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The role of universities in conveying skills needed to deploy the global bioeconomy

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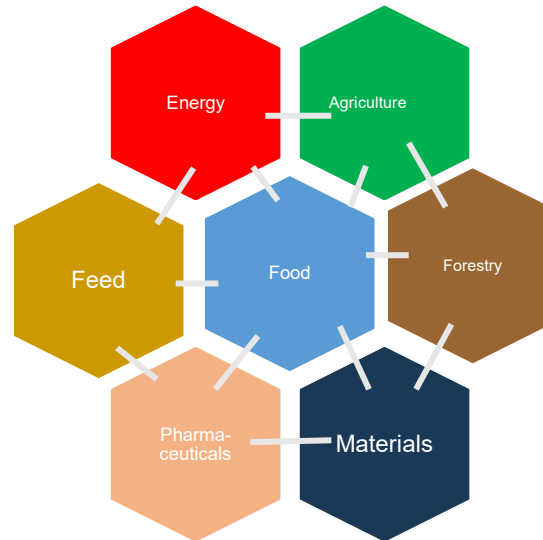
Skills required to drive the transition to a circular and sustainable bioeconomy



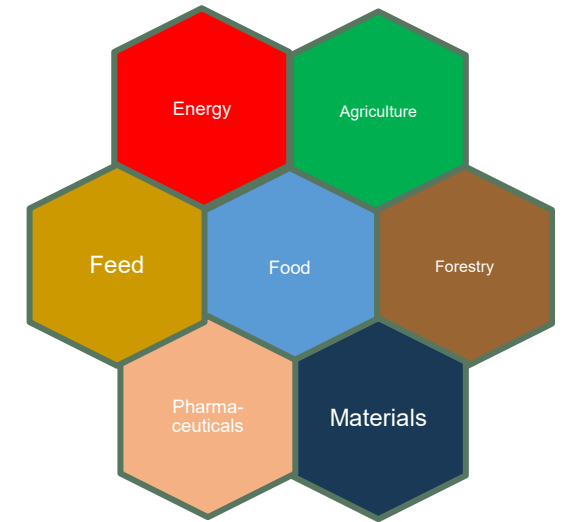
Bioeconomy is an inter-disciplinary and inter-sectoral approach



Stage 1-Reinforce innovation and extend current infrastructure across the economy



Stage 2-Build and strengthen value chains across industry sectors



Stage 3-Realise a connected biobased economy from field to end consumer

Adapted from Biobased Industry Consortium



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How to shape education for a sustainable
circular bioeconomy?

Conclusions from the GBS2020 Workshop on Education, training &
capacity building

Lewandowski, Urmeter, Lask, Janzik (2020)

To realize the transition to a sustainable bioeconomy:
Both change-makers that can drive the sustainability
transition and experts and craftsmen with practical and
technical skills are required,
and experts who are able
(I) to respond to the upcoming needs of the specific
bioeconomy sectors,
(II) to bridge the interfaces
between bioeconomy disciplines, and
(III) to attend to the principles of sustainability and
circularity.



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An increase in the relative demand for people with higher-level qualifications in the bioeconomy is expected.

Emerging digital and industrial technologies, business models and socioeconomic developments will shape the types of skills needed in these sectors.

Future bioeconomy higher education provision requires a pronounced emphasis on:

- **systems thinking**
- **local bioeconomy aspects**
- **technological and digital skills**
- the inclusion of **ethical aspects** of using biological resources.
- **transversal skills** including critical thinking, collaboration, planning, project management skills, adaptability and readiness for continuous learning.
- **Data literacy** to exploit opportunities from the transition towards sustainable and circular bioeconomy.



The requirements to higher education provisions:

- **Interdisciplinary cooperation** in the workforce is required to address the scientific, technical, economic, and social challenges of our times.
- **Collaboration** among and between Higher Education Institutions (HEIs) and business and industry, governments and civil society stakeholders to meet the demand for new skills.
- **Transdisciplinary curricula** will be needed to connect viewpoints across different fields
- Education programs need **to combine** the provision of **disciplinary, inter-, and transdisciplinary competences** with the conveyance of **systems thinking** and the stimulation of **creativity for new solutions**, including more **entrepreneurship education**.



“Knowledge” for action

Decision making

Communication

Collaboration

Motivation

Transformative Knowledge

Systems Knowledge

Normative Knowledge

Disciplinary
Knowledge

Technological,
scientific, socio-
economic

**How is this realized at the
International Master
Bioeconomy at University of
Hohenheim? .**

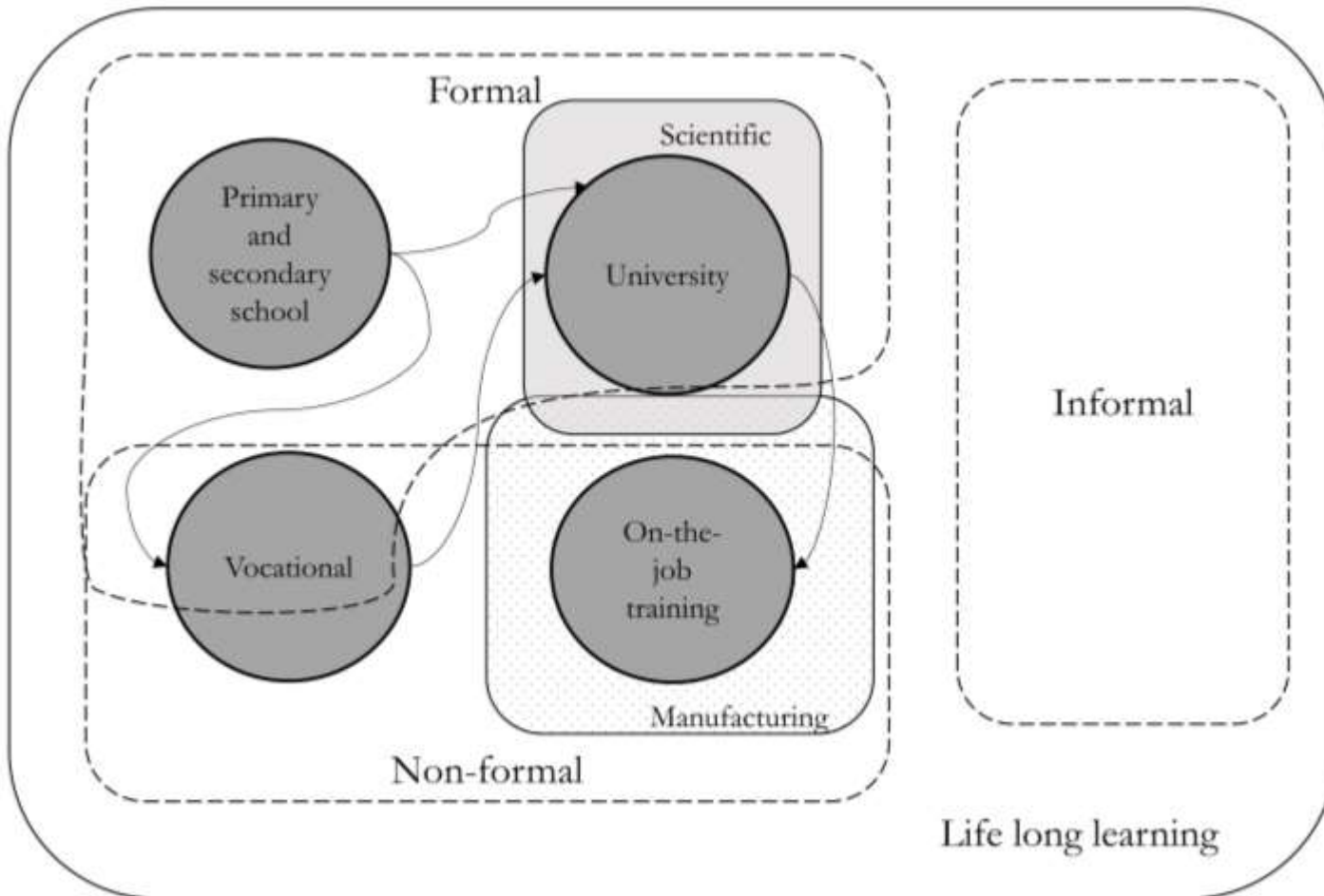
Bioeconomists:

- learn in international, inter- and transdisciplinary teams
- take the perspective of and cooperate with companies, entrepreneurs, NGOs, policy bodies, research institutions,
- get an understanding of European values and perspectives



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- Education programs need **to combine** the provision of **disciplinary, inter-, and transdisciplinary competences** with the conveyance of **systems thinking** and the stimulation of **creativity for new solutions**, including more **entrepreneurship education**.
- Universities need to create an environment in which **pathfinder** can develop, that lead this transition and in which a **mind-set for inter- and transdisciplinarity** and for a **collaborative** ethos can be developed.



Interaction of education at different levels and the role of Universities

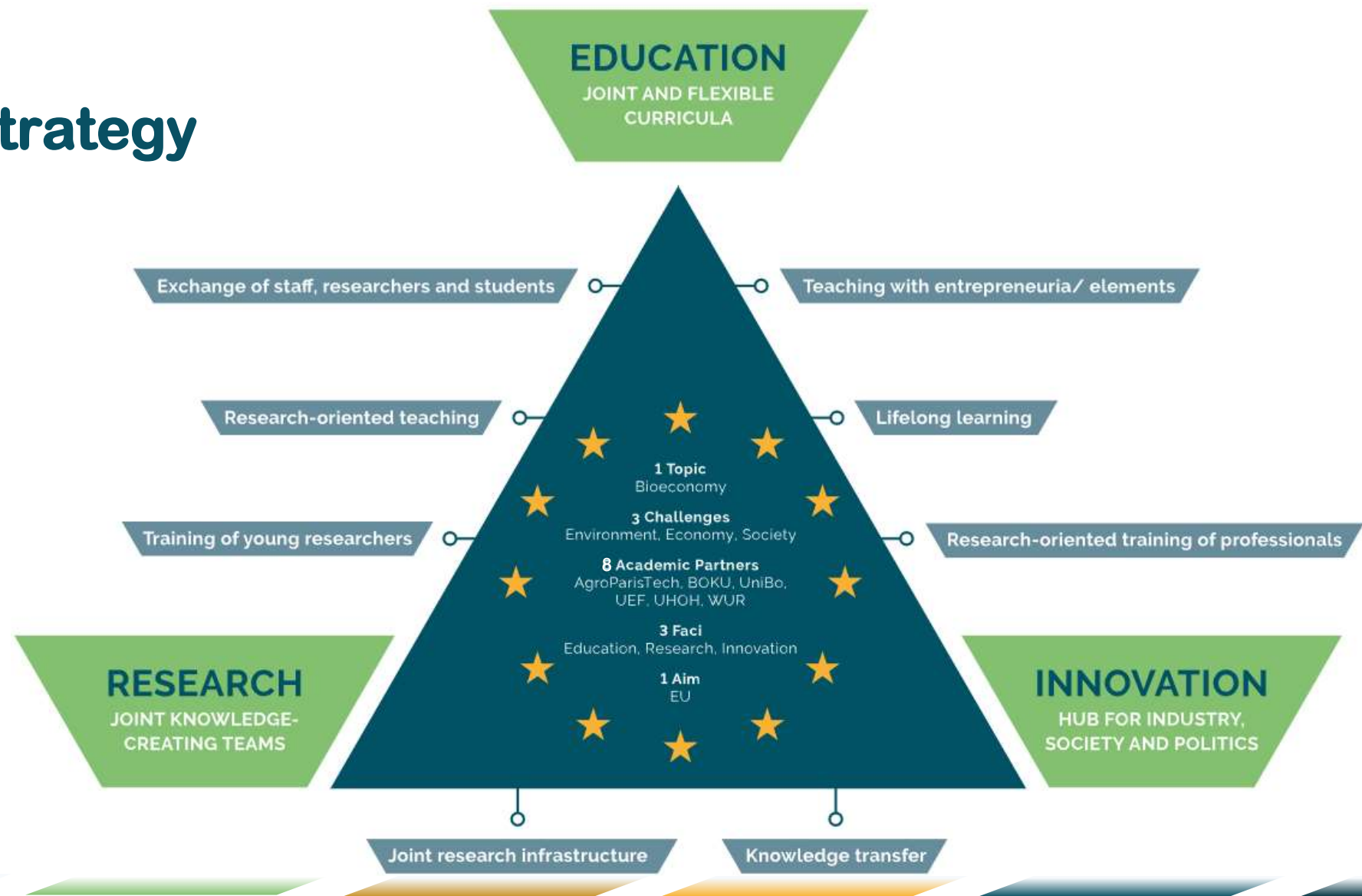
The European Bioeconomy University (EBU) education strategy



**european
bioeconomy
university**



EBU Strategy



EBU's Education Strategy

...is to come from the skills demand in the European Bioeconomy and to align bioeconomy curricula across Europe

➔ ***The European Bioeconomy University Education Strategy***

- Based on systematic assessment of the skills demand of the European bioeconomy industry - including international and larger companies, SMEs and startups - and stakeholders
- Strives for an inclusive education program for students on all levels including lifelong learners and professionals:
 - innovative didactic approaches for the inclusion of interdisciplinary, research-oriented learning and entrepreneurial thinking (starting at Bachelor level)
 - collaborative, skills-demand-driven Master study program
 - common platform with online educational material on the bioeconomy
 - mobility program for students' and lecturers' exchange between EBU partners, making best use of synergies from European University cooperation
- Strengthens the involvement of industry and stakeholders in teaching and curriculum development
- Develops policy recommendations for bioeconomy education

Best practices of EBU Bioeconomy Education



- **Fostering a joint understanding of European values in education and research**
- Exchange of best practice in **European networks**
- **Increasing mobility and exchange opportunities** for students and educators across disciplines and European regions and dedicated additional training programs, to address specific skills gaps (e.g. EBU-Label)



- **Offering bioeconomy education at different levels (Bachelor, Master, PhD, ...)**
- Specific joint programmes at Master's level, fostering interdisciplinarity and entrepreneurship and Conveyance of **entrepreneurial skills** (e.g. FOEBE and FOEBE+)



- **EBU Joint Doctoral Programmes** as transdisciplinary research and education programmes with double degree awarded through bilateral agreements among EBU members (DESTINY).



- Offering **transdisciplinary exchange**, e.g. by involving private sector or policies into education and **live long learning** offers



- **Multi-level Bio-Based Education Centres** as knowledge and innovation hubs (e.g. BIOBEC)
- **EBU e-learning platform** to exchange the best practices and sharing educational material (e.g. ABBEE)

- ➔ **Online learning platform**
- ➔ **Life-long learning offers**
- ➔ **EBU as blueprint for University cooperation**



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Shaping Education for the European Bioeconomy

Thank you for your attention!



www.european-bioeconomy-university.eu

