VIEWPOINTS:

With London mayor Sadiq Khan urging the government to introduce a ban on woodburning stoves, we asked two experts to provide their thoughts on the viability of this popular home choice

Paul Testa
Paul Testa is an architect and university lecturer. He is an advocate of low energy design and the Passivhaus standard.

BACK THE BAN

Rather than burning our wood, we should be building with it, locking away the carbon instead of releasing it into the atmosphere, says architect Paul Testa

Let me first make it clear that I love a fire; don't we all? There's something about sitting in front of a real flame that connects us with our hunter-gatherer selves. It's primal and brilliant. But we're not cavemen or women anymore; so why, after the advent of central heating and insulated homes, do we still burn wood for heat? Fashion definitely has a role to play. The woodburning stove has become one of the must-haves of this generation. The reasons for this are laudable: it's sustainable and cuts energy costs. But how sustainable is it?

The Sustainability Argument

Trees take a relatively long time to grow, slowly absorbing atmospheric carbon and storing it in their timber. We can then choose to do lots of things with those trees: leave them to grow and continue to absorb carbon; make things like furniture and buildings, retaining that carbon storage for tens if not hundreds of years; chop them down and leave them to rot, releasing the carbon over many years; or burning them for heat and/or power, releasing the carbon almost instantaneously back into the atmosphere.

This would be better if we were using timber that was already a waste product or from a fast-growing local source. But most people don't live next to a sawmill or have trees that they can coppice in their back gardens, and windfall branches in local woods only provide for so long.

Growing timber and having a market for sustainable forestry is good, but let's lock as much of that carbon away for as long as possible — let's build our homes out of it rather than burn it.

Air Quality

And what about the impact on air quality? What about the microscopic particulates that get produced by the burning of wood that find their way into the air we breathe and into our lungs? Since the Clean Air Act in 1952 things have improved significantly. Woodburning stoves burn much hotter and more efficiently than open fires, reducing the particulate matter but not eliminating the problem. However, with the increased uptake of solid fuel stoves they are starting to have a significant and identifiable impact on air quality in our cities.

Air quality is often at its worst in cold conditions. The colder easterly winds in winter are often carrying particulates from continental Europe. Colder conditions are also more likely to induce temperature inversions, holding the poor air close to the ground rather than it rising to higher altitudes. These are the exact conditions when stove use is most intense, creating a perfect storm of terrible air quality and poor health in our cities.

Current UK advice in periods of extremely poor air quality is to avoid strenuous exercise. This is no solution at all and completely fails to acknowledge the causes of the issue, and why measures to curb stove use should be welcomed.

Obviously stoves are not the only culprit and restrictions should be part of a more comprehensive package of measures, including plans to reduce vehicle emissions (something which there is still a distinct lack of political will to achieve), and to increase cycling and walking. Put simply, we shouldn't be burning wood for heat — and a ban on woodburning stoves seems a useful place to start.

"Woodburning stoves are starting to have a significant and identifiable impact on air quality in our cities"

WOOD BURNING STOVES

David Hilton
David Hilton is an expert in sustainable building and energy efficiency, and a director of Heat and Energy Ltd.

GLORIOUS, GOOD WOOD

Not only would a ban on woodburning stoves fail to address the issues it claims to solve, it would also rob some homes of their most viable heating option, argues David Hilton

I love fires — not only the art of a good barbecue, but also the use of woodburning stoves. There is an air of curious intrigue and something cosy and romantic about a real fire. I can easily see the inefficiency of an open fire with passive stack heat loss up the chimney and uncontrolled combustion, but a good woodburning stove is a lot more controllable and, if both the air inlet and flue outlet are directly connected to the outside, we have a virtually balanced flue appliance.

Perhaps this affinity and fascination with real fires is more than just personal preference or social fashion because the act of watching a fire is deeply rooted in evolution. The act of mastering fire was perhaps the most pivotal event in the history of humans: it extended the day, allowed us to cook food, warded off danger and aided socialisation. Instinctively we are still drawn back to the fire.

A study from the University of Alabama showed that watching a fire actually lowers blood pressure. The participants that watched the fire, and could hear it, showed around a 5% drop in blood pressure, whereas the participants that could not hear it and saw an inverted image of the fire actually showed an increase in blood pressure.

The Burning Issue

Wood is theoretically a zero carbon fuel but this argument is losing pace as there are many other uses for wood, such as building with it, that do not involve releasing the carbon. The fact of the matter is that we can burn wood far quicker than we can grow it, but woodburning stoves allow us to burn wood that would not usually be used for construction or in high performance burners. Modern woodburning stoves burn much cleaner and if you avoid back boilers the burn temperatures are more efficient. If we want to avoid using wood as a fuel then these stoves are not the place to start. Rather look at power stations that import volumes of wood for electricity generation.

Finding a Niche

The role of the woodburning stove cannot realistically be justified in all properties, but there are many homes where it can play a significant part. I would not advocate a woodburning stove as a primary heating appliance, but in some old buildings and really efficient modern buildings there is a good argument for them.

"Woodburning stoves allow us to burn wood that would not usually be used for construction"

Due to the lack of meaningful insulation and airtightness, as well as the thermal mass of the building, pre-1900s rural properties often require high-grade heat. Many of these properties do not have the benefit of mains gas, and as such the heating options have been oil or bottled gas (LPG). By setting the central heating to a background temperature, the woodburner can then be used to 'recharge' the heat in the mass of the building as well as add ambience.

A similar regime can be employed in a Passivhaus scenario as there is usually no central heating system. In the event that the home is left unoccupied, or even partially occupied, for a period of time it may cool down and then need to be reheated to compensate for the lack of internal heat gains. A woodburning stove is ideal for this, as it delivers the heat when required.

Let's not forget that we live in homes, not just houses. We are intrinsically drawn to fire and we desire the same things as our ancestors — namely to relax and converse in front of a fire.