

Understanding Domestic Solid Fuel Burning Behaviours

INGENIOUS Briefing Report, November 2026

Summary of findings and recommendations

FINDINGS:

- Most people viewed solid fuel burning as a cost-effective and environmentally sustainable heating method that has little impact on their health.
- Because of the perceived benefits of burning solid fuels and the drawbacks of alternative heating methods, people reported being unlikely to stop burning solid fuels in the future.
- There were gaps in knowledge of government regulations on solid fuel burning, because people found it hard to find and apply information about these regulations to their own specific circumstances.
- People also thought that current solid fuel burning regulations were ineffective.

RECOMMENDATIONS:

- To support people to reduce or stop burning solid fuels, continued awareness-raising of the impact on health is needed, alongside myth busting about the relative cost of solid fuel burning and its impact on the planet. Communications emphasising social norms against solid fuel burning may also be helpful.
- To support adherence to solid fuel burning regulations, people need clear, individualised, easier-to-access guidance on:
  - Whether their home is in a smoke control area
  - What DEFRA-approved/exempt appliances are, and how to tell if they have one
  - What types of solid fuels can be burnt in their specific appliance in their location
- Clear communications are also needed that explain why solid fuel burning regulations are important, how they are enforced, and what the consequences of not following them are. Publicising action taken to enforce regulations may be helpful.

Background

In the UK, burning solid fuels (e.g., wood, briquettes, smokeless coal) in the home is a key source of fine particulate matter (called PM2.5)[1]. Particulate matter is made up of small pieces of solid materials or droplets of liquids that are in the air. These particles are harmful to human health including increasing the chance of developing respiratory and cardiovascular diseases, and lung cancer[2]. Even DEFRA-approved and Ecodesign stoves can produce over 450 times more particulates per unit of energy than a gas fired boiler[2]. Worldwide, it is estimated that over 2.9 million deaths each year are due to household air pollution caused by burning solid fuels[3].

In this research project[4], we interviewed and/or surveyed 34 people living in Bradford who burn solid fuels in their homes, to explore what might help or make it difficult to reduce or stop burning solid fuels, and might help or make it difficult to follow government regulations on solid fuel burning.

Who we spoke to

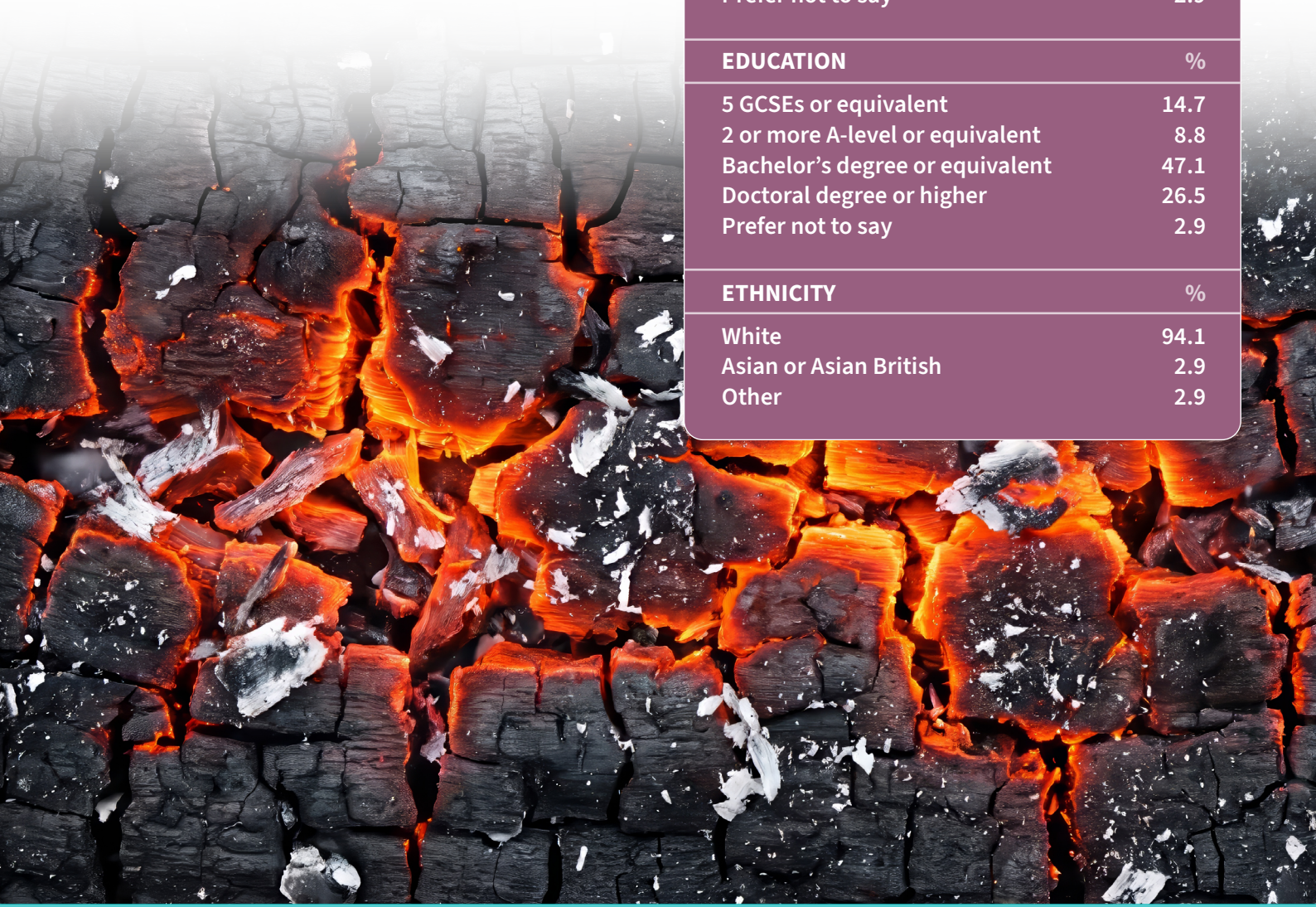
34 people living in Bradford who burn solid fuels in their homes.

- Around half (47%) lived in a Smoke Control Area (an area where you can only use certain types of solid fuel unless you have an exempt appliance, also called a DEFRA-approved stove)
- Most people had only one solid fuel burning appliance (e.g., a wood or coal burning stove), and most had the appliance installed after they moved to their home.
- Most people reported worrying about money either never or only sometimes, and all felt warm enough in their home on a typical winter day either some or all of the time.

GENDER	%
Female	52.9
Male	41.2
Non-binary	2.9
Prefer not to say	2.9

EDUCATION	%
5 GCSEs or equivalent	14.7
2 or more A-level or equivalent	8.8
Bachelor's degree or equivalent	47.1
Doctoral degree or higher	26.5
Prefer not to say	2.9

ETHNICITY	%
White	94.1
Asian or Asian British	2.9
Other	2.9



What we learnt about barriers to reducing or stopping burning solid fuels at home

1. Most people viewed solid fuel burning as a cost-effective and environmentally sustainable heating method that has little impact on their health.

1a. The majority of people we spoke to reported that the sustainability of solid fuels (e.g., as a renewable resource) was a key motivator when choosing to install or use their solid fuel burning appliance. Air pollution appeared less of a concern, as fewer than a third considered the appliance's emission rate when purchasing.

"I like to feel environmentally conscious. So it's like, we've talked about some of the issues of pollution, but I think in the grand scheme it balances up because of the green credentials of renewable energy"

1b. Around half the people we spoke to thought that burning solid fuels had little effect on household air pollution, and most thought that burning solid fuels had little impact on their health.

"It's an effective enough wood burner... It burns really efficient. I don't get much ash. I keep the chimney swept. So I think there's minimal pollution"

"I feel like if I use the wood burner, any pollution I produce is going to affect me most and it doesn't affect me. I feel incredibly healthy… There's so many other things that should be tackled before wood smoke, because smoke can be minimised and can be incredibly environmentally friendly"

2. Because of the perceived benefits of burning solid fuels and the drawbacks of alternative heating methods, people reported being unlikely to stop burning solid fuels in the future.

2a. Burning solid fuels was associated with positive emotions and a sense of nostalgia. Around a third of people we spoke to thought that burning solid fuels was seen as positive by the general public.

"It's a really warm, wonderful heat when you're in a room and visually it's aesthetic, so actually it's a pleasing thing to have a log fire burning in your room"

"They're the new thing, aren't they? People are having gas fires taken out and wood burners put in, so at the moment society is not suggesting that we need to stop using them or reduce using them, they're the new thing to be using"

2b. The cost of using alternative heating methods and their impact on the planet were the most frequently reported barriers to stopping burning solid fuels.

"And especially with the current energy crisis, it's nice to be able to use locally sourced, seasoned wood that we can burn and reduce our gas uses with current gas prices"

"Ethics. I think it's unethical as a species that what we're doing to the planet and I don't feel comfortable using and wasting electricity and gas"

IMPLICATIONS

To support people to reduce or stop burning solid fuels, continued awareness-raising of the impact on health is needed, alongside myth busting about the relative cost of solid fuel burning and its impact on the planet. Communications emphasising social norms against solid fuel burning may also be helpful.

It is important to note that the people we talked to felt relatively financially secure. Households who do not have an affordable alternative to heating their home by burning solid fuels may instead be supported to burn solid fuels as safely as possible, by following government regulations.

What we learnt about barriers to following government regulations on solid fuel burning

3. There are gaps in knowledge of government regulations on solid fuel burning, because people found it hard to find and apply information about these regulations to their own specific circumstances.

3a. Most people knew what a 'smoke control area' was and whether they lived in one, but fewer understood what 'authorised fuels' and 'exempt appliances' were, and that giving off smoke from a chimney can result in a fixed penalty notice or nuisance abatement notice. Just under a third didn't know whether their appliance was DEFRA-approved.

"I was aware that there was some regulation, but I wouldn't have been able to tell you exactly what it was"

3b. Some people we spoke to had actively searched for information about solid fuel burning regulations but found it difficult to work out whether they lived in a smoke control area, and which fuels were ok to use in which areas and which appliances.

"I just wanted... a visible map of Bradford district and, red, you know, are we in a smoke control area, green are we not in a smoke control area? … I think the information is there, but it's very hard to find, it's buried away and it's not clear which areas"

- **Smoke control areas** are areas where you cannot release visible smoke from a chimney. In these areas, you can only buy or use authorised fuels (certain types of solid fuel that do not produce much smoke), unless you have an exempt appliance
- **Exempt appliances**, which are often called DEFRA-approved stoves, are solid fuel burning appliances that are legally permitted to burn unauthorised fuels inside smoke control areas

4. People thought that current solid fuel burning regulations were ineffective.

4a. Some people we spoke to believed that solid fuel burning regulations were important, but there was also a lot of scepticism. Some people felt that regulations were based on untruths or ulterior motives, while others felt that it was difficult to check whether people were following regulations, and therefore that ignoring the regulations was unlikely to be penalised.

"How do you police what people are burning inside their homes. It's hard enough to enforce the TV licence, how are you going to do wood burning?"

"It's a symbolic act by the government to tackle people's health. It's performative politics… a performative action by the government to look like they're doing something about climate change"

"I think that was the confusing thing, you know, seeing smoke coming from the chimney. It's, like, how do you measure it? … what is too much smoke? How is it going to be judged?"

IMPLICATIONS

To support adherence to solid fuel burning regulations, people need:

- Clear, individualised, easier-to-access guidance on:
  - Whether their home is in a smoke control area
  - What DEFRA-approved/exempt appliances are, and how to tell if they have one
  - What types of solid fuels can be burnt in their specific appliance in their location
- Communications that explain why solid fuel burning regulations are important, how they are enforced, and what the consequences of not following them are. Publicising action taken to enforce regulations may be helpful.

Report authors and acknowledgements

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Understanding Air Pollution in Homes

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