UrBIOfuture

careers, education & research

Final Conference

AGENDA

- Introduction and guidelines
- Context
- Educational Programs mapping
- Stakeholders needs identification
- Main GAPS identified
- The Bioruukki case study
- 10 Best Practices for academia – industry collaboration
- Main conclusions and recommendations

This project has received funding from the Bio Based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 837811.

INTRODUCTION AND GUIDELINES

This session is being recorded

Please, make sure your microphone is muted

Use the chat to send your questions

This is an interactive session, please, participate on menti.com

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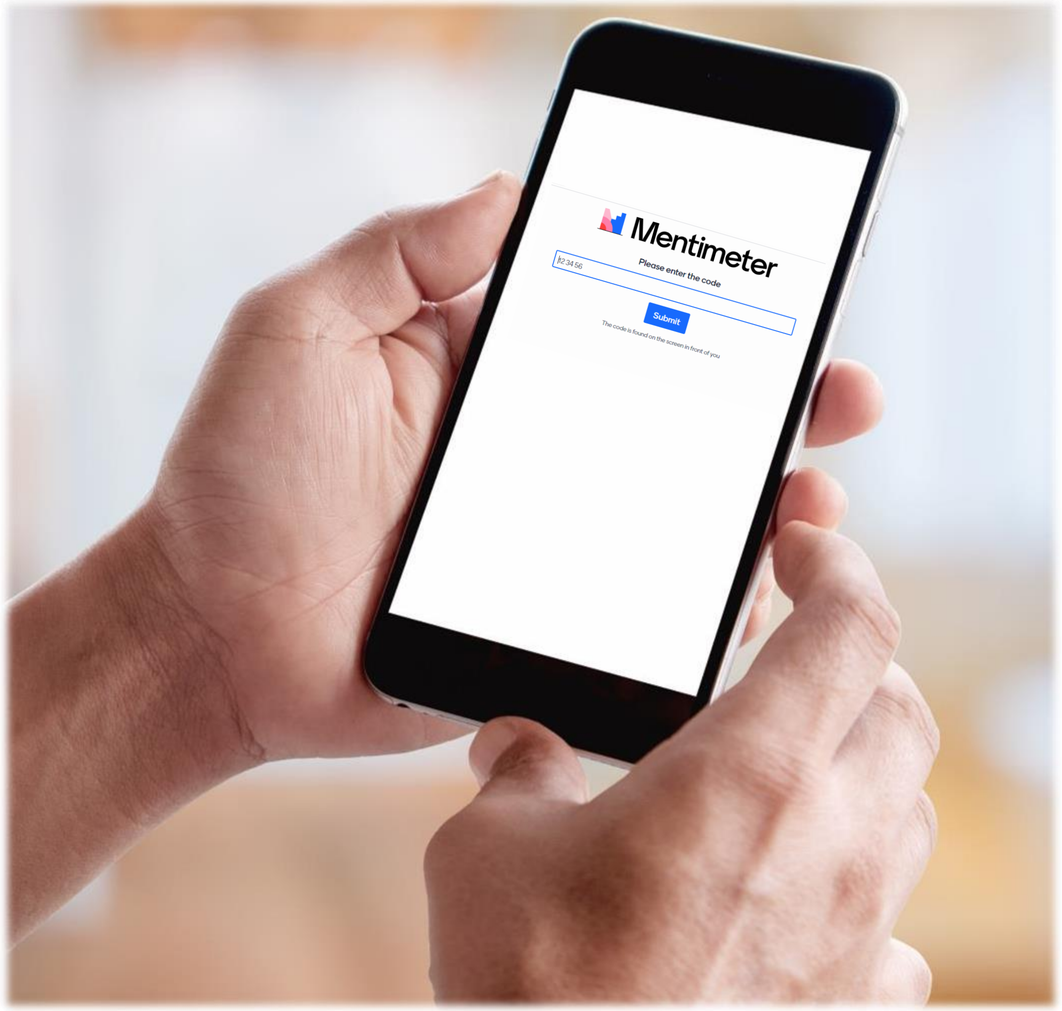
INTRODUCTION AND GUIDELINES

1. Go to menti.com
2. Introduce code 79 76 10
3. Vote!



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CONTEXT

What is the bioeconomy?

The bioeconomy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food, materials and energy.

Why is it important?

The bioeconomy employs around 18 million people

It could generate a further 1 million jobs, particularly in rural and coastal aeras, by 2030

It has an anual turnover of 2.3 trillion €

It has a great potential to boost the reduction of our dependence on fossil fuels

You can find these and other related facts and figures at: ec.europa.eu/research/bioeconomy/

What's in the bioeconomy for you?

Mentimeter

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OBJECTIVES

1. To map completed and ongoing programs addressing curricula that involve bio-based activities
2. To foster the interaction and alignment among educational and research institutions and industry
3. To identify current education and professional gaps and skills mismatch in the bio-based field
4. To provide the bio-based industry and sector with a basis for promoting careers in the bio-based sector, the so-called “UrBIOfuture experience”
5. To disseminate and exploit UrBIOfuture

Universitat Autònoma de Barcelona · Consiglio Nazionale delle Ricerche · VTT · Agro Business Park · c+t=a^n Corporación Tecnológica de Andalucía · vito · UNESCO IHE Delft · Sustainable Innovations · PPNT Poznański Park Naukowo-Technologiczny

Coordinator: UAB
Duration: 12 months
Number of partners: 9
Funding: BBI-JU (H2020 Programme)
Budget: 996.386,00 €
EU Contribution: 946.568,00 €
In Kind Contribution: 49.819,00 €

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METHODOLOGY

Planning

Stakeholders List
Instruments to get data
Creation of UrBIOfuture Working Group

Reports

Educational Programms Analysys
Stakeholders needs analysis
Educational and Skill GAPS
Dynamic Workshops

Recover data

38 focus group and Interviews
Template of Educational Programs
Survey to know stakeholders needs
3 online consultations among stakeholders

UrBIOfuture Experience

Involvement of Stakeholders – Co-creation
Biorruki experience
Promotional events
Dissemination of the results
Best practices
Train the trainers and train the students

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RESOURCES

Related Initiatives
www.urbiofuture.eu/related-initiatives/

Job opportunities and Internships
www.urbiofuture.eu/future-opportunities/career-opportunities-industry/

Map of educational programmes
www.urbiofuture.eu/educational_programmes/

Map of pilot sites
www.urbiofuture.eu/future-opportunities/pilot-sites/

Video resources
https://www.youtube.com/channel/UCZ1K5sxHB0fpg31PQBpJ45Q

Success cases
www.urbiofuture.eu/success-cases/

A set of materials
www.urbiofuture.eu/documents/#urbiofuture-experience

Reports and Capacity Building
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E-learning materials
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Educational Programs mapping

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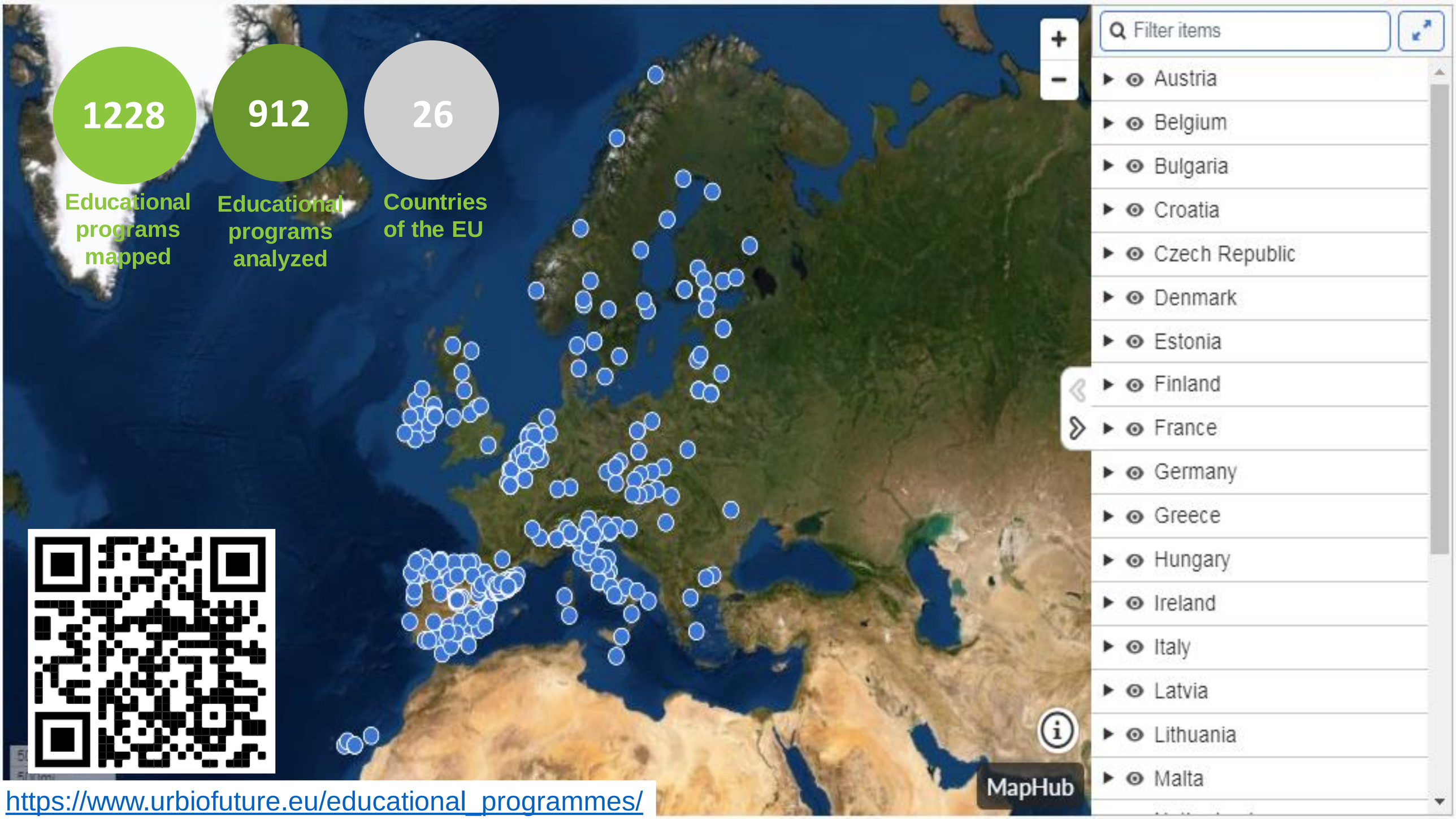

https://www.urbiofuture.eu/educational_programmes/

Stakeholders needs identification

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Stakeholders needs identification

Focus Group

5

Number of participants: 38 (27 + 11)

Countries represented: Belgium, Denmark, Finland, Italy, Poland, Spain and Netherland.

Participants average profile:

- 65% of women
- Between 40 and 50 y.o.
- Over 15 years of experience in the sector
- Mostly in management positions

Interviews

11

Survey

152

Countries represented: almost all European Countries.

Main sectors of activity:

- Biotechnology
- Agriculture
- Pharmaceuticals
- Chemical
- Food Products
- Biorefinery
- Bioenergy

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Main GAPS identified

Main GAPS identified

RESEARCH AND INNOVATION

Knowledge transfer: from the LAB to the Industry
Innovation and Change

01

PERSONAL INITIATIVE AND ENTREPRENEURSHIP

Critical thinking
Problem solving

02

MANAGEMENT

Development of business models
Project management

03

SUSTAINABILITY AND INDUSTRY

Circular economy / Zero waste industry
Sustainable competitiveness / Economy

04

SPECIALISTS IN BIO-BASED SECTOR BUSINESS

Bio-based market knowledge & techno-economic expertise
Identify and create market application for new bio-based products

05

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Main GAPS identified

TECHNOLOGY

Key enabling Technologies for the Bio-based industry
Digital skills

06

SALES AND MARKETING

Increasing consumer / society awareness on bio-based products
Adapting the products to new targets

07

BASIC SCIENTIFIC KNOWLEDGE

Biotechnology / Biology
Chemistry / Chemical Engineering

08

RULES AND REGULATIONS

Common EU Regulations
Bio-Based products legal framework / quality, safety and security regulations

09

SOFT SKILLS

Teamwork and conflict resolution
Collaboration / Adaptability / Relationship building

10

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Main GAPS identified

TECH. EXPERTISE IN PRIMARY CONVERSION PROCESSES

New processes to improve bioproducts yield from bio-waste
Methods for efficient and cost-effective biomass' production

11

TECH. EXP. IN MATERIALS, PRODUCTS AND FUNCTION.

New functional bio-based materials and products: plastics, composites, starch, ….
New (chemical) building blocks from renewable resources

12

TECH. EXPERT. IN SECONDARY CONVERSION PROCESSES

New more efficient methods to recover/convert bio-based chemicals
Biopolymer processing to obtain different materials for automotive, agriculture, etc..

13

TECH. EXPERT. IN SUSTAINABLE BIOMASS PRODUCTION

Techno-economic assessment of processes, bio-refineries and bio-based value chains
Life Cycle assessment of processes, biorefineries and bio-based value chains

14

DATA MANAGEMENT

Data analytics & Advanced Analytics
Data processing (carry out, retrieve, transform)

15

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Have you identified any other gaps between current educational programmes and the bio-based industry needs?

The Bioruukki case study

VTT Bioruukki Pilot Centre - An integrated enabler to accelerate higher value business in bio and circular economy

Biomass
Waste
Side streams

Thermochemical conversions

Biomass processing and textile fibres

Process Chemistry

Fuels from waste
Recycled textile fibres
Chemicals from cellulose
Metal recovery from ashes
Plastics recycling to chemicals
Process data and digitalisation

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Case study “Bioruukki pilot ecosystem as a training platform” in Helsinki capital region

WHY

- How can piloting infrastructures be efficiently utilized in education?
- How can we build an open, dynamic, multi-actor ecosystem for business, research and education around research facilities?

HOW

- Identification of needs, potential partners, co-operation options, expected benefits, main barriers and key practices. In collaboration with the stakeholders from relevant educational institutes.

WHAT

- A general concept and an action plan has been developed to guide how research and piloting infrastructures can be efficiently utilized in training and education in open, dynamic, multi-actor ecosystems.

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Information was generated in many ways

1

Focus group interview on education needs for 2030:
Educational institutes and cluster organisations (7 participants)

2

Online questionnaire to educational institutes in Finland:
Universities, universities of applied science and vocational schools (22 answers)

3

Face to face interviews with educational institutes in the Helsinki capital region, relevant to Bioruukki :
Universities, universities of applied science, vocational schools and high schools (5 educational institutes)

4

Workshop with educational institutes and other stakeholders relevant to Bioruukki :
Universities, universities of applied science, vocational schools, high schools, researchers, city representative and representative of network of professionals (24 participants)

5

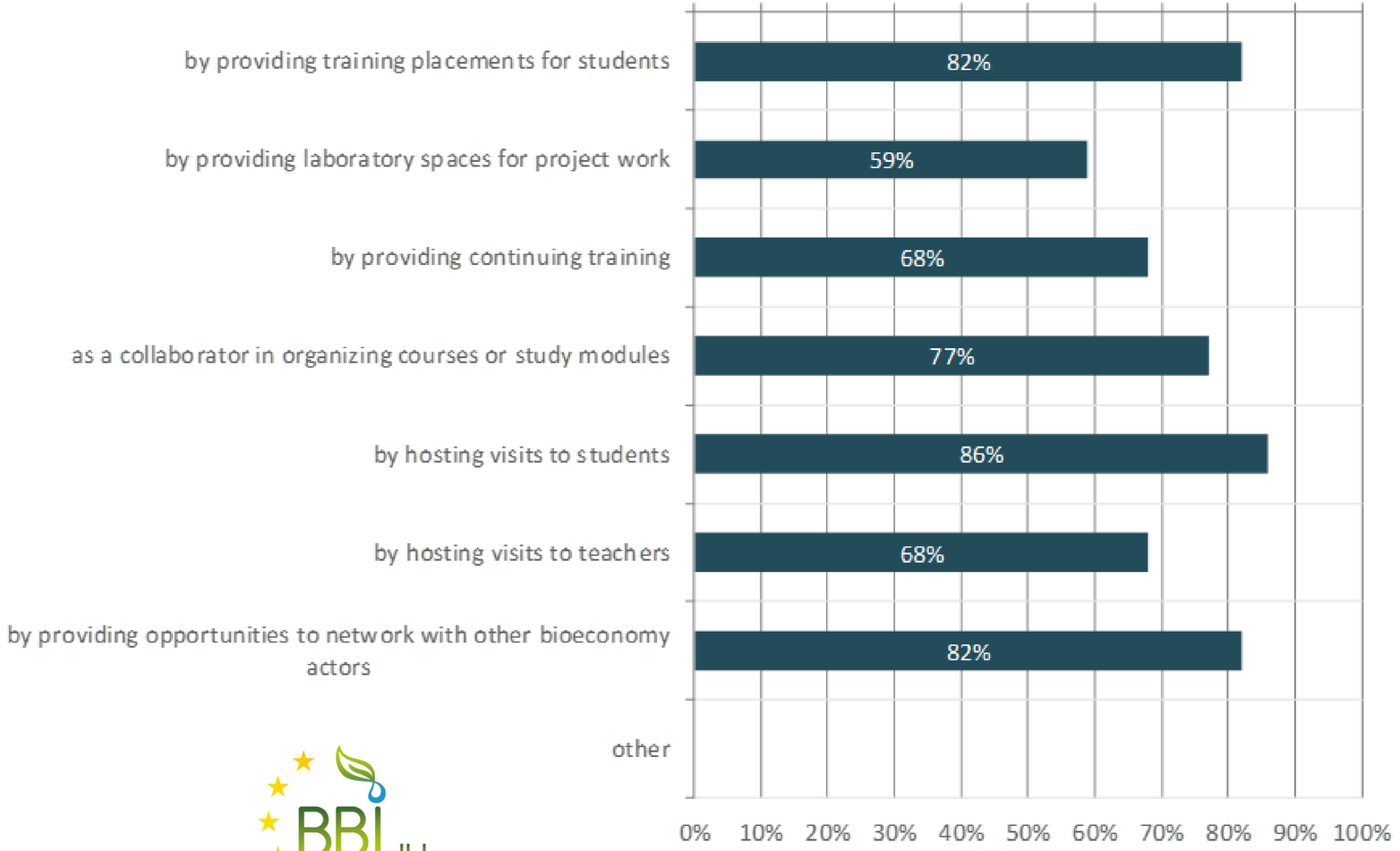
Reporting of results:
An action plan for Bioruukki and guidance for research and piloting infrastructures in general

Survey results indicate interest and need

10. How could piloting infrastructure serve your educational institution?

Multiple choice

Number of respondents: 22, selected answers: 115



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There are opportunities, but also challenges

The most feasible opportunities:

- Thematic visits to pilot plants as part of courses organized by the educational institutes and schools.
- Internship placements and thesis work in research projects in the pilot environment.
- Train-the-trainer activities would be a powerful tool for multiplying the impact.

Identified main challenges:

- A pilot plant is not typically an education provider, therefore extra resources and new type of procedures and collaboration is needed for the longer training courses.
- The coaching and supervision of trainees in a laboratory or pilot plant requires considerable resources and specific arrangements in e.g. occupational safety and confidentiality issues.
- Lack of information on supply and demand of training placements.

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Recommendations:

- Since **pilot facility** owners are not education providers it is essential to **collaborate with educational institutes** in organizing study modules.
  - Thematic lectures and excursions are relatively easy to organize, whereas longer study modules would require significantly more resources and external financing.
- Subsequent **support of national and European authorities** is needed to foster collaboration between educational institutes and pilot plants.
  - Reducing administrative and financial constraints, providing funding and incentives to collaborate across sectors and countries within Europe, setting up specific agreements.
- **Facilitate the networking, knowledge sharing and collaboration** between pilot plants.
- At the European level **each pilot plant needs to tailor their concept** for collaboration depending on their role in providing the education and links to educational institutes, funding possibilities, occupational safety rules, IPR policy and internal rules and local regulations.

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10 Best Practices for academia – industry collaboration

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10 BEST PRACTICES FOR UrBIOfuture

10 Best Practices for Academy & Industry Cooperation to develop TOGETHER Circular Bioeconomy Education Programs

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APROACH

A Build upon previous success cases:

REUNE (“MEET”) MANUAL OF 63 GOOD PRACTICES FOR UNIVERSITY & BUSINESS COOPERATION

B Address UrBIOfuture objective

TO FOSTER INTERACTION AND ALIGMENT AMONG EDUCATIONAL/ RESEARCH INSITUTIONS AND INDUSTRY

C Contribute to UrBIOfuture afterlife impact

NEXT GENERATION OF EUROPEAN CIRCULAR BIOECONOMY EDUCATION PROGRAMS

APROACH

1 - Fostering collaboration between Universities and Business

2 - Knowledge transfer between Universities and Business

3 - Production and commercialisation processes

4 - Services, advice and consultancy

5 - The management of intellectual property protection

6 - Financing

7 - Mechanisms for the management of University-Business relationships

8 - Human resources policies

9 - Networks, clusters and technology parks

10 - Regional frameworks

Analysis of 16 international success stories on University - Industry cooperation

Interviews, visits information, trends…resulted in 63 good practices structured in 10 chapters

Consortium

European Union Funding for Research & Innovation

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10 BEST PRACTICES FOR UrBIOfuture

COLLABORATION STRATEGY

Combining forces in the same direction, explore and define the expectations and hopes
Well-defined Road Map which is accepted by all the agents involved

01

COLLABORATION GUIDELINES

Co-designing in detail a GUIDE MANUAL about how are we going to collaborate
Remove barriers caused by cultural differences to enhance mutual understanding

02

PROMOTION OF EFFECTIVE INTERACTIONS

Both, at personal and sectorial level
Organizing sectorial activities involving whole value chains of an Industry

03

PROVIDING EQUIPMENT AS DEMONSTRATORS

Exchange of equipment between Companies and Universities
establishing pilot programs and initiating a customer loyalty process

04

CONSOLIDATING LONG-TERM RELATIONSHIPS

Take advantage of existing collaborations between University Research Groups and Industries collaborating in projects development consistently

05

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10 BEST PRACTICES FOR UrBIOfuture

HIGH IMPACT INDUSTRY & UNIVERSITY RELATIONSHIPS

Develop conceptual frameworks based on good practices for mutual cooperation to co-design next European generation of Circular Bioeconomy Education Programmes

MIT Legatum (USA) by John Chisholm

06

PROMOTE DIALOGUE ABOUT KNOWLEDGE TRANSFER

An opportunity to consolidate collaborations while defining this key area for the CBBEEP co-design

07

SUPPORT ENTREPRENEURSHIP

An opportunity to consolidate collaborations for effective generation of spin-offs and start-ups, while defining this key area for the CBBEEP co-design

08

GENERATE LIVING-LABS OR REAL TIME LABORATORIES

Involvement of the end-user in testing bioproducts and bioprocess prototypes for effective knowledge transfer, entrepreneurship and high impact education programs

09

ORGANISE PERMANENT INTERACTIVE FORUMS

LabTours and IdeasLab, stable interactive initiatives between business and researchers, but also useful tools to integrate in high impact education programs

10

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OUR VISION

1 15 MOST DEMANDED PROFILES identified in UrBIOfuture, provides A GOOD START POINT

2 10 UrBIOfuture BEST PRACTICES FOR ACADEMY & INDUSTRY COOPERATION provides solid TOOLS and GUIDES

3 LET'S START co-design NEXT GENERATION OF EUROPEAN BIOECONOMY EDUCACTION PROGRAMS

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Do you have any other recommendations for collaboration between pilot sites, education, industry and other stakeholders?

Mentimeter

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Main conclusions and recommendations

Main conclusions

European Complexity

Different countries and regions have their own legal frameworks and educational systems, as well as its own bio-based industry focus.

Education needs and curricula should be implemented at regional level.

An integrated vision of the educational framework should be designed centrally, at European level.

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Main conclusions

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Research and innovation

The focus should be on how to transfer knowledge from the laboratory to the industry, as well as applying research to the practical needs of the industry.

More knowledge about the process of the experiments, not only the results.

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Main conclusions

Industry and Education

Strengthen the connection between education and the industry, making emphasis on the labour market needs across the entire value-chain.

The educational programmes should prepare the future professionals and the industry must collaborate in the process.

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Main conclusions

New methodologies

New formats should be explored, such as project and challenge-based learning, co-creation and collaborative learning, living labs, etc.
This is especially relevant to make the younger generations interested in bioeconomy studies and careers to fulfil the growing demand of talents.

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Main conclusions

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Soft skills and cross-sectoral skills

Transversal and cross-sectoral skills are increasingly needed for a complex and rapidly evolving sector like the bioeconomy.

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Main conclusions

Collaboration

Enhance networking, knowledge sharing and collaboration among different programmes, projects and initiatives.

Stimulate the debate around education in bioeconomy and the cooperation between different stakeholders such as industrial players, regional authorities, EU Member States, pilot centers, and education providers.

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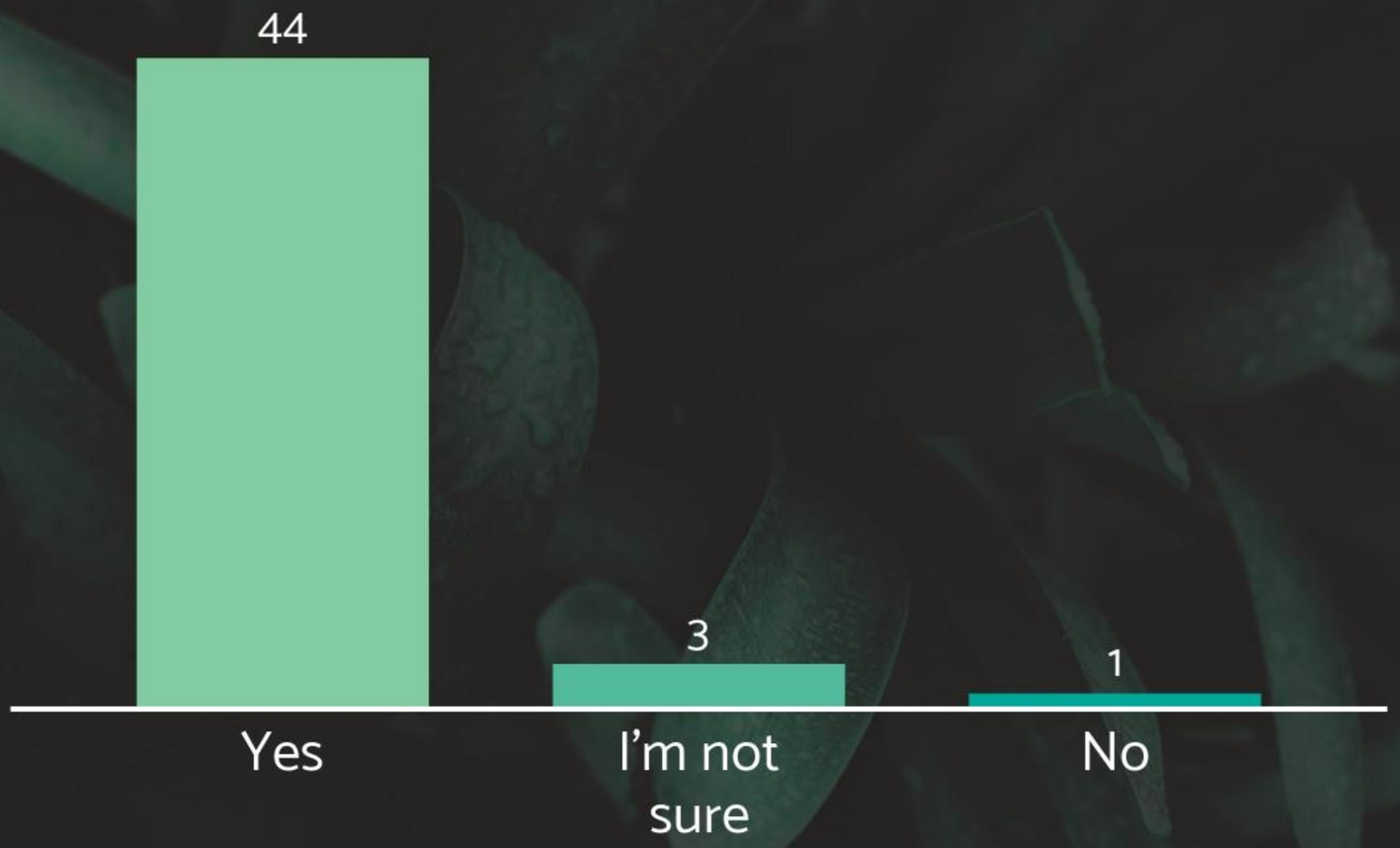
Questions & Answers

How would you rate this webinar?

Would you recommend this webinar to your friends and / or colleagues?



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