

## What is biomass?

Biomass refers to all organic matter either plant or animal derived that can become an energy source. Biomass in this factsheet refers to solid biomass used for combustion. IrBEA has separate factsheets to describe liquid and gas bioenergy sources. Biomass has one of the lowest greenhouse gas emissions of all renewable fuels. Biomass is suitable for decarbonising heat demands at all temperature ranges and across all industries.

## What are the main types of solid biomass and wood fuels?

### Wood pellets

Wood pellets are produced from sawdust, a by-product of sawmilling timber. Wood pellets are convenient and reliable fuels that are produced by a number of companies on the island of Ireland. Wood pellets are traded across the EU and some are traded into Ireland. Due to their high energy density, they can be transported long distances while maintaining a low impact on carbon emissions in their life cycle analysis. Wood pellets are suited to heating systems ranging from domestic stoves to industrial boilers of several hundred kW capacity. Wood pellets need to be stored in dry conditions to maintain their quality.

### Firewood

Firewood is mankind's oldest and most reliable fuel. Today, firewood can be used in highly efficient stoves and boilers. Firewood must be properly dried to below 25% moisture content and ideally below 20% to burn efficiently and correctly. Firewood should be sustainably sourced from forest thinnings and pulpwood as part of sustainable forest management. It is primarily used for domestic heating and is best used in Eco-Design stoves rather than open fires.

Firewood can come from softwood or hardwood sources. Both contain the same energy per kg, however, hardwood is a denser more compact material.



### Woodchip

Woodchip is produced from forestry by-products that are unsuitable for sawmilling due to crooked stems, high numbers of knots or otherwise damaged stock. Woodchip is primarily used at industrial and commercial level for space heating and process heating. As a fuel, it is suitable for all temperature demands up to several hundred degrees Celsius. Boilers range in size up to several thousand kW. Woodchip is a low-cost fuel which has low carbon emissions and is particularly suited to larger boiler systems.

### Biomass briquettes

Briquettes can be made from clean, compressed sawdust, wood shavings, straw, energy crops and other solid biomass materials. They utilise by-product material from timber manufacturing and agricultural processes. Briquettes are suited to domestic heating. They can be used in any stove but the best efficiency is achieved when used in Eco-Design stoves.

## Sustainability Criteria

To be considered as sustainable, wood fuels must meet stringent EU criteria set out in the current Renewable Energy Directive. RED II ensures that biomass fuels are produced sustainably and achieve the target greenhouse gas emission reductions. The Directive also ensures the protection of habitats, watercourses, and the sustainable management of forestry.

Using wood fuels encourages sustainable afforestation and forest management while ensuring more efficient use of forestry resources. Wood fuel offsets the use of fossil fuels. Life cycle analysis confirms the carbon neutrality of wood fuels. All signatories to the Paris Agreement support this once sustainability measures are implemented.

## Wood Fuel Quality Assurance

The Wood Fuel Quality Assurance Scheme (WFQA) certifies Irish wood and biomass fuels to EN/ISO 17225 Standards. Fuel quality and in particular, moisture content is vital to ensure efficient clean combustion. This maximises heat production and minimises particulate emissions. Using quality fuels along with regular maintenance will enhance the lifespan of any stove/boiler.



For further information go to [www.wfqa.org](http://www.wfqa.org)

Air quality guidelines for wood fuel combustion:



### MODERN APPLIANCES

Replace old and inefficient appliances



### FUEL QUALITY

Use only certified and quality assured fuels



### INSTALLATION

Use competent installers



### MAINTENANCE AND USERS

Regular maintenance of appliance  
Educate users and raise awareness of best practice

## What are the benefits of using wood fuels and solid biomass?

- Reduces reliance on imported fossil fuels
- Creates local employment, economic value and revenue streams in rural areas
- Ireland has ample biomass resources to meet projected demands
- Least cost and lowest carbon option for decarbonising heat, particularly high temperature heat
- Promotes sustainable forest management
- Can be used for continuous baseload electricity production through combined heat and power (CHP)
- Ideal for heating buildings, in particular for direct replacement of oil and gas boilers
- Can be easily retrofitted into existing heating systems
- Biomass is ideally suited to district heating

## IrBEA's work in this area

IrBEA represents members who are actively involved in the production of biomass fuels. Association membership also extends to those that are involved in the design, manufacture and installation of biomass boilers and appliances. We offer quality assurance and sustainability certification through the Wood Fuel Quality Assurance (WFQA) Scheme. IrBEA promotes quality standards and best practice through our Biomass Designers Register and Biomass Installers Register.

IrBEA continues to work with policy-makers and industry stakeholders to promote, encourage and facilitate the use of biomass to achieve our national renewable energy targets. We collaborate with partner organisations including Renewable Energy Ireland (REI) in promoting the transition to renewable energy. REI have published a 40by30 Renewable Heat Plan report which outlines how Ireland can transition to 40% renewable heat by 2030 through the use of all available technologies including biomass, biofuels and biogas.

Further reading: Hendrick E, Koffman PD. 2021. Wood as a Fuel.