



Rialtas na hÉireann
Government of Ireland



CASE STUDY EVIDENCE TO POLICY

EPA-funded SAPPHIRE Project

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THE PROBLEM

Air pollution is the single largest environmental health hazard in Europe. Particulate matter with a diameter of 2.5 micrometres or less (PM2.5) can penetrate deep into the lungs and is the pollutant with the greatest impacts on human health, accounting for over 1,100 premature deaths each year in Ireland. The main health effects of air pollution include stroke, heart disease, lung cancer, and both chronic and acute

respiratory diseases, including asthma. These conditions can lead to sickness and ill health, as well as premature mortality.

Residential solid fuel burning is known to be a significant source of PM2.5 in the main cities of Ireland; however, comparable information was not available for the many small towns across the country.



THE PROJECT



The EPA-funded this research to answer the question: What is the contribution of residential solid fuel burning to air pollution levels in towns where the Ban on Bituminous Coal is not in place?

The researchers used a combination of field measurements and source apportionment modelling to investigate the sources of PM2.5 in Killarney, Enniscorthy and Birr. At each location,

evening levels of PM2.5 were often an order of magnitude higher than those during the day, and huge spikes in pollution were regularly observed when wind speeds were low.

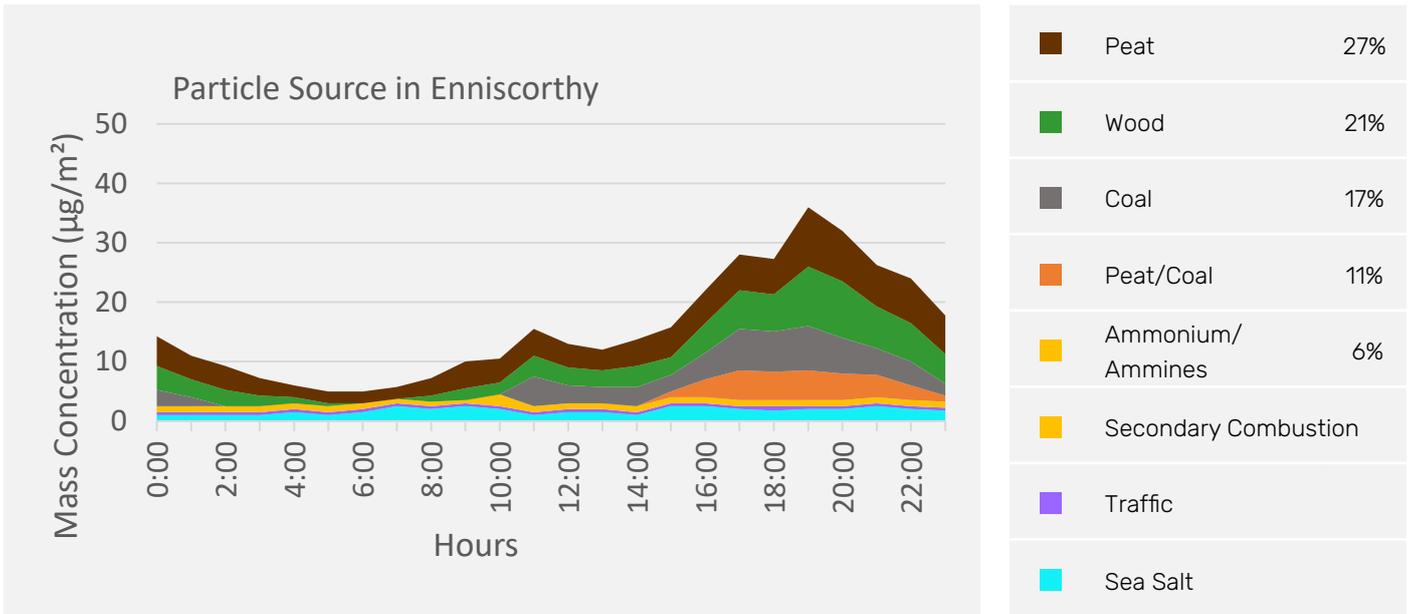
Real-time monitoring of the chemical composition of PM2.5 showed that residential solid fuel burning was the dominant source category, accounting for 72%, 82% and 60% of PM2.5 measured in Killarney, Enniscorthy and Birr, respectively. Chemical fingerprints of particles generated from the combustion of different solid fuels showed that burning of peat was the dominant source at each location, followed by burning of wood and then coal.

The research findings showed that new

measures and policies were urgently needed to reduce harmful emissions from residential solid fuel burning across the country. As the study found that peat and wood were major contributors to PM2.5, the introduction of a nationwide smoky coal ban was unlikely to lead to significant air quality improvements in small towns

Measures to reduce emissions from all solid fuels – peat, wood and coal – would be more successful in improving air quality for all urban centres including small towns.

The research also identified the need for more research to address how domestic residences are heated in general, rather than attempting to discourage the use of one specific solid fuel.



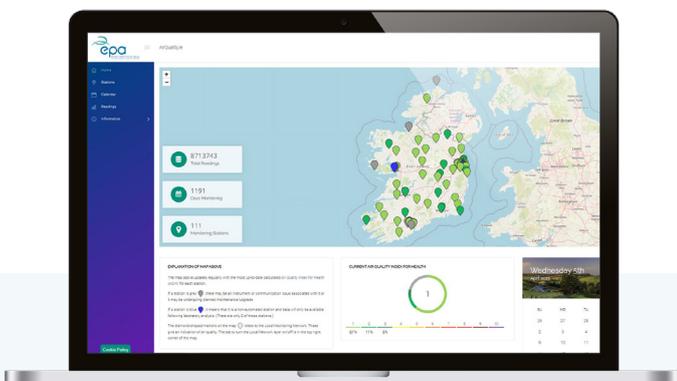
Source: John Wenger, EPA Science to Policy Seminar October 2022

To facilitate knowledge transfer and maximise impact, representatives from the EPA, the Climate Action Regional Offices and of the Department of the Environment, Climate and Communications were involved in the scoping, evaluation, steering and monitoring of the project.

THE OUTCOMES

The results of this research were used to inform the Solid Fuel Regulations for Ireland, which came into effect on the 31st of October 2022. The primary focus of these regulations is on improving air quality and improving people’s health chances and outcomes, by restricting the retail, online and commercial sale of smoky fuels, including smoky coal, turf and wet wood.

The results of this research also informed the EPA National Ambient Air Quality Monitoring Programme 2017-2022 (<https://airquality.ie/>).



Further research was funded by the EPA to develop a better understanding of the residential solid fuel use in Ireland, with a strong focus on quantifying the use of non-traded solid fuels (RESOFUEL Project: <https://www.epa.ie/publications/research/epa-research-2030-reports/research-407.php>).