



An Roinn Comhshaoil,
Aeráide agus Comarsáide
Department of the Environment,
Climate and Communications



An Roinn Tithíochta,
Rialais Áitúil agus Oidhreacht
Department of Housing,
Local Government and Heritage



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Environmental Services Training Group

LOCAL AUTHORITY ROADS CONFERENCE and EXHIBITION - 2023

Session 4 – Air Quality
Clayton Galway, September 2023



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Greenhouse Gas Emission Statistics

Tony Kent

EPA



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Greenhouse Gas Emission Statistics

14/09/2023

Tony Kent
Spatial Analyst - Environmental Protection Agency

Role of EPA Emissions Inventories and Projections



- EPA compiles [National Inventories](#) and Projections of Ireland's Greenhouse Gases
 - International: Reporting to EU and United Nations Framework Convention on Climate Change
 - National: Climate Action and Low Carbon Development (Amendment) Act 2021; Carbon Budgets
- Reportable GHGs and Air Pollutants
 - Carbon Dioxide
 - Methane
 - Nitrous Oxide
 - F-Gases: HFCs, PFCs, SF₆, NF₃
 - Air Pollutants: Zn, Pb, PM2.5, NH₃
- Reported by sector and by gas



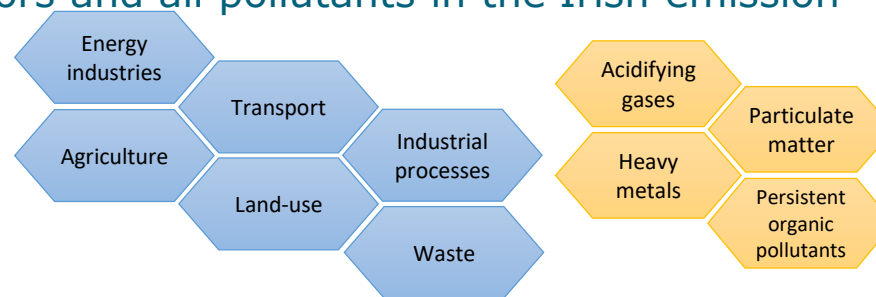
The MapEire Project

- Funded as part of the Climate Research Call 2015 – Air Science
- This project is to map emissions for all the pollutants under the scope of the Convention on Long-Range Transboundary Air Pollution (CLRTAP) and the Framework Convention on Climate Change (UNFCCC)
- The goal was to develop a spatial and temporal model that is linked to the Irish emission inventory, using the best available spatial and temporal datasets for specific emission categories
- More information is available at the project website: www.MapEire.dk

The Spatial Emission Model

- Complete spatial emission mapping on 1 km x 1 km resolution for the Irish Exclusive Economic Zone
- Integrated database system focusing on performance optimisation
- Includes all sectors and all pollutants in the Irish emission inventory

- 177 sectors
- 32 pollutants



- Integrates official statistics and spatial information

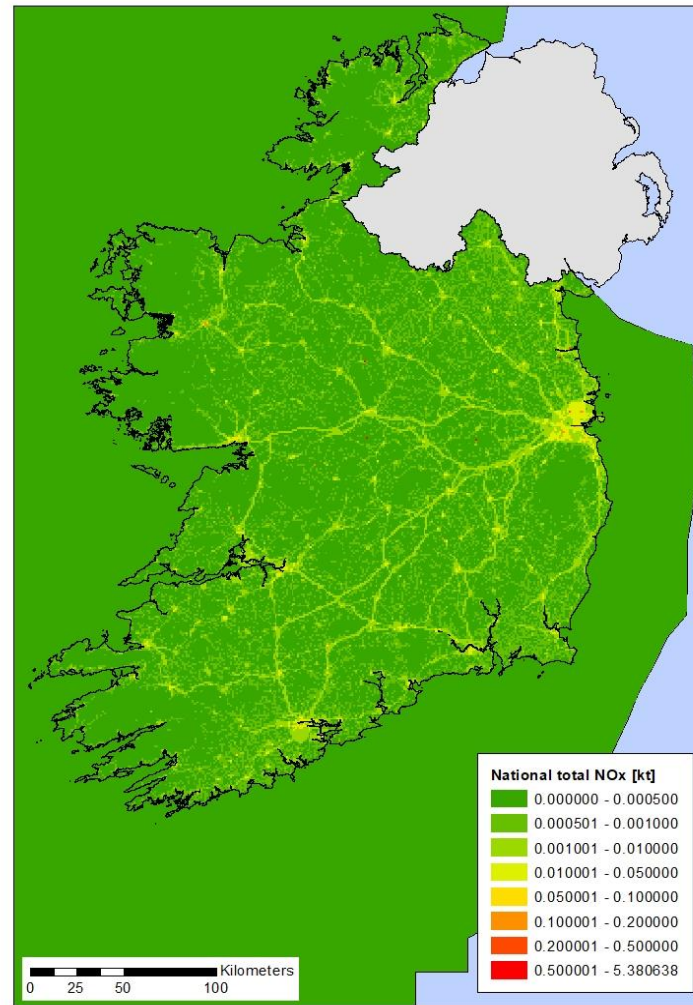
Data Sources

- National statistics, e.g. National census, Census of Agriculture
 - Facility level data, e.g. PRTR reporting, ETS reporting
 - Digital spatial data
 - Point themes
 - Buildings
 - Airports
 - Line themes
 - Road network
 - Aviation cruise
 - Polygon theme
 - Mines and quarries
 - LPIS
 - Land-use maps
 - Administrative units
- And Inventory Data



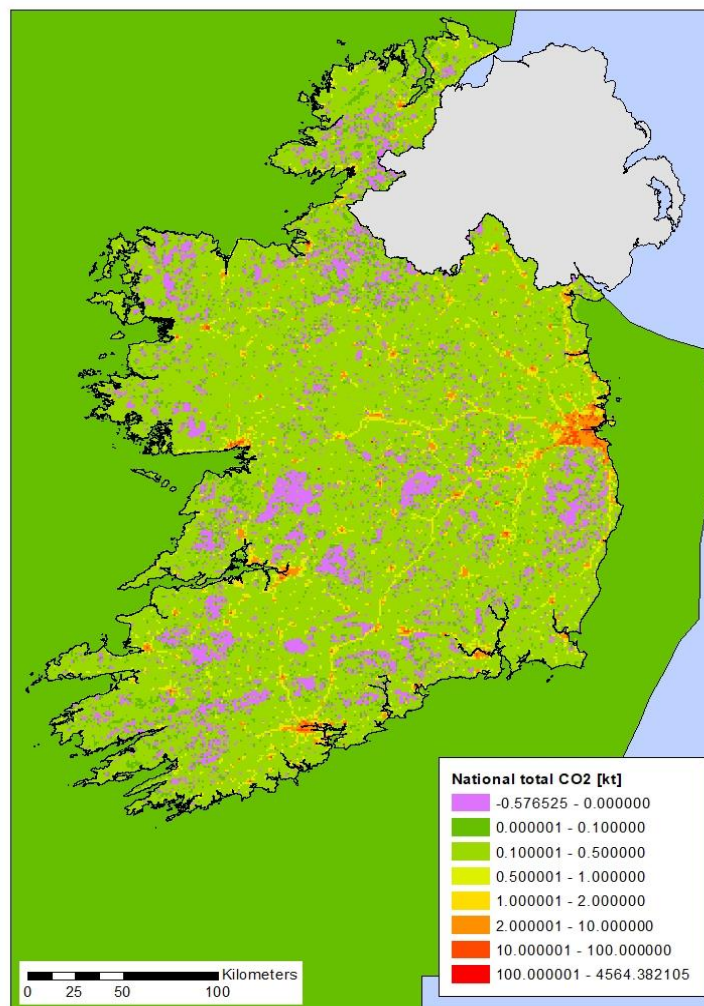
Nitrous Oxide

- NOx emissions show a clear pattern reflecting major roads and densely populated areas

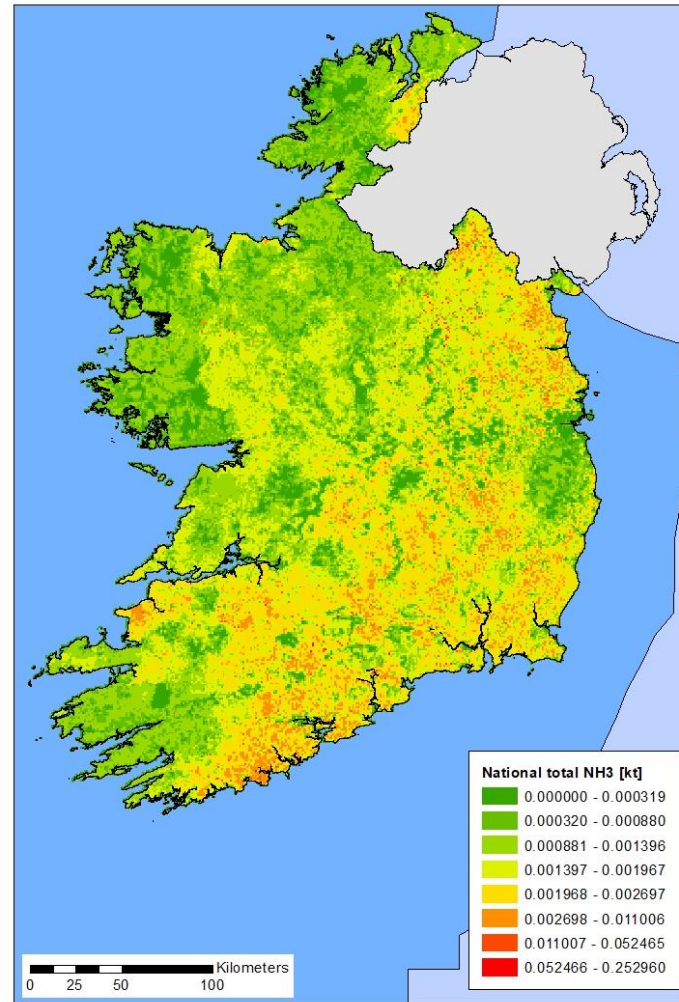


Carbon Dioxide

- CO₂ emissions similar to NO_x but also visible are carbon sinks (forests)

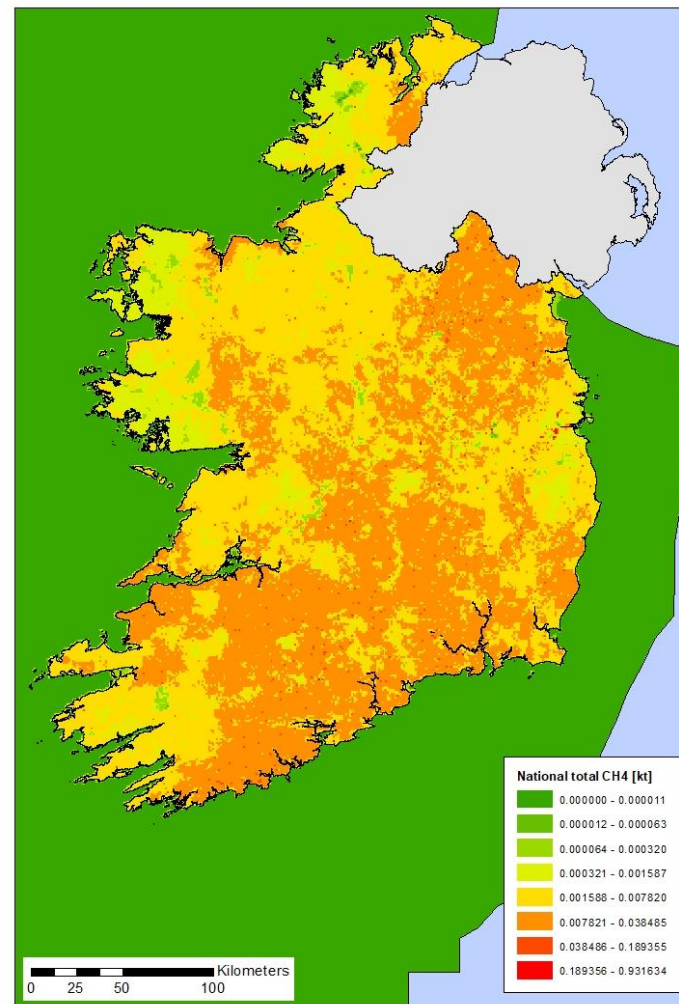


- Ammonia comes from the management of animal manures etc, so relevant to the agricultural sector
- The emission map reflects the intensity of the agricultural production



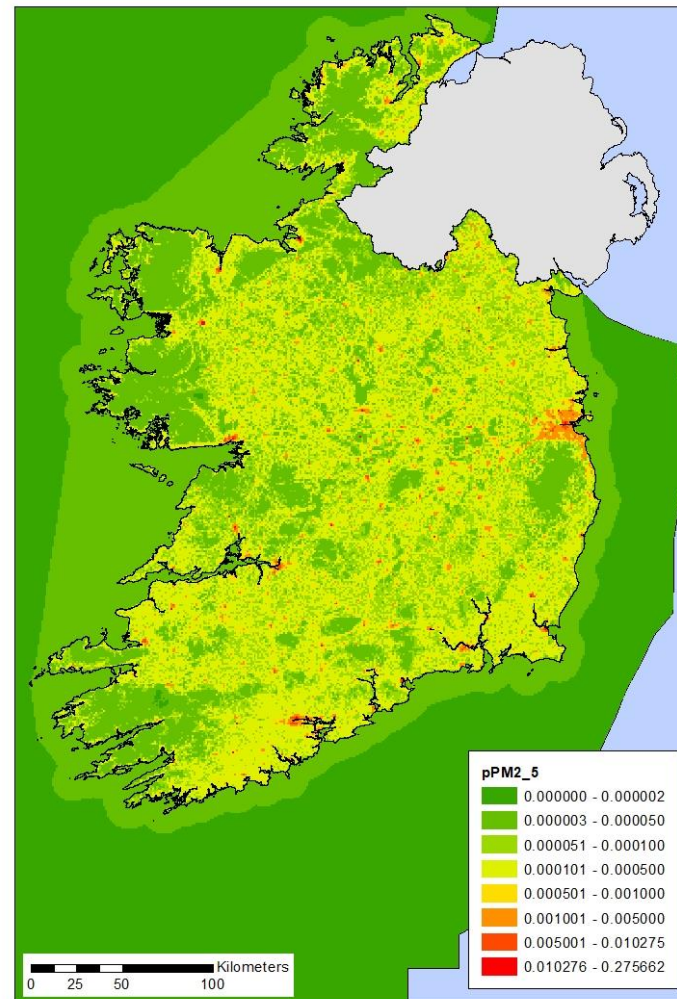
Methane

- Methane (CH_4) similar to Ammonia, is dominated by the agricultural sector
- The emission map reflects the intensity of the agricultural production



Particulate Matter 2.5

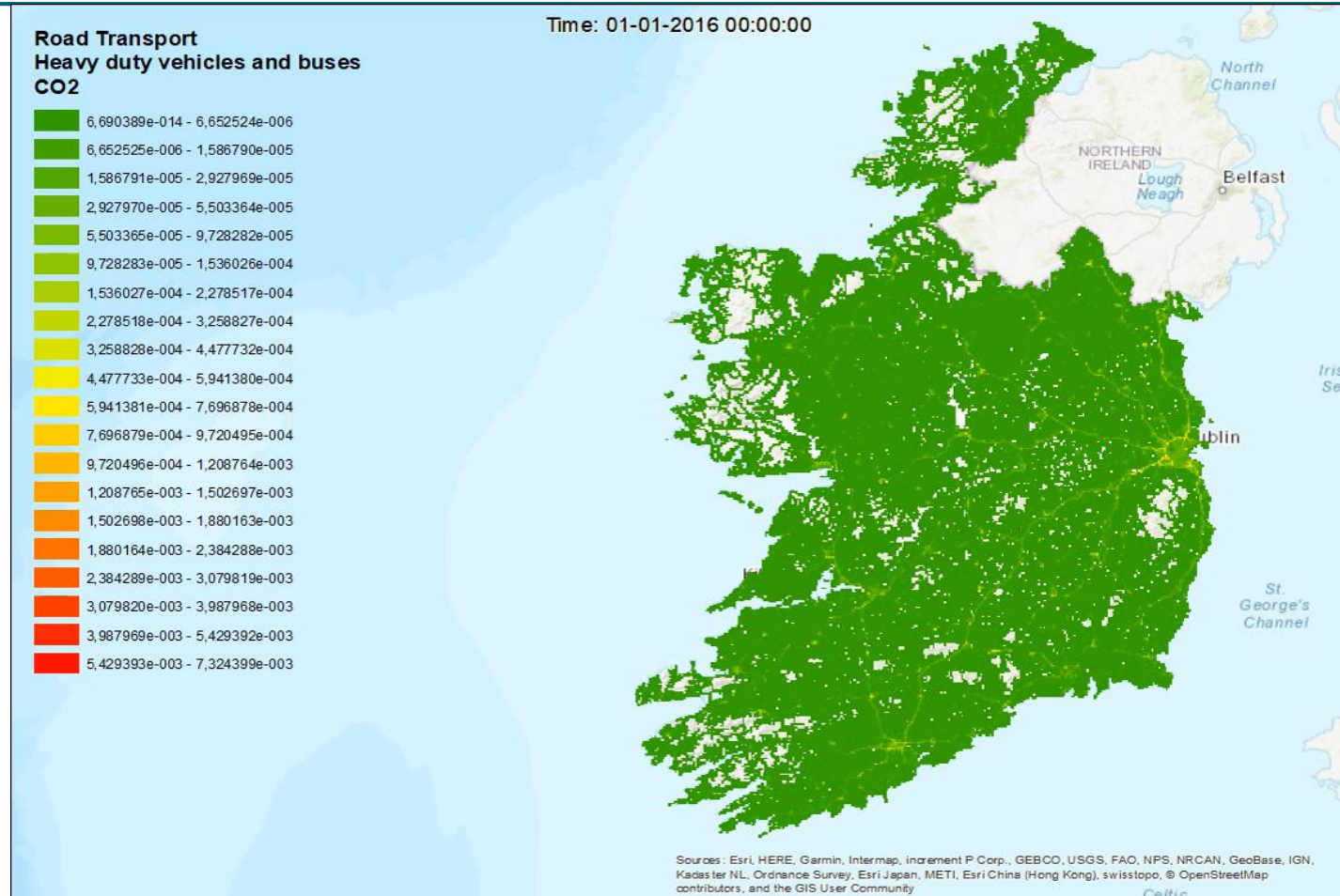
- For particulate matter, the main source is residential heating
 - PM 2.5 – particles less than 2.5 micrometers in size
- Large population centres are clearly visible



The Temporal Emission Model

- The temporal component has been integrated in the MapEire model using the same basic platform as the spatial distribution
- Temporal keys have been developed for all sectors with varying degree of detail based on data availability
- In some cases there are different temporal distributions for different pollutants from the same sector
- In all cases, the temporal profiles are developed showing monthly, daily and diurnal variations
- In some cases, the temporal profiles have been based on expert judgement as no better data were available

Example for CO₂



- Available now is a detailed spatial and temporal emission inventory for Ireland - currently being updated with latest datasets
- Data indicates where and when the highest emissions occur
 - 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)
- County based data will be available

Thank You



EmissionsStatistics@epa.ie



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Thank You

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ESTG Annual Conference 2023

14th September

Final Closing Address with

Bernie Kiely

Department of Environment, Climate & Communications



For more information on this conference please contact the Local Authority
Services National Training Group.

T: 052 616 6260E: lasntg@tipperarycoco.ie | W: www.lasntg.ie

