



## Annual Report 2024

### Form to collect inputs from Tasks

#### Overview of the Task

(max. 3000 characters)

IEA Bioenergy Task 40 - Deployment of biobased value chains

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Task Leader until October 2024: Uwe R. Fritsche, IINAS, Germany

Co-Task Leader and Leader since November 2024: Christiane Hennig, DBFZ, Germany

Task Secretary: Nora Lange, DBFZ, Germany

Participating countries: Austria, Denmark, Germany, The Netherlands, Sweden, USA

Website: <http://task40.ieabioenergy.com/>

The focus of Task 40 in the current triennium is on the development and design of efficient, economically viable, and low-risk (bankable) value chains to support a larger deployment of sustainable biomass for energy, for biobased chemicals and materials, considering food, feed, and fibre markets, i.e., the bioeconomy, and for a long-term renewable carbon management. In short, the Task will work on deploying sustainable biomass for energy in the context of the larger bioeconomy and a future renewable carbon economy.

Within this scope, international, national, and regional biomass trade remains an issue. However, it is key to understand biobased value chains and how to sustainably maintain or transform them. For this, the barriers and drivers for sustainable biomass deployment will be identified, and policy developments will be reflected that could foster biomass uptake in existing and new (emerging) markets.

A key new issue to be addressed from a deployment point of view is the impact of developing carbon markets and of limited CO<sub>2</sub> emission budgets on the deployment of biogenic energy carriers, products, and services.

The Task has three core areas of operation which all include Inter-task projects considering the various biobased value chains, markets, and applications; Task 40 sees itself as “horizontal” among IEA Bioenergy Tasks.

- WP1: Market developments.
  - Regional bioenergy markets and transitions.
  - Sustainable biobased value chains in the circular bioeconomy context.
- WP2: BECCUS & carbon markets/valorisation.
  - Industrial processes: technologies, markets, and deployment.
  - Management of Biogenic CO<sub>2</sub>: BECCUS Inter-task Phase 2 (follow-up strategic inter-task project).
- WP3: Deployment Strategies.
  - Synergies of green hydrogen and bio-based value chains deployment (new Inter-task project).
  - Guidance on sustainable financing.

**BOX: Selected highlights**

*[please provide a brief overview of the most significant achievements in 2024, ideally in bullet format] (max 1000 characters)*

- Conference presentation Task 40 at ABLC in Washington DC, USA
- Task 40 participates in two of five Coordination groups initiated by IEA Paris:
  - IEA TCP Coordination Group on Carbon Management
  - IEA TCP Coordination Group on Hydrogen
- Scientific journal publication: Schipfer, F., Burli, P., Fritsche, U., Hennig, C., Stricker, F., Wirth, M., Proskurina, S., Serna-Loaiza, S. (2024): The circular bioeconomy: a driver for system integration. Journal Energy, Sustainability, and Society
- Task 40 Webinar “Utilisation and storage of captured biogenic CO<sub>2</sub> - Deployment in selected EU countries”
- Conference presentation ITP BECCUS 2.0 “BECCUS applications” at DBFZ Annual conference
- BBEST and IEA Bioenergy conference Sao Paulo, Brazil, 3 presentations: “BECCUS:From innovation to deployment”, “Mobilizing feedstocks and setting up supply chains”, “Biobased value chain networks enabling multi-sector coupling”
- Publication of final report of Task 40 Bioeconomy Synergies 2.0 project

## Progress in R & D

### Work programme and key deliverables

*[please include only the most significant deliverables, extracting key messages/learnings from them]* (max. 3600 characters)

Bioeconomy Synergies (BioSyn) Initiative -Biorefineries as system integrators for improved resource efficiency and system reliability (by Fabian Schipfer, Sebastian Serna-Loaiza, Bettina Muster, Judith Buchmaier, and Pralhad Burli)

The IEA Bioenergy BioSyn Initiative showcased the potential of system integration in bioeconomy networks to enhance resource efficiency, resilience, and sustainability. By leveraging diverse biomass resources and advanced biorefinery technologies, the project highlighted pathways to reduce emissions, foster circular economies, and strengthen regional development. Key outcomes include recommendations for biomimicry-inspired frameworks, policy support, and international collaboration to align bioeconomy strategies with global sustainability goals. The final report is available on the Task 40 Homepage summarizing Task 40 Bioeconomy Synergies activities. Additional insights are provided by a presentation “Bioeconomy Synergies 2.0 - Biobased Value Chain Networks Enabling Multi-Sector Coupling” (Fabian Schipfer, TU Wien) at the BBEST+IEA Bioenergy conference (video recording), and the scientific journal publication (see following).

Summarizing Task 40 work over the past two years:

Schipfer, F., Burli, P., Fritsche, U., Hennig, C., Stricker, F., Wirth, M., Proskurina, S., Serna-Loaiza, S. (2024): The circular bioeconomy: a driver for system integration. Journal Energy, Sustainability, and Society. Scientific journal publication. <https://doi.org/10.1186/s13705-024-00461-4>

Regional Transitions 2.0 (by Hoefnagels, Ric et. al.)

The project aims to demonstrate that regionalization and commoditization strategies can work together in the energy transition, with the regional context playing a key role in the sustainability performance of bioenergy supply chains. The project is divided into two tasks that both focus on the regional context but differ in terms of the supply chain length.

Task 1 explores the regionalization of biobased value chains. Case studies include the integration of bioenergy communities for renewable natural gas production in Austria (TU Wien), bio-based innovations in Central Germany (DBFZ), and the use of risk rating for bioeconomy development in the United States and Canada (INL).

Task 2 examines regional mobilization strategies for commoditized supply chains. This task includes case studies on the role of sugar depots for biorefinery supply (University Utrecht), location factors for advanced biorefineries in Europe (INL), and biofuels rollout in Sweden (RISE). Industry input, particularly from our industrial member RWE, will provide valuable perspectives on regional mobilization strategies for resilient supply chains linked to global markets.

The project timeline includes the completion of case study reports, followed by a synthesis report that combines the individual case studies and industrial partner perspectives to be published by March 2025.

### **Task meetings, workshops and webinars**

(max. 1000 characters)

5 online Task 40 meetings and 12.-14.03. hybrid physical meeting in Washington, DC

24.02. Presentation at IEA IETS Workshop Circular Carbon

15.03. Conference presentation Task 40 at ABLC in Washington DC, USA, physical

22.04. IEA TCP Carbon Management Coordination Group Workshop, online

02.05.&18.09. IEA Bioenergy Monitoring Panel for ITP BECCUS 2.0, online

22.05. Workshop "ITP Synergies", hybrid at DBFZ in Leipzig

17.06. IEAB Webinar BECCUS 2.0 "Utilisation and storage of captured biogenic CO<sub>2</sub> - Deployment in selected EU countries", online

11.07. Webinar GBEP "Understanding the climate benefits of BECCS", on BECCUS 2.0 ITP, online

12.09. DBFZ annual conference, presentation of BECCUS 2.0 ITP, online

23.10. BBEST and IEA Bioenergy conference in Sao Paulo, Brazil, 3 presentations: "BECCUS: From innovation to deployment", "Mobilizing feedstocks and setting up supply chains", "Biobased value chain networks enabling multi-sector coupling", physical

### **Collaboration with other Tasks and organisations**

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- Close cooperation with different IEA TCPs like IEA Hydrogen, IEA AMF, IEA IETS, IEA ETSAP
- Task 40 participates in two of five Coordination groups initiated by IEA Paris:  
22.04. Workshop IEA TCP Coordination Group on Carbon Management, online  
18.07. IEA TCP Coordination Group on Hydrogen, online
- Close cooperation with other IEA Bioenergy Tasks takes place within the two strategic ITPs "Management of biogenic CO<sub>2</sub>: BECCUS 2.0" and "Synergies of green hydrogen and bio-based value chains deployment", in particular with Tasks 32, 33, 34, 36, 37, 39, 42, 44 and 45.
- Within BECCUS 2.0 ITP four Work Package Leader meetings took place and within Synergies ITP four.
- Cooperation with GBEP on BECCS (webinar)

## Dissemination

[e.g., Newsletters, website] (max. 1000 characters)

- Publication of Task 40 Newsletter in December 2024:  
<https://task40.ieabioenergy.com/wp-content/uploads/sites/29/2024/12/IEA-Bioenergy-Task-40-Newsletter-December-2024.pdf>
- Up-to-date information of the Task 40 website on activities, publications and the work programme of the current triennium
- Contribution to IEA Bioenergy Newsletter
- Overall Task 40 contributed to and presented at 6 workshops and 3 conferences

## Main activities in 2025

[please provide an overview of the most significant activities foreseen in 2025] (max. 1000 characters)

- 5 Task meetings, virtual
- Physical/hybrid Kick off Triennium 2025-2027 Task meeting 9-10 April 2025 in Stockholm, Sweden
- Participation in second webinar "ITP Synergies" to be scheduled Q1 2025
- Participation in ExCo96 WS "Biomass and Hydrogen - Allies for Net Zero" 15 May 2025 in Paris
- Finalisation of work on Task project Regional transitions 2.0 and publication of summary report
- Finalisation of work on ITP BECCUS 2.0
- Finalisation of work on ITP Synergies
- Kick off 2025-2027 work package activities:
  - WP1.1 Roadmap for biogenic carbon value chains
  - WP1.2 Case studies of defossilising carbon in industry
  - WP2.1 Showcasing Task 40 BECCUS projects - BECCUS technologies, concepts and value chains
  - WP2.2 Continued BECCUS Intertask Project (ITP) 3.0 - carbon management around BECCUS
  - WP3.1 Analysis of resilience of new biogenic carbon value chains
- Newsletter publication, new-biannual format with focus on selected thematic content