Biofertiliser's role in cushioning impact on of international Gas Crises on UK Food Security

Overview

As war continues to impact global oil and gas prices, British farmers now face the threat of extreme rises in fertiliser prices. While thoughts of course remain with the tragic loss of life across the region, at home, many thoughts are turning to potential impact on fertiliser supply, the future of UK farming, and food security.

The UK currently relies on imported synthetic fertiliser, the key component of which is natural gas. These fertilisers are often produced on the European continent but are reliant natural gas affected by the prices of imported LNG. A significant amount of this will travel through the Straits of Hormuz, and future availability, and cost of LNG imports are currently uncertain.

Based on the experience of the Russian invasion of Ukraine, we are likely to see future fertiliser prices rise to more than £700 a tonne, and potentially up to £900 a tonne. This would be a 300% increase in just a few months. This is also likely to hit at a key time for the UKs arable farms, as prices would likely increase at the start of fertiliser spreading season.

Despite there being no synthetic fertiliser production in the UK, there is significant biofertiliser production (digestate) across the country. Biofertiliser is produced through anaerobic digestion, transforming organic matter into biogas and biofertiliser, also known as digestate. This digestate is a nutrient rich, natural fertiliser which with the right management can directly replace gas derived synthetic fertiliser.

This offers multiple benefits, supporting local economies, circular economies, reducing our reliance on imports, and contributing to net zero in agriculture, a hard to decarbonise sector.

With key policy actions, this sector could help British farmers and the government absorb expected significant price shocks, ensuring food security, supporting farmers, and keeping value in the British economy.

Policy Action Needed

Problem: Strict conditions on spreading biofertilizer (digestate) – stricter conditions than manure spreading

Explanation: *currently, Nitrogen Vulnerable zones Regulations mean you can only spread digestate between September and December stricter than manure spreading, despite it being pasteurised to a high level (PAS110), targeted and processed reducing in lower odour pollution.*

This means that Digestate often needs to be stored for long periods and is often unable to be used effectively

Policy Action needed: Bring digestate into line with similar fertilisers, especially when using low impact

spreading technologies.
Prevent arm's length bodies such as Natural England effectively prohibiting digestate spreading for ill-defined reasons where synthetic fertiliser spreading would be allowed.

Explanation: Equalising the playing field between bio-fertiliser (Digestate) and Manures/synthetic fertilisers will cushion the impact of rising prices of imported synthetic fertiliser. This should be done along the lines of agronomic benefit as opposed to arbitrary dates. This of course should continue to observe the needs of nitrate vulnerable zones. Make spreading dependant on agronomic conditions not dates.

Problem: RB209 nitrogen loading criteria are treated as absolute by EA officers

Explanation: *The guidance for within the RB209 organic manures contains an example of nitrogen requirement for application that is often treated as a target value by permitting officers. As with spreading seasons this needs to be treated on an agronomic basis. Different crops have different nitrogen demands so may need more application than would be accepted based on this interpretation.*

Policy Action needed: DEFRA to work with EA, NIEA, NRW and SEPA to ensure that there is pragmatic not prescriptive used of the RB209 guidance. ADBA and industry can facilitate training for permitting officers on this.

Explanation: Working with the regulators and farmers to improve the implementation of spreading regulations will allow higher digestate application relevant to practical crop cultivation. Coupled with pragmatic implementation of NVZ & farming rules for water this can enable greater food security with without increased cost.

Problem: lack of a biofertilizer standard

Explanation: *EU regulation 2019/1009 sets the standard for biofertilizer that is recognised across industry and borders.*

Policy Action needed: adopt a similar standard for the UK inspired by Eu 2019/1009

Explanation: By having a statutory standard it simplifies the establishment of an industry to improve and facilitate the use of digestate in agriculture.

Problem: Farmers don't know about the potential of biofertiliser

Explanation: *Currently, farmers feel trapped by the international market that often results in these price shocks. They don't know much about digestate and its potential to be used as a fertiliser*

Policy Action needed: Stakeholder Engagement led by DEFRA with farmers and fertiliser suppliers

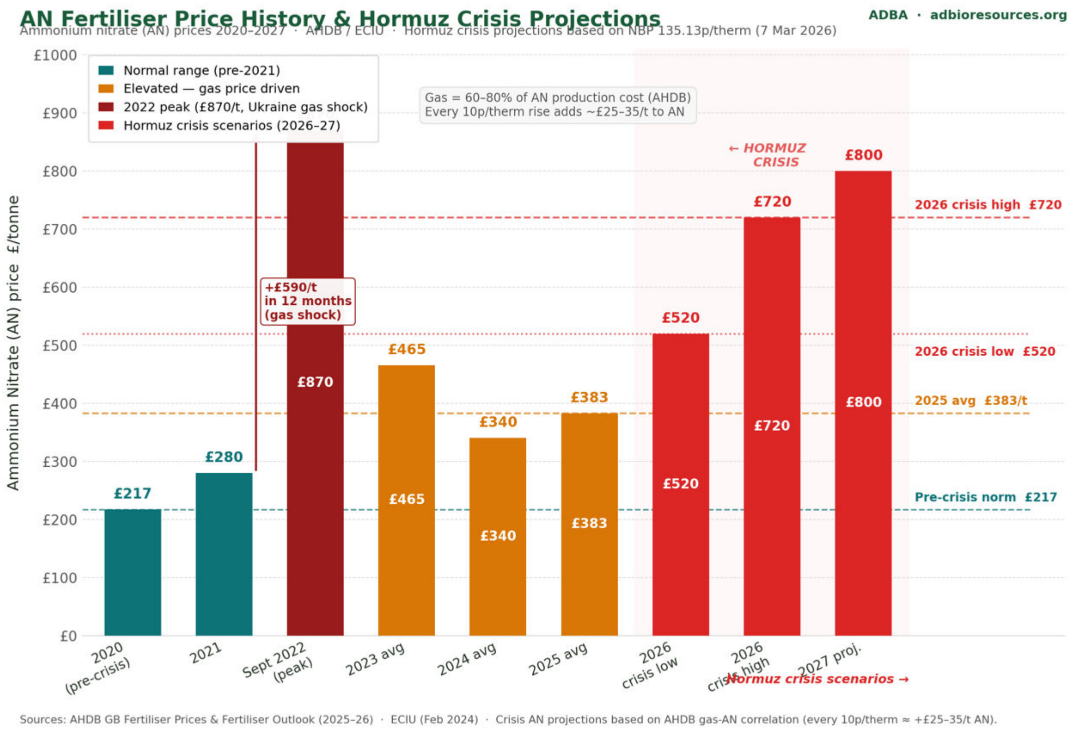
Explanation: work with industry and industry bodies to promote the use of digestate, using ADBA as the trade body to connect farmers, digestate suppliers and Anaerobic Digestion plants with farmers via local EA teams etc.

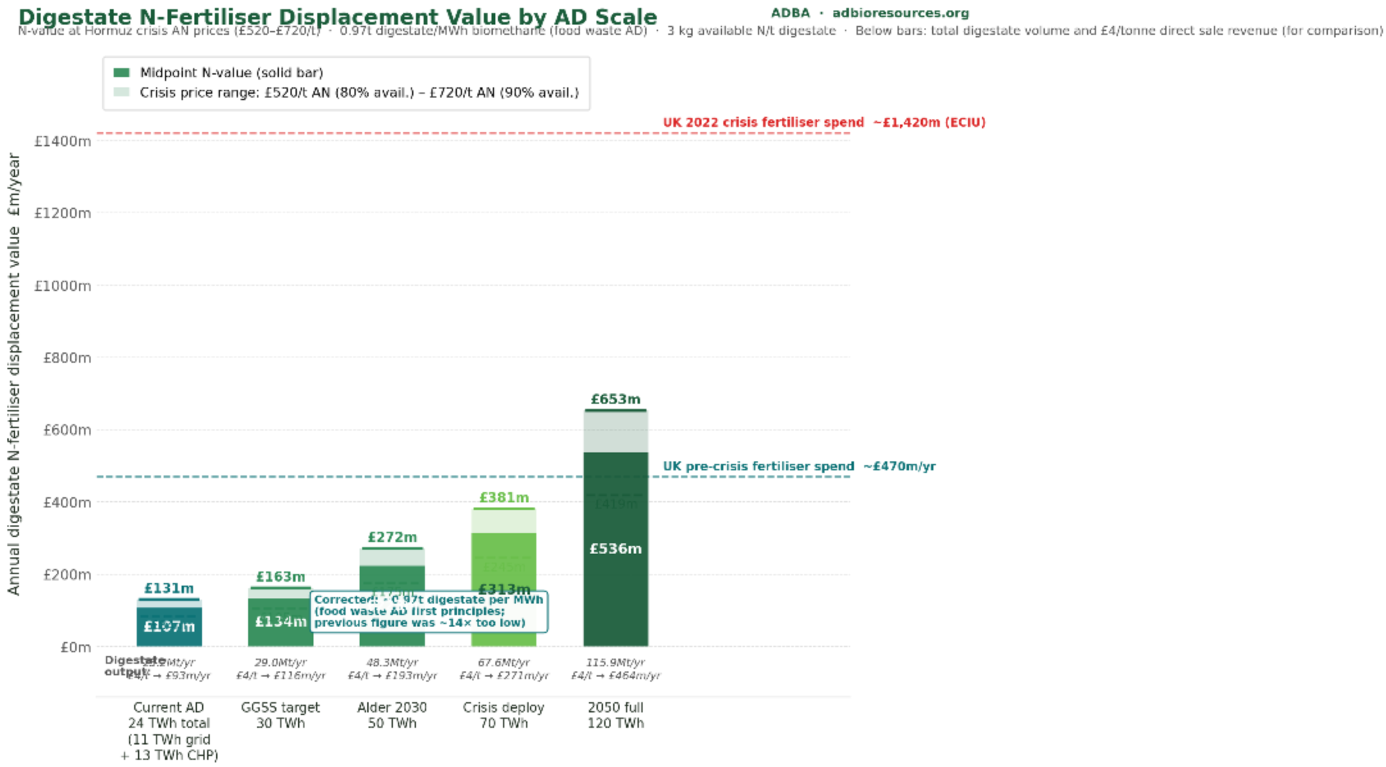
Economics

The availability of AD derived digestate can offer short term potential to offset around £130m of risk and retain the value in the UK in the first year of a fertiliser crisis. The UK has 11Twh of approved biomethane injection, 7.8TWh of notional biomethane capacity and 13TWh biogas used in electrical generation. Based on the current level of biomethane production capacity, liberating producers to meet this the full injection capacity and introducing short- and medium-term targets to stretch the sector will enable more synthetic nitrogen fertiliser displacement. Currently there is the potential for 25-30% of the synthetic nitrogen to be replaced by digestate.

Based on the experience of the Russian invasion of Ukraine and the disruption to natural gas supplies in the aftermath we can expect a fertiliser price spike in May or June. It is likely that this spike will be to well over £700/tonne N. If the international gas supply situation is not resolved soon then this price will continue to rise.

Critically all the value of the digestate is retained in the UK as opposed to being exported in the purchase of synthetic nitrogen fertiliser. £3-5/tonne of digestate, representative of the low end of synthetic nitrogen prices, is sufficient to make a major economic difference to the UK AD industry and preserve the food security of the UK. This could reduce the cost of delivering biomethane to the grid by £3/MWh. Without developing and promoting an alternative to gas derived fertiliser the UK will be forced to pay more for food or subsidise famers to purchase foreign fertilisers.





What is Digestate

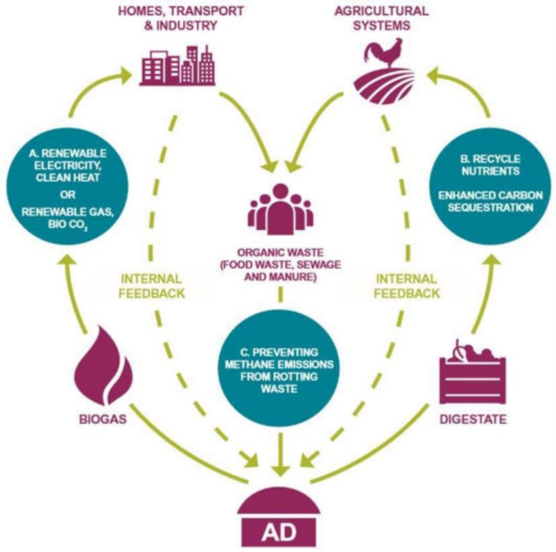
Digestate, also known as biofertiliser, is the nutrient rich material left after organic wastes such as food waste, manures, crop residues and sewage sludge are processed through anaerobic digestion (AD). In AD, naturally occurring microorganisms break down these materials in an oxygen free environment, producing biogas, a renewable gas used for heat and electricity or upgraded to biomethane for injection into the gas grid.

Once the biogas has been captured, the remaining material is digestate. This contains valuable plant nutrients including nitrogen, phosphorus and potassium, as well as organic matter that helps improve soil health and structure. Digestate is typically separated into liquid and solid fractions, both of which can be applied to farmland as fertiliser.

By recycling nutrients already present in organic wastes, digestate reduces the need for imported synthetic fertilisers while returning carbon and nutrients to soils. As discussed later in this briefing, wider use of digestate can therefore help farmers manage rising fertiliser costs while supporting more circular and resilient food and farming systems.

About the UK Anaerobic Digestion sector

There are currently over 750 biogas plants operational in the UK. The entire industry digests approximately 36 million tonnes of organic material each year - organic material that would otherwise emit greenhouse gases including highly potent methane, if left untreated in landfill.



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