



BIOECONOMY STRATEGIES IN THE WORLD

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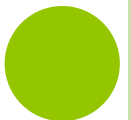
CONTENT

- Background for Bioeconomy strategies
- Why we need strategies?
- Summary of Bioeconomy related strategies around the world (based on German Bioeconomy Council reports)
- Questions & discussion



BACKGROUND FOR BIOECONOMY STRATEGIES

- Sustainability issue
 - Who is the best example of real sustainability?
 - How do it act?
 - Does it grow year by year?
 - Who does?



BACKGROUND FOR BIOECONOMY STRATEGIES

- Money issue
 - Money as a tool not as a goal
 - Take care about „real“ things



BACKGROUND FOR BIOECONOMY STRATEGIES

- Consumption issue
 - Change consumption patterns
 - Footprint of products, localness, renewability
 - The cleanest product is one that you don't have to produce



BACKGROUND FOR BIOECONOMY STRATEGIES

- Obsession with numbers
 - Prediction of Inflation (Tomáš Sedláček)
 - Douglas Adams: The Hitchhiker's Guide to the Galaxy
 - Importance of new measurements not based only on quantity of production, i.e. consumption



BACKGROUND FOR BIOECONOMY STRATEGIES

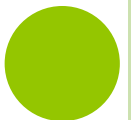
○ Equality issue

- There is enough to prevent suffering for anybody
- Can we achieve equality by another growth?
- Famine vs. diseases of obesity



BACKGROUND FOR BIOECONOMY STRATEGIES

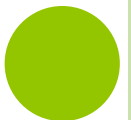
- Economical – ecological – social issue
 - Importance of weights
 - Does it pay back?
 - Bioeconomy as long term sustainable or temporary solution?



BACKGROUND FOR BIOECONOMY STRATEGIES

- New Jobs
 - Global Sustainability
 - On the way to equality?
 - Does technology create new jobs?

NEW JOB



WHY WE NEED STRATEGIES?

- Risk of abuse the thought of circularity
 - Consumer as a new job?
- Experience based behavior
 - Don't repeat ours mistakes?



BIOECONOMY

- Main areas
 - Energy (electricity, fuel, heat)
 - R&D
 - Agriculture
 - Forestry
 - Marine resources
 - Chemical industry
 - Pharmaceutical industry
 - Food industry and others



BIOECONOMY

- A little more extensively **BE** can be described as relatively new multidisciplinary ideological direction affecting all major sectors of the economy, for which purpose we can consider creating an economic system that uses as inputs of its production **biological** and therefore within an acceptable timeframe **renewable** natural resources instead of **non-renewable** resources, especially **fossil**. These renewable resources are located mainly in rural areas, and their use can provide **long-term sustainable jobs**, increase the **attractiveness** of rural areas and thus indirectly contribute to strengthening **competitiveness** and **self-sufficiency** of rural areas and thus limit the **migration** of young people from rural areas.



BIOECONOMY

- Through the application of knowledge derived from biotechnology research system we can utilize these resources **efficiently, sustainably** and at the same time carefully considering the environment, thus contributing to solving the mentioned global societal challenges. Through the production of new "bio" products (biobased products), for example: bioplastics, biofuels, bioenergy, biopharmaceutics et al., which requires not only infrastructural (eg. construction of biorefineries) but also procedural modifications to the existing system (eg. localization and assessment of biomass resources , supply chain logistics etc.), **BE** offers new development potential for both existing and new, previously unused or stagnant, sectors and regions.



BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
EU	YES	<p>R&D Innovation;</p> <p>Biotechnology;</p> <p>Politics coherence;</p> <p>Food and (bio)energy safety;</p> <p>Sustainable „green“ and „blue“ development;</p> <p>Global societal challenges (climate change, resource management, food security);</p> <p>Strengthening competitiveness EU as whole within global economy</p>	<p>Innovating for Sustainable Growth : A Bioeconomy for Europe</p>	<p>HORIZON 2020</p> <p>Food security, sustainable agriculture, marine and maritime research and the bioeconomy programme;</p> <p>SPIRE (chemistry);</p> <p>EIBI (developing „clean energy“);</p> <p>European Innovation Partnership (EIP) in agriculture (EIP- AGRI);</p> <p>PPP projects – The Biobased Industries Consortium;</p> <p>Bioeconomy panel (2013) – expert advisory board;</p> <p>ERA-NET – Joint Programming Initiatives;</p> <p>Bioeconomy observatory (statistical monitoring and modeling);</p> <p>Key Enabling Technologies Observatory (monitoring in field of EU biotechnology area);</p> <p>European commission for standartization (standards for biobased products, trademark, label „bio“)</p>

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Germany	YES	R&D and innovation; Biotechnology; Renewable resources; World food security; Sustainable agricultural production; Healthy and safe nutrition;	Forschungsstrategie BioOekonomie 2030 (2010); Bioeconomy Policy Strategy (2013); Action plan of using renewable resources for material and energy consumption; Action plan for renewable energy; Strategy for Forestry 2020; National research strategy (NFS, 2010) - 2.4 bil.. EUR - Strengthening innovation ability of research in private and public sector	Support alliance between science, SMEs and industry with aim to create Bioeconomy value chain; Support for building biorefineries for lignocellulose within bioeconomy cluster in LEUNA – up to 40 mil. EUR; Support for building plant for production 2. generation bioethanol in Straubing; Support for plant for recyclation biogenic waste in Karlsruhe; Support for biorefinery for production of kerosin from algae in Julich; Support for start-up business, study and training courses

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Finland	YES	<p>Sustainable food production;</p> <p>Replacing fossil resources;</p> <p>Ensuring sustainable growth of economy and competitiveness and well-being of citizens</p>	<p>The Finnish Bioeconomy Strategy – Sustainable growth from bioeconomy (2014)</p>	<p>Creating favourable business and investment climate;</p> <p>Establishment of Bioeconomy Panel;</p> <p>Innovative financial instruments for support new types of bioeconomy enterprising;</p> <p>Comprehensive support research and training experts in BE area</p>

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Sweden	YES	<p>Sustainable production of biomass;</p> <p>Reducing the climate impact of existing activities;</p> <p>Decrease the use of fossil fuels;</p> <p>Creating smart products resulting from the refining of biomass;</p>	<p>The Swedish research and innovation strategy for the bio-based economy (2012)</p>	<p>Support for the activities of universities and research institutions;</p> <p>Promoting changes in consumption patterns of consumers and producers;</p> <p>Consideration of environmental and socio-economic impacts of increased biomass production;</p> <p>Support for SMEs;</p> <p>Promoting collaboration across industry sectors</p>

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
West Nordic Countries	<p>YES;</p> <p>Common macro-regional strategy for Island, Greenland and Faroe Islands</p>	<p>R & D and innovation;</p> <p>Achieving "green" growth;</p> <p>Biotechnology;</p> <p>Use of marine biological resources;</p> <p>Technology transfer;</p> <p>Soil protection;</p>	<p>Future Opportunities for Bioeconomy in the West Nordic Countries (2014);</p> <p>Nordic bioeconomy initiative(2012) – tool for establish common political platform</p>	<p>Provisions Bioeconomy Panel to create a more comprehensive bio-economy strategy;</p> <p>The establishment of centers of excellence, virtual knowledge networks - making regions more attractive;</p> <p>Support for construction of the central biorefinery</p>

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
France	In the preparation stage; Mainly terms „green economy“, „industrial ecology“ and „circular economy“	Ecological transformation (transition); Industrial biotechnology; Biofuels; Energy from biomass ; Greening the chemical industry; Biobased materials - particularly bioplastics ; CO2 separation; Storage and recovery; Treatment of water resources; Environmental Engineering	National Strategy for ecological transition (2014); Future Investments Programme (infrastructure, research and training in biotechnology, bioinformatics, agriculture, nanobiotechnology) - more than 1.5 billion. EUR for the last 10 years; Programme Energy and Life - Cycle Management - 1.35 billion. EUR greening the chemical industry and the promotion of bioenergy; Programme for Innovation - 1bn. EUR for centers of excellence focused on renewable energy	Boosting cutting-edge technologies; Motivation for the ecological transformation of society (social transition based on a shared vision and common practiced patterns of consumer behavior); INRA - National Institute for Agricultural Research; ADEME - Agency for Renewable Resources; CNRS - National Research Institute; Support Clusters of competitiveness - cooperation between science, research and practice on a regional basis; The Action Plan for the regeneration industry: The New Face of Industry ; Action plan for sustainable public procurement in order to promote organic products; Biobased buildings standard ; IRS - the standard for sustainable investment funds; Grenelle law - a tool for more organic farming; EcoPhyto Plan - management of plant cultivation - "Biodiversity Act"; Increasing environmental taxes towards the EU average

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Italy	In the preparation stage; Mainly term „green economy“,	The transition to a "green plant-based" chemical industry; Strengthening competitiveness and innovativeness	The law on banning the production of plastic bags of non-biodegradable plastic (2011)	Organizing 3rd EU Bioeconomy Stakeholders Conference in 2014 or 2015 World Fair (food security); The creation of innovation clusters, eg. Bio-economic cluster SPRING - greening of the chemical industry; Establishment of a fund for sustainable growth - 300 mil. EUR for research projects and support for SMEs; Support for the construction or conversion of non-fossil based large-scale demonstration plants

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Austria	In the preparation stage; BE in sub-documents	Bio-Based Industry; R & D and innovation; The increase regional added value and competitiveness of regions; Reduction of dependence on imported natural resources; Biobased průmysl	Policy paper on bioeconomy (2013) – commitment for bioeconomy research in Government coalition agreement; Strategy for research, technology and innovation in the biobased industry - RTI (2014)	The establishment of an interdepartmental working group that developed Status Quo Report - assessment of bio-economic oriented activities in the country in order to create the National RTI Strategy for bioeconomy; Support biorefineries; Creation of stakeholder platforms; Support for the development of concepts for efficient use of biomass and to assess the economic and environmental impacts of organic products

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Belgium	In preparation stage, For now prevails regional activity in BE	To become one of the most competitive bio-economic regions in Europe in 2030; "Green" growth; Creating new jobs; The development of circular economy ; Local, efficient and sustainable use of biomass - sustainability criteria	Memorandum Bioeconomy in Flanders (2014); New Industry Policy ; New Factory of the Future	Assembly Innovation Hub for Sustainable Chemistry ; Assembling an interdepartmental working group for bio-economy - IWG

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Denmark	In preparation stage; Many BE relevant documents	Ambitions to become an bioeconomy leader ; Economical growth; Creation of new jobs; Support for exports ; Reducing dependence on fossil fuels, Sustainable way of food production; Exploiting the potential of biofuels	Growth Plan for Foods (2013); Growth Plan for Water, Bio and Environmental Solutions “ (2013); Declaration Denmark as growth hub for sustainable bioeconomy ;	Appointment of the National Bioeconomy panel ; Support PPP cooperation in order to develop the market for biobased products ; Support for construction of biorefineries

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Great Britain	NO; Many BE relevant documents	" high-value " and " high-competitive industry "; Biofuels and bioenergy; Bioplastics and biomaterials; Industrial biotechnology; Sustainable intensification of agriculture ; " Low-carbon " wood industry; Technology transfer	Natural Environment White Paper (NEWP, 2011); Science and Innovation Strategy for Forestry in Great Britain (2014); Marine Science Strategy 2010 – 2015; Agri-tech Industrial Strategy 2013; High-value Manufacturing Strategy 2012; Bioenergy Strategy 2012; Global Food Security Programme	Assembling The Biotechnology and Biological Science Research Council (BBSRC) ; Provisions of the Industrial Biotechnology Innovation and Growth Team ; Support Sustainable Bioenergy Centre - cooperation among the elite research institutions; Promoting the integration of biorefineries and biobased processes; Foundation of Science and Innovation Fund - cooperation with developing countries; Tax relief and better purchase prices for producers of bioenergy

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Netherlands	NO; Preferred term biobased economy	Solutions of global societal challenges (climate change, energy security, sufficient resources); Efficient use of biomass ; Support for R & D and innovation; Biobased materials, bioenergy	Innovative contract in the field of bio-based economy : "Groen" Groen Van biomass naar business "(2012); Framework Memorandum on the Bio-based Economy (2012); Green growth strategy "Groene Groeio: voor een gravel, duurzame economie" (2013); Action plan to develop biorefineries (2008)	Support for PPP projects in biotechnology , food, chemical industry and agriculture; Support for the development of sustainability criteria for biomass utilization; Creating the Top Consortium for Knowledge and Innovation - more than 100 stakeholders; Support biorefineries

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Ireland	NO; Many BE relevant documents	Food and energy security; Rural development; Promotion of public health; Economical growth; Strengthening competitiveness; Creating new jobs; Strengthening the knowledge capacity; Exploiting the potential of large quantities of biomass - Biotechnology	Towards 2030 – Teagasc’s role in Transforming Ireland’s Agri-Food Sector and the Wider Bioeconomy (2008); Government policy statement Delivering our Green Potential (2012); Harnessing our Ocean Wealth – integrated development plan for blue economy	Government finance the 2 year project „ A Bio Economy for Ireland – An Evaluation of Development opportunities, Policies and Initiatives Shaping Ireland’s Transformation to a Sustainable Low Carbon Bioeconomy “; Training and education experts in BE area

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Lithuania	NO; Comprehensive support for biotechnology	Strengthening the high-tech industry ; Reduce dependence on imported fossil fuels; Creating value-added agricultural and forestry products; Efficient use of biomass; Production of bioplastics, 2nd generation biofuels, biopharmaceuticals, etc .; Economical growth; Increase the proportion of " high added-value, knowledge-intensive and highly-qualified-labor-intensive economic activities " on GDP	National Program for Biotechnology Development (2006)	Extensive investments in R & D; Promotion of new bioeconomy enterprises and clusters ; The commercialization of the results of R & D; Promoting cooperation between the research and business; Support for the development of biorefineries

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Portugal	NO; Mainly focus on marine area	Ambition to become a leader among the maritime nations of the world ; Economical growth; Creating new jobs; Sustainable aquaculture ; "Blue" biotechnology and energy; Use of algae for biofuel production	National Ocean Strategy (2013)	Support for multi-sectoral projects for the valorisation of oceans and coastal areas; Support for biorefineries

BIOECONOMY RELATED STRATEGIES IN EUROPE

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Norway	In preparation stage; BE also in other documents	Development of innovative marine bio industry ; biotechnology; Strengthening competitiveness; Creating new jobs; Food security ; Greening industrial and energy sectors; Promoting the development of rural areas in particular; Effective utilization of biomass	Marine Bioprospecting Strategy (2009); Strategy for an environmentally sustainable Norwegian aquaculture industry (2009); National Biotechnology Strategy (2011); Research Programme on Sustainable Innovation in Food and Biobased Industries (BIONAER);	Founded Norwegian Institute for Bioeconomic Research (Nibbio, 2015); Promoting co-operation between research and industry - research community;

BIOECONOMY RELATED STRATEGIES IN AFRICA

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
South Africa	YES	Bioinnovations based on biological sources and processes to generate sustainable economic, social and environmental development	South Africa Bio-Economy Strategy (2013); Ten-Year Innovation Plan (2008); National Biotechnology Strategy (2001)	Education & training of experts; Funding academic researchers; Bio-Innovation Venture Capital Fund; „Responsible“ genetic engineering; Plan to develop new drugs , vaccines, diagnostic and medical devices (TBC, HIV)

BIOECONOMY RELATED STRATEGIES IN AFRICA

- Focused on Bioenergy
 - Mali, Nigeria, Senegal, Uganda
- Focused on Biotechnology
 - Kenya, Tanzania, Uganda
- Focused on R&D and Innovation
 - Namibia
- Focused on Blue Economy
 - Mauritius



BIOECONOMY RELATED STRATEGIES IN AMERICAS

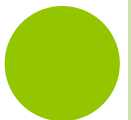
Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
USA	YES	Health sector; R&D; Biofuels; Biobased materials; Non-energy application of Biomass; Genetical modification; Innovation; Bioinformatics; Synthetic biology	Bioeconomy Blueprint (2012); Farm Bill; Biorefinery Assistance; Program to biobased materials	Farm to fleet programme – biofuel for NAVY; Biopreferred Program (Public Procurement);

BIOECONOMY RELATED STRATEGIES IN AMERICAS

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Brazil	NO; Mainly green economy, biotechnology	GMO – the biggest producer; Food security, health, income; competitiveness; Biodiversity; Large scale biofuel program since 1975	Bioenergy Strategy; Biotechnology Strategy (2007)	Social Label to protect local farmers; Support sugar-based biofuels;

BIOECONOMY RELATED STRATEGIES IN AMERICAS

- Focused on Bioenergy
 - Mexico
- Focused on Biotechnology
 - Uruguay, Paraguay, Colombia
- Focused on R&D and Innovation
 - Argentina



BIOECONOMY RELATED STRATEGIES IN ASIA/PACIFIC

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Japan	YES	<p>Autonomous and decentralized energy production;</p> <p>Protect traditional agriculture places;</p> <p>Achieve harmony with nature;</p> <p>Efficient use of biomass;</p> <p>R&D</p>	<p>National Plan for Promoting Biomass Utilization (2010);</p> <p>Biomass Industrialization Strategy (2012);</p> <p>Low Carbon Technology Programme</p>	<p>National Bioeconomy Council;</p> <p>Labels (EcoLeaf) of products footprint;</p> <p>Biomass town concept;</p> <p>Tax relief for green innovations;</p> <p>Increasing CO2 tax;</p> <p>Fair distribution between urban and rural areas</p>

BIOECONOMY RELATED STRATEGIES IN ASIA/PACIFIC

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Malaysia	YES	<p>Multistakeholder cooperation;</p> <p>Biotechnology;</p> <p>Transformation into a knowledge economy by 2020;</p> <p>Maximize commercial opportunities</p>	<p>Bio-economy</p> <p>Transformation Programme;</p> <p>National Biotechnology Policy;</p> <p>National Biomass Strategy</p>	<p>BiotechCorp – bio-accelerator platforms;</p> <p>3 phases:</p> <p>Capacity building (2005 – 2010);</p> <p>Commercialization of R&D (2011-2015);</p> <p>Internalization (2016-2020)</p>

BIOECONOMY RELATED STRATEGIES IN ASIA/PACIFIC

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
Russia	YES	<p>Biotechnology; Nanotechnology; Towards to post- industrial economics („World Bioeconomics“); Genetically modified plants and animals</p>	<p>Comprehensive Program for the Development of Biotechnology – BIO2020</p>	<p>Demonstration plants; Technology center; Biobased clusters; Support SME’s; RVK – Russian Venture Capital</p>

BIOECONOMY RELATED STRATEGIES IN ASIA/PACIFIC

Country	Dedicated BE Strategy	Focus	Documents/Financing	Main BE support tools
South Korea	YES	<p>Low Carbon Growth Strategy;</p> <p>Biotechnology;</p> <p>Health;</p> <p>Establish „creative“ economy;</p> <p>R&D;</p> <p>High-added value agriculture;</p>	<p>Blue-Bio 2016 Plan;</p> <p>Biovision 2016;</p> <p>Green Growth Strategy;</p> <p>National Basic Energy Plan;</p>	<p>Training and education;</p> <p>Coordination of cooperation across all sectors;</p> <p>Public procurement;</p> <p>Clear quantitative targets to achieve</p>

BIOECONOMY RELATED STRATEGIES IN ASIA/PACIFIC

- Focused on Bioenergy
 - China, Indonesia, New Zealand, Thailand
- Focused on Biotechnology
 - Australia, China, India, Sri Lanka, Thailand
- Focused on R&D and Innovation
 - Australia, China, New Zealand
- Blue Economy
 - Australia



Thank you for your attention

Any questions?

