



## IEAGHG Information Paper 2016-IP48; BECCS Deployment in the UK

A new report has been published by the Energy Technology Institute<sup>1</sup> of the UK that suggests that UK CCS Strategy should include a demonstration of bioenergy with CCS technology to allow negative emissions to be delivered within the next decade. The report entitled “The Evidence for Deploying BECCS in the UK” can be found at:

<https://d2umxnkyjne36n.cloudfront.net/insightReports/The-Evidence-for-Deploying-Bioenergy-with-CCS-in-the-UK.pdf?mtime=20161107110603>.

Key messages from the report include:

- Bioenergy with CCS (BECCS) can deliver negative emissions (the net removal of CO<sub>2</sub> from the atmosphere) whilst also producing energy in the form of electricity, heat, gaseous & liquid fuels
- There are no “show-stopping” technical barriers to BECCS – individual technologies, sectors and value chains have been substantially de-risked over the last five to 10 years
- The next steps are to demonstrate the components of BECCS together in combination at a UK plant.
- A successful implementation could lead to up to 55m tonnes of CO<sub>2</sub> emissions a year in the 2050s being removed from the atmosphere. This is equivalent to half the UK emissions target in 2050.

### The UK Context

To tackle the causes of climate change, the UK has committed to an 80% reduction in its greenhouse gas (GHG ) emissions by 2050, compared to 1990 levels. Meeting these targets will require a massive transformation in the way energy is generated and used in the UK.

Bioenergy technologies when combined with Carbon Capture and Storage (BECCS) can deliver negative emissions (net removal of CO<sub>2</sub> from the atmosphere) whilst producing energy in the form of electricity, heat, gaseous and liquid fuels.

Negative emissions provide important emissions ‘headroom’ as the UK transitions towards a low-carbon energy system, since the additional ‘breathing space’ afforded by negative emissions reduces the need for rapid emissions reductions in sectors such as heavy duty transport and aviation which are more difficult and expensive to decarbonise. Evidence from ESME, the ETI’s peer-reviewed energy system modelling environment, suggests that by the 2050s, BECCS could deliver c.-55 million tonnes of net negative emissions per annum (approximately half our emissions target in 2050), whilst meeting c.10% of the UK’s future energy demand. This would reduce the cost of meeting the UK’s 2050 GHG emissions target by up to 1% of GDP.

An info graphic has been developed to summarise the reports findings is given overleaf.

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<sup>1</sup> The ETI is a public-private partnership between global energy and engineering companies and the UK Government. Its role is to act as a conduit between academia, industry and the government to accelerate the development of low carbon technologies. See: <http://www.eti.co.uk/about>

Bioenergy with CCS (BECCS) can deliver negative emissions (the net removal of CO<sub>2</sub> from the atmosphere) whilst also producing energy in the form of



By 2050 BECCS could deliver

**c55m** tonnes  
of net negative emissions per annum



roughly half the UK emissions target in 2050

# THE EVIDENCE FOR DEPLOYING BIOENERGY WITH CCS (BECCS) IN THE UK



Significant knowledge gaps addressed by the ETI and others over the last 10 years have...

identified pathways to sustainable feedstock supply in the UK



proved the ability to deliver genuine carbon savings



demonstrated no significant technical barriers to deployment



identified key CO<sub>2</sub> stores and progressed technology to verify store integrity



The UK is well-placed to exploit the benefits of BECCS



it has vast storage opportunities offshore, and strong academic & industrial experience in both bioenergy & CCS

The next steps are to demonstrate the components of BECCS together in combination at a UK plant



proving the technology, feedstock supply & logistics, and overall commercial viability

UK government support for BECCS is vital



BECCS should be an integral part of UK CCS and decarbonisation strategies

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## Summary

We are seeing a lot of discussion with respect to the need for negative emission technology, with BECCS/BIOCCS being the focus of much interest and discussion. This report confirms IEAGHG's position that there are no technical barriers to BECCS implementation. The ETI report demonstrates that in a UK context BECCS deployment helps offset growth in GHG emissions in other sectors and could contribute significantly to meeting the UK GHG emission reduction targets.

John Gale

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