

Imtech And Tamar Energy Sign £14.5m AD Plant Contract

Posted on 25 February 2014 by Darrel Moore



Imtech Water, Waste and Energy (Imtech) and Tamar Energy consolidated their emerging relationship by signing a £14.5m contract to build a 3MWe anaerobic digestion plant in Hertfordshire. (= HK\$ 161.095m @11.11 Jan 2016 MOD)

Tamar Energy's strategy is to develop a UK network of up to 40 plants over the next five years. Imtech was selected to deliver this project due to its track record of effective EPC delivery of renewable energy projects in the waste and water sectors.

The plant located in Hoddesdon, Hertfordshire will convert 66,000 tpa of unavoidable food wastes to around 3 MWe of renewable electricity each year. This is enough to power 6,000 homes.

It will also produce 18,000 tpa of renewable fertiliser material, displacing requirements for non-renewable alternatives.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292473/426765_EA_QP_Anaerobic_Digestate_web.pdf

The process includes depackaging of waste materials, sanitisation in compliance with the ABP regulations, biogas cleanup prior to CHP utilisation, across-plant odour control, and an innovative biological wastewater treatment plant, enabling the recycling of process water.

Bruno Speed, Imtech – “Each site will have different constraints, but we relish the opportunity to work with Tamar to provide the best possible AD solution for each individual project”

Bruno Speed, managing director at Imtech, said: “We are looking forward to the challenges that the forthcoming project will provide. We are also working with Tamar Energy on a number of other projects. Each site will have different constraints, but we relish the opportunity to work with Tamar to provide the best possible AD solution for each individual project.”

Tony Wilson, director of construction and operations at Tamar Energy, said: “We selected Imtech for their robust EPC delivery solution. Imtech has significant expertise in delivering complex projects in a cost-effective and innovative way.

The ex-power station site is exceptionally complex, with numerous challenges, including a flood plain location, ecological considerations, high pressure gas main through the centre of the site, adjacent 400kVa high voltage overhead power lines, in ground power lines and an adjacent historic asbestos landfill.

“Using its experience of previous schemes, Imtech has already shown us how it will be able to deal with these complex issues and add value to this project and others, going forward”.

The two companies are in discussion regarding a number of other projects in Tamar Energy's pipeline. Prior to signing the contract, Imtech has been supporting Tamar Energy in Hertfordshire throughout the planning application process and has brought its considerable experience and innovative approach to the project, enabling a fast-track development, which will see the site exporting electricity prior to the FIT's review in March 2015.

Imtech will also support Tamar Energy throughout the plant commissioning process and plant optimisation activities.

<http://www.ciwm-journal.co.uk/imtech-and-tamar-energy-sign-14-5m-ad-plant-contract/>

Imtech Wins 14.5m Contract for 3MW Food Waste to Biogas AD Plant in Herts

Tamar Energy has awarded a £14.5 million contract to Imtech Water, Waste and Energy to build a 3MWe Anaerobic Digestion plant to process food waste in Hertfordshire.

UK biogas facility developer, Tamar Energy has awarded a £14.5 million contract to Imtech Water, Waste and Energy to build a 3MWe Anaerobic Digestion plant to process food waste in Hertfordshire. According to the developer, the plant located in Hoddesdon, Hertfordshire will handle some 66,000 tonnes per year of unavoidable food waste, while generating enough energy to power 6,000 homes and producing 18,000 tonnes per year of renewable.

The facility will include equipment to depackage waste materials, sanitisation systems that meet Animal By-Product regulations, equipment to clean the biogas prior to use by the gas engine generators, odour control equipment and a biological wastewater treatment plant that will enable the recycling of process water.

Tamar Energy's strategy is to develop a UK network of up to 40 plants over the next five years. Imtech said that it was selected to deliver this project due to its track record of effective Engineering, procurement and construction delivery of renewable energy projects in the waste and water sectors.

"The ex-power station site is exceptionally complex, with numerous challenges, including a flood plain location, ecological considerations, high pressure gas main through the centre of the site, adjacent 400kVa high voltage overhead power lines, in ground power lines and an adjacent historic asbestos landfill," explained Tony Wilson, director of construction and operations at Tamar Energy.

More projects in the pipeline. The two companies are in discussion regarding a number of other projects in Tamar Energy's pipeline. Prior to signing the contract, [Imtech](#) said that that it had been supporting [Tamar Energy](#) in Hertfordshire throughout the planning application process, enabling a fast-track development which will see the site exporting electricity prior to the Feed in Tarrif review in March 2015. Imtech will also support Tamar Energy throughout the plant commissioning process and plant optimisation activities.

<http://waste-management-world.com/a/imtech-wins-14-5m-contract-for-3mw-food-waste-to-biogas-ad-plant-in-herts>

SCMP Lai See [Howard Winn](#)

PUBLISHED : Saturday, 15 March, 2014, 1:50am UPDATED : Thursday, 20 March, 2014, 6:32am

Digesting the price

Howard Winn



Serving up a cost discrepancy

We were intrigued to read about a contract in Hertfordshire, in Britain, for a three megawatt food waste anaerobic digestion plant. The plant will handle some 66,000 tonnes a year or 181 tonnes per day while generating enough energy to power 6,000 homes and produce 18,000 tonnes of compost a year.

The contract was awarded by Tamar Energy to Imtech Water, Waste and Energy for £14.5 million (HK\$187.5 million). The site on which this facility is being built is described as "exceptionally complex".

Hong Kong is planning a similar plant at Siu Ho Wan in North Lantau. It will process 200 tonnes a day of food waste and will supposedly generate some 14 million kilowatts per hour. The plant was discussed at an environmental affairs panel meeting recently when lawmakers were told that construction costs had tripled from HK\$489 million to HK\$1.5 billion. That's about eight times the price of the British facility. How can that be right when both facilities have a similar capacity?

<http://www.scmp.com/business/article/1448917/digesting-price>

<http://www.tamar-energy.com/our-business/site-locations/location/hoddesdon>

<http://www.tamar-energy.com/our-business/site-development-process>

SCMP Letters

Concerns over new organic waste plant

I am pleased that the Legislative Council's panel on environmental affairs has approved funding for the construction of Hong Kong's first organic waste treatment plant in northern Lantau.

Although some argue that the government should focus on waste reduction at source, building the Siu Ho Wan facility is still necessary to treat the waste that cannot be avoided, such as vegetable and fruit trimmings, and fish bones.

However, I have some concerns about the project.

According to the Environmental Protection Department's website, the collected food waste will be composted to produce soil conditioners, for example. It is estimated that about 20 tonnes of compost will be generated daily.

Yet, soil conditioner does not have to be applied every day to enhance the growth of plants and crops.

I therefore think this 20 tonnes will exceed the demand in Hong Kong.

The government should think of the possible uses and distribution channels for the soil conditioner.

If it is not used and therefore some of this material is wasted, the plant will become a white elephant.

Apart from market size, the department will also have to recognise the importance of quality control. If quality control is variable, it will be difficult to process it effectively.

Given that 200 tonnes of food waste will be treated per day, how can the government ensure the quality of the organic product that is generated by the plant?

As the focus initially is on business waste, officials will have to work with what are described as "professional kitchens" so that companies educate kitchen staff to co-operate with the food waste recycling programme.

It might be more cost-effective for the department to start with large food companies and hotels.

It could also work with property management companies of shopping malls to engage restaurant tenants in the programme as they can spread the message more quickly and effectively.

Emily Lam, Tai Po

<http://www.scmp.com/comment/letters/article/1455783/letters-editor-march-24-2014>

South China Morning Post 南華早報

Published on *South China Morning Post* (<http://www.scmp.com>)

[Home](#) > Unfair to compare one-stage UK example with Hong Kong waste plant

Unfair to compare one-stage UK example with Hong Kong waste plant

Friday, 28 March, 2014, 3:54am [Comment](#) Letters

SCMP Editorial

I refer to the letter by Emily Lam ("Concerns over new organic waste plant", March 24) and the opinion expressed in Lai See ("Digesting the price", March 15).

Ms Lam is right that despite food waste reduction efforts, adequate food waste treatment and recycling facilities are necessary to treat and recycle food waste.

Phase 1 of the organic waste treatment facility (OWTF) at Siu Ho Wan in North Lantau will recycle food waste into biogas for electricity generation and compost.

The compost produced shall be required to meet the compost and soil conditioner quality standards promulgated by the **Hong Kong Organic Resource Centre**, which is the compost standard adopted in Hong Kong.

Our pilot composting plant at Kowloon Bay has demonstrated that the compost products are of good quality. The compost quality produced by OWTF phase 1 can meet the centre's standards.

The average demand for compost in Hong Kong is about 20,000 tonnes per year, therefore, 7,000 tonnes of compost each year from the OWTF phase 1 could be absorbed.

As regards the issue of cost raised in Lai See, the scale, scope, type and site conditions for the food waste treatment plant in Hertfordshire, UK, are very different from those of OWTF phase 1.

The Hertfordshire plant is only a single-stage process using anaerobic digestion to produce electricity only. OWTF phase 1 is a two-staged process using anaerobic digestion and composting to produce electricity and good quality compost and is designed to operate every day throughout the year.

The Hertfordshire plant is located in an industrial area of approximately six hectares. OWTF Phase 1 has to fit into a very compact site of about 2.2 hectares and meet very challenging engineering conditions and stringent environmental standards. The cost figure for the Hertfordshire plant refers to the construction cost only, excluding, for example, the costs of design, contract administration and supervision, and technology supply. The project estimate for OWTF phase 1 accounts for the total project cost of the design, construction and commissioning.

The Hertfordshire plant is privately owned and does not carry a public education function. The OWTF phase 1 will include public educational facilities.

As indicated in our food waste policy blueprint, we will continue to reduce food waste and develop modern large-scale organic waste treatment facilities in phases.

Elvis W. K. Au, assistant director of environmental protection

More on this:

[Letters to the Editor, March 24, 2014](#) [1]

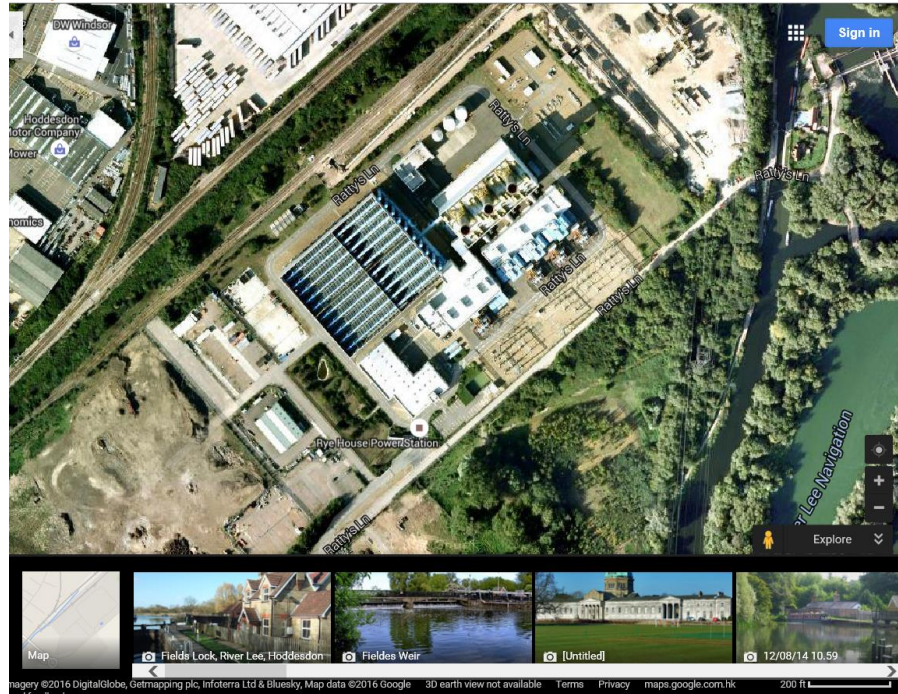
[Digesting the price](#) [2]

Source URL (retrieved on Mar 28th 2014, 5:42am): <http://www.scmp.com/comment/letters/article/1458785/unfair-compare-one-stage-uk-example-hong-kong-waste-plant>

Links: [1] <http://www.scmp.com/comment/letters/article/1455783/letters-editor-march-24-2014>

[2] <http://www.scmp.com/business/article/1448917/digesting-price>

Old power station site area Hoddesdon UK



Old Power station complete site area and roadways - 1,000 feet x 710 feet (710,000 sq feet) 65,960 m² / 6.596 hectares

Old Power station built footprint area - 650 feet x 450 feet (292,500 sq feet) 27,174m² / 2.717 hectares

1 Hectare = 10,000 m² (Note: – Elvis Au comparing the area of a former power plant to an OWTF is not like for like comparison as reflected below)

In fact just 1.1178 hectares was leased for the Tamar Energy OWTF - 181 tonnes per day - plant area

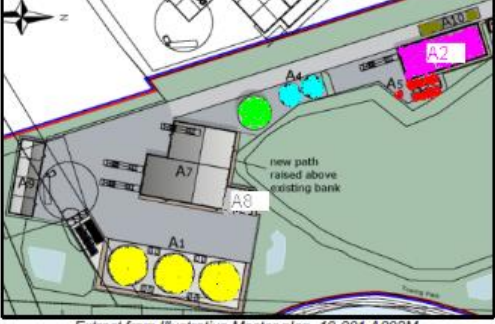
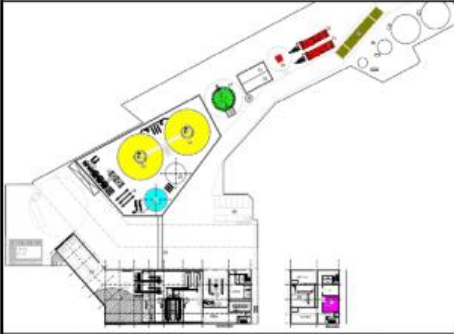
<http://www.petchev.co.uk/rattys-lane-hoddesdon-hertfordshire>

Rattys Lane, Hoddesdon, Hertfordshire, EN11 0RF

The Hoddesdon property comprises a **2.76 acre (1.1178 hectares)** site let to Tamar Energy Ltd on a long lease expiring in 2040. The site is currently under development and on completion will comprise a new Anaerobic Digestion Plant which will provide energy from household waste. Hoddesdon is situated within Hertfordshire approximately 22 miles to the North of the M25. The site benefits from excellent road communications linking to the M1/M11/M25 & A10. The main access point to the site is directly from Rattys Lane. (Note: 1 acre = 4840 sq yards / 0.405 hectares) **whereas the HK plant according to Elvis has DOUBLE that area at 2.2 hectares.**

<http://news.cleartheair.org.hk/wp-content/uploads/2015/12/OWTF200tpd.pdf>

Scoping Opinion Request Revisions to AD Facility Land at Ratty's Lane, Hoddesdon On Behalf of Tamar-Energy Ltd <http://www.hertsdirect.org/docs/pdf/r/hoddesdonscopop.pdf>

Consented Scheme	Amended Scheme
 <p>Extract from Illustrative Master plan, 10-001 A002M.</p>	 <p>Extract from 795247.IP.DR.003 03, Optimised Layout</p>
<p>A1. Digestion tanks</p> <p>A2. Compost storage/Office</p> <p>A3. CHP plant and flue</p> <p>A4. Buffer tanks</p> <p>A5. Flare</p> <p>A6. Gas holder</p> <p>A7. Mechanical separation</p> <p>A8. Odour plant and stack</p> <p>A9. Waste water treatment plant</p> <p>A10. Weighbridge</p>	<ol style="list-style-type: none"> 1. Liquid waste reception tank 2. Flat bunker 3. Crusher 4. Feeding Hopper 5. Sieve drum 6. Sand grip trap 7. Intermediated suspension buffer tank 8. Suspension buffer tank 9. Light fraction 10. Heavy fraction 11. Sanitation 12. Cooler 13. Digester 1 14. Digester 2 15. Discharge tank 16. Biogas Desulphurisation 17. Gas storage tank 18. Condensate central sump 19. Flare 20. CHP1 21. CHP2 22. Container biofilter 23. Air blower 24. Weighbridge 25. Waste reception 26. Ele/MCC room 27. Offices and welfare 28. Car park 29. Dewatering 30. Waste water treatment 31. Heat distribution 32. Bridge crane 33. Pipe bridge

EPC WRAP contracts (Turnkey contracts)

<https://www.dlapiper.com/~media/Files/Insights/Publications/2012/02/EPC%20contracts%20in%20the%20power%20sector/Files/epccontractsinthepowersector/FileAttachment/epccontractsinthepowersector.pdf>

“ Engineering, procurement and construction (EPC) contracts are the most common form of contract used to undertake construction works by the private sector on large-scale and complex infrastructure projects¹. Under an EPC contract a contractor is obliged to deliver a complete facility to a developer who need only turn a key to start operating the facility, hence **EPC contracts are sometimes called turnkey construction contracts**. In addition to delivering a complete facility, the contractor must deliver that facility for a guaranteed price by a guaranteed date and it must perform to the specified level. Failure to comply with any requirements will usually result in the contractor incurring monetary liabilities.



Unlike a standard EPC contract, the project company cannot look only to a single contractor to satisfy all the contractual obligations (in particular, design, construction and performance). Under a split structure, there are at least two entities with those obligations. Therefore, a third agreement, a wrap-around guarantee,¹⁰ is used to deliver a single point of responsibility despite the split.

Under a wrap-around guarantee, an entity, usually either the offshore supplier or the parent company of the contracting entities, guarantees the obligations of both contractors. This delivers a single point of responsibility to the project company and the lenders. The contracting entities will then enter into a separate agreement to determine how, as between themselves, liability is to be apportioned. However, that agreement is not relevant for the purposes of this paper.”

Watch the video realisation of the Hoddesdon OWTF plant and see the contract terms:


<https://www.youtube.com/watch?v=7unmy6iQw8E>

Contract Type: Full EPC Wrap under IChemE Red Book – Lump Sum



Tamar Energy Ltd - Hoddesdon, Hertfordshire

Source Segregated Organic Waste Anaerobic Digestion Plant



Completion Date: Summer 2015

Contract Duration: 18 months


Contract Value: £14.5 million

Contract Type: Full EPC wrap under IChemE Red Book – Lump Sum


Key Features:

- Treatment of 66,000 tonnes per year of unavoidable food waste
- Processing of packaged, unpackaged, solid and liquid wastes
- Includes ABPR Cat3 materials
- 3MWe generation from two CHP engines
- Production of renewable fertiliser digestate
- Robust industry standard depackaging equipment
- Utilisation of CHP waste heat in ABPR compliant sanitisation stage
- Mesophilic digestion with pumped mixing system and gas storage roofs
- Hydrogen sulphide control via ferric dosing
- Centrifuge dewatering of digestate
- Innovative biological wastewater treatment enabling process water recycling
- Site wide odour control
- Flood plain location with numerous challenges including complex geotechnical conditions, ecological considerations, high pressure gas main, overhead and in-ground HV power cables and adjacent asbestos landfill

Imtech Anaerobic Digestion Plant Hoddesdon



ImtechCorporate

 392

1,131

Relevant Press articles

Published on **South China Morning Post** (<http://www.scmp.com>)

[Home](#) > Hong Kong government can't meet food waste target at new plant

Hong Kong government can't meet food waste target at new plant

PUBLISHED : Tuesday, 29 December, 2015, 8:14pm UPDATED : Tuesday, 29 December, 2015, 8:16pm

News > Hong Kong > Health & Environment

Shirley Zhao shirley.zhao@scmp.com

Officials say costs were underestimated as project was first of its kind

Officials admitted that the government could provide a waste treatment plant in North Lantau **with only half the amount of food waste** they had earlier estimated. At a public hearing by the Legislative Council's public accounts committee today, **officials also explained that they underestimated the construction costs of the first phase of the Siu Ho Wan waste treatment facility by over 200 per cent due to the lack of reference prices for similar projects.**

Lawmakers were questioning the officials about an **earlier Audit Commission report, which criticised the Environment Bureau for underestimating the construction costs of the plant**, ultimately leading to a four-year delay in tendering and commissioning.

[READ MORE: Rubbish effort: Hong Kong environment bureau slammed for slow work on food waste disposal \[1\]](#)

The report also questioned whether the government could meet its estimated target of providing the plant with about 86 tonnes of food waste every day. During the hearing, Vivian Lau Lee-kwan, **director of Food and Environmental Hygiene**, said **her department would be able to provide only about 40 tonnes of food waste from 36 wet markets every day** to the plant due to limited resources. **“Sorting, collecting and transferring the food waste all involve new resources,”** she said.

Facing criticism for the underestimation of the project’s construction costs, assistant director of the Environmental Protection Department Elvis Au Wai-kwong explained that the project was the first of its kind in Hong Kong.

As there was no price reference, the bureau decided to get a tender offer first to obtain a market price before asking the Legco for funding approval, despite the bureau having already estimated in 2010 that the project might cost HK\$489 million.

[READ MORE: What a waste: Hong Kong government ‘set to miss targets’ as people dump more rubbish \[2\]](#)

The first offer received in 2011 was “unreasonably high”, said Au, so the bureau cancelled the tender and put out a new one in 2013, which resulted in a “reasonable” offer. In 2014, The Legco’s finance committee approved the bureau’s application for funding of about HK\$1.6 billion. **Au said it was difficult to correctly estimate the costs because there were no similar projects in the city and no standard prices across the world for reference.**

Regarding doubts over whether the government could meet its target of reducing municipal solid waste per capita by 40 per cent by 2022, Secretary for the Environment Wong Kam-sing admitted that **the target was “ambitious and progressive”**, but said he believed that the Environment Bureau could meet the target with multiple policies and cooperation among different departments.

URL: <http://www.scmp.com/news/hong-kong/health-environment/article/1896065/hong-kong-government-cant-meet-food-waste-target>
Links

[1] <http://www.scmp.com/news/hong-kong/health-environment/article/1880154/rubbish-effort-hong-kong-environment-bureau>

[2] <http://www.scmp.com/news/hong-kong/health-environment/article/1874282/what-waste-hong-kong-government-set-miss-targets>

HK Standard

New collection targets in row over food waste

Environmental authorities have set a new target for the collection of food waste after they were criticized for overstating their achievements in the latest audit report. Kinling Lo <http://tinyurl.com/zc8ywbj>
Wednesday, December 30, 2015

Environmental authorities have set a new target for the collection of food waste **after they were criticized for overstating their achievements in the latest audit report.**

The Environmental Protection Department had targeted a daily collection of **86 tonnes of food waste** from more than 70 wet markets, managed by the Food and Environmental Hygiene Department. But the audit report reviewing the reduction and recycling of food waste found the **FEHD supplied only a daily total of 11.5 tonnes.**

After conferring with various parties, officials from both departments told the Public Accounts Committee of the Legislative Council yesterday that efforts will be intensified to send **40 tonnes** of food waste daily to organic waste treatment facilities now being put in place. Responding to criticism that the government is not fully utilizing expensive facilities that should handle more than 200 tonnes of food waste daily upon their

completion in 2017, EPD officials said they are steadily stepping up their collection of food waste.

Assistant director of environmental protection **Elvis Au** Wai-kwong said a new contractor has been commissioned to also improve the collection of food waste from financial and commercial companies, apart from collections at wet markets. The department will also look into expanding collections at public housing estates. However, Director of Housing Stanley Ying Yiu-hong said it would take some time before relevant schemes are launched. "If collection points are not convenient for households, they will be reluctant to dispose of their food waste in bins separate from those for normal rubbish. Some people may also dislike having food waste collected very close to where they live," Ying said.

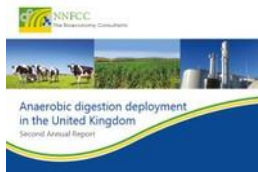
Committee member Alan Leong Kah-kit said the EPD and the Environment Bureau have been "relaxed, indifferent and unprofessional" in reducing food waste.

For senior EPD staff to state that the costs of an OWTF AD plant were unknown is frankly lacking veracity and credibility – there are literally thousands of AD plants in the world, the cost of local construction for buildings is known, the cost of the required AD and associated equipment is easily accessible to international consultants the Govt uses for these projects such as Mott McDonald and such international AD companies are skilled in EPC Wrap turnkey projects.

<http://www.nnfcc.co.uk/bioenergy/ad-deployment-report>

NNFCC Report - Anaerobic Digestion deployment in the UK

The Anaerobic Digestion (AD) industry in the UK has experienced rapid growth in recent years and this is set to continue for years to come.



There are now over 185 operational AD plants in the UK outside of the sewage treatment sector, with a further 500 projects currently under development. Understanding this deployment landscape is vital for investors, developers and policymakers alike.

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, providing detailed information on feedstock requirements, installed capacity and output type (combined heat & power or biomethane-to grid) for every project.

A free extract of the report is available [here](#)

Biomethane Carbon Calculator



All existing and new biomethane producers claiming the Renewable Heat Incentive (RHI) must ensure all fuel consignments meet two new sustainability criteria from 5th October 2015: a greenhouse gas (GHG) lifecycle emissions target (60% saving against the EU-fossil comparator) and land criteria.

AD is one of the most difficult technologies for determining supply chain emissions on account that plants will often use a wide variety of feedstocks (e.g. crops, residues, manures, slurries, and food waste) to produce a range of outputs (e.g. biomethane for injection, heat, electricity, and digestate), with emissions requiring appropriate allocation.

Author NNFCC

Published 12 Oct 2015

Industry [Bioenergy](#) [Biorefining](#) [Biofuels](#) [Feedstocks](#)

Download  [Biomethane Carbon Calculator \(PDF, 877 kB\)](#)

http://adbioresources.org/docs/July_2015_Market_Report.pdf (**AD plants existing and in planning - for UK only**)

See the following snapshot of where the sector currently stands:

OPERATIONAL PLANTS BROKEN DOWN BY ELECTRICITY/CHP, HEAT-ONLY AND BIOMETHANE		
Electricity/ heat/ biomethane	Number of operational plants	Capacity of operational plants
Outside of water sector		
Electricity/ CHP plants	215	210 MWe
Heat-only plants	6	0.1 MWth
Biomethane plants	25	17,266 m ³ / hr
Total	246	282 MWe-equivalent
Water sector		
Sewage electricity plants	155	177 MWe
Biomethane sewage plants	4	4,200 m ³ / hr
Total	159	195 MWe-equivalent
Total		
Electricity/ CHP	370	388 MWe
Heat-only	6	0.1 MWth
Biomethane	29	21,466 m ³ / hr
Total	405	477 MWe-equivalent

And of what is in the planning pipeline:

PROPOSED AD PLANTS					
	Number of electricity/ CHP plants	Potential installed capacity, MWe	Number of biomethane plants	Potential installed biomethane capacity, m ³ /hr	Total number of plants
With planning application approved (not including extensions to existing schemes)	306	328	27	16,415	333
With planning application submitted (not including extensions to existing schemes)	134	168	2	1200	136
Total proposed	440	496	29	17,615	469
Operational non-sewage plants potentially converting to biomethane	N/A	N/A	2	1,500	N/A
Operational sewage plants potentially converting to biomethane	N/A	N/A	2	1,250	N/A

4.1. Whole AD industry

In 2015 we are expecting the number of operational plants to increase by approximately 79, to 481³ (based on our 'Mid-point' scenario – see descriptions of scenarios below), and a further 48 in 2016. The ranges for these estimates in these years are ± 20 . This compares to an increase in 2014 of 102 plants, which was an exceptional year due to the reasons outlined below.

4.7. Planning data

Planning data (the number of plants submitting planning applications, and the numbers receiving approval) gives an excellent indication of how the industry will develop over the next couple of years.

469 plants are in the planning process. The following table breaks these down between those with planning approval and those that have submitted applications, and by capacity category⁶:

PROPOSED AD PLANTS					
	Number of electricity/ CHP plants	Potential installed capacity, MWe	Number of biomethane plants	Potential installed biomethane capacity, m ³ /hr	Total number of plants
With planning application approved (not including extensions to existing schemes)	306	328	27	16,415	333
With planning application submitted (not including extensions to existing schemes)	134	168	2	1200	136
Total proposed	440	496	29	17,615	469
Operational non-sewage plants potentially converting to biomethane	N/A	N/A	2	1,500	N/A
Operational sewage plants potentially converting to biomethane	N/A	N/A	2	1,250	N/A

5.2. Tonnes of feedstock used and projections

AD currently processes the following quantities of feedstock^{10,11}, (all tonnages are million wet tonnes¹²):

Farm waste (FW)	Industrial residues (ILW and ISW)	Crops (C)	Food waste (FDW)	Residual waste (RW)	Sewage Sludge (SS) rounded to nearest million
1.0	6.1	1.3	1.6	0.5	22.0

High liquid feedstocks

The feedstock tonnages are highest for industrial liquid residues and sewage sludge. This is due to their high liquid content relative to other feedstocks.

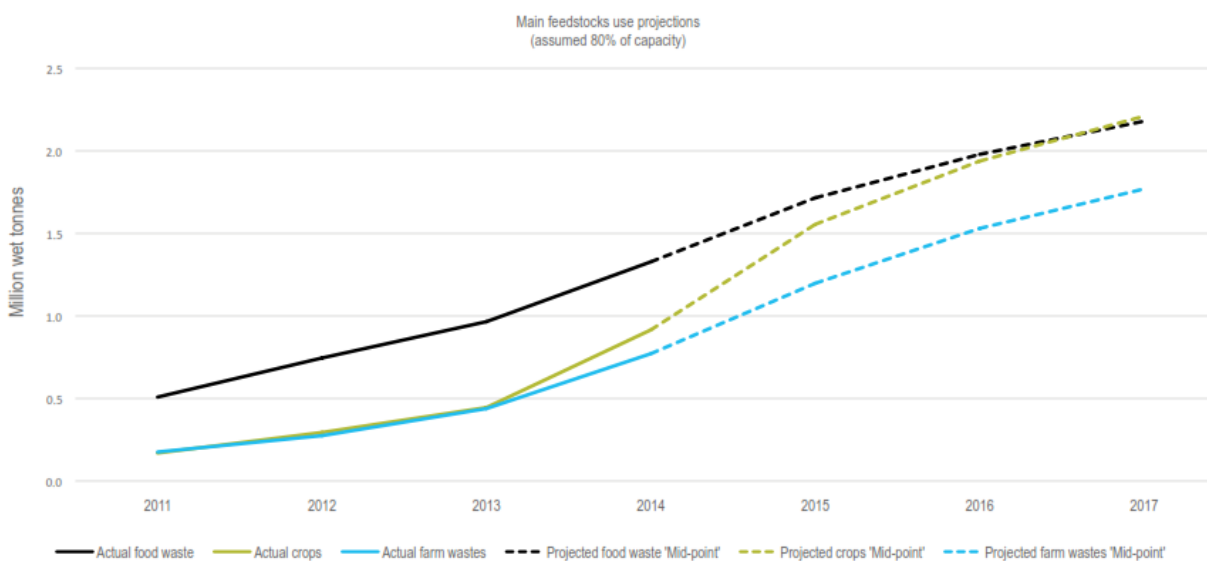
The Government estimates that 75%¹² of the 24–34 million wet tonnes of sewage sludge¹³ is now processed through AD, and still increasing as existing treatment processes are maximised and expanding.

Industrial process residues include the liquid effluents from food and drink manufacturing that are treated on-site (ISW are the solid fraction of the residues produced). Digesting these liquid feedstocks allows food manufacturers to reduce discharges to sewers and capture energy for use on site. Coca-Cola, Heineken, Nestle, BV Dairy and other brands are all now using AD, and GlaxoSmithKline has also now made a planning application for an AD plant.

Food waste

Food waste is the largest feedstock sector of the AD market (outside the high liquid feedstocks), with approximately 1.6 million tonnes of food waste being recycled by the sector. This grew strongly in 2014 as new capacity came on-line, and 2015 is also seeing an increase. Chart 27 shows this increase, but also shows our projections for 2016 and 2017, in which the use of food waste continues to increase slowly. This is based on our 'Mid-point' projection of plants (and their associated capacity and use) being constructed: between a 'High' scenario of England introducing more separate food waste collections and continued supportive RHI and FITs policies; and a 'Low' being the reverse of this.

Chart 27



5.3. WRAP survey of feedstocks

Each year WRAP undertakes a comprehensive survey of the industry (www.wrap.org.uk/content/ad-sees-significant-growth-says-latest-sector-survey) to capture the previous year's feedstock figures. This is an important survey for the industry and WRAP rely on the industry to participate to gather the maximum amount of data it can. We use this past WRAP feedstock data to sense check our own data. As outlined above, we also use data such as the proportion of feedstock capacity that is actually used for our own estimates.

WRAP estimated that in 2013 1.1 million tonnes of food waste were used in AD, as well as 0.4 million tonnes of crop and 0.35 million tonnes of farm wastes. These align very closely to the ADBA data for 2013, which gives us confidence in our 2014 data.

Chart 33

OPERATIONAL DATA BY NATION – INCLUDING WATER SECTOR							
	Number of plants	MWe	m ³ / hr	Agricultural tonnes per annum (capacity)	Industrial tonnes per annum (capacity)	Municipal/ commercial tonnes per annum (capacity)	Sewage sludge tonnes per annum (capacity and use)
England including water sector	339	341	18,766	2,539,371	4,604,896	2,321,096	20,460,480
Scotland including water sector	27	33	2,850	128,730	2,958,500	235,500	738,360
Wales including water sector	25	17	600	58,080	18,000	79,000	1,804,520
Northern Ireland including water sector	14	9	-	183,403	-	62,500	-
Total	405	399	22,216	2,909,583	7,581,396	2,698,096	23,003,360

Chart 34

PLANTS WITH PLANNING PERMISSION BY NATION						
	Number of plants	MWe	m ³ / hr	Agricultural tonnes per annum (capacity)	Industrial tonnes per annum (capacity)	Municipal/commercial tonnes per annum (capacity)
England outside the water sector	197	239	13,615	2,861,564	1,691,200	3,037,774
Scotland outside the water sector	43	44	2,800	513,196	275,000	1,023,000
Wales outside the water sector	12	8	-	152,997	-	125,500
Northern Ireland outside the water sector	81	36	-	985,936	41,900	-
Total	333	328	16,415	4,513,694	2,008,100	4,186,274

Chart 35

6.1.3. PLANTS WITH SUBMITTED PLANNING APPLICATIONS						
	Number of plants	MWe	m ³ / hr	Agricultural tonnes per annum (capacity)	Industrial tonnes per annum (capacity)	Municipal/commercial tonnes per annum (capacity)
England outside the water sector	104	136	700	1,401,677	140,000	768,500
Scotland outside the water sector	12	12	500	202,602	-	-
Wales outside the water sector	7	10	-	12,500	-	132,000
Northern Ireland outside the water sector	13	10	-	117,400	-	100,000
Total	136	168	1,200	1,734,179	140,000	1,000,500

<http://www.bccresearch.com/market-research/energy-and-resources/biogas-anaerobic-digestion-egy076b.html>
Waste-Derived Biogas: Global Markets for Anaerobic Digestion Equipment

- Published: February 2014
- Report Code: EGY076B

REPORT HIGHLIGHTS

The value of the global market for anaerobic digesters and landfill gas equipment is estimated at nearly US\$4.5 billion for 2013. The market is projected to reach US\$7 billion by 2018 growing at a compound annual growth rate (CAGR) of 9.4% over the five-year period from 2013 to 2018.

This report provides:

- An overview of the world market for the anaerobic digestion equipment used to transform waste materials into sustainable energy
- Analyses of global market trends, with data for 2013, and projections of compound annual growth rates (CAGRs) through 2018.
- Information on the best strategies used by governments responsible for sustainable waste handling and energy supply solutions
- An examination of current as well as future trends in the market for industry players and technology developers to understand and strategize their investments

Biogas Upgrading: Technologies and Global Markets

- Published: February 2014
- Report Code: EGY086B

- [Highlights](#)
- [Scope & Analyst](#)
- [Related Materials](#)
- [TOC & Pricing](#)

REPORT HIGHLIGHTS

The global market for biogas upgrading equipment reached \$125.4 million in 2011. This market is expected to grow to \$198.7 million in 2013 and \$442.4 million in 2018, with a compound annual growth rate (CAGR) of 17.4%.

This report provides:

- An overview of the global market for biogas upgrading technologies.
- Analyses of global market trends, with data from 2012, estimates for 2013, and projections of compound annual growth rates (CAGRs) through 2018.
- Analysis of the equipment used to transform crude biogas from waste materials and energy crops into sustainable energy.
- A review of feed sources used for biomethane production.
- Comprehensive profiles of leading in the industry.

<http://www.iea-biogas.net/country-reports.html>

Task 37: Energy from Biogas

Task 37 is an international working group which covers the anaerobic digestion (AD) of biomass feedstocks including agricultural residues (e.g. manure and crop residues), energy crops, organic-rich waste waters, the organic fraction of municipal solid waste (OFMSW) and industrial organic wastes. Anaerobic digestion is carried out in facilities specially adapted for each particular feedstock, or mixture of feedstocks in the case of co-digestion. The main interests are the production of biogas for use directly for heat and power, upgrading of biogas to biomethane, utilisation of biogas/biomethane for electricity grid balancing and high quality digestate that can be used as biofertiliser. Task 37 addresses the whole biogas production chain from feedstock collection and pretreatment to biogas upgrading, biofertiliser application and process chain sustainability.

Task 37 Biogas Country Report Summaries




 Task 37 Country Reports Summary 2014 (3.8 MiB)

Member Country Reports

Latest country reports

-  Australia 2015 (897.9 KiB)
-  Austria 2015 (505.1 KiB)
-  Denmark 2015 (1.3 MiB)
-  France 2015 (696.8 KiB)
-  Finland 2015 (601.4 KiB)
-  Germany 2015 (1.0 MiB)
-  Ireland 2015 (877.5 KiB)
-  Korea 2015 (772.8 KiB)
-  Netherlands 2015 (381.6 KiB)
-  Norway 2015 (1.6 MiB)
-  Sweden 2015 (856.6 KiB)
-  Switzerland 2015 (670.0 KiB)
-  United Kingdom 2015 (337.8 KiB)
-  European Commission 2014 (149.5 KiB)

Plant Lists

-  Up-grading Plant List (113.5 KiB)
-  **Up-grading Plant Suppliers** (10.2 KiB)
-  Small-scale Plant Suppliers (13.0 KiB)

Report



Country Reports

of Task 37, latest reports from October 2015

Publication



Technical Brochures

Sustainable biogas production in municipal waste water treatment plants, September 2015

[download PDF](#)

Publication



Biomethane

Status and Factors Affecting Market Development and Trade A Joint Study by IEA Bioenergy Task 40 and Task 37 September 2014

<http://www.biogasreports.com/>

Publication



Success Story:

More than 10 years production of fossil free automotive fuel and certified digestate from food waste

Vera Park in Helsingborg Sweden, October 2014

[\(PDF 412 KB\)](#)

Publications



Presentations of workshop

IEA Bioenergy 2015 Conference – Biogas Session Workshop of Task 37, Berlin, Germany, October 2015