GLOSSARY

Biodiesel
Biodiesel is a methylester derived from vegetable oils or animal fats by the process of transesterification. Biodiesel has similar properties as fossil diesel and can be blended with fossil diesel or used as pure biofuel.

Bioethanol
Bioethanol is an alcohol – C\(_2\)H\(_5\)OH – derived from sugar by fermentation. The crops used for the production of ethanol for energy purposes contain sugar (like sugar beets or sugar cane) or starch like cereals or corn. In the latter case starch is hydrolyzed to sugar and then fermented to alcohol. The conversion of lignin or cellulose to sugar is a more complicated process and subject to research in pilot plants. These technologies are summarized under the term advanced biofuels.

Biomass
The biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste. (Renewable Energy Directive)

Biofuels
‘Biofuels’ means liquid or gaseous fuel for transport produced from biomass

Bioliquids
‘Bioliquids’ means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass

Biogas
Biogas is a gas containing 50-70% biomethane. It is produced by micro-organisms under anaerobic conditions from different sources of wet biomass such as manure, fresh crops, and organic waste. The process of biogas production takes place in landfill sites and also in swamps and other places in the nature, where organic matter is stored under anaerobic conditions.

Black liquor
Wood consists of cellulose, hemicellulose and to 30-35% of lignin, which cannot be used to produce pulp and paper. Black liquor is a recycled by-product formed during the process of chemical pulping of wood in the papermaking industry. In this process, lignin is separated from cellulose, with the latter forming the paper fibres. Black liquor is the combination of the lignin residue with water and the chemicals used for the extraction. It plays an important role as bioenergy carrier in the paper and pulp industry. An example: A pulp mill consuming 1 million m\(^3\) wood per year can use 0.03-0.04 Mtoe primary energy in the form of black liquor.

By-products and waste of the forest- and wood industry
Further wood based fuels are by-products of the forest- and wood industry such as: Bark, saw dust, demolition wood, branches, tops and other wood waste.

CO2eq (Carbon Dioxide Equivalent)
Carbon dioxide equivalent is the standard unit for comparing the global warming potential of any greenhouse gas over a specified period of time. In this way, the relative severity of all greenhouse gas emissions can be evaluated in terms of one agreed reference point.
CHP (Combined Heat and Power)
Combined heat and power (CHP) or cogeneration is a technology used to improve energy efficiency through the generation of heat and power in the same plant, generally using a gas turbine with heat recovery. Heat delivered from CHP plants may be used for process or space-heating purposes in any sector of economic activity including the residential sector. CHP thus reduces the need for additional fuel combustion for the generation of heat and avoids the associated environmental impacts, such as CO₂ emissions.

Energy crops
Energy crops are those annual or perennial plants that are specifically cultivated to produce solid, liquid or gaseous forms of energy, including transportation biofuels. These can be traditional crops such as oilseeds, (rape, soybean, sunflower) cereals (wheat, barley, maize) sugar beet and new dedicated perennial energy crops – only planted for energy purposes – such as short rotation coppices (willows, poplars) miscanthus, reed canary grass and others.

Final Energy Consumption
‘Gross final consumption of energy’ means the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and transmission.

Fire wood
Fire wood is the oldest form of woody biomass, yet in many European countries it is still the most used biomass. The production and the use of firewood is labour intensive, explaining why firewood has lost market shares in the past. New firewood boilers complying with high environmental standards, new technical development of producing firewood and the increasing price of fossil fuels lead to a renaissance of firewood as heating fuel in some regions.

Gross Calorific Value (GCV)
The gross calorific value is the total amount of heat released by a unit quantity of fuel when it is burned completely with oxygen and when the vapor produced during combustion is condensed to liquid water. GCV includes the heat of condensation and is therefore independent upon the moisture content.

Gross Inland Consumption (GIC)
Gross inland consumption is the quantity of energy consumed within the borders of a country. It is calculated using the following formula: Primary production + recovered products + imports + stock changes – exports – bunker (i.e. quantities supplied to sea going ships).

Net Calorific Value (NCV)
The net calorific value (or lower heating value – LHV) is the amount of heat released by a unit quantity of fuel, when it is burned completely with oxygen, and when the water contained in the fuel is transformed to vapor and not condensed to water again. This quantity therefore does not include the heat of condensation of any water vapor. The net calorific value of a given biomass depends on the content of dry matter (excluding minerals) and moisture. The higher the moisture content and minerals content (giving ashes) the lower the net calorific value.

Organic Waste (renewable)
Renewable organic waste is the term used to describe those wastes that are readily biodegradable, or easily broken-down with the assistance of micro-organisms. Organic wastes consist of materials that contain molecules based on carbon, the carbon coming from the atmosphere via the green plants. This includes food waste and green waste.
**Pellets**

Wood pellets are a clean, CO2 neutral and convenient fuel, mostly produced from sawdust and wood shavings compressed under high pressure using no glue or other additives. They are cylindrical in shape and usually 6-10 mm in diameter. The average length is about 10-30 mm. Furthermore, due to their high energy content the convenient delivery and storage features, pellets are the ideal fuel for fully automatic small scale heating systems. With a rapidly growing share in the market, they are a key technology for increasing biomass utilisation in Europe. In the last few years pellets are increasingly used in power plants for cofiring. Pellets are also an excellent way of using local resources thus making a concrete contribution to environmental protection and climate change prevention.

**Refuse-derived fuel (RDF)**

(Also solid recovered fuel or specified recovered fuel) RDF is produced by shredding and dehydrating municipal solid waste (MSW). It consists largely of organic components of municipal waste such as plastics and biodegradable waste.

**RES = Renewable Energy Sources**

‘energy from renewable sources’ means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases

**Round wood**

Wood in its natural state as felled, with or without bark. It may be round, split, roughly squared or in other forms. Normally measured in m3.

**Ton of oil equivalent (toe)**

The ton of oil equivalent is a conventional standardized unit for measuring energy, defined on the basis for a ton of oil with a net calorific value of 41 868 kJ/kg.

**Utilised agricultural area (UAA)**

Total arable land, permanent grassland, land used for permanent crops and kitchen gardens. The UAA excludes unutilised agricultural land, woodland and land occupied by buildings, farmyards, tracks, ponds, etc.

**Wood chips**

The importance of wood chips as heating fuel is increasing rapidly due to competitive prices and automatic heating systems based on wood chips. Wood chips are either produced as by-products from saw mills and other wood industries or from logs coming directly from the forests; in the latter case their price is higher. High quality wood chips can only be produced from optimal raw material with a minimum diameter of five centimetres. Smaller diameters cause more ash, which means less convenience for the customer operating the wood chip heating system. Rotten and musty wood, dirty wood, demolition wood, shrubs with small branches and whole trees are not suitable to produce high quality wood chips for small wood chip heating systems. Such raw materials can, however, be used to produce lower quality wood chips for larger biomass district heating plants.

**Wood briquettes**

Briquettes are similar to wood pellets, but physically larger. Sizes vary but briquettes can vary in diameter from around 50 mm to 100 mm. Briquettes are usually between 60 mm and 150 mm in length. They can offer a cleaner, more consistent alternative to firewood logs, offering higher energy density and steady combustion.