European Commission

Technology factsheet:

Competitiveness of clean energy technology – Bioenergy

December 2023

Key technologies

Bioenergy already has commercial applications such as burning biomass to generate electricity, biogas production for electricity or biomethane.

tech 1

TRL 3-7: Slow pyrolysis (bioheat is a co-product)

tech 2

TRL6-8: Gasification

tech 3

TRL 8-9: Biomass combustion; Anaerobic digestion; Pelletisation; Torrefaction

Key value chain figures

- **Sector turnover**
  - Solid Biomass to energy: EUR 38.4 billion (2021) – largest turnover in Germany, Sweden and Finland.
  - Biogas: EUR 55 billion (2021) – largest turnover in Germany, Italy, France.
- **Employment (direct and indirect):**
  - Solid Biomass: 350 000 (2021) – largest turnover in Germany, Sweden and Finland.
  - Biogas: 47 100 (2021).

Key facts

Fact 1

Bioenergy from sustainable sourcing will ensure sustainable energy production by prioritising using non-recyclable biomass waste and agricultural and forest residues and contribute to energy diversification and increase energy security.

Fact 2

Modern bioenergy is essential to the future low-carbon global energy system. IEA and EU modelling shows that deploying Bioenergy with Carbon Capture and Storage (BECCS) is essential to reach net-zero emissions goals.

Fact 3

The European bioenergy sector is a global leader, with over 800 000 jobs including individual heating system sector, and over 50 000 companies across the value chain.

Scan QR code for more information on biofuels