

## High-resolution spatial mapping of the Irish emission inventory

The MapEire project has developed a high-resolution spatial mapping of the national Irish emission inventory. The work is state-of-the-art and combines a large amount of statistical data with detailed spatial information to allow for a complete spatial emission mapping on a 1 kilometre by 1 kilometre resolution. The spatial model is developed as an integrated database system focusing on performance optimisation.

Spatial emission mapping is an important first step to quantify pressures in form of deposition of harmful substances to the environment and human exposure to air pollution.

The quality of the spatial emission mapping is crucial for the quality, applicability and reliability of modelled air pollution levels, estimated human exposure, incurred health effects and related costs; all very important information for policy makers in decisions of implementation of environmental policies and measures.

The spatial model integrates official statistics, such as the Irish emission inventory, with a large number of spatial datasets as diverse as land cover, road network, building use and heat demand, selected through a comprehensive assessment of spatial available data. The model covers 32 pollutants and 177 sectors, and includes the entire Irish exclusive economic zone.

Development of high-resolution spatial emissions contributes directly to at least two of the targets for the UN Sustainability Development Goals; 1) to substantially reduce the number of deaths and illnesses by 2030 from hazardous chemicals and air, water and soil pollution and contamination, and 2) to reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

The high-resolution spatial model for Ireland allows for a more detailed regulation, implementing measures targeting areas where emissions are highest, allowing for more cost-effective initiatives on local, regional and national scale.