



INSIGHT of BIOMASS

ENERGY: TYPES of PELLET

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Biomass energy is an energy come into existence plants and animal waste which are, or were recently, living material.

Woody, cellulosic, and oil-rich plants are the three types of bioenergy plant sources. These are can be converted into electricity, fuel and heat. Biomass is available almost everywhere in the world.





Biomass is divided into primary and secondary sources.

Primary biomass energy sources are plant materials grown for energy production, such as wood, crops, fruits, maize, sugar cane, and sunflower seeds which get converted to sunflower oil.

Secondary biomass energy sources are 'waste' materials which can be used for energy production.





How much biomass is used for energy?

In 2021, the total primary energy supply, fossil fuels account for 81 %, nuclear energy represents 5 % and renewable energy sources 14 % (of which the contribution of biomass is about 70 %).

Biomass is today used primarily for feed, then for food and finally for energy, fuels and chemical feedstock production. It accounts for 13 % of global final energy consumption (other renewables add an additional 5 % to total final energy consumption).





Why biomass is important?

In the energy industry, renewable sources play a vital role in the “decarbonization” process of the economy, referring to the process of reducing the amount of greenhouse gas emissions produced by the burning of fossil fuels. Over 50 countries have developed bioeconomy strategies.

Moreover, they have introduced carbon pricing systems, representing over 20 % of annual GHG emissions. The price of CO₂ European Emission Allowances increased from €4 to €25/t between 2017 and 2019.





Why biomass is important for European Countries?

In 2018, the European Union adopted the Renewable Energy Directive II (REDII). Most of the provisions of the REDII entered into force on January 1, 2021, and EU Member States were required to transpose the REDII into national legislation by June 30, 2021.

In the EU, GHG emissions must be reduced to 50 % of 1990 levels by 2030. Furthermore, the EU set a net-zero GHG emissions target and will become climate neutral by 2050, therefore fossil fuels will be phased out and substituted by renewable energy sources.





Why Pellet is significant for EU?

Wood pellets form a clean, environmentally beneficial, sustainable, and renewable biomass. The increasing global demand for renewable energy is driving the demand for wood pellets to reduce the usage of fossil fuels that contribute to global warming.

Apart from this trend, wood pellets are becoming popular across the globe owing to the increasing prices of primary fuel because of the energy-related issues stem from Russia-Ukraine crisis.

A background image of a dense forest of tall, green coniferous trees under a clear sky.

PELLETS



Why Pellet is significant for EU?

Wood pellets have become an important energy carrier traded on a large scale and over long distances, due to their high energy density and stable characteristics.

In 2021, EU wood pellet consumption hit a new record of 23.1 million metric tons (MMT) mainly due to increased residential use in Germany and co-firing of wood pellets with coal in the Netherlands. In 2022, EU demand is expected to further grow to 24.3 MMT, boosted by the high price of fossil fuels.

A dense forest of tall, thin evergreen trees, likely spruce or fir, filling the lower half of the slide. The trees are dark green and appear to be in a natural setting.

PELLETS



Why Pellet is significant for EU?

EU demand for pellets has significantly outpaced domestic production for the past ten years. This has resulted in increased imports from mainly Russia, the United States, Belarus, and Ukraine. In 2021, EU wood pellet imports totaled 5.4 MMT, with a value of \$924 million.

With Russia's invasion of Ukraine, the wood pellet imports from Russia, Belarus, and Ukraine are significantly affected. On the longer term, third country trade could also be affected by the implementation of sustainability requirements by the EC and individual EU Member State governments

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Why Pellet is significant for EU?

Due to the recent geopolitical and economic factors, European countries have made an efforts to change their supply chain which highly depend on Russia. On April 8, 2022, EU agreed on a fifth package of restrictive measures against Russia. As part of this package, the EU adopted import bans through Council Regulation (EU) 2022/576 of 8 April 2022 amending Regulation (EU) No 833/2014.

This package includes wood pellets, which means that wood pellets from Russia are now banned from entering the EU market.

A background image of a dense forest of tall, thin evergreen trees, likely spruce or fir, under a bright sky. The trees are in various shades of green, and the overall scene is a natural, outdoor setting.

PELLETS



Why Pellet is significant for EU?

While the EU accounts for 45 percent of world production, EU demand represents 55 percent of the global market. Residential (below 50 kW) and small-to-medium scale commercial (more than 50 kW) use of pellets represents approximately 70 percent of EU pellet consumption, leaving 30 percent for large scale industrial use of pellets, with a capacity of generally more than 5 MW, according to Bioenergy Europe.

The major users of wood pellets in the EU are Italy, the Netherlands, Germany, Denmark, France, Sweden, Belgium, and Austria

A dense forest of tall, thin evergreen trees, likely spruce or fir, filling the lower half of the slide. The trees are dark green and appear to be in a natural, undisturbed setting.

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Types of Pellet

Olive Pomace

Olive pomace is used as solid fuel in pellet form especially in the Aegean and Medditarean region. Every year important amounts of olive pomace occur from olive tree gardens these areas.

Pomace, which there is no oil left, is a dry mass. It is preferred because it is ecological, contains 5000 kcal/kg, is affordable, and is low in ash compared to other fuels such as coal.

A dense forest of tall, thin evergreen trees, likely spruce or fir, filling the lower half of the page. The trees are dark green and extend to the top of the frame.

PELLETS



Types of Pellet

Corn Cobs Pellet

As an ideal natural pellet fuel, corn can grow fast in wide regions that suits its plantation, which means a consistent availability of fuel resources.

The ash produced after burning can be used as an additive for the gardens to improve the soil quality.

A background image of a dense forest of tall, thin evergreen trees under a bright sky.

PELLETS



Types of Pellet

Pine Pellet

Pine pellet, which is one of the bioenergy sources, is used for heating and industrial purposes.

A background image of a dense forest of tall, thin evergreen trees, likely pines or spruces, under a bright, slightly hazy sky. The trees are dark green and fill the lower two-thirds of the frame.

PELLETS



Types of Pellet

Rice Husk Pellet

Rice husk pellet is a kind of biomass material pellet. It is made of rice husk or rice hull, which is the outer layer of the paddy grain. Rice husk is with deficiencies of soft, light and low in calorificity.

After pressed by the biofuel pellet mill, rice husk has become the high calorificity biofuel pellets – rice husk pellets.

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PELLETS



Types of Pellet

Beech Wood Pellet

Beech wood pellets can be used as an efficient fuel source for a wide variety of applications. They are mostly for cooking fuel or heating purposes, though there are other advantages to consider. They burn in central heating boilers, which are known to provide high user comfort, cleanliness and easy operation.

When using stoves with this fuel, the heating is consistent, and they are low maintenance to operate.

A background image of a dense forest of tall, thin evergreen trees under a bright sky.

PELLETS



Types of Pellet

Bamboo Powder Pellet

Being a member of biomass source, bamboo is widely known as a perennial grass plant, but it's woody in nature.

Most of the bamboos can be harvested 4 times in a year and widely cultivated over the world, which means bamboo is a kind of potentially sustainable biomass fuel. Due to its woody nature, the production of bamboo pellets are similar to wood pellet production.

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PELLETS



Types of Pellet

Coffee Shell Pellet

During the preparation of coffee beans or coffee, a lot of residue in the form of coffee shell and the coffee ground is obtained. This residue, after processing, can be used to make coffee pellets that are further used to generate steam, to heat the greenhouse, and to run other heat dependent processes.

The top coffee producers are Brazil, Vietnam, Colombia, Indonesia, Ethiopia, Honduras, Uganda, etc.

A background image of a dense forest of tall, thin evergreen trees, likely spruce or fir, under a bright sky. The trees are dark green and fill the lower half of the page.

PELLETS



Types of Pellet

Wheat Straw Pellets

Wheat straw is a large potential resource for heat and power production and a possible alternative to woody biomass in countries with little forest resources.

Wheat straw, once dehydrated and ground is subjected to the granulation process, obtaining a cylinder product, smooth, bright and uniform of 5 or 6 mm in diameter.

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PELLETS



Types of Pellet

Waste Paper Pellets

When waste paper is made into biomass pellets, it can be used as one green and renewable energy resource with a wide application. The waste paper pellet is a high efficient fuel that plays an important role in family heating, cooking, generating electricity, or as industrial fuel. They can discharge as high calorific value as possible, little smoke and ash left.

Waste paper boxes, shells, newspapers, magazines and packaging boxes are crushed by a crusher, and then processed into pellets

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PELLETS



Types of Pellet

Miscanthus Pellets

Miscanthus species or elephant grasses is a high yielding energy crops. They are perennial, rhizomatous grass, which can grow more than 3 meters tall in a growing season.

Miscanthus pellets are made by the miscanthus pellet mill. Even though miscanthus can be burned directly for heat, miscanthus pellets have a better combustion performance.

A background image of a dense forest of tall, thin evergreen trees, likely spruce or fir, under a clear sky. The trees are dark green and fill the lower half of the page.

PELLETS



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