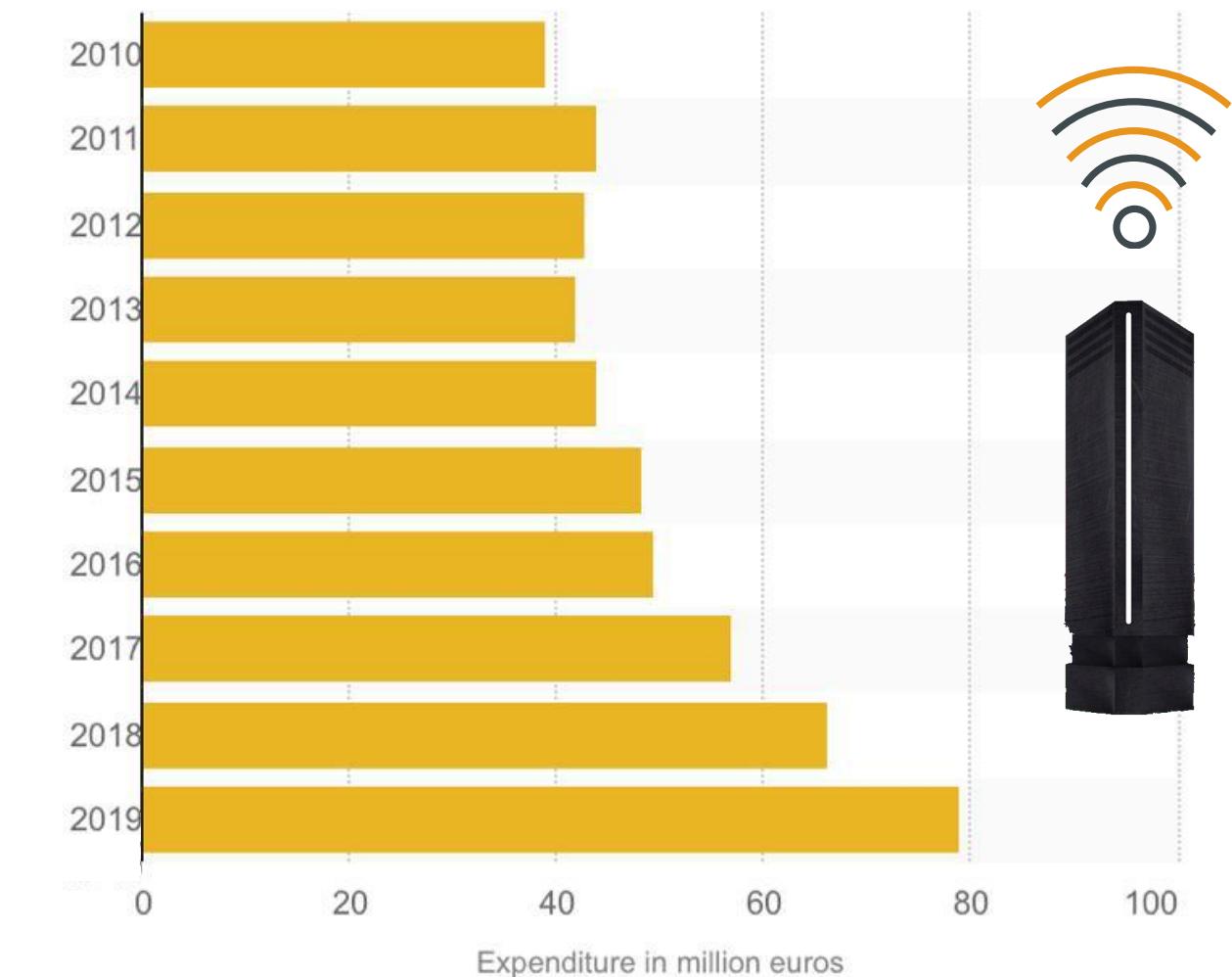
## Personalized for Helsinki

### Variations through the day:

- Automatically lights up depending on pollution levels detected by the Megasense network (IoT NET) which leads to savings in energy consumption costs of 297 USD/46.85%\* in Downtown area and 408 USD/64.41%\* in Jatkasaari area through monthly energy costs.
- Advertising is displayed on the towers all time. The advertising pricing will depend on the localization of the towers and its visualizations. We see here a potential business since outdoor advertising expenditure in Finland had a growth of 102.8% during the last 9 years.

\*Percentage of monthly energy cost per tower::

Outdoor advertising expenditure in Finland from 2010 to 2019 (in million euros)



Source: Statista research management.  
<https://www.statista.com/statistics/545583/annual-advertising-expenditure-in-finland-by-medium/>

# OUR CLIENTS

B2G

## Government:

- Decrease the number of clinic cases (10.710) due to high levels of pollution in public spaces\* and their associated costs (102M USD).
- Get data analysis and feedback about pollution reduction policies (worldwide).
- Be aligned with the National Air Pollution Control Programme, which aims to reduce by 34% the amount of PM2.5 pollution for 2030\*\*.

\*Cost calculated with Megasense data of the city of Helsinki (Assuming simulation with 100.000 people). For detail see: "Venture air calculations.xls".

\*\*Publications of the Finish Ministry of Environment.

\*\*\*Marjukka Hiltunen, Economic environmental policy instruments in Finland.

\*\*\*\*Publications of the Finish Ministry of Environment.

\*\*\*\*\* Based on data from Finland's largest shopping mall.

## Why would they choose us?

B2B

## Businesses:

- Circumvent environmental emission taxes\*\*\*.
- Guarantee low level pollution for their facilities, according to regulations\*\*\*\*.
- Positive reputation and strategical marketing capabilities.

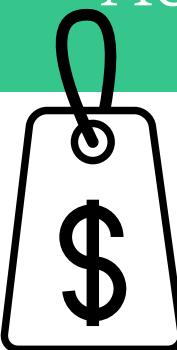
## Indoor public spaces:

- Reduce maintaining costs due to air purification systems that indoor spaces are using\*\*\*\*\*.
- Improve the quality of life for customers and workers, reducing the probability of respiratory or cardiovascular diseases morbidity.

# PURIFYING SERVICE

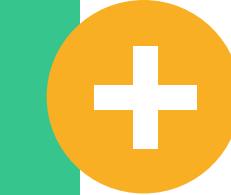
## Tower

- 10 years of useful life
- Clean 500,000 cubic meters of air per day
- Compatible with AC systems
- Low energy consumption
- Customizable design
- Advertising module



**\$40,000 USD**

Per tower



## Classic

- Maintenance & cleaning service
- Optimize tower positioning



**900 USD**

Per month\*

## Silver

- Data analysis
- Smart turn on/off using live data
- Maintenance & cleaning service
- Optimize tower positioning



**\$1,800 USD**

Per month\*

## Gold

- Advertising management\*\*\*
- Data analysis
- Smart turn on/off using live data
- Maintenance & cleaning service
- Optimize tower positioning



**\$6,000 USD**

Per month\*\*

\*Price for 2 towers. More towers can be added for a fee.

\*\*Price for 1 tower.

\*\*\* Control display advertising on the tower: owner of the tower can decide what is displayed on tower's leds.

# VALUE ADDED SERVICES (ADs)

## Advertising service

### Popular location

- 10.000 visualizations: 3.000 USD/Month
- 20.000 visualizations: 5.000 USD/Month
- 40.000 visualizations: 7.000 USD/Month

→ Forecast revenue of 18.2M USD\*

### Regular location

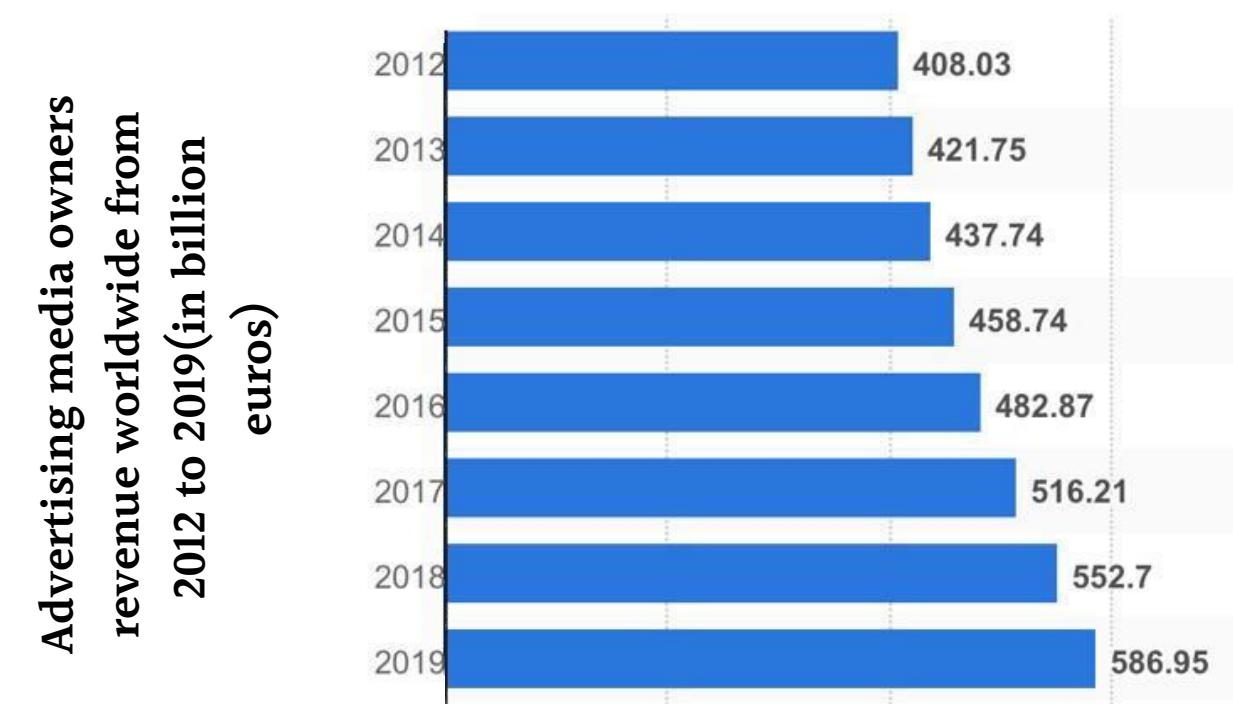
- 10.000 visualizations: 1.500 USD/Month
- 20.000 visualizations: 2.800 USD/Month
- 40.000 visualizations: 5.000 USD/Month

→ Forecast revenue of 8.4M USD\*



## Scalable worldwide market

- 92% of the global population breathe polluted air (WHO, 2019).
- Advertising media owners revenue had a growth of 43.85% the last 7 years.



Source: Statista research management.

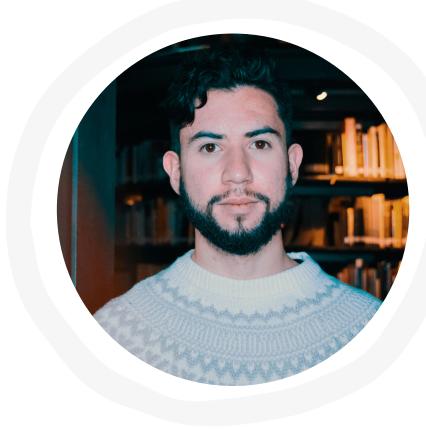
<https://www.statista.com/statistics/236943/global-advertising-spending/>

\*\*5 years forecast. For further details, please check the file "Forecast Plan.xls".

# THE TEAM



**Andrés Martínez**  
Physicist & Systems Engineer  
University of los Andes



**Nicolás Vergara**  
Physicist & Electronic Engineer  
University of los Andes



**Laura Forero**  
Economist & Industrial Engineer  
University of los Andes

## Supported by

