



BioBeo Final Report

Innovative education for the bioeconomy



BioBeo is a Horizon Europe (2022-2025) project with 15 partners in 10 European countries with the aim to develop and deploy an education programme to enhance engagement across society regarding lifestyle, circularity and bioeconomy, using 5 bioeconomy themes: Interconnectedness, Outdoor Learning, Forestry, Life Below Water, and the Food Loop.

This report highlights the innovative educational resources developed in the project and are free to download from the website: www.biobeo.eu.



This project has received funding from the European Union's HORIZON-CSA HORIZON Coordination and Support Actions under Grant Agreement No. 101059900.



Education Programme

Curriculum Change

Further Resources

Achievements

Preschool and Primary School Materials



An **English and Irish Language Education Programme** for Primary Schools will feature five outdoor learning sessions, where children and teachers will explore local bioeconomy themes and engage with their environment under the guidance of Múinteoir BioBeo.

Bees are essential workers in nature, with beekeeping playing a vital role in the bioeconomy through sustainable honeybee management for pollination and production of honey and bee products.

Secondary School Materials



The **Teacher's manual** includes six lesson plans, each with a PowerPoint presentation, and worksheets on five bio-economy themes that can be taught in any sequence or as stand alone.

It aims to develop key competencies in sustainable development, aligning with several SDGs (2, 3, 12, 13, 14, 15).

It also includes an excursion to **BlueCity** in Rotterdam to engage students with real-world bioeconomy applications and sustainability through start-ups.

How to: Bioeconomy Education



The **Train-the-Trainer Manual** provides a training program for involving stakeholders in governance and implementation, focusing on community, parental, and child participation. It includes self-directed learning, training activities, and peer-training materials.

The **Missing Link guide** bridges bioeconomy education theory with practical lesson plans, offering strategies for engaging school stakeholders. It provides practical advice, self-reflection tools, and supports sustainable teaching practices.

Idea gathering and youth engagement resources



Youth Policy Engagement - Turn Ideas into Action!

Writing a clear, compelling policy memo is a powerful way to communicate your innovative ideas to decision makers. Use your creativity to craft well-researched, actionable recommendations that can drive positive change in the world.

Your voice matters—make it heard and inspire the policies of tomorrow!

Further Materials



Teachers' Manual - How To Grow Mushrooms: Incorporating mushroom cultivation in classrooms creates an engaging learning experience, teaching students about the bioeconomy, eco-friendly practices, culinary uses, reduced carbon footprints, circular concepts, nutritional value, and health benefits.



Curious about what a career in the bioeconomy could look like? [Bioeconomy Career Profiles](#)

This is a great resource for educators and students to explore inspiring career pathways through exclusive interviews: meet a Conservation Ranger with the National Parks and Wildlife Service, an Education Coordinator, and a PhD student researching innovative bio-based materials!



Buzz Words

"BioBeo embedded inclusive, multilingual learning using Universal Design for Learning principles. Youth participation was central: young people co-created content, represented their views on bioeconomy education, and shared their creative responses at the BioBeo Festival in March 2024 and with EU policy makers"
- Associate Professor Máire Nic an Bhaird of Maynooth University.



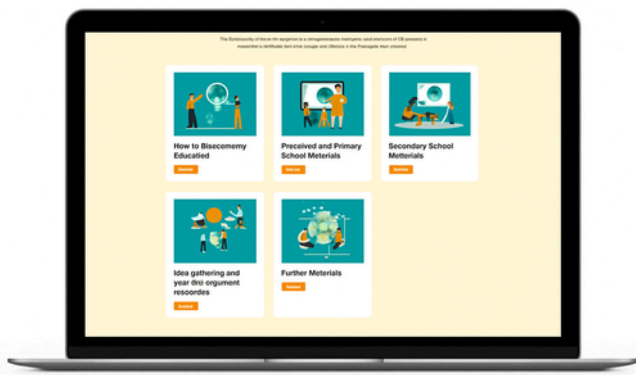
"I think it is a great honour and a great success for BioBeo that we are seen as an essential partner for new schools and a guarantor of quality in curriculum development with regard to the bioeconomy and circular economy."

- Dr Evelyn Reinmuth, Head of University of Hohenheim's Bioeconomy Office

Digital Handbook

Guide for Introducing New Content to Schools" assists in integrating fresh topics like bioeconomy into classrooms. Developed under the BioBee project, it helps understand the institutional landscape and provides practical tips and materials. Readers will navigate challenges and meet key players in the process. Ready to explore? Dive in!

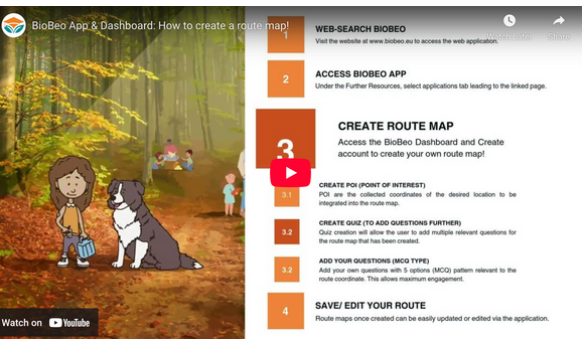
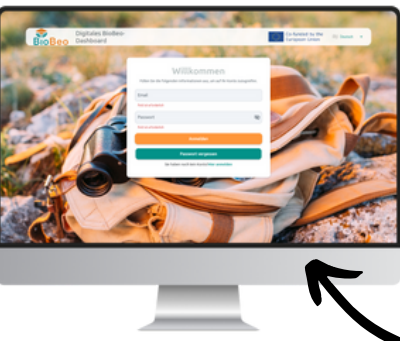
So, grab your explorer's hat, and let's dive in!



Blueprint and Methodology for Innovative Governance

This report examines the institutional and social environments for introducing bioeconomy content in schools across various countries, identifying favorable models and conditions. The preparation involved a template for project partners to gather necessary information, including expert knowledge, statistics, literature reviews, legal analysis, and curriculum evaluations. Data collection was enhanced by semi-structured interviews with educators and authorities. The CASE team analyzed the data using thematic analysis to identify and present recurring patterns.

Applications



Meet the BioBee App, where nature lovers become eco-adventurers in a lively location-based game! Choose your age-tailored trail and embark on a biodiversity quest, answering quirky quizzes to earn points. With child-friendly paths, the app offers 28 routes, 147 fascinating spots, and 418 brain-teasing questions, plus you can create new trails! Available on the web, Android, and iPhone, it's sweeping across Europe. No worries about privacy—no personal info collected! [Download here](#) a guide for teachers, educators, and school staff or watch the video.

BioBee Dashboard is a tool for educators to create routes and assign quizzes to the point of interests. These routes and quizzes will be available on the BioBee App for the students to go around their area and learn about bioeconomy. The [dashboard](#) can be accessed here!

BioBee Interactive XR Tools

Be Earth for the Bioeconomy!



SMARTlab and the **Inclusive Design Research Centre at UCD** received funding from the European Commission for the Biobee Project. It developed a diverse XR Toolkit for learners and educators of all ages, accessible on various devices, and offers XR training. They emphasise the importance of communities, including children, having the rights and skills to create their own XR learning experiences. Enjoy!



Mindscape VR 360



Food Loop

Autosome Growsome Hydroponics



Eco Telly

Wild Derrynane

Ocean VR Scent



Bee Hotel



Be Earth

Embrace the future of learning with SMARTlab. Our accessible **XR tools** are designed to inspire and empower learners of all ages and abilities. Join us on a journey towards innovation, inclusion, and limitless possibilities. Discover the power of technology in education and start transforming your world today.

Videos



[Watch here](#) or [visit the BioBee YouTube](#) Channel for our BioBee song, music, animations and more videos! **Animated Storytelling Video Series.** The animated storytelling videos aim to introduce the concept of the bio-economy through fun & engaging animations illustrating how we can all participate in creating a sustainable world!

Beo's Bioeconomy Sing-Along



"BioBee Comic: Answering the Curlew's Call" examines the links between language, heritage, culture, and the bioeconomy, stressing the curlew's significance for conservation and sustainable living featuring Douglas Hyde and David Gray, emphasizing cultural preservation and ecological awareness.

The [world's first circular bio-economy puppet show](#), using biobased materials. The show raises awareness about biodiversity, particularly the endangered curlew bird, while promoting the Irish language and sustainability. Teacher guidance notes facilitate global classroom replication, highlighting the blend of environmental awareness & cultural preservation.

Comics



Finding Beo, introduces to the concept of bio-economy and emphasizes the connection between all the themes.



Back to the Future with Beo and Raja, gives us a glimpse into the early bio-economy. This adventure set in UCD Centre for experimental archaeology allows us to venture into the past.

Answering Curlew's Call, highlights the connection between language, culture, land, and the bioeconomy, drawing inspiration from Douglas Hyde's vision. It illustrates how these elements have historically influenced societal change, from the quest for independence to addressing climate change.

Find an animated video version and a puppet show based on this comic in our video section!

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Games



The board game [Resource Don't Go!](#) was created by international students during a summer school focused on bioeconomy. It offers playful insights into sustainable and circular bioeconomy challenges and is suitable for schools and universities. Learners can create and present their own playing cards, making it adaptable for various bioeconomy-related courses.

Podcasts



Delve into groundbreaking bioeconomic insights and revelations with podcast host Hailey Ciantar and podcast editor and producer Rita Escórcio. Through a series of interviews, you will learn about bioeconomy's presence in various sectors. **Bioeconomy Matters!**
[Click Here to listen to the podcasts!](#)



On March 15, the **BioBeo bioeconomy festival** was held at Odisee University in Brussels, aiming to connect bioeconomy with education, supported by the European Commission. As part of the EU Bioeconomy Changemakers Festival, it featured workshops, lectures, live music, comedy, and art installations.

Secondary school students learned about growing mushrooms on coffee grounds and explored forest beauty through art. European Commission officials attended, highlighting the festival's role in promoting sustainable initiatives among youth. **Klees Komp showcased his book "The Rainmaker"**, highlighting that everyone can make an impact, regardless of age or size. He emphasized collective action to combat climate change.



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The [BEST network](#), an extension of the BioBeo project, is a community of bioeconomy and sustainability educators, launched in March 2025 via the 'BioBuzz' newsletter. It will host an annual meeting for sharing best practices in bioeconomy education. Educators from the BioBeo Blended Intensive Programme will lead the network and recruit new members, ensuring long-term collaboration and ongoing dissemination of bioeconomy and sustainability content in education.



The BioBeo Horizon Europe Project and BiOrbic hosted a [Ceardlann Oideachais: BioBeo and BiOrbic Bioeconomy Education Workshop](#) at UCD Global Lounge on February 20th, addressing biodiversity loss and innovative research communication. Participants included researchers, educators, journalists, and policymakers. The event showcased a comic about the Curlew's decline, a board game on chocolate life cycle assessment, and VR/AR experiences of the Amazon rainforest, led by Prof. Lizbeth Goodman. John Bell from the European Commission emphasized the significance of education for future generations. Mary Colwell, founder of Curlew Action, inspired attendees with her message on protecting the Curlew.

Find out more of our achievements!!



[Click Here](#)



BioBeo has helped establish LENA, a primary school focused on bioeconomy education. It helped establish LENA, a primary school focused on bioeconomy education. LENA,

“Lebendige Naturschule,” encourages children to explore their curiosity in both indoor classrooms and outdoor environments. The school emphasizes community involvement and outdoor learning for optimal development, with parental engagement being a key component, supported by partners from “Parents International.”

Buzz Words



"Bioeconomy will now be a topic in a new subject 'Climate Action and Sustainable Development' for secondary school students in Ireland. We were delighted to contribute to this development."

- Associate Professor Tom Curran, BioBeo Coordinator, University College Dublin.



"In the 2024 Global Action Days, participants were invited to find, photograph and share examples of day-to-day items produced through bioeconomy. Over 70 500 participants from more than 500 settings across 60 countries took on this BioBeo activity."

- Reeza Hanselmann, FEE International Coordinator of Education



Dr. Michelle Darmody provided an insightful tour, introducing us to local gardener-members with a vision to create a 'pixel' garden hub for 200 family back-gardens and 5 school gardens, sharing seeds, plants, and gardening knowledge. The [‘An Cruidín’-Kingfisher Garden](#) Project impressed me with its vibrant biodiversity and life, thriving into Autumn. It features individual allotments, a wildlife pond, outdoor classrooms, potting sheds, a hot composter, a four-bay compost system, solar panels, a solar water pump, bee-hives, and an innovative human composting toilet, showcasing a self-sustaining bio-economy community garden. The site also boasts fine trees, native plants, and flowers.



The Netherlands held the [Week of Economics Education](#) to promote future-proof economics education, involving BioBeo members and 14 Dutch universities of applied sciences. The program aimed to inspire diverse economic thinking and address how to prepare students for increasingly pressing global questions.