

# Highlights of the Conference

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## Energy security and diversification

- **Sustainable biomass recognised as a renewable carbon resource and strategic pillar for climate neutrality, energy security and industrial resilience**
- **Biofuels and renewable fuels essential for reducing fossil fuel dependence and strengthening energy security; Growing role of biomass in high-value biomaterials and biochemicals**
- **Europe remains a leader in biomass innovation, but deployment at commercial scale requires investment support, loan guarantees or risk-sharing mechanisms**



## Topic 1 Sustainable Resources for Decarbonising the Economy

- **Intermediate crops, low-ILUC systems and lignocellulosic feedstocks showed strong potential for advanced biofuels and SAF**
- **Integrated crop rotations, agroforestry and marginal land use can improve biodiversity, soil resilience and CO<sub>2</sub> capture**
- **Cascading wood-use strategies highlighted opportunities for carbon storage, recycling and resource optimisation**
- **Biomass logistics, storage and geospatial planning tools increasingly important for efficient biomass supply chains**



## Topic 2 Sustainability, Impacts and Policies

- **Harmonised sustainability governance, certification systems and MRV frameworks remain essential for global biomass value chains**
- **LCA and integrated sustainability assessment tools increasingly support policymaking and industrial implementation**
- **Social acceptance, stakeholder engagement and transparent governance identified as key factors for large-scale deployment**
- **BECCS and carbon-negative systems gaining importance within long-term climate mitigation and carbon removal strategies**
- **Regional and decentralised biomass value chains can improve resilience, industrial flexibility and sustainable biomass allocation**



## Topic 3 Biomass, Bio-based Products and Bioenergy Integration

- **Integrated bioenergy systems and biorefineries can strengthen energy security, resilience and sector coupling, co-producing fuels, chemicals, biomaterials, biomethane and energy**
- **Strong synergies emerging between biomass, renewable hydrogen, solar systems and local energy grids**
- **Computational models and process integration tools accelerating industrial implementation of integrated biorefineries**
- **Optimal biomass allocation and investment support remain essential for economically viable large-scale deployment**



## Topic 4 Biomass Conversion for Bioenergy

- **Progress in pretreatment, torrefaction and thermochemical conversion technologies improving biomass logistics and conversion efficiency**
- **BECCS and BECCU pathways increasingly integrated into biomass conversion systems, supporting carbon-negative energy solutions**
- **Gasification research focused on syngas cleaning, catalysts, tar reforming and hydrogen-rich syngas production**
- **Advanced combustion, biomethane and anaerobic digestion technologies highlighted innovative pathways for low-carbon fuels, circular agriculture and renewable gas systems**
- **Machine-learning and advanced optimisation tools increasingly applied to biomass conversion processes**



## Topic 5 Biomass Conversion to Intermediate Bioenergy Carriers & Sustainable Biofuels

- Strong progress in SAF, advanced biofuels and hybrid biomass-electrification systems
- HTL, supercritical water gasification and Power-and-Biomass-to-X systems demonstrated high flexibility and carbon efficiency
- Pyrolysis and hydrothermal processing technologies moving toward industrial scale-up and commercialisation
- Significant advances achieved in refinery integration, co-processing and upgrading of bio-oils and biogenic intermediates
- Renewable hydrogen integration and flexible biorefinery optimisation becoming central for future low-carbon fuel production



## Topic 6 Biomass Conversion to Bio-based Products and Chemicals

- **Expansion of integrated biorefineries producing renewable chemicals, biomaterials and advanced products**
- **Industrial biotechnology and biomass valorisation converting residues into proteins, enzymes, specialty chemicals and biomaterials**
- **Lignin, biochar and industrial residues increasingly transformed into bioplastics, adsorbents and advanced carbon materials**
- **Artificial intelligence and machine-learning tools increasingly supporting process optimisation, scale-up and material design**



## Take Home Messages

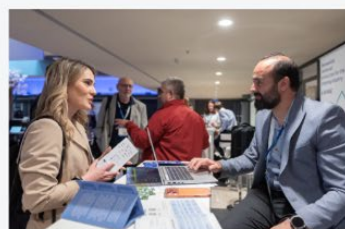
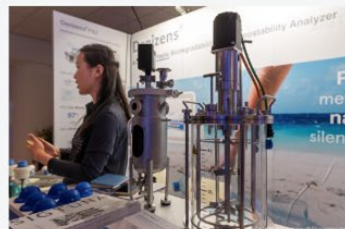
- Sustainable biomass is increasingly recognised as a strategic renewable carbon resource supporting climate neutrality, energy security and industrial competitiveness
- Advanced biofuels, SAF and integrated biorefineries are progressing toward industrial deployment, supported by renewable hydrogen and Power-to-X integration
- Harmonised sustainability governance, transparent carbon accounting and robust certification systems remain critical for market uptake and long-term deployment
- Accelerating industrial scale-up will require stronger links between innovation, policy and industry, financial support, loan guarantees and risk-sharing mechanisms





# EUBCE 2026

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# Thank you!

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