# D2.1 - Report on conceptual and operational framework for design of BBECs

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# 1.Executive summary

As detailed in the Description of Action, T2.1 aims to develop an overarching framework for BBEC design, in relation with the findings of WP1.

For that purpose, the present deliverable includes i) desk research to create an Inventory of Best Practice to inform and enhance BBEC design, and ii) the creation of a comprehensive Centre Readiness Level Framework Assessment Survey to inform the BBEC co-creation workshops and future centre design.

Each of the 19 consortium partners were required to submit at least one example of best practice in education and/or industry that will elevate the development of the BBEC centres. 29 best practice examples have been collected, showcasing examples from a European and international perspective, both in the Bioeconomy sector and outside it.

The best practice examples were compiled according to their locations, target audience as well as thematic areas. More precisely, for this latter aspect, 11 categories were identified, in relation with the findings of T1.2:

- Pedagogies;
- University engagement and collaboration with industry;
- Lifelong learning and continuous personal development;
- Clusters/networks/partnerships;
- Research & Development supports;
- Funding & Investment networks;
- Enterprise Development supports;
- Mentoring Programmes (academic or industry);
- Digital technologies and integrations;
- Diversity and inclusion practices;
- Engagement with civic society.

This inventory of Best Practice demonstrated a wide range of locations, target audiences and thematic areas. However, it also shows a clear gap in several of these thematic areas, namely Digital technologies and integrations, Diversity and inclusion practices, Enterprise Development supports and Funding and Investment networks.

Based on the inputs from the Inventory of Best Practice as well as the guidelines developed in the frame of T1.2, a Centre Readiness Level survey has been created

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that profiles the unique regional capabilities of the six BBEC locations and highlights opportunities for collaboration that will support the BBEC network design.

The survey using a Word form set up comprises 23 questions distributed across 5 categories:

- Thematics & Learner profiles;
- Business model;
- Networks and capabilities;
- Roles and functions;
- Innovation supports.

It is to be administered to all 19 partners with an accompanying guidance document.

These outputs directly support the activities in T2.2, T2.3 and T2.4. In particular, both the inventory and the survey will help in the identification of the main stakeholders for each regional BBEC. Hence, the engagement of these actors that starts in this Task 2.1 will continue in the next Tasks. Moreover, the description of the actors coming from the outcomes of the Centre Readiness Level Framework Survey will help the project partners to understand the main dimensions of each of the six BBECs, providing a first draft definition of the BBECs themselves.

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# 2.Introduction

As described in the Description of Action, T2.1 aims to develop an overarching framework for BBEC design. The framework will detail the main key components and pillars of activities of the proposed 6 BBEC centers.

This framework for assessment will be developed to provide a BIObec classification of Center Readiness Level Framework and international best practice via deskwork.

As such this deliverable reports upon:

- the desk research related to the inventory of best practice (section 3, including objectives, methodology, compilation of the best practice examples and lastly their analysis);

- the creation of a Centre Readiness Level Framework Survey to inform the BBEC design (section 4, including objectives and description of the survey).

A conclusion is proposed as section 5, gathering the information from sections 3 and 4.

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# 3.Desk research – Inventory of best practice

## 3.1. Objectives

The main objective was to create an Inventory of Best Practice to inform and enhance future BBEC design and framework for assessment. In line with the vision of the BIObec Project to merge best practices from university with those of innovation centres research was conducted to identify the key offerings, functions and services delivered by both types of organisations to be integrated into BBEC design. As such the following 11 thematic areas were identified:

- Pedagogies;
- University engagement and collaboration with industry;
- Lifelong learning and continuous personal development;
- Clusters/networks/partnerships;
- Research & Development supports;
- Funding & Investment networks;
- Enterprise Development supports;
- Mentoring Programmes (academic or industry);
- Digital technologies and integrations;
- Diversity and inclusion practices;
- Engagement with civic society.

## 3.2. Methodology

To achieve the task objectives, the 19 Consortium partners were required to conduct desk research to document and report on innovative bioeconomy education models/pedagogies and/or best practice examples from industry/education. These case studies could draw on best practice examples from both bioeconomy education providers and outside organisations related to other sectors and industries, in specific European regions, countries, or worldwide.

Each consortium partner was required to submit examples, via a structured template which was then catgorised but was not limited to the aforementioned 11 thematic

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areas. Using the data from the 29 case studies a series of 23 key questions were identified to map each BBEC Centre Readiness Level in activating best practice enabling factors, identifying strengths and gaps in services across the BBECs. The responses from the survey facilitated the creation of unique BBEC profiles across the pilot network thus providing a benchmarking system with which to measure current and future activities, services, programmes, resources and capabilities.

## 3.3. Compilation of the best practice examples

A compilation of the best practice examples is proposed in the form of the table below. For each case, the name of the example, its country and its contact partner are given, as well as two key characteristics, i.e. the target group and thematic areas. The full description of the examples, as submitted by the contact partner, is given in section 7 Appendix.

*Table 1: Summary of the best practice examples including their key characteristics*

| Name | Country | Contact partner | Target | Thematic areas |
|---|---|---|---|---|
| **Asmildkloster – International Academy of Agricultural Business** | Denmark | FCBD | Vocational students, professionals | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development |
| **BIOCIRCE – Postgraduate Programme** | Italy | UNIBO | Graduate scientists, social scientists, professionals | Pedagogies<br>University engagement and collaboration with industry |
| **BIOEAST – Technology Transfer Centres in Agriculture** | CEE countries | ART | Policy makers regional and national, related stakeholders | Clusters/networks/partnerships |
| **BIO-ERKO – Bioeconomy Specialisation Education** | Finland | UEF | Employees, entrepreneurs, vocational sector, students | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development |
| **Bioökonomierevier** | Germany | UHOH | Stakeholders from business, agriculture, research, education, local authorities and the public | University engagement and collaboration with industry<br>Clusters/networks/partnerships<br>Engagement with civic society |

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| | | | | |
|---|---|---|---|---|
| **BioSC training programme** | Germany | UHOH | Students | Pedagogies<br>University engagement and collaboration with industry |
| **BIOVOICES – Startupper School Academy. Lazio** | Italy | FVA | Highschool 15-18 years, educators | Pedagogies<br>University engagement and collaboration with industry |
| **CeADAR – AI Work Ready Graduate Programme** | Ireland | MTU | Graduates, researchers, industry | Pedagogies<br>University engagement and collaboration with industry<br>Digital technologies and integrations |
| **CEIA3 – Campus of International Excellence in Agri-food, Andalusia** | Spain | CTA | Policy makers, researchers, industry & society | University engagement and collaboration with industry<br>Clusters/networks/partnerships<br>Research & Development supports |
| **ECIU – European Consortium of Innovation Universities** | EU | UAB | Undergraduates, postgraduate researchers | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development |
| **EcoCEO – Entrepreneurship for a Circular Economy: Serious Game** | EU | CNR | high school 14-19 years, educators | Pedagogies<br>Engagement with civic society |
| **EIT Raw Materials – Awareness Campaign for Sorted Waste Collection** | EU | CNR | High school 15-19 years, educators | Pedagogies<br>Engagement with civic society |
| **Green Transformation Programme – Sustainable Innovations (SIE)** | EU | SIE | Undergraduates, graduates, young professionals | Pedagogies<br>Mentoring Programmes (academic or industry) |
| **IAHR Young Professionals Congress – International Association** | Global | IHE | Young professionals, researchers, and students | Mentoring Programmes (academic or industry) |
| **IATI Institute – Freeway of Technology & Innovation Consortium** | Poland | PRO-CIVIS | Universities, research institutes and enterprise | Clusters/networks/partnerships<br>Research & Development supports |
| **Industry Skills Centers – Vocation Training Construction Sector** | Poland | PRO-CIVIS | Professional development, job seekers, school leavers | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development<br>Diversity and inclusion practices |
| **INTRINSIC: Innovative Ed for Sustainable** | EU | BOKU | Higher Education | Pedagogies<br>University engagement and collaboration with industry |

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| | | | | |
|---|---|---|---|---|
| **Entrepreneurship in Life Sciences** | | | Teachers in Life Sciences | |
| **Junior Achievements (JA) Bulgaria – Entrepreneurial skills development** | Global | TRU | High school & vocational 15-19 years, graduates | Pedagogies<br>University engagement and collaboration with industry |
| **MOOC Circular and Biobased Production** | NL | WUR | Students and professionals | Pedagogies<br>Lifelong learning and continuous personal development |
| **RAW MatTERS Ambassadors at School – 30 EU Research & Universities** | EU | CNR | High school 12-19 years, educators, society | Pedagogies<br>University engagement and collaboration with industry |
| **Rediscovery Centre** | Ireland | IBF | Primary, secondary, and tertiary educations students, SMEs | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development |
| **REEdI – Redesigning Engineering Education in Ireland: VR & AR Integration** | Ireland | MTU | Schools leavers, mature students, professional career change | Pedagogies<br>University engagement and collaboration with industry<br>Lifelong learning and continuous personal development |
| **Sectors Skills Council – Chemical/Raw Materials Recovery/High-quality Food,& Water and Sewage Management and Reclamation Sectors** | Poland | IBE | Chambers, industry, regulatory institutes, employers, employees | Clusters/networks/partnerships |
| **SGGW – Warsaw University of Life Sciences Masters Programme** | Poland | PRO-CIVIS | Graduates and professionals | Pedagogies<br>University engagement and collaboration with industry |
| **Teacher Training Centre Kielce – Workshop 'Everyday Bioeconomy'** | Poland | IBE | Primary school science teachers and pupils | Pedagogies |
| **Transition2Bio** | EU | FVA | Member states and EU projects | Pedagogies<br>Engagement with civic society |
| **UdG Innovative Sectorial Systems Ecosystems of Girona Province** | Spain | UAB | Enterprise, research centres, education institutes | Clusters/networks/partnerships<br>Enterprise Development supports |
| **Universities of Cordoba & Almeria – Joint Masters Programme** | Spain | CTA | Graduates, professionals | Pedagogies<br>University engagement and collaboration with industry |

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| | | | | |
|---|---|---|---|---|
| **What if Hubs? - Theoretical living lab and design thinking workshops** | Denmark | FCBD | Bioresource cluster members, university students | Clusters/networks/partnerships |

## 3.4. Analysis of the best practice examples

The BIOBEC partners submitted 29 best practice examples representing regional, national, European and International case studies and collaborations.
Case studies included many examples from the bioeconomy sector, however, several case studies from other sectors have also enriched the depth and breadth of best practice including examples detailing thematics; Augmented Reality/Virtual Reality (AV/VR) technology integration in education; mentoring programmes for AI graduates and best practice in networking in the hydroenvironment.

Each case study (best practice example) has been classified under the 11 thematic areas detailed in section 3.2. The number of case studies per thematic area is shown in Figure 1.

| | | | |
|---|---|---|---|
| Pedagogies | 21 | Research & Development Supports | 2 |
| University collaboration with industry | 17 | Enterprise Development Supports | 1 |
| Lifelong Learning & CPD | 7 | Mentoring Programmes (academic or industry) | 3 |
| Funding & Investment networks | 3 | Digital Technologies AR/VR Integrations | 1 |
| Clusters - Networks - Partnerships | 7 | Engagement with civic society and communities | 4 |

*Figure 1: Number of examples for each thematic area*

The following observations could be made from this classification:

- All thematic areas were covered by at least one case study;
- There is a strong predominance of examples related to Pedagogies (21), University engagement and collaboration with industry (17), those thematic areas being associated with more than half of the examples;
- Nearly a quarter of the examples (7) are related to Clusters/networks/partnerships and Lifelong learning and continuous personal development;
- Several examples (2-4) are related to engagement with civic society, Mentoring programmes (academic or industry), Research & Development supports;

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- Only one example is related to Digital technologies and integrations and similarly to Diversity and inclusion practices and Enterprise Development supports;

- One thematic area was not covered in these examples. This area is Funding and Investments networks.

Thus, there are gaps in relation to best practice examples in Digital technologies and Integrations, Diversity and inclusion practices, Enterprise Development supports and Funding and Investment networks that can be filled as the BIObec project develops.

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# 4.Creation of a survey to inform the BBEC design

## 4.1. Objective of the survey

The objective of the Centre Readiness Level Framework Survey is for each BBEC location to conduct an analysis of their readiness levels by completing a detailed survey of 23 questions to create a detailed profile.

The survey was informed by the compilation and analysis of best practice examples collected as well as the guidelines developed in the frame of T1.2. This survey will be completed by all partners participants in the subsequent tasks of WP2, summarized in the figure 2 below.

| | | |
|---|---|---|
| **Task 2.1** [M1-M5] | Educational Centre Framework Design | Creation of a benchmarking system informed by the compilation and analysis of 29 best practice case studies in bioeconomy education to generate a Centre Readiness Level Framework document |
| **Task 2.2** [M3-M9] | Validation of BBEC cases & organisational approach | Framework document administered to all 19 BIObec partners to conduct an in depth assessment of each BBEC to define the unique profiles, characteristics, thematic specialities, services, staff, supports |
| **Task 2.3** [M7-M11] | Co-creation and conceptual design of each centre | 6 individual BBEC Business Model Canvas (BMC) to map existing capabilities, value propositions, current and future opportunities, identify potential organizational models, future design of each BBEC. |
| **Task 2.4** [M7-M11] | Definition of regional BBEC business model & governance structure | Identification of suitable governance structures and business model type appropriate to suit the needs of each regional BBEC. |

*Figure 2: Link between tasks in WP2*

## 4.2. Description of the survey

The survey was originally designed in the following Google form link (Screenshots of the Google form are also proposed in Figure 2):
https://docs.google.com/forms/d/e/1FAIpQLSf42kgbTW1thI102GCQQyY0ckMHf-5E4ghkV8x2IhrS4CeJfQ/viewform?vc=0&c=0&w=1&flr=0

However, to guarantee respondents the possibility to review and edit the survey, it was decided to move the 23 questions from the Google form to a Word file, editable

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offline. The collection of the surveys is in the scope of the following Task 2.2. Furthermore, the surveys collected will be integrated in Deliverable 2.2.

Background & Aim of the Survey

The BIObec project aims to maximize the opportunities offered by the Bioeconomy by interlinking universities, innovation labs, and R&D centers with industrial actors and regions to avoid skills and competencies gaps.
In order to achieve this, BIObec proposes a concept that merges the traditional idea of an education centre – such as a university or a vocational education and training centre – with that of a knowledge hub: the Bio-Based Education Centres (BBECs), which will act as multi-level knowledge hubs bridging the gaps between academic institutions, students, innovation entities and policymakers.

The present survey aims to gather information to constitute the BBECs in terms of participant institutions, scope, target perimeter, time, frame, and, in general, all the main dimensions that underlie any education and training institution.

Furthermore, the survey is finalized to understand the subjective commitment and/or contribution that each respondents' institution would bring to the BBECs, making clear how each stakeholder can strengthen the BBECs framework and their constitution.

1) Your organisation name, address and location *

Votre réponse

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2) Outline the bioeconomy thematic pillars that your organisation specializes in? *
(e.g. food, marine, forestry, biorefining, education & outreach etc)

Votre réponse

3) Knowledge Areas - Select the academic levels that your organisation targets and delivers services to

| | Column 1 |
|---|---|
| SECONDARY | ☐ |
| VOCATIONAL | ☐ |
| BACHELOR | ☐ |
| POST GRADUATE CERT/DIPLOMA | ☐ |
| MASTERS | ☐ |
| PHD | ☐ |
| CPD - Continuous Professional Development | ☐ |
| OTHER | ☐ |

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4) Learner Profile: Select the learner groups that your organisation serves

| | Column 1 |
|---|---|
| Primary Schools | ☐ |
| Secondary Schools | ☐ |
| Undergraduates | ☐ |
| Postgraduates | ☐ |
| Life Long Learners | ☐ |
| Industry Professionals | ☐ |
| Civic Society | ☐ |

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5) Type of Centre (Business Model)

| | Column 1 |
|---|---|
| Public | ☐ |
| Private | ☐ |
| Public Private Partnership | ☐ |
| Network Facilitator | ☐ |
| Charity | ☐ |
| Other | ☐ |

6) Your Network - Specify the geographical reach of your network

| | Column 1 |
|---|---|
| Local | ☐ |
| National | ☐ |
| Regional | ☐ |
| European Union | ☐ |
| International | ☐ |

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7) Your Network - Detail your organisations links to University & Third Level Institutes *

Votre réponse

8) Your Network - Detail your organisations links with Vocational Education Centres *

Votre réponse

9) Your Network - Outline your organisations links with Government Departments/Agencies/Bodies *

Votre réponse

10) Your Network - Detail your networks and collaboration with Research Centres *

Votre réponse

11) Your Network - Detail your networks and collaboration with Non-Government Organisations *

Votre réponse

12) Your Network - Detail your networks and collaboration with Enterprise Development & Support Agencies *

Votre réponse

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13) Your Network - Detail your networks and collaboration with Innovation Centres and/or Digital Hubs *

Votre réponse

14) Your Network - Detail your networks and collaboration with Industry (corporate, international, national, regional, large/SME) *

Votre réponse

15) Your Network - Detail your networks and collaboration with Industry Associations, Regional Networks and Clusters *

Votre réponse

16) Outline the existing roles and functions within your organisation that you believe should be included in the BBEC design framework. *

Votre réponse

17) Role: 'Industry Liaison for the Skills & Talent Pipeline' Do you have dedicated staff within your organisation to identify current and future skills and talent needs? Please provide specific examples. *

Votre réponse

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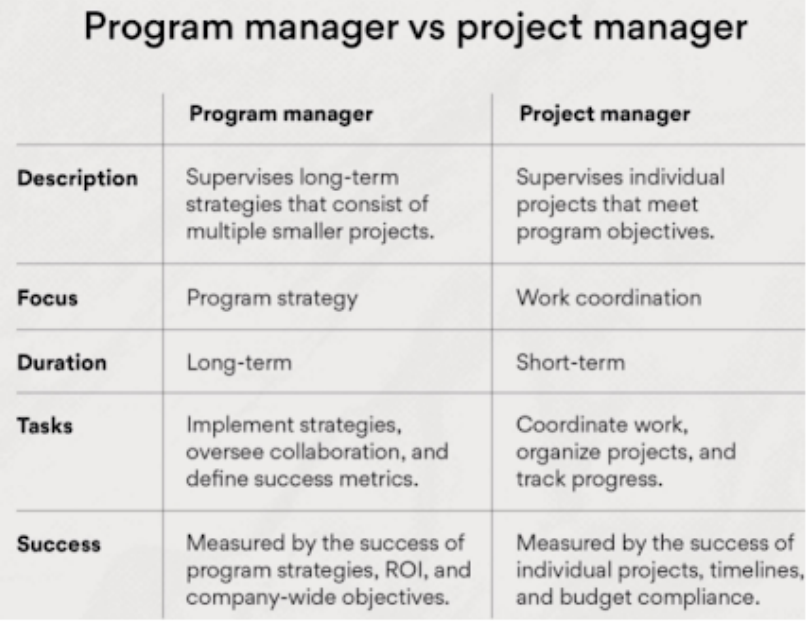
18) Do you have dedicated Programme Managers within your organisation for the delivery & development of education, innovation, enterprise development programmes? (see the image below for further explanations on Programme Manager) Please provide specific examples. *



Program manager vs project manager

| | Program manager | Project manager |
|---|---|---|
| **Description** | Supervises long-term strategies that consist of multiple smaller projects. | Supervises individual projects that meet program objectives. |
| **Focus** | Program strategy | Work coordination |
| **Duration** | Long-term | Short-term |
| **Tasks** | Implement strategies, oversee collaboration, and define success metrics. | Coordinate work, organize projects, and track progress. |
| **Success** | Measured by the success of program strategies, ROI, and company-wide objectives. | Measured by the success of individual projects, timelines, and budget compliance. |

Votre réponse

19) Do you have dedicated Project Managers within your organisation responsible for the coordination of education, innovation, enterprise development programmes? (see the previous image for further explanations on Project Manager). Please provide specific examples. *

Votre réponse

20) If you have Lecturing and/or Training Staff, outline the specific types of learners they engage with e.g. undergraduate, postgraduate, industry, life long learners etc. *

Votre réponse

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21) Detail and describe the types of Support roles and Administrative roles within your organization (e.g., academic admission staff, recruitment and applications managers, classes and courses managers, tutors, etc.) *

Votre réponse

22) Enterprise, Creativity, Innovation & Entrepreneurship Development - Indicate which of the following supports and services that your learners have access to: *

- [ ] VR/AR technology integration
- [ ] Innovation sprints & Design Thinking
- [ ] Networking events
- [ ] Enterprise Accelerator Programmes
- [ ] Funding & Investment networks
- [ ] Research, Development & Innovation supports
- [ ] Site visits to bioeconomy industry settings
- [ ] Site visits to bioeconomy research centres
- [ ] Work based industry placements
- [ ] Mentors from industry
- [ ] Mentors from academia
- [ ] Health & Wellbeing supports
- [ ] Diversity & Inclusion supports
- [ ] Other

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23) BBECs Constitution - Think to all the characteristics of your Institution/Organization (geographical reach, stakeholders involved, thematic area, networks, etc.) and your Vision and Mission. Can you detail the commitment and/or contribution that your Institution/Organization would make to BBECs? *

Votre réponse

*Figure 2: Screenshot of the survey questions created in Google form*

As illustrated in Figure 3, there were 23 questions distributed across 5 categories:

- Thematics & Learner profiles;
- Business model;
- Networks and capabilities;
- Roles and functions;
- Innovation supports.

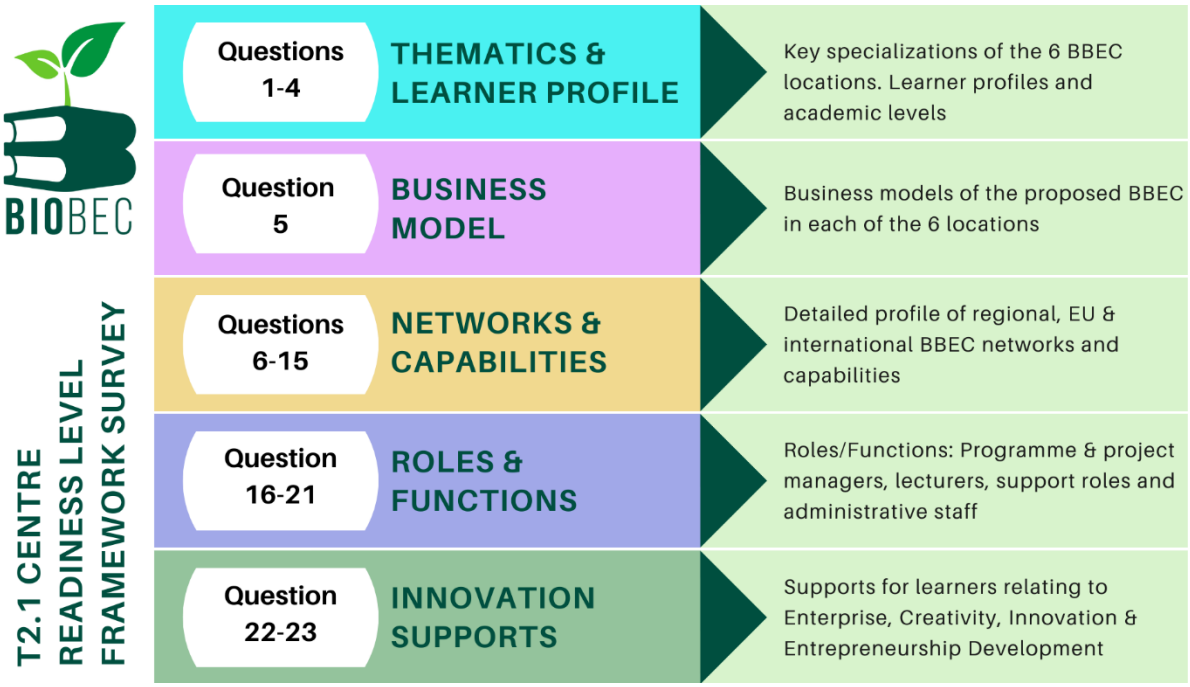


*Figure 3: Categories for the survey questions*

Through the data collection conducted via the survey a set of six unique regional BBEC profiles was captured. This process provided an in-depth understanding of the entire network of pilot BBECs across a broad spectrum of capability identifiers. A sample profile for the BBEC Ireland is shown in the Figure 4 as follows.

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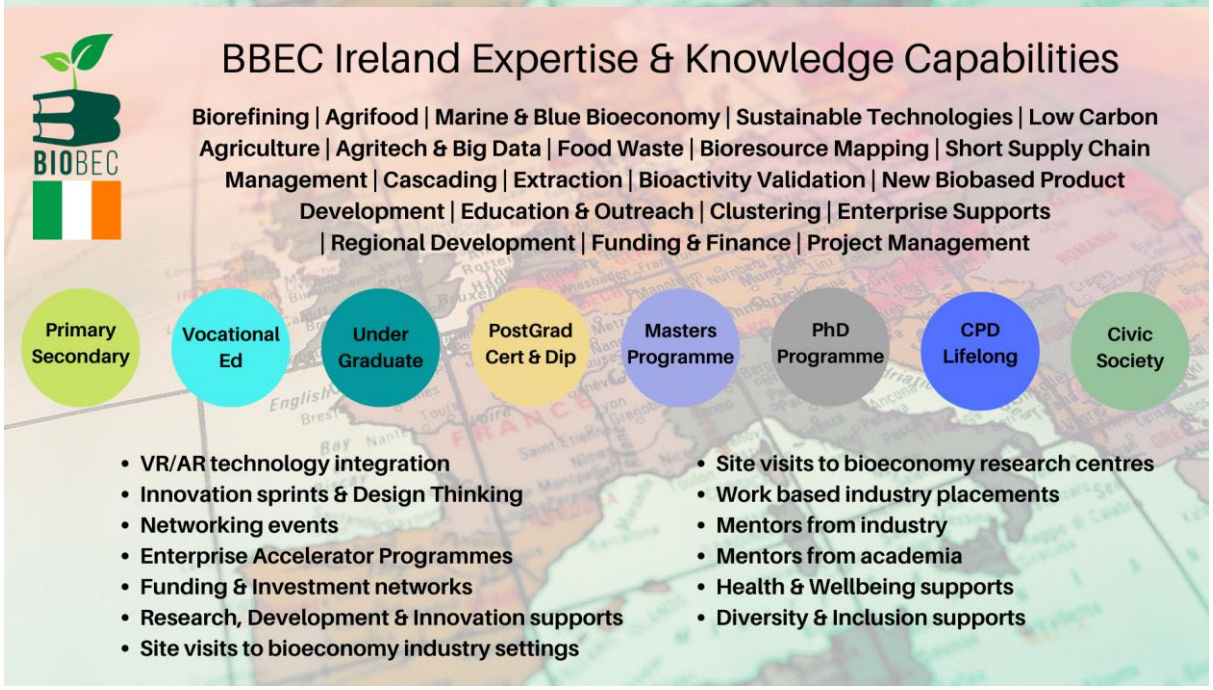


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**HIGHER EDUCATION INSTITUTES**
MTU & IBF have connections with and access to 21 HEI's via the Higher Education Authority. Additionally MTU has developed long standing and deep partnerships with a significant number of these universities and third level education providers.

**VOCATIONAL**
MTU & IBF are linked with the national network of Education & Training Boards Ireland (ETBI). ETBI is the national representative association for the 16 ETBs.

**GOVERNMENT AGENCIES**
- Dept Enterprise, Trade & Employment
- Dept Agriculture, Food & Marine
- Dept Environment, Climate & Communications
- Local & Regional County Councils
- Intertrade Ireland
- Science Foundation Ireland
- TEAGASC
- Environmental Protection Agency

**RESEARCH CENTRES**
| BIORBIC | Clean Tech Centre | Shannon ABC | IMaR | 16 EI Technology Gateway Network | CONNECT | LERO SFI Software | MAREI SFI Energy Research | NIMBUS | Ryan Institute | QUESTOR Queens Belfast | Dairy Processing Technology Centre

**ENTERPRISE DEVELOPMENT**
| Enterprise Ireland | Western Dev Commission | Atlantic Economic Corridor | Local Enterprise Office | Intertrade Ireland | UnáG | NEWKD | SKDP

**CLUSTERS**
| CIRCULEIRE | IBEC | Carbery Group | Energy Cork | Marine & Industry Network | Chambers Ireland | EI Cluster Network

**DIGITAL INNOVATION HUBS**
| RDI HUB | RUBICON | Microsoft Dreamspace | Portershed | Dogpatch | Guinness Enterprise Centre | Connected Hubs Network

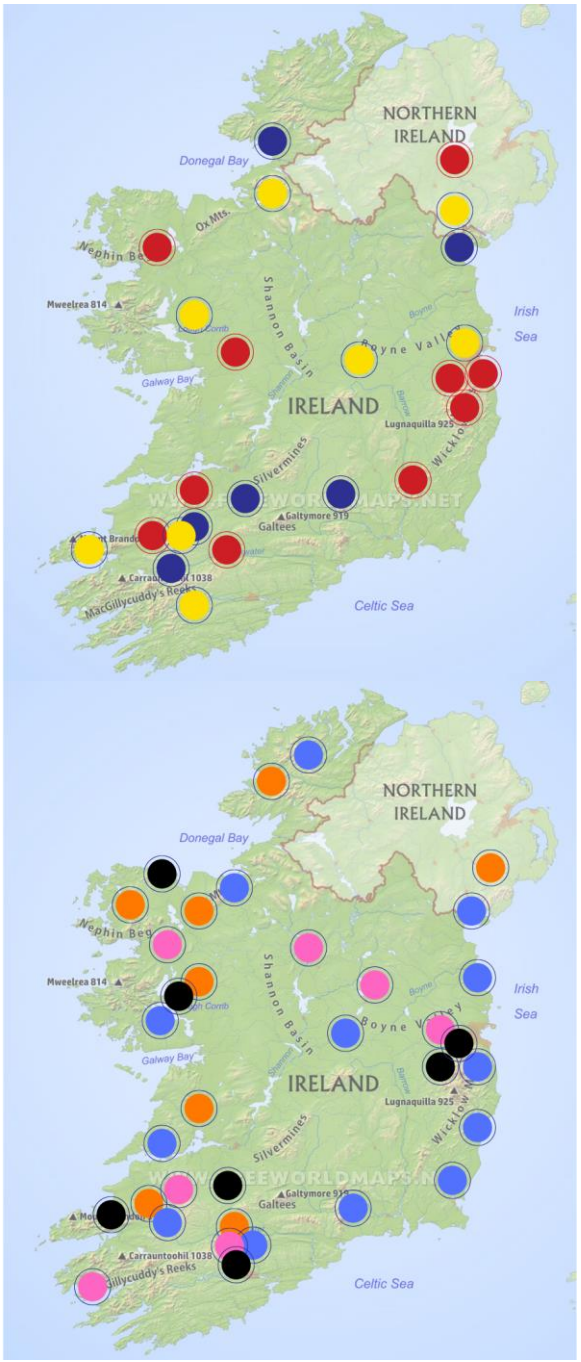


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*Figure 4: Sample profile for the BBEC Ireland*

# 5. Conclusions

The analysis of needs and expectations as well as the understanding of the regional conditions coming from WP1 (i.e. D1.1, D1.2, D1.3) set the stage for the activities in the scope of WP2.
In particular, to specifically respond to the requirements of T2.1, an extensive collection of circa 30 best practice examples has been performed with the support of all 19 BIObec partners.

This inventory of Best Practice demonstrates a wide range of locations, target audiences and thematic areas. However, it also shows a clear gap in several of these thematic areas, in particular:

- Digital technologies and integrations;
- Diversity and inclusion practices;
- Enterprise Development supports and Funding;
- Investment networks.

Based on the results of this desk research and in agreement with T1.2 partners, a Centre Readiness Level Framework Survey assessment form has been prepared for distribution to partners, in order to inform the BBEC design. It consists of 22 questions, gathered in 5 categories covering the key aspects for the design and that take into account the guidelines formulated in T1.2.

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The outputs from this T2.1 deliverable (and T2.2) will provide the basis for and directly guide the structure and delivery of T2.3 Co-creation and conceptual design workshops for each centre (M7-M11).

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# 6. Appendix: Description of best practice examples

## 6.1. Asmildkloster Academy of Agricultural Business – Denmark

| Name Organization/Title/Programme - web link |
|---|
| **Innovation inspiration for your leaders in biobased business**<br>Agro Business Park and Asmildkloster Academy of Agricultural Business<br>https://asmildkloster.dk/international/<br>https://www.agrobusinesspark.dk/<br>https://cbio.au.dk/en/ at Aarhus University is a key collaborative partner |
| **Location of the activity/model and the types of partners involved** |
| Agro Business Park and Aarhus University.<br>Vocational students (aspiring Agricultural leaders) meet business incubation environment and research environments |
| **Purpose and objective of the activity/model** |
| The course is to inspire vocational students and bioeconomy leader aspirants to innovate and incubate, to start their own business within bioeconomy in broad sense.Students from Asmildkloster Academy of Agricultural Business meet and talk with local start-ups in the incubation centre at Agro Business Park and visit research facilities and have presentations at Aarhus University as a tailor made mixture of lectures and discussions with start-ups. |
| **Detail the funding model in operation** |
| Simple funding model: Asmildkloster Academy of Agricultural Business buy this course at Agro Business Park, who has Aarhus University as a close collaboration partner.<br>Has been carried out twice, but still not 'institutionalized' |
| **Target audience and participants** |
| Vocational students and professionals in job who want to meet Startups and who are interested in this type of career. |
| **Description of activities and/or services** |

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| |
|---|
| As part of the training the participants/the students should make their own start-up idea and apply for the annual official innovation competition in Agro Business Park. The preparation of the application is 'canvas training', and if the idea is good enough, they might win a grant to start up. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| The fundamental idea of having education directed towards innovation and incubation makes students understand how complex the world is and how much knowledge is needed to foster the next bioeconomy startup. Networking is crucial and one person cannot cover it all. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Students understand the need for more knowledge (need to know) to be able to startup. They meet real startups, who has been there and can give advice. When realizing 'need to know' they can ask university teachers much more specific questions and the academic teachers can 'meet the real world' type of challenges. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Vocational schoolteachers, University teachers and the 'brooker' is innovation and facility manager with a strong network, engaging businesses and academics to share knowledge. |

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# 6.2. BIOCIRCE – Postgraduate Programme

| Name Organization/Title/Programme - web link |
|---|
| Organizations: University of Naples Federico II, University of Milano-Bicocca, University of Bologna, University of Turin, Intesa Sanpaolo, Novamont SpA, GFBiochemicals SpA, PTP Science Park of Lodi, Cluster CLAN agrifood, Cluster SPRING<br>Title: Postgraduate Programme "Bioeconomy in the Circular Economy (BIOCIRCE)"<br>Web link: https://masterbiocirce.com/ |
| **Location of the activity/model and the types of partners involved** |
| Locations: Milan, Naples, Turin, Bologna. It is also planned an industrial stage.<br>Types of partners involved: The programme is organized jointly by 4 universities (University of Naples Federico II, University of Milano-Bicocca, University of Bologna, University of Turin), 4 companies (Intesa Sanpaolo, Novamont SpA, GFBiochemicals SpA, PTP Science Park of Lodi), and 2 Italian technological clusters (Cluster CLAN agri-food, Cluster SPRING).<br>The programme collaborates with several companies and has signed Memorandums of Understanding with foreign organizations, such as Virginia Polytechnic Institute and State University and the Irish Bioeconomy Foundation. |
| **Purpose and objective of the activity/model** |
| On the website of the programme, the following aims are specified:<br>• "Developing of a sustainable innovation in a responsible manner<br>• Reduction of barriers to biotechnology innovation<br>• Promotion of the integration of biotechnology research across commercial applications<br>• Creation of an ongoing dialogue among governments, citizens, academia and firms<br>• Bringing of new technologies to existing and emerging markets in a legal way" |
| **Detail the funding model in operation** |
| Based on payment by participants, but some scholarships are made available |
| **Target audience and participants** |
| The programme is aimed mainly at two categories of participants, i.e., with either a scientific or social science background. In particular, the programme website reports:<br>"The program welcomes students from all different backgrounds:<br>• Graduate scientists who want to pursue a career outside the lab |

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- Social scientists and business studies students who want to develop their interests in life science innovation
- People already working in biotechnology related fields who wish to engage further

The program is designed for two groups of students that are professionals with either scientific or legal/economic background".
Over the years the share of the two groups is variable, but in recent years scientists seeking a complementary training in business/economic subjects has prevailed.

**Description of activities and/or services**

The description of the programme's education offer is specified on the programme website as follows:
"The program […] offers an extensive training program for professionals interested in working within the bio-based goods and services industry using biological resources and bio-technological processes. The program allows the professionals to go in depth in all the aspects related to the production and marketing sides of bio-based products, whilst using the latest technology. Students study the entire value chain of bio-based products: the production of raw materials in agricultural ecosystems in diverse climatic regions, the properties and supply logistics of biological resources, the bio-technological and industrial processes used to convert these resources into (new) bio-based products, and the marketing and consumption of final products. Studying the entire value chain for bio-based products give to professionals the opportunity to deal with the environmental, social and economic dimensions of the bio-economy from a micro and a macro level perspective, including innovation, institutions and policies".
"[…] graduates are exposed to different perspectives and points of view:

- Established producers seeking to introduce renewable resources, biotechnological processes, and their corresponding products onto the market
- Companies focusing on new biobased resources, processes, and products
- Actors attempting to gauge the need and acceptance of such products
- Organizations supporting the development of biobased value chains, e.g., through research and advisory services".

"The program includes four compulsory modules (5 Credits each) given by the four participating Universities. Modules cover relevant scientific topics as well as economic and legal issues".
"Students are required to attend 4 weeks full-time lessons, each one taught in a different University, and a 6-months stage in one company or institution. Individual study time is required to prepare for the intermediate evaluation planned after each module and for preparing a final thesis work".

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

Two characteristics are potentially relevant:

- The flexibility of course contents, that each year is tailored to the background of participants.
- The close collaboration with industry in bringing cases of good practices and in allowing an industrial stage leading to the thesis.

**What, in your view, are the key impacts/benefits of this model/service offering?**

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| |
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| The key impact is in bridging between master courses and job high-level professionals seeking a career in biobased industries or willing to be entrepreneurs in the field. This applies to the most innovative fields and in innovation management itself. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| The courses are taught by the participating institutions. Modules are covered based on their relevant fields, as specified on the programme website which reports as follows: "Each module envisages teaching on scientific topics by staff members of the participating Universities, whilst Economic and regulatory aspects, as well as specific case studies, are covered by members of participating companies and associations". The teaching part carried out by companies is very important and usually linked to visits (altogether around half of the time, growing from year to year) |

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# 6.3. BIOEAST – Technology Transfer Centres in Agriculture

| Name Organization/Title/Programme - web link |
|---|
| Thematic Working Group Bioeconomy Education<br>"TWG BE Edu"<br>https://bioeast.eu/education-2/ |
| **Location of the activity/model and the types of partners involved** |
| The activity operates as an active network of experts involved in Bioeconomy Education matters within the BioEast Region. The BioEast NCPs of each country nominate one or more representatives in the TWG on Education The representatives are mostly selected among the Academic community (educators) or they are from the public administration (e.g., Ministry of Education). Most countries have nominated experts from both sources.<br>One country has the responsibility for the coordination of the TWG. In this case for the Education, responsible country in the Czech Republic. As an active network among 11 countries, the action has not a constant location. The basis of the coordinator is Prague, Czech Republic |
| **Purpose and objective of the activity/model** |
| BIOEAST Initiative identified priorities and established corresponding TWGs that are designed as macro regional[1]. TWG BE Edu was initiated by the BIOEAST HUB CZ to tackle common issues of the BIOEAST macro region.<br>The main objectives of the TWG include:<br>• Interaction and horizontal knowledge transfer<br>• Improvement of the level of Education on a regional scale but also its adaptation to the regional needs and priorities<br>• Alignment with other European Initiatives in this perspective<br>• Enhancing the cooperation and synergies within the TWG and the member states |
| **Detail the funding model in operation** |
| The activity of TWG BE Edu is partly supported by the CSA H2020 project BIOEASTsUP, and partly by national funds or resources of the Institutions that nominated the representatives. |
| **Target audience and participants** |
| • Policy makers on both Macro-regional and national level<br>• Related stakeholders and end users of Bioeconomy practices |

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**Description of activities and/or services**

TWG BE Edu activities:

1. To initiate position papers for the BIOEAST Board to tackle the common problems and challenges in the BIOEAST macro region.
2. To identify and connect to Bioeconomy HUBs, platforms, initiatives, and institutions in the BIOEAST region providing education on Bioeconomy at all levels, and to analyze them in terms of objectives, contents, principles, target audiences and impacts.
3. To specify means and methodologies: Regional analysis with examples for good practice of education curricula, terms of education, practices and priorities, involvement of industry, sources of education, online or virtual courses, tailor-made education, etc. Additionally, analysis of the evaluation system(s) is foreseen.
4. To highlight factors related to the regional characters of Bioeconomy such as (i) Homogeneity of structural challenges, (ii) Susceptibility, public acceptance and consumers' demand, (iii) Presence of stimulating ecosystems at regional level, (iv) Importance of smart specialization strategies, (v) Existing funding and supporting tools, (vi) Presence of key clusters and national strategies oriented for good regional priorities, and to examine their impact to a specific educational initiative on a case by case basis
5. To enable the potential for pilot courses and specific case-studies based on real industry requirements throughout the running of educational courses. To underline the mutual benefits of such an approach for private, public sectors, and education bodies at all levels.
6. To define and develop a conceptual basis for a BIOEAST Thematic Working Group and Training in Bioeconomy, align the goals of the Platform with Regional priorities and strategies for Bioeconomy, growth, and innovation, creating a focused group for the BIOEAST Marco-region on Education and Training in Bioeconomy involving the relevant stakeholders from academia, training institutions, industry, policy and government stakeholders.
7. To educate young scientists on how to make better use of information from the value chain and to provide opportunities to find new business models and business opportunities.
8. To establish a solid contact with other European platforms of this kind and especially with the European Concept of Practice for Bioeconomy Education, for bilateral exchange of information, cooperation and mobility

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

- The regional aspect: The model is innovative per-se connecting experts from a large Macro-region with many local particularities and differences on a common perspective enhancing the Bioeconomy education plans and strategies. The challenge is to adapt this principle on each domain and location.
- The heterogeneity of the members of the TWG, including policy makers, researchers and entrepreneurs

**What, in your view, are the key impacts/benefits of this model/service offering?**

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| |
|---|
| BIOEAST Initiative identified priorities and established corresponding thematic working groups (TWGs) that are designed as macro regional[2] TWGs network policy makers and experts to discuss problems, potential, priorities common for the macro region. The coexistence on sectoral and regional basis, also enhances the horizontal transfer of knowledge and expertise. It also creates a common basis for dealing with issues of a wider interest (e.g., establishing or adopting a particular strategy for one region or one country) |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| • Policy makers and officers of public administration<br>• The academic society including University professors and Researchers<br>• Related stakeholders including managerial stuff for innovation and operations |

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# 6.4. BIO-ERKO – Bioeconomy Specialisation Education

| Name Organization/Title/Programme - web link |
|---|
| Project: BIOERKO (IS-Bioerko and Join-Bioerko)<br>Education program: ***Bioeconomy specialization studies***<br>Web link: https://www.biotalouskoulutusitasuomi.fi/en/ |
| **Location of the activity/model and the types of partners involved** |
| Location: Eastern Finland<br>It is organized jointly by the University of Eastern Finland, Karelia University of Applied Sciences, and Savonia University of Applied Sciences.<br>The studies are completed within 18 months, which are carried out as multiform teaching, consisting mainly of online studies, but also including contact days. Teaching and learning are based on company-specific development tasks.<br>The specialization education model is following:<br>- personal study and development plan including mentoring from university (academic mentor) through studies<br>- company and/or student specific development project including mentoring from university (academic mentor and experts/researchers), working life mentor and peers (student from same class)<br>- compulsory courses which introduce the bioeconomy (concept, needs, change in society, views to future)<br>- bioeconomy process courses which give students possibility to deepen his/her knowledge on certain topic (forests, biorefining, energy, circular economy etc.). There is possibility also to select courses from organizing universities |
| **Purpose and objective of the activity/model** |
| 1. First implementation (2018-2020): to develop a new work-based learning and teaching model<br>2. Second implementation (started in September 2020): to develop international bioeconomy competence in Eastern Finland by working life oriented continuous learning |
| **Detail the funding model in operation** |
| The education is organized with special funding from the Ministry of Education and Culture. The development of Bioeconomy specialization studies – innovation and expertise provided jointly by universities and companies for the growth and structural change sector in Eastern Finland (2018–2020) and developing international |

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bioeconomy competence in Eastern Finland by working life oriented continuous learning were funded by the European Social Fund.

**Target audience and participants**

- People who work, or will be working, in the field of bioeconomy in companies, consultation or promotion tasks, or as vocational teachers, or who operate in the public sector to promote bioeconomy.
- Entrepreneurs or individuals who aim to become entrepreneurs in the field of, for example, bio-based production and raw material procurement for bioproducts.

The applicants must have a suitable university degree or other degree suitable for the field of bioeconomy.

**Description of activities and/or services**

The specialization education is offered in cooperation between the universities and employers in fields where degree programmes are not available. Teaching and learning are based on company-specific development tasks.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

The specialization education brings *a new form of training* offered by the universities in cooperation with industries, designed to complement previous degrees for people working in certain professions so that they would have stronger expertise in their current jobs.

**What, in your view, are the key impacts/benefits of this model/service offering?**

- The model has a contribution in upgrading the skills for people that have already graduated and worked in a bioeconomy related field and it contributes to developing new skills for people that want to activate in bioeconomy field.
- Bioeconomy specialization education allows university teachers/researchers and experts from other organizations to get familiar with each other and learn from each other. Specialization education is a way to enhance co-operation between universities and companies.
    - Students' feedback: Students see the provided education valuable for their professional development, new networks, development project – connects studying and work, multidisciplinary view to bioeconomy, company visits and presentations are valued, getting to know universities (education, RDI, professionals), motivates to learn more, tools for communication in bioeconomy.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

- Academics (university teachers and researchers, RDI-persons)
- Companies (from small to larger companies' personnel), public organizations

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# 6.5. BioökonomieRevier

| Name Organization/Title/Programme - web link |
|---|
| BioökonomieRevier – A model region for sustainable bioeconomy: https://www.biooekonomierevier.de/ |
| **Location of the activity/model and the types of partners involved** |
| Jülich, Germany<br>Research center:<br>• Institute of Plant Sciences of the Forschungszentrum Jülich<br>• Center for Environmental Management, Resources and Energy (CURE)<br>• Fraunhofer institute<br><br>University:<br>• Aachen- University of applied sciences<br>• RWTH Aachen University<br><br>Companies:<br>• Sense UP Biotechnology<br>• Yncoris- Industrial Service |
| **Purpose and objective of the activity/model** |
| Becoming a model region for sustainable economic activity. The Bioökonomie REVIER initiative is pursuing the goal of developing the Rhineland into a model region for sustainable economic activity with international appeal. The phase-out of lignite and climate change require structural change in the Rhineland. This should provide sustainable jobs for the local people and at the same time deal with the environment and resources in a sustainable manner.<br>Mission: Together with stakeholders from business, agriculture, research, education, local authorities and the public, concrete recommendations for a sustainable bioeconomy in the Rhineland will be developed by summer 2021 - from the region for the region. Here we benefit from more than ten years of experience in the field of bioeconomy research in the Rhineland. |
| **Detail the funding model in operation** |
| The Bioökonomie REVIER Rheinland initiative is funded by the Federal Ministry of Education and Research through sub-projects supported with funds from the emergency program for structural change. BioREVIER Rheinland is also funded by the Federal Ministry for Economic Affairs and Energy. |
| **Target audience and participants** |

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Target audience: Stakeholders from business, agriculture, research, education, local authorities and the public

**Description of activities and/or services**

- Networking and advising across sectors
- Survey and evaluation of innovation potential in the region
- Promoting topic-related start-ups, running the BIOBoosteRR accelerator programme
- Municipal contact for the bioeconomy: survey of bioeconomy profiles, funding advice, capacity building
- Informing the public about the bioeconomy and its importance for people
- Science: coordination of innovation labs for rapid transfer of promising research ideas to industry
- Civic participation to establish a regional bioeconomy
- Encourage people in the region to get involved!

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

- Involvement of different stakeholders
- Inclusion of different topics from bioeconomy that apply to the region: science, agriculture, education, economy
- Implementation of call for ideas from students to build a regional vision of local bioeconomies
- Bioeconomy reports for the region

**What, in your view, are the key impacts/benefits of this model/service offering?**

- The stakeholders feel included in the future of bioeconomy in the region
- Connection with a lot of actors
- Offer the information to have access to funding

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

Academics

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## 6.6. BIOVOICES

| Name Organization/Title/Programme - web link |
|---|
| Project: BIOVOICES, Transition2BIO<br>Education program: ***Startupper School Academy***<br>Web link: http://www.lazioinnova.it/startupper-school-academy/ |
| **Location of the activity/model and the types of partners involved** |
| Location: Lazio Region, Italy<br>The Startupper School Academy is a school competition recognized by the Italian Ministry of Education, organized for several years by Lazio Innova, the Lazio Region organization responsible for boosting innovation in the region.<br>Since 2018 the Startupper School Academy is enriched by the thematic award dedicated to the circular bioeconomy, thanks to the collaboration of the Startupper School Academy organizers with projects BIOVOICES (from 2018 to 2020) and Transition2Bio (from 2021). The Bioeconomy prize is coordinated by these projects, but several partners are involved every year, to enrich the prizes and the contents, namely: Novamont, Cluster SPRING and ReSoil Foundation.<br>Edition 2021/2022 is the fourth year of the Bioeconomy Prize in the Startupper School Academy prize. Year after year, the quantity and quality of business ideas submitted for the bioeconomy prize are increasing. |
| **Purpose and objective of the activity/model** |
| The objective of the bioeconomy prize of the Startupper School Academy is dual:<br>promote awareness and education about bioeconomy, its sectors, impacts and benefits to drive the transition towards more sustainable behaviors of young people<br>inform on opportunities and inspire study and work careers in the domain |
| **Detail the funding model in operation** |
| The competition is supported economically by Lazio Innova and it is recognized by the Italian Ministry of Education as part of the high school programme to shorten the gap between school and work.<br>To participate in Startupper School Academy, small teams of high school students (up to 5) should present a business idea for a product or service. The Startupper School Academy has different phases in which the students receive different types of mentoring and training (provided by Lazio Innova), to transform their initial idea into a concrete business plan, to be presented in the form of pitch to the jury. To compete for the bioeconomy prize the students' ideas should deal with bioeconomy or bio-based products. For these students and their teachers, additional thematic training |

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activities are provided, thanks to the collaboration with the partners above mentioned, that provide these activities as in-kind contributions.
In terms of awarding, for the bioeconomy prize, the best idea receives 1.500 Eur (provided by Novamont), the second and third receive a set of bio-based products and all of them are invited to present their solution in the context of large-scale events where BIOVOICES/Transition2Bio are exhibiting. In addition, the students are invited to interviews and events as bioeconomy ambassadors.

**Target audience and participants**

High school students: targeting individual pupils or small groups up to 5 between 15-18 years old.

- Teachers: although the teachers are not involved in the contest as direct participants, their role is a central pillar of the activity, since they stimulate and support the students in the process. For this reason, a capacity building activity for the teachers is delivered, to help them in introducing these contents in their curricula.

**Description of activities and/or services**

An intense package of capacity building activities is delivered both by Lazio Innova (mainly competences related to entrepreneurial skills and practical skills about design and prototype development) and the bioeconomy prize partners (information about bioeconomy and bio-based products, the applications in everyday fields, the impacts of bioeconomy in the economy, society and environment, the business and careers opportunities in the domain, etc.).
The capacity building activity for the 2020/2021 edition was composed by 3 modules:

Module 1 (What is the bioeconomy and bio-based products? Educating a generation aware and specialized in the bioeconomy")

- Module 2 (What is the bioeconomy and bio-based products? Ideas and application fields for possible ideas and solutions to apply for the "bioeconomy prize")
- Module 3 (Design Thinking to boost your project's idea)

In edition 2021/2022 the new module about bioeconomy careers will be added.
Every year, based on the feed-back from the previous editions, the capacity building package is improved and enriched.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

A school contest is a very effective format to inspire and inform youth about bioeconomy and bio-based study/labor market opportunities for their future. To reach these objectives, the contest should be designed to provide a full educational pathway, embedded in a playful and stimulating experience, the competition. Nevertheless, the organization is resource-consuming and a good way to maximize the impact is to co-organize a thematic prize in already existing school projects. This significantly increases the impact and reduce the organizational workload and facilitate the reach of many students. This approach can also respond to the increasing competition for attention due to the large number of school projects that the schools are receiving every day. To stand from the crowd and increase the credibility of the contents, a partnership with an Institution recognized by the Ministries of Education or regional actors is very effective.
Finally, this activity helped to:

strengthen the connection between industries and info-educational activities

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- involve young generations in an incubation program supported by a regional institution, stimulating students in their entrepreneurial careers and challenging them to develop a bio-based product ready for the market.
- Develop an entrepreneurial mindset in future workforce through a high school project

**What, in your view, are the key impacts/benefits of this model/service offering?**

Organize the bioeconomy prize in the context of an existing, well known and already established school project like the Startupper School Academy has several advantages:

the activity is recognized by the Ministry of Education in form of educational credits for the students, increasing the motivation to participate

the impact is much higher compared to the one reachable in the context of an EU Funded project

the resources available for promotion, contacting the schools, assisting, responding to requests is significantly higher and is undertaken by the main organizer

the visibility of the activity is amplified by the partners' communication channels, including media

it is a way to reach indirectly regional authorities and policymakers involved in awarding and promoting the prize, raising their interest in the bioeconomy

In addition, the involvement of external partners like Novamont, cluster SPRING and ReSoil Foundation enriches the contents available for the participants and the prizes available for the winners.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

Academics (high school teachers)
General Public (students)
- Companies (industries, startups, and clusters representatives)
- Policy Makers (Lazio Innova and Lazio Region representatives)

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# 6.7. BioSC training programme

| Name Organization/Title/Programme - web link |
|---|
| Training program of BioSC (Bioeconomy Science Center) https://www.biosc.de/training |
| **Location of the activity/model and the types of partners involved** |
| North Rhine Westphalia<br>The RWTH Aachen, the Heinrich Heine University in Düsseldorf, the Friedrich Wilhelms University in Bonn and the Jülich Research Center |
| **Purpose and objective of the activity/model** |
| The development and implementation of a sustainable bio-based economy are based on the education of young people. In all fields of the knowledge-based bioeconomy experts are urgently required today. Therefore, the BioSC aims for a transdisciplinary education of graduates at a top international level. The transfer of basic knowledge and the holistic understanding of bioeconomy challenges are therefore the main focus of the BioSC graduate education approach. |
| **Detail the funding model in operation** |
| Since 2013, the BioSC is being supported on a long-term basis by the State of NRW within the framework of the NRW strategy project BioSC. The state provides the necessary measures for the further integration of the BioSC partners in research and education for a sustainable bioeconomy.<br><br>The NRW strategy project BioSC represents the prototype for a new funding model for regional, trans-disciplinary research associations within the funding landscape of the federal state North Rhine Westphalia. Based on a long-term joint strategy and cooperative governance, research and training are sustainably developed and operated outside of the institute boundaries. In addition to other prerequisites, this approach is required by the national Bioeconomy Council as an essential condition towards a bioeconomy in Germany. |
| **Target audience and participants** |
| Target audience: Students |
| **Description of activities and/or services** |

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| |
|---|
| Summer / Winter Schools<br>Workshops<br>PhD day<br>Courses<br>Projects |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| Offer of expansion of the students' methodological spectrum and cross-disciplinary networking of technological expertise.<br>Promote sharing ideas<br>Offer the acquisition of practical experience<br>Strengthen interdisciplinary thinking and to support bioeconomy |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Transfer of knowledge<br>Develop competences and experiences of young scientists for the special interdisciplinary challenges in the bioeconomy. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Academics<br>Innovation managers |

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# 6.8. CeADAR – AI Work Ready Graduate Programme

| Name Organization/Title/Programme - web link |
|---|
| CeADAR - Ireland's Centre for Applied AI<br>Work Ready Graduate Programme<br>https://www.ceadar.ie/work-ready-graduate-programme/ |
| **Location of the activity/model and the types of partners involved** |
| CeADAR is Ireland's national centre for Applied AI. CeADAR is a market-focused technology centre that drives accelerated research, development, and deployment of AI and data analytics technology and innovation into businesses. The Centre is the bridge between the worlds of applied research in AI and data analytics and their commercial deployment. CeADAR is funded by Enterprise Ireland and IDA Ireland, is headquartered in University College Dublin and is a partnership with the Technological University Dublin (formerly DIT). |
| Purpose and objective of the activity/model |
| Now in its second year, CeADAR's Work Ready Graduate Programme has 10 graduates placed with CeADAR and Enterprise member companies where they are getting to apply and finesse their skills as well as acquiring new ones. The programme was first developed by CeADAR in 2018/19, and continues today, with funding from Enterprise Ireland. CeADAR was motivated to create the programme because of a gap in support for graduates, particularly in the fields of Data Analytics and Machine Learning, as they navigate the start of their careers. |
| Detail the funding model in operation |
| CeADAR is financed by the government funded agencies Enterprise Ireland and IDA Ireland, is headquartered in University College Dublin and is delivered in partnership with the Technological University Dublin (formerly DIT). |
| Target audience and participants |
| Graduates, particularly in the fields of Data Analytics and Machine Learning, as they navigate the start of their careers. |

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| Description of activities and/or services |
| --- |
| The Centre's work focuses on developing tools, techniques and technologies that enable more people, organisations, and industries to use analytics and AI for better decision making, unlocking hidden insights, and sustained competitive advantage.<br>CeADAR has strengths in:<br>• predictive analytics<br>• machine and deep learning<br>• artificial intelligence<br>• real-time analytics<br>• text analytics and natural language processing<br>• data visualisation<br>• blockchain and smart contracts<br>• computer vision and image analytics.<br><br>The Centre has an extensive catalogue of technology demonstrators, and is particularly active in working with companies to develop bespoke solutions to their requirements.<br>Industry membership of CeADAR has grown significantly in recent years and now totals 90 industry partners ranging from multi-nationals to indigenous SMEs spanning every industry vertical.<br>The Centre is also the focal point of a thriving national ecosystem delivering frequent seminars, conferences, and members' networking events throughout the year. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| The programme carefully matches the 10 graduates identified by CeADAR, through open competition, with the host companies. Each participant gets one-to-one mentorship from a dedicated data scientist within CeADAR. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Industry membership of CeADAR has grown significantly in recent years and now totals 90 industry partners ranging from multi-nationals to indigenous SMEs spanning every industry vertical.<br>CeADAR was awarded the Dunn & Bradstreet prize for *Best Analytics Research Group Ireland* at the DataSci Awards and in November 2018 it received the European i-Spaces GOLD award from the Big Data Value Association in Brussels. CeADAR is the designated EU AI Digital Innovation Hub in Ireland and is one of only 30 across the EU. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| CeADAR's technical staff are a mix of AI and data scientists from industry backgrounds and experienced in deploying applied solutions as well as researchers with strong academic credentials and knowledge of the state-of-the-art in their fields.<br>CeADAR's technical staff are further supported by software engineers who assist with prototype and solution implementation, following industry best practice in software development and dev ops. This ensures seamless collaboration with industry, and easy integration and adoption of prototypes and solutions. |

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# 6.9. CEIA3 – Campus of International Excellence in Agri-food, Andalusia

| Name Organization/Title/Programme - web link |
|---|
| Campus of International Excellence in Agrifood (ceiA3)<br>Website: http://www.ceia3.es |
| **Location of the activity/model and the types of partners involved** |
| Five Andalusian academic institutions (University of Córdoba, University of Almería, University of Cádiz, University of Huelva, and University of Jaén), in collaboration with the Institute for Agricultural and Fisheries Development of Andalusia (IFAPA), and the Spanish National Research Council (CSIC).<br><br>In addition, collaboration agreements are in place with a significant number of companies, as well as with social, industry and scientific organizations. |
| **Purpose and objective of the activity/model** |
| Established in 2009, the overall objective of ceiA3 is to promote collaboration among the agri-food-related research groups of five leading Andalusian academic institutions to increase the impact of their knowledge, capabilities and activities on society and the agri-food sector. |
| **Detail the funding model in operation** |
| The core activities of all five academic institutions, IFAPA and CSIC are publicly funded. Other sources of funding include various European, national, and regional programs as well as revenues from services provided to public agencies and private companies. The administration-related activities of the ceiA3 consortium are funded through a combination of all of these sources. |
| **Target audience and participants** |
| Due to its broad range of activities, ceiA3's target audience involves all the stakeholders of the agri-food sector quadruple helix, i.e., all levels of government, academic and research institutions, private companies and industry organizations, and society. |
| **Description of activities and/or services** |
| • **Scientific research**, **knowledge transfer** and **dissemination** activities carried out by more than 300 research groups working in areas of interest to the agri-food sector.<br>  ○ Seven research clusters: food and health; sustainable agriculture; economics, law, and agri-food business; animal biotechnology; plant biotechnology; bioenergy and agri-food technology; and food security. |

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    - Over 50 Horizon 2020 projects and 300 national and regional R&D projects conducted by more than 4,000 researchers since the establishment of ceiA3 in 2009.
    - Knowledge transfer and dissemination of research results through a scientific journal (C3-Bioeconomy), participation in, and organization of various types of events (workshops, seminars, conferences, European Researchers' Night, etc.).
- **Technical services** and customized solutions offered to companies to help them address challenges and opportunities.
    - An average of 400 contracts signed by research groups with companies and revenues close to 35 million euros in the past five years (2015-2019).
- A wide range of **specialized training courses**, **undergraduate programs**, and **postgraduate programs**.
    - An annual average of 25,000 students enrolled in about 80 degrees, 6,000 students in over 100 master programs, and 700 students in more than 20 doctoral programs.
    - Over 4,000 final master's degree projects and about 30 doctoral research projects in companies in the past five years (2015-2019).

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

One of the key aspects of ceiA3 that could be translated to BBEC is the creation of a legally constituted consortium that works as a catalyst for collaboration among academic institutions and with organizations from the quadruple helix. This entity provides support to the partner universities and R&D groups through three units: financial and administrative, international and tech transfer projects, and communications.

**What, in your view, are the key impacts/benefits of this model/service offering?**

While it is not exclusively focused on bioeconomy education, the students benefit from the critical mass built through the pooling of resources of the participating institutions, which leads to more:

- Opportunities to participate in industry-related projects as well as in activities carried out with public and not-for-profit organizations.
- Opportunities to participate in international projects.
- Exposure to and collaboration with researchers and students from other universities.
- Exposure to lecturers and speakers from industry and the public sector.
- Opportunities to find placements in industry during their studies and after graduation.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers, etc.)**

- VP Research and VP Academic of the University of Cordoba (lead academic institution) and ceiA3 consortium staff.
- Faculty members and staff of the five participating Andalusian universities.
- Researchers from IFAPA and CSIC.
- Technology and innovation-related professionals from client companies and collaborating companies.

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- Members of the industry community and public sector through their participation as guest lecturers and invited speakers in courses and events organized and/or sponsored by the consortium.
- Entrepreneurs, business executives, and technical experts in their role as hosts in site visits or as supervisors/co-supervisors of business placements, master's degree projects, and doctoral research projects.

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# 6.10. ECIU – European Consortium of Innovation Universities

| Name Organization/Title/Programme - web link |
|---|
| **Organization:** European Consortium of Innovative Universities<br>**Title**: ECIU University<br>**Link**: https://www.eciu.org/about-eciu#about-eciu-university |
| **Location of the activity/model and the types of partners involved** |
| The activity is implemented across Europe, and it directly involves 14 universities (Aalborg University, Dublin City University, Hamburg University of Technology, Institut National des Sciences Appliques, Kaunas University of Technology, Linkoping University, Lodz University of Technology, Tempere University, Technologico de Monterrey, Universitat Autònoma de Barcelona, University of Aveiro, University of Stavanger, University of Trento and University of Twente.<br>For the implementation of its activity, ECIU University also involves different typologies of stakeholders related to business, Public Administrations and NGO. |
| **Purpose and objective of the activity/model** |
| The goal of the ECIU University project is to establish a true European University where learners, researchers, business, public organizations, citizens, and associations are enabled to create relevant innovative solutions for real life challenges with real societal impact.<br>ECIU University is determined to change the way of delivering education from a model based exclusively on degrees, to one based in diverse opportunities of learning and acquiring skills and attitudes. It represents a unique example of a European University creating, testing, and evaluating not only a learning model, but also a whole innovation system, steering all the university activities, from education to research, from administration and support to innovation and valorisation.<br>The ECIU University is an ambitious undertaking, with distinctive features that makes it unique:<br>• Societal impact by solving societal challenges<br>• Flexible, diverse, and tailored education for students and for any person interested in learning<br>• Development of challenge-based education<br>• Development of challenge-based research and innovation<br>• Embedded mobility. |
| **Detail the funding model in operation** |

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The ECIU University started with EU contribution through Erasmus + programme, and since the second year is also working with the contributions of the partners, as well as the participation in other international funding programs which facilitate resources to run all the activities.

**Target audience and participants**

The Project aims to involve participants from different background and professional profile. In the field of higher education, it involves all types of students (undergraduate, master and PhD), teaching and research staff and administration staff. At the same time, all kind of professionals involved in companies, industries, Public Administrations, NGO, and others can participate in the project proposing challenges.
Students, teaching staff and researchers, together with other stakeholders will work together to find solutions or provide ideas to solve the challenge.

**Description of activities and/or services**

Since the founding of the ECIU University, CBL has been a major part of the institution, and the joint work of the members of ECIU University involved in the fields of teaching, research and university management was encouraged so that they could establish common patterns of challenge management. For the time being, challenges are offered in pilot sessions, in which students from all Universities members of ECIU University can participate in a challenge offered by any member university. In this way, the local approach is strongly connected with the international perspective.
Challenge-based Learning is a learning methodology based on a real experience: participants face a specific problem of the territory, and explore possible options for improvement, coming up with the proposal of a solution, which is eventually implemented and evaluated.
The person responsible for coordinating the challenge experience is a facilitator or teacher: an expert on the subject to be treated, who coordinates the group of participants and is the connecting point between the participant and the entity that provides the challenge.
Learners or participants may belong to the university, but they may also be external to the academic sphere: citizens interested in the subject and related the field of the challenge, lifelong learning students, workers from the institutions that provide the challenge, etc. The working groups are multidisciplinary, and each member contributes with their knowledge and experience in the analysis of the challenge and the formulation of the final proposal.
The institution that provides the challenge to be resolved can be a private company, a public institution, an NGO... any entity that has a strong connection to the territory.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

Associated with the challenges, there is the offer of the so-called micro-modules, small training experiences that help the participants to the challenges to supplement those aspects where they may have shortcomings. There are basically three types of micro-modules: the ones related to the Sustainable Development Goal 11, the ones about linguistic and intercultural skills, and the ones about soft-skills, transversal competences that increase their know-how about teamwork, leadership, working methodologies in CBL, etc.
The participation in any of the activities proposed by ECIU University will result in a micro-credential recognition.

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| The BBEC's centers can learn of the structure of micro-credentials and the recognitions process developed by ECIU University. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| The main impact/benefit is the design of a micro-credentials model. Micro-credentials are an opportunity to fundamentally change universities' role in transforming learning and being a promising means of aligning universities with wider societal perspectives and valued social goals. Micro-credentials redefine the types of awards and qualifications offered by universities. They can align universities' missions with wider societal, economic, and environmental goals. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| The personnel involved in the development of this project are institutional managers, academics, administration staff, project managers and staff members of the different organizations proposing the challenges. |

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# 6.11. EcoCEO – Entrepreneurship for a Circular Economy: Serious Game

| Name Organization/Title/Programme - web link |
|---|
| Consortium of the European project *Serious game Platform for education on Circular Economy in highschools* (SmartPlaCE@Schools): VITO (Belgium), CNR (Italy), Wuppertal Inst. of Tech. (Germany)<br>**"EcoCEO – it's your business! Learning circular economy by playing"**<br>https://ecoceo.eu |
| **Location of the activity/model and the types of partners involved** |
| EcoCEO has been tested in four EU Countries by several hundreds of students, in collaboration of the school staff and under the supervision of specialists from four research institutions that also supplied lectures on the basis of the circular economy and related subjects. |
| **Purpose and objective of the activity/model** |
| EcoCEO is an educational game addressed to teach, in an innovative way, principles of entrepreneurship and circular economy to pupils from 12 to 18 yrs. It is a table-top game, downloadable for free from Internet (https://ecoceo.vito.be/en/teaching-activities), that can involve 3 or 4 single players or teams of two people. During the game players play the role of the Chief of the Executive Office (CEO) of a hypothetical factory that makes its business in a linear-economy scenario but, because of the raw materials' shortage, it must move towards the circular-economy model. The game is designed to be played in one standard class time.<br>The objectives are to:<br>1) stimulate entrepreneurship;<br>2) introduce the idea of finance and return-of-the investments;<br>3) learn that every production step generate waste;<br>4) understand the difference between linear and circular economy;<br>5) practice some circular economy concepts such as production efficiency, substitution of the critical raw materials, recycling, retire from the market sell for scrap, change goods with services, and design-for-repair.<br>Many additional documents are downloadable from the same website to support school teachers to integrate EcoCEO in the standard official curricula linking it to STEM subjects, citizenship and economics. |
| **Detail the funding model in operation** |

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| The development of EcoCEO has be funded by the European Institute of Technology (EIT), Knowledge Innovation Community (KIC) Raw Materials for server years and its educational model is part of the flagship project Raw MatTERS Ambassadors at Schools 4.0 (http://rmschools.eu) for the wider society learning of the EIT KIC Raw Materials. The table-top game could become a commercial product in the near future, but it is not clear if it will be economically supporting the related educational/supervision activity. |
| **Target audience and participants** |
| The target audience are students from 14 to 19 and their teachers. Some specific sectors of the general population, particularly oriented to the ecological transition, could be find useful and fun to play EcoCEO. |
| **Description of activities and/or services** |
| EcoCEO aims to introduce entrepreneurship and circular economy to the students. In general, the activities are modular to be agreed with the school staff. Further educational material related to the game is available to set up frontal lessons about the deepening of the subject and to stimulate the debate among the students. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| Gamification can be an educational methodology useful to catch the target's attention and to transfer efficiently some key concepts and increase the awareness.<br>Although the role-playing game EcoCEO is set among hypothetical factories of microchip, smartphones and e-bikes, the educational model is easily transferable to the bio-economy sector.<br>The entrepreneurship and the finance-based model of the EU economy are transversal concepts over all the economy sectors. BIOBec's network could replicate the gamification model to introduce the specific concepts of the bioeconomy. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| The key benefits of the educational model based on gamification are the integration of the frontal lessons with a demanding activity that can be set during the recreation time without further burdening on the pupil's energy. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| The key persons are the teachers that have to coordinate the activity with the students. Experts from academy and research institutions can facilitate the transfer of the border knowledge. Finally, the gamification model aims that student become "the teachers of themselves", practicing some of the main circular economy concepts and learning them, so they can develop an eco-entrepreneurial sensitivity. |

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# 6.12. EIT Raw Materials – Awareness Campaign for Sorted Waste Collection

| Name Organization/Title/Programme - web link |
|---|
| Consortium of the project E-Mining@School (E-M@S): National Research Council of Italy (CNR), HIT, FBK, University of Trento, Relight–company (Italy), University of Limerick (Ireland), Circularize - company (Belgium), IVL (Sweden), CGCC, Eurocat (Spain).<br>**"Create an awareness campaign for sorted collection of specific waste"**<br>https://eitrawmaterials.eu/project/e-ms/<br>https://www.youtube.com/watch?v=uWxFw7RKiWk |
| **Location of the activity/model and the types of partners involved** |
| "*Create an awareness campaign for sorted collection of specific waste*" is an activity that has been carried out in five EU Countries in 2018-2019 by some high-school classes lead by specialists from universities and research institutions that also supplied lectures on communication, critical raw materials, waste from electric and electronic equipment (WEEE), and circular economy. The model changed from country to country in agreement with the local waste collection regulation and the school organization. The partners were schools and research institution but, in some cases, were involved also the municipality and a waste collection company.<br>The activity was then replied in 2021 by twenty students of the "Liceo Enrico Fermi" in Bologna (Italy) in the framework of the project Raw Matters Ambassadors at Schools 4.0 (RM@Schools4.0, http://rmschools.eu). In this case the model to "Create an awareness campaign for a sorted collection of specific waste" followed the principles of the project management (Who-do-what) dividing participants in groups that must take care the following work package:<br>1) coordination and reporting;<br>2) communication with the public;<br>3) pol on awareness about the public on the specific waste;<br>4) collection logistic and contacts with the waste service company.<br>The awareness campaign started in February and ended in the European Green Week, at the beginning of June when Italian schools stop lessons. The communication involved poster posting into the school, the publication of an article on the school web-news, and the participation of specialists to three student general assembly where also virtual tours of the factories where WEEE are recycled were organizes. A competition among the classes to collect the highest number of wastes was also organized. During the last week of collection, the students carried at schools the WEEE (group 4, non-hazardous) and the waste collection company certified more than 200 kg of collected waste. |

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By the calculator set by the project #WEEE4Future (https://weee4future.eu) The students were able to evaluate how much copper, aluminium and plastics will be recycled thanks to their separate collection, and how much $CO_2$ will not be emitted in the atmosphere, becoming aware to have performed a concrete action against the climate change, in agreement with they claim in the movement "Friday for future".
The press office of the waste collection company, together with the participants of the activity, released press communicate that were published by two local newspapers, several websites and many images were reported on two local TV-news.

**Purpose and objective of the activity/model**

"*Create an awareness campaign for sorted collection of specific waste*" aims to organize a group of students to become the promoters of the awareness on the importance of waste recycling among their schoolmates, relatives, friends and neighbours in general. The long-term activity (three month or more) allows to communicate the complex aspects of the material cycle in a specific value chain. The students should discuss together the best communication strategy to their public and practical aspects for a safe and profitable waste collection.
The objectives are:
1) introduce project managements and communication skills;
2) make the students multiplier of knowledge;
3) collect positive energies of youngsters to concrete action toward ecological transition;
4) sensitize a wide part of the society to sustainability issues;
5) promote concrete actions toward circular economy.

**Detail the funding model in operation**

The development of "Create an awareness campaign for sorted collection of specific waste" has be funded by the European Institute of Technology (EIT), Knowledge Innovation Community (KIC) Raw Materials on 2018-2019 and its educational model is actually part of the European flagship project RM@Schools4.0 for the wider society learning of the EIT KIC Raw Materials. However, municipality, waste collection companies, and ecological no-profit organization could support this activity.

**Target audience and participants**

The target population to involve in creating the campaign are students from 15 to 19 years old, their teacher and school staff in general. The audience target however, is the widest population that can be connected in any way to those students.

**Description of activities and/or services**

The activities to "Create an awareness campaign for sorted collection of a specific waste" are:
1) the formation of some action-group;
2) the contact with the waste collection company;
3) the involvement of the director of the school for the permission;
4) the communication to the schoolmate, relatives, neighbours to have a relevant amount of waste collected;
5) the logistic when collect the waste, how long do it, and where store the waste;
6) register all the action and record the amount of waste collected in order to make tangible the impact of the action;
7) produce the press realise to consolidate the impact of the action in the public opinion and among the local decision-maker.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

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The innovation is to make the students the main actors of the campaign. They have to maintain the dialogue with the waste collection company, to decide the agenda of the communication events, to organize the logistics of the collection, to register everything and to prepare the press release for the media. The final satisfaction is the real amount of the secondary raw materials recovered and the amount of the greenhouse gasses saved that gives meaning to the claim of the "Friday for future" movement.
Although the collection was devoted to WEEE, it can easily be transferable to other waste or by-products typical of bioeconomy, i. e. clothes. If exported to food, the logistic aspects appear much heavier (i.e., hygiene, refrigeration, fast distribution).

**What, in your view, are the key impacts/benefits of this model/service offering?**

The key benefits of this educational model deals with
1) enabling students to manage complex and long-term activities;
2) exploit their social network to convey constructive information;
3) focus their positive energies to concrete actions of environmental protection;
4) connect the standard school curricula to the transition to the sustainable development;
5) involve students as knowledge multipliers to contaminate a wider part of the society.
Finally, the awareness campaign creates the synergies among three different projects of wider society learning: E-M@S, RM@Schools4.0 and #WEEE4Future. This kind of synergies are desirable to boost the impacts of different projects.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

The key persons are the students (in this case from high schools) with their social network and their ability to communicate peer-to-peer with the schoolmate and to catch the attention of the relatives and neighbors but also that of the mass-media. The school staff are key persons to supervise students, and the connection with the waste collection company is mandatory for the final recovery and recycling of the waste. For other typology of waste (i.e., clothes) the waste collection company could be replaced with no-profit organization devoted to the refurbishment and redistribution of used clothes.
Finally, a group of specialists (researchers/academics and/or experts from companies) is needed to suggest the activity and supply the additional contents outside the standard School curricula.

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# 6.13. Green Transformation Programme – Sustainable Innovations (SIE)

| Name Organization/Title/Programme - web link |
|---|
| Green Transformation Programme is the brand, owned by Sustainable Innovations (SIE) through which different capacity building programmes are developed, being the following ones the more relevant:<br>• The Green Leaders of Tomorrow<br>• The Incubator for Leaders in Sustainability<br><br>Website: https://gtprogramme.eu/ |
| **Location of the activity/model and the types of partners involved** |
| • The Green Leaders of Tomorrow is a six-week intense rotating programme that combines three weeks of online training and three weeks of presidential activities in Madrid, Paris, and Amsterdam. Different partners are involved as research institutions, companies, NGOs.<br>• The Incubator for Leaders in Sustainability is an intensive online programme that helps University students and young professionals to improve their career preparation and get a certificate in up to three different courses: Sustainability, Micro-MBA and Innovation. This programme also guarantees an online internship placement in a European company while the participants receive professional coaching focused on the most demanded skills in this work field. Thus, an essential part of this programme is to create relevant bridges between education and the industry and companies, involving all relevant stakeholders. |
| **Purpose and objective of the activity/model** |
| Boosting skills in fields such as innovation, sustainability, environmental processes and green technologies as well as connecting students and young professionals with the labor market and bridging the gap between the company's and industry's needs and the educational programmes. |
| **Detail the funding model in operation** |
| This programme is fully private, although there is the possibility to establish framework agreements with scholarships for certain educational institutions. |
| **Target audience and participants** |
| University students and young professionals. |
| **Description of activities and/or services** |

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- Green Leaders of Tomorrow

The Green Leaders of Tomorrow encompasses different courses and curricula revolving around circular economy and sustainability. Participants work directly with existing EU projects, learn the current best-practices, technologies, and methodologies. Most importantly, they all acquire an international professional experience by working closely with many different types of stakeholders. Some of the topics on the syllabus revolved around waste management, water management, energy, Life Cycle Assessment (LCA) and social environmental assessment. This programme is in English language, and it offers more than 240 hours working on real-life case studies of environmental processes, sustainable products, and green technologies.

Applications are open for students and young professionals that would like to join the programme in July 2022 https://docs.google.com/forms/d/e/1FAIpQLSdFNTUJnmwcdHQi-kCsstCNFv7tKW75vrfijEy2g0XhFUqrsw/viewform

- Incubator for Leaders in Sustainability

Designed from hundreds of existing Horizon 2020 programme proposals, the certifications are built upon a technical, environmental, and business practical method. Three certifications are offered as part of the vocational training modules: Sustainability, Micro-MBA and Innovation. Each certification lasts for two months with a minimum dedication of 3 hours per week including pre-recorded videos, related materials, blog participation and a quiz per module. Each certification requires teamwork towards a final project. The programme is in English language.

Applications are open for students and young professionals that would like to join the programme in February 2022 https://docs.google.com/forms/d/e/1FAIpQLSdFNTUJnmwcdHQi-kCsstCNFv7tKW75vrfijEy2g0XhFUqrsw/viewform

Entities interested in partnering can send an email to gtp@sustainableinnovations.eu

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

The rotational aspect of the Green Leaders of Tomorrow, as well of the engagement of industrial stakeholders in both programmes. In addition, both programmes apply a learn by doing methodology, through which the students have the chance to work in real-life projects, providing them with working experience.

**What, in your view, are the key impacts/benefits of this model/service offering?**

Students get the chance to work in an international environment, on real-life case studies and with real industrial stakeholders.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

Innovation managers, project managers, university professors and other professionals.

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# 6.14. IAHR Young Professionals Congress – International Association

| Name Organization/Title/Programme - web link |
|---|
| International Association for Hydroenvironment engineering and Research (IAHR)<br>IAHR Young Professionals Congress<br>https://www.iahr.org/index/detail/348 |
| **Location of the activity/model and the types of partners involved** |
| Online free congress<br>Members of IAHR association and Young Professionals Networks |
| **Purpose and objective of the activity/model** |
| The IAHR Young Professionals Congresses give young professionals, researchers, and students the opportunity to present their work and access mentoring from leading global experts. |
| **Detail the funding model in operation** |
| Free congress (no registration costs)<br>Funded via IAHR budget (member fees, other sources including donations) and sponsors |
| **Target audience and participants** |
| Target audience: young professionals, researchers, and students in the field of Hydroenvironment<br>Participants: both young professionals, researchers and students, and experts in the field, either members of IAHR or not (congress open to all) |
| **Description of activities and/or services** |
| Congress with 3 days of oral sessions from young professionals, researchers and students, each session being followed by a mentoring session, during which the presenters receive advice from experts in the field (the session chairs)<br>Oral sessions in the form of 5 min poster presentation (selected by the scientific committee via extended abstract submission) |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |

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| Development of similar congress for young professionals, researchers and students in the Biobased sector, with a mentoring component, i.e., connect with experts in the field and receive advice from them |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Connection between young professionals, researchers, students and (senior) experts in the field. Set-up (free online congress) that offers the opportunity of broad participation worldwide |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Academics (congress scientific organization) and managers of the IAHR association (congress technical organization) |

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# 6.15. IATI Institute – Freeway of Technology & Innovation Consortium

| Name Organization/Title/Programme - web link |
|---|
| IATI Institute - the Freeway of Technology and Innovation http://iati.pl/en/o-nas/ |
| **Location of the activity/model and the types of partners involved** |
| IATI is a virtual institute designed to integrate scientific research and three types of actors: universities, independent research institutes and enterprises. Creates a multi-partner cooperation network operating as part of a consortium. Currently, the group of IATI partners consists of 51 institutions, including: 24 universities, 8 research institutes and 19 companies. |
| **Purpose and objective of the activity/model** |
| The challenges that Poland had to meet within the financial perspective 2014-2020 and after this period, required responsibility and creativity. Establishing a relevant consortium IATI is the way in which Polish scientists and economic leaders reply to the need of close and effective cooperation. The consortium will serve as the platform of cooperation between business enterprises and research and development centres and will act as a catalyst for joint scientific and implementation initiatives. |
| **Detail the funding model in operation** |
| Public and private |
| **Target audience and participants** |
| Universities, research institutes and enterprises |
| **Description of activities and/or services** |
| Within IATI there are many Competence Centres.<br>The Competence Center is the main center of ongoing cooperation to which the resources (research infrastructure) and research teams of the Partners have been assigned. Thanks to this, an entrepreneur or institution looking for a specific technical or technological solution will receive structured information on the possibility of implementing a given problem in a specific Competence Center. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| A virtual institute created to integrate scientific and research work by: universities, independent research institutes and enterprises. A multi-partner cooperation network operating as part of a consortium. |

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| IATI have created over 70 virtual Competence Centers. Each of CC are an incubator of innovation, because they are where the partners cooperate on the acquisition of innovative technical and technological solutions. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Benefits of the model:<br>• development of own competences and the competences of its staff, acquiring new skills and know-how in the R&D area<br>establishing contacts and access to a wide range of institutions and companies with key competences in strategic research areas<br>• new opportunities for research projects and opportunities to use funds for applied research<br>• measurable results of cooperation with leading research and development centers in Poland and abroad based on reasonable, fair and partnership principles |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Academics, project managers, innovation managers |

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# 6.16. Industry Skills Centers – Vocation Training Construction Sector

| Name Organization/Title/Programme - web link |
|---|
| Industry Skill Centers<br>https://www.szkoleniadekarzy.pl/ |
| **Location of the activity/model and the types of partners involved** |
| **Purpose and objective of the activity/model** |
| Support for the preparation of human resources for the needs of modern economy in individual industries through:<br>- providing space for lasting cooperation between business and vocational education at all levels of vocational education<br>- implementation of the concept of professional excellence in the Polish vocational education system<br>Idea:<br>- construction / expansion / reconstruction or adaptation and equipment of 120 modern industry education, training, and examination centers, as a rule, at schools providing vocational education or vocational training centers<br>- integration of education and training activities for the purposes of developing the skills of pupils, students, company employees and other learners |
| **Detail the funding model in operation** |
| Funded by the National Reconstruction Program |
| **Target audience and participants** |
| - Employees, learners<br>- teachers<br>- pupils<br>- students<br>- business representatives<br>- academy society<br>- career counselors<br>- people with disabilities |
| **Description of activities and/or services** |

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- providing educational and training facilities to schools, universities, and employers for educational and training purposes,
- mediation in establishing cooperation between business and education,
- disseminating innovative solutions used in a given industry and supporting innovation in vocational education,
- analysis of the demand for professions and skills in a given industry,
- conducting practical training for young people (pupils and students), including people with disabilities,
- raising qualifications and retraining adults, including training for industry employees (also in the remote formula),
- industry training for vocational education teachers, university lecturers and training for practical vocational training instructors conducting classes with students at employers,
- examination, including validation of skills acquired informally and informally, and examinations for industry qualifications,
- preparing people with disabilities to enter the labor market in a given industry,
- support for career counseling and promotion of education in the professions of a given industry.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

- The project is part of the concept of the European initiative of Centers of Vocational Excellence and good practices in this area match to the BBECs specific

**What, in your view, are the key impacts/benefits of this model/service offering?**

- The regional aspect: 120 regional centers tailored to the specificity of local labor markets are planned
- complex services: education, counseling, certification etc.
- Short training cycles
- created with the needs of a modern, innovative economy in mind
- A wide audience

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

Projects in partnership with

- industry employers' organizations and schools
- institutions providing vocational education
- local government units, in cooperation with universities and research and development centers

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# 6.17. INTRINSIC: Innovative Ed for Sustainable Entrepreneurship in Life Sciences

| Name Organization/Title/Programme - web link |
|---|
| Erasmus+ Strategic Partnership<br>INTRINSIC - INnovative educaTion foR sustaInable eNtrepreneurShip In Life sCiences<br>https://intrinsic.eu/ |
| **Location of the activity/model and the types of partners involved** |
| Erasmus+ project coordinated by University of Natural Resources and Life Sciences Vienna, partners were higher education institutions, and ICA - the network of European Life Science Universities<br>Partners were Agricultural University Athens, AUA; Universitatea de Stiinte Agricole si Medicina Veterinara a Banatului "Regele Mihai I al Romaniei" din Timisoara, BUAS; University of Ghent, UGent; University of Helsinki, UH; The Association for European Life Science Universities, ICA; University of Teramo, UNITE; Wageningen University, WU; University of Zagreb, UNIZG |
| **Purpose and objective of the activity/model** |
| INTRINSIC aimed to empower Life Science University teachers to develop their students' Sustainable Entrepreneurship Competencies so as to prepare their graduates to be effective entrepreneurs and leaders to address the SDGs |
| **Detail the funding model in operation** |
| Erasmus+ Strategic Innovation, funded by the EU |
| **Target audience and participants** |
| Higher Education Teachers in Life Sciences |
| **Description of activities and/or services** |
| INTRINSIC aimed to deliver five innovative intellectual outputs (O1 to O5) see also RESOURCES:<br>O1: An open modular interactive ePlatform to develop teaching and assessment activities for Sustainable Entrepreneurship in Life Sciences, to collaborate and develop a professional learning network and teaching portfolio, supported also by a mobile App.<br>O2: A mobile APP to monitor entrepreneurial-related activities of students<br>O3: A design tool for teaching Sustainable Entrepreneurship in Life Sciences<br>O4: A train-the-trainer staff development module |

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| O5: An online case study collection and good practice examples as support and guidance for teachers using the INTRINSIC ePlatform. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| The teaching design tool and staff development module, and the entrepreneurial mind set monitor as an innovative way to assess student development. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| INTRINSIC introduces the concept of sustainable entrepreneurship education to higher education teachers, which enables them to introduce teaching modules to foster the related competences in their students. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Academics, project managers, e-learning & didactical innovators |

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# 6.18. Junior Achievements (JA) Bulgaria – Entrepreneurial skills development

| Name Organization/ Title/ Programme - web link |
|---|
| Junior Achievements Bulgaria<br>https://www.jabulgaria.org/ |
| **Location of the activity/model and the types of partners involved** |
| Junior Achievements Bulgaria (JAB) has a strong reputation for delivering innovative and modern education from a very young age to university level. The portfolio of their educational products and services includes programs in 3 thematic areas related to the bioeconomy domain: entrepreneurship, financial literacy, and job skills. JA's educational philosophy is based on blended learning using digitized learning, interactive content, and high technology. The organization's business model is characterized by close cooperation with business and practitioners involved in the creation and delivery of educational content, training, and services, and in the development of entrepreneurship education policies. As a member of JA Worldwide and JA Europe, Junior Achievements Bulgaria annually reaches 40,000 students from 450 settlements in the country. |
| **Purpose and objective of the activity/model** |
| Students who have participated in JA programs show a deeper understanding of concepts and basic principles of circular economy and sustainable business, as well as practical skills for using them in life. They are much easier to enter the labor market, create more start-up successful companies and receive higher remuneration than their peers who have not received such training.<br>The success of JA Bulgaria's educational model is due to the combination of quality learning content based on a hands-on learning approach, trained, and motivated teachers, and the involvement of local community volunteers - business and public sector representatives who help young people as their mentors or presenting the classroom content, breaking it through the prism of their practical experience. |
| **Detail the funding model in operation** |
| 93% of the reported 2020 budget of the organization are based on fees paid by the industry. The industry is interested to sponsor JAB to have access to a continuous flow of new workforce whose training has been arranged not fully by the sponsor company but also by other industry players, universities and the JAB experts.<br>7% of JAB's budget derives from funding from donor organisations, mostly the EU and Foundation America for Bulgaria (successor of the US Agency for International Development in Bulgaria). |

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| Target audience and participants |
| --- |
| - High and vocational school students aged 15-19, primarily studying subjects and professions related to the bioeconomy field<br>- University students at the bachelor's and master's level in disciplines related to the bioeconomy field |
| **Description of activities and/or services** |
| Targeted educational programmes and initiatives, training, joint projects in the bioeconomy field. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| One of the latest initiatives of JAB and the Edge: R&BD – is an intensive pre-accelerator program aimed at young people between the ages of 18 and 29 - young professionals or students - bachelors, masters and PhD students who want to work on creating and developing technology lean startups in the following areas:<br>• raw materials and circular economy (Raw materials and Circular Economy);<br>• smart cities (Smart Cities);<br>• Medicine and Health (Medicine and Healthcare).<br><br>An important part of our training model is the close collaboration with volunteers from the business sector, to provide practical advice and guidance for the development of student startups. The project "Agroentrepreneur" (AgriPreneur) joined two universities focusing on agricultural economics, agribusiness, business management and alternative tourism - University of Forestry in Sofia and Agricultural University in Plovdiv. The aim is to develop the entrepreneurial culture and skills of students through the implementation of the JA Bulgaria Agrarian Student Startup Program.<br>The Student Learning Company Program is a hands-on entrepreneurship course based on one of JA's oldest and most established programs, the Learning Company. The purpose of the program is to encourage students to be more entrepreneurial through the creation and management of their own learning company. Within a semester, they form a team, develop their business idea, develop a product / service prototype, and present a business and financial statement of the project. Their work is supported by their tutor and / or volunteer business consultants.<br>In the course of the work participants gained competences and skills such as: leadership skills, communication skills, decision-making skills, negotiation skills, organization, time management.<br>A special jury also awarded a prize in the category "Agribusiness Entrepreneurs of the Future", a distinction for the joint efforts to introduce entrepreneurial training in more universities in Bulgaria. Students from the Agrarian University established a startup company that will offer a new service to farmers – drones to identify problem areas with diseased crops. With their business idea, the young people won the Agri-Entrepreneurs of the Future Award. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| Multi-level approach, different stakeholders' focus, tailor-made training, practice oriented. Upon completion of the programme, the young people have an invitation to join one of the industrial sponsors of JAB that has paid for the training of all cohort participants in bioeconomy. On its side, this multi-level training makes sure that the students are not trained only for the needs of one specific company but are prepared with regards to a wide range of market needs in the bioeconomy segment and could have a wide choice of career opportunities besides the sponsors of the JAB training. |

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| Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.) |
| --- |
| Trainers, academia, business. The research/training staff have a background of previous work in the industry, and the industry representative have profiles of providing in-house training or R&D activities in the company. |

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# 6.19. MOOC Circular and Biobased Production

| **Name Organization/Title/Programme - web link** |
|---|
| Wageningen University and Research<br>MOOC Circular and Biobased Production<br>https://www.wur.nl/en/Education-Programmes/online-education/MOOCs/Circular-and-Biobased-Production.htm |
| **Location of the activity/model and the types of partners involved** |
| Massive Open Online Course |
| **Purpose and objective of the activity/model** |
| MOOC on the transition towards a circular economy, taking into consideration economic, supply chain, social, technical, managerial and environmental aspects.<br>Three MOOCs.<br>- Micro Masters Chemistry and Technology for Sustainability<br>- Micro Masters Economics and Policies for a Circular Bio-Economy<br>- Micro Masters Business and Operations for a Circular Bio-Economy |
| **Detail the funding model in operation** |
| MOOC is free. Students have to pay for a certificate after the completion of the MOOC. |
| **Target audience and participants** |
| Students and professionals with an interest in the circular biobased economy. A MOOC is a Massive Open Online Course. It's a course, open to anyone and easily accessible from all over the world. Participants can obtain a certificate from Wageningen University & Research and edX® after completion, for a small fee. |
| **Description of activities and/or services** |
| Following instruction online including at own pace. They can follow the different modules. Moderated group activities. Individual feedback. Cap Stone to work on own cases for deepening knowledge. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| Available for students and professionals from all parts of the world. Prepares interested students for campus MSc in Biobased Sciences at Wageningen University. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |

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| |
|---|
| Participants can assess the different modules from all over the world. The MOOC is free of charge. Participants work in groups and provide feedback on the contributions by others. Only those interested in a certificate have to pay a small fee. Participants can work on a case study in the Cap Stone module where they receive individual support. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Main people involved are academics and support staff handling questions and comments. |

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# 6.20. RAW MatTERS Ambassadors at School – 30 EU Research & Universities

| Name Organization/Title/Programme - web link |
|---|
| The Raw MatTERS Ambassadors at Schools (RM@Schools)* is an innovative programme, promoting a wide dissemination action on sustainable innovation, the efficient use of all natural resources, and circular economy strategies, in school and society. It is supported by strategic European partnerships among 30 research and university partners from 18 EU countries, >120 schools, and 30 companies (http://rmschools.isof.cnr.it/).<br>Thus, tthe consortium works to develop cooperation between the three sides of the knowledge triangle: **research, education, and business** to introduce students from high schools to issues around the value of raw materials while promoting new professional careers in this sector.<br>The consortium of the European project is leaded by National Research Council of Italy (CNR)<br>"***Raw Matters Ambassadors at Schools – RM@Schools***" flagship program in the WSL sector of EIT RawMaterials<br>**http://rmschools.eu**<br>* In the project name "Raw MatTERS", our message resonates: Tackling European Resources Sustainably (TERS). |
| **Location of the activity/model and the types of partners involved** |
| The RM@Schools methodology has been tested in more than 14 EU Countries by several hundreds of students, in collaboration of the school staff and under the supervision of experts from the consortium (RM Ambassadors) that also supply lectures/activities on circular economy and related topics<br>A network of research institutes, Universities and companies work together to create attractive activities for secondary schools. |
| **Purpose and objective of the activity/model** |
| RM@schools programme aims to introduce students among 12 to 19 yrs. (more in general schools), to the subjects of circular economy, sustainable development and the sustainable use of raw materials (with a focus on critical raw materials) and to increase student awareness of these current societal challenges that European agencies are seeking to address<br>An active learning is proposed to schools by RM Ambassadors (experts in some RM-related issues and trained teachers) by involving students in experiments with RM-related hands-on educational kits, in excursions in industries, and in science dissemination activities |

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The programme comes from the awareness that the transition to the renewable energies and to circular economy strategies, do not involve only scientific and technical aspects, but it also needs a major engagement of the European citizens about the urgency to change lifestyle in agreement with the Sustainable Development Goals of the United Nation Organization (UNO). Youngsters, the target of RM@Schools, are then the key players of this mind-set change.

**Detail the funding model in operation**

RM@Schools is funded by EIT RawMaterials, a Knowledge and Innovation Community (KIC) on Raw Materials of the European Institute of Innovation and Technology (EIT).
Since 2018 it is the flagship program for the wider society learning of the EIT RawMaterials

**Target audience and participants**

1) Students from 12-19 years
2) Teachers from high schools
3) Society

**Description of activities and/or services**

RM@Schools has developed specific **educational paths** (called 'the learning pathways') for schools **on the innovation themes** listed on the European Institute of Innovation and Technology (EIT) RawMaterials (Exploration & Mining, Recycling, Substitution, and Circular Economy) which are intended to lead the students through a range of teaching methods and ends with the creation of a student-created piece of work that lets the students interact with the wider community
A core element of the RM@Schools approach is to engage students actively and empower them to communicate with peers and wider society about critical concepts related to raw materials and their use. With the end goal of creating a communication tool targeting an external audience, students are actively involved in the learning process. Students benefit from such an approach more widely as the skills involved are increasingly viewed as important skills in the workplace. Thus, students become science communicators themselves and this can lead to them becoming Young RM@Schools Ambassadors
Another core element is to empower schoolteachers on these topics, thus a lot of educational materials (lab experiments, discussion activities, digital tools, educational games, etc.) were created and shared on an e-learning platform. In addition, also, many train-the-trainer workshops are organised.
Go to the Virtual Centre for the complete list of educational tools for schools: https://rmschools.isof.cnr.it/moodle/

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

**To shift from information to engagement of youngsters** □ to involve actively youngsters in the learning/training process, give them an active role in increasing the awareness of society on sustainable lifestyles, and create international common initiatives where youngsters can be involved
**To use a combination of educational approaches in the training courses**, such as frontal lessons, open discussion, learning by doing, peer-to-peer education, creating communication material and gamification.
**To create educational tools for Teachers from high schools**, so they can approach many topics related to bioeconomy within their official curriculum at school

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| |
|---|
| **To create a European network between the three sides of the knowledge triangle**: research, education, and business; and a team of collaborative teachers in each country |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| - to create a communication action that works at different levels: among peers, in families, in schools, at national and international level.<br>- to give value to all the disciplines by starting from circular economy challenges, thus strengthening connections between science, creativity, entrepreneurship, and responsible citizenship<br>- the strong engagement of youngsters in the action towards society and the possibility for them (and for RM Ambassadors) to use their creativity, knowledges, and skills in developing solutions and diffusing the knowledge contents |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| The key persons are teachers and experts from research centers/universities that must coordinate the activities with students. |

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# 6.21. Rediscovery Centre – Ireland

| Name Organization/Title/Programme - web link |
|---|
| Name: The Rediscovery Centre<br>Link: http://www.rediscoverycentre.ie/ |
| **Location of the activity/model and the types of partners involved** |
| Location: Dublin, Ireland.<br>Partners: A range of professions including scientists, artists, carpenters, teachers, entrepreneurs. |
| **Purpose and objective of the activity/model** |
| The Rediscovery Centre have several education and research initiatives which supports the development of circular economy and sustainability in Ireland. |
| **Detail the funding model in operation** |
| Funded by: Environmental Protection Agency (EPA), Department of Communications, Climate Action and Environment (DCCAE), Dublin City Council. |
| **Target audience and participants** |
| • Primary, Secondary and Tertiary education students.<br>• Workshops and skills development for unemployed people.<br>• Business support for SMEs engaged in sustainability projects |
| **Description of activities and/or services** |
| • The centre runs STEM and Sustainability project, which is a national programme for education and public engagement delivering a suite of education workshops, programmes and events on sustainability and STEM topics. The project aims to educate students, teachers, and members of the public on the science of sustainability, by examining and exploring how STEM can solve societal challenges and build a more sustainable future. http://www.rediscoverycentre.ie/education/stem-sustainability/<br>• The centre provides workshops/ social enterprises for people of all ages and education levels in topics such as Furniture, Fashion, Paint and Cycling. Each of these use waste as a resource and provide training and employment for local people while promoting sustainability.<br>• The centre runs a free mentoring and support program called The Circular Economy Academy. This academy provides business support services built on the Rediscovery Centre's vast knowledge of social enterprise development |

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and design thinking concepts. The service includes advice for start-up, circular business planning, development, funding, diversification, and training. http://www.rediscoverycentre.ie/research/circular-economy-academy/

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

- The primary and secondary school education at The Rediscovery Centre is focused around 90minute workshops. Each workshop covers a variety of environmental and STEM topics and link with the Sustainable Development Goals.
- The adult workshop/ social enterprises provide employment to the local area while also training people in the re-use and repair of materials. For example, 'Rediscover Fashion' is a social enterprise that creates training opportunities for the long term unemployed and all revenue generated from its activities are reinvested in the enterprise. This programme highlights that an estimated 93% of all textile waste in Ireland is sent to landfill and it aims to counteract this by teaching members of the public repair and reuse skills through interactive workshops, demonstrations, and talks.

**What, in your view, are the key impacts/benefits of this model/service offering?**

- The school education provides exciting workshops that are based on hands-on enquiry and experiential learning. Each workshop features a presentation, a range of interactive activities and ends with a feedback session to encourage the students to share what they have learned.
- Provides employment and education to people in disadvantaged area.
- Promotes the circular economy and sustainability practices to a range of people.
- Promotes the development and business support of sustainable SMEs.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

The centre brings together the skills and expertise of a range of professions including scientists, artists, carpenters, teachers, entrepreneurs.

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# 6.22. REEdI – Redesigning Engineering Education in Ireland: VR & AR Integration

## Name Organization/Title/Programme - web link

REEdI - Rethinking Engineering Education in Ireland
Website: https://reedi.ie/

## Location of the activity/model and the types of partners involved

**Location:** Ireland, Australia & United Kingdom
The project is coordinated across two higher education institutes in Ireland: MTU, and UL. Charles Stuart University in Australia and Harper Adams University in the UK bring an international dimension to the project.
**Industry Partners involved:**

**Research Centre Partners involved:** The involvement of key research partners enables innovations in research to be embedded in the REEdI Engineering Programme. This partnership enables student engineers to engage in work placements around Ireland and provides access to satellite hubs of leading high-tech facilities such as- VR/AR facilities and Smart Manufacturing lines. REEdI leverages the existing networks, facilities, and capital infrastructure of each of the collaborating research partners.
**CONFIRM** is focused on the application of digital innovation across the manufacturing value chain to foster growth and competitiveness in the Irish manufacturing industry and enable Irish based manufacturing companies to compete within the rapidly changing global landscape.
**LERO** brings together expert software teams from universities and institutes of technology across Ireland in a coordinated centre of research excellence with a strong industry focus. LERO's research spans a wide range of application domains from

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driverless cars to AI, cybersecurity, fintech, govtech, smart communities, AgTech and Healthtech.
**IMaR** Research Centre at MTU Kerry is part of the Technology Gateway Network, a nationwide resource for industry delivering solutions on near to market problems. These world-class research collaborators are central to REEdI success as a robust research base is required to inform future engineering practice.
**ACE** is a collaboration between Dairymaster, McHale Engineering, Abbey Machinery, Kerry County Council, and Munster Technological University, Kerry to develop cutting edge learning and development solutions for the AgriTech sector. ACE headquarters are based at MTU Kerry.

**Purpose and objective of the activity/model**

Ireland has a shortage of Engineering Graduates with the skills that the manufacturing sector requires. REEdI are addressing this by co-designing the REEdI Engineering Curricula with industry partners and embedding world class models of teaching and assessment throughout the curriculum. REEdI will transform the delivery of undergraduate engineering education in Ireland. Building on the success of world-leading cutting-edge models of engineering pedagogy, REEdI combines an innovative method of curricula design, content delivery utilising new immersive technologies and student access to a network of world class Science Foundation Ireland research centers to deliver a transformative programme of self-directed and self-scheduled learning for the next generation of engineers. This creates a wealth of advantages in undergraduate engineering education provision and simultaneously creates a valuable talent pipeline for the manufacturing sector.

**Detail the funding model in operation**

REEdI is government funded through the Higher Education Authorities (HEA) Human Capital Initiative (HCI) Pillar 3.

**Target audience and participants**

School Leavers, mature students, professionals changing career paths

**Description of activities and/or services**

REEdI is a ground-breaking approach to engineering education in Ireland. Student engineers that graduate with a REEdI Bachelor of Engineering (Honours) in Mechanical and Manufacturing Engineering will be perfectly placed to become Engineers of the future for Ireland's Manufacturing sector. Student engineers work on projects in teams during their first 2 years on campus. The student engineers then progress into work-based placement opportunities in years 3 & 4 where they work on projects in industry whilst getting paid to study engineering modules of their choice. The REEdI Adaptive eLearning platform is an online learning tree that holds all the engineering content the student engineer will study from year 1 to Year 4.
The REEdI Suite is a purpose-built virtual and physical collaboration space with endless possibilities. The REEdI Suite hosts a huge array of the very latest augmented, virtual, and mixed reality platforms, enabling you to think differently whilst learning and working in a unique technology-rich environment. This includes:

- 5x VR Sections, each equipped with high-end wireless VR headsets and touchscreen monitors
- A range of 360 cameras for content creation
- High-end VR kit, equipped with AR-enabled smartphones, tablet, and router for tour creations, exploration, and remote interaction
- Several Microsoft HoloLenses for a true augmented reality experience

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- A 70" interactive touchscreen panel for group collaborations and presentations
- A selection of AR-Core enabled Android tablets for mobile experiences
- LiDAR scanners, drones, haptic devices

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

- VR & AR also give students the opportunity to simulate potentially dangerous scenarios in a safe environment.
- VR &AR gives students access to simulations allowing them to master tasks, allowing them to repeat the task as many times as they want. That wouldn't be the case in the traditional practical laboratory format that is standard in engineering education.
- Student engineers can learn physical tasks through 'learning by doing'.
- Immersive simulations can be considerably cheaper than traditional training methods.
- VR training environments are accessible 24/7 and students can have an unlimited amount of time working with machines and tools.
- Immersive technologies allow students to learn in ways that would otherwise not be possible (e.g., work on equipment in challenging conditions etc)

**What, in your view, are the key impacts/benefits of this model/service offering?**

Immersive technologies can be used to amplify student learning and engagement in terms of their technical and their soft skills. For example, students can interact with 3D models using these technologies to prototype, collaborate and innovate with other students resulting in greater knowledge acquisition, a deeper understanding of engineering concepts, better grades, longer retention of knowledge and improved transversal skills for our graduating students.

**Benefits for industry partners include:**

Developing greater links to higher education institutes for research & development opportunities; access to targeted talent pool; injection of new ideas; opportunities for existing staff to mentor students; access to graduates with high level transversal skills.

**Benefits for students include:**

**Career Benefits;** Developing an awareness of workplace culture, Potential for commanding higher wages, Short-term financial benefits, Enhanced employment prospects.

**Skills Benefits:** Working in a setting which puts theory into practice, developing an awareness of workplace culture, opportunity to develop a range of personal attributes, development of key interactive attributes, building up a network of contacts.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)?**

Operations Core Project Team:

- REEdI Project Lead
- Director of REEdI
- Eight staff on the project management and lecturing team
- Operational Excellence Committee:
  Comprised of eight experts from the research, innovation, higher education and engineering national ecosystem

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# 6.23. Sectors Skills Council – Chemical/Raw Materials Recovery/High-quality Food & Water and Sewage Management and Reclamation Sectors

**Name Organization/Title/Programme - web link**

Sector Skills Council:

1) The Sector Skills Council for The Chemical Sector

   https://radasektorowa-chemia.pl/
2) The Sector Skills Council for the Raw Materials Recovery

   https://srk-odzysk.kig.pl/
3) The Sector Skills Council for the High-quality Food

   http://rada-zywnosc.pfpz.pl/
4) The Sector Skills Council for the Water and Sewage Management and Reclamation Sector

   https://rada-gws.ios.edu.pl/

**Location of the activity/model and the types of partners involved**

The Council is a forum for the exchange of experiences between formal, non-formal and informal education, research units and entrepreneurs operating in the sectors with the participation of social dialogue institutions (trade unions and employers' organizations), professional self-government and other stakeholders, acting for the development of the sectors by increasing knowledge about his qualification and professional needs.

The competence area of the bioeconomy industry meets the profile of 1) The Sector Skills Council for the Chemical Sector, 2) The Sector Skills Council for Raw Materials Recovery 3) The Sector Skills Council for the Water and Sewage Management and Reclamation Sector.

Past best practices show that the Sector Skills Council is responsible also for the Sectoral Qualifications Framework, including its future updates and particularly the application for its inclusion IQS. The Council constantly accompanies the work on the sectoral qualification framework, is an opinion-forming and consultative body. All

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representatives of the sector are involved in the work of the Council to respond to the needs of the representatives.

**Purpose and objective of the activity/model**

Tasks of sectoral competence councils

- acquiring knowledge from entrepreneurs about their qualification and professional needs in a given sector of the economy;
- disseminating information on qualification and professional needs in a given sector of the economy;
- initiating cooperation of entrepreneurs with universities and entities, in order to integrate education and employers;
- formulating recommendations for adjusting human resources to the current needs of entrepreneurs in each sector of the economy.
- developing the principles of functioning of educational agreements on the basis of known European solutions, as a form of involving employers in integrated educational activities;
- cooperation with international institutions
- cooperation with the competent minister

Other activities:

- sector qualifications monitoring
- recognize educational barriers and involvement of employers in the process of training staff
- Sectoral Qualifications Framework
- standardization and certification

Problems responded to by the council in Poland

- difficulties in finding job candidates who meet the needs of employers
- little investment in employee development
- unsatisfactory results of formal and non-formal education
- no offer in the field of non-formal education that would meet the needs of employers
- The lack of employee competencies has an impact on the competitiveness of entrepreneurs

**Detail the funding model in operation**

The activity of is partly supported by the Polish Agency for Enterprise Development Coordinator (co-financed by the European Social Fund under the Knowledge Education Development Operational Program 2014-2020 (implemented based on the Grant Agreement No. UDA-POWR.02.12.00-00-SR11 / 18)

**Target audience and participants**

- chambers and industry organisations
- representatives of higher education and vocational education and training
- regulatory institutions
- employers
- employees

**Description of activities and/or services**

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Sectoral Competence Councils exist in many EU countries. However, they differ in their activity profile and implemented projects. In Poland, **Sectoral Competency Frameworks** are an advisor and consultant for the so-called Sectoral Qualifications Framework. They are the guardians of the Framework, i.e., they can apply for the inclusion of the Framework in the Integrated Qualifications System and update and modify it in accordance with the direction of changes in each sector.
The mission of developing the framework was to prepare an accessible and simultaneously versatile tool, which would allow for the competences and qualifications functioning in the industry to be distinguished, named, and organised. SQF develops and details second stage Polish Qualifications Framework level descriptors typical for vocational qualifications, translating the content of the entries into the language of the industry. In practice, this means describing and systematising the knowledge, skills, and social competence by the different levels of advancement and complexity occurring in the sector. In applying the industry's language, which makes use of the entries in the PQF, employers can better and more adequately know which competences are missing in their workplace and what they should expect from their employees in terms of preparation. On the other hand, for employees, this can facilitate a better understanding of the needs of employers and help them assess their own competences in terms of career planning. The development of SQF enables qualifications to be compared and creates the conditions for the professional mobility of employees in the sector. It will also respond to the need to recognize the learning that occurs in the workplace or is obtained from training providers.
Other good practices of Council activities from other sectors
IT:

- developing recommendations for updating the Sectoral Qualification Framework
- monitoring of PQF and IQS changes
- support for non-formal education (lifelong learning, certification, the role of employers in improving employees' qualifications)

Financial services

- inclusion of the NDS and selected sectoral qualifications into the IQS
- initiating and supporting the development of new sector standards,
- including qualifications acting to increase the development prospects of young employees who will benefit from ordering, greater transparency, and comparability of qualifications, including in the international dimension

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

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In the first case, the innovation is creating a common language of learning outcomes for a wide audience of stakeholders. The methodology of creating the sectoral qualifications framework, which is based on the work of experts and consultations with the industry environment from the beginning to the end. It begins with an inventory of competences and qualifications functioning in the sector (individual and group interviews). The further way of organizing work is as follows:

1. Processes (What do they key processes look like for the defines areas of activity in the sector
2. Sub-processes tasks (What do the professional tasks and activities of the processes look like? Which tasks and activities are more important in implementing processes?)
3. Competences (Which skills, knowledge and social competences are needed to perform the tasks and activities? Which competences are key?)

The next step was to organize and group the most commonly occurring competences. The main purpose of distinguishing the competences that should be used in qualifications typical for the sector was to indicate the areas that should be considered when describing each qualification in the sector.

The contexts distinguished in the analysis of competences for the chemical industry:

| **CONTEXT** | **COPE OF COMPETENCES WITHIN THE CONTEXT** |
|---|---|
| environmental protection | Competences in such areas as the circular economy, the environmental impact<br><br>of the sector, handling production waste |
| technology | Competences in such areas as operating machines and using production |
| product requirements | Competence in such areas as product properties and safety, customer |

**SQF for Chemistry Industry**: sample descriptors for skills in the field of environmental protection

| **DETERMINANTS:** | **LEVEL 3** | **LEVEL 4** | **LEVEL 5** | **LEVEL 6** | **LEVEL 7** | **LEVEL 8** |
|---|---|---|---|---|---|---|
| ENVIRONMENTAL PROTECTION AND SAFETY<br><br>WASTE RECYCLING: | Classify waste by its recyclability | Assess the suitability of waste and by-products for recycling | Select waste and by-product treatment methods | Design production processes in accordance with the principles of a circular economy | Implement new waste and by-product processing technologies in the production plant | Develop innovative waste and by-product treatment methods |
| ENVIRONMENTAL PROTECTION AND SAFETY:<br><br>WASTE TREATMENT: | | Identify the hazardous substances in waste on the basis of laboratory tests | Determine waste and by-product treatment methods | Supervise the disposal of waste in accordance with standards and regulations | Implement new technologies and methods of waste disposal in the production plant | Develop innovative methods of waste and by-product disposal |

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| What, in your view, are the key impacts/benefits of this model/service offering? |
| --- |
| The Sectoral Qualifications Framework help to organise the competences in the sector. SQF form the basis of a common language for employers, individuals and companies involved in recruitment processes. A precise description of needs makes it possible to develop a training programme and determine its desired effects.HR professionals gain a tool allowing them to differentiate the competences operating more easily in the sector and to determine whether job applicants have them. This makes it a tool that can be used, for example, to identify competence gaps or to indicate competences essential for the implementation of innovative production methods.<br>Benefits:<br>• diverse and complementary types of stakeholders, representative of the sector<br>• Connecting the community of employers and representatives of science<br>• Holistic approach to the sector<br>• A group of experts who care about improving the quality within the sector<br>• Carrying out research for the benefit of the demand for skills and educational offer<br>• Involvement in the process of creating the Sectoral Qualifications Framework |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| • Vocational and higher education institutions, as well as non-formal education.<br>• Related stakeholders including managerial stuff for innovation and operations<br>• Policy makers and officers of public administration<br>• Sector's experts |

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# 6.24. SGGW – Warsaw University of Life Sciences Masters Programme

| Name Organization/Title/Programme - web link |
|---|
| Warsaw University of Life Sciences (SGGW) - https://www.sggw.edu.pl/en/ |
| **Location of the activity/model and the types of partners involved** |
| Warsaw, Poland |
| **Purpose and objective of the activity/model** |
| SGGW offers the possibility of studies in the field of "Commodity Science in Bioeconomy". These are studies of first degree (master's degree). |
| **Detail the funding model in operation** |
| "Commodity science in the bioeconomy" is financed from public funds. |
| **Target audience and participants** |
| Graduates of this field of study work as commodity experts and specialists in quality and brand development or product management. They are prepared to work in food industry and food industry enterprises, mainly in positions dealing with food marketing, sales and market analysis of food and bioeconomy products. Students graduating from this field of study are also in demand in departments dealing with logistics, export, finance and organization of deliveries, in consulting companies and providing services in the field of production and sales organization for food processing plants. |
| **Description of activities and/or services** |
| The study program includes basics of management, engineering graphics, basics of marketing, materials science and materials engineering. Students learn about the issues of commodity science in primary production and food processing, instrumental methods of product evaluation and quality management. They acquire knowledge and skills in the area of microeconomics, macroeconomics, marketing, management, forecasting and the functioning of the market economy. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| The innovation of this teaching model consists in linking issues related to the bioeconomy with food production. Agriculture is a very important sector in Poland and in the context of bioeconomy. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |

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|---|
| Educating students in this field of study gives the necessary knowledge in the field of bioeconomy and circular economy, which means that future staff working in the production and processing of food will have key knowledge influencing the implementation of the principles of sustainable development. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Academics |

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# 6.25. Teacher Training Centre Kielce – Workshop 'Everyday Bioeconomy'

| Name Organization/Title/Programme - web link |
|---|
| Workshop "Everyday bioeconomy - the use of the research method in the teaching process"<br>Teacher Training Center in Kielce. |
| **Location of the activity/model and the types of partners involved** |
| Non-formal education, a series of workshops, urban level |
| **Purpose and objective of the activity/model** |
| The aim of the training is to increase teachers 'competences in raising pupils' environmental awareness, including the bioeconomy, with particular emphasis on the sources of air pollution, ways of reducing their emissions and the impact on human health and the environment. |
| **Detail the funding model in operation** |
| # R043 RDI2ClUB "Activities supporting research, development and innovation in rural areas towards the creation of clusters and innovative ecosystems within the smart bioeconomy" co-financed by the Interreg Baltic Sea Region Program 2014-2020. The project is implemented by the Marshal's Office |
| **Target audience and participants** |
| - Primary school science teachers and all teachers interested in the subject<br>- Pupils |
| **Description of activities and/or services** |
| Workshop program<br>Part 1<br>Introducing the concept of bioeconomy on examples from everyday life.<br>Bioeconomy content in the core curriculum of science subjects.<br>Selected experiences and experiments in the lesson in the field of bioeconomy, with particular emphasis on the sources of air pollution, ways to reduce their emissions, impact on human health and the environment. Implementation of a mini project at a school in the field of bioeconomy.<br>Part 2<br>Selected experiences and experiments in the lesson in the field of bioeconomy.<br>Presentation of the implemented mini project at school in the field of bioeconomy. |

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| What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations? |
|---|
| An innovation is the model of education that builds the awareness of bio education from scratch. What can be incorporated in BBECs is an education model, methodology of teaching<br>During group interviews, many interviewees underlined that it is very important to build the culture of bioeconomy and the youngest should be interested in the environment. It was postulated to prepare teachers for this, to inspire pupils to encourage them to be active in the bioeconomy and to create thinking about this topic. The series of workshops for teachers is based on the fact that they can educate them in the field of bioeconomy in a practical way through experiments. The limitation of the initiative is its local scope. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| The advantage of the project is the dissemination of the idea of bioeconomy to the youngest and building a culture in this area. Thanks to the workshops, teachers will become more aware of the importance of bioeconomy and will pass this knowledge on to pupils in an interesting, practical way. In the future, this may encourage young people to choose a career related to bioeconomy. However, it should be systemic and related to cooperation with enterprises and the science sector. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| - Teachers<br>- Teacher trainers<br>- Other educational staff |

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# 6.26. Transition2BIO

| Name Organization/Title/Programme - web link |
|---|
| Project: Transition2BIO<br>Education program: ***Transition2BIO capacity building package in awareness, communication and stakeholder engagement for regional and national actors***<br>Web link: https://www.transition2bio.eu/ |
| **Location of the activity/model and the types of partners involved** |
| Location: Several Regions in Europe (online delivery)<br>The activity will be delivered in partnership with other EU funded projects, regional authorities, clusters and initiatives promoting the bioeconomy. |
| **Purpose and objective of the activity/model** |
| The Integrated package of the Transition2bio capacity building services was developed to respond to the need to increase the awareness, communication and stakeholder engagement capacities of the stakeholders in charge of promoting the bioeconomy in different regions. The Integrated package the project Transition2bio has designed, provides contents on Bioeconomy and its sectors, presenting an overview of inspirational good practices stemming from different European Funded projects, as well as methodological approaches to perform bioeconomy awareness raising, communication, education and stakeholder engagement activities. As part of the capacity building package, debate, mutual learning, good practices exchange and collaboration will be facilitated among national, regional and local policy actors, on challenges related to awareness raising, communication and education. |
| **Detail the funding model in operation** |

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| The main funding model is EU funding, namely the deployment of capacity building packages to regional actors, as part of the Transition2BIO activities. To increase the sustainability, the modules will be recorded, and made available beyond the project lifetime.<br>Additionally, to increase the impact beyond the Transition2Bio project's planned activities, partners are experimenting alternative deployment formats, in partnership with the target beneficiaries of the capacity building:<br>The Italian region Friuli Venezia Giulia will integrate the package in the regional catalogue of capacity building activities for regional employees, recognizing professional credits. The format is pre-recorded sessions.<br>Collaboration with other projects for "train the trainers" activities targeting the project partners that will benefit from these new capacities to implement their activities in the regions (e.g. create the innovation ecosystem for the bioeconomy strategy). An example of this activity will be done in collaboration with GoDanuBio and Be-Rural. |
| **Target audience and participants** |
| Member States and Regions willing to increase bioeconomy awareness, communication, education and stakeholder engagement.<br>Other EU funded projects willing to strengthen the awareness, communication and stakeholder engagement capacities of the partners. |
| **Description of activities and/or services** |

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The capacity building package will increase the capacity of Member States and Regions in bioeconomy awareness, communication, education and stakeholder engagement, through 5 modules:

| Module | Title | Duration | Format |
|---|---|---|---|
| **Module 1** | Specific Knowledge (Circular and sustainable bioeconomy) | 60 minutes (online recorded) | Experts talk |
| **Module 2** | Good Practices and Replicable formats | 30 minutes (online recorded) | Lecture |
| **Module 3** | Methodologies and models | 60 minutes (online recorded) | Lecture + (optional) interactive workshop (at least 30 min.) |
| **Module 4** | Transition2Bio Toolkits | 30 minutes (online recorded) | Lecture + provision of Toolkits |
| **Module 5** | Knowledge exchange and mutual learning | 90 minutes (live streaming) | Multistakeholder workshop |

Specifically, each module is organized as follows:

Module1: Specific knowledge (circular and sustainable bioeconomy)

Bioeconomy and application sectors (JRC-KCB/DG RTD)
Benefits of the bioeconomy, the circular economy and the bio-based sectors (BIC/EIT FOOD)
The role of the bioeconomy in the European policies (JRC-KCB/DG RTD)
How regional policy priorities can be leveraged to support the ecological transition? (DG Regio)
The role of awareness, communication and stakeholder engagement for the creation of the innovation ecosystem for the bioeconomy (Transition2Bio)

(Module in collaboration with: EU funded projects, JRC - Knowledge Center for Bioeconomy, Clusters, Universities)

Module2: Good practices and replicable formats

Presentation of inspirational good practices to:
Inspire
Assess
Inform and Educate
Engage
Co-create
Case studies

Module3: Methodologies and models

Methodologies to drive the systemic mindset change
Methodologies to facilitate multistakeholder debate and co-creation
Methodologies to facilitate the planning of communication and Stakeholder engagement activities

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Module4: Transition2BioToolkits

Tools for Awareness and Communication
Tools for Stakeholder engagement and co-creation

Module5: Knowledge exchange and mutual learning

Organization of 1 Knowledge exchange and mutual learning workshop with the participants to the Transition2Bio Capacity Building package to exchange experiences and consolidate the educational pathway.

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| What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations? |
|---|
| Lack of communication, awareness and stakeholder engagements capacities is a bottleneck for the wider diffusion of the bioeconomy in the different regions.<br>The Transition2Bio capacity building package differs from existing educational contexts as it provides a very practical set of contents, tools, formats, methodologies and experiences, stemming from the extensive experience of several EU funded projects in these topics, namely BIOWAYS, BIOVOICES, LIFT, Biobridges, Dandelion, Transition2Bio. The package promotes the exploitation of EU funded projects and makes their outcomes available as Actionable Knowledge for the stakeholders. |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| The Transition2BIO Capacity Building package has several benefits:<br>It's a very practical package to support the regional stakeholders with contents, methodologies, tools, replicable good practices and formats to strengthen their capacities in awareness raising, communication and stakeholder engagement.<br>It raises awareness on the EU funded projects in bioeconomy sector and therefore maximizes the exploitation of their outcomes<br>It facilitates the replication of effective, well experimented formats and tools for awareness raising, communication and stakeholder engagement.<br>It reaches the regions in a widespread way, thanks to the "train the trainers" format which allows to overcome the linguistic barriers. |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Policy Makers (Member States and Regions), regional authorities<br>EU Funded projects |

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# 6.27. UdG Innovative Sectorial Ecosystems of the Girona Province

| Name Organization/Title/Programme - web link |
|---|
| **Organization:** Universitat de Girona I Diputació de Barcelona<br>**Title**: Innovative sectorial ecosystems of Girona Province<br>**Link**: https://www.udg.edu/en/campusempresa/campus-sectorials |
| **Location of the activity/model and the types of partners involved** |
| The activity is in the Girona region of (Spain).<br>The main partner is Universitat de Girona, in collaboration with the Diputació de Barcelona (kind of regional administration).<br>Other partners from the industry are involved in the activity according to the different work lines implemented with are related to the main economic fields of the region (water, tourism, food, cultural communication, composites, health, cultural and natural heritage, social cohesion, robotics, and industrial innovation). |
| **Purpose and objective of the activity/model** |
| The activity aims are to become a relational platform with a market driven approach to facilitate the interaction and relationships between companies and institutions of the region, in close collaboration with the Universitat de Girona. In each economical field they develop a so-called "Campus", where experts are working in close collaboration to identify focus areas, create sectorial groups of interest, implement advisory and promotional activities, design training activities and collaborate in research. |
| **Detail the funding model in operation** |
| The activity started with funds obtained through EU FEDER program and the contribution of two public administrations (Diputació de Barcelona and Universitat de Girona). |
| **Target audience and participants** |
| The main target group of this activity are the companies of the Girona area interested in the possibilities of collaboration with other companies, and specially with Universitat de Girona and its research, innovation, and training structures. |
| **Description of activities and/or services** |

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According to its website:
The UdG's Sectoral Campus is a relational platform with a clear approach, market driven, which seeks to proactively facilitate the relationship between companies and institutions in the social-economic sector and the University of Girona, based on a priori mutual knowledge and the promotion and maintenance of a continued relationship through a personalised and unique dialogue with the University of Girona.
The campus acts in a proactive, bi-directional way:

- Detecting the needs and interests of the sector's companies and institutions and bringing them to the attention of the UdG's research groups for them to be met.
- Putting the research groups in touch with the companies and institutions that may potentially be interested in the research and services they offer.

The structure and operations model of the sectoral campus is based on:

- The thematic focusing of the campus geared towards a specific economic and/or social sector.
- An organisational and functional campus geared towards proactively facilitating the relationship between companies/institutions and the UdG's research groups based on:
    - A promotion of loyalty among the sector's companies and institutions.
    - The promotion and maintenance of a continued relationship with the companies/institutions.
    - The identification of a reference interlocutor at the UdG (Campus Facilitator) who interacts personally with the company or institution, guiding and advising it until its demand and needs are met.
- A functioning based on an approach market driven that consists in developing activities geared towards satisfying R+D+I needs and interests and sector-specific education (directed at professionals), based on asking the sector, ab initio, what their needs and interests are. The outcome of this process is:
    - The definition of a strategic agenda of relevant and useful research for the sector, agreed on between the companies/institutions and the UdG's research groups.
    - The definition of a catalogue of professional profiles in demand in the sector and the educational requirements for each of these professional profiles.
    - The development of a portfolio of benefits/services for companies and institutions, geared to satisfying these needs and interests.

**What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?**

The experience presented in this best practice is useful for BBECs since it gives ideas about how enterprises and university can collaborate to improve innovation processes as well as the training programs implemented through the universities.

**What, in your view, are the key impacts/benefits of this model/service offering?**

The main impact of this proposal is that it's a useful to facilitate synergies between university, administrations, and enterprises in order to improve innovation and training.

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| Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.) |
| --- |
| Academics, research staff, experts, enterprises, and Public Administration. |

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# 6.28. Universities of Cordoba & Almeria – Joint Masters Programme

| Name Organization/Title/Programme - web link |
|---|
| Joint master's program in Circular Bioeconomy and Sustainability<br>https://www.ual.es/estudios/masteres/presentacion/7121 |
| **Location of the activity/model and the types of partners involved** |
| University of Cordoba (Andalusia, Spain) and University of Almeria (Andalusia, Spain) |
| **Purpose and objective of the activity/model** |
| The overall objective of the program is the development of multidisciplinary competencies in technical and business topics related to the valorisation of biomass (and bio-waste) through its transformation into value-added products as well as their integration into the biorefinery model. |
| **Detail the funding model in operation** |
| The academic institutions that offer the program (University of Almeria and University of Cordoba) are publicly funded. |
| **Target audience and participants** |
| The initial target audience is formed by students holding an undergraduate/Bachelor's degree in Biotechnology, Biology, Chemistry, Biochemistry, Food Science and Technology, Pharmacy, Medicine, Veterinary Medicine, Environmental Sciences, Marine Sciences, Chemical Engineering, Agricultural Engineering, or Forest Engineering.<br>The program was launched in October 2021, with 15 students enrolled in the first cohort. |
| **Description of activities and/or services** |
| A one-year master's program, with a total of 60 ECTS credits. Of these, the students are required to earn 32 ECTS credits from a "Core Subjects" module and 8 ECTS credits in elective courses. Before they can graduate, the students are required to complete 20 ECTS credits through a business placement (6 ECTS credits) and the preparation of a master's degree final project (14 ECTS credits). |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |

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A common practice in some countries, the introduction of mandatory business placements in this new program highlights the commitment of the universities to the employability of the students, enriching their training in an environment that will provide them a deeper knowledge about the skills that they need to succeed in the bioeconomy sector. In addition, the internships will provide feedback to the universities and host companies about adjustments that might be necessary for future cohorts of students.

**What, in your view, are the key impacts/benefits of this model/service offering?**

The mandatory internship will give the students an opportunity to put in practice the knowledge acquired during their academic training, thus preparing them for the exercise of their professional activities after graduation and facilitating their incorporation into the job market.

**Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)**

- Faculty members of the University of Cordoba and the University of Almeria.
- Representatives of the public sector and members of the business community through their participation as guest lecturers and invited speakers.
- Entrepreneurs, business executives, and technical experts hosting site visits organized by the universities to Andalusian bioeconomy companies.
- Entrepreneurs, business executives, and technical experts in their role as supervisors of the business placements.

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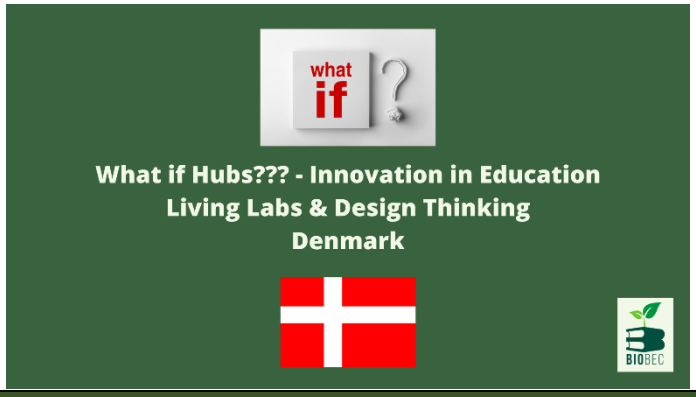
# 6.29. What if Hubs? - Theoretical living lab and design thinking workshops




## Name Organization/Title/Programme - web link

**What if…? Hubs**

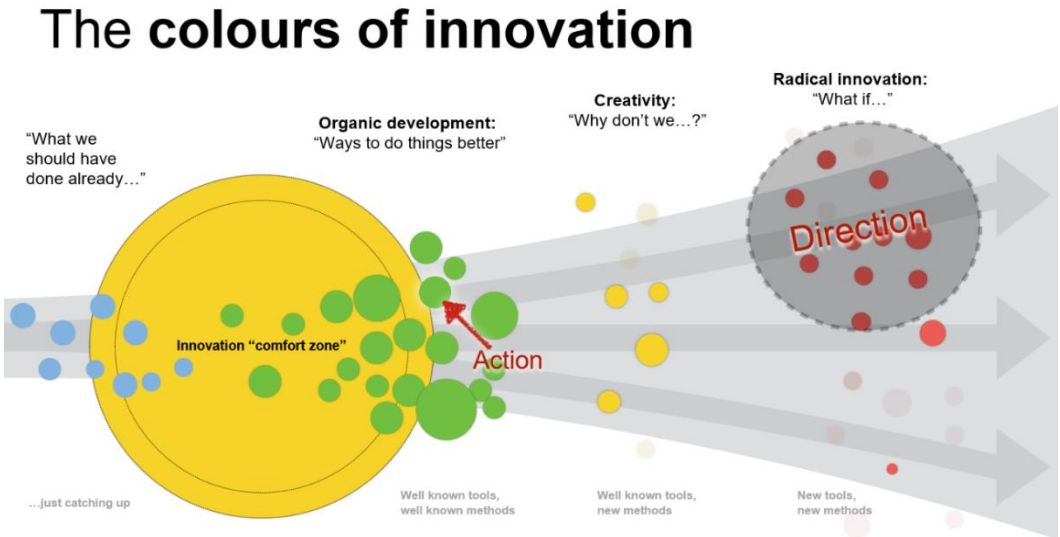
This 'case' is more like ideas for inspiration that we are considering using in Food and BioCluster for innovation and teaching of students/youngsters to innovate.
https://newtonroom.com/dk and https://www.innovationcolours.org/

## Location of the activity/model and the types of partners involved

Has not yet been implemented with our case - https://thelink.dk/ has the idea of the *What if…?* Innovation Hub.
Could be implemented physically in Agro Food Park https://www.agrofoodpark.com/frontpage/

## Purpose and objective of the activity/model

What if – model seeks to imagine that what we believe is to come (future trends) in the future could be here right now we should ask: *Why don't we…?* And *what if…?* thus stimulating radical innovation




## Detail the funding model in operation

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|---|
| The funding model is yet to be developed.<br>The financial need is estimated to be 300.000€, including teachers, facility rental, marketing etc. Clusters (such as FBCD) could be hosting and make the fundraising.<br>Sponsorships from large companies should be sourced. |
| **Target audience and participants** |
| Bioresource cluster members and others with interest – especially university students |
| **Description of activities and/or services** |
| The idea is that the innovation course should have a semester duration, to ask the questions, to experiment, to network, etc. Let university students and start-up companies together investigate the future and try to find the solutions we need tomorrow – out of the traditional innovation comfort zone. |
| **What innovations in this example (education model or mode of delivery) can be translated to the BBECs network to enhance learning opportunities and exceed stakeholder/learner expectations?** |
| We need BBEC with strong focus on innovation and various models on inspiring for innovation should be part of any BBEC |
| **What, in your view, are the key impacts/benefits of this model/service offering?** |
| From dream to real practical innovation – we should nudge and nurse the talents with an inspiring **What if…. Hub** |
| **Who are the key personnel involved (e.g., academics, project managers, innovation managers etc.)** |
| Enthusiastic innovation hub managers with close relations to academia and startup companies |

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