

Update: 2 December 2021

Clean Air in London (CAL) calls for wood burning ban in urban areas

CAL has identified 12 facts or principles about wood burning, climate change and air quality after nearly six months of constructive correspondence with the Climate Change Committee

CAL calls for Parliamentary Select Committee investigation into domestic wood burning

Wood smoke continues to plague cities and towns across the UK over 65 years after the first Clean Air Act 1956 largely banned it in urban areas. The new Environment Act 2021 will do little or nothing to remedy this situation.

Defra's Clean Air Strategy, published on 14 January 2019, stated on page 10¹:

*"Burning wood and coal in open fires and stoves makes up 38% of the UK's primary emissions of fine particulate matter (PM_{2.5})."*²

This estimate was repeated in Defra's National Statistics release titled 'Emissions of air pollutants in the UK – Particulate matter (PM₁₀ and PM_{2.5})' as recently as 17 February 2021 (updated 26 February 2021)³:

"The use of wood in domestic combustion activities accounted for 38 per cent of PM_{2.5} emissions in 2019. Emissions of PM_{2.5} from domestic wood burning more than doubled between 2003 and 2019 (from 20 to 41 thousand tonnes) and increased by 1.0 per cent between 2018 and 2019." ^{Note 5}

CAL has therefore undertaken a landmark investigation into the policies, practice and evidence around wood burning. As part of this investigation, CAL has corresponded constructively with Chris Stark, Chief Executive of the Climate Change Committee (CCC) and a senior member of his team to clarify the CCC's position on wood burning, climate change, air quality and related matters. As a result, CAL has identified 12 facts or principles.

CAL is publishing its correspondence with the CCC in letters dated 4 May, 8 June and 14 August 2021. The timeline of CAL's correspondence with the CCC, including a number of emails, is shown under 'Useful links and resources'. Please note that CAL's letter to Chris Stark dated 14 August illustrated the unlikely circumstances or combination of circumstances when wood or biomass burning might be considered 'low carbon' (on page 6). That list represented CAL's examples not the CCC's.

The CCC is aware that CAL would be publishing this update and associated letters but has not seen or approved it. CAL is willing, in principle, to amend this update if requested by the CCC e.g. to correct any misunderstanding.

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

² Defra confirmed to CAL in a letter dated 15 November 2021 that: *"The figures used in the Clean Air Strategy 2019 are based on the best available data at the time and we stand by them. We are continuously gathering new evidence and data to improve our emissions estimates and reduce the related uncertainty."*

³ <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25>

Quotes

Simon Birkett, Founder and Director of Clean Air in London, said:

“Clean Air in London (CAL) has spent many months clearing the thick smoke around wood burning.

“In a ground-breaking investigation, CAL has identified 12 facts or fundamental principles about wood burning, climate change and air quality after detailed and constructive correspondence with the Climate Change Committee over nearly six months.

“The facts, taken together, must mean a ban on wood burning in urban areas. CAL has identified a reluctance in Government and elsewhere to call for or effect such a ban despite the obvious need for it.

“Exceptions to a wider ban on domestic wood burning should be limited to the continued use of biomass boilers in large heritage buildings in rural areas off the gas grid when there is no viable alternative.

“CAL wishes to record its thanks to the Climate Change Committee and Chris Stark and his colleague Jenny Hill in particular for their constructive response to our enquiries.”

Climate Change Committee

CAL has identified a number of important facts or principles about wood burning, greenhouse gases, climate change and air pollution and confirmed that domestic wood burning should not be allowed in the UK subject to very limited exceptions. The 12 facts or principles are:

Air Quality, Climate Change and Net Zero

1. Tackling air quality is an important part of the transition to Net Zero greenhouse gas emissions.
2. Any outcome that removes greenhouse gas emissions at the expense of air quality would be unacceptable⁴.

Wood burning

3. Wood is not a fossil fuel (unlike coal, gas and oil).
4. Biomass is plant or animal material used as a fuel to produce electricity or heat e.g. wood, energy crops and waste from forests. Biomass is not a fossil fuel.
5. Wood burners should not be counted towards either low-carbon heat targets or renewable energy targets. Heat pumps, solar and wind are ‘low carbon assets’.
6. 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.
7. Burning wood on open fires is highly inefficient (both for energy production and on an air quality basis) and should not be counted towards renewable energy targets.

⁴ Please note that CAL continues to support its ‘London Principle’ that states: “We must think in terms of ‘One Atmosphere’. All obligations to reduce air pollution must be met. Any trade-offs between climate change and air quality should be made in an explicit and transparent way e.g. through the application of the ‘London Principle’. This states that a 1% disbenefit in climate change terms (e.g. increased CO₂ emissions) should be accepted when there is an associated benefit of 10% in air quality terms (e.g. reduced emissions of particulate matter or oxides of nitrogen) (and vice versa).”

Limited exceptions for biomass boilers

8. There is no role for biomass use in low-carbon heat networks.
9. Efficient biomass boilers can play a role in niche uses where air quality legislation would not be breached e.g. larger and hard to insulate rural properties (such as heritage or stately homes with high levels of heat loss), off the gas grid, where heat pumps or hybrid heat pumps (using biofuels) are not viable⁵.
10. Biomass can be a low-carbon fuel provided its lifecycle emissions can be shown to be below a certain threshold e.g. feedstocks such as residues or waste wood that would not otherwise be used.
11. Support for bioenergy use in buildings should be limited to biomethane produced from anaerobic digestion and other niche uses, including hybrid heat pumps systems in ‘hard to treat’ off-gas homes, local combined heat and power systems and small-scale district heat networks.
12. Government should not support any biomass for heat in urban areas because of the air quality impacts including fine particulate matter (PM_{2.5}) i.e. including wood stoves and open fires.

The CCC advises on ‘best use’ of biomass rather than recommending dates to end the sale and then use of wood or biomass stoves or burning appliances as it does for fossil fuel appliances.

Health

Chris Stark’s letter to CAL dated 8 June 2021 pointed to the report by the CCC’s ‘UK Health Expert Advisory Group’ for the Sixth Carbon Budget titled ‘Sustainable Health Equity: Achieving a Net Zero UK (UCL)’ (published 6 November 2020)⁶ which 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 CO₂ 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.”

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.*

The CCC confirmed to CAL in an email dated 17 October 2021 that:

“...we regularly commission expert advice from bespoke advisory groups, including – on this occasion – advice on the health implications of setting the sixth carbon budget. The views of expert groups are separate to those of the CCC and it is the role of our Committee to form an independent view, drawing in evidence from a host of areas in making their judgement.”

⁵ <https://www.theccc.org.uk/publication/development-of-trajectories-for-residential-heat-decarbonisation-to-inform-the-sixth-carbon-budget-element-energy/>

⁶ <https://www.theccc.org.uk/publication/ucl-sustainable-health-equity-achieving-a-net-zero-uk/>

On 17 October 2021, the CCC stated (*in italics below*) in response to three questions raised by CAL:

- Will the CCC please consider making an explicit public statement in one of its next publications or media releases to address the points raised by CAL in correspondence...?
- Will the CCC please publish an up-to-date glossary defining key terms including those we've discussed?
- Please can you say if you have any date or dates in mind or object to CAL's recommendation that the use of wood burning stoves and open fireplaces should be banned in cities as soon as possible and throughout urban areas by January 2029 (subject also to complying fully with air quality laws and guidelines).

"...we have no plans to revisit our analysis, publish new material or make new recommendations on these topics. We return regularly to our analysis, but I regard these topics - as I've mentioned before - as outside of our formal remit."

CAL hopes that the CCC will change its mind on these matters, not least given the publication of new World Health Organisation air quality guidelines on 22 September 2021 and the outcome of COP26.

Duties

CAL wishes to clarify further the CCC's duties.

Next steps

In order to address the plague of wood burning, CAL is calling for:

1. wood burning to be banned in urban areas as soon as possible and in any event in domestic properties throughout England and Wales by 1 January 2029 subject to limited exceptions e.g. heritage properties in rural areas, off the gas grid where there is no viable alternative;
2. the CCC and the Government to accept fully and formally four recommendations in 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);
3. an investigation by a 'super' group of Parliamentary select committees, led jointly by the Environmental Audit Committee and the Environment, Food and Rural Affairs Committee, into domestic wood burning; and
4. a new Clean Air Act to give local authorities and Metro Mayors the powers they need to decarbonise buildings including homes.

In addition, CAL has submitted a Freedom of Information request to the CCC dated 23 November 2021 requesting further information e.g. the who, what, why, when and how the CCC considered this important report and decided not to accept [or revisit] its recommendations on matters which it considers are '*outside [its] formal remit*'. CAL has also sought to understand whether the CCC consulted government departments before reaching its conclusions e.g. BEIS, Defra or DHSC.

CAL continues to encourage the CCC to revisit its analysis, publish new material and make new recommendations on the topics raised by CAL including: an explicit statement to address the points raised by CAL; an up-to-date glossary of key terms including those raised by CAL; and specific dates to end the sale and use of domestic wood burning appliances and open fires.

Useful links and resources

1. Headlines

24 November 2021

Feature: Why we need transparency in the wood-burning industry

<https://airqualitynews.com/2021/11/24/feature-why-we-need-transparency-in-the-wood-burning-industry/>

5 December 2020

Polluting wood burners become latest target for clean air campaigners

<https://www.independent.co.uk/climate-change/news/wood-burner-pollution-log-stove-electric-b1766413.html>

2. New World Health Organisation air quality guidelines

<https://cleanair.london/health/new-who-air-quality-guidelines/>

<https://www.who.int/news-room/events/detail/2021/09/22/default-calendar/launch-of-the-who-global-air-quality-guidelines>

<https://breathelife2030.org/news/w-h-o-air-quality-guidelines/>

<https://www.healtheffects.org/sites/default/files/jarosinska-who-guidelines-hei-2021.pdf>

3. Environment Act 2021

13 September 2021

Baroness Jones of Moulsecoomb proposes amendment to ban the sale and use of wood burning appliances including fireplaces

<https://hansard.parliament.uk/lords/2021-09-13/debates/D1F7DC1B-0DF4-4086-A4F2-32910E340F53/EnvironmentBill#contribution-5BAF7A7D-799E-44D5-956D-362320A501E5>

<https://bills.parliament.uk/publications/42483/documents/625>

9 November 2021

Environment Act 2021 received Royal Assent

<https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

4. Defra announcements

17 February 2021

Emissions from domestic burning in the UK

<https://deframedia.blog.gov.uk/2021/02/17/emissions-from-domestic-burning-in-the-uk/>

National Statistics release

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

29 April 2021

Concentrations of particulate matters (PM₁₀ and PM_{2.5})

<https://www.gov.uk/government/statistics/air-quality-statistics/concentrations-of-particulate-matter-pm10-and-pm25#trends-in-concentrations-of-pm25-in-the-uk-2009-to-2020>

1 May 2021

Restrictions on sale of coal and wet wood for home burning begin

<https://www.gov.uk/government/news/restrictions-on-sale-of-coal-and-wet-wood-for-home-burning-begin>

4 May 2021

New law to encourage the burning of cleaner fuels at home

<https://deframedia.blog.gov.uk/2021/05/04/new-law-to-encourage-the-burning-of-cleaner-fuels-at-home/>

5. *Digest of UK Energy Statistics (DUKES) 2021 on 29 July 2021*

<https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2021>

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1023276/DUKES_2021_Chapters_1_to_7.pdf

Thread <https://twitter.com/CleanAirLondon/status/1449299689933873160?s=20>

The main report titled ‘Digest of United Kingdom Energy Statistics (DUKES) 2021: Chapter 1 to 7 included Note 7 on page 43:

“Domestic wood consumption has been revised downwards following new estimates arising from a Defra study on domestic consumption. This resulted in a change from 2,241 ktoe to 733 ktoe in the 2018 reference year which has been applied to the time series to 2008. The heat pump series

has also been back corrected to 2008, removing a previous step change in 2015. The methodology note (link) provides further detail.”

Note: No link is provided by BEIS to the methodology.

- 6. Scientists at Imperial College London and the National Physical Laboratory estimated that wood burning was responsible for between 23 and 31% of urban derived PM_{2.5} in London in a report titled ‘Airborne particles from wood burning in cities’ (published in March 2017)**

https://uk-air.defra.gov.uk/assets/documents/reports/cat05/1801301017_KCL_WoodBurningReport_2017_FINAL.pdf

<https://londonair.org.uk/LondonAir/guide/WoodBurning.aspx>

London Air Quality Network has also stated that:

“In London in 2014, 69% of people who burn wood were doing so in open fires, a practice banned in the capital by smoke control areas created under the Clean Air Acts. These cover almost all of the built-up area of London.”⁷

It seems likely that the proportion of primary PM_{2.5} emissions coming from domestic wood burning will fall, over time, despite an increase in total wood burning, as people move from illegal burning of wood in open fireplaces to wood burning stoves which emit less particulate matter.

- 7. European Environmental Bureau published a report titled ‘Where there’s fire, there’s smoke – Emissions from domestic heating with wood on 21 September 2021**

<https://eeb.org/library/where-theres-fire-theres-smoke-emissions-from-domestic-heating-with-wood/>

8. Ongoing research

Defra told CAL on 12 August 2021 that the volume of wood used for domestic burning was confirmed as over-estimated by the “Burning in UK Homes and Gardens” Research Report⁸ and ⁹ published on 10 December 2020. They said that “Additional research is ongoing on emissions factors for wood and other solid fuels”.

The Department for Energy, Industry and Industrial Strategy (BEIS) published a report titled ‘Digest of UK Energy Statistics [DUKES] annual data for UK, 2020’ on 29 July 2021. Note 7 on page 43 reveals:

“Domestic wood consumption has been revised downwards following new estimates arising from a Defra study on domestic consumption. This resulted in a change from 2,241 ktoe to 733 ktoe in the 2018 reference year which has been applied to the time series to 2008. The heat pump series*

⁷ <https://londonair.org.uk/LondonAir/guide/WoodBurning.aspx>

⁸ https://uk-air.defra.gov.uk/library/reports?report_id=1014

⁹ <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=20159&FromSearch=Y&Publisher=1&SearchText=AQ1017&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

has also been back corrected to 2008, removing a previous step change in 2015. The methodology note ([link](#)) provides further detail.”

*kilotonnes of oil equivalent.

See the report and Twitter thread here:

<https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2020>

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1023276/DUKES_2021_Chapters_1_to_7.pdf

<https://twitter.com/CleanAirLondon/status/1449299689933873160?s=20>

CAL has called for Defra to publish its ‘new estimates’ and clarify whether domestic wood burning accounts for 10-15% of the UK’s primary emissions of fine particulate matter (PM_{2.5}) or around 40%.

9. Climate Change Committee report titled ‘COP26: Key outcomes and next steps for the UK’

2 December 2021

This report highlights the COP26 pledge identifying the importance of protection and restoration of existing forests (page 24).

It also says that the CCC is broadening its outlook to take in vital enablers such as public attitudes; business action; workers and skills; governance; and how costs and benefits are shared (page 5).

<https://www.theccc.org.uk/publication/cop26-key-outcomes-and-next-steps-for-the-uk/>

10. Timeline

1 May 2021

Defra media release on “Restrictions on sale of coal and wet wood for home burning begin”

<https://www.gov.uk/government/news/restrictions-on-sale-of-coal-and-wet-wood-for-home-burning-begin>

@CleanAirLondon exchanges tweets with @ChiefExecCCC

<https://twitter.com/CleanAirLondon/status/1388428956618084354?s=20>

4 May	CAL letter to Chris Stark
8 June	Chris Stark reply to CAL CAL and CCC exchange emails
9 June	CCC emails CAL
14 June	CAL emails CCC
16 July	CCC replies to CAL
14 August	CAL letter to Chris Stark summarising points

15 August	CCC and CAL exchange emails
2 September	CCC emails CAL
19 September	CAL emails CCC
24 September	CAL emails CCC
8 October	CAL email to CCC Chris Stark email to CAL
9 October	SB email to Chris Stark with five questions
17 October	Chris Starks replies to four questions with an FOI for the last question SB thanks Chris Stark
23 November	CAL submits FOI request to CCC

11. Correspondence with the Climate Change Committee