Clean Air IN LONDON

Chris Stark
Chief Executive
Climate Change Committee
1 Victoria Street
Westminster
London SW1H OET

By email

14 August 2021

Dear Chris

Ending the sale and use of wood burning appliances, including wood burning stoves, in cities and towns

Thank you very much for your 8 June reply to Clean Air in London's (CAL's) letter of 4 May and putting me in touch with Jenny Hill who has been most helpful in answering my follow up questions.

1. CCC's position on air quality and wood burners

CAL was pleased to receive confirmation that the Climate Change Committee's (CCC's) position on air quality, wood burners and related matters includes:

- The CCC recognises the importance of tackling air quality issues as part of the transition to Net Zero greenhouse gas emissions.
- Any outcome that removes greenhouse gas emissions at the expense of air quality would be unacceptable.
- Wood burners should not be counted towards either low-carbon heat targets or renewable targets.
- Wood burners are not a desirable policy outcome, based on their inefficient heat generation, air quality impacts and the suboptimal use of finite bioenergy resources.
- Burning wood on open fires should not be counted towards renewable energy targets.

Your letter also referred to research analysis done for the CCC on the air quality impacts of potential CCC scenarios. In particular, the report by your 'UK Health Expert Advisory Group' for the Sixth Carbon Budget titled 'Sustainable Health Equity: Achieving a Net Zero UK (UCL)' (published 6 November 2020)[1] stated on page 15:

It is also worth noting that even though $PM_{2.5}$ emissions are lower when biomass is used for electricity generation rather than fossil fuels, the role of biomass in achieving net-zero is highly contested given first the time lag (from decades to hundreds of years) between CO_2 from biomass combustion being emitted and the sequestration of those emissions via new tree growth, and second the fact that emissions from imported biomass are not accounted for in the UK.

[1] https://www.theccc.org.uk/publication/ucl-sustainable-health-equity-achieving-a-net-zero-uk/

On the following page (page 16), the report recommended four regulatory interventions:

- *Transition to clean energy sources – decarbonising both power generation and industrial, commercial and domestic energy.*
- *Set a target date to eliminate home installations of wood burning and gas stoves, prioritising elimination in urban areas.*
- *Set a further target date to eliminate/remove all existing wood burning stoves in urban areas.*
- *Enforce existing and new fuel standards.*

Individually and collectively, these statements are clear and reassuring.

2. Sixth Carbon Budget (and related documents)

CAL is seriously concerned however, that the Sixth Carbon Budget[2], published on 9 December 2020 (i.e. less than five weeks after the 'UK Health Expert Advisory Group's report was published), was not clear or reassuring on the above matters.

The "Policies for the Sixth Carbon Budget and Net Zero" (December 2020) says:

The dynamics of each sector, and the principle of minimising early scrappage, point to common timings on the phase-out of high-carbon assets on the path to Net Zero, regardless of what low-carbon solution replaces them (Table 1.2):

- ***Boiler lifetimes of 15 years imply a phase-out date for the installation of fossil fuel boilers in advance of 2035**, in order for uptake of low-carbon heat to be sufficient to decarbonise buildings by 2050. Our scenarios involve sales of oil boilers phased out by 2028, and gas boilers by 2033 in residential homes, with the exception of hydrogen-ready gas boilers in areas where the gas grid is set to convert to low-carbon hydrogen.*

And:

"Outside of zones designated for the gas distribution network to switch to hydrogen, all new heating appliances will need to be low-carbon by 2033." (page 141)

"Requiring gas turbines and boilers to be hydrogen ready would reduce risks of them becoming stranded assets and would provide ready-made markets for low-carbon hydrogen." (page 141)

Biomass is mentioned some 50 times including on page 145:

"Best-use of biomass and wastes are those that maximise GHG savings on the path to Net Zero. New applications need to be aligned to 2050 already."

In the same report "wood" is mentioned only four times – either in relation to "construction" or "biodegradable waste" and "stoves" are not mentioned at all.

[2] https://www.theccc.org.uk/publication/sixth-carbon-budget/

The Sixth Carbon Budget Methodology report states:

Low-carbon heat (page 94)

i) Residential buildings

Our assessment of the economy-wide best use of biomass indicates that use in buildings should be minimised as far as possible. Some scenarios exclude a role for biofuels. Others include a limited role, restricted to use in hybrid configurations alongside heat pumps in the hardest-to-heat off-gas homes, such that biofuels provide a back-up role in meeting peak demands on the coldest winter days.

Bioenergy and waste supply (page 179):

A number of different bioenergy production routes were included in our analysis, along with the use of wastes. Feedstock costs have been held fixed over time, whereas conversion processes have been assumed to become cheaper and more efficient over time. All our bioenergy conversion processes are assumed to be energy self-sufficient (i.e. no external inputs of fuel or electricity required), which is reflected in the conversion efficiencies used. The addition of CCS increases conversion costs and lowers efficiencies. Costs are set out in section 3.

- ***Solid biomass.*** *Domestic feedstocks (forestry residues, perennial energy crops, straw & waste wood) and imported biomass feedstocks are supplied directly (without conversion) to the Power, Manufacturing & Construction, Residential & Non-residential Buildings and Agriculture sectors. These end-uses increasingly transition to CCS, or phase out over time. Current informal supplies of biomass for building heating (~8 TWh/year) are assumed to phase out in line with biomass combustion boilers in buildings.*

The CCC's messaging is highly technical, even obscure, and adds to the public impression, rightly or wrongly, that the CCC is ambivalent about the continued use of wood burning appliances including wood burning stoves. Further evidence is provided below.

CCC statements on fossil fuel boilers

The CCC has proposed dates for ending the sale of coal, gas and oil in various documents but not wood burners. The Sixth Carbon Budget's Balanced Pathway[3], sees the installation of high-carbon fossil fuel (e.g. oil) boilers phased out by 2028 and gas boilers by 2033 in residential homes with the exception of hydrogen-ready gas boilers in areas where the gas grid is set to convert to low-carbon hydrogen (section (d) and Table 2.3 on page 71).

In contrast, the CCC advises on the 'best use' of biomass with no phase out dates, as far as CAL can find, for any such appliances used for domestic heating. CAL understands 'biomass' includes 'wood'.

[3] https://www.theccc.org.uk/publication/sixth-carbon-budget/

CAL believes that this 'silence' on wood burning appliances conflicts with the CCC's clear and helpful position on wood burners as set out in correspondence between us and summarised in (1) above.

3. Conflicting messaging on wood burning

CAL believes that the lack of clarity from the CCC's publications and public statements (including omissions) is causing or contributing to inaccurate, conflicting or confusing messaging to the public on wood burning appliances including wood burning stoves.

Stove Industry Alliance

By way of illustration of these issues, the 'Stove Industry Alliance' (SIA) states in FAQs on its website[4]:

Q1. I've heard wood burning stoves might be banned?
There are no proposals to ban wood burning stoves, despite what some media headlines may have portrayed. Defra has included wood burning stoves in their Clean Air Strategy published in 2019, and their advice is to install an SIA Ecodesign Ready stove and to use Ready to Burn wood fuel. The Mayor of London has also given the same advice. You can be confident buying an SIA Ecodesign Ready stove that you are buying the latest stove technology and an appliance that meets the government's emission requirements.

Q5. Are wood burning stoves at all "green"?
Yes, wood burning stoves are a ***genuine renewable very low carbon method of heating****, and the modern stoves also have low levels of emissions. A key aspect here is the low carbon nature of wood burning, as the trees remove as much CO_2 during their lives as they produce being burnt in a wood burning stove. A tree left to decompose in the forest will produce more CO than when it is burnt in an Ecodesign compliant stove or fireplace.* ***[CAL emphasis.]***

https://stoveindustryalliance.com/consumer-advice/faqs/

The CCC has (rightly) set dates for ending the sale and then use of combustion appliances using fossil fuels (e.g. coal, gas and oil) but not done so for wood burning appliances including wood burning stoves (which are considered by the CCC to use 'biomass' not 'fossil fuel').

At a bare minimum, CAL considers that the CCC should be explicitly and publicly recommending the phasing out of the sale and then use of wood burning appliances including wood burning stoves in urban areas with dates and subject only to very specific and limited exceptions or exemptions.

4. Seeking to understand the CCC's apparent reluctance to propose ending the sale and use of wood burning appliances including wood burning stoves

CAL assumes that the CCC has chosen not to recommend explicitly and publicly ending the sale or use of wood burners despite knowing the harm they do to air quality and public health. CAL understands that the CCC considers that:

[4] https://stoveindustryalliance.com/consumer-advice/faqs/

"…its role, as set out under the Climate Change Act 2008[5], is to advise on greenhouse gas emissions, and to take in to account a number of factors in our advice, including but not limited direct role advising Government on its statutory duties under air quality legislation.

"…advising on the phase out of fossil fuel appliances is clearly within our remit – the same cannot be said for other environmental pollutants. Our 2018 Biomass report considers the emissions of carbon from biogenic sources primarily from a carbon cycle perspective – whilst we acknowledge the wider impacts and factor those into our advice, we do not advise on policies which have as their ***primary purpose*** *compliance with wider environmental controls."*

"Its role is to advise on the 'best use' of biomass."

More particularly, the CCC seems to consider that:

- wood burners and biomass burners are not 'fossil fuel' appliances.
- coal, gas, oil are fossil fuels.
- coal, gas, oil and are 'high-carbon' fuels.
- heat pumps, solar and wind are 'low caron assets'

Defra considers wood, biomass and coal to be solid fuels[6 and 7].

The CCC considers biomass (including wood) to be a 'low carbon' fuel provided its lifecycle emissions can be shown to be below a given threshold. It may come down to the types of 'feedstocks' e.g. using residues or waste which would not otherwise be used.

Chapter 2 in your report titled 'Biomass in a low-carbon economy' (published 15 November 2018)[8] is titled 'When is biomass production low-carbon and sustainable?'. Section 2.5 Overview (pages 55 and 56) states:

Whilst there is no universal answer to the question as to whether biomass is low-carbon, there is a sufficiently robust evidence base to identify contributing factors to both low- and high-GHG types:

Low-GHG biomass for energy depends on preventing losses of land carbon stocks both through direct and indirect effects, and minimizing the contributions from the cultivation and processing of biomass across the supply chain.

At the other end of the spectrum, biomass used for energy can be associated with much higher GHG emissions than fossil-fuel alternatives, particularly when it drives large losses in land carbon stocks.

Effective policy is essential to ensure that low-GHG biomass is incentivised and high-GHG biomass is regulated out. It also has a role in incentivising best practice which could facilitate higher levels of low-GHG biomass supply. The role of policy in achieving this is picked up in Chapter 3.

[5] https://www.legislation.gov.uk/ukpga/2008/27/contents
[6] https://consult.defra.gov.uk/airquality/domestic-solid-fuel-regulations/
[7] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf
[8] https://www.theccc.org.uk/publication/biomass-in-a-low-carbon-economy/

Box 2 titled 'Good practice to produce biomass in a sustainable low-carbon way' (page 12) states:

*"The evidence suggests that sustainable low-carbon energy **is** possible, but this can **only** be achieved in certain circumstances, **if** certain practices and criteria are followed." [**CCC emphasis**.]*

Figure 2 titled 'Hierarchy of best use for sustainable biomass resources' (on page 13) shows uses in biomass in UK buildings limited by 2050 to "*Only very limited additional use for buildings heat: niche uses in e.g. district heat and hybrid heat pumps*".

Figure 2.7 on page 57 shows the use of agricultural residues and wastes using low-carbon energy in processing as being Low-GHG biomass likely to lead to substantially lower GHG emissions relative to a fossil fuel alternative.

Figure 2.8 on page 67 shows the 'Air quality emissions of bio-feedstocks and fossil fuels in residential heating – NOx and particulates'. This figure shows that open fires, conventional stoves and conventional wood burners produce much more PM and NOx than fossil fuels such as coal, gas or liquid fuel.

For example, for wood or biomass burning to be considered 'low-carbon' it would need to:

i. be supplied from forests with fast growth rates.
ii. come from wood feedstocks such as waste wood and residues, industrial residues and fast decaying forest residues.
iii. be waste wood that comes primarily from the construction and demolition sector.
iv. exclude high moisture content wood.
v. be naturally dried as opposed to using fossil fuels to dry the wood or biomass.
vi. involve 'low' carbon transport emissions.

Defra warns against the burning of treated waste (e.g. old furniture, pallets or fence panels) because treated waste can emit harmful fumes and toxic pollutants, such as arsenic, into your home when burnt[9].

It is hard therefore for CAL to imagine a combination of practical circumstances where the use of wood burning appliances, including stoves, would make sense from a 'greenhouse gas' perspective never mind from an 'air quality' perspective e.g. it might need to be: from fast growing local forests; naturally dried; and waste, in a remote property with no neighbours on a cold winter day.

I have not found a 'glossary' in recent CCC publications. This is an important omission because your recommendations, including 'exceptions', are highly technical and likely to be impossible to fathom for a lay person.

5. Wood stove industry

CAL has written recently to Defra about the cosy world of the wood stove industry. The letter dated 11 August 2021 is attached, pending a reply from Defra, given its relevance to a number of issues raised in our correspondence.

[9] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf

Please note that Woodsure Limited, the quality assurance certification scheme for woodfuel, was due to take over the running of the government's Biomass Suppliers List[10] on behalf of the Department for Business, Energy and Industrial Strategy on 1 July 2021[11].

6. Modelling of future $PM_{2.5}$

The Environment Bill[12] establishes a legally binding duty on government to bring forward at least two air quality targets for $PM_{2.5}$ in secondary legislation by 31 October 2022[13, 14 and 15]. The report on the Air Quality Expert Group (AQEG) $PM_{2.5}$ modelling workshop[16] (15 March 2021) was published in a document titled 'Modelling of future $PM_{2.5}$ in support of the Defra air quality target setting process on 15 July 2021[17]. It states:

Non-exhaust particulates from vehicles, wood-burning and other domestic emissions are likely to remain a critical source of primary emissions for 2030 that play an influential role in determining urban exposure and attainment of limit values. There remain important differences in the methods and estimates of some emissions in different inventories, for example NAEI vs London AEI for woodsmoke. The choice of emission scenarios has a significant influence on the attainment of a 10 µg m-3 annual limit value in some urban centres.

The report was published alongside a summary of responses and government response to Defra's 'Call for Evidence on Future $PM_{2.5}$ Concentrations'[18].

An important research paper titled "The sensitivities of emissions reductions for the mitigation of UK $PM_{2.5}$" revised and published on 18 January 2016[19] concluded that:

"Reductions in primary $PM_{2.5}$ has the largest impact on the [Average Exposure Index] in 2010 as well as the 2030 [Current Legislation] scenario."

7. CAL conclusions and next steps

As you know, CAL admires and respects your work to fight climate change and is most grateful for the clarifications and assurances in your letter of 8 June and subsequently from Jenny.

CAL also welcomes the CCC's stated intention to tackle air quality issues as part of the transition to Net Zero and not to allow the mitigation of greenhouse gas emissions at the expense of air quality.

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[10] https://biomass-suppliers-list.service.gov.uk/
[11] https://woodsure.co.uk/woodsure-takes-on-management-of-the-biomass-suppliers-list/
[12] https://bills.parliament.uk/bills/2593
[13] https://uk-air.defra.gov.uk/library/air-quality-targets
[14] https://uk-air.defra.gov.uk/news?view=271
[15] https://www.gov.uk/government/publications/fine-particulate-air-pollution-pm25-setting-targets
[16] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2107150951_Modelling_PM25_workshop_summary_15_03_21.pdf
[17] https://uk-air.defra.gov.uk/library/reports?report_id=1023
[18] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2107150952_Call_for_Evidence_on_Future_PM2.5_Concentrations_Summary_of_Responses.pdf
[19] https://core.ac.uk/download/pdf/33453992.pdf

However, CAL remains deeply concerned that this stated intention has not been translated into meaningful policies or messaging to the Government or general public in relation to wood burning appliances including wood burning stoves despite the clear and obvious health risks they pose.

As mentioned in CAL's letter of 4 May, the CCC is bound by the need to meet the air quality requirements set out in the National Emission Ceilings Regulations 2018. In addition, as a public body as defined by the Human Rights Act, the CCC has duties to protect life and health in accordance with Articles 2 and 8 of the European Convention on Human Rights. A policy to reduce greenhouse gases but which could increase, or certainly fail to decrease, harmful particulates would, in CAL's view, be unlawful. You will appreciate that 'omissions' are as unlawful as 'unlawful' statements or actions. Put another way, the CCC must act within the framework of the law as whole and cannot and must not consider greenhouse gases in isolation.

CAL has been working with legislators over the last few weeks who wish to propose one or more amendments to the Environment Bill, when it returns to the House of Lords on or about 6 September 2021, that would set a date or dates to end the sale of wood burning appliances, including wood burning stoves, in England and give powers to local authorities to set a date or dates to end the use of fireplaces and wood burning appliances, including wood burning stoves, in urban areas. Please therefore explain to me by 2 September 2021, in layman's terms, what specific exceptions or exemptions the CCC considers should apply, if any, to those two types of bans and in what circumstances.

Please will the CCC also make an explicit public statement in one of its next publications or media releases along the above lines and publish an up-to-date glossary defining key terms so that the CCC's position on wood burning appliances, including phase out dates, is unambiguous.

Last, but not least, please say if I have misunderstood anything mentioned in this letter as CAL would like to publish the letters exchanged between us.

I look forward to hearing from you again.

Yours sincerely

Simon Birkett
Founder and Director
Clean Air in London

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