



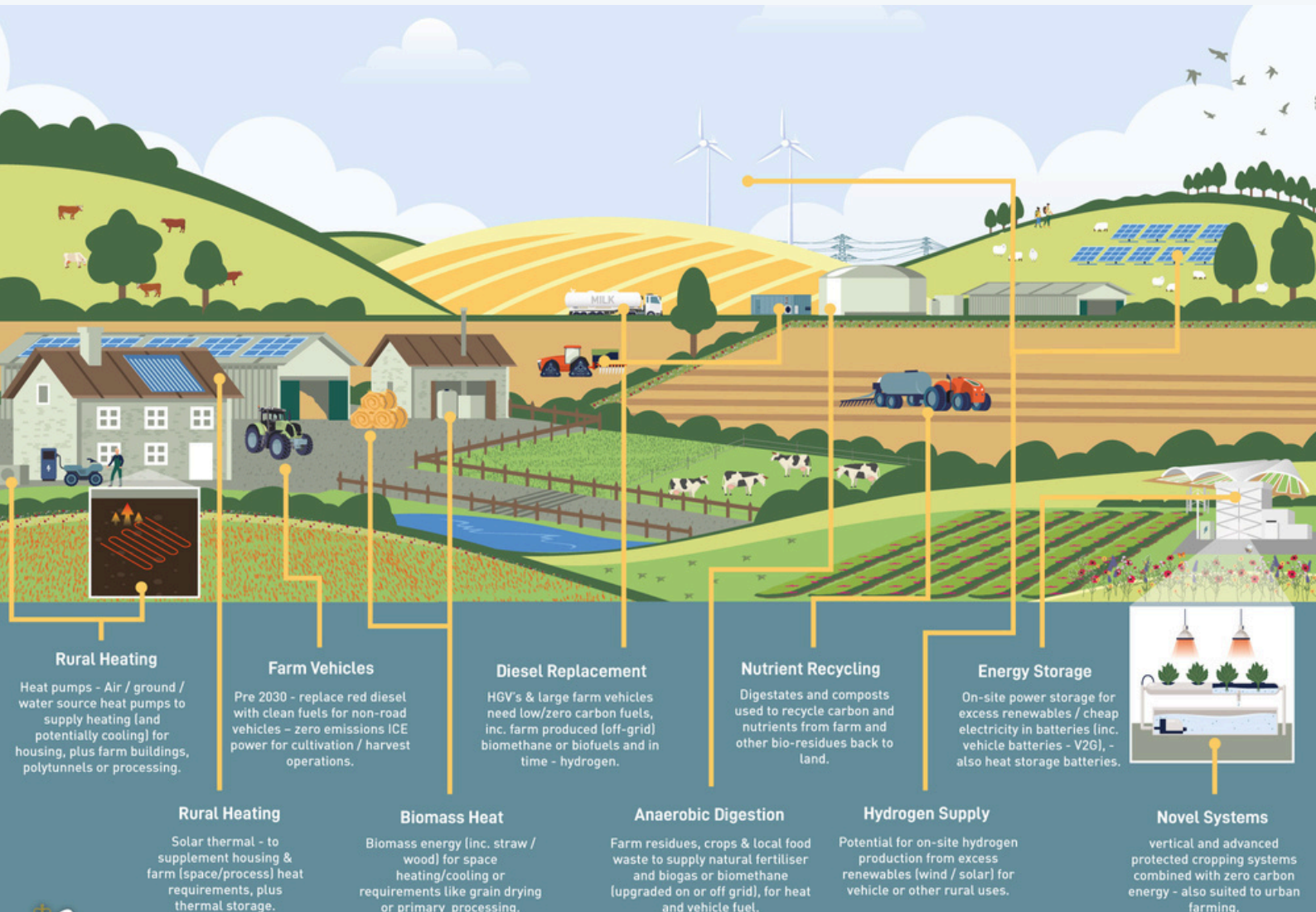
# Hydrogen in farming project

As part of the net zero transition, the UK gas networks are exploring access to hydrogen. Northern Gas Networks (NGN) are also keen to explore the potential for hydrogen (H<sub>2</sub>) in the farm sector. The Royal Agricultural Society of England (RASE) and its project partner Cenex have been asked to assess the future potential for H<sub>2</sub> to replace fossil fuels on farms. This project is funded by NGN as part of the Ofgem's Network Innovation Allowance. The project is focused on the farming sector in Yorkshire.

## Project background

British agriculture is under growing pressure to curb emissions. While diesel has been the fuel of choice for some time, farmers will have to replace diesel and other fossil energy sources. Electricity, biofuels and gas fuels can be produced on farm, while internal combustion engines can run on gas fuels (biomethane and, in time, blended fuels and hydrogen). The RASE Farm of the Future Report (see [www.rase.org.uk/reports/](http://www.rase.org.uk/reports/)) includes a section on future fuels and powertrains, with some potential for hydrogen produced on farms contributing to farm decarbonisation.

The focus of the Yorkshire hydrogen study will include on-farm H<sub>2</sub> production and storage, plus distribution, for use in local heating applications and for fuelling of H<sub>2</sub> powertrains in rural use.



## On farm energy demand

The project will assess whether hydrogen has potential for on-farm production and use as a zero emissions fuel. There is potential to combine hydrogen production with other on-farm decentralised energy systems and carbon capture. Future uses for hydrogen on farms could include the following:

- Space heating for homes and buildings – replacing electricity and fuel oils
- Crop processing, packing and storage – alternative to electricity and fuel oils
- Heating of water for various applications – in place of fossil fuel steam boilers
- Fuel for on heavier farm vehicles – plus replacing fuels used for crop drying
- Use in farm related transport – both product haulage and input delivery.

## Project delivery

The objective of the project is to assess the potential for use of H<sub>2</sub> on farms and in more rural areas and understand what will be required to facilitate the supply of H<sub>2</sub> in areas not serviced by the gas grid. NGN is keen to ensure that agriculture is not excluded from East Coast Hydrogen's remit.

The project will include a technical evaluation of the potential for the use of H<sub>2</sub> in a range of farm applications, where it can be used to replace fossil fuels. While it will take time for sufficient volumes of green H<sub>2</sub> fuel to be available for rural applications, there is a developing market for the use of gas fuels in agriculture, starting with biomethane. The farming community needs to prepare for a future without red diesel. The project will also assess the scope for on-farm H<sub>2</sub> generation, using green energy as well as the possibility of using green H<sub>2</sub> in UK fertiliser manufacture.



***“We will also explore what is required to make H<sub>2</sub> and other gas fuels more available and affordable in areas without a grid connection”***

A key part of the project is getting opinions from farmers and stakeholders from across the rural economy. RASE will be working with Innovation for Agriculture (IfA) on engagement with farmers. RASE and IfA will organise a number of webinars and meetings with farming groups as well as farm visits and other events during the summer and autumn of 2024. This will include face to face events and displays at the Great Yorkshire Show (9th to 12th July) and Driffield Show (17th July). RASE will also be working with local stakeholders such as the Yorkshire Agricultural Society, plus companies that are involved in the replacement of diesel with gas fuels such as New Holland, JCB and Qube.

In the planned farmer engagement exercise the RASE team will seek to assess the level of farmer awareness of the need to look at alternative fuels and at the same time dig deeper into what will be the early adoption opportunities for green hydrogen on farms. We will also explore what is required to make H<sub>2</sub> and other gas fuels more available and affordable in areas without a grid connection. It should be noted that hydrogen is much harder to store and transport than biomethane.

The report will be made available to grid operators plus other stakeholders and project supporters.