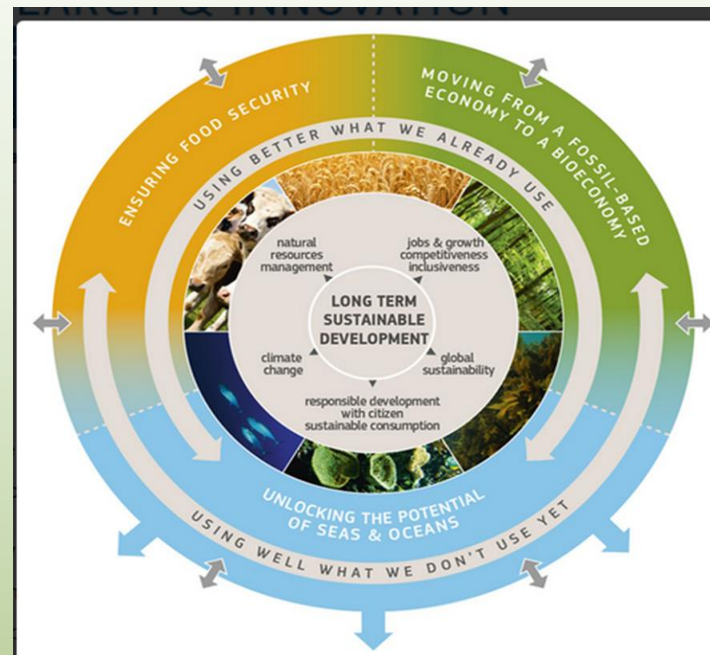


The Bioeconomy Panel – Strategies and Practices

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<http://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=panel>

Bioeconomy means ‘biologisation’ of the economy as an economy-wide and industrial strategy.

Fossil fuels are replaced by bio-based substitutes, not only for energy, but also for material, clothing, plastic, and chemical applications and non-market services

BIOECONOMY BASED ON NEW BIOLOGY CUTS ACROSS SECTORS AND CAN BE COMPARED WITH ICT’S PENETRATION OF THE WHOLE ECONOMY



From bioeconomy to bioeconomy

Oil
consumption



1000

2000

3000

Living off the land

*A brief
moment
in history*

Living off the land

BIOECONOMY IS ALSO A VERY ANCIENT AND TRADITIONAL
(bread baking, beer brewing, food conservation, char coal
production),

Historically biomass was the main primary energy source.
Also, for instance in Ethiopia today, biomass is still by far
the dominant energy source, providing about 90 per cent
of primary energy.

**HERE THE CHALLENGE IS TO MAKE BETTER USE OF BIOMASS
WITH NEW TECHNOLOGIES**

Theory of bioeconomy and conceptual issues

Why and When did bioeconomy appear?

What challenges does bioeconomy want to solve ?

What are the main gains and risks of bioeconomy?

Environmental and Ecological economics

Green economy -bio based economy - circular economy

What are the relationships?? similarities ??? Differences ???

„GREENING“ of economic thinking

I. 20th century (1973 ,1979)

- oil shocks – price rises
- changes of societal viewing of nature (*Silent Spring and Limits to Growth*)



1980-Environmental, Resource and 1990- Ecological Economics-

Sustainable Development

II. 21th century (2008 -2009)

- financial economic crises
- climate changes
- Oil and resource crisis



Green Economy- BIOECONOMY

Green growth - Separation of economic growth from degradation of natural environment

BIOBASED ECONOMY

INCREASED EMPLOYMENT AND
INCOME GENERATING OPPORTUNITIES

FACTORS INFLUENCING INCOME GENERATION
-- PART-TIME JOBS OR SHIFT-WORK
-- NUMBER OF HOUSEHOLDS
OR PEOPLE EMPLOYED
-- NUMBER OF EMPLOYMENT PER ENERGY UNIT
PER AMOUNT OF LAND
-- LOW SKILLED LABOUR AND INDIRECT LABOUR

SOCIAL BENEFITS

SOCIAL COSTS

INCREASED
STANDARD
OF LIVING

INCREASED
ACCESSIBILITY
TO GOODS
-- EDUCATION
-- HEALTHCARE
-- FOOD
-- RESOURCES

IMPROVED HUMAN
HEALTH

-- REDUCED AIR
POLLUTION
-- REDUCED
DISEASES

INCREASED COHESION /
STABILITY

-- REDUCED
MIGRATION
-- RURAL
DEVELOPMENT

INCREASED
BENEFITS FOR
PRODUCERS
AND SELLERS

INCREASED PRICES
OF LAND / CROPS
OR FOOD

NEGATIVE IMPACTS
ON:
-- CONSUMERS
-- URBAN POOR

CHANGES IN
LAND USE AND
LAND ACCESS

-- LESS PASTURES
FOR LIVESTOCK
-- DESTRUCTION OF
TRADITIONS

FOOD
INSECURITY

INCREASED
UNDERNOURISHED
POPULATION

Bioeconomy externalities

The emerging bioeconomy is changing the competition for food, land and water.

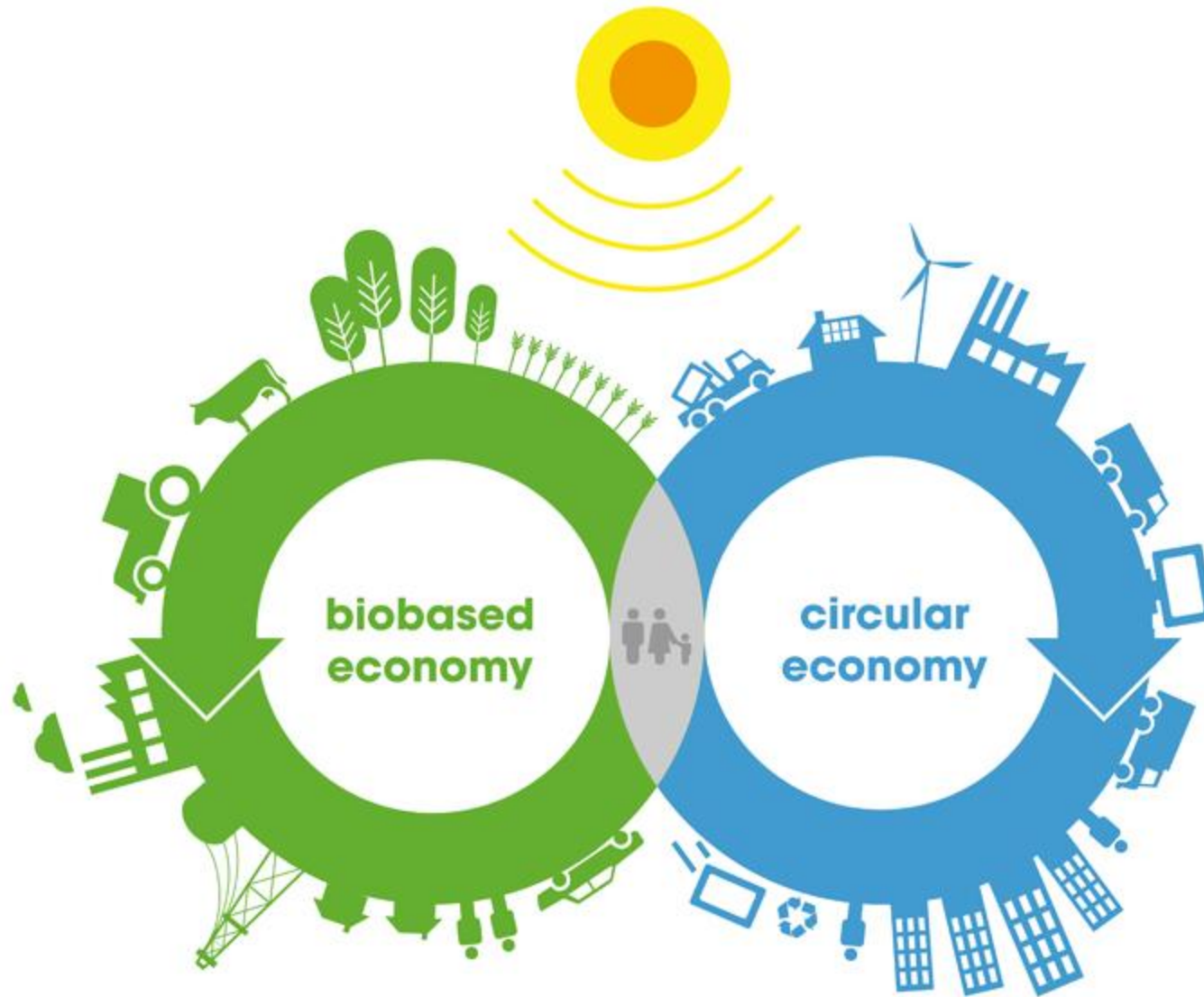
The governance of the food system needs to pay renewed attention to property rights, especially land, including communal lands.

Reconciliation of food security goals and bioeconomy is thus a matter of technological and institutional innovations

Reconciliation of food security goals and bioeconomy is thus a matter of technological and institutional innovations

Systematic research into the bio-economy is still in its infancy and should be pursued to explore its perspectives

Implementation of measures will necessitate the active participation of all stakeholders in innovation



Biobased Economy / Circular Economy

Fossil route:
1.000.000 year



Oil & gas
Refinery

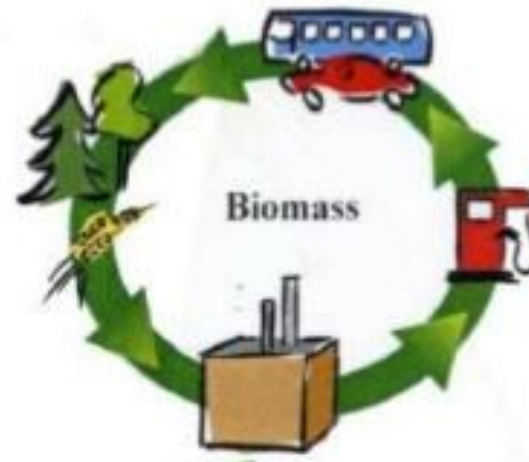


Polymers or
chemicals

BROKEN CIRCLE



CLOSED CIRCLE



Bio route:
1 to 2 year

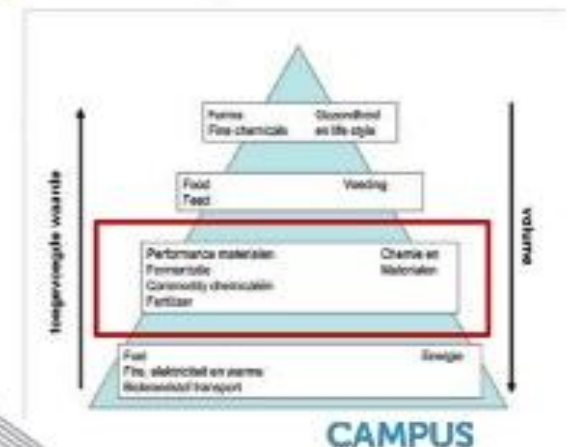


Agro products
Bio refinery
Modification



Polymers of
chemicals

Gradual shift towards sustainable systems



Accelerating Biobased Business

Where next for the European bioeconomy?

The latest thinking from the

1. **Standing Committee on Agricultural Research Strategic Working Group (SCAR)**
2. **European Bioeconomy Panel**



It is released on the occasion of the **Bioeconomy Stakeholders' Conference** organised by the Italian Presidency of the European Union in Turin on 8-9 October 2014.

The Standing Committee on Agricultural Research (SCAR)

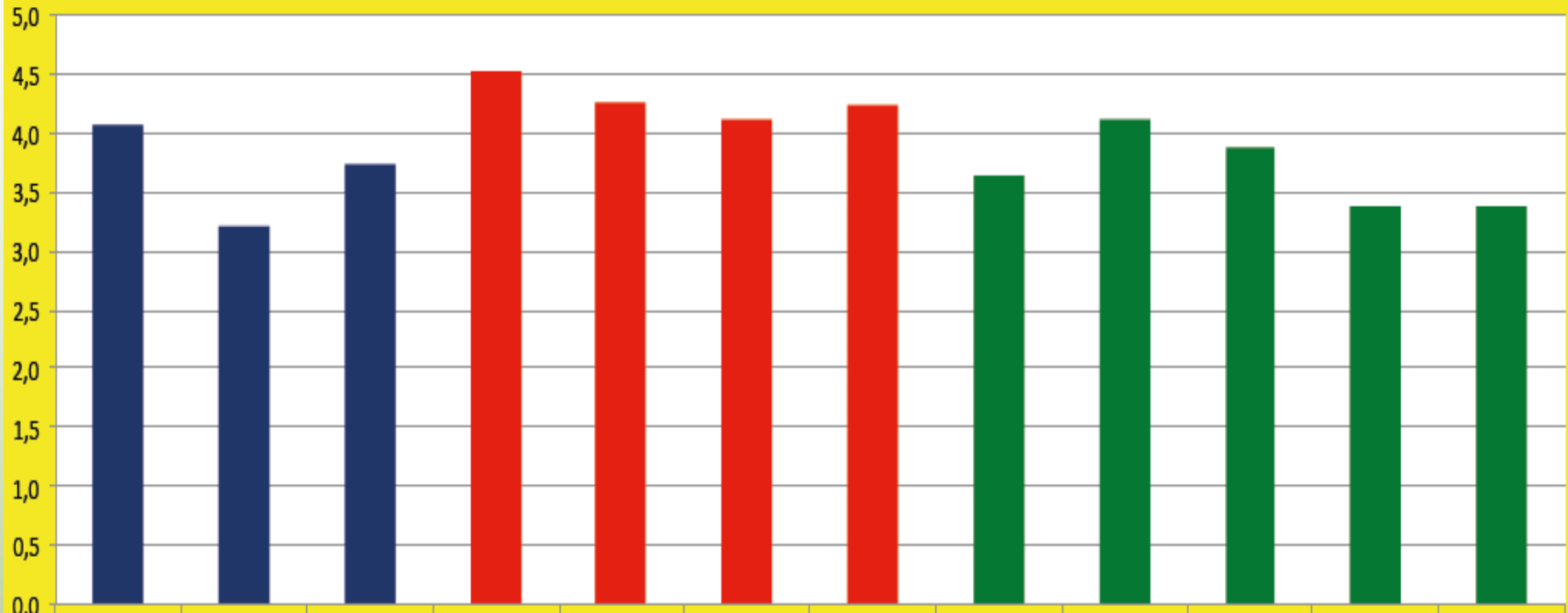
is a committee of EU Member State representatives, chaired by the European Commission. **Established in 1974** by a regulation of the Council,

it was **re-launched in 2005** with a strengthened mandate **to advise** the Commission and Member States **on the coordination of agricultural research efforts**.

The SCAR established its **Strategic Working Group - Sustainable Bio-resources for a Growing Bioeconomy in 2012**.

The Standing Committee on Agricultural Research (SCAR)

Q2 Bioeconomy drivers - national priorities



Food security, land use
EU bioeconomy strategy
Energy independency
Develop classic BE sectors
Develop new BE sectors
Improve business, employment
New business, employment
Healthy diet
Global climatic change
Environmental protection
Waste reduction, residue use
Meet new societal demands

■ Environmental ■ Economic ■ Social

19 countries included

The European Bioeconomy Panel

Established in 2013 to support interactions among different policy areas, sectors and stakeholders in the bioeconomy.

The Panel **was created with 30 members**, selected after a call for applications

Representing :

**business and producers,
policymakers,
scientific community
civil society.**

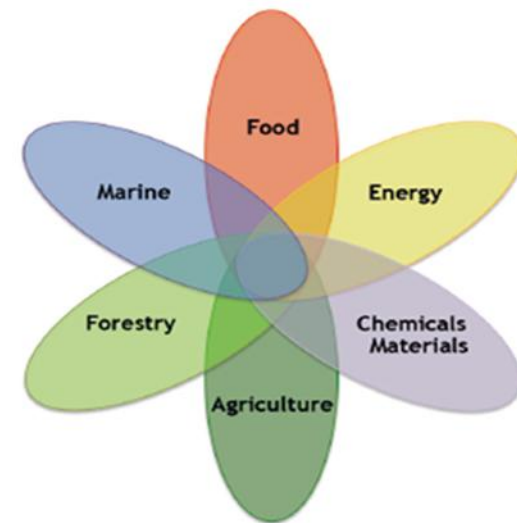


Figure 2.1. Fields covered in the Bioeconomy

The Bioeconomy Panel

In its first year the Panel **established two thematic working groups:**

- **GROUP ON BIOMASS SUPPLY**
- **GROUP ON MARKET-MAKING IN THE BIOECONOMY**

Two papers:

Paper on Biomass Supply

Paper on Market-making in The Bioeconomy

The Bioeconomy Panel supports :
the European Commission Action Plan on the bioeconomy
EU strategy for bioeconomy

Paper on Biomass Supply

Three challenges

1. overexploitation of natural resources
2. reduce greenhouse gases related to land use
3. ensure economically viable biomass for all operators in the chain

The first challenge is to produce enough biomass without overexploitation

Additional land to grow crops and forests for energy or materials is available but limited. There is a real risk of more desertification and of overexploitation of the earth's resources .

The second challenge is to reduce greenhouse gases related to land use and biomass production.

Worldwide, the **agricultural sector is estimated to be responsible for 25% of greenhouse gas emissions**. Bioenergy is promoted to replace fossil resources and to mitigate climate change, which makes sense to the extent that greenhouse gas emissions related to land use are reduced.

A third challenge is to **ensure economically viable biomass for all operators in the chain**

Every nation has the potential to develop its own resources and in doing so to stimulate economic **growth**, provide skilled **jobs** and support primary **industries**, such as forestry and agriculture.

These impacts could be also important in developing nations.

Potential for bioeconomy

Forest-Based Sector Technology Platform :

harvesting possibilities in Europe could be **increased sustainably by 30% from 2010 to 2030** if the adequate **research and innovation activities** are successful.

Agriculture:

there is potential to **increase yield by applying new techniques**, choosing the most efficient crops – **using unused or unproductive land (for example around highways, in industrial areas or in cities)**

Marine and aquatic resources:

Aquaculture (on land and at sea) has huge potential for creating new supplies of biomass

Municipal waste: in the first place the principle ‘reduce, re-use, recycle’ should be pursued.

Considerations – EU support

A. Sustainable biomass: There is no “sustainable” or “unsustainable” biomass as such.

Rather, there are less sustainable production practices, at the expense of factors such as soil, biodiversity, water and ecosystems.

B. Current policies: Sustainable production is promoted by current policies within the EU:

The Common Fisheries Policy (CFP) and CAP

C. Sustainability criteria: Sustainability criteria are also implemented, for example, in the Renewable Energy Directive (RED) and the Fuel Quality Directive.

the European Commission has proposed to limit the use of food crops for biofuels.

The concept of Sustainable Biomass Regions

A regionally differentiated strategy to prevent environmental harm and to facilitate social and economic growth

Regional (sub-national) approach:

Creating more certification systems or requirements, or more regulations, may not be the best way to increase sustainable production

A regional/local approach can also take into account divergent natural or social circumstances and needs

Paper on Market-making in The Bioeconomy

EU bioeconomy markets face **disadvantages when compared** with international competitors in, for example, the **US, Brazil, China and South East Asia**, such as :

- higher land and energy costs

- lower political support, funding and incentives.

Recommendation for improvement the situation

- 1. Inputs: infrastructure, raw materials, energy and skills*
- 2. Fostering Innovation and Collaboration*
- 3. Attracting investment*
- 4. Coherent legislation and the need for supportive policy*
- 5. Demand side measures*
- 6. Awareness and understanding*

Bioeconomy observatory - data about bioeconomy

Observatory Policy Research Markets Countries Analysis Stakeholders Observatory Search

Your source of information on bioeconomy

Find here all the latest **data** and **information** about **bioeconomy**, including **statistics** on investments in research, **policy mapping**, bioeconomy **country profiles**, **data visualisation** and **analytical reports**.

This website is managed by the European Commission's **Joint Research Centre (JRC)**.

Contents of this first website version will be **regularly upgraded**.

Policy
Policy Mapping

Research
Research Statistics

Markets
Economic Data

Joint JRC - SCAR survey



Bioeconomy implementation in Member States

*Results of the joint JRC - SCAR survey
September 2014*

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BIOECONOMY WITHIN CZECH REPUBLIC

Czech republic bioeconomy activities

1) May 2012 - „Towards a sustainable bioeconomy in Europe: how the Czech Republic is making the difference „ Brussel

The Czech Liaison Office for Research and Development (R&D) and the Permanent Representation of the Czech Republic to the European Union recently held a special conference on the country's contribution to moving Europe towards a sustainable European bioeconomy.

2) January 2015 - Bio-based Economy – Opportunities for Cooperation Workshop – Bio-based Industries

Czech Republic - bioeconomy institutions

1. The Central European Institute of Technology (CEITEC) in Brno ;
2. Specialist centre in life sciences and advanced materials and technologies research; the Institute of Chemical Technology (ICT) in Prague;
3. The Czech University of Life Sciences Prague (CULS);
4. CzechGlobe - Global Change Research Centre in Brno, a centre whose primary objective is to obtain deep knowledge of global climate change issues;
5. The Academy of Sciences , Czech Republic (ASCR) in České Budejovice.
6. BIOECONOMIC INITIATIVE – UNIVERSITY OF SOUTH BOHEMIA

Project examples

MOBITAG ('Building up modern **biotechnologies for agriculture**'),

'CAPACITIES' Theme, helped enhance research of novel biotechnologies with particular emphasis on **genome analysis**, exploitation of natural compounds, transgenesis, and safety aspects of **genetically modified**

CONFFIDENCE ('**Contaminants in food and feed**: inexpensive detection for control of exposure')

Preparing

A REGULAR Post Graduate Course on Bioeconomy University of South Bohemia

Scope

The post graduate course on Bioeconomy - **multidisciplinary approach**, covering a wide spectrum of topics from sciences, economy, business, law and communication.

various backgrounds:

Undergraduate students of :

Life Sciences or

Agriculture

Social Scientists or

Business students aiming to pursue a career in life sciences innovation

Structure

The key element of the course, structured in well-defined units and provided in both

- 1/ **theoretical courses** and
- 2/ **group-based case studies practical works.**

Students will benefit from :

the input of various faculties of the University of South Bohemia (e.g. Economy, Life Sciences, and Agronomy) but also from the presence of top level invited contributors and lecturers.

Possible Subjects

- *Green growth, sustainability and resource dependencies*
- *Characteristics and applications of biomass*
- *Trends in the domains of energy (including biofuels), chemistry, materials (including bioplastics), biotechnology, waste processing, pharmaceuticals, agriculture, forestry and fisheries*
- *Geo-political distribution of farmland, biomass resources, transportation hubs and industrial processing facilities*
- *Biorefineries and Green Chemistry*
- *Circular economy, recycling and cascading of biomass applications*
- *Policy support schemes and governance arrangements*
- *Societal issues, e.g. 'Food versus fuel' and intellectual property rights for GMOs*
- *Decentralization and regionalization (production closer to consumption) against the backdrop of growing global markets*

Our inspiration

Bioeconomy courses organized abroad

The University of Edinburg (in Europe)

http://www.ed.ac.uk/studying/postgraduate/degrees?id=769&cw_xml=details.php
<http://www.ed.ac.uk/studying/postgraduate/degrees?id=769&cw_xml=details.php>

(in MSc level)

The University of Iowa (in the United States)

<https://www.biorenew.iastate.edu/education/courses/>
<<https://www.biorenew.iastate.edu/education/courses/>> as an example Finally, if you look at the Bioeconomy calls and you see that one of them is of interest might proceed further to join a consortium or create one.

Thank you for your attention