De-Minimis Assessment

For Self-Certified Measures in Defra

Title of Measure	Solid Fuel Burning: Taking action to reduce $PM_{2.5}$ and smoke emissions
Lead Department/Agency	Defra
Expected Date of Implementation	2027
Date of Assessment	
Lead Departmental Contact	
Type of Measure (primary/secondary etc)	Secondary legislation
BRU Reference Number	

Cost of Preferred Option (2025 prices, 2025 present value)		
Total Net Present Social Value £904m	**Business Net Present Value** £-0.9m	**Equivalent Annual Net Direct Cost to Business (EANDCB)** £0.09m

1. Policy Overview, Rationale for Intervention and Intended Effects

1.1 Problem Under Consideration

Air pollution is the biggest environmental risk to human health and the impacts of poor air quality are disproportionately felt by low-income communities[1], exacerbating health and social inequalities. According to the World Health Organization, particles of 2.5 micrometres or less ($PM_{2.5}$) are considered the most harmful pollutant to human health[2]. Domestic combustion, referring to households burning a variety of solid fuels including wood and manufactured solid fuels (MSFs), is a major source of $PM_{2.5}$. In 2023, domestic combustion contributed 20% of the UK's total $PM_{2.5}$ emissions. From 2009 through to 2020, emissions of $PM_{2.5}$ from domestic combustion rose by 36%, largely due to a rise in emissions from the burning of wood. In recent years, the majority of $PM_{2.5}$ emissions from domestic combustion came from households burning wood indoors, which contributed 11% of total $PM_{2.5}$ emissions in 2023.[3] The latest domestic burning survey[4] shows that the prevalence of domestic burning has increased by 4 percentage points since previous research conducted by Defra in 2018-2019.[5]

The $PM_{2.5}$ targets[6] under the Environment Act 2021 require us to reduce concentrations to no more than 10 micrograms per metre cubed ($\mu g/m^3$) by 2040, and to reduce public exposure to $PM_{2.5}$ by 35% by 2040, compared to a 2018 baseline. These targets strengthen

[1] Exposure to air pollution in England, 2003–23, The Institute for Fiscal Studies, December 2024 https://rcp.ac.uk/media/jzul5jgn/every-breath-we-take-the-lifelong-impact-of-air-pollution-full-report.pdf
Health consequences of air pollution

[2] Health risks, World Health Organization (WHO)

[3] Emissions of air pollutants in the UK – Particulate matter (PM10 and PM2.5) - GOV.UK (updated February 2025)

[4] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043

[5] Research to understand burning in UK homes and gardens - AQ1017

[6] The Environmental Targets (Fine Particulate Matter) (England) Regulations 2022

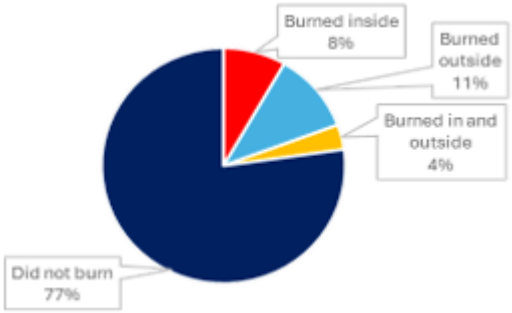
our existing legal framework, including our legally binding targets to reduce $PM_{2.5}$ emissions under the National Emissions Ceilings Regulations 2018.[7]

Whilst we are making good progress towards interim Environment Act $PM_{2.5}$ targets, further action will need to be taken to be confident of meeting our long-term statutory targets. To achieve statutory targets and to address the impact of $PM_{2.5}$ on public health, we have little alternative but to take action to reduce emissions from this source.

The Government recognises that solid fuel appliances are a source of $PM_{2.5}$ and that this is known to contribute to a number of health conditions (e.g. lung cancer, strokes etc.) through long term exposure. [8]

In 2022-23, 23.5% of households in the UK engaged in domestic burning (8% indoors, 11% outdoors, 4% both), up from 19% in 2018-19. This increase has been largely driven by indoor burning, rising from 8% to 12%. Survey data suggests that approximately 1% of UK households are reliant on solid fuels for their heating[9], showing that most indoor burning occurs alongside other heating systems rather than as a substitute driven only by affordability pressures.

Figure 1 **Percentage of UK households that burned over a 12-month period[10]**



Use of burners, stoves or enclosed fireplaces (65%) and open fireplaces (32%) account for most indoor burning. Solid fuel appliance use is relatively evenly spread across regions, apart from London where use is less common.[11]

Rural areas have a higher prevalence of burning (34%) compared to urban areas (21%). However, despite lower prevalence, burning in urban areas has greater impact on population exposure due to the higher population density in urban areas compared to rural areas.[12]

[7] The National Emission Ceilings Regulations 2018
[8] Particulate matter (PM2.5) – Check air quality – GOV.UK
[9] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043
[10] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043
[11] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043
[12] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043

1.2 Rationale for Government Intervention

Air pollution is a form of negative externality, which is a cost imposed on people who are external to the transaction. In this case, this relates to producers of harmful pollutants impacting the health of the public who are not involved in emitting these pollutants. For example, studies show that smoke from wood heating enters neighbouring homes, providing a clear exposure pathway. [13] [14] The solid fuel market does not account for the health costs imposed on the public associated with burning highly polluting solid fuels without government intervention, negatively impacting social welfare. Therefore, government intervention is necessary in order to correct this market failure and improve public health.

Additionally, the benefit of clean air is considered a public good, which is a good that is unavoidably provided to all and its consumption by an individual does not impact the consumption of another's. As a result of clean air being a public good, it is not possible for it to be supplied solely by the market. Subsequently, government intervention is required to ensure that clean air is sufficiently supplied.

Government intervention is also necessary in order to address asymmetric information in the solid fuel market. Asymmetric information is when one party (consumer/producer) is unaware of the full costs or benefits of the good or service, leading to an inefficient allocation of resources. In this instance, consumers are often unaware of the health impacts of burning certain domestic solid fuels. In a recent Public Attitudes Survey conducted by Defra, only 3% of respondents selected burning in homes and gardens as the main cause of air pollution in England.[15]

1.3 Current Regulatory Landscape

We have already implemented a number of measures to reduce emissions from domestic burning. Under the Clean Air Act 1993[16], local authorities can declare Smoke Control Areas (SCAs) covering some or all of their area, which make it an offence to emit smoke from a chimney of a building. If solid fuels are being burnt, they must either be used on an authorised appliance (which has been tested with that fuel to ensure it meets emission limits) or be an authorised fuel which can be used on non-authorised appliances (e.g. open fires) which have been tested under these conditions and have met emission limits.

Following feedback from local authorities, the Environment Act 2021[17] made changes to the SCA framework to streamline enforcement, including allowing councils to issue fixed penalty notices (FPNs) to those contravening the rules, and granting local authorities the power to broaden the scope of their SCAs to include moored inland waterway vessels.

In addition, through the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 ("Domestic Solid Fuels Regulations" or DSFR)[18], we regulated to improve fuel standards. We introduced restrictions on the sale of wet wood as well as limits on the sulphur content

[13] Ries FJ, Marshall JD, Brauer M. Intake fraction of urban wood smoke. Environ Sci Technol 2009;43:4701–6

[14] Fuller GW, Sciare J, Lutz M, Moukhtar S, Wagener S. New Directions: Time to tackle urban wood burning? Atmos Environ 2013;68:295–6.

[15] Public Attitudes to Air Quality - AQ1060

[16] Clean Air Act 1993

[17] Environment Act 2021

[18] The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020

and smoke emissions from MSFs. We have phased out the sale of bituminous coal (traditional house coal) used for burning in domestic premises.

In 2022, Eco-Design legislation[19] [20] came into force introducing new requirements for efficiency and included specific requirements for air quality emissions. Since then, only Ecodesign compliant stoves can enter the market for sale across the country. Ecodesign stoves, compared to non-Ecodesign stoves, produce lower emissions and are more efficient. The regulations set emission requirements for particulate matter (PM), organic gaseous compounds (OGC), carbon monoxide (CO) and nitrogen oxides (NOx). The stoves must also meet a set efficiency level.

In January 2023, Defra published the Environmental Improvement Plan (EIP)[21] setting out proposals to deliver clean air. These included continuing our drive to improve fuel and stove standards for solid fuel burning. In December 2025, Defra published its revised Environmental Improvement Plan[22], setting out our intent to consult on a package of measures to tackle emissions from domestic burning. Air pollution is also included as a key element of this Government's Health Mission[23] five-point plan on the prevention of ill health because of its impact on human health. Within this context, the Government is considering a comprehensive series of interventions to reduce emissions so that everyone's exposure to air pollution is reduced.

We are now seeking views through a consultation for a package of policies to further reduce $PM_{2.5}$ emissions from domestic solid fuel burning (including wood and manufactured solid fuels).

1.4 Proposed government interventions

On stoves, we are seeking to set a new stove emission limit and the introduction of a mandatory labelling scheme for emissions and health. On fuels, we are exploring new mandatory health labelling.

The measures are in line with the Government's Environmental Principles, particularly the rectification at source principle as it targets emissions at the start point rather than downstream mitigation. The package of considered measures would contribute to the improvement of environmental protection by protecting people from the effects of human activity on the natural environment. In line with the Environmental Principles Policy Statement[24], decisions on measures to be taken forward will balance social, economic, and environmental considerations.

2 Policy Options (including alternatives to regulation)

[19] Ecodesign of energy-consuming products - https://www.gov.uk/guidance/placing-energy-related-products-on-the-uk-market

[20] Commission Regulation (EU) 2015/1185 of 24 April 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for solid fuel local space heaters (Text with EEA relevance)

[21] Environmental Improvement Plan

[22] Environmental Improvement Plan (EIP) 2025 - GOV.UK

[23] Build an NHS Fit For the Future - GOV.UK

[24] Environmental principles policy statement - GOV.UK

This section firstly describes the longlist of policies before moving onto how these policies were appraised to reach a shortlist. A preferred way forward is then set out which will be compared with a do-nothing option and an alternative option.

2.1 The Longlist

The following longlist is a list of all the domestic combustion policies that have been considered:

i. New stove emission limit
ii. Mandatory labelling scheme for solid fuel stoves
iii. Mandatory health labelling for fuels
iv. Increasing the fixed penalty notices (FPN) to a range of £300-£2,000
v. New Manufactured Solid Fuels (MSFs) emissions limits (ELV)
vi. Extending the scope of the Domestic Solid Fuels Regulations
vii. Stove scrappage scheme, or funding installation of equipment reducing emissions from appliances
viii. Banning domestic burning
ix. Making the whole of England a Smoke Control Area

In the revised EIP 2025, we committed to actions to reduce emissions from domestic burning. Some of these have been taken forward, and others are still under development. We are now ready to consult on a suite of measures that are fully developed and ready to go (policies i-iv above). These shortlisted policies are outlined in section 2.2.

Measures v and vi have been removed for the time being from the consultation, due to the costs for businesses and costs for consumers. These may be revisited at a later date.

Measure vii has been rejected because research conducted on international comparators has shown mixed results. For example, the Danish scrappage scheme was found to be ineffective and poor value for money[25]. Scrappage schemes are expensive to deliver at scale and would require significant public funding and could undermine wider messaging on reducing burning as they can signal support for stove ownership and use rather than signalling reducing burning overall.. The research shows that the emissions reductions delivered are not enough to justify the expense. As a result, any reduction in emissions may be negated by an increase in burning more generally, therefore this option would not represent good value for money.

Measure viii (banning domestic burning) has also been rejected since domestic burning provides the primary heating source for approximately 1% homes and a ban would risk putting households into fuel poverty (where households face difficulty affording sufficient energy to heat their homes to an acceptable standard).[26]

Additionally, measure ix (making the whole of England a Smoke Control Area) has also been rejected. While this would simplify a complicated regulatory landscape and help messaging and understanding among householders and enforcement bodies, it would have a disproportionate impact on rural areas where air quality is generally less of an issue than in urban areas. Additionally, exemptions would be required for people who are off the gas grid or who rely on domestic burning as their primary heat source.

[25] Holzfeuerung – Deutsche Umwelthilfe e.V.

[26] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043

Non-regulatory options, such as education and communication campaigns, have been considered but have not been considered effective to address the problem under consideration. Whilst these approaches would be beneficial without regulations to support them, their impact is likely to be limited as consumer and business behaviour change is difficult to achieve in the absence of regulation. Many households lack clear information on the health and environmental impacts of burning fuels and make choices based on cost or convenience rather than emissions. Manufacturers and retailers lack incentive to produce or promote low-emissions stoves and fuels when doing so increases costs. . Therefore, we mainly consider non-regulatory options as complimentary to future regulations. However, we welcome views during the consultation on whether other possible non-regulatory options should be recommended and remain open to considering these options in more detail in further analysis for future assessments.

2.2 Details of Shortlisted Policy Options

A summary of the measures is outlined in Table 1. Impacts have been modelled based on the current assumption that the policies will come into force in 2027. However, actual implementation dates for measures may differ, depending on consultation outcomes and industry readiness.

Table 1 ***Summary of shortlisted policy options***

Policy	**Description**	**Territorial Application**	**Assumed Date measure is currently expected to come into force**
New stove emission limits	Tightens smoke emissions limits for new stoves from 5g/hr to 1g/hr (plus 0.1g per 0.3 kW heat output). Applies only to new stoves entering the market.	Great Britain, in Northern Ireland only in Smoke Control Areas.	2027
Mandatory Stove Emissions Labelling	New label for stoves showing emissions and tested fuels and health messaging. Displayed alongside existing energy efficiency labels.	Great Britain	2027
Mandatory Health Labelling for Fuels	Label on fuel packaging highlighting negative health impacts of burning solid fuels.	UK-wide subject to legislation with devolved governments.	2027

i. New stove emission limits

The new stove emissions limits will tighten the smoke emission limit values (ELV) on new stoves entering the market in the UK from 5g/hr to 1g/hr (plus 0.1g per 0.3 kW heat output).

Industry testing data suggests that 70% of stoves tested since 2018 already meet this new standard.[27] Testing evidence further shows that most new solid fuel appliances significantly outperform a 3g/hr standard, suggesting that a less stringent limit (for example 2g/hr) would deliver limited additional emissions reductions. More stringent limits (for example 0.5g/hr) would be difficult to measure accurately given current testing methods creating uncertainty around compliance. Therefore, an ELV of 1g/hr has been chosen.

Current stove standards permit a smoke emissions rate of no more than 5 grams per hour (plus 0.1g per 0.3 kW of output) of operation. To maximise the impact of this policy and to streamline implementation, we are now proposing a new stringent standard. To maximise the impact of this policy we will look to streamline the testing methodology to enable one testing regime to meet a range of air quality needs including the new stringent emission limit. In the past, stoves could demonstrate compliance with emissions limits using more than one recognised testing approach, however, all methods had to be in line with official standards.

This proposed new standard would apply to new stoves entering the market only. Stoves which are already installed or placed into the market before the new legislation comes into force would not be affected. Existing additional restrictions in SCAs will still apply, including the ban on burning wood in an open fireplace or in stoves not authorised for burning wood. This standard can prevent future emissions from growing as new stoves are purchased and old ones are replaced with those that follow the new standard. While it does not immediately reduce emissions from existing stock, it should gradually improve overall emissions.

Territorial application

We propose to apply this new emission limit across Great Britain. In Northern Ireland, the new limits would only apply in Smoke Control Areas, so that Northern Ireland remains compliant with Windsor Framework obligations, as the emission limit would conflict with EU product standards.

ii. <u>Mandatory labelling scheme for solid fuel stoves</u>

To provide customers with the information they need to make informed choices, including information about the health impacts of domestic burning, we propose introducing a mandatory stove labelling scheme for new solid fuel stoves. The new label would be displayed alongside the existing energy efficient label and include a rating scale feature reflecting the measured emissions of the product. This would require a separate label to be attached to all new stoves that display information about the stove's emissions, and the fuels for which it has been tested for use. The label would provide clear, standardised, and consistent information, available immediately at the purchase point, allowing consumers to compare stove models and make an informed decision on the cleanest product to buy. We understand that people who burn at home can engage with messaging about the health impacts of domestic burning on themselves and their families. The label would therefore also include a clear statement highlighting the impact burning solid fuels has on the health of individuals and their families. Appliances already on the market, or in people's homes, would not be affected by the new labelling
. The new labelling would be in addition to, not a replacement for, current labelling.

[27] Industry testing data is provided to the government by HETAS based on existing stove certification requirements.

Territorial application

For emissions labelling, Schedule 6 of the Environment Act 2021 allows the UK Government to establish labelling schemes. The proposed labelling scheme would be implemented in Great Britain only under this Schedule with the agreement of the Scottish Government and the Welsh Government. Under the Windsor Framework, Northern Ireland is precluded from participating in such a scheme.

Health labelling, which we are proposing to be included on stoves alongside the emissions labelling, would likely require new legislation in order to apply across the UK with agreement from Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland.

iii. Mandatory health labelling for fuels

We are also proposing mandatory health labelling on solid fuel packaging. Domestic burners purchase fuels relatively frequently as survey evidence suggest 50% indicate they purchase fuels in small quantities for 'a few burns at time' rather than bulk buying in large amounts[28]. Putting labels on these products could have more impact than on stoves as it will provide a regular reminder that burning these fuels have a negative effect on the health of their family and their neighbours.

The lead in time would need to be agreed with industry as packaging is ordered sometimes years in advance.

Territorial application

Health labelling would likely require new legislation in order to apply across the UK with agreement from Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland.

2.3 Policy Options

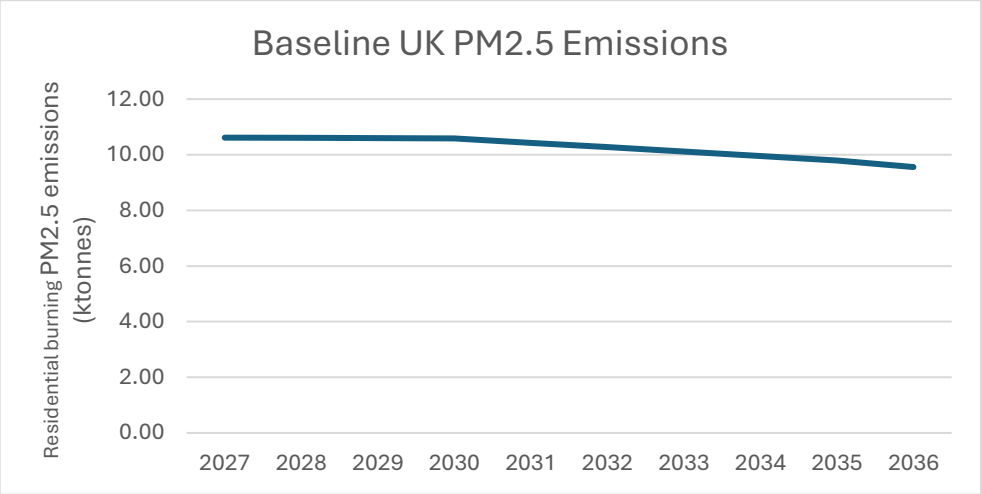
Option 0 (baseline): Do Nothing

This option would continue with existing legislation. The current policies have less stringent ELVs for stoves than the shortlisted policies, no call for mandatory stove and solid fuel health labelling, and the maintenance of the £300 FPN. While the estimated PM2.5 are expected to decrease at the baseline rate projected in the National Atmospheric Emissions Inventory (NAEI)[29], these reductions are not sufficient to meet the 2040 PM2.5 targets, indicating further intervention is required. Baseline projections can be seen in Figure 2.

[28] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 and Monitoring of domestic burning practices in the UK - AQ1043

[29] Projected Air Quality Emissions Data: 2025-2050

Figure 2 ***Baseline UK PM2.5 Emissions***



Option 1: Implement some of the shortlist policies

In this option only some of the shortlisted options are implemented after consultation. At this stage, the combination of measures has not been fixed, as the final policy package under this option will be informed by consultation responses which may enhance understanding of industry readiness, cost to consumers and business, and public appetite. This option would be less ambitious than the commitments set out in the 2023 EIP on domestic burning.

Option 2 (preferred way forward): Implement all the shortlisted policies

In this option, all the shortlisted options are implemented. This option is the preferred way forward because it is the most effective at reducing emissions of PM2.5 from domestic burning, having the greatest positive impact on public health.

The following analysis of the costs and benefits looks at Options 1 and 2 against the do nothing scenario (Option 0). Option 1 is represented by the cost and benefits of the individual shortlisted policies and Option 2 is represented by the total for all the shortlisted policies.

3 Description of Novel and Contentious Elements (if any)

The stove industry have been vocal critics of Defra's existing policies to tackle domestic burning. They argue that Defra overestimates the negative impact of domestic wood burning and its contributions to PM emissions. We anticipate that they could be critical of any measure which impacts the sale of domestic burning appliances, including the proposed tighter stove emission limits and the mandatory health labelling, calling for more action on open fires.

4 Assessment of Impacts on Business

This section sets out the costs to business from the proposed measures. Where the cost is predicted to have a high probability of occurring and is significant, it has been monetised. Where the cost is negligible (defined as a having a change on impact of 5% or less), the cost is explained qualitatively but not monetised. The appraisal period is over a 10-year period between 2027 and 2036. Costs were adjusted using the ONS GDP deflator[30] to express them

[30] GDP deflators at market prices, and money GDP - GOV.UK

in 2025 prices to align with a consistent price base year . A standard discount rate of 3.5% was applied to the costs to reflect the time value of money in accordance with HM Treasury's Green Book[31]. A De Minimis Assessment is justified because the total direct costs to business of the proposed measures are estimated to be below the ±£10 million threshold.

It should be noted that the policy to increase the FPN for not adhering to regulation is mostly ignored in the cost benefit analysis, with the exception of familiarisation cost to local authorities. This is because it is a wealth transfer from business to government, therefore there is no change in social value.

A summary of expected impacts resulting from the policy are grouped by affected stakeholder group in Table 2.

Table 2 ***Summary table of expected impacts (2025 prices, 2027 present value)***

Stakeholder group affected	**Impact**	**Cost/ Benefit**	**Monetised?**	**NPV Estimate (£m, discounted)**	**Direct/Indirect (i.e. in EANDCB or EANDCH)**
Businesses	Familiarisation costs	Cost	Yes	0.8	Direct
	Monitoring costs – testing charges and registration fees	Cost	No	-	Direct
	Monitoring costs – labelling costs	Cost	No	-	Direct
	Capital costs – new stoves that meet emission limits	Cost	No	-	Direct
	Capital costs – excess stock costs	Cost	No	-	Direct
	Profit loss	Cost	No	-	Indirect
Local authorities (LAs)	Familiarisation costs	Cost	Yes	0.3	Not applicable
Society	PM2.5 abatement	Benefit	Yes	932.6	

4.1 Monetised Cost To Business

The total Equivalent Annualised Net Direct Cost to Business (EANDCB) of Option 2 is **£0.09** million a year, in 2025 prices and with a present value base year of 2027. Table 3 presents the estimated number of firms impacted by the proposed measures.

[31] The Green Book (2022) - GOV.UK

Table 3 **Type and number of firms based in the UK**

Firm Type	Number of firms
Wood suppliers	1,163
MSF Suppliers	81
Appliance manufacturers	315

4.1.1 One-off Costs

The only monetised costs to business associated with the shortlisted measures are familiarisation costs that are assumed to only be incurred in the first year of implementation (2027).

Familiarisation Costs

Familiarisation costs following changes in legislation are business costs associated with changing business processes, including getting agreement to the changes, as well as communicating, testing and implementing changes. The types of firms impacted by the policies and the scope of the familiarisation costs per policy are presented in the tables below. Based on evidence from previous impact assessments, the cost per firm is based on the assumption that it would take 1 FTE Administrator, 2 FTE technical experts, and 1 FTE Manager each a full working day (8 hours) to become familiar with the change in regulations. This assumption will be tested at consultation.

The hourly wage of each grade of employment is set out in Table 4. The data on the wage of employees by grade is from the ONS Annual Survey of Hours and Earnings (ASHE) 2025 Provisional Release[32].

Table 4 **Employee wages**

	Mean Gross Hourly Pay, 2025 (£)
Managers	22.83
Technical experts	29.18
Administrative occupations	17.34

The non-wage labour cost is accounted for by uplifting the wage cost by 22.0% .[33] This is then multiplied by 8 hours to calculate the familiarisation cost per employee. Applying the assumed staff mix outlined above results in a £962 total familiarisation cost per firm. Finally, the total familiarisation costs below are calculated by multiplying the per-firm cost by the estimated number of businesses impacted from Table 3 for each policy and discounting over the appraisal period. These familiarisation costs per measure are outlined in Table 5.

Table 5 **Familiarisation cost per measure**

Measure	Type of Firms Impacted	Total Familiarisation Cost £m, 2027-2036 (2025 prices, discounted)[34]	Scope
i. Stove Emission Limit	Appliance manufacturers	£0.3	GB, SCA in N. Ireland

iii. Mandatory Label: Stove	Appliance manufacturers	£0.1	GB, N. Ireland only for health label
iv. Mandatory Label: Fuel	Wood suppliers, MSF suppliers	£0.5	UK
Total (Option 2)		**£0.9**	

4.2 Non-monetised Costs to Business

This section splits the non-monetised costs into two sections. Firstly, the cost to fuel suppliers as well as fuel and stove manufacturers. Secondly, the cost to businesses that burn solid fuels. Non-monetised costs are likely to be quantified following through consultation with stakeholders if more evidence becomes available.

4.2.1 Cost to Business: Fuel Suppliers, Fuel Manufactures and Stove Manufactures

Monitoring Costs

There are compliance costs to fuel and stove manufacturers in the form of fuel and stove testing charges and annual registration fees.[35] This is thought to cover the cost to the non-profit government-recognised certification body, Heating Equipment Testing and Approvals Scheme (HETAS) in certification. However, this is not an extra cost since these industries are already paying HETAS to certify fuels and stoves to show they meet the current DSFR in terms of fuels across England and the requirements for sale/use in a smoke control area (SCA) and for eco-design standards across the country in terms of stoves.

For the mandatory labelling of stoves and fuel, the costs are currently assessed as negligible. The label template will be created by Government, so there will be no additional costs to industry related to design of the label. This is standard practice in regulated product markets, a well-established example being the energy efficiency rating system. For stove emission labels, the information needed to create the label is already captured in the testing carried out to ensure compliance with the DSFR. Manufacturers of stoves and fuels will incur a cost associated with printing and attaching the label. This cost is considered to be minimal relative to the overall manufacturing costs and operational costs and therefore unlikely to have a significant impact on individual firms. On this basis, the costs have not been monetised but this assumption will be tested through consultation with stakeholders.

Capital Costs

For the stove emission limit measure, across the UK stove manufacturers will have to develop stoves that meet the smoke emission limit value of 1g/hr. This cost is thought to be minimal based on data from the stove testing contractor HETAS that suggests 70% of the stoves tested since 2018 meet the proposed limit of 1g/hr. Therefore, most stoves in the market already meet the proposed stove emission limit, and so it is assumed that most stove manufacturers will not incur significant capital costs due to this regulation. However, this will mean the remaining 30% of stoves may require redesign or additional testing, so some

[32] Annual Survey of Hours and Earnings (ASHE) - Office for National Statistics

[33] RPC guidance note on 'implementation costs'

[34] Familiarisation cost = No. of businesses in scope of the measure * labour cost of familiarisation. The labour cost includes the hourly wage of employees involved in the new system and the number of hours spent understanding the new system.

[35] Fuel application fees: A1 1 Ready to Burn MSF Application Form Rev 1.2 Aug 2021.indd
Stove application fees: Apply for an appliance exemption for use in smoke control areas - GOV.UK

manufacturers could incur modest capital costs. Though these assumptions will be tested at consultation, it should be noted that this assumes that the number of stoves tested and available in the market that meet the proposed stove emission limit is proportional to the number of stoves sold that meet the proposed standard (i.e. 70% of the stove market meeting the stove emission limit means that 70% of stoves sold meet the stove emission limit).

Another potential cost to stove manufacturers is wasted capital in the form of inventory/excess stock, in that stoves that have already been manufactured that do not meet the proposed stove emission limit will not be able to be sold. However, this is also thought to be minimal based on the proportion of stoves that already meet the proposed stove emission limit, and the policy planned to have at least a two-year window before being implemented. As a result, there would be no need to sell through existing stock before introducing the additional labelling. This assumption will be tested further at the consultation.

Loss in Profits

Part of the objective of health labelling is to remind consumers of the negative health impacts of burning solid fuels addressing the asymmetry in information that exists between consumers and a third party (e.g. neighbours) and thereby reducing the externalities from overconsumption. It is possible that as a direct consequence consumers will purchase less solid fuel and fewer stoves, thereby having a direct cost to fuel suppliers and stove manufacturers in the form of reduced profits. The reason this cost is non monetised is because the effect of health labelling on consumer behaviour is not currently quantified. Alternatively, there is some evidence of a 'green halo effect' [36] through which eco-labels enhance the perception of a product beyond what the eco-label describes (e.g. a carbon label could improve how people think about a product's safety). As a result, stove manufacturers and the fuel industry could see increased profits as a result of the mandatory health labelling.

The change in profits for stove manufacturers is thought to be minimal considering that desk-based research found that there is not a significant difference in the price of stoves (per kWh) above and below the proposed stove emission limit. Therefore, it is estimated that firms' profits are not impacted by consumers switching from higher to lower polluting stoves.

4.3 Assessment of Benefits

This section presents the abatement and associated monetised benefits from the proposed measures over the 10-year assessment period, 2027-2036.

Over this period, it is estimated that PM2.5 abatement would be 10.8 kilotonnes. The associated monetised value of this abatement is £933 million, in 2025 prices and discounted. This estimate is derived by applying emissions factors to the projected reduction in PM2.5 from the new stove emissions limits measure. We then monetise the abatement by multiplying the abatement by the damage costs, which are the estimate social value of a change in pollutant emissions.[37] The graphs below show the emissions over time in Option 2

[36] Does the Eco-Score lead to a halo effect?

[37] Air quality appraisal: damage cost guidance – It should be noted that the impact pathways approach (IPA) was not used as it was not deemed proportional in this instance and due to time and resource constraints. The IPA is not expected to show significantly different results. Defra expects to use the IPA for this policy in future analyses.

(with all the shortlisted policies) compared to the baseline (Option 0, a do nothing scenario).[38] Figure 3 and Table 6 present the estimates for monetised abatement.

Figure 3 **PM2.5 Emissions, baseline and Option 2**

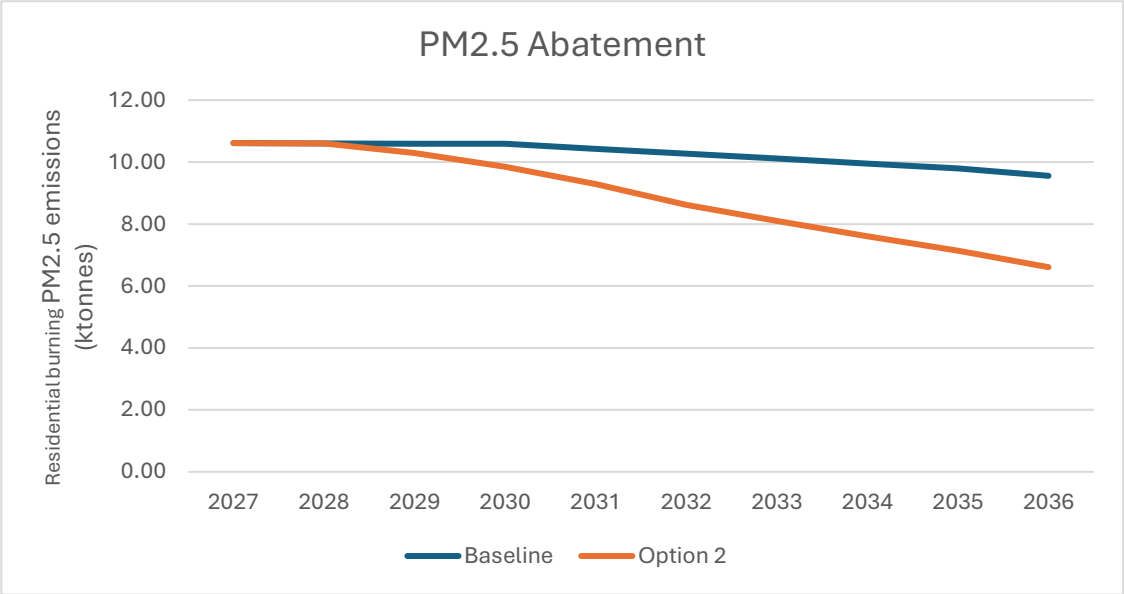


Table 6 **Monetised benefit from PM2.5 abatement, 2027-2036 period (2025 prices and discounted)**

PM2.5 Damage Cost = £95,574 (£/kilotonne) in 2025 prices

Measure	PM2.5 Abatement (kilotonnes)	Monetised Abatement (£m)
Stove Emissions Limit	10.8	£933

The benefits above were discounted by a health discount rate of 1.5% (in accordance with the Green Book) in order to reflect the time value of money. The abatement was estimated using activity and emissions data from the National Atmospheric Emissions Inventory 2021 and 2023[39]. The activity for solid fuels in the NAEI is derived from the Digest of UK Energy Statistics (DUKES)[40].

4.4 Monetised Benefit

Stove Emissions Limit

The abatement of this measure is estimated to be 10.8 kilotonnes of PM2.5 over the 10-year period 2027-2036, equating to £933 million in monetary terms (in 2025 prices and discounted).

Abatement from stoves would arise from the uptake of 1g/hr stoves over the appraisal period. Based on the lifetime of stoves, existing stoves will be replaced every 15 years alongside any new stove purchases activity. As previously mentioned, implementation of the

[38] NAEI emission projections are every 5 years (2030, 2035, etc.). Interim years based on linear annual difference.

[39] Air Pollutant Emissions Data | National Atmospheric Emissions Inventory

[40] Digest of UK Energy Statistics (DUKES) - GOV.UK

measure allows 3 years for stove manufacturers to adjust to the proposed stove emission limit. Subsequently, abatement is assumed to only occur after the 3-year implementation period is over.

4.5 Non Monetised Benefit

Mandatory Labelling: Stove and Fuel measures

Evidence on the effectiveness of ecolabelling is mixed, but we understand that ecolabels could encourage greener choices, meaning a greater number of purchases of stoves with better emissions saving. Similarly, in terms of fuel health labelling, this could increase the purchases of lower emitting fuels. Overall, this would bring benefits for reducing emissions, having a positive impact on human health and the environment and increase the net present value figure presented as part of this assessment. Evaluating the true impact of ecolabelling and health-labelling interventions on the purchasing behaviour of household appliances and fuels, respectively, is challenging. This is because most of the reviewed evidence is related to food and drink ecolabels and only a limited number of studies explored behaviour in real world settings.[41] However, the net effects of the proposals are expected to be positive due to the low costs of implementing these schemes, as well as the evidence suggesting that ecolabelling and health labelling can have small but positive effects.

4.6 Sensitivity Analysis

This section presents the outcome of sensitivity analysis which was conducted on the key assumptions to test their robustness.

4.6.1 Damage Costs

Sensitivity analysis has been conducted on the damage cost of PM2.5, in line with the damage cost guidance in the Green Book and the air quality damage cost guidance.[42] The low, central, and high damage costs estimates are presented in Table 7 for PM2.5 2025 prices.

Table 7 **Low, central, and high damage cost estimates, £/ktonne**

Damage Cost	Low	Central	High
PM2.5	£37,615	£95,574	£250,874

Damage cost estimates have a sensitivity range because the impacts of air pollution on both health and non-health pathways are inherently uncertain The emissions dispersion modelling, the interpretation of changes in air pollution concentrations and the valuation of those impacts all contribute to this uncertainty. This has been reflected through damage cost sensitivity analysis as presented in Table 8, with low, central and high values for monetised PM2.5 abatement. The results, in 2025 prices and discounted, reflect the uncertainty showing that there is a considerable range in monetised abatement.

[41] 15848_THE_ROLE_OF_ECOLABELS_IN_THE_PATH_TO_NET_ZERO (1).PDF
Developing and testing behavioural insight informed communication messages about domestic burning - AQ1021
Impact of health warning labels on selection and consumption of food and alcohol products: systematic review with meta-analysis - PubMed

[42] Air quality appraisal: damage cost guidance - GOV.UK – uplifted to 2025 prices

Table 8 ***PM2.5 monetised abatement range***

	Low	Central	High
Monetised PM2.5 abatement	£367.0m	£932.6m	£2447.9m

5 Wider Impacts (Including Assessment of Impact on SMBs and Households)

5.1 Small and Micro Business Assessment (SaMBA)

Small and micro-businesses can be affected disproportionately by the burden of regulation. The SaMBA ensures that new regulatory proposals are designed and implemented in a manner aiming to mitigate disproportionate burdens where appropriate. Small businesses are defined as having 10-49 employees and micro as having 1-9 employees. Data on number of employees in businesses in the following sectors is limited: fuel manufacturers, fuel suppliers, stove manufacturers, and unregulated businesses that burn. As a result, the following analysis aims to provide an approximation of the potential impact of the proposed policies on small and micro businesses.

Impact on Small and Micro Business (SMBs) per Measure

i. New stove emission limits

There are numerous stove manufacturers in the UK (315), therefore, it is possible to consider that the majority of stove manufactures are SMBs. As a result, the burden of tightening stove ELVs falls on SMBs. It is not possible to exempt the SMBs in the stove manufacturing sector without undermining the objective of the policy; however, a phased implementation approach has been taken to allow business to adapt.

ii. Mandatory labelling scheme for solid fuel stoves &
iii. Mandatory health labelling for fuels

As previously mentioned, due to the large number of firms in the stove manufacturing sector, stove manufacturers are likely to be SMBs. If consider that the same logic can be applied to fuel suppliers, then it is likely that the burden of mandatory health labelling for stoves and solid fuels falls on SMBs. It is not possible to exempt the SMBs from this measure without undermining the objective of the policy.

These assumptions will be tested through consultation, and the distributional impact on SMBs will be reviewed through feedback and further engagement with stakeholders.

SMBs Overall Cost

While for many of the measures the burden of compliance falls on SMBs, as previously outlined, the negative compliance costs are thought to be minimal. In terms of stove emission limit measure, since the policy is the tightening of existing regulation and most of the market is already compliant, the monitoring, administrative and capital costs are mostly unchanged. Similarly, for health labelling, the costs will be negligible as the information needed to create the label is captured in the testing already carried to ensure compliance with the DSFR and the design cost of the label is incurred by the government.

5.2 Cost to Households

There are no costs incurred by households over the period 2027-2036.However, there is a possibility that businesses may pass on costs to consumers through higher prices, which could disproportionately impact fuel-poor houses who spend a larger share of their income on heating. We intend to test household costs through the consultation process.

5.2.1 Non-Monetised Household Cost

Cost of Compliance to Households
The burden of compliance is primarily on businesses manufacturing and selling fuels and stoves, the cost of compliance is not placed on the consumer. While there is the possibility that the cost of compliance would be passed onto consumers through higher prices, as previously outlined, the cost of compliance to business is minimal so it is estimated that no compliance costs need to be passed onto to consumers. The burden of compliance being placed on industry also means that households do not incur familiarisation costs.

5.3 Costs to Government

Familiarisation Costs to Local Authorities
Since the proposed measures will change what local authorities are enforcing, local authorities will incur familiarisation costs following the introduction of new legislation. This is a one-off cost assumed to occur in the first year of implementation. Based on previous domestic burning impact assessments, local authority familiarisation cost has been estimated by assuming that it takes 1 FTE local authority enforcement officer a day to become familiar with new measure per local authority for each measure. Since different measures impact different Devolved Governments (DGs), Table 9 outlines the familiarisation cost to local authorities per DG.

Table 9 **Familiarisation Cost, Devolved Governments**

Devolved Governments	**Local Authority Familiarisation Cost (£m)**
England (inc London)	0.30
Scotland	0.02
Wales	0.01
N. Ireland	0.0
Total	**0.33**

6 Assessment of Impact on Trade and Investment (Including Internal Market Assessment)

The proposed stove measures do not fully encompass N. Ireland. Therefore, there is a limited risk that stoves moving from N. Ireland to the rest of the UK complicates enforcement of the proposed regulations. However, the analysis considered that less polluting stoves were estimated to cost the same as more polluting stoves. Therefore, it can be thought that there is little financial incentive to purchase a more polluting stove in N. Ireland and use in other areas of the UK.

If the proposed measures were to be extended to areas outside of SCA in N. Ireland, it would be necessary to consider the implications of the Windsor Framework and the United

Kingdom (Internal Market) Act, in particular compatibility with the Ecodesign Directive (2009/125/EC) and the new Ecodesign Requirements for Sustainable Products Regulation ((EU) 2024/1781).

7 Assessment of Environmental Impacts

7.1 The Environmental Principles

The Environmental Principles Policy Statement sets out the need for policy to consider environmental protection and enhancement. Part of the definition of environmental protection is the "protection of people from the effects of human activity on the natural environment." The proposed policies aim to directly reduce the negative impacts of air pollution on people, thereby directly addressing this aspect of environmental protection. Out of the 5 environmental principles, the proposed policies mainly consider the rectification at source principle. This principle aims to address the origin of environmental damage at its source to remedy its effects. By directly targeting domestic burning, which is one of the greatest contributors to PM2.5 emissions in the UK, the proposed measures are fulfilling this principle.

It is not thought that the proposed policies would have a significant impact (positive or negative) on other elements of the environment, such as biodiversity or habitat loss. The analysis below quantifies the small change in greenhouse gas emissions from the proposed measures.

8 Rationale for producing a DMA (as opposed to an OA/IA)

A De Minimis Assessment is justified given the estimated Equivalent Annualised Net Direct Cost to Business (EANDCB) is £0.09 million. This is under the +-£10 million threshold.

Will the policy be reviewed (yes/no): yes	**Review date if applicable: 2032**

Review Provision Detail and Monitoring and Evaluation Plans

Basis of the review: As soon as reasonably practicable after the end of the period of three years from the date on which these Regulations fully come into force, Government will conduct a review of the effectiveness of the regulatory provisions.

Review objective: The key objective of the review is to assess whether the policy has resulted in the projected reductions of PM2.5 and whether any change seen can be attributed to the legislation. Given the large contribution domestic combustion has to overall PM2.5 emissions, the review will aim to study the progress made in working towards the National Emission Ceilings Regulations 2018 (NECR) and the 2021 Environment Act PM2.5 targets. Beyond assessment against our statutory commitments, we will seek to assess the implementation processes and the resulting impacts of the legislation on other areas. We will aim to determine the extent to which the policies were delivered as intended and understand the contextual factors that influenced their implementation. This may include an examination of how the policy was received by key stakeholders such as local authorities, businesses, and members of the public, and the underlying reasons for varying levels of support or opposition.

Review approach and rationale: The review would be based on air quality data monitoring and further modelling on the achievability of NECR and Environment Act PM2.5 targets,

either through the EIP process or a domestic alternative reporting mechanism. In addition, social research methods (e.g. survey and engagement of stakeholders) may be used to examine whether there have been changes in the choice of appliances or fuels used at the household level and whether this differed across geographic locations or socioeconomic groups. Finally, the review would aim to consider whether any unintended consequences arose as a result of the policies, such as the emergence of informal or grey markets, to ensure a comprehensive understanding of both the intended and unforeseen effects of the legislation.

Baseline: The current (baseline) position against which the change introduced by the legislation can be measured are the projected emissions of PM2.5. The current business-as-usual estimates will be comparable with the actual emission levels following the introduction of the legislation and at the time when a Post Implementation Review (PIR) is conducted to measure the success of the policy. To explore other impacts, pre-existing baseline survey data on household fuel use and appliance ownership, attitudes towards domestic burning, and a previous evaluation of the Domestic Solid Fuels Regulations, published in 2025 by Defra[43], will be used to make comparisons with any newly collected survey data to determine change.

Success criteria: The policy will be successful if a considerable fall in PM2.5 emissions is observed by the projected review date. In 2036, the anticipated reductions in PM2.5 compared to the baseline under the preferred option is to be approximately 2.9kt.

[43] Evaluation of the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020