

EDUCATION FOR BIOECONOMY DEVELOPMENT

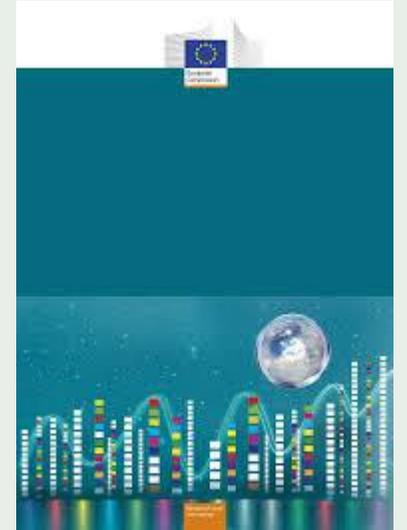
BIOECONOMY IN THE FOREFRONT OF NATIONAL POLICIES
BIOEAST CONFERENCE

BUDAPEST, 8 NOVEMBER 2018

Assoc.Prof. Eva Cudlinova & Dr George Sakellaris
University of South Bohemia, CR

The Bioeconomy Objectives in Europe

- Ensuring Food Security
- Managing Natural Resources Sustainably
- Mitigating and Adapting to the Climate Change
- Creating Jobs
- Maintaining European Competitiveness



Objectives to be reached by improving the knowledge basis and by fostering innovation

A NEW BIOECONOMY STRATEGY FOR SUSTAINABLE EUROPE, October 2018



14 key actions of the Bioeconomy Strategy Action Plan

1

STRENGTHEN AND SCALE-UP THE BIO-BASED SECTORS, UNLOCK INVESTMENTS AND MARKETS

-  Mobilise stakeholders in development and deployment of sustainable bio-based solutions
-  Launch the EUR 100 million Circular Bioeconomy Thematic Investment Platform
-  Analyse enablers and bottlenecks for the deployment of bio-based innovations
-  Promote and develop standards, labels and market uptake of bio-based products
-  Facilitate the development of new sustainable biorefineries
-  Develop new biodegradable products, including bio-based plastic substitutes

2

DEPLOY LOCAL BIOECONOMIES RAPIDLY ACROSS EUROPE

-  Launch a Strategic Deployment Agenda for sustainable food and farming systems, forestry and bio-based products
-  Launch pilot actions for the development of bioeconomies in rural, coastal and urban areas
-  Support regions and Member States to develop Bioeconomy Strategies
-  Promote education, training and skills across the bioeconomy

3

UNDERSTAND THE ECOLOGICAL BOUNDARIES OF THE BIOECONOMY

-  Enhance knowledge on biodiversity and ecosystems
-  Monitor progress towards a sustainable bioeconomy
-  Promote good practices to operate the bioeconomy within safe ecological limits
-  Enhance the benefits of biodiversity in primary production

Education for New Jobs

Bioeconomy strategy has the potential to generate 1 million new green jobs by 2030

Today's students will be part of the transition during their working career. If teachers are able to inspire this current generation of students, they can help speed up this transition.

What Do We Need

A new generation of experts:

■ Widely Educated in terms of conventional disciplines

- *[Life Sciences / Economy / Social Sciences / Regulation / Communication]*

■ Highly Specialized in terms of:

- *Domains of Application*
- *Regional Consideration*
- *Synergies and Cooperation*
- *Modelling & Systems optimization*
- *Public – Private Consideration*
- *Other*



Students Awareness of Bioeconomy

Situation in the Netherlands 2011

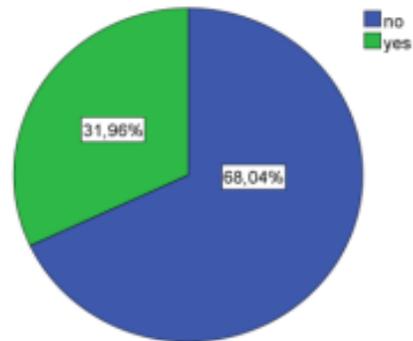
Study amongst high school students :

7% is familiar with the term bio-based economy

70% has never heard the term bio-based economy

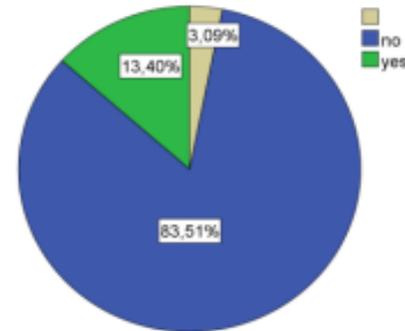
Source : Gerlinde.vanvilsteren@wur.nl , Wageningen University research

Situation in Poland 2014



Source: own research.

Figure 1. Have you heard about bioeconomy?



Source: own research.

Figure 2. Have you heard about bioeconomy at your university?

Education for Bioeconomy

- **The universities should rethink** the traditional approach where the curricula are faculty-based. We must move **towards a multidisciplinary approach** involving **economy, society, natural sciences, technology and lifelong learning**.
- **Efficient collaboration with policymakers and the bioeconomy sectors** to identify **what type of knowledge** and competences need to be developed
- **Improved collaboration between the university and industry** is necessary for the **integration of academic studies and practical experience**.

Education For Bioeconomy



It is important to **decide on whether :**

- **to integrate bioeconomy** and value chain approaches **into the existing curricula** (plant and animal science, food technology, forestry, energetics, etc.)
 - **or launch a separate curriculum** to address different aspects of the bioeconomy.
-
- **First**, students should **learn a discipline** – become a good chemist, a good process engineer or a good agronomist.
 - **Second**, they should be able to relate their expertise to the bigger picture.

International Networking

- Development of a **multidisciplinary approach** is possible via **active networking inside and outside the university**.
- **Transnational character of research and education is adequate.**

Orientations and developments in **extending the national character of the strategies/policies** by moving up to a trans regional scale clustering competences and resources for regional and global bioeconomy topics.

Networking Activities

- **LODZ Declaration on a European Bioeconomy Education Platform**

After a preparatory year and exchange of opinions, an initiative group consisted from experts from all-over Europe came to the following conclusions during **the Lodz - Poland Congress on Bioeconomy, November 20-21 2017.**

The Lodz European Bioeconomy Congress adopts this initiative and declares its full support

- **2ND GLOBAL BIOECONOMY SUMMIT BERLIN 2018**

*Parallel Workshops III, 20th April, 11:00 – 13:00 / Track: "Policy,,
International Cooperation in Education and Training*

Fundamentals for an European Forum for Education for a Sustainable Bioeconomy

EU Networking Structures

- Bioeconomy Initiative in the European Commission
- European Federation of Biotechnology – Bioeconomy Task Force
- Europa-Bio / EFIB / IFIB
- Bio TIC Consortium / Bio-Based Industries
- EU Bioeconomy Clusters & Consortia (Danube, Bio-East, Baltic, CEI)
- A Platform for the Bioeconomy Education
- **Non EU Initiatives (Malaysia, USA)**



Courses of Bioeconomy in EU

Management of Bioeconomy, Innovation & Governance ,**University of Edinburgh** (MSc)

The Bioeconomy programme is offered at the **University of Hohenheim, Stuttgart** (MSc)

Applications are now open for the master on Bio-resource Value Chain Management (BVM)
University of Twente (MSc)

Biorefinery Engineering (BRE) at the **Graz University of Technology**. (MSc)

Bioeconomy - renaissance of natural resources economy **University of eastern Finland**

BIOCIRCE – First Master's program in Bioeconomy, **Italy, Torino**

The University of South Bohemia

A strong Background in Educational Matters dedicated to Bioeconomy

- *Bioeconomy Initiative <https://bei.jcu.cz>*
- *Founder & Organizer of the Year Bioeconomy Course Event*
- *Co-Founder of the Lodz Declaration on Bioeconomy Education (2017)*
- *Coordinator of the COST-Action on Bioeconomy Education*
- *H2020 project POWER4BIO*
- *Emphasizing on the Regional Character of Bioeconomy Education*
- *Co Funder CZ Platform for Bioeconomy Education*

European Particularities

■ European Particularities:

- *Complicated political and decision making structures*
- *Fragmented social, cultural, and economic societies*
- *Lack of proactivity in the legislative process*
- *Not optimized public-private partnership*
- *Differentiated public perceptions and adoptions*



■ Despite them, Europe still remains the most advanced area on Earth in the domain of Bioeconomy Education

■ Since it is impossible to change the European Particularities, we must adapt the Educational Model to them

Means and Methodologies

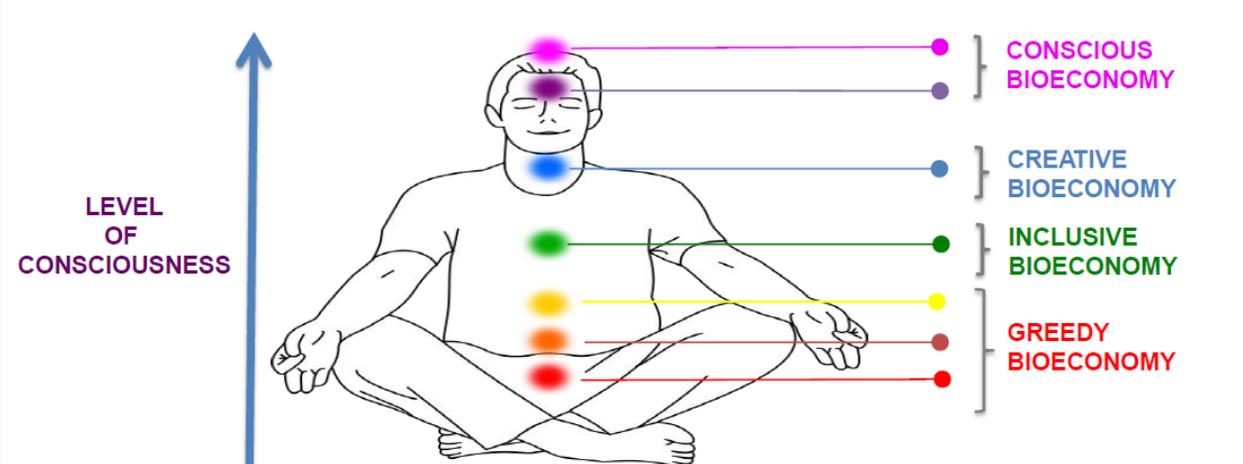
■ Screening and Evaluation of the existing Programs

- *Locations Countries Regions*
- *Inclusiveness into eventual National Strategies*
- *Platform for curricula and course mapping*
- *Detecting synergies and networks*
- *Evaluation of the outcomes*

■ Planning for the Future

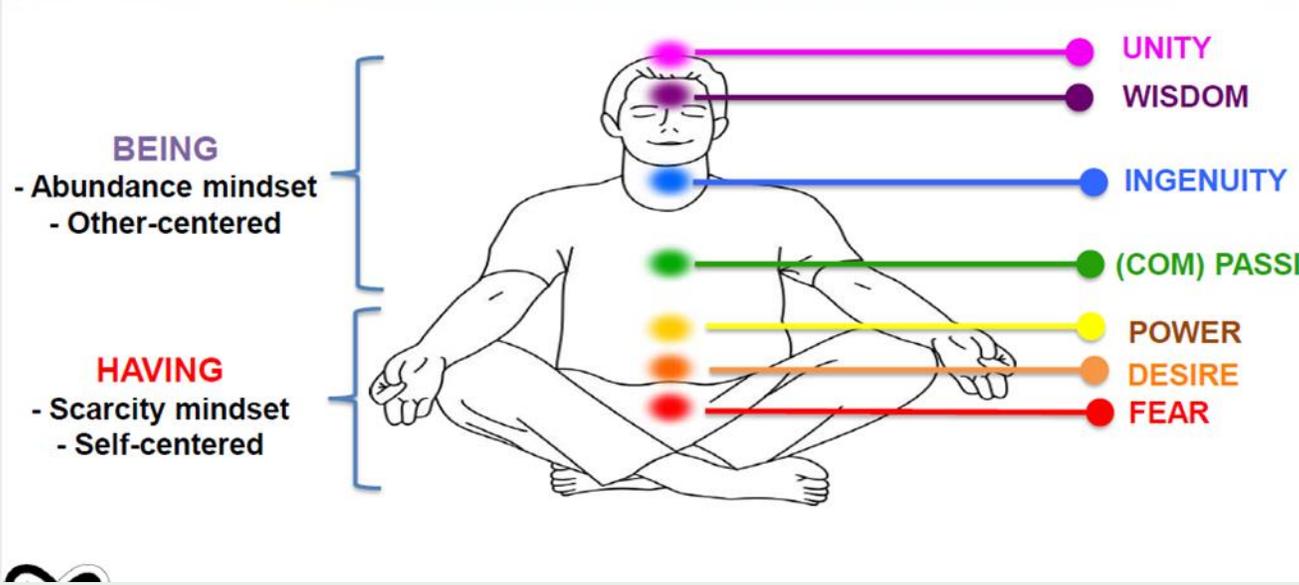
- *Level of Education*
- *Tailor made Education*
- *Digital Education*

Let's co-create the bioeconomy **consciously**



Copyright

Frugal innovators = **conscious** innovators



Navi Radjou: Frugal Innovation A catalyst for conscious bioeconomy, Berlin, Bioeconomy Summit 2018

Thank you for your attention