Briefing

Landfill methane emissions: the impact of losing the renewable electricity subsidy

May 2025

Summary

The subsidy scheme currently encouraging landfill gas to be captured and turned into renewable electricity is due to come to an end from 2027.

There is a risk this will increase methane emissions, one of the most potent greenhouse gases, at the same time losing enough potential green electricity to power 1.1 million homes.

About methane

Methane is a greenhouse gas over 80 times more powerful than CO_2 over a 20 year period. Urgent action is needed to cut methane emissions if the world is to stay below 1.5°C of warming and avoid more devastating effects of climate change. Cutting emissions now would have a short term cooling effect, helping to mitigate the risk of overshooting dangerous climate tipping points.

The UK was a founding member of the Global Methane Pledge and has historically been a world leader on reducing methane emissions, but progress has slowed in recent years. The UK still does not have a Methane Action Plan in place.

At the COP29 climate summit in November 2024, the UK joined the declaration on reducing methane from organic waste. That means the UK has committed to setting a methane reduction target for the waste sector, and delivering the policy needed to achieve it. Despite this, methane emissions from landfill sites in the UK may actually worsen rather than continue to improve, as a subsidy supporting their capture is ending in 2027.

Landfill gas and current subsidy

Any biodegradable matter amongst the waste sent to landfill produces 'landfill gas'. This is a mixture of methane and CO_2. Most landfill operators capture it using complex infrastructure and burn it to generate renewable electricity.

This is subsidised by the Renewable Obligation Certificate scheme which adds approximately £50 per MWh to the payment for the electricity generated, making these operations viable. Without this support, the process can be too expensive for operators. However, the scheme is due to be phased out from 2027, although methane will continue to be produced by historic landfill sites for many years to come.

The impact of losing the subsidy

UK landfill gas produced 3TWh of electricity in 2023, meeting one per cent of the country's electricity demand.[1] Our analysis shows this was **enough to power 1.1 million average medium sized homes, or every electric vehicle on the road today in the UK.[2]**

The amount of energy produced from this source will naturally and gradually decrease, as policies to cut biodegradable waste sent to landfill take hold, but the electricity supplied will decline suddenly if the subsidy ends and nothing replaces it. The result is likely to be that landfill operators will flare (dispose of through burning) the methane instead, rather than generating baseload renewable electricity.

It is also likely to result in higher methane emissions as the incentive to capture as much landfill gas as possible will disappear. Operators will be required to flare the gas but will have no incentive to maintain the skills and machinery to optimise its capture.

In 2022, the last year for which data is available, if capture rates had been 48 per cent (which we estimate could be the level if the subsidy ends) instead of the recent plateau of 58 per cent, we calculate 88,000 tonnes more methane would have been released. This is equivalent to the methane released by half a million dairy cows in a year and is the opposite of what needs to happen if the UK is to show international leadership on this issue.[3]

Recommendations

The government should:

- Announce a subsidy extension for landfill gas electricity generation (which might cost £75-100 million in 2028, declining each year

thereafter), or allow landfill gas electricity generators to bid into future contracts for difference (CfD) schemes, to replace the previous Renewable Obligation Certificate subsidy.

- Directly fund research and innovation into technologies to capture and utilise landfill gas for other uses, beyond electricity, helping to maintain the incentive to capture the gas.
- Commit to publishing a detailed National Methane Action Plan, showing how the government intends to meet the Global Methane Pledge the UK signed up to at the Glasgow COP26 climate summit in 2021.

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[1] Department for Energy Security and Net Zero, 2024, Digest of UK Energy Statistics, Chapter 6.2.
[2] An average medium sized UK home consumes 2,700kWh of electricity each year, according to Ofgem. The average electric vehicle may consume 1,300kWh of electricity each year, according to EVBox. There are almost 1,300,000 electric cars in the UK as of October 2024, according to Zapmap. Therefore, the electricity generated from landfill gas in 2023 was more than enough to supply all electric vehicles.
[3] This calculation uses recorded methane emissions from landfills in 2022, as found in the National Atmospheric Emissions Inventory (Department for Energy Security and Net Zero, and Department for Environment, Food and Rural Affairs). We estimate the additional emissions that would have escaped landfills if the gas capture rate were 45 per cent instead of 55 per cent, as per table A3.5.4 in the UK Greenhouse Gas Inventory 1990-2020 Annexes. We assume the average dairy cow in the UK emits 175 kg of methane per year, as noted in section 2 of the Scottish government's 'Dairy farmer-led group: climate change evidence', December 2021.