

BECCS: FROM POTENTIAL TO PRACTICE

Unleashing Carbon-Negative Energy

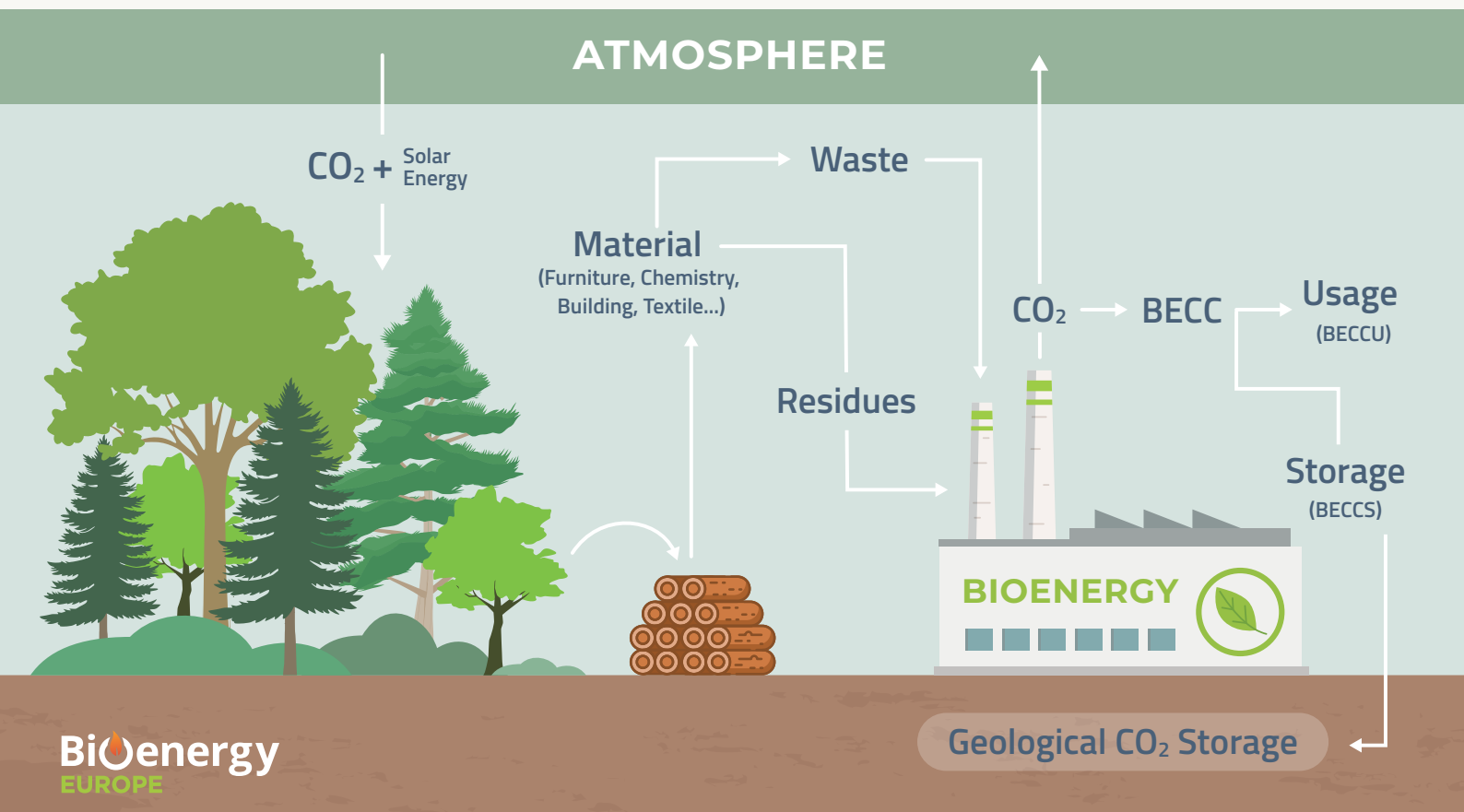
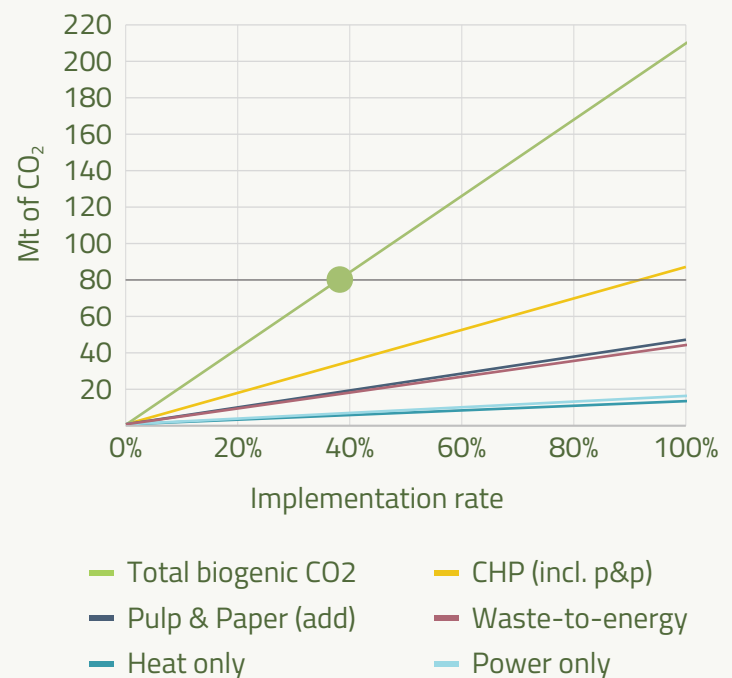
Bioenergy with Carbon Capture and Storage (BECCS) is a proven technology that combines renewable energy production with capture and permanent storage of carbon dioxide (CO₂). As plants grow, they absorb CO₂ from the atmosphere. When this biomass is used to produce energy, the CO₂ is released back into the atmosphere, making bioenergy carbon-neutral. BECCS takes this further by capturing the CO₂ produced and storing it underground, preventing it from re-entering the atmosphere. This process removes CO₂ from the carbon cycle and delivers **net-negative emissions**.

BECCS could realistically deliver the EU's 2040 goal of 80 Mt CO₂ removals per year ([COM/2024/63 final](#)) by integrating carbon capture into only 38% of existing biomass installations. Expanding deployment to 50% could enable around 105 Mt CO₂ removals annually. Large-scale BECCS deployment in Europe is technically feasible, economically viable, and achievable with existing technologies.

38%

of existing biomass plants to achieve 80 Mt CO₂ removals per year

Biogenic CO₂ captured (95% capture rate)



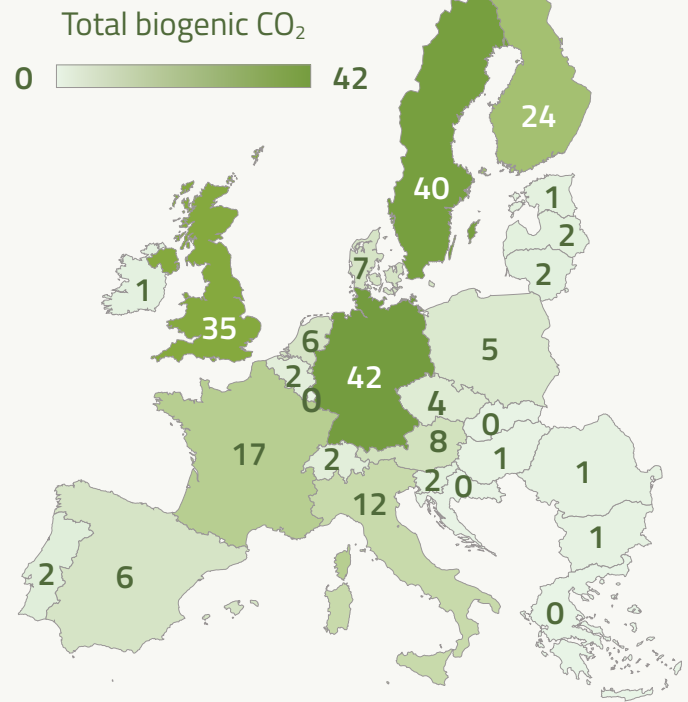
Europe's Untapped Opportunity

BECCS potential is widely distributed across Europe, with the greatest opportunities in combined heat and power (CHP) plants and the pulp & paper sector. Countries such as Sweden, Germany, Finland, and the United Kingdom have the most potential thanks to existing strong bioenergy infrastructure. Significant untapped capacity also exists in France, Italy, and Austria, offering a genuine EU-wide opportunity.

A 220-Million-Tonne Advantage

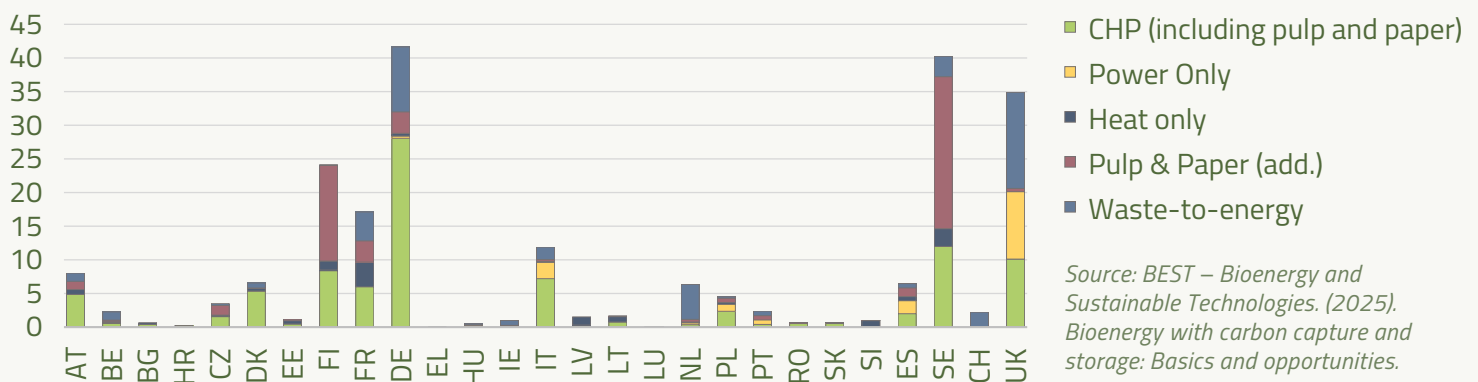
Every year, 220 Mt of biogenic CO₂ come from European bioenergy plants. Capturing and storing half of this would allow Europe to exceed its 2040 carbon removal goals, while enhancing energy resilience and industrial competitiveness. Biogenic carbon is the commodity of the future. In a defossilised economy, sustainable biomass and bioenergy will remain the only renewable sources of carbon, essential to maintaining Europe's industrial base.

Map of biogenic carbon potential for BECCS (Mt CO₂ potential per year)



Source: BEST – Bioenergy and Sustainable Technologies. (2025).
Bioenergy with carbon capture and storage: Basics and opportunities.

Bioenergy Carbon Capture & Storage potential in European countries (Million tonnes captured/year).



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POLICIES TO MAKE IT POSSIBLE

BECCS deployment depends on supportive policy frameworks and investment signals. **Policymakers should:**

- Create demand for durable carbon removals through binding targets in EU climate legislation;
- Integrate BECCS into EU climate and industrial strategies;
- Provide financial incentives and carbon removal credits to reward negative emissions;
- Facilitate the development of CO₂ transport and storage infrastructure;
- Ensure regulatory clarity and permitting efficiency;
- Recognize sustainably sourced bioenergy as a cornerstone of Europe's carbon removal pathway.

With coherent action, BECCS can help the EU achieve net-negative emissions while strengthening its clean energy leadership.

Download the study here!



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