

Anaerobic Digestion

Anaerobic digestion (AD) is a natural process of decomposition and decay that takes place in the absence of oxygen and by which organic matter is broken down to its simpler chemical components. The digestion process produces biogas, comprising largely of methane (60%) and carbon dioxide (40%), and a digested material.

Key Issues

- The anaerobic digestion of animal slurries could potentially deliver several environmental and farming benefits. The digestion of animal slurries transforms organic nitrogen into inorganic nitrogen, a better fertiliser, and depending on the composition of digested material, a better balanced fertiliser. Compared to the raw animal slurries AD digested material is significantly less odorous, and has lower organic pollution potential, which ultimately has water quality benefits.
- The biogas produced is a renewable energy source and whether used as a transport fuel or to produce electricity, it displaces fossil fuel energy. Consequently, there is an overall reduction in emissions of greenhouse and acidifying gases, both of which Ireland has international commitments to reduce.
- Anaerobic digestion sourced energy will also provide energy security of supply benefits. Anaerobic digestion sourced energy further diversifies the national fuel mix, and reduces the country's reliance on fossil fuels, the price of which are subject to global energy market trends.
- Anaerobic digestion is also a technology that can make a significant contribution to the management of organic wastes in Ireland. The EU's Landfill Directive will increasingly prohibit landfill of organic waste. Anaerobic digestion recovers energy from such waste and produces a material that is suitable for land spreading.
- The ultimate destination of digested organic material is application to land. As anaerobic digestion requires a mixture of organic wastes (e.g. animal slurries, sludges, food processing, abattoir wastes) there is a concern in the agriculture sector that application to land of digested wastes containing animal by-products (e.g. abattoir wastes, catering wastes) poses a risk of spreading animal disease. Outbreaks of animal diseases, such as BSE or Foot-and-Mouth, threaten agricultural export markets, which are very sensitive to disease status.



- Anaerobic digestion earns revenue through energy sales and gate fees for wastes but usually is not compensated for the environmental benefits it creates (e.g. displacing air emissions, energy security of supply benefits, waste management benefits, potential water quality improvements, reduction in odours). Based on existing energy prices anaerobic digestion is generally not economically viable. However if projects were compensated or subsidised for the environmental benefits they generate, anaerobic digestion would be a feasible commercial proposition.

Environmental Protection Agency's Role

The EPA has no direct role in the development of anaerobic digestion in Ireland. However, it considers that anaerobic digestion can play a part in dealing with multiple environmental issues delivering significant benefits.

Depending on the size of proposed anaerobic digesters, the EPA may be the relevant licensing authority, and particularly so if anaerobic digesters are proposed within or adjacent to existing Integrated Pollution Prevention and Control (IPPC) licensed sites (e.g. intensive pig farms, food processing factories, etc.).

Local Authorities' Role

Local Authorities have the primary responsibility for protection of the environment in their own functional area. Local Authorities, as the planning authority, adjudicate on planning matters related to proposed anaerobic digesters.

As Local Authorities must prepare waste management plans with regard to the prevention, minimisation, collection, recovery and disposal of non-hazardous waste, Local Authorities may themselves undertake to develop anaerobic digestion capacity for the management of organic wastes, or alternatively plan for the development of such capacity within their functional area.

Dept of the Environment, Heritage & Local Government's Role

The Department of the Environment, Heritage and Local Government is responsible for the development of waste management policy, with its most recent waste management policy document being "National Strategy on Biodegradable Waste" published in April 2006. Ireland's waste policy framework has been established through a combination of both Government policy statements and local authority waste management plans. These form the basis for delivering a new national integrated and sustainable waste management system over the coming decade.

Dept of the Communications, Marine and Natural Resources' RoleThe Department of Communications, Marine and Natural Resources has responsibility for energy policy and planning, including responsibility for implementing measures to increase the penetration



of renewable energy technologies in electricity production in Ireland. Among its objectives are to develop a competitive energy supply industry, to ensure security and reliability of energy supply and to develop energy conservation and end-use efficiency.

EPA Recommends

The EPA supports the development of anaerobic digestion capacity for the management of organic wastes, and associated environmental benefits, and in particular, recommends that:

1. Local Authorities consider the development of anaerobic digestion within the context of their Regional Waste Management Plans as a tool for the management of organic wastes within their functional areas
2. Farmers, the Agri-Food sector, and other significant producers of organic wastes to consider the use of anaerobic digestion as an efficient and environmentally beneficial technology for the management of waste material.
3. Government departments and regulatory bodies involved in the agriculture, environment, waste management and energy sectors to work together to develop a mutually efficient, effective and safe regulatory regime, including support measures, for the operation of anaerobic digestion facilities in Ireland.
4. Monetary supports be introduced for the development of anaerobic digestion capacity, which in addition to providing non-fossil fuel energy, would provide an infrastructure for the management of biodegradable organic wastes.

Background

- The first industrial application of anaerobic digestion occurred in 1859 in Bombay, India. By 1895 biogas was being recovered from a sewage treatment plant and used to fuel street lamps in Exeter, England. The first anaerobic digester in Ireland was commissioned at the Tullamore sewage treatment works in 1986.
- There are at least 5 small-scale on-farm anaerobic digesters in operation in Ireland. These digesters generally only accept farm wastes (i.e. slurries), while the energy produced is used on-farm only, with surplus gas production flared. These anaerobic digesters do not have the facility to supply energy distribution networks. Several business and local authorities also use anaerobic digesters to process industrial and wastewater treatment plant sludge.

Contacts

Headquarters
PO Box 3000
Johnstown Castle Estate
County Wexford, Ireland

T +353 53 9160600
F +353 53 9160699
E info@epa.ie
LoCall 1890 33 55 99

www.epa.ie

Regional Inspectorates

Regional Inspectorate
McCumiskey House
Richview, Clonskeagh Road
Dublin 14

T +353 1 268 0100
F +353 1 268 0199

Regional Inspectorate
Inniscarra, County Cork

T +353 21 487 5540
F +353 21 487 5545

Regional Inspectorate
Butts Green, Kilkenny

T +353 56 7722 329
F +353 56 7765 085

Regional Inspectorate
John Moore Road, Castlebar
County Mayo

T +353 94 904 8400
F +353 94 902 1934

Regional Inspectorate
The Glen, Monaghan

T +353 47 77600
F +353 47 84987

Regional Offices

Annabella, Mallow
County Cork

T +353 224 3865

The Rectory, Church Street
Athlone, County Westmeath

T +353 906 475722

Mungret College,
Mungret, County Limerick

T +353 6122 7900

11 Rosemount Lane
Letterkenny, County Donegal

T +353 74 912 2274

www.epa.ie

