EU Danube Region Strategy
PA 8 LIGHTHOUSE

GREEN TECH, CIRCULAR ECONOMY & CIRCULAR BIOECONOMY

Innovation Hub CCU_{BIO} BW

Umwelttechnik BW
Baden-Württemberg Regional Government

Basics

Name: Innovation Hub CCU_{BIO} BW

Country: Germany

Scoring: 50/50

Project Coordinator:

Umwelttechnik BW

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https://www.umwelttechnik-bw.de/de/ccubio

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Key Project Data:

2021 – 2024

Funded by Baden-Württemberg Ministry for the Environment, Climate and Energy Sector

About the project

The **Innovation Hub CCU_{BIO} BW** was established to position Baden-Württemberg as a leader in **biotechnological CO_2 recycling**. Coordinated by the **Umwelttechnik BW Agency**, the project plays a key role in implementing Baden-Württemberg´s Strategy for Sustainable Bioeconomy.

Mission

Development and implementation of bioeconomic processes in industry, using CO_2 as a resource.

The project operates through **biotechnological approaches**, transforming CO_2 into valuable products such as chemicals, materials, or proteins. These efforts contribute to a **circular carbon economy and circular bioeconomy but also reduce reliance on fossil carbon**.

INNOVATION

The project focuses on biotechnological CO_2 recycling, which is still an underdeveloped but high-potential solution in the climate and bioeconomy field. It also combines technical, legal, and communication tools and addresses early-stage awareness and long-term transformation

SUSTAINABILITY

The project creates reusable knowledge and tools, supports circular carbon use, aligned with climate neutrality goals and encourages long-term cooperation between business, research and development.

SCALABILITY

The project's approach is easy to replicate and to scale and can help others save time and overcome barriers by building on the experience gained. Other regions or federal states can also use comparable methods, formats and tools.

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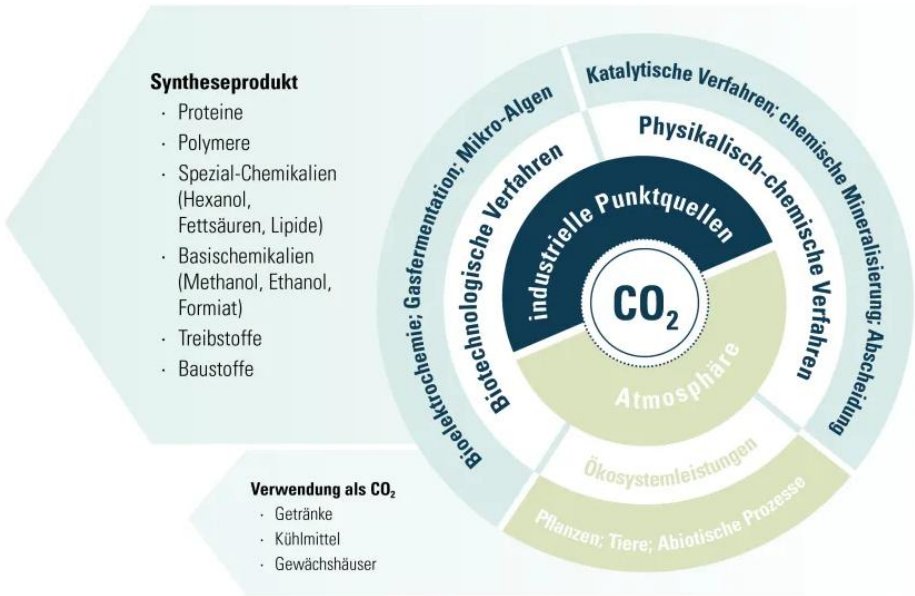
Baden-Württemberg Ministry of Economic Affairs, Labour and Tourism

Activities

The main activities of the Innovation Hub CCU_{BIO} BW included:

Reason/Objective	Activities
Raise awareness for biotechnological CO_2 recycling	Development of three practical tools: – The CO_2 Recycling Tool – The Biological CO_2 Recycling Guide showcasing real-world examples – The Legal Study providing orientation for actors both in the industry and public sector
Use the power of networking	Organization of 20 events, including a field study trip → Visit of a working CO_2 fermentation plant
Address legal challenges	Creation of a detailed Legal Analysis that examines key barriers and provides recommendations for both policymakers and project developers
Visibility and Engagement through public communication	Media coverage and campaigns → via video, social media, press, and a newsletter

The following graphic illustrates the wide range of products that can be obtained from CO_2 recovery:



https://www.umwelttechnik-bw.de/en/node/479

Methodology

Several methods were employed throughout the project. The key aspects of the project's methodology included:

1. Needs-driven development

All three tools are based on early input from companies and experts to ensure relevance and usability.

2. Interactive formats

More than 20 workshops and webinars done, and a study trip to the Steelanol plant enabled knowledge exchange and networking.

3. Legal Study

A structured regulatory review by a specialized law firm identifies key barriers and developed practical recommendations for implementation.

4. Targeted communication

Outreach via video, social media, press, and a newsletter. As result, visibility and stakeholder engagement are increased.

5. Iterative feedback loops

All actions and outputs were co-developed with stakeholders and the funding authority ensuring alignment with practical needs and political goals.

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Impact and Added Value

Innovation Hub CCU_{BIO} BW made a measurable contribution to advancing biotechnological CO_2 recycling in Baden-Württemberg and beyond. It provided added value in four key areas:

Key area 1: Practical tools for companies

The project delivered hands-on support for companies who wish to evaluate the feasibility of CCU projects covering technical, economic, and legal aspects.

Key area 2: Transfer of best practice

The visit of the running CO_2 fermentation plant and its business model helped reduce scepticism and increased openness towards implementation.

Key area 3: Legal orientation and policy input

The Legal Study provides concrete recommendations and was recognized as valuable input for future legislative development.

Key area 4: Public and political visibility

The project reached a wide audience via newsletters, social media, and publications, helping to raise awareness and establish CCU_{BIO} as a relevant part of the bioeconomy and climate policy discourse in the region.

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Outcome and Result

The Innovation Hub CCU_{BIO} BW achieved results that helped close gaps in knowledge, legal understanding and cooperation in the field of CO_2-based biotechnologies.

Measure	Result
Development practical tools	– Companies can explore CCU technologies with an online-tool – The Legal Study offers analysis, checklist and ideas for policy-makers – The CO_2 Recycling Guide contains key fact´s and real examples, written in simple language
Networking	Creation of a small, but active community
Study trip to the Steelanol plant	Strong effect: The visit helped participants turn their interest into real project ideas. Some used it as a starting point to plan pilot projects or find partners.
Visibility and Engagement through public communication	LinkedIn posts led to discussions, and the newsletter reached over 800 people.

→ **The project proved that easy-to-use tools, legal clarity and real-life examples can help a topic move forward. However, to bring more projects into reality, ensure further support and funding, some changes are still required. The base has been established, now it needs to grow.**

Review

Barriers

- Lack of legal clarity for companies interested in CO_2 recycling
- Limited awareness and technical knowledge, especially among SMEs
- Lack of visible best-practice projects in Baden-Württemberg slowed down interest in implementation

→ **It became clear that successful CCU development requires strong and continuous networking. The group of actors must have a wide range: it needs enablers, policymakers, emitters, technology providers, plant engineers, and business developers at the same table. Without this variety, relevant perspectives and project success factors are missed.**

Ideas for future replication

- Simple workshops and informational events to inform companies
- Legal analysis based on national law
- Study trips to working CCU plants
- Support for regional lighthouse projects

Tips

- Listening to the real needs of companies and public actors
- Focus on small, practical steps instead of complex strategies
- Communication matters → critical voices can help improve the outcome
- Include legal and certification aspects early
- Ensure that networking includes all relevant roles → only a broad, mixed group can move CCU projects forward effectively.