Biofuels Factsheet

irbea irish bioenergy association

What are biofuels?

Biofuels are liquid or gaseous fuels used for transport. These fuels are used in road, rail, marine and aviation. Biofuels are derived from organic matter or biomass resources and not from fossil sources.

What are main types of Biofuels?

The main types are bioethanol, biodiesel, hydrogenated vegetable oil (HVO) and biogas/biomethane.

Current biofuels are suitable for use in conventional combustion engines with no modification or with light modification. Biofuels are generally blended with conventional fuels. The blend level is dependent on technical fuel standards and on commercial and regulatory criteria.

Bioethanol blended directly with petrol
e.g. E10 = 10% ethanol-petrol mix

Biodiesel blended directly with diesel
e.g. B12 = 12% Biodiesel-diesel mix

Biomethane produced from biogas
e.g. biomethane 100% or blended with fossil gas

What is Bioethanol?

Bioethanol (alcohol) is a petrol substitute made by fermenting the sugars in cereal grains, sugar beet, cane, and other plant matter. Bioethanol is widely used today, by being blended with traditional petrol. In 2021, Ireland has 5% ethanol in petrol, and has the potential to move to 10% (E10) in the future.

France has 85% bioethanol blend available. Brazil blends 25% ethanol in all petrol. Europe generally is moving to 10%.

The introduction of E10 in Ireland would achieve the same benefit in terms of carbon reductions as 100,000 electric cars, with no cost to the consumer or exchequer. E10 is suited to all petrol vehicles, no matter the age, make or model.

Most ethanol consumed in Europe is produced in Europe from sustainably grown grain and beet, with no adverse impacts on land use, biodiversity or the environment. Ethanol results in 75% lower carbon emissions compared to petrol.

What is Biodiesel?

Biodiesel is a diesel substitute made from vegetable oil, animal fats and used cooking oil. Biodiesel is made using a process called transesterification which processes the source materials into a liquid fuel similar to diesel from fossil fuels. Biodiesel is then blended with traditional diesel. HVO (Hydrogenated Vegetable Oil) is another form of renewable diesel, made by catalytic hydrodeoxygenation and resulting in a fuel which is chemically identical to fossil diesel. Ireland currently deploys 7% biodiesel (B7) in the fuel supply, derived mostly from used cooking oil and tallow. Biodiesel is a highly effective decarbonisation solution for the existing diesel fleet and blending rates should be increased in the coming years.

Biodiesel can also be made from palm oil, however ongoing concerns exist at a European level regarding the sourcing, production, traceability and sustainability of palm oil.

What is Biogas/Biomethane?

Biogas is a gaseous renewable fuel that is made by breaking down organic matter by microbial action using anaerobic digestion technology. This typically takes place inside sealed vessels where a gas, largely comprised of methane and carbon dioxide, is produced, captured and stored. This gas can then be upgraded and cleaned to produce biomethane. Biomethane has the same qualities as fossil gas (often referred to as natural gas). This gas can then be used to decarbonise a range of sectors including heat, transport, and power generation. Its primary benefit as a biofuel is to decarbonise the transport sector. It can be compressed and stored as well as being injected into the existing gas network infrastructure.

Further details are available on the Biogas Factsheet.

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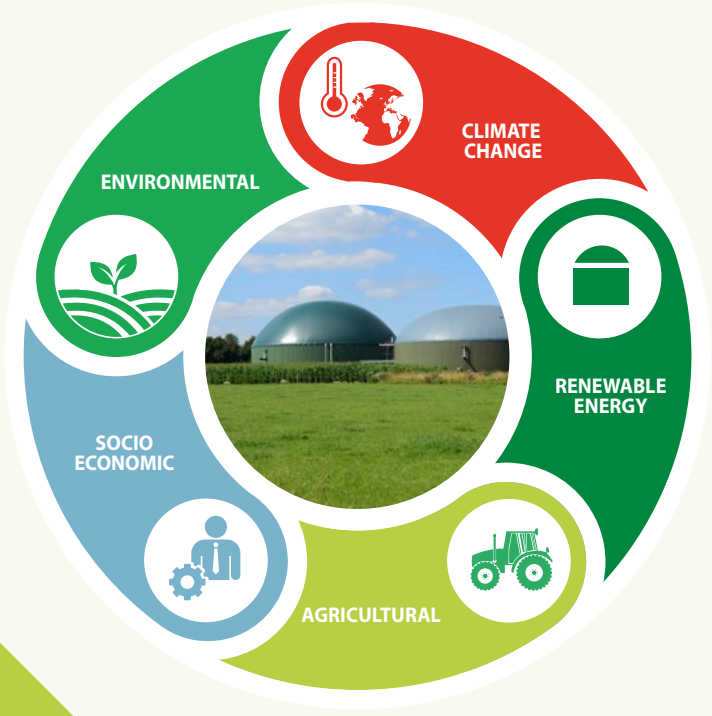

Biofuel Benefits

- Reduced carbon emissions in the transport sector
- Lowest cost option for decarbonising the existing transport system
- Can be used in existing vehicles and distributed via existing fuel supply infrastructure
- Can be produced locally, reducing dependency on fossil fuel imports
- Creates economic value and offers alternative revenue streams especially to the rural economy
- Results in valuable co-products, in particular protein-rich feed meal, reducing Europe's dependency on imported protein
- Recycle wastes, such as municipal organic waste, agricultural residues, tallow and used cooking oil to be used as energy
- Using biofuels is an excellent means of promoting the circular economy and bioeconomy

Biofuel Obligation Scheme

The inclusion of biofuels in transport fuels is governed by the Biofuel Obligation Scheme (BOS). The BOS is administered by the National Oil Reserves Agency (NORA) on behalf of the Minister for Transport. Importers of motor fuel have been required to blend a percentage of biofuel into all fuel since 2010.

Future Developments

Hydrogen also has potential to be used as a vehicle fuel in fuel cells. Bio-hydrogen is derived from biomass by various methods and could provide an alternative biofuel in the future.

IrBEA's work in this area

Many IrBEA members are actively involved in the production of biofuels in its different forms. IrBEA continues to advocate for the role biofuels can play on the decarbonisation of our transport sector. IrBEA continue to lobby for an immediate transition to biofuels containing a higher proportion of renewable resources, plus improved regulation to assure that only high quality, genuine renewable energy is deployed.

IrBEA works with a range of stakeholders to ensure that the ambitions set out by the Biofuel Obligation Scheme and targets in the renewable transport sector are delivered upon.