
Danish experience in estimating and mapping exceedances of environmental objectives

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Danish monitoring network

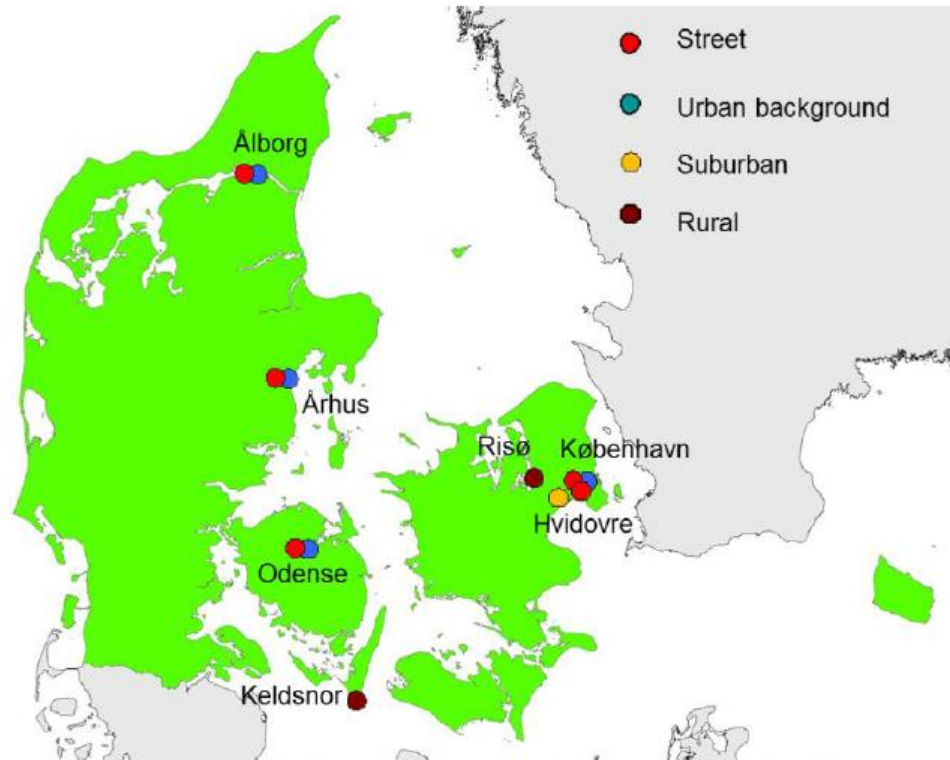


Figure 2.1. Main stations used for monitoring of air quality in relation to health.

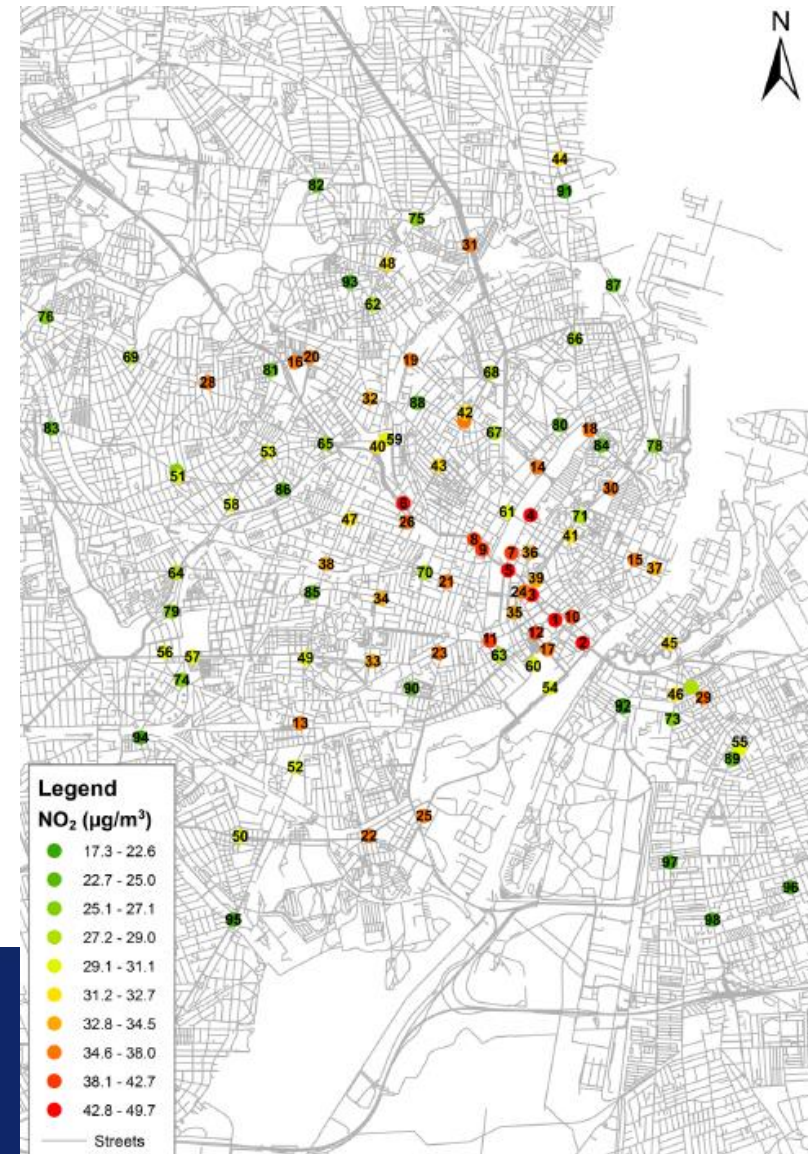
Current Danish situation in respect to AQ directives

- ▶ At one single station there is measured exceedance of NO₂.
- ▶ No exceedances of other substances at any stations.
- ▶ Only **measured** data are officially reported.
- ▶ An annual report describes the situation according to measurements.
As a supplement the report provides **modelling results for selected streets** (street segments).



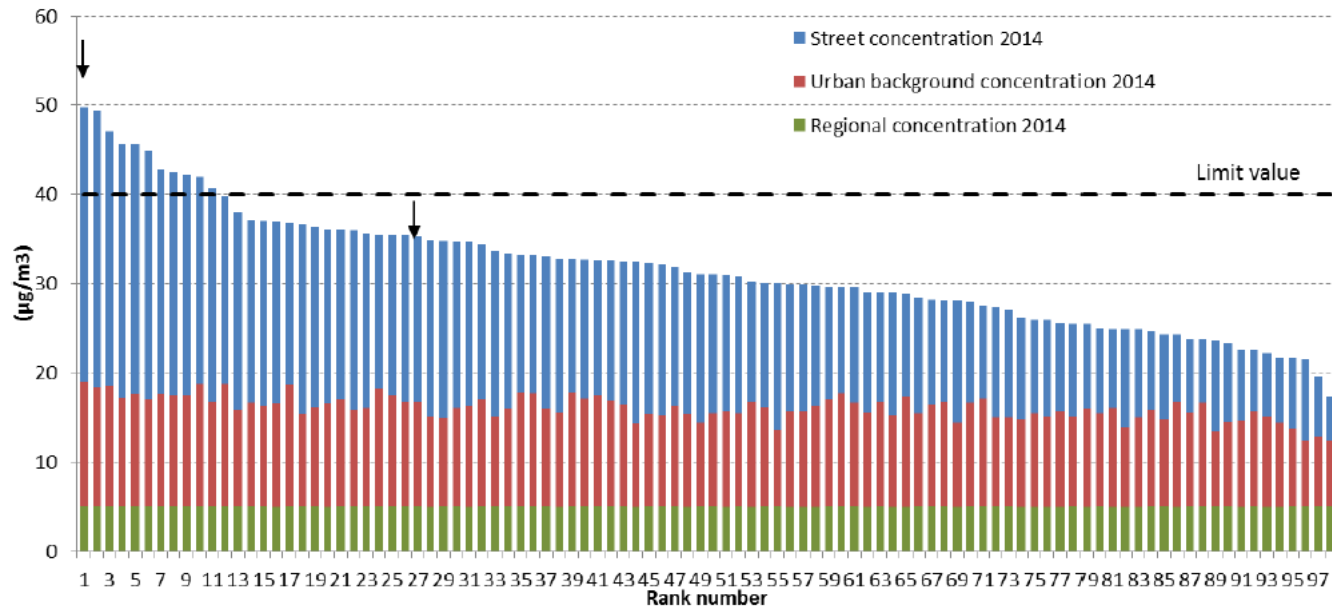
NO₂ concentration at 98 selected streets

- ▶ 98 street segments in Copenhagen in focus.
- ▶ Model results are derived using a chain of models:
 - ▶ Regional scale model DEHM
 - ▶ Urban background model UBM
 - ▶ Street canyon model OSPM



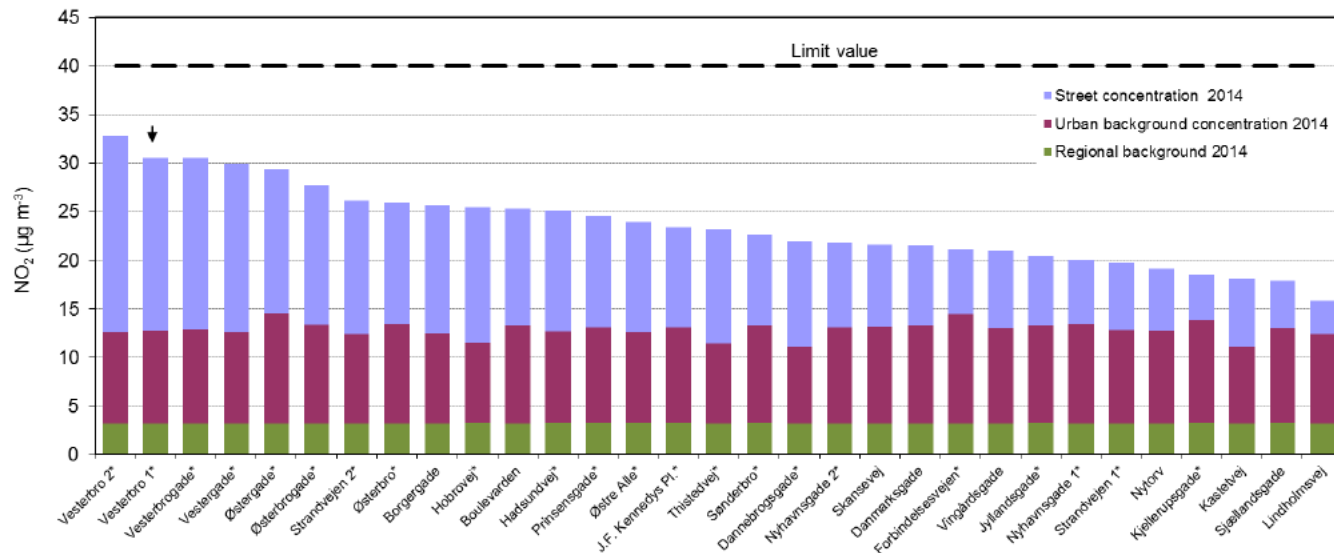
Ranking of the 98 street segments (NO₂)

11 street segments in Copenhagen above the limit value.



Ranking of 31 street segments in Aalborg (NO₂)

No exceedances
in the town of
Aalborg



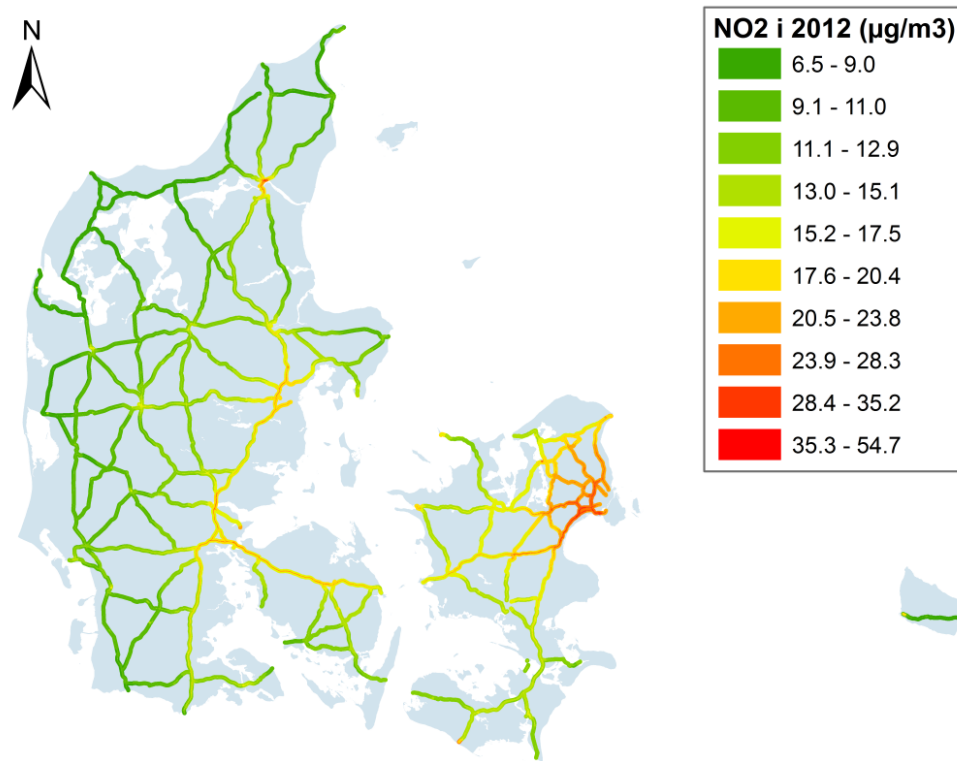
Official reporting...

- ▶ The modelling results are currently not officially reported in the data stream.

Mapping of air quality in other contexts

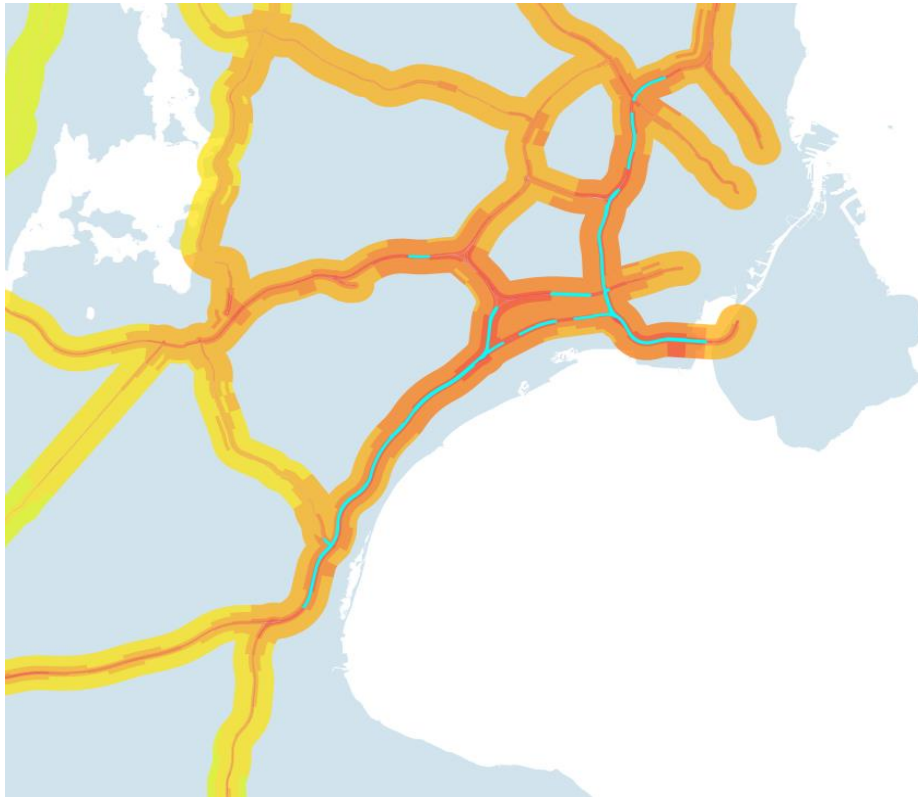
- ▶ Air quality **along Danish state roads** (mainly open roads, not street canyons).
 - Modelling system involving DEHM, UBM and OML-Highway.
- ▶ Web site "Air quality at your street". NO₂, PM_{2.5} and PM₁₀ modelled for **all 2.3 mio. addresses in Denmark**.
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Modelling along Danish state roads: NO₂



(Jensen et al. 2015: <http://dce2.au.dk/pub/SR154.pdf>)

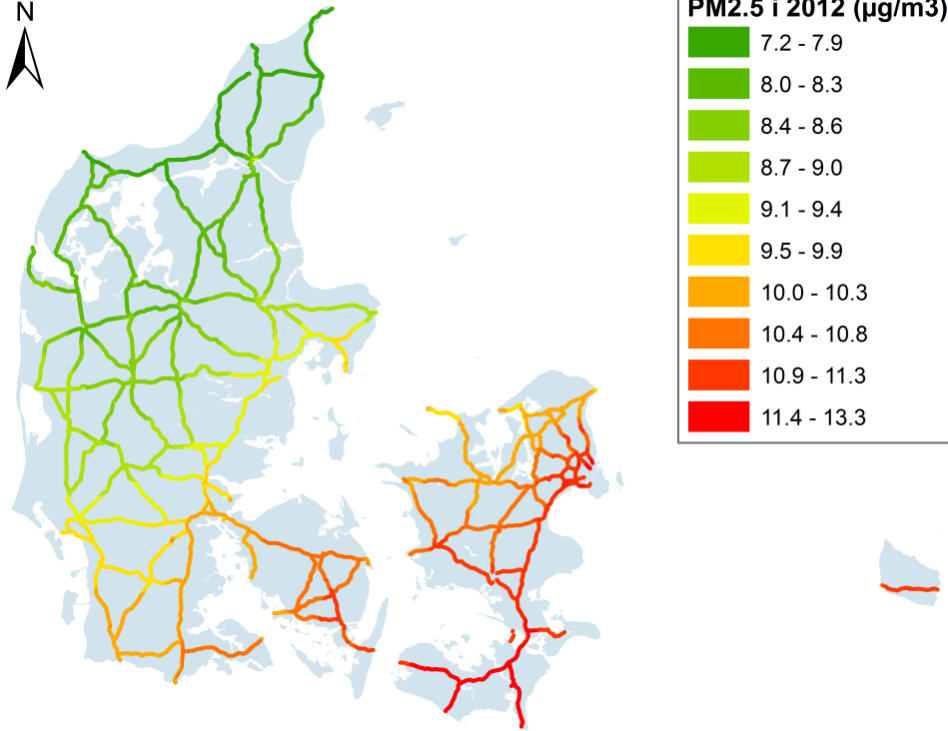
Exceedances of NO₂ Limit Value?



Indicative exceedances of NO₂ limit value (40 µg/m³) (blue).
Max. is 55 µg/m³ 38 m from road centre line at Køge Bugt Motorway

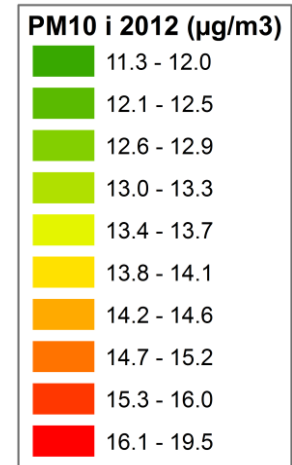
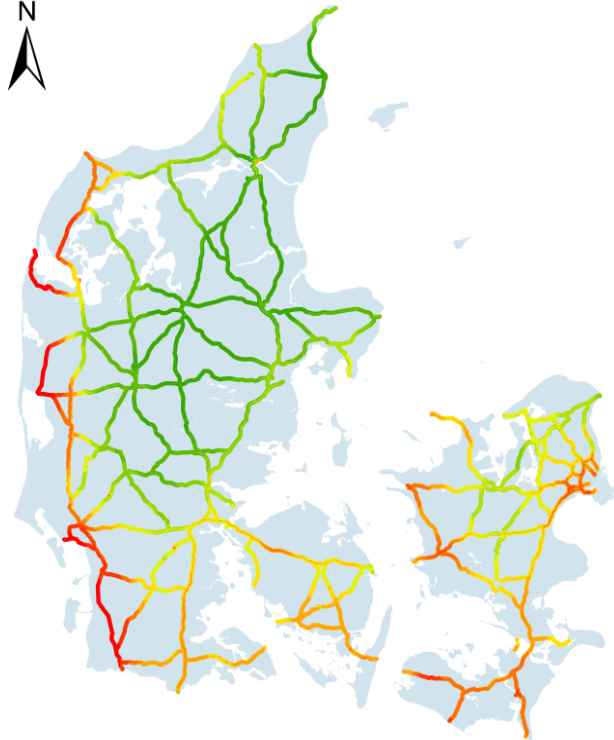
Air quality of PM_{2.5} along State Roads

- ▶ Limit value of 25 µg/m³ not exceeded



Air quality of PM₁₀ along State Roads

- ▶ Limit value of 40 µg/m³ not exceeded



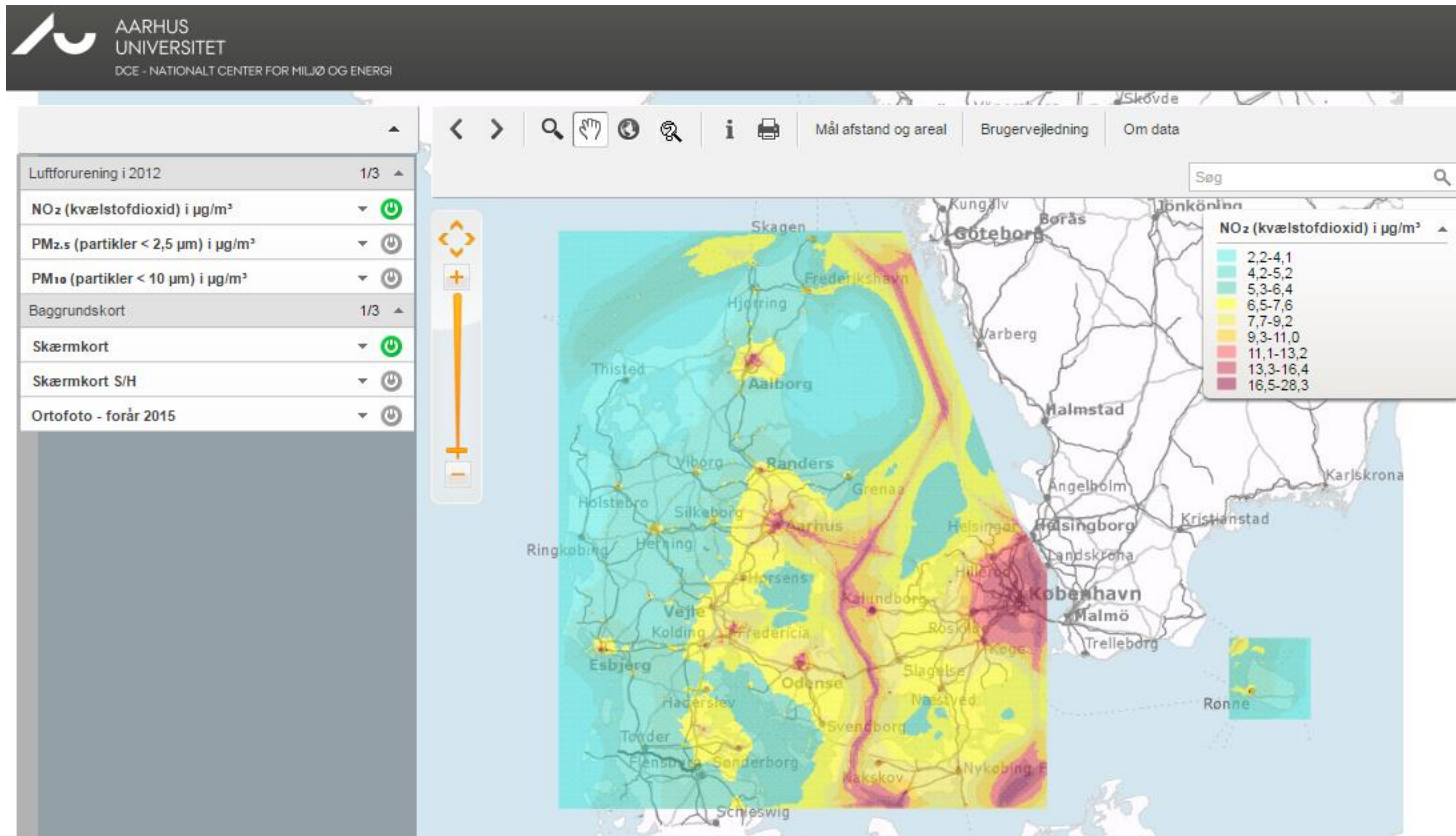
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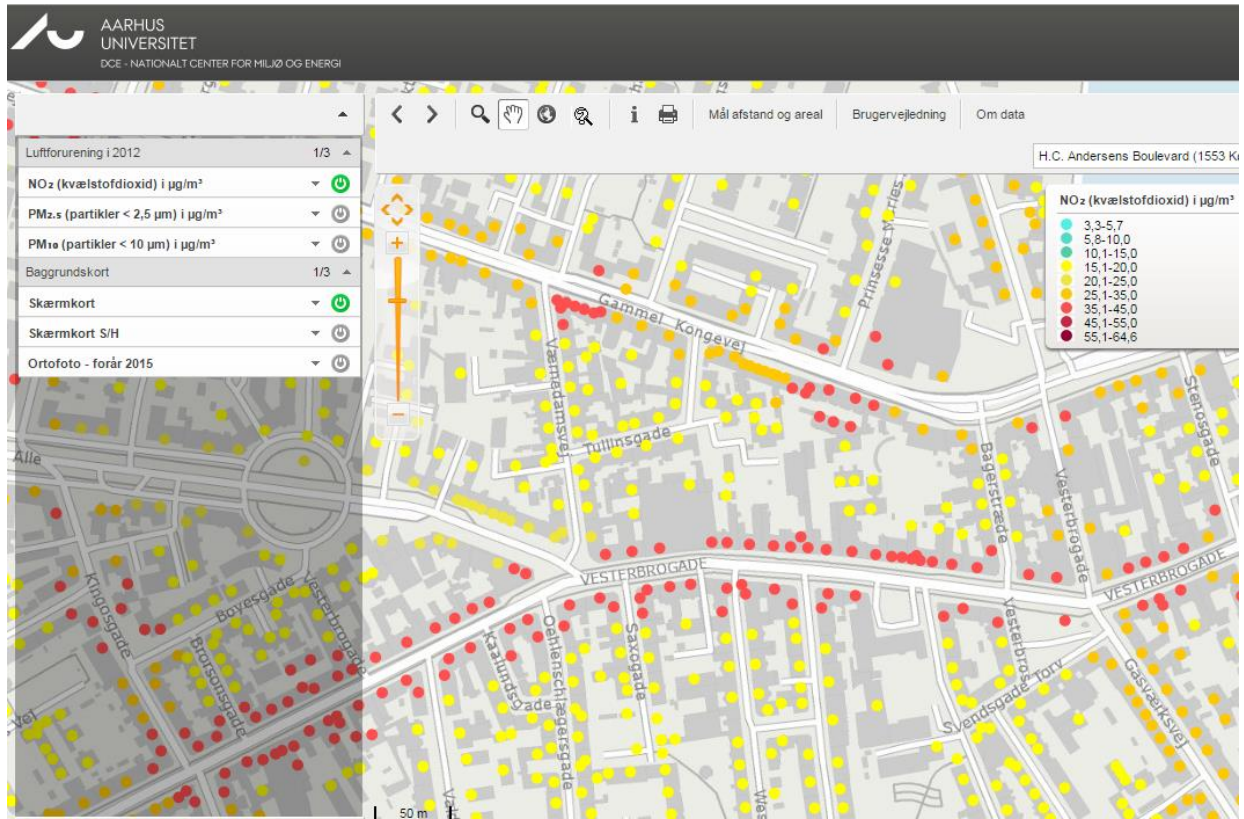
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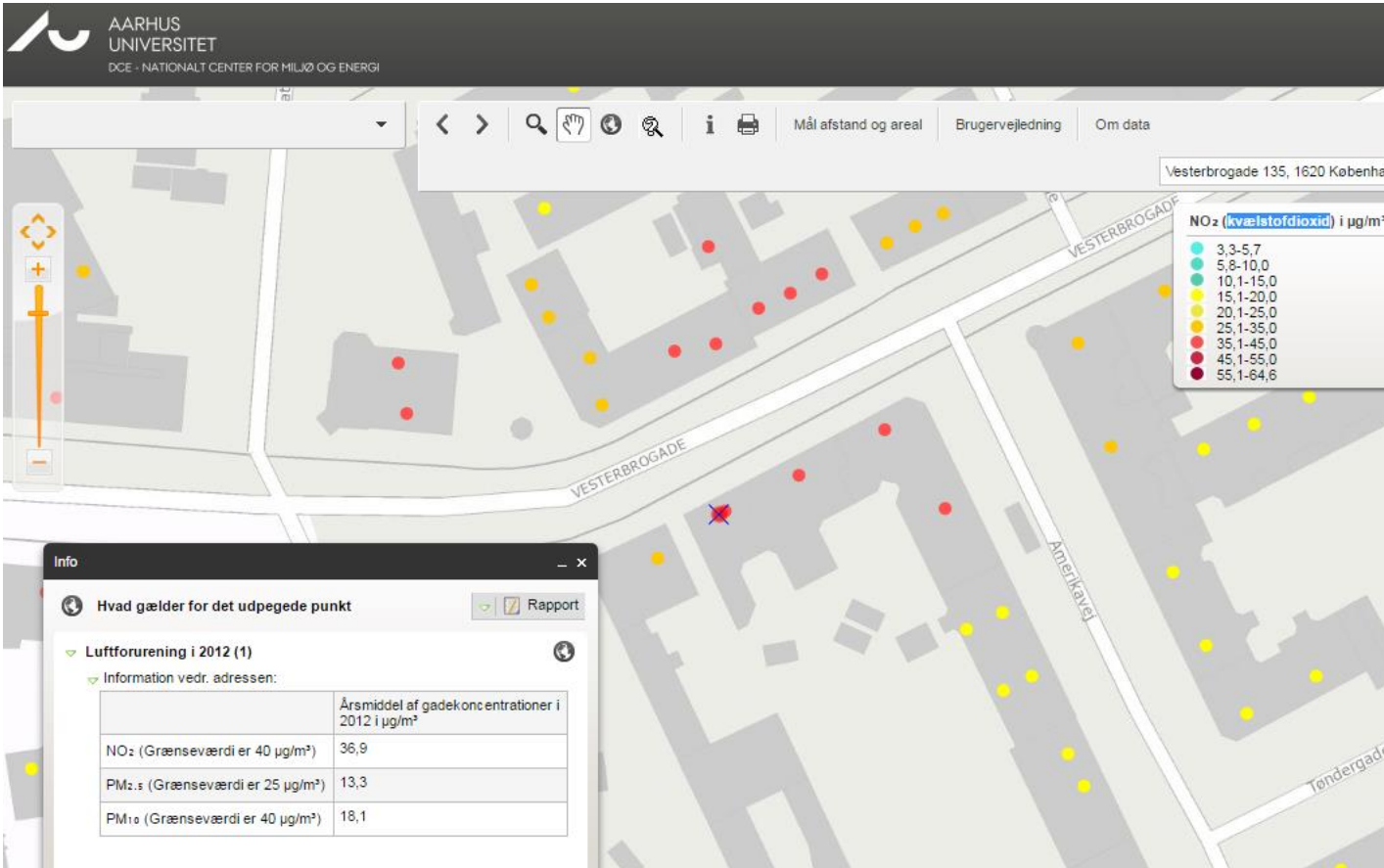
Objectives of project

- ▶ Provide an easy to use screening tool for indicative modelled air quality data for all addresses in Denmark
- ▶ Focus on geographic variation and relative differences.

Web site "Air quality at your street".







Conclusion

- ▶ We have tools that can be used to provide the information requested by the IPR decision: An assessment of various parameters related to the area of exceedance.,
- ▶ Currently, we do not produce the specific information requested.



IPR decision guidance

Where environmental objectives have been exceeded, **estimates of the total area, population and road length** exposed to levels above the environmental objective shall be reported for each zone as a whole.

Associated geometry information (GIS data) shall also be provided.

References to the assessment methods observing the exceedances shall also be given e.g. the fixed or indicative measurements, modelling or objective estimation used.

Assessment methods are reported within Data flow D.