

TIME TO GET SERIOUS ON NET-ZERO

Bean Beanland, Chairman at the Ground Source Heat Pump Association, argues now's the time to get serious in bringing alternative technologies to the forefront to ensure we reach the nation's net-zero carbon goals.



As global activity unfolds on an hourly basis in response to COVID-19, it's tempting to contrast government inertia over long term energy policy to deliver net-zero 2050. COVID-19 has implications for today, tomorrow, and next week; here in the UK, we do not feel the impact of climate change within such immediate timescales, but the potential is every bit as dangerous to lifestyle and, ultimately for some, to life itself.

Enshrining net-zero into UK law was the easy bit, but did the parliamentarians who voted through the legislation really understand what they were voting for? If decarbonisation was possible while keeping bills low, we'd be doing it already.

Concentrating on the built environment, government still seems to think that a choice must be made – electrification or hydrogen – and that the choice is some years out. I don't see it like that. To achieve net-zero within 30 years, we will need all the technologies currently at our disposal, those in development, and some that are still blue sky thinking. The key is deploying each technology against the most suitable targets, and at the optimum time.

We also need to accept that 'we've always done it like that' is no longer viable, and that it will be costly. The questions are; how much and who pays? In a recent written parliamentary response, Kwasi Kwarteng, Minister of State for Business, Energy, and Clean Growth, stated that "the way heating is supplied to over 28 million homes, businesses, and industrial users will need to change".

Nobody wants to pay more for warmth and comfort, can we at least consume less if we're paying more? That's the fabric first option. Can we abdicate responsibility for individual fuel procurement and allow a bigger entity to worry about fuel and efficiency, while delivering comfort? That's the district heat option. We are told that we're wedded to our boilers, but are we? Isn't it the outcome that we enjoy, warmth and hot water on demand?

These sorts of approaches would allow government to ratchet up the cost of fossil fuels while keeping the impact on the consumer to acceptable levels. Rather than giant strides, small incremental increases in costs, year-on-year, would encourage us all to do things differently, to look for energy savings, and to place a greater value on the energy we need.

On the technologies; do we need a flame temperature of 1,000°C to achieve 21°C in our built environment? Not really, but heat transfer through electric heat pumps is ideally suited to the task. Can we use heat pumps for heavy transport and for very high industrial process temperatures? No, but valuable hydrogen, in combustion or fuel cells, would be a great fit.

The DEFRA carbon factor for grid electricity is 256gCO₂/kWh. A ground-source heat pump operating at a seasonal performance factor of 3.5 is effectively emitting at 73gCO₂/kWh. This is a 63% reduction compared to a natural gas at 92% efficiency. That's a massive step towards net-zero, and it's available today. In addition, heat pumps are zero NO_x, SO_x, and PM2.5 emitters

at the point of use. This is significant for public health, where NO_x and particulates are more damaging than carbon dioxide.

To deliver these benefits at scale, we need policy for heat which encourages insulation and supports electrification. The heat pump operating at 73gCO₂/kWh this year, could be operating at 57gCO₂/kWh next year, as the grid continues to decarbonise. Load-shifting heat pump operation to overnight could increase the carbon savings even more, and reduce cost below that of natural gas. If we can get it right with government, if we can persuade them of the merits of electrification of heat in the built environment, in the absence today of other technically and commercially viable options, it could be a defining year.

Long-term policy must signal that the fossil fuel era is ending and that alternatives will be supported. Current visibility of this long-term strategy is low, so there is no investment or training. Hints were in the Budget, with the first tentative levies on gas and a freezing of levies on electricity. But the lack of clarity on the Non-Domestic Renewable Heat Incentive is problematic. Commercial heat pump systems are a long time in the making, so not knowing what is beyond April 2021, just 12 months away, is already causing projects to fall. Many of these are social housing deployments which are just the sort of initiatives that government should be supporting.

There is public appetite for action. Bold leadership is required. Decarbonisation of heat at scale could start today – it just needs a policy environment that allows us to do it.