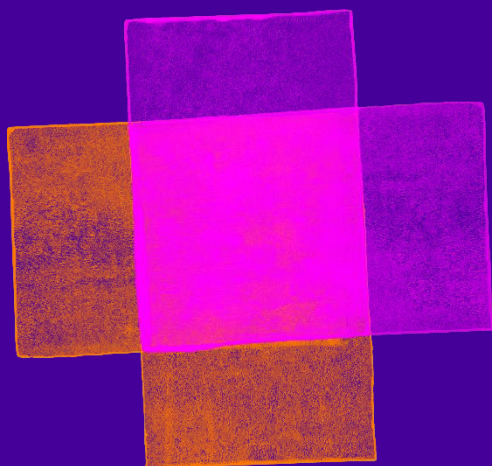


Domestic Burning In Northern Ireland

Winter 2024/25



ASTHMA+
LUNG UK

NORTHERN IRELAND

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Executive Summary

The Northern Ireland Executive has included a commitment toward protecting the Environment as part of the draft Programme for Government¹, and sets three missions: people, planet and prosperity, for both now and in the future. We believe that this report sets out a blueprint for affirmative action that will improve the planet, resulting in a healthier people which in turn will promote prosperity for the province. At Asthma + Lung UK Northern Ireland, we campaign for cleaner air and to prioritise lung health. We collaborate with Government and partners to fight against air pollution as this contributes to healthier lungs, and an improved respiratory health for all.

Air pollution from wood burning has steadily increased over the last thirty years, to the point where it is now the second largest source of fine particulate matter (PM_{2.5}) pollution in Northern Ireland after emissions created by construction and manufacturing industries. Across the UK, PM_{2.5} emissions from burning wood as a fuel have increased by 89% since 2010.²

In comparison with other major UK cities, Belfast is the second biggest per head emitter of PM_{2.5} in the UK. Whilst transport and industrial activity contribute significantly to air pollution, domestic fuel burning produces more emissions in NI than in other parts of the UK.³ We need to combat domestic burning now.

There is no safe level of air pollution to breathe in. An air pollutant is any substance in the air that could harm people. Particulate Matter (known as PM), and nitrogen dioxide (NO₂) are particularly damaging.

When people are exposed to high pollution levels, for example next to a busy road or during a high pollution episode, they breathe in these toxic materials. Many experience immediate symptoms such as irritated airways, breathlessness, and coughing. People with a lung condition suffer further with high levels of air pollution. Toxins can exacerbate symptoms, cause an asthma attack or a COPD flare-up.

Department of Health project that in the period 2017-2035, the total costs to health and social care are estimated to be in the region of £182m - £635m⁴. Air pollution is draining our resources, straining our health system. Air pollution is a public health crisis.

Particulate matter is one of the most dangerous pollutants for human health. It exacerbates lung conditions like asthma and chronic obstructive pulmonary disease (COPD). It has also been linked to the increased likelihood of developing heart conditions, strokes, mental health issues and dementia. Air pollution has been shown to cause cancers, with research showing that for every 10 µg/m³ of increased exposure to PM_{2.5}, the risk of dying from any cancer rose by 22%.⁵ If your child breathes in high levels of air pollution over a long period of time, they might be at risk of their lungs not working as well, as they grow older, developing asthma during childhood or as an adult - and if they have asthma already, air pollution can make it worse with wheezing, coughs and lung cancer when they're older and through infections like pneumonia.⁶

Almost 8 out of 10 (76.9%) people with a lung condition who responded to a 2024 Asthma + Lung UK

¹ <https://www.northernireland.gov.uk/sites/default/files/consultations/newnigov/draft-programme-for-government-our-plan-doing-what-matters-most.pdf> (gov.uk)

² <https://www.gov.uk/government/statistics/emissions-of-air-pollutants>

³ <https://www.asthmaandlung.org.uk/northern-ireland-manifesto-prevent-it>

⁴ <https://aims.niassembly.gov.uk/questions/printquestionssummary.aspx?docid=358789>

⁵ <https://aacrjournals.org/cebp/article/25/5/839/71066/Cancer-Mortality-Risks-from-Long-term-Exposure-to>

⁶ <https://www.asthmaandlung.org.uk/how-your-lungs-work/risks-your-childs-lungs/air-pollution#:~:text=If%20your%20child%20breathes%20in,wheezing>

survey on air quality across the UK said that they are concerned about their own & their families health and wellbeing, whilst over three quarters (78.5%) have said that they support the introduction of a clean air zone in their area⁷. We hear about the impact of domestic burning on lung conditions almost every day, whether that's smoke from bonfires or fumes from neighbours' chimneys.

This position paper looks to set out key policy proposals which will address the issue of wood burning in Northern Ireland, with reference to key developments across the UK. It has a specific focus on indoor burning of wood, with some reference to burning coal and other forms of fuel. While this paper sets out the urgent need for more evidence, policy makers know enough to be taking a precautionary approach by setting a public health framework for action to reduce wood burning now, before it's too late.

We would like to see the Northern Ireland Executive support the following recommendations to be taken forward during the 2022-2027 mandate:

1. The Northern Ireland Executive, alongside its public health and environmental agencies, should deliver a national awareness raising campaign to set out clear health advice, including specific guidance to all homes with a wood burning stove or open fire, alongside general messaging on the health impacts of air pollution.
2. The Department of Economy needs to Implement a ban on the sale of the most polluting fuels such as house coal and wet wood.
3. Deliver a region-wide scrappage scheme for the most inefficient wood burners.
4. Legislate for annual MOT-style checks on wood burners and stoves, and a ban on wood burning stoves in new builds.
5. Set up PM_{2.5} monitoring stations in every community for local authorities to accurately analyse the levels of PM_{2.5} across different neighbourhoods, identify hotspots and implement more targeted interventions designed to reduce pollution levels. DAERA currently fund local authorities to monitor, investigate and control sources of air pollution, but the grant is often underspent and requires local authority initiation.
6. Use data from increased monitoring to communicate health alerts to people living with lung conditions during periods of higher air pollution. This would better support hospitals and general practices to reduce emergency respiratory admissions, reduce hospitalisations and reduce waiting times.
7. Revise all legislation covering Smoke Control Areas to better support local authorities to implement and enforce SCAs. Along with better monitoring, local authorities would be able to better monitor and investigate and control air pollution caused by domestic burning as well as enabling stronger enforcement for repeat offenders.
8. Empower local authorities to track PM_{2.5} emissions at source so that SCA breaches can be identified and action taken.
9. The Northern Ireland Executive needs to deliver on the **draft Clean Air Strategy**, legislation and funding.
10. Consider implementing a Northern Ireland wide Smoke Control Area to avoid blackspots and to ensure that each community has the relevant air quality and public health protections in place.

⁷ Opinion Matters polling for Asthma + Lung UK Northern Ireland (2024)

Background

Health impacts of domestic burning

As the weather gets colder, there is often an increase in domestic burning across Northern Ireland, with people lighting fires and stoves to keep their homes warm in winter. We repeatedly hear from people living with lung conditions that this has a significant impact on their lung health and how they perceive how safe it is to walk around their area or leave windows open while a neighbour burns wood or any source of fuel.

The two most dangerous pollutants for human health are Nitrogen Dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). Air pollution has a major impact on public health and it is linked to an estimated 900 deaths each year in Northern Ireland⁸, and around 43,000 deaths across the UK. A single fireplace operating for one hour and burning 10lbs of wood, is estimated to emit 4,300 times more carcinogenic polyaromatic hydrocarbons than 30 cigarettes.⁹

Poor air quality worsens asthma and COPD symptoms resulting in people feeling more anxious about their lung health and increases the likelihood of a hospital admission, if symptoms worsen. It has also been linked to the increased likelihood of developing lung cancer, heart conditions, strokes, mental health issues and dementia.

Fine particulate matter - PM_{2.5}

What is it?

Tiny particles of solid and liquids in the air, such as dirt or dust. Referred to by their diameter in size, PM_{2.5} has a diameter smaller than 2.5µm (microns) - 30 times smaller than the average human hair.

How bad is it?

Particulate matter can trigger asthma attacks and symptoms flare up for people living with a lung condition such as COPD. It can enter deep into the lungs and into the blood stream. It is incredibly damaging to human health.

An estimated 97% of people in the UK are breathing levels of PM_{2.5} above what the World Health Organisation (WHO) guidelines recommend.

Where does it come from?

Concentrations of PM_{2.5} are particularly bad in Northern Ireland's cities and large towns. The main sources of PM_{2.5} pollution are industrial combustion, domestic combustion and road transport.

⁸ Air Pollution & Mortality on the Island of Ireland (20023) [air-pollution-and-mortality-on-the-island-of-ireland-report.pdf](https://www.bhf.org.uk/research/air-pollution-and-mortality-on-the-island-of-ireland-report) (bhf.org.uk)

⁹ <https://www.familiesforcleanair.org/health/health4/#:~:text=Other%20EPA%20estimates%20suggest>

Contribution to air quality in Northern Ireland and the UK

In Northern Ireland, the health impact of burning wood are two-fold: it increases the levels of dangerous pollutants inside the home; and increases the levels of ambient PM_{2.5} in the air outside, impacting both those choosing to burn wood and those who happen to live, work and play nearby.

A systematic review of the science of indoor air quality and its impact on children across the UK, undertaken by the Royal College of Paediatricians and Child Health in January 2020¹⁰, found that children spend on average just 68 minutes outdoors each day, meaning that the levels of pollution inside and incredibly important for the health of children and young people.

One study found that wood burners can triple the number of harmful pollutants in the home¹¹. Another has found that even Eco-design stoves emit 750 times more pollution than an HGV¹². While the exact impacts of wood burning stoves are contested by the Stove Industry Alliance, it is clear that they emit a significant amount of PM_{2.5}, which we know can enter the lungs and then the blood stream which can severely damage human health.

In January 2022, European regulations came into force to ensure that all new wood burning stoves, multi-fuel stoves and fireplaces must meet strict new guidelines known as Eco-design. However, even if someone purchased and installed a stove prior to January 2022 that does not meet these new standards then they currently don't have to do anything with that stove, as long as they are burning approved fuels.

Even kiln-dried wood and smokeless coal, which are still legal to burn in the UK, emit high levels of PM_{2.5}. These levels are extremely dangerous for vulnerable groups such as young children, the elderly and those living with lung conditions. There is also some concern about other chemicals which can be released through the burning of kiln-dried wood as a result of the treatments it has undergone to dry out. While the academic research is ongoing as we learn more each year about the full impact, this remains a major cause for concern for public health. Therefore, anyone with a lung condition should avoid burning anything on an open fire or in a wood burning stove, regardless if it is an Eco-design stove or not.

¹⁰ https://www.rcpch.ac.uk/sites/default/files/2020-01/the-inside-story-report_january-2020.pdf

¹¹ <https://www.theguardian.com/environment/2020/dec/18/wood-burners-triple-harmful-indoor-air-pollution-study-finds>

¹² <https://airqualitynews.com/news/fuels-news/feature-why-we-need-transparency-in-the-wood-burning-industry/>

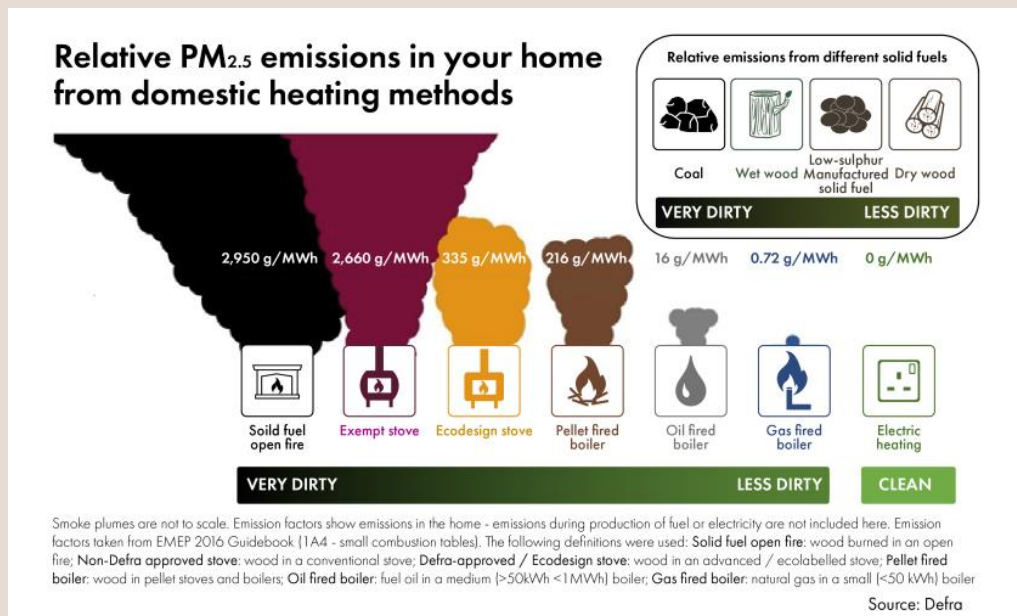
Emissions from domestic burning in Northern Ireland and the UK

Across the UK, domestic burning is a major source of particulate matter emissions, accounting for 16% of PM₁₀ and 27% of PM_{2.5}¹³. For comparison, in the same year, road transport accounted for just 13%, the proportion of all emissions stemming from domestic burning and will become even more prominent. It is estimated that around 50% of local ambient PM_{2.5} concentrations can be attributed to long-range transboundary transport emanating from outside Northern Ireland.

The use of wood stoves and open fires has been increasing year on year. As a result, levels of PM_{2.5} from domestic wood burning have increased by 35% between 2010 and 2020¹⁴. This has been attributed to a growing trend towards wood burning as a luxury household appliance, rather than due to any reduction in traditional heating methods. There has, however, been a 20% increase in wood burning stove sales as a result of increased gas prices across the UK¹⁵.

Monitoring of PM_{2.5} in Northern Ireland is recorded primarily at roadside. As such it is difficult to pinpoint what proportion of emissions come from domestic burning. Only three sites in Northern Ireland have been measuring PM_{2.5} concentrations for at least five years (this being considered the minimum for estimation of trends). Annual mean concentrations at these sites showed a decrease between 2019 and 2020, likely due to the COVID-19 restrictions, but since then have remained fairly stable: 7-9 µg m⁻³ at urban sites, 4 µg m⁻³ at the rural Lough Navar¹⁶. During the winter months there is likely to be an increase in use of wood stoves and fires most likely as a result of the cost of living crisis and soaring gas and electric costs.

The UK Government's Department for Environment, Food and Rural Affairs research (shown in image below) found Eco-design stoves produce 450 times more PM_{2.5} emissions than gas boilers¹⁷. For older stoves, now banned from sale, emissions are 3,700 times greater than a gas boiler.



¹³ <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25>

¹⁴ IBID

¹⁵ <https://www.dailymail.co.uk/news/article-10509439/Stove-sales-soar-gas-bills-rocket-experts-fear-increase-add-pollution-levels.htm>

¹⁶ Air Pollution in Northern Ireland 2023 report (Screen version).pdf (daera-ni.gov.uk) https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Air_Pollution%20in%20Northern%20Ireland%202023%20report%20%28Screen%20version%29.pdfv.uk

¹⁷ <https://www.theguardian.com/environment/2022/dec/08/eco-wood-burners-produce-450-times-more-pollution-than-gas-heating-report>

Burning trends in Northern Ireland

Despite its major contributions to levels of air pollution in the UK, just 8% of homes are burning combustible fuel - including wood, coal and biomass¹⁸. In Northern Ireland that figure stands at a staggering 27.1%, compared to 12% in Wales and just 6.8% in Scotland. It should be noted that for many rural areas in Northern Ireland, households are not connected to the gas grid. This also explains why we have the highest percentage of domestic burning in the UK and the most pressing need of immediate policy action.

Generally, wood burning tends to be most prevalent across towns and cities, with 68% of those burning wood living in urban areas of the UK¹⁹, however Northern Ireland appears to buck this trend. This may be because rural areas are less likely to be connected to gas and assumed to be burning more than urban areas. But those living in towns and cities who are burning are doing so for an additional source of heat.

Domestic burning is a social issue

Wood burners have become appealing for the more well-off, especially in urban areas. In these urban areas, a small number of households use wood burning stoves and open fires as their primary source of heat. It is clear that for the vast majority using such heating methods in urban areas, it is for aesthetic purposes.

In light of soaring gas and electric prices so far this decade, less affluent households in Northern Ireland are less likely to have the means to retrofit fireplaces or purchase newer and more efficient wood burners. These households are more likely to have greater exposure to poor air quality. We know that it is the most densely populated areas across our towns and cities that have much higher levels of PM_{2.5}. These are also areas where we find the most deprived communities.

Burning wood is not environmentally friendly

Wood burning stoves are being increasingly marketed as clean, green forms of domestic heating, particularly when compared to gas or oil burning heaters. This is because wood burning stoves do not rely on fossil fuels to operate, and can be classed as carbon neutral forms of heating.

Carbon neutral means that carbon dioxide (CO₂) released from the wood when burnt is balanced out by the CO₂ that the wood absorbed during its life. Wood burning is also seen as renewable because new trees can be planted after they have been cut down. However, despite these things both being true, it is not the case that wood burning is an environmentally friendly form of heating. There are a number of considerations that are often overlooked when making the case for wood being a renewable, carbon neutral fuel.

Firstly, suggesting wood burning is carbon neutral does not take into account the timeframe needed for trees to grow back when cut down for heating - wood burning only achieves carbon neutrality as a source of heating in the long term. It can take several decades and even centuries for forests to regrow²⁰.

Secondly, replanted trees do not have the same carbon capturing capability as forests that are native to Northern Ireland and the UK. Research has shown that native forests store more carbon dioxide than

¹⁸ <https://randd.defra.gov.uk/ProjectDetails?ProjectID=20159&FromSe>

¹⁹ IBID

²⁰ <https://www.sciencedaily.com/releases/2018/03/180322140915.htm>

planted forests, one study concluded that it would take 40 to 100 years for a managed forest to capture the same amount of carbon as a natural forest²¹. Trees planted for wood pellets are often cut down within 20 years which is not enough time to absorb the same quantity of carbon than they emit.

Thirdly, most people in the UK are not able to source their wood from local, renewable sources. The UK is the second largest importer of wood products in the world²² and imports of wood pellets, primarily used for burning, have increased year on year since 2019²³. Imported wood cannot be carbon neutral, as it creates additional carbon emissions from transportation, with around 80% coming from North America to the UK.²⁴.

Cutting down wood for fuel has broader environmental impacts beyond CO₂ emitted into the atmosphere and should, as a result, be reduced as much as possible. Forest ecosystems are vital for our planet and health. Deforestation and cutting down trees have disastrous consequences for biodiversity. An increase in the demand of wood or wood pellets will drive the harvest of biologically diverse old-forest growth, often in countries that have low environmental regulation. Evidence has also shown a host of negative consequences for health linked with deforestation.

Furthermore, carbon neutrality should not be seen as the goal in and of itself. The NI Executive has set the goal of at least 100% reduction in net zero greenhouse gas emissions by 2050²⁵ - within one generation it claims. Whilst under certain circumstances wood burners could be seen as carbon neutral, they are not "net zero" as this refers to not emitting CO₂ emissions from the start. Therefore, an increase in wood burning will undermine our attempts to reach net zero emissions by 2050, or indeed the interim targets of an at least 48% reduction in net emissions by 2030.

Finally, particulate matter pollution (both PM_{2.5} and PM₁₀) is itself helping to speed up climate breakdown. Particulate matter can be circulated around the globe, ending up in the most remote places, including the polar regions. When PM lands on ice and snow it darkens them slightly, leading to less sunlight being reflected back into space, and contributing to global warming²⁶.

²¹ IBID

²² <https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/>

²³ https://cdn.forestresearch.gov.uk/2022/02/ch3_trade_fs2021.pdf

²⁴ [https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2019/trade-8/origin-of-wood-imports-4/#:~:text=The%20USA%20\(61%25\)%20and,pellet%20imports%20to%20the%20UK.](https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2019/trade-8/origin-of-wood-imports-4/#:~:text=The%20USA%20(61%25)%20and,pellet%20imports%20to%20the%20UK.)

²⁵ The Climate Change Act (Northern Ireland) 2022 - Key elements | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

²⁶ <https://www.unep.org/news-and-stories/story/air-pollution-and-climate-change-two-sides-same-coin>

Policy context

Wood burning is a health and environmental issue, resulting in increasing levels of ambient PM_{2.5}. There is a duty to reduce levels of wood burning not just to protect those in their homes, but their neighbours and wider communities as well. We must therefore take a precautionary approach for public health based on all available evidence, in line with World Health Organisations advice for protection from environmental hazards.

In order to do this, there needs to be a policy framework that protects public health first. In Northern Ireland, we eagerly await progress on the draft Clean Air Strategy. This strategy will support similar policy asks on respiratory health.

Asthma + Lung UK Northern Ireland are willing partners in the drive for policy change and have already met the DAERA Minister twice in 2024, as well as attending various sub-groups on respiratory health. We have supported the Northern Ireland Executive in the evidence gathering phase of the Clean Air Strategy along with civil servants, academics, environmental organisations and other key stakeholders. We also sit on the Queens University Belfast Air Pollution and Health Steering Committee.

House coal and wet wood

All new stoves for sale in Northern Ireland and the UK must meet Eco-design standards, as set out in European regulations in January 2022²⁷, however these only account for less than 10% of all wood burning stoves currently in use in the UK and there are no plans to retrofit existing stoves²⁸. Improvements in wood burners and technological change are not enough. There must be behavioural change across the country to move away from coal and wet wood.

While these measures are likely to reduce levels of PM_{2.5}, they risk being ineffective without efficient enforcement. House coal releases just under 5 times more PM_{2.5} than smokeless coal, and wet wood releases 4 times more PM_{2.5} than dried wood. Regardless of any interventions to limit PM_{2.5} emissions, it must be remembered that domestic combustion in all forms is incredibly dangerous to human health, as there is no safe level of air pollution to breathe. It is clear that exposure to any level of PM_{2.5} from wood burning is likely to cause damage to people's health, whether that wood has been kiln dried or not.

There is a risk that allowing some types of wood to be burnt in specific Eco-design stoves will promote the idea that these are safe ways to burn fuel in the home. This is not the case. We know that there is no safe level of air pollution and such policies could undermine attempts by governments to communicate the importance of reducing air pollution for public health and environmental reasons.

²⁷ [https://cleanair.london/policy/implementation-of-ecodesign-regulations-from-1-january-2022-is-an-important-step-on-the-path-to-banning-wood-burning/#:~:text=From%201%20January%202022%2C%20the,nitrogen%20\(NOx\)%20\(e.g.%20less](https://cleanair.london/policy/implementation-of-ecodesign-regulations-from-1-january-2022-is-an-important-step-on-the-path-to-banning-wood-burning/#:~:text=From%201%20January%202022%2C%20the,nitrogen%20(NOx)%20(e.g.%20less)

²⁸ <https://randd.defra.gov.uk/ProjectDetails?ProjectID=20159&FromSe>

Smoke Control Areas

First introduced as part of The Clean Air (Northern Ireland) Order 1981, Smoke Control Areas make it illegal to emit smoke from chimneys unless exempt of using authorised fuels. In Northern Ireland, 6 of the 11 local authorities have at least one Smoke Control Area, with the majority covering the major urban settlements.

Through Freedom of Information and Environmental Information Regulations requests, Asthma + Lung UK Northern Ireland has found that between 2019 and 2023 a total of 686 investigations were carried out by local authorities after receiving complaints within Smoke Control Areas. Of these investigations the only outcome was advice issued to the household. According to the FOI responses, no council has formally taken action such as issuing fines.

Smoke control areas are not fit for purpose. They are not effectively communicated to residents nor properly enforced by local authorities. We estimate that there are roughly 60 people across Northern Ireland who are responsible within local authorities to investigate complaints and possible breaches of Smoke Control Areas. The problem of enforcement appears not to be workforce related but the powers and resources available to local authorities to investigate and take appropriate action.

Public awareness of the dangers

Many of those who burn wood do not do so purely to heat their homes. Instead, the main reasons why people in the UK used a wood burning stove are: to create a homely feel, so they could heat just one room, to save money and/or because they like look of a fire²⁹.

Asthma + Lung UK Northern Ireland has been calling for greater education around the dangers associated with air pollution, as well as the specific dangers that domestic burning can cause to people with asthma and other lung conditions.

When it comes to domestic burning, there is simply not enough knowledge of the potential dangers both to the individuals burning wood inside and also to others nearby.

Asthma + Lung UK Northern Ireland polling showing that 71.7% are concerned with air quality in their local area. Our polling also found that 58.4% are concerned with the increased use of wood burning stoves and 78.5% of respondents would support the Introduction of a clean air zone in their area.³⁰

²⁹ IBID

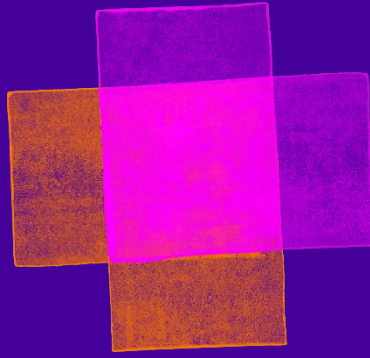
³⁰ Opinion Matters polling for Asthma + Lung UK Northern Ireland (2024)

Policy recommendations

1. **The Northern Ireland Executive, alongside its public health and environmental agencies, should deliver a national awareness raising campaign to set out clear health advice, including specific guidance to all homes with a wood burning stove or open fire, alongside general messaging on the health impacts of air pollution.**
2. **The Department of Economy needs to implement a ban on the sale of the most polluting fuels such as house coal and wet wood.**
3. **Deliver a region-wide scrappage scheme for the most inefficient wood burners.**
4. **Legislate for annual MOT-style checks on wood burners and stoves, and a ban on wood burning stoves in new builds.**
5. **Set up PM_{2.5} monitoring stations in every community** for local authorities to accurately analyse the levels of PM_{2.5} across different neighbourhoods, identify hotspots and implement more targeted interventions designed to reduce pollution levels. DAERA currently fund local authorities to monitor, investigate and control sources of air pollution, but the grant is often underspent and requires local authority initiation.
6. **Use data from increased monitoring to communicate health alerts to people living with lung conditions** during periods of higher air pollution. This would better support hospitals and general practices to reduce emergency respiratory admissions, reduce hospitalisations and reduce waiting times.
7. **Revise all legislation covering Smoke Control Areas to better support local authorities to implement and enforce SCAs.** Along with better monitoring, local authorities would be able to better monitor and investigate and control air pollution caused by domestic burning as well as enabling stronger enforcement for repeat offenders.
8. **Empower local authorities to track PM_{2.5} emissions at source so that SCA breaches can be identified and action taken**
9. **The Northern Ireland Executive needs to deliver on the draft Clean Air Strategy, legislation and funding.**
10. **Consider implementing a Northern Ireland wide Smoke Control Area to avoid blackspots and to ensure that each community has the relevant air quality and public health protections in place.**

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- ⁴ <https://aims.niassembly.gov.uk/questions/printquestionssummary.aspx?docid=358789>
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- ⁶ <https://www.asthmaandlung.org.uk/how-your-lungs-work/risks-your-childs-lungs/air-pollution#:~:text=If%20your%20child%20breathes%20in,wheezing>
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- ¹⁶ Air Pollution in Northern Ireland 2023 report (Screen version).pdf (daera-ni.gov.uk) https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Air_Pollution%20in%20Northern%20Ireland%202023%20report%20%28Screen%20version%29.pdf.uk)
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- ²⁴ [https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2019/trade-8/origin-of-wood-imports-4/#:~:text=The%20USA%20\(61%25\)%20and,pellet%20imports%20to%20the%20UK.](https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2019/trade-8/origin-of-wood-imports-4/#:~:text=The%20USA%20(61%25)%20and,pellet%20imports%20to%20the%20UK.)
- ²⁵ The Climate Change Act (Northern Ireland) 2022 - Key elements | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)
- ²⁶ <https://www.unep.org/news-and-stories/story/air-pollution-and-climate-change-two-sides-same-coin>
- ²⁷ [https://cleanair.london/policy/implementation-of-ecodesign-regulations-from-1-january-2022-is-an-important-step-on-the-path-to-banning-wood-burning/#:~:text=From%201%20January%202022%2C%20the,nitrogen%20\(NOx\)%20\(e.g.%20less](https://cleanair.london/policy/implementation-of-ecodesign-regulations-from-1-january-2022-is-an-important-step-on-the-path-to-banning-wood-burning/#:~:text=From%201%20January%202022%2C%20the,nitrogen%20(NOx)%20(e.g.%20less)
- ²⁸ <https://randd.defra.gov.uk/ProjectDetails?ProjectID=20159&FromSe>
- ²⁹ IBID
- ³⁰ Opinion Matters polling for Asthma + Lung UK Northern Ireland (2024)



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