BioGoV.net

Save the Date! Final Event: Growing Together: Art, Inclusion & Green Skills

14th, May 14:30 - 17:30 CEST Comet Louise, Pl. Stéphanie 20, 1050 Brussels, Belgium



Funded by the European Union

BioGoV.net

BigGQV.net Governance & Upskilling for a Stronger Bioeconomy —

Agenda

14h30 – 14h45	
14h45 – 15h00	
I5h00 - 15h30	
15h30 – 16h00	Coffee Break & Networking
16h00 – 16h30	
16h30 – 17h00	Art Meets Bioeconomy Education Interactive Sensory Session
17h00-17h15	Final Remarks
I7h15	Final Coffee Break & Networking
Funded by the European Union	



Welcome!





Policy & Education Recommendations

Susanna Albertini (<u>albertini@fvaweb.it</u>) and Selenia Marinell (<u>marinelli@fvaweb.it</u>)

FVA New Media Research

What's next for bioeconomy education? VET and Life-long learning perspectives workshop (29 October 2024)

- On 28 Oct GenB organised the workshop targeting the Pre-University and Communication levels (organised by GenB)
- Projects providing inspirational presentations: BioGov.net, Engage4Bio, Circular Bricks, Scientix, ICA-CoP Bio-Edu
- 94 registrations received from 28 Countries
- 60 active participants, representing 34 EU projects and initiatives
- Effective interactive sessions on <u>Miro board</u>. Many insightful inputs gathered (co-creation of Educational and Policy recommendations)
- The **aggregated PPTs from speakers** were shared among the participants and <u>are available here</u>
- Browse all the recommendations factsheets here







Recommendations delivered in several contexts

- High-level workshop at the EC DG RTD "Bioeconomy education to enable the transition to a competitive, regenerative, and fair (bio)economy. Building the next union of skills in the bioeconomy", 20 Nov 2024 Recommendations presented to around 100 experts in bioeconomy education (see web article) in light of the update of the European Bioeconomy Strategy
- GenB and BioBeo final event "Bridging generations: Education and Policy to shape a sustainable future", 10 April 2025 Recommendations presented to diverse range of EU-funded initiatives including GenB, BioBeo, SLEs, CLEVERFOOD, LOESS, and ProBleu and representatives from the EC DG RTD and DG AGRI, as well as CBE JU
- (in progress) Delivery through the **EC public consultation** "Towards a circular, regenerative and competitive bioeconomy" (<u>link</u>)







What's next for bioeconomy education?

Main takeaways from the workshop – Education dimension recommendations

• Co-Creation of Educational Recommendations

curricula?

1.Context: How to approach bioeconomy education within a

wider discourse in formal, non-formal and informal green

education?

2.Curriculum: What contents and materials are needed for 3.Professional development of educators: What approaches would be useful for formal, non-formal and informal educators to embed bioeconomy education in their educators to effectively learn and teach bioeconomy?

4.Collaboration: Which kind of collaborations should be established to help educators better integrate bioeconomy in educational programmes?



Governance & Upskilling for a Stronger Bioeconomy ——



What's next for bioeconomy education? Main takeaways from the workshop – Education dimension recommendations

Public Awareness and Engagement:

✓ Promote bioeconomy in the wider discourse of environmental literacy through community education and engagement activities involving local actors (e.g. through Living labs, citizen science, experiential learning) to support the citizens and students in taking and active role in the transition.

BioGovnet

Governance & Upskilling for a Stronger Bioeconomy

Take stock from previous EU funded and regional experiences (including materials, educational packages, guidelines for training and mentoring programmes, platforms, etc.)

Skills needed:

- Bioeconomy transition requires transversal skills like critical thinking, innovation thinking, entrepreneurship, and system thinking.
- ✓ **Foster holistic understanding** to meet the **complexity** of the bioeconomy education.
- Connect bioeconomy education response with real world issues and local skill needs for the circular bioeconomy and bio-based sectors.

Curriculum modernization:

- Circular bioeconomy should be treated as meta skill in existing curricula across all educational levels.
- Promote interdisciplinarity and crossover programs with education providers, industry and local administration to respond to evolving industrial and market demands.
- ✓ Foster co-creation of innovative curricula.

Innovative teaching approaches:

Promote innovative approaches (formats and models) to address challenges and respond to opportunities (Ideas incubators, problem-solving oriented teaching, coaching, Lab Works, simulations, Arts-based methods, site visits, experiential learning, peer learning and interdisciplinary learning and collaborative learning communities).



What's next for bioeconomy education? Main takeaways from the workshop – Education dimension recommendations

Inclusion and accessibility:

✓ Promote tailored formats (Adaptable Course Content, visual storytelling, Art, Virtual Living Labs) to meet the needs of specific marginalized or disadvantaged groups (incl. Primary sector, NEETS, migrants) and integrate underrepresented groups into the workforce.

Continuous monitoring and evaluation of educational programs:

- ✓ Promote the regular assessment of bioeconomy education programs to ensure that they remain relevant and effective and to inform the design of innovative curricula.
- Developing assessment tools to measure the impact of bioeconomy education on students' knowledge and skills. Train the Trainers and LLL:
- ✓ Support continuous professional development for educators at various levels, including informal and non-formal education recognized with micro-credentials and certifications.
- Teachers should be the first to be educated in these complex topics and equipped with actionable lesson plans, resources and toolkits (in local languages).

Practical experiences and collaboration with industries:

- Break down silos, promoting partnerships and alliances with industry, educators, local communities, environmental organizations, etc. to identify systemic interrelations, better align education with real labour market needs and implement hybrid education programs.
- Support the creation of multi-actor Regional Hubs to connect education with local policy priorities.





What's next for bioeconomy education?

Main takeaways from the workshop – Policy dimension recommendations

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy



What's next for bioeconomy education? Main takeaways from the workshop – Policy dimension recommendations

Strategic Policy integration:

- ✓ Facilitate **multi-ministerial approach** to ensure **cross-sectoral collaboration** and **coherence** for bioeconomy education at local, regional, and EU level.
- Embed bioeconomy knowledge into the curricula across all educational levels to ensure students gain practical and theoretical skills.
- ✓ Specific **policy recommendations must coincide with curriculum reform** to be actionable.

Inclusive Policy measures:

- ✓ Maximise the opportunities for **inclusive growth through bioeconomy education**.
- Include bioeconomy education in public schools at all level to make bioeconomy and sustainability topics accessible to students. across diverse socioeconomic backgrounds.
- ✓ Target educational offer to attract individuals from rural and underrepresented communities, ensuring a diverse talent pipeline. **Stakeholder engagement:**
- Engaging stakeholders in defining educational priorities to respond to different needs along the whole value chain.
- ✓ Support the creation of Interdisciplinary Learning Hubs, fostering the collaboration across disciplines, promoting knowledge transfer from industry to education and ensuring that educational opportunities are aligned with bioeconomy political and industrial agendas.

Work experience and vocational training

✓ Foster the above mentioned partnership to facilitate more adaptive systems like collaborative learning hubs, apprenticeships, and vocational training focused on bioeconomy.





What's next for bioeconomy education? Main takeaways from the workshop – Policy dimension recommendations

Supportive networks and structures:

- ✓ Support the dissemination of success stories, tools and resources, through knowledge platforms supported by governments.
- Multidisciplinary bioeconomy HUBs can play the role of mentors to support industries, policy makers and educators in integrating the bioeconomy in their practice.
- Enhance the role of connectors and ecosystem facilitators promoting dialogue and mutual learning among stakeholders. **Funding and incentives:**
- ✓ **Bioeconomy LLL and VET education should be a priority** for future EU Funding.
- In addition, new business models and public-private partnerships should be used to support long-lasting initiatives.
- ✓ Simplify legislative processes to **unlock funding for smaller, local initiatives.**
- Provide recognition scheme through certificates and credits for educators and professionals

Data support to policy:

- Boost awareness and empowerment of policy actors with regards to the circular bioeconomy.
- Provide systematic data collection for better strategic planning and evidence-based guidance for future policies and initiatives in bioeconomy education (mapping impacts of successful policies, regional needs and gaps, training programs, initiatives, case studies and good practices).

Monitoring and skill alignments:

Monitoring labor market trends and local bioeconomies through observatories and platforms to bridge skill gaps.







Coffee Break

Let's enjoy a small break from bioeconomy ©

BigGQV.net Governance & Upskilling for a Stronger Bioeconomy —

Let's design a biobased education programme

Mara van Eijndhoven & Myron Koster

Avans University of Applied Sciences.

Agenda

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy

- Mission
- Challenges
- Our focus
- The Eight Field Model + Design example
- Interactive session

Guidelines for developing biobased training programmes in co-creation with stakeholders, including the instruments for collaborative learning and for exchange of experiences.

De/liverable 4.

Challenges



- Multi-purpose vs concrete and detailed about biobased
- For each level of education vs what to do per level
- Usable for one specific region vs usable for all regions



Focus

- Deliverable: A step-by-step guideline on <u>how</u> to develop training programmes in co-creation with stakeholders.
 - Content of the steps (the <u>what</u>) is up to you
 - Included in the document:
 - Governance
 - Deliverable 4.1 Guidelines for developing the training governance framework
 - Collaboration & Engagement, Effectiveness, Efficiency
 - Communities of Practice
 - Art
 - Deliverable 5.2 Policy recommendations
 Actionable Knowledge for training
 and mentoring programmes
 - Marginalized groups



Designing Biobased Education

BioGov.net

omy Education and Training Governance Fram

Collaboration &

A step-by-step guideline for developing training programmes in co-creation with stakeholders.

WHAT DO YOU WANT TO ACHIEVE?

WHEN ARE YOU SATISFIED?

GOALS/PROBLEM (ORGANISATION) GOALS? **HOW DO WE MEASURE ORGANISATION RESULTS RESULTS?** WORK А **BEHAVIOUR** FROM EVALUATION TO RESULT CONTEXT/SITUATION? HOW DO WE MONITOR PERFORMANCE THIS BEHAVIOUR IN THE WORK SITUATION? COMPETENCES/SKILLS/ \mathbf{A} **SKILLS/COMPETENCES KNOWLEDGE?** HOW DO WE DETERMINE LEARNING OUTCOMES THE RESULTS **OF LEARNING?** $\mathbf{\Lambda}$ LEARNING LEARNING SITUATION CONTEXT/SITUATION? HOW DO WE EVALUATE **PROCESS/TRAINING** THE PROCESS?

\bigcirc

Eight Field Model

- Kessels and Smit, HR
- Left: Setting goals & designing training programmes
- Right: Measuring and reflecting the effects
- We create a link between the intervention fields (left – right), develop them in parallel so that you can measure simultaneously





Step 1-4

- Start: what do we want to achieve and solve?
 - Goal/ambition, problem
 - goal-driven to start
- Is creating a biobased training programme the solution?
- Create a team to cocreate
 - The same goal, but different visions is okay





Step 1: Goals/problems



Key Points:

- Identify societal or organizational challenges that might benefit from educational intervention.
- Avoid jumping straight to a learning solution—clarify the root goal first.
- Education should support broader changes (e.g., policy improvement, innovation).

- Problem: Policymakers overlook bioeconomy in policy creation.
- Goal: Create policies aligned with circular economy principles.
- Solution: An educational programme was proposed to make bioeconomy "visible" to policymakers and part of their mindset

Step 2: Future work context



Key Points:

- Define what future job roles and work environments look like (ist soll).
- Focus on how tasks and expectations are evolving due to bioeconomic transitions.

- Future context: Policymakers need to consider sustainability and bioeconomy in all relevant policy domains.
- The programme highlighted real-life scenarios and applications of bioeconomy in policy contexts

Step 3: Required Competences



Key Points:

- Identify knowledge, skills, and attitudes required for success in the future work environment.
- Look beyond generic skills—tailor them to specific, contextual work needs.

- Competences: Systems thinking, policy innovation, communication of complex bioeconomic topics.
- Competency gap: Policymakers lacked frameworks and awareness about bioeconomy's role in achieving sustainability targets

Step 4: Learning situation



Key Points:

- Design effective, context-based learning interventions using suitable principles and environments.
- Consider informal, experiential, or work-integrated learning methods.

- Learning was collaborative and experiential.
- Included workshops, simulations, and interaction with bioeconomy practitioners to promote immersive understanding

Step 5-8

• End: *Did you achieve your goal? Did you solve the problem?*





Step 5: Learning Process Evaluation



Key Points:

- Evaluate during the learning process, not just at the end.
- Use feedback loops from participants and facilitators to improve learning outcomes in real time.

- Ongoing feedback from trainers and peers.
- Adjustments made during the programme based on participant reflections and workshop outputs

Step 6: Learning outcome



Key Points:

- Assess whether participants achieved the targeted competencies.
- Prefer authentic, real-world evaluations over traditional exams.

- Final output: TED-style talks where participants showcased how they applied bioeconomy in their policymaking.
- Evaluated on innovation, relevance, and integration of biobased principles

Step 7: Performance



Key Points:

- Measure whether learning translates into actual behavioural change on the job.
- Focus on integration of new practices and decision-making processes.

- Participants showed increased awareness and integrated bioeconomic concepts into live policy development projects.
- Observed by colleagues and external partners

Step 8: Impact



Key Points:

- Determine if learning led to strategic impact—e.g., policy change, innovation, or societal benefit.
- Look at long-term transformation, not just individual change.

- Long-term goal: Mainstreaming of bioeconomic thinking in public policy.
- Initial signs: Development of draft policies integrating bio-based solutions and stakeholder collaboration



Interactive session

Let's chat!



What is your statement position?

- Create a duo
- 5 minutes you will discuss the position you both have in this statement.
- Fill in the Wooclap with your own answer
- Plenary closing

Wooclap – interactive part

Join this Wooclap event





Enable answers by SMS

BioGoV.net

Governance & Upskilling for a **Stronger Bioeconomy** ——





Art meets Bioeconomy Education

Selenia Marinelli (<u>marinelli@fvaweb.it</u>) FVA New Media Research



From STEM to STEAM, to support the green transition

STEAM (Science, Technology, Engineering, Arts and Mathematics) is a new form of teaching seeking to promote curricular integration between science, technology, engineering, mathematics and the arts. It enlarges the previous education approach based mainly on **STEM** (Science, Technology, Engineering and Mathematics).

Arts-based approaches and methods can help driving the change towards a more sustainable, just and inclusive transition, as they:

- embrace more-than-cognitive aspects of knowledge, such as emotions, values, and intuition, that are often neglected or marginalized in conventional science
- **improve communication and engagement** with diverse audiences, such as policy-makers, practitioners, and the general public, by using creative forms of expression to explore alternative pathways and possibilities for sustainability
- explore teaching and learning across different disciplines, hence facilitating interconnected, deeper, and meaningful learning processes, as well as collaborative and experiential learning

Funded by the European Union





Arts can nurture education for just sustainability

Its role became central in many innovative educational, training, mentoring and research programs, to **ignite critical and creative strengths in learners**, while **supporting an ethically-aware imaginative engagement**.

Diagram of informing literatures converging in just sustainability arts (Kippen and Hauk, 2016).





New European Bauhaus (NEB)



The NEB integrates a **multidimensional vision**, bringing a **cultural and creative dimension** to the Green Deal **to enhance sustainable innovation**, **technology and economy**. Building on existing frameworks like the Davos Baukulture Quality System (Swiss Confederation, 2018), the initiative gives space for creation and experimentation.



The NEB value and working principles, together with the specific ambitions per each dimension (The NEB Compass, 2021)

BioGov.net methodological approach

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy

The methodology developed in **BioGov.net project** incorporates New European Bauhaus' aspects and values, integrating **art-based frameworks** and the **STEAM approach to learning**, to develop a methodological approach to link **art to bioeconomy education**, along 4 **dimensions**.



Learn more about the BioGov.net methodology



Map of case studies along 4 dimensions in art and bioeconomy education



the European Union

Co-creation of recommedations and validation through multistakeholder workshops in the CoPs

Fine tune the methodology





1 - Czech Republic 2 - Estonia

3 - Germany 4 - Greece

6 - Netherlands

7 - Portugal 8 - Slovakia

5 - Italy



.......





1. Art to elicit new ways of thinking and develop skills

Objective:

- To define educational programmes which stimulate:
 - Systemic vision
 - Circular and sustainable mindset
 - Structural change (biotransition)
 - Transversal competences and skills
 - Divergent thinking





What is systemic thinking?



BioGoV.net Governance & Upskilling for a Stronger Bioeconomy

Surce: <u>https://bit.ly/3SyeTsn</u>

Design thinking

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy

🔬 SQUADRA ROSSA





Paloma Oliveira



🖌 una foglia secca

🖌 un mucchie di vecchi scontrini scoloriti

« uno scontrino di 5000 euro per l'acquisto di una borsa firmata









Visual thinking

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy





2. Art to address different learning styles and BioGoV.net facilitate inclusion of marginalized groups

Using methodologies and artistic communication in bioeconomy education.

Objective:

- To define educational programmes which facilitates:
 - Use of arts in various ways to better address different learning styles people have/prefer
 - Reach marginalized groups using artistic means





Different learning styles



The VARK model (Neil Fleming) suggest that everybody receives and processes the information differently (visual, auditory, written, kinesthetic and multimodal - more information in this <u>article</u>).



Bioplastics Chefs: Super recipies for a future Taranto

Context: SOUx – School of Architecture for Kids in Taranto (old town). **Taranto** is reknown for Ilva—a steelworks factory built in the 1960s. It's one of Europe's **worst environmental disasters due to pollution, linked to various types of cancer**. The crisis has severely impacted the health of residents—especially children—and created deep social and economic tensions.

Target: kids aged 7-12 years old (some of them with **difficult backgrounds** and **learning difficulties** e.g. they couldn't read)

Format: 2 hours workshop - Sensory laboratory (observing, touching, feeling biomaterials) + bioplastics in action

Triggering questions: Do you know what waste is? What if we used waste to make biomaterials for the cities of tomorrow? ...new opportunities exist in materials, just as new opportunities exist in life.





Reach marginalized people



Examples:

- People with learning difficulties (e.g. Dyslexia, Dysgraphia, Dyscalculia, Visual Perceptual/Visual Motor Deficit, Attention Deficit Hyperactivity Disorder (ADHD) Language Processing Disorder, Nonverbal Learning Disabilities)
- Non-native speakers like migrants
- To motivate/stimulate people not easy to engage (e.g. NEETS, unemployed, etc.)



Biomaterials Lab in action!

Context: Event "Science in Borgata. A Nobel Laureate in Quarticciolo". **Quarticciolo** is a historic working-class neighborhood on the periphery of Rome, home to a diverse migrant community and known for its strong grassroots activism.

Target: young people and the entire community to activate public spaces.

Focus: promoting scientific education as a tool to fight educational inequality and local crime, with a focus on overcoming gender stereotypes in STEAM fields. The event included interactive workshops for different age groups and hosted as main guest the Nobel laureate in Physics Giorgio Parisi.





3. Art to communicate messages, inspire people and raise their interest and awareness

Using inspirational case studies and artistic formats to educate in the bioeconomy.

Objective:

- "To integrate the opportunities created by the human-centric principles, offered by art, culture and (eco)-design, in respect to the bio-based feedstocks, including traditional and novel biological materials"
- Leverage the *Nespresso marketing model* to link beauty and good (Art and Bioeconomy)

BioGoV.net Governance & Upskilling for a Stronger Bioeconomy





The BioArt Gallery







4. Inject the bioeconomy in Cultural and Creative Industries professionals

Objectives:

- Inspire students and professionals engaged in artistic careers to integrate bioeconomy in their practices
- Inform/educate professionals in Cultural and Creative Industries to use biomaterials in their work.





Do It Yourself biomaterials



Funded by

the European Union







- . **Raise awareness on more sustainable** materials for architecture and design + more responsible production
- Stimulate new perspectives on work • and entrepreneurial opportunities

Various biomaterials samples, Selenia Marinelli





What if we could embrace a new perspective in which we support alternative ways of building material production, based on our habits as food consumers?

Bio-based residues as cultural assets.

Hy-Fi Tower (The Living, 2014)





BIQ House (Splitterwerk, 2013)









Elephant Chapel (Boonserm Premthada, 2025)





Awarded with a Special Mention at the current Venice Architecture Biennale.

Motivation: For the exemplary way that it shows us how to build a durable brick structure with bio material. It uses elephant dung in order to minimize the use of materials to create an open-air sanctuary called Elephant World in a province of Thailand where humans have armoniously coexistent with Elephants for centuries.

The projects celebrates the alliance and preserves its context and condition.

66

Time to join the Interactive Sensory Session!



Final Remarks

thank you



