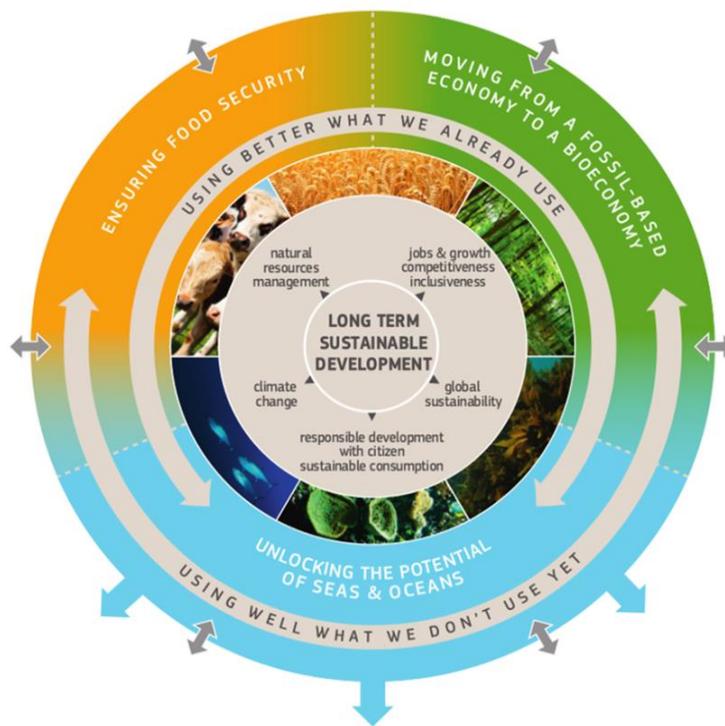




Summary Report

Workshop on Promoting Education, Training and Skills across the Bioeconomy

Brussels, 15 October 2019



Date: 18-02-2020

Research and
Innovation

**Workshop on Promoting Education, Training and Skills across
the Bioeconomy**

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Disclaimer

"The opinions expressed in this report represent the point of view of the meeting participants. These opinions cannot, under any circumstances, be attributed to the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the here above information."

1. INTRODUCTION

On the 15th of October 2019, the European Commission organised a workshop in Brussels entitled "Promoting education, training and skills across the bioeconomy". This workshop was planned to support the implementation of action 2.4. "Promote education, training and skills across the bioeconomy" of the updated EU Bioeconomy Strategy¹ and Action Plan². The workshop brought together various existing networks, alliances and leading actors to discuss the implementation of action 2.4. These stakeholders were identified during an extensive mapping of ongoing activities relevant to education, training and skills across the bioeconomy. Key initiatives, in particular, those focusing on skills gaps and mismatches across the bioeconomy and promoting the development of relevant bioeconomy related curricula were presented in the workshop. The experts represented various groups of stakeholders including academia, small, medium and large companies, workers and governmental organisations sharing expertise across bioeconomy sectors including agriculture & forestry, food systems and bio-based innovation systems. BIOEAST and the Standing Committee of Agricultural Research (SCAR) were also involved, in view of their recognised interest and important activities in the area of bioeconomy. The European Commission services that participated in the workshop were DG AGRI, DG ENV, DG MARE, DG RTD, DG EMPL and JRC. This document intends to summarise the discussions that took place during the workshop and the views expressed by the stakeholders. It does not constitute the view of the European Commission.

2. ACTION 2.4 PROMOTE EDUCATION, TRAINING AND SKILLS ACROSS THE BIOECONOMY

Action 2.4 Promote education, training and skills across the bioeconomy is one of the fourteen actions proposed in the 2018 updated European Bioeconomy Strategy. This action aims at reducing skills shortages and skills mismatches across the bioeconomy by supporting development of new and updated curricula which respond to the diverse and evolving needs of stakeholders and sectors in the bioeconomy. The workshop that took place on the 15th of October 2019 on Promoting education, training and skills across the bioeconomy was one of the activities planned under the Bioeconomy Strategy action 2.4.

3. WORKSHOP ON PROMOTING EDUCATION, TRAINING AND SKILLS ACROSS THE BIOECONOMY

The workshop on Promoting education, training and skills across the bioeconomy consisted of two main sessions: in the morning session, current initiatives and EU funded projects were presented and in the afternoon, a participatory discussion took place. The morning session provided also an opportunity for hearing the industry and the workers' perspective on skills development across the bioeconomy.

Annex I provides summaries of the presentations that were given in the morning session and that were submitted to the organisers of the workshop. Lacking summaries are because they were not received. However, all the slides from the workshop including UrBIOfuture and *RethinkResources*, which could not be presented on the day of the workshop due to unforeseen circumstances, are also attached in the Annex.

¹ COM(2018) 673 final

² SWD(2018) 431 final

Section 3.1 gives an overview of the outcome of the participatory discussions that took place in the afternoon.

**3.1. Promoting Education, Training and Skills across The Bioeconomy Sectors -
Results From The Interactive, Participatory Discussion**

Below are the results of the interactive, participatory discussion, which was organised in breakout groups answering three questions relevant for promoting education, training and skills across the bioeconomy. Each of the groups was discussing the issues relevant to one of the following sectors of the bioeconomy: Agriculture & Forestry (land-based primary production), Food Systems, Bio-based innovation systems, Seas, oceans and inland waters. As there were no participants choosing the latter sector, this discussion table did not take place.

Box 3. Questions for the interactive discussion

Question 1: *What are the key barriers for developing skills through Vocational Education and Training*

- *University Education*
- *Entrepreneurship*

In the following areas: Agriculture & forestry (land-based primary production)/ Food systems / Seas, oceans and inland waters / Bio-based innovation systems

Question 2: *Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce*

1) of today

2) in the future (by 2030, by 2050)

In the following areas: Agriculture & forestry (land-based primary production)/ Food systems / Seas, oceans and inland waters / Bio-based innovation systems

Question 3: *How to address the key barriers to deliver necessary skills profiles in the following areas: Agriculture & forestry (land-based primary production)/ Food systems / Seas, oceans and inland waters / Bio-based innovation systems?*

WHO? WHAT? HOW?

3.1.1. Food Systems

3.1.1.1. Food systems – Group I

Participants: *Bergeret Pascal* (SCAR AKIS (co-chair)), *Haentjens Wim* (DG RTD-Dir C, Unit C2 – Bioeconomy and Food Systems), *Lusser Maria* (JRC.D.1), *Nistor Adina* (European Schoolnet (EUN)), *Pink Malgorzata* (BLOOM project), *van Oost Inge* (DG AGRI.DDG1.B.2), *Goyens Petra* (DG RTD-Dir C, Unit C2 – Bioeconomy and Food Systems)

Question 1: *What are the key barriers for developing skills through*

- *Vocational Education and Training*
- *University Education*
- *Entrepreneurship*

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Results:

- "Massification of Bachelors level". The BSc are too general, there are too many students enrolling, there is a lack of staff. The ratio staff/number of students is low leading to a high level of failure.
- "MacDonaldisation of courses": Too many courses offered, courses are too broad, students have difficulties choosing during the Masters Programme. Students learn about how but not why something is relevant (eg climate change). There is a need to contextualise -- why is it relevant to learn or do something.
- Universities compete on the market, just like people.
- Vocational education has a wealth of experience and use innovative pedagogic technologies. The university systems should learn from these VET schools but because of hierarchical/status issues do not.
- The higher education system has an autonomy which does not force them to link with the outside world. There should be a system of interconnection with the world they are teaching for. There is also disconnect between teachers.
- There is a mistrust of uptake of information and knowledge. For example: if a university and their scientists are not well connected with the world of farmers, farmers don't trust them. They rather trust their father's approach than the one proposed by scientists
- A systems approach / systems thinking is needed.
- There is a need to contextualise -- why is it relevant to do something.
- Take a step back and look at areas to work on or with. Multi-actor approach skills are relevant.
- There is a need for soft skills to interact with different groups and stakeholders as well.
- There are also barriers at the teacher level; reluctance to change is often a generational issue. Knowledge about bioeconomy, awareness of new teaching tools, materials or approaches are other reasons.
- It is difficult to attract but also to keep talent. Young people learn skills, then leave to other jobs.
- Often new teaching materials are in English which makes it so much harder to reach a more remote village in a country where few people speak English fluently.

Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

1) of today

2) in the future (by 2030, by 2050)

Results:

- Former generations thought that they will do the job for which they studied their whole life.
- Technical skills will remain relevant. Specialty education will need to be developed (e.g. in biobased areas like textiles and new proteins from various biomass sources etc)
- Social sciences, especially with regard to understanding and changing consumer behaviour (related to all bioeconomy sectors) needs to become more prominent.
- Specialty disciplines are often working in silos. As the bioeconomy is conceptually wide, interdisciplinarity, curiosity and critical and systemic thinking is required.

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- *Problem solving collaboration and soft skills become crucial. The current problems cannot be solved alone. There is a need to work together with people that have different viewpoints and educational and professional backgrounds.*
- *If lifelong learning is the new normal, how to incorporate it into a normal career trajectory, especially as interdisciplinary and soft skills are becoming more relevant*
- *Climate mitigation, adaptation, circularity and sustainability should be key in food systems education. Also, a more global attitude as the food system applies to the whole world, not only Europe.*
- *Awareness of what data is, and overall data management is necessary (how the data is treated, what info can be retrieved, how can it be used, who has the ownership etc).*
- *We currently don't have enough capacity to make sense of data. There is a skills shortage in data scientist.*
- *Food industry is already very ethically charged so if you bring Artificial Intelligence (AI) into it, it will become more ethically delicate.*
- *Universities start to establish ethics with regard to AI.*
- *There is a need for systems designers, people that have skills and insight in how systems work, in all sectors of the bioeconomy and certainly in food systems education.*
- *There is a rise of social media "influencers", some of which are very influential and not necessarily knowledgeable or skilled. How can this emergence of influencers be managed?*

Question 3: *How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?*

WHO? WHAT? HOW?

Results:

- *WHO?*
- *It is a governance issue that has to be implemented at regional level as education is mostly a regional competence. Regions must receive and give the right signal otherwise it will take a long time before change happens. For change to percolate down, Quadruple Helix approaches are relevant.*
- *Bioeconomy is also different at the regional level due to different biomass potentials. KICs could play a relevant part.*
- *Can you realistically expect that universities teach everything?*
- *The dialogue between the different educational providers, whether and amongst universities and VET, is not taking place. If it were to take place it could tackle a few issues like adapting the curricula to develop skills in the bioeconomy.*
- *Who should organise the dialogue, who should trigger the discussions? OECD is relevant. Who are the authorities to organise this debate?*
- *Customers/consumers may also be demanding change.*
- *Food KICs are bringing systemic thinking into masters programmes, entrepreneurial aspects and vocational training.*
- *There is also a role to play for the authorities that plan calls for H2020, ERASMUS, Horizon Europe, calls at national level etc (a project needs to bring more than science and business)*
- *WHAT?*

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- *It also becomes relevant to "evaluate the evaluators" that evaluate educational and research institutions, projects, curricula, proposals for funding should be considered.*
- *You have to know where you are going, and have a vision about the food systems which is changing drastically. So what should skills development look like to tackle all the changes that we are facing?*
- *We need a neutral organisation, an authority voice that brings that together.*
- *HOW ?*
- *A foresight exercise is a way to bring people together to build a common foreseeable future and then do the back-engineering to the presence, to the now.*
- *It is easier to reach a collective consensus as foresighting develops long-term visions rather than short term ones.*
- *Then you need to find transition pathways to develop those futures and build a common understanding/vision to get to that future.*
- *Look at the food industry of the future. The delivery of food transportation to the consumers is very disruptive, there is a long consultation going on now. Same with the farmer of the future in 2040. If you draw on the different studies you can use these elements as a starting base with the institutions of today.*
- *The vocabulary – e.g. strategy, vision, etc - is important Foresight has a shorter-term approach than a vision. Defining the terminology can open up people to come closer together.*
- *Sharing best practices is relevant. Finland scores is high on the educational path. If you give that attention in a European forum it will make people start thinking and create the understanding that there is a need to change the educational system.*

3.1.1.2. Food systems – Group II

Participants: *Luca Cocolin* (University of Torino, EIT Food), *Pittia Paola* (University of Teramo), *Sonnino Roberta* (Cardiff University), *Tranberg Anna* (ERRIN), *Bole Kristina* (DG RTD-Dir C, Unit C2 – Bioeconomy and Food Systems)

Question 1: *What are the key barriers for developing skills through*

- *Vocational Education and Training*
- *University Education*
- *Entrepreneurship*

Results:

- *Complexity of food systems as one of the main barriers*
- *Lack of connectivity between the 3 different forms of education and clarity who is responsible for what; more synergies are needed between VET, university education and entrepreneurship*
- *Lack of more systematic thinking on which skills are needed now and in future*
- *A mismatch between society and industry needs*
- *Differences between the entities providing the education (e.g. universities, enterprises) and conservative approaches to teaching*
- *Lack of mapping platforms with available data on institutions providing training in this area*
- *Lack of understanding of the food systems and co-benefits*

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Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

1) of today

2) in the future (by 2030, by 2050)

Results:

- *Already existing technical skills need to be improved; building top competencies with additional responsibilities*
- *New critical thinking skills, systemic thinking, sociological approach and understanding of behavioural changes (how consumers act)*
- *Sustainability and circular economy needs to be part of the learning process*
- *Collaboration and knowledge sharing among different stakeholders and institutions*
- *Cooperation among workers (high to low skilled jobs)*
- *Ethical skills*
- *Earlier education on food and home economics classes in high school*

Question 3: How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?

WHO? WHAT? HOW?

Results:

- *Need to revolutionise current higher education system; food systems require a new approach, for example launching a pioneer programme, a Pan-European food systems MA (building on the EIT Food Systems MA programme)*
- *Ensure top-down approach when efforts on regional and local level are not sufficient*
- *Importance of involving key players, such as FAO, UN World Food Programme, etc.*
- *Encourage lighthouse projects, such as smart cities and communities, also in food systems area*
- *Connecting with regional smart specialisation strategies*
- *Teaching methodologies need to evolve to deliver on sustainability*
- *New education models with critical and systemic thinking needed*
- *Embed food systems into other education curricula, e.g. public health, social work, biology*
- *Address lack of interdisciplinarity in higher education*

3.1.2. Agriculture&Forestry (land-based primary production)

3.1.2.1. Agriculture & Forestry (Land-based primary production) Group I

Participants: **Boselie-Abbenhuis** Floor (Dutch Ministry for Agriculture, Nature and Food Quality, The Netherlands), **Boscaleri Fabio** (Tuscany Region Brussels Liaison Office, Belgium), **Gentchev Galin** (DG AGRI Unit D4, Belgium), **Kovacs Barna** (Permanent Representation of Hungary to the European Union, Belgium and BIOEAST), **Lewandowski Iris** (University of Hohenheim, Germany), **Rothwell Jenny** (BEACON Bioeconomy Research Centre, Ireland), **Ni Choncubhair Orlaith** (DG RTD-Dir C, Unit C2 – Bioeconomy and Food Systems)

Question 1: What are the key barriers for developing skills through

- Vocational Education and Training
- University Education
- Entrepreneurship

Results:

1. No common understanding of the concept of the BE:
 - Stakeholders have problems finding where their role is and how they can contribute to the BE
 - No "lead" above all parts; different faculties address the BE
 - Missing link between disciplines and different parts of the BE
2. Silos, sectors don't see business case; also funding institutions often not structure for interdisciplinary approach
3. Lack of strategic thinking at policy and primary producer level – no influence, no lobbying, missing best practice examples
4. Educational system conservative; more experts than generalists; interdisciplinary experts needed; new types of teachers needed
5. Missing link between industry and education/research; the skills demand, especially for SMEs, not expressed

Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

- 1) of today
- 2) in the future (by 2030, by 2050)

Results:

Discussed need to address skills profiles in farmers and foresters as well as advisory services

- Better understanding of new BE business models, e.g. cooperative approaches, soft skills
- Too little value created in the sector – need to learn to create and keep more added value in their farms
- Business skills in a more innovative market
- Calculating and handling risks
- Environmental impacts
- New technologies

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- *Circularity*
- *Digitisation*
- *Communication (to explain the concept of the BE)*

Question 3: *How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?*

WHO? WHAT? HOW?

Results:

- *Policy level: education should be an important part of national/regional BE strategies – should help to develop new curricula for sustainability and support educational reforms, e.g. using EU funding (for example Structural Funds); practice-oriented education (e.g. internships, exchanges)*
- *Skills differential across Europe – think about approaches to develop educational programmes – bring educational institutions from across Europe together including BioEast countries; “nuggets” of knowledge – share modules*
- *Rules in educational systems need to be more flexible, e.g. diploma systems that are recognised by different countries*
- *Financial incentives to make relevance of BE concept more visible – share good practice examples; use ERASMUS+ (mobility programmes for farmers/foresters/SMEs – how to tackle languages?)*
- *CAP – role of advisors, EIP Operational Groups*

3.1.2.2. Agriculture & Forestry (Land-based primary production) Group II

Participants: *Fernández Álvarez de Buergo Pablo* (Agri-food Cooperatives Spain, Spain), *Berruto Remigio* (University of Turin, Italy), *Maciulevicius Mindaugas* (EESC Member), *Weinbrenner Timo* (DG AGRI, Unit F.1, Belgium), *Brenne Roman* (DG RTD-Dir C, Unit C2 – Bioeconomy & Food Systems)

Question 1: *What are the key barriers for developing skills through*

- *Vocational Education and Training*
- *University Education*
- *Entrepreneurship*

Results:

Vocational Education and Training (VET):

- *Lack of time for primary producers to attend trainings and courses.*
- *Average age of primary producers is too high (average age of farmers at around 50 years).*
- *Lack of motivation to attend trainings and courses, as there is a reluctance to change behaviour in traditional sectors.*
- *Lack of communication of available VET. Missing success stories.*
- *Lack of cooperation in some few cases.*

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University Education

- Lack of funding for new technology.
- Little connection of universities to the market.
- Lack of student interest in relevant courses.
- Lack of new and innovative teaching methods.
- Lack of cross-sectoral modules to generate interest in relevant courses.

Entrepreneurship

- Low margins in primary production sectors.
- Long return on investment as demotivating factor.
- Lack of communication on possibilities.
- Primary production as disputed area, always under criticism.

Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

1) of today

2) in the future (by 2030, by 2050)

Results:

Agreement amongst the participants, that there are no differences between the required skill profiles for today or for the future.

- Economic knowledge (e.g. of business models).
- Openness for technological innovations and readiness to use them.
- Communication skills.
- Teamwork skills.
- Knowledge on climate change adaptation.
- Social openness (e.g. to overcome the gender gap in primary production).
- Transfer and management of experience.
- Opportunistic entrepreneurial behaviour.
- Teaching skills for seasonal workers.

Question 3: How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?

WHO? WHAT? HOW?

Results:

Replies addressed directly the barriers for developing skills.

- Online material/courses and being present at fairs (to address the lack of time).
- Providing success stories (to address the lack of motivation, the high average age, and the lack of communication).
- Apprenticeship models (to address the lacking connection between universities and the market).
- Blended learning (to address the lack of new teaching approaches).
- Cooperation between universities (to address the lack of cross-sectoral primary production modules).
- Diversification (to help to overcome the low margins in primary production).
- Workshops involving SME's and farmers (to address traditional sector thinking).

3.1.3. Bio-based Innovation Systems

3.1.3.1. Bio-based innovation systems – Group I

Participants: **Glössl Josef** (University of Natural Resources and Life Sciences, Vienna (BOKU), Austria), **Hasewend Brigitte** (Graz University of Technology - TU Graz, Austria), **Kreysa Joachim** (Bioeconomy Advisor JRC, Belgium), **Lund-Larsen Jesper** (United Federation of Danish Workers 3F, Denmark), **Sakellaris George** (University of South Bohemia - Czechia), **Trika Evangelia** (DG MARE, A.1, Belgium), **Vanninen Petteri** (Natural Resources Institute – LUKE, Finland), **Sanchez Lopez Javier** (JRC Ispra, Unit D.1, Italy)

Question 1: What are the key barriers for developing skills through

- Vocational Education and Training
- University Education
- Entrepreneurship

Results:

The first point of discussion agreed among the participants is the fact that, regarding barriers, there are no differences between the three different levels specified.

The main barriers identified and discussed are listed below:

- *Fragmented knowledge. Bioeconomy and particularly bio-based innovation systems bring a new comprehensive and cross-sectorial context. Education as well as the new generation of experts, that should fulfil the needs of stakeholders and industry, need to adapt to it.*
- *Heterogeneous students with different backgrounds, e.g. from biologist to engineers; generalists vs. specialists, theoretical vs. practical, etc.*
- *Lack of connectivity/cooperation among institutions, universities, authorities.*
- *Lack of awareness of general public (which could demotivate the public administration to invest in such programmes) as well as heterogeneity in public perception of the bioeconomy (e.g. GMOs).*
- *Lack of resources for investing in educational and training programmes.*
- *Lack of educative actions at primary stages (even prior to primary school).*
- *Digitalisation (gap between generations).*
- *Fear to changing/shifting jobs (e.g. coal miners).*
- *Inter and intra-heterogeneity of educational programmes at geographical scale (not only at European / national / regional level).*
- *Slowness of university programmes to adapt to changes.*

Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

- 1) of today
- 2) in the future (by 2030, by 2050)

Results:

1) of today

- *Cross-sectorial knowledge with a holistic approach will be required (specialists in a field will be less required).*

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- *Yet, knowledge on specific fields will surely be demanded, e.g. biopharma, molecular farming, etc.*
- *Required capacities/competences will be:*
 - *flexibility,*
 - *resilience,*
 - *adaptation to different environments (e.g. traditional vs. digital) and disciplines (agri/forest/environment/socio-economic...),*
 - *social skills (teamwork and building communities),*
 - *Out-of-the-box thinking*
 - *Effectiveness (to improve value chains not only by the use of technology)*
- *Role needed: moderators of change to guide and give confidence of the change*
- *Some skills required:*
 - *Management of resources, inter alia, knowledge transfer*
 - *Entrepreneurial skills*

2) **in the future (by 2030, by 2050)**

- *The skills profile of the future are unknown*

Question 3: *How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?*

WHO? WHAT? HOW?

Results:

WHO?

- *Educators/trainers in general terms*

WHAT?

- *Adaptation on a case by case.*
- *Develop capabilities more than factual knowledge.*
- *Improve the capabilities / capacities such as resilience, flexibility, etc.*
- *Harmonisation of sectorial needs*
- *Agreement on the way forward at management level*
- *Agreement and development of a bioeconomy curricula and skills mapping at all levels (workers, engineers, theoretical academics, etc.) from industry and academia. Subsequent support by national authorities (which would avoid biased profiles)*
- *Train the trainers.*
- *Educative actions at primary school (e.g. in Switzerland with working organisations and industry)*
- *Vertically and horizontally- integrated approaches*
- *Provide more resources to research funding*
- *Collecting best material/best practices (focus on e-learning / interactive material).*

HOW?

- *Developing integrated approaches, which address and link institutions, target groups.*
- *Bottom-up approach supported by top-down decisions (EC could be leading the effort together with MS and regions).*
- *Develop new & make better use of existing university networks (e.g. European Bioeconomy University initiative, ICA-Association for European Life-sciences Universities) to improve cooperation / join forces.*
- *Develop new teaching approaches*

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- Campaigns to raise awareness.
- Continuity of good initiatives (e.g. Marie Curie)

Results of the interactive discussion

3.1.3.2. Bio-based innovation systems – Group II

Participants: **Albertini Susanna** (European Bioeconomy Network (EuBioNet)), **Brandt Lasse** (Metsä Fibre), **Calikowski Tomasz** (DG RTD-Dir C, Unit C1 – Circular Economy & Biobased Systems), **Emerencia Nelo** (BIC - Bio-based Industries Consortium), **Marchis Alexandru** (Universita Cattolica del Sacro Cuore), **Matić Ivan** (Ministry of Agriculture Republic of Croatia), **Van Vilsteren Gerlinde** (Wageningen University & Research), **Vilar Michelle** (Cargill), **Weidtmann Annette** (Baden-Wurtemberg / University of Hohenheim), **Robaczewska Joanna** (DG RTD-Dir C, Unit C2 – Bioeconomy & Food Systems)

Question 1: What are the key barriers for developing skills through

- Vocational Education and Training
- University Education
- Entrepreneurship

Results:

The key barriers for developing skills in the bio-based innovation systems are stemming from the main challenges that the sector is facing including complexity and fast/unpredictable evolutions in the bio-based innovation system as well as difficulties in identifying, understanding and prioritizing innovation opportunities and translating them in a long-term vision for sector development.

The specific barriers are similar across the education system and include:

- Lack of knowledge and information on skill needs and gaps in the sector
- Lack of effective knowledge transfer
- Difficulties in managing change in a fast-paced environment
- Ineffectiveness of traditional education and training, the system is too rigid
- Lack of learning capabilities at the organisational and individual level
- Insufficient focus on entrepreneurial skills
- Lack of awareness and understanding of the bio-based sector
- Becoming caught up in traditional ways of thinking and working, which promote silos approach
- Fear of change
- Low priority is given to education and training and investment in skills
- Overloaded curricula

Question 2: Which specific skill profiles (knowledge, roles and responsibilities) are needed for the workforce

1) of today

2) in the future (by 2030, by 2050)

Results:

In the bio-based sector, the skills of today are the same as the skills of the future and they include basic science and technical skills. The soft skills are getting increasingly important and include:

- Capability to connect and see the overall picture
- Team-working
- Capability to manage highly-dynamic and complex systems

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- *Multi-disciplinarily and transversality*
- *Full stack competences*
- *Pro-active attitude*
- *Creativity*
- *Understanding the value-nets*
- *Resilience and persistence*

Question 3: *How to address the key barriers to deliver necessary skills profiles in the area: bio-based innovation systems?*

WHO? WHAT? HOW?

Results:

Key actors for developing skills for bio-based innovation systems:

- *Authorities at all levels with a focus on the local and regional authorities*
- *Industry*
- *Students*
- *Teachers*
- *Employees*
- *Start-ups and entrepreneurs*

The focus should be directed towards:

- *Developing and promoting alternative teaching methods*
- *Promoting mutual learning and multi-stakeholder approach to education*
- *Raising awareness in all groups of stakeholders (including farmers, policy makers, large public)*
- *Promoting best practices to inspire and transfer knowledge*
- *Showcasing innovative products, processes and ideas*
- *Promoting community education*
- *Revising HR strategies of the companies and promoting their alignment with the teaching curricula*
- *Developing entrepreneurial competencies*
- *Use media and new media (digital media)*
- *Engaging icons, influencers, ambassadors*

**Workshop on Promoting Education, Training and Skills across
the Bioeconomy**

4. AGENDA

Promoting education, training and skills across the bioeconomy

15 October 2019, 9:30 – 17:30
ORBN 03/078 & ORBN 03/067 (Session I)
ORBN 11th floor (Session II)

AGENDA

9:30	Welcome and introduction European Commission
9:45-10:45	<p>Session I. Part I. Presentations of the current initiatives and EU funded projects.</p> <p>Preliminary mapping of skill gaps and related educational programmes across bioeconomy. Results from EU funded projects. (UrBiofuture, Askfood, BioEnergyTrain, Blueprint on sectoral cooperation on skills for Bio-economy, new technologies & innovation in agriculture).</p> <p>Q&A</p> <p>UrBiofuture - Aleix Barrera- Corominas, Universitat Autònoma de Barcelona/ UrBiofuture project. <i>Mapping exercise of bio-based industry needs</i></p> <p>Askfood –Paola Pittia - University of Teramo (Italy) - <i>Alliance for Skills and Knowledge to Widen Food Sector-related Open Innovation, Optimisation and Development</i> ASKFOOD</p> <p>BioEnergyTrain - Brigitte Hasewend, Executive Director, the European Sustainable Energy Innovation Alliance - <i>Bioeconomy a growing industry</i></p> <p>Blueprint on sectoral cooperation on skills for Bio-economy, new technologies & innovation in agriculture - Remigio Berruto, University of Turin</p>
10:45-11:00	Coffee break
11:00-12:00	<p>Session I. Part II. Presentations of the current initiatives and EU funded projects.</p> <p>Industry perspective on the challenges and approaches towards developing skills for bioeconomy (Metsä Group, RethinkResources).</p> <p>Metsä Group –Lasse Brandt, VP HR, Metsä Fibre - <i>Metsä Group’s approach to education and training</i></p> <p>RethinkResources- Founder & CEO, RethinkResource GmbH, Zürich -</p> <p>The bioeconomy and a future biobased food industry and agriculture sector: How can workers’ organisations shape the change? (EFFAT). –</p>

**Workshop on Promoting Education, Training and Skills across
the Bioeconomy**

	<p>EFFAT – European Federation of Trade Unions in the Food, Agriculture and Tourism - Jesper Lund-Larsen –<i>Bioeconomy a growing industry</i></p> <p>Supporting Regions in the design of innovative bioeconomy educational paths: The contribution of the European Bioeconomy Network and Biovoices project.</p> <p>Susanna Albertini European Bioeconomy Network and BIOVOICES project</p> <p>Q&A</p>
12:00-13:30	Lunch break
13:30-14:30	Session II. Part I. Interactive discussion (World Café format) Breakout groups’ discussion and reporting on key issues identified during the mapping of the current initiatives and EU funded projects in the area of education for bioeconomy.
14:45-15:00	Coffee break
15:00-16:45	Session II. Part II. Interactive discussion (World Café format) Breakout groups’ discussion and reporting on key issues identified during the mapping of the current initiatives and EU funded projects in the area of education for bioeconomy.
16:45-17:30	Closing remarks and final discussion

5 . PARTICIPANTS LIST

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VILAR Michelle	
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6. **ANNEXES**

Annex I. Summaries of the presentations of the current initiatives and EU funded projects that were submitted after the workshop by the presenters.

Annex II Presentations during the workshop

Disclaimer

"The opinions expressed in this report represent the point of view of the meeting participants. These opinions cannot, under any circumstances, be attributed to the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the here above information."