

Air monitoring stations in the City of Copenhagen

**Market dialog
2019**



Introduction

This report summarizes a market consultation prior to a possible tender in August 2019 about the possibilities for setting up and operating different types of air monitoring stations in the city. The new stations will measure the air's content of harmful substances to give a description of the health-related consequences of air pollution in the city.

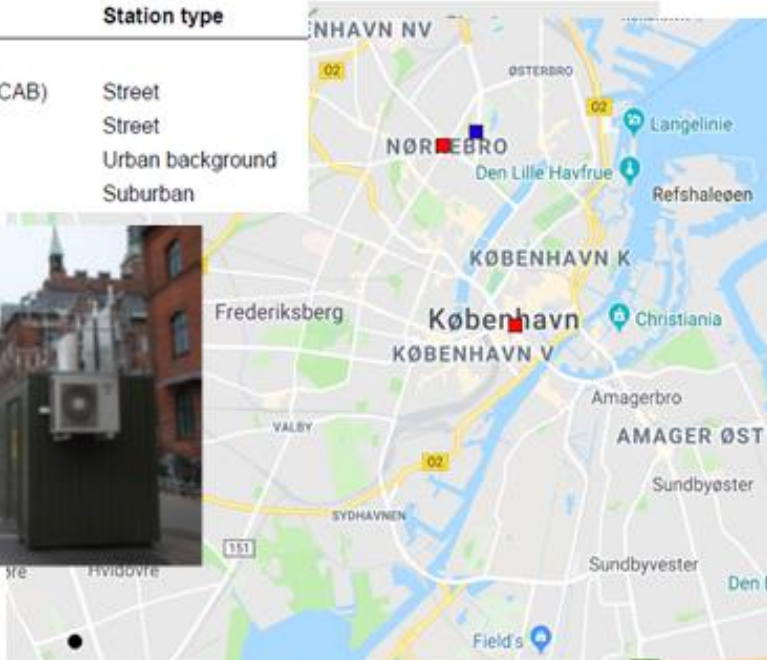
The city of Copenhagen have been in contact with 25 companies and universities during this market consultation. The objective of the discussions was to gain insights on the market's work with measurements and data collection of Ultrafine Particles and NO2 among others.

How is data collected today?

DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 21 May 2008
on ambient air quality and cleaner air for Europe

The Danish Air Quality Monitoring Programme - Copenhagen

Location	Station type
Copenhagen	
H.C. Andersens Boulevard (HCAB)	Street
Jagtvej	Street
H.C. Ørsted Institute (HCØ)	Urban background
Hvidovre, Fjeldstedvej	Suburban



Measurements in Copenhagen

- Nitrogen oxides (NO, NO₂ and NO_x (= NO + NO₂))
- Particle mass (PM₁₀ and PM_{2.5}) as 24-hour averages
- Elements (heavy metals) in PM₁₀ at HCAB and HCØ
- Particle number at HCAB and HCØ
- Ozone (O₃) at HCAB and HCØ
- Carbon monoxide (CO) at HCAB and HCØ
- Benzene and toluene at HCAB and HCØ
- PAHs at HCAB and Hvidovre
- SO₂ at HCAB
- Elemental carbon (EC) and organic carbon (OC) at HCAB
- And the meteorological parameters – air temperature, wind speed and direction, relative humidity and global radiation

Q&A: Data and health-related consequences

- What substances are relevant to measure to assess the health-related consequences?
 - NO₂, PM_{2,5}, Black Carbon and the total amount on ultrafine particles. It could also be relevant to measure noise.*
- Are there specific health hazardous substances besides UFPs, which are relevant to measure on a street level?
 - the universities need more data to analyse impact on health due to UFP and Black Carbon.*
- How can data on air pollution be displayed on a website?
 - the NO₂ level for the city on hourly basis could be an indicator for air pollution in the city. The London Air app could be an inspiration for Copenhagen.*

Q&A: Measuring methods

- What methods are best suited for measuring health hazardous substances in the air?
 - *A measuring station, which meet the EU-norm is the best solution if the effort is to create data that can be used in EU. For studies at the universities, you must create data for 3 years at one spot, so you need one fixed station in a area there people live.*
 - *Mobile stations/sensors can be used in campaign e.g. to measure air pollution in areas with a lot of stoves.*
 - *Participants suggested to split the procurement in to two since only a few can deliver fixed stations, which meet the EU-norm, but a lot of companies have sensors, which can be used for campaign and live data.*
- How can we measure: real-time, hourly, daily and annually?
 - *It is possibly to show data near real time, but the data will not be quality assured. To understand what particles you have in Copenhagen you must measure the size of the particles and not the number.*

Q&A: Models for monitoring stations

- How can modelling of data describe street level pollution?
 - *A mix of one fixed station meeting EU demands for data quality and other stations/sensors in the city combined with information about traffic and urban design.*
 - *It would be good to have information about the numbers of busses, trucks, diesel cars and electric cars.*
- Where will it be relevant to measure?
 - *In housing areas so there will be comparable data for health studies.*
 - *Inside and outside for as people spend 90% of the time inside.*
 - *In area with a lot of stoves, within narrow streets, near the harbor for identifying the effects of cruise ships.*
 - *It is important to place more than one station/sensor in the area since the air pollution differs with wind directions*

More information

A possible tender will be published on the TED portal in August 2019.

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