



Data availability and future applications

Stakeholder workshop

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Summary

- › **Within the MapElre project the first high resolution spatial and temporal mapping of emissions for Ireland has been carried out**
- › **Model covers all sectors and pollutants included in the Irish emission inventory**
- › **Emissions are now publically available by GNFR sector on a 1 km x 1 km resolution, and on an hourly basis**
- › **Data extraction can be made on customised sectoral and temporal level**



Data availability

- › **The spatial inventory data are available to download from the project website**
- › **Data are available as shape files for data processing in GIS software and as images, e.g. to be used in presentations**
- › **Temporal profiles are available as spreadsheets on the project webpage**
- › **Data are free to use provided the source is explicitly acknowledged**



Documentation

- › **The project has been presented during two international conferences**
- › **One paper ‘Spatial High-resolution Mapping Of National Emissions’ has been published in WIT Transactions on Ecology and the Environment (DOI: 10.2495/AIR180371)**
- › **One paper ‘Influence of improved methodology and increased spatial resolution on gridded emissions’ has been submitted to the International Journal of Environmental Impacts**
- › **One paper is in preparation on the temporal model focussing on road transport**



Documentation

- › **A technical report will be published documenting the data and methodology for the spatial and the temporal model**
- › **The report will be published early 2019**



Potential improvements

- › **Both the spatial and temporal model can be improved by developing more detailed profiles and by including more time-series for the spatial keys**
- › **Suggestions for further improvements will be included in the final technical documentation report**

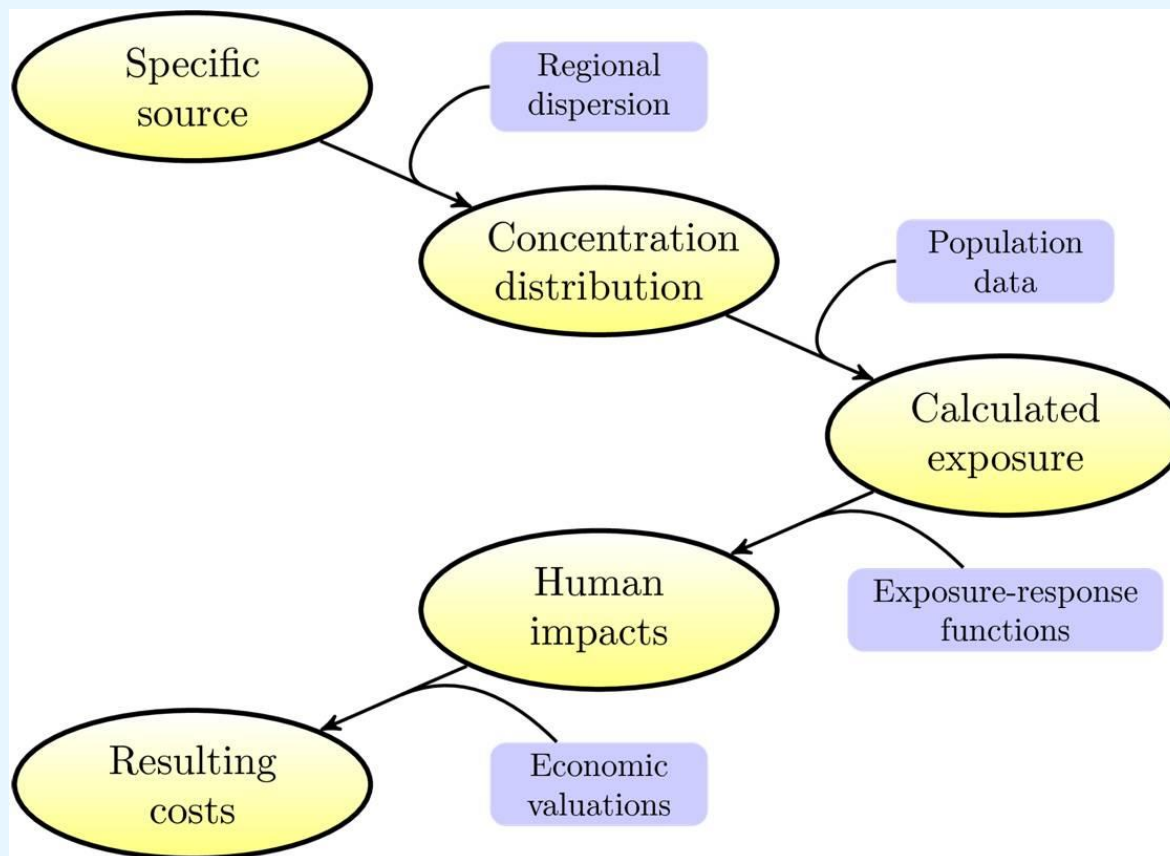


Future applications

- › Available now is a detailed spatial and temporal emission inventory for Ireland
- › Data can be used by all stakeholders to get an impression of where and when the highest emissions occur
- › This can be used as input for policy makers in decisions of implementation of environmental policies and measures
- › Data at a detailed level can be used to quantify pressures on vulnerable nature (e.g. Natura 2000 areas)
- › Many possibilities to extend the usefulness of the results of this project

Future applications

- > The spatial and temporal emission inventory is an important step, but only the first step in a chain



Future applications

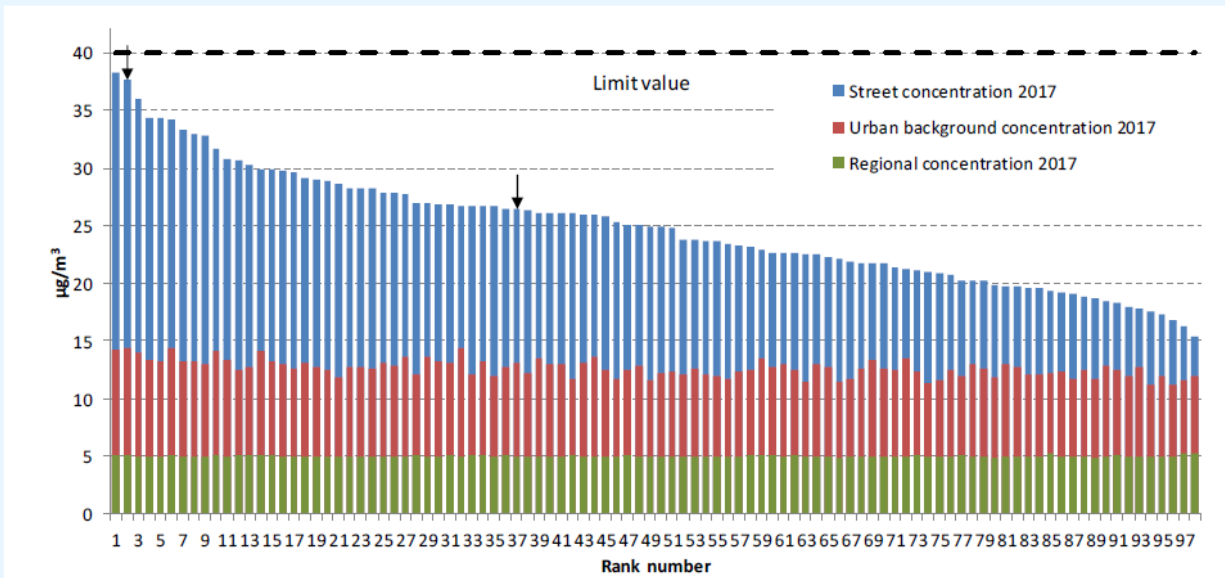
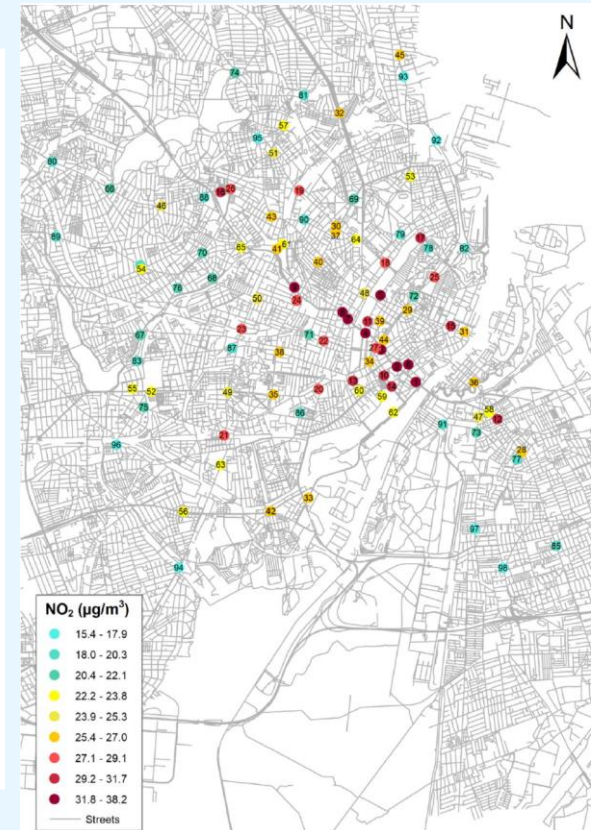


Figure 3.2. Annual mean concentrations of NO₂ in 2017 for 98 streets in Copenhagen according to model calculations. The contribution from traffic in the street canyons is based on the street canyon model OSPM® (blue colour). The urban background (reddish colour) is obtained from calculations with the urban background model UBM with input from the regional scale model DEHM (green colour). The value for a street segment is for the side of the street with the highest annual mean concentration of the two sides. However, for streets with a measuring station it is the side where the station is located.



Ellermann et al., 2018 - The Danish Air Quality Monitoring Programme, Annual Summary for 2017

Future applications

Table 13.2. Contribution from emissions in foreign countries to Denmark and the contribution from emissions in Denmark to the number of premature deaths, calculated by the EVA model system for the year 2017.

Contributions 2017	Number of premature deaths	% of total
Total air pollution in Denmark	3240	100
Foreign contribution to Denmark	2.470	76
Denmark's contribution to Denmark	771	24
Denmark's contribution to Europe incl. Denmark	2951	100
Denmark's contribution to Europe excl. Denmark	2180	74

Table 13.3. Contribution from emissions in foreign countries to Denmark and the contribution from emissions in Denmark to the total health related external costs, calculated by the EVA model system for the year 2017.

Contributions 2017	Billion Euro	Billion DKK	% of total
Total air pollution in Denmark	3.3	25	100
Foreign contribution to Denmark	2.7	20	81
Denmark's contribution to Denmark	0.6	4.6	19
Denmark's contribution to Europe incl. Denmark	3.3	25	100
Denmark's contribution to Europe excl. Denmark	2.7	20	81

- › We hope that the work will continue in Ireland on dispersion modelling, exposure calculations, human impacts and related costs



Acknowledgements

- › **The Irish EPA for funding of the project as part of the Climate Research Call 2015 – Air Science**
- › **The Irish emission inventory team for sharing expert knowledge on the Irish emission inventory and national circumstances**
- › **The Steering Committee for valuable comments and advice regarding methodology and data availability**
- › **Stakeholders and data providers for highly appreciated discussions, cooperation and sharing of data**
 - › **SEAI, CSO, Irish rail, National Transport Authority / Transport for Ireland / Transport Infrastructure Ireland, University College Dublin (David Kelleghan)**