

The Faculty Jurisdiction (Amendment) Rules 2022 require churches to obtain permission for any gas-for-gas or oil-for-oil boiler replacement; hydrogen and Hydrotreated Vegetable Oils (HVO) have been cited as an alternative to gas and oil for like boiler replacement.

Hydrotreated Vegetable Oils

In considering the use of HVO, we should consider the full implications of our actions, including ensuring that we are not solving one environmental challenge by creating another.

The rationale for this advice is based on several concerns and the research which supported them.

HVO is widely marketed as a sustainable solution to fossil fuels, but there are concerns suggesting serious issues that need to be addressed before committing to HVO, particularly its full traceability and carbon footprint claims.

A core concern relates to the supply chains, which are complex and not transparent. Sustainably certified schemes have limitations and do not consider the impact of the indirect land-use changes or the full lifecycle carbon footprint. It is even reported that HVO sourced from the EU is often blended with palm oil imported into the EU for processing. HVO can be produced from vegetable oil and fats containing triglycerides and fatty acids.

A quote from the Royal Academy of Engineering highlights this: *"The carbon footprint and other sustainability aspects of biofuels should be evaluated on a life cycle basis across full supply chains to avoid shifting the burdens from one part of the life cycle or supply chain to another."*

EU research indicates that once the effects of land use change and draining of peatland are accounted for, the Greenhouse gases impact of palm-oil-derived HVO could be up to 3 times greater than standard fossil fuel diesel. Furthermore, HVO requires more vegetable oil than other methods of biodiesel production. Consequently, in 2020, the EU agreed to phase out biofuels with a high risk of indirect land-use change by 2030.

We must all consider the impact of our actions and ensure that we are not addressing one environmental challenge by creating another. The Church Buildings Council, therefore, **does not** support the adoption of HVO as part of the move to net-zero carbon until such a point as these issues are resolved beyond doubt.

Hydrogen

The obvious appeal of hydrogen is that it does not release CO₂ when burnt and that it can be made from water, an almost limitless resource.

Hydrogen is produced commercially by separating the hydrogen from water in a process called electrolysis. For hydrogen to be considered "green", electricity from renewable sources has to be used to electrolyse the water. There are three forms of hydrogen commercially available; only **one** is green, and most of the world's hydrogen is currently manufactured using fossil fuels.

Generating electricity from wind or solar, converting it into hydrogen and then burning the hydrogen at home uses more energy than just using the electricity to directly heat a home, with a heat pump.

"Heating homes in the UK with green hydrogen would use approximately six times more renewable electricity than heat pumps. We do not have the time or resources to waste further investigating hydrogen's role in home heating, especially when the well-known laws of thermodynamics determine the answer." Second National Infrastructure Assessment

It seems likely that any future use of hydrogen will be limited rather than universal. It is likely best suited to applications or places that are hard to electrify – in the main, transport-related. This limited—rather than universal—use of hydrogen should inform our decisions.

The Church Buildings Council concludes that hydrogen **is not** likely to be practically and economically viable for use in the short and medium term for heating churches.

Hydrogen as a potential future fuel has limited rather than universal uses. It is highly unlikely that hydrogen will play a role in achieving the Church's Net Zero Carbon goal by 2030. Distribution and storing hydrogen presents significant safety challenges making it more suitable for use in regulated commercial settings.

The limited, rather than universal, use of hydrogen should inform design choices for heating systems. A new replacement boiler being hydrogen-ready will not make a meaningful contribution towards a shift to net zero.

Source URL: <https://www.churchofengland.org/resources/churchcare/advice-and-guidance-church-buildings/hydrogen-and-hydrotreated-vegetable-oils>