



NNFCC

The Bioeconomy Consultants



Anaerobic digestion deployment in the United Kingdom

Second Annual Report

April 2015

Anaerobic Digestion deployment in the United Kingdom

There are over 180 operational AD plants in the UK outside of the sewage treatment sector, with a further 500 projects currently under development. NNFCC monitors AD activity and has published the second annual report on AD Deployment in the UK. The report provides a comprehensive regional breakdown of sector development in Scotland, Wales, Northern Ireland and the 10 regions of England, giving detailed information on feedstock requirements, installed capacity and output type (combined heat & power or biomethane injection) for every project.

To purchase the report or for further information about this and NNFCC's related services, visit our website or e-mail: enquiries@nnfcc.co.uk.

About NNFCC

NNFCC is a specialist Bioeconomy consultancy based in York, UK. Established by the UK Government in 2003 as the National Non-Food Crops Centre, NNFCC has grown to become a leading UK consultancy focused on understanding biorenewable markets and technologies.

NNFCC offer global companies pioneering consultancy services and act as an advisor to UK Government, providing technical, market and policy expertise on the conversion of biomass and waste to bioenergy, biofuels and biobased products.

Anaerobic digestion is a key focus area for the NNFCC. Activities include contributions to development and delivery of the UK Anaerobic Digestion Strategy and Action Plan, maintenance of the Official Information Portal on Anaerobic Digestion at www.biogas-info.co.uk and regular provision of AD market and technical reports to Government and commercial clients.

NNFCC

NNFCC is a leading international consultancy with expertise on the conversion of biomass to bioenergy, biofuels and bio-based products.



NNFCC, Biocentre,
York Science Park,
Innovation Way,
Heslington, York,
YO10 5DG.

Phone: +44 (0)1904 435182
Fax: +44 (0)1904 435345
E: enquiries@nnfcc.co.uk
Web: www.nnfcc.co.uk

Contents

1	Introduction	10
2	Policy & Incentives	11
2.1	Feed-in-Tariff (FIT)	11
2.2	Renewables Obligation (RO).....	12
2.3	Northern Ireland Renewables Obligation (NIRO).....	13
2.4	Renewable Heat Incentive (RHI)	13
2.5	Northern Ireland Renewable Heat Incentive (NIRHI).....	15
2.6	Contracts for Difference (CfD).....	15
2.7	Sustainability Criteria	16
3	Deployment Analysis Criteria	17
3.1	Definitions.....	17
3.2	Assumptions.....	19
4	United Kingdom	21
5	Scotland.....	28
6	Wales	35
7	Northern Ireland.....	41
8	England.....	46
9	North West of England.....	51
10	North East of England.....	56
11	Yorkshire & Humber	61
12	West Midlands.....	66
13	East Midlands.....	71
14	East of England.....	76
15	South West of England.....	82
16	South East of England.....	87
17	Greater London.....	93
18	Isle of Wight	98
19	Appendix: List of AD projects in the United Kingdom	101

Figures

Figure 1. Development status of AD projects in the United Kingdom	24
Figure 2. Scale distribution of AD projects in the United Kingdom.....	24
Figure 3. Projected theoretical deployment of AD projects in the United Kingdom	25
Figure 4. Feedstock requirements for AD projects in the United Kingdom.....	25
Figure 5. Estimated land requirements for crops used in AD projects in the United Kingdom	26
Figure 6. Development status of AD projects in the United Kingdom by nation.....	26
Figure 7. Map of AD projects in the United Kingdom	27
Figure 8. Development status of AD projects in Scotland.....	31
Figure 9. Scale distribution of AD projects in Scotland	31
Figure 10. Projected theoretical deployment of AD projects in Scotland	32
Figure 11. Feedstock requirements for AD projects in Scotland.....	32
Figure 12. Estimated land requirements for crops used in AD projects in Scotland.....	33
Figure 13. Map of AD projects in Scotland	34
Figure 14. Development status of AD projects in Wales.....	37
Figure 15. Scale distribution of AD projects in Wales	37
Figure 16. Projected theoretical deployment of AD projects in Wales.....	38
Figure 17. Feedstock requirements for AD projects in Wales	38
Figure 18. Estimated land requirements for crops used in AD projects in Wales	39
Figure 19. Map of AD projects in Wales.....	40
Figure 20. Development status of AD projects in Northern Ireland	43
Figure 21. Scale distribution of AD projects in Northern Ireland.....	43
Figure 22. Projected theoretical deployment of AD projects in Northern Ireland	44
Figure 23. Feedstock requirements for AD projects in Northern Ireland	44
Figure 24. Estimated land requirements for crops used in AD projects in Northern Ireland...	45
Figure 25. Map of AD projects in Northern Ireland	45
Figure 26. Development status of AD projects in England	48
Figure 27. Scale distribution of AD projects in England.....	48
Figure 28. Projected theoretical deployment of AD projects in England	49
Figure 29. Feedstock requirements for AD projects in England.....	49

Figure 30. Estimated land requirements for crops used in AD projects in England	50
Figure 31. Development status of AD projects in England.....	50
Figure 32. Development status of AD projects in the North West of England.....	53
Figure 33. Scale distribution of AD projects in the North West of England	53
Figure 34. Projected theoretical deployment of AD projects in the North West of England...	54
Figure 35. Feedstock requirements for AD projects in the North West of England	54
Figure 36. Estimated land requirements for crops used in AD projects in the North West of England	55
Figure 37. Map of AD projects in the North West of England.....	55
Figure 38. Development status of AD projects in the North East of England.....	58
Figure 39. Scale distribution of AD projects in the North East of England	58
Figure 40. Projected theoretical deployment of AD projects in the North East of England.....	59
Figure 41. Feedstock requirements for AD projects in the North East of England	59
Figure 42. Estimated land requirements for crops used in AD projects in the North East of England	60
Figure 43. Map of AD projects in the North East of England.....	60
Figure 44. Development status of AD projects in Yorkshire & Humber	63
Figure 45. Scale distribution of AD projects in Yorkshire & Humber.....	63
Figure 46. Projected theoretical deployment of AD projects in Yorkshire & Humber	64
Figure 47. Feedstock requirements for AD projects in Yorkshire & Humber.....	64
Figure 48. Estimated land requirements for crops used in AD projects in Yorkshire & Humber	65
Figure 49. Map of AD projects in Yorkshire & Humber.....	65
Figure 50. Development status of AD projects in the West Midlands.....	68
Figure 51. Scale distribution of AD projects in the West Midlands	68
Figure 52. Projected theoretical deployment of AD projects in the West Midlands.....	69
Figure 53. Feedstock requirements for AD projects in the West Midlands	69
Figure 54. Estimated land requirements for crops used in AD projects in the West Midlands	70
Figure 55. Map of AD projects in The West Midlands	70
Figure 56. Development status of AD projects in the East Midlands.....	73
Figure 57. Scale distribution of AD projects in the East Midlands	73
Figure 58. Projected theoretical deployment of AD projects in the East Midlands.....	74

Figure 59. Feedstock requirements for AD projects in the East Midlands	74
Figure 60. Estimated land requirements for crops used in AD projects in the East Midlands.	75
Figure 61. Map of AD projects in the East Midlands	75
Figure 62. Development status of AD projects in the East of England.....	78
Figure 63. Scale distribution of AD projects in the East of England	78
Figure 64. Projected theoretical deployment of AD projects in the East of England.....	79
Figure 65. Feedstock requirements for AD projects in the East of England	79
Figure 66. Estimated land requirements for crops used in AD projects in the East of England	80
Figure 67. Map of AD projects in the East of England.....	81
Figure 68. Development status of AD projects in the South West of England.....	84
Figure 69. Scale distribution of AD projects in the South West of England	84
Figure 70. Projected theoretical deployment of AD projects in the South West of England..	85
Figure 71. Feedstock requirements for AD projects in the South West of England	85
Figure 72. Estimated land requirements for crops used in AD projects in the South West of England	86
Figure 73. Map of AD projects in The South West of England	86
Figure 74. Development status of AD projects in the South East of England.....	89
Figure 75. Scale distribution of AD projects in the South East of England	89
Figure 76. Projected theoretical deployment of AD projects in the South East of England....	90
Figure 77. Feedstock requirements for AD projects in the South East of England	90
Figure 78. Estimated land requirements for crops used in AD projects in the South East of England	91
Figure 79. Map of AD projects in the South East of England.....	92
Figure 80. Development status of AD projects in Greater London	95
Figure 81. Scale distribution of AD projects in Greater London.....	95
Figure 82. Projected theoretical deployment of AD projects in Greater London	96
Figure 83. Feedstock requirements for AD projects in Greater London	96
Figure 84. Map of AD projects in London.....	97
Figure 85. Map of AD projects in the Isle of Wight.....	100

Tables

Table 1. List of AD projects in Scotland	101
Table 2. List of AD projects in Northern Ireland.....	105
Table 3. List of AD projects in Wales	111
Table 4. List of AD projects in the North West of England	113
Table 5. List of AD projects in the North East of England	116
Table 6. List of AD projects in Yorkshire & Humber.....	118
Table 7. List of AD projects in the West Midlands.....	121
Table 8. List of AD projects in the East Midlands.....	125
Table 9. List of AD projects in the East of England.....	129
Table 10. List of AD projects in the South West of England.....	133
Table 11. List of AD projects in the South East of England.....	137
Table 12. List of AD projects in London.....	140
Table 13. List of AD projects in the Isle of Wight.....	141

1 Introduction

This report outlines current deployment in the UK anaerobic digestion (AD) industry, giving a comprehensive regional breakdown of the sector in Scotland, Wales, Northern Ireland and 10 regions of England (the nine NUTS1 regions and the Isle of Wight).

The report provides detailed information on installed capacity, feedstock requirements and estimated cropping area for all anaerobic digestion plants contained within the NNFCC anaerobic digestion deployment database, which tracks projects from the first public announcement through to operation.

The database is updated on a monthly basis and compiled using a number of data sources including: press announcements; regular discussions with technology providers, suppliers, investors and developers; the Department of Energy and Climate Change (DECC) Renewable Energy Planning Database (REPD), Planning Portals and Council planning registers; Ofgem statistics; the Official Information Portal on AD, Biogas Map; and WRAP's Waste Market Intelligence Team. Combined, these data sources provide an accurate insight into the various types, scales and status of AD projects in the UK.

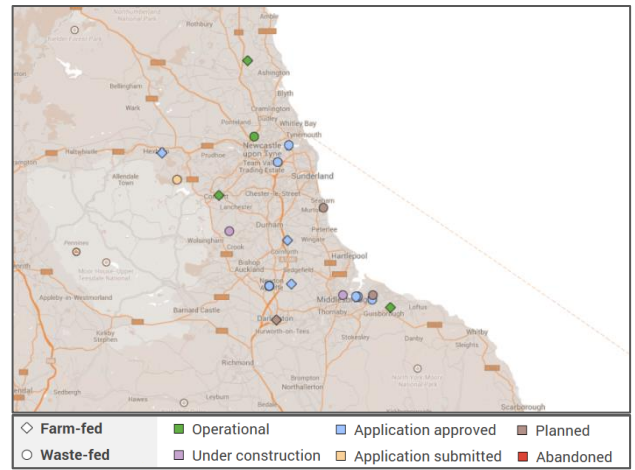
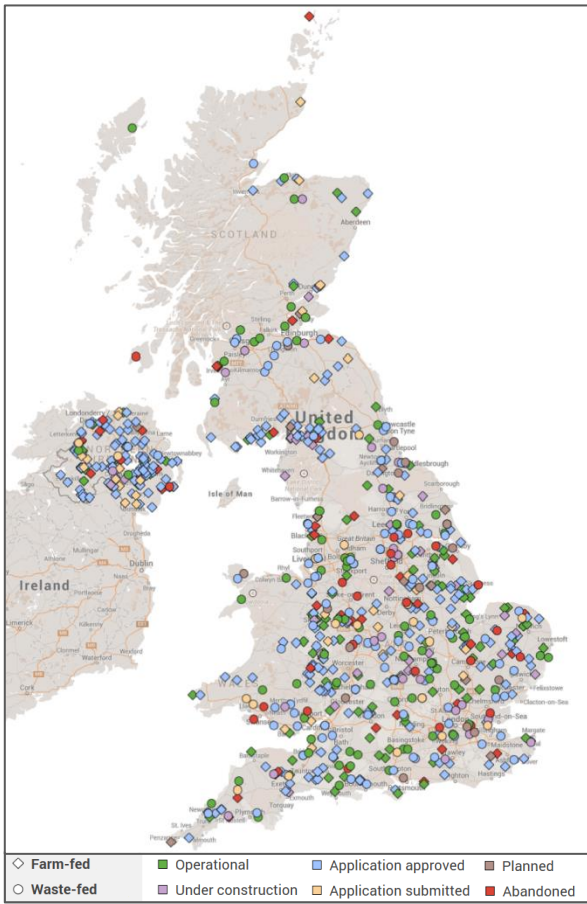
Transparency is a critical factor when evaluating data robustness. This is especially important when using such data to validate strategic decision-making processes. By pulling information from primary resources and providing a plant-by-plant breakdown, this report provides detailed and trustworthy data with complete transparency throughout. We expect that this report will be of great value to developers, investors and policymakers alike in understanding the current state-of-play of the UK AD industry.

The scope of this report extends to both the agricultural and non-sewage waste AD sectors and includes both combined heat & power and biomethane-to-grid projects. However, sewage waste treatment AD plants are not included. On account of the short lead times for development of AD projects, future deployment estimates in this report only extend to 2018.

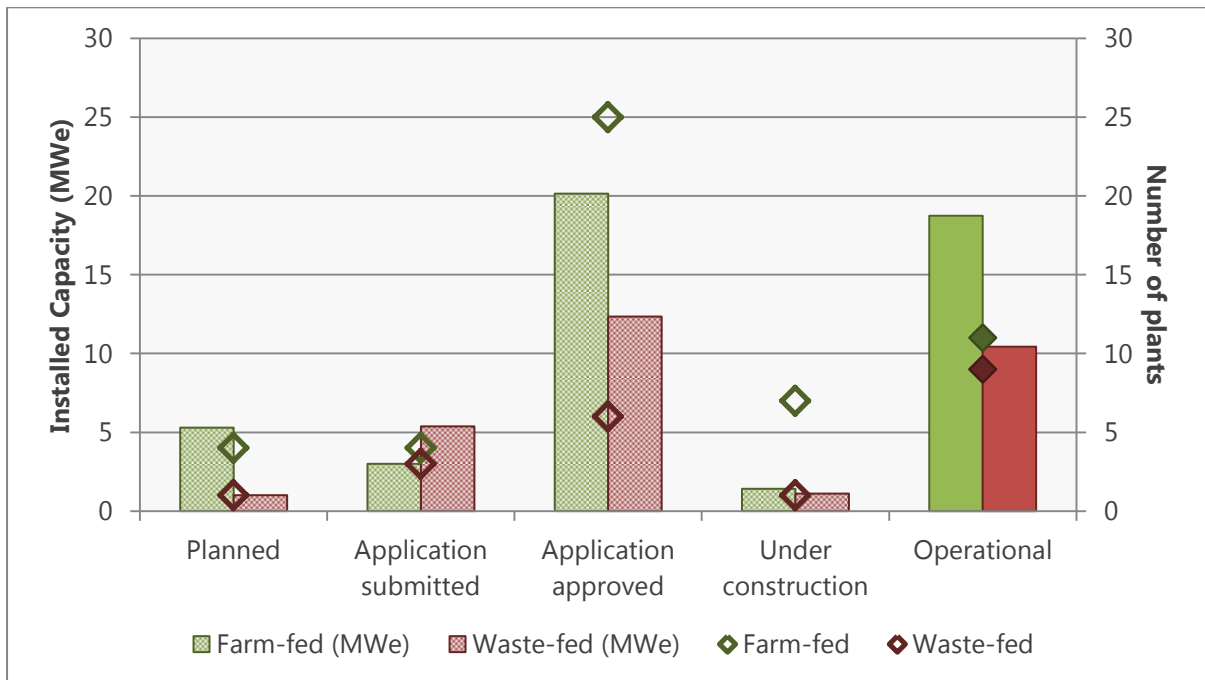
Data for this report was prepared 1st March 2015 and so any developments in the UK AD sector made after this date will not be included.

Example Content

Maps of AD projects in the United Kingdom

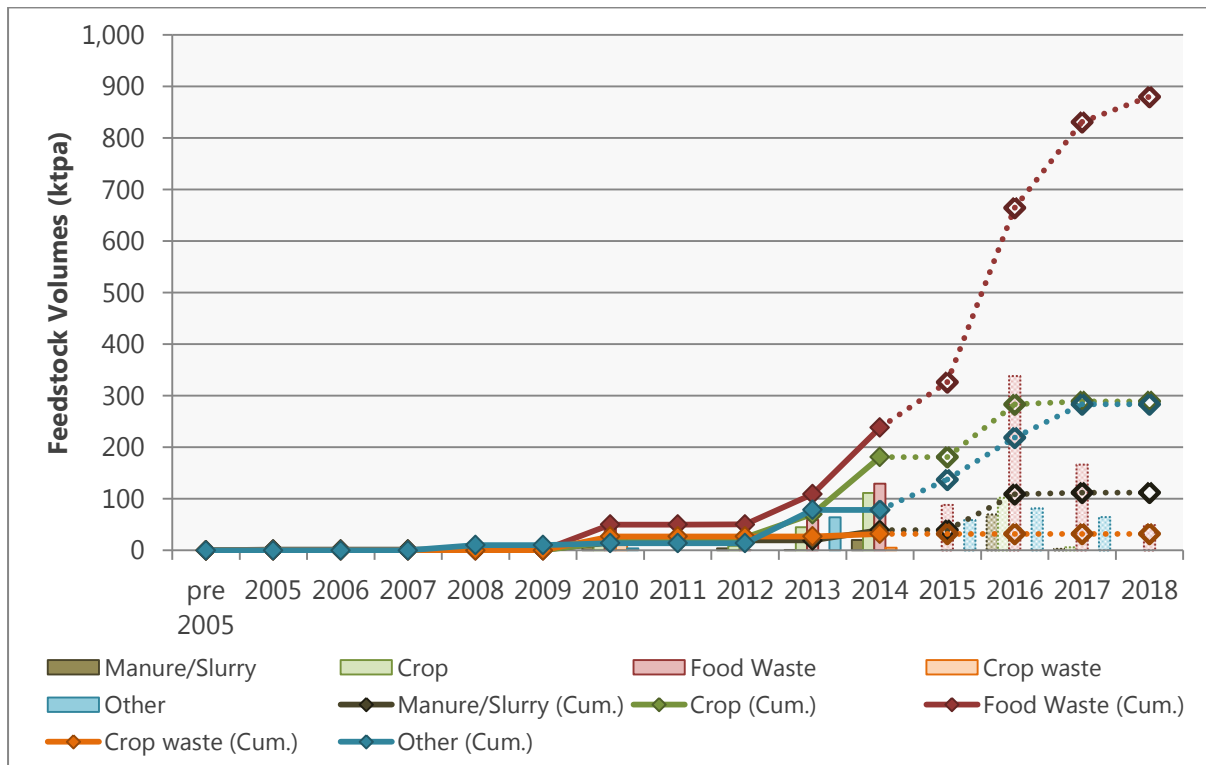


Development status of AD projects in XXXXX



Example Content

Feedstock requirements for AD projects in XXXXX



Feedstock requirements for AD projects in XXXXX

Developer	Site name	Capacity (kW _e)	Output	Status	Completion	Type	Feedstock	Feedstock demand (tpa)					
								Total	Manure/Slurry	Crop	Food Waste	Crop Waste	Other Waste
<i>County</i>													
SSE	XXXX	2200	CHP	Operational	2011	Waste-fed	Energy crops & food waste	75,000	-	35,000	40,000	-	-
W Parker & Son	XXXX	0	Heat only	Operational	2005	Farm-fed	cattle slurry & manure	190	190	-	-	-	-
D Finlay & Son	XXXX	25	CHP	Operational	2012	Farm-fed	Cattle slurry & grass silage	2,500	2,000	500	-	-	-
Widix	XXXX	4000	CHP	Under construction	2015	Waste-fed	Food waste	100,000	-	-	100,000	-	-
Mr Wallace	XXXX	124	CHP	Application approved	2016	Farm-fed	Cattle slurry	3,000	3,000	-	-	-	-
Renewables Unlimited	XXXX	360	CHP	Planned	2017	Farm-fed	Cattle slurry, silage, molasses & glycerol	5,000	3,000	1,000	-	-	1,000
<i>County</i>													
TEG Biogas	XXXX	700	CHP	Operational	2012	Waste-fed	Food waste & animal processing wastes	16,000	-	-	12,800	-	3,200
Alauna Renewable Energy	XXXX	1400	CHP	Under construction	2015	Waste-fed	Food waste	30,000	-	-	30,000	-	-
TD Forster & Son	XXXX	2222	BtG & CHP	Under construction	2015	Farm-fed	Rye & energy beet	40,000	-	40,000	-	-	-
Drysdale Ltd	XXXX	1000	CHP	Application approved	2016	Farm-fed	Energy beet, rye & vegetable waste	22,000	-	15,000	-	7,000	-
S Mitchell	XXXX	50	CHP	Application approved	2016	Farm-fed	Cattle slurry	1,000	1,000	-	-	-	-
Eairlie Farming Company	XXXX	500	CHP	Application submitted	2016	Farm-fed	Silage & energy crops	8,000	-	8,000	-	-	-
Westray Biogas	XXXX	6	CHP	Recommissioned	Abandoned	Farm-fed	Beef cattle manure, grass silage	2,500	1,750	750	-	-	-