

Daniel Rossi - Copa Coge La la Inpoche Research Innovation Working Party - Delegate R&I Confagricoltura 2019 June 27- Session XIV Room 2 "Policy, Prevention, Socio Eco Issues" 7th Intern. Conf. on Sustainable Solid Waste Management -Heraklion 19

copa*cogeca

european farmers

european agri-cooperatives

copa

european farmers



Created in 1958

23 million European farmers and family members

60 full members from the EU Member States and 36 partner organisations

Created in 1959

22.000 European agricultural cooperatives

35 full members from the EU Member States, 4 affiliated members and 36 partner organisations

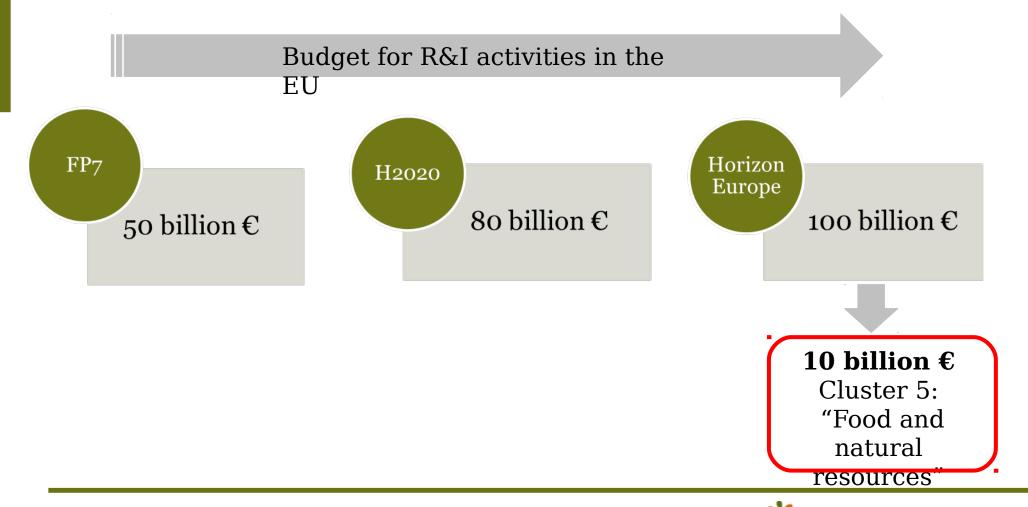


In **1962**, a joint Secretariat was created, making it one of the largest and most active organizations in Brussels for the past **60** years.

Evolution of R&I activities in the EU



Evolution of Budget for Research and Innovation







echallenges and responses for the Agri Food

Scarcity in raw materials;

Climate change and resilience;

- Globalization to manage;
- Local food chains and markets enhanced;
- Buyers and Retailers concentration;
- New ways of consumption;
- High **stratification** of consumption;
- **New glocal values:** ethics, envi, ethnic, authentic, natural ...;
- **New nutritional** and diet values;
- New policies on CAP, food&drink: neo protect, neo prohibi, neo info;
- New trade policies: Europe, Efta, Nafta, Asian, Ttip, Med, Mercosur.

- Precision farming and sustainability and circularity;
- Raw materials **diversity**; nutritional values;
- New vegetable and animal varieties
- Low cost technologies and downscaling
- Resources use and manufacturing efficiency to improve;
- **Horizontal** Innovation to be incorporated: new materials., ICT, process, pack, mild tech., envi friendly;
- From old to **young generation of entrepreneurs**;
- Food Supply Chain and Collaborative Networks;
- New distribution systems and new business models;
- Flexibility and differentiation to face new ways

The Mind Map



INNOVATIVE FARMERS & AGRI-COOPERATIVES

- Enhanced Knowledge Exchange
- Farmers learning from farmers
- - Farmers leading Innovation
- - Links between conventional and organic systems
- Green Growth;
- Efficient use of resources
- Active management of natural resources
- Climate change mitigation and adaptation
- Closing the yield gap
- Improved agrifood system productivity
- Fair and Competitive Value Chains
- Collaboration across all sectors in the chain
- New strategy for value chains and new business models
- Healthy Farming;
- Integrated pest management
- dealing with emerging pests and diseases
- Enhancing biosecurity in housed livestock
- Plant and animal breeding for resilience and robustness



Features of biological resources

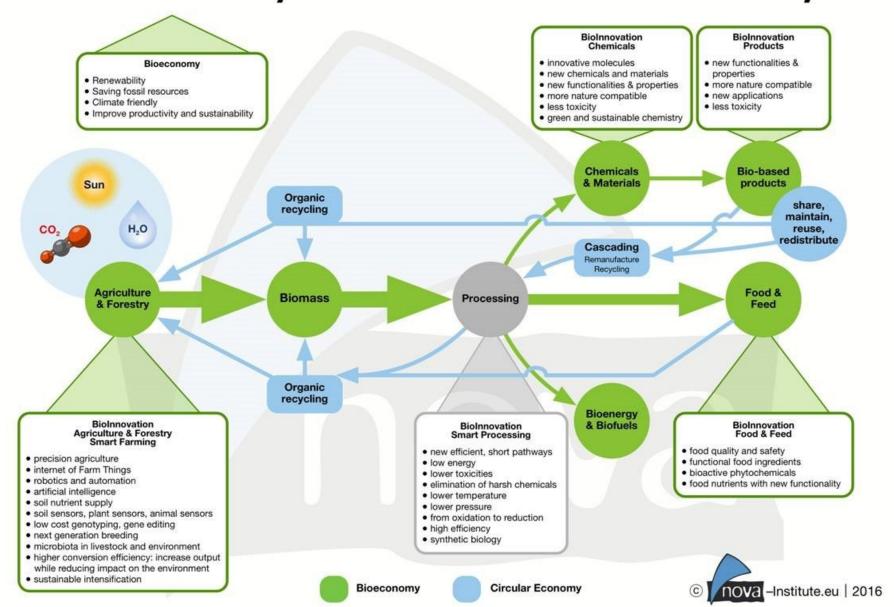
The uniqueness of some remarkable features of biological resources makes them attractive for becoming the possible fundament of an economy:

- Their Renewability
- ■Their CO₂ "friendliness" or even sometimes carbon neutrality
- Their Re-use or multiuse, also in the format of cascades
- •Their potentials for new, better functions in their products, like higher stability, longer life, stronger endurance, less or no toxicity, less water, more convenient haptic surfaces for users etc.



Comprehensive Concept of Circular Economy from mining, farming, carbon capture and utilization (CCU) from recycling Raw material **Product** manufacturing Trade / distribution maintain Product use Reuse/ redistribute Remanufacture Recycling Collection Organic recycling CO₂ recycling Product end of life Biodegradables **Energy recovery** CO2 Graphic available at © NOVa - Institute.eu | 2016 bio-based.eu/graphics

Bioeconomy: More than Circular Economy



Bioeconomy Policies around the World

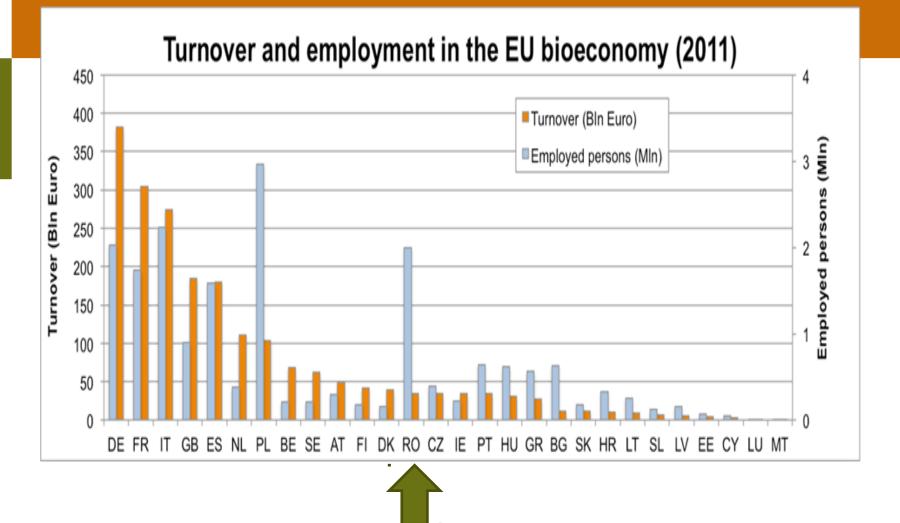
- dedicated bioeconomy strategy
- bioeconomy-related strategy
- be-related strategy; dedicated be-strategy is under development
- dedicated be-strategy is under development













2015 EU BIO-ECONOMY

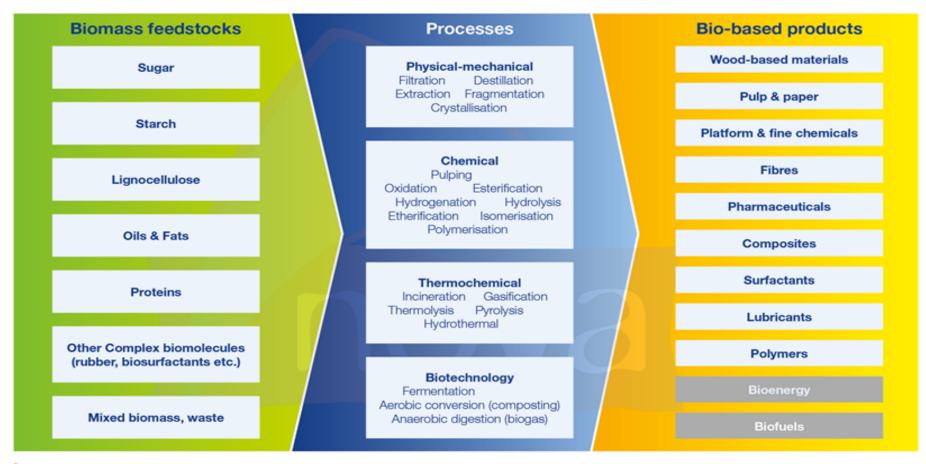
EU bio-economy turnover of 2.690 billion € with 22 million employees.

Sector	Turnover (Billion €)	Employees (million)	Source
Food & Drink Industry	1.186	4.4	FoodDrinkEurope
Agriculture	430	12,0	COPA-COGECA
Fisheries	14	0.5	FAO
Paper, Leather etc.	428	1,8	CEPI
Forestry	337	2,0	CEI-BOIS
Others (build, textile, seeds, breeds)	227	1,0	CEFIC - CIVA
Bio-based materials			
Chemistry	60 (est)*	0,15 (est)*	USDA, Arthur D Little, Festel, McKinsey, CEFIC
Enzymes	1 (est)*	0,005 (est)*	Amfep, Novozymes, Danisco/Genencor, DSM
Biofuels	7	0,15	EBB, eBio
Total	2.690	22	

Source : CE 2015



Bio-based Economy: feedstocks, processes and products (without food & feed)





What can be concluded from these recent industrial developments inside and outside Europe, in terms of required new skills?

There is a growing number of biobased production lines for intermediates and platform molecules, all focused around the renewable "C"!

There is a shift from science and research activities on the content of biological resources to more optimization of industrialized processes (hydrothermal, biological or combination of both).

There is a shift from the cell factory to the real factory with the necessary growing attention on economics. This requires stronger attention also on elements of the back-end of value chains like norms, standards, marketing and consumer acceptance.



What can be concluded from these recent industrial developments inside and outside Europe, in terms of required new skills?

In addition CO₂ turns out more and more to become a potential resource, as well as by products, waste and proteins become important objects of the bioeconomy.

The frontiers among chemical products, biofuels, proteins for food and other purposes as well as for the concrete attribution to diverse industrial application fields start to become "blurred"!

This might reach a new dimension by a stronger use of big data in the future.



Changes and lessons learnt in the last twelve years with relevance to strategies and policies

(Chris Patermann)
Biomass and solid waste remains the primary natural resource of the bioeconomy, be it a carrier for energy or a modular part for chemicals, biochemicals, proteins or nutrients, etc...

Recently, CO₂ is added to the portfolio of primary natural resources of the bioeconomy.

Biorefineries will be the central production facilities of the bioeconomy. Their primary but not exhaustive feedstock will be biological waste resources and biomass: both of renewable nature.

Carbonate processing facilities physically, hydrothermatically or biologicaly, like BIG-C (Germany, Belgium, Netherlands).



Changes and lessons learnt (cont. Chris Patermann)

Recycability and/ or multiple reuse of biomass in diverse forms including cascades, will be a prime function along new value chains like "from fork to farm" or "farm to fork", "gate to plate" etc. . Recently, the potentials of resilience of biological resources are added to this discussion.

Biotechnologies, in particular industrial biotechnology and focused new knowledge stemming from converted technologies, like nano-, info- or cognitive sciences will remain the technology drivers of this new form of economy.



Changes and lessons learnt (cont. Chris Patermann)

The joint potentials, but also joint interfaces and touching points among the digitalisation and the biologisation of our economy must be quickly further examined, made publicly aware to pressure groups and decision makers and, if possible, be translated into joined action plans and activities!

This is not easy as digitalisation is more visible, less complex and less expensive than biologisation!

There are other new trends emerging we must take into account: potentials of resilience of biological resources, aspects on health ("one health") and last but not least big data and new required skills.





CHALLENGES AND OPPORTUNITIES FOR THE EU AGRICULTURE SECTOR

Bioeconomy Opportunities for the farming sector:

- * Diversification of activities and income, new skills required
- *High potential based on by products and residues only partially used (Bioeast initiative)
- *Active partner of any initiative to further develop bioeconomy
- *Better policy coherence both at EU and national level
- *Investments on infrastructures, logistics, innovation, tech transfer....
- *New business models
- *New partnerships between farmers agro cooperatives industry



CHALLENGES AND OPPORTUNITIES FOR THE EU AGRICULTURE SECTOR

How do we support Farmers' organizations to be BE promoters?

- * Being aware of the BE opportunities
- *Enhancing farm sustainability (envi., econ., social)
- *Accessing to the AKIS Advisory Services adapted to farmers' needs
- *Having knowledge exchanges and learning each other, by doing
- *Providing future CAP financial support and specific measures
- *Identifying action plans and concrete solutions at the national level, from regional infrastructure to research & Innovations tools
- *Finding new win win bridges with the industry and the research arena, also planning vocational education and new skills



ACTIONS AT EU LEVEL

To recognise the role of Circular Bioeconomy - Decarbonising our economy while creating rural jobs

- *Reflection paper towards a sustainable Europe by 2030 circular bioeconomy a huge opportunity to create competitive advantages on a sustainable basis
- 2050 Long-term Climate Strategy circular economy as a key enabler to reduce greenhouse gas emissions
- *InvestEU sustainable agriculture and forestry and wider bioeconomy
- *Future CAP bioeconomy as one of the main objectives of the CAP strategic plans
- *Future Research and Innovation bioeconomy part of the Cluster *"Food, Agriculture, natural resources & Bioeconomy" addressing



ACTIONS AT EU LEVEL Sharing new knowledge and best practices on national strategies and local projects

Workshop on "Best practices in integrating primary production in the Bioeconomy value chains " - September 2018

- *a successful deployment of the BE achieving **fully integrated BE value chains** with fair distribution of benefits among the partners engaged
- *regulatory and policy stability is an important pre-condition to invest in bioeconomy projects, together with new education and vocational /training
- *setting up of FIs adapted to the size of the investments is crucial for streamlining BE investments
- ***encouraging the valorisation of marginal/nonproductive land** for growing industrial crops economic and environmental benefits
- ***enhancing support to all types of cooperation models** for primary producers

Next step- an event on cooperatives and cooperation - summer 2019



EUROPEAN AGRI- FOOD AND FORESTRY COOPERATIVES AT THE HEART OF SUSTAINABLE BIOECONOMY

- * Agro in LOG project http://agroinlog-h2020.eu/en/home/
 - Integrated harvesting
- -Integrated logistics
- •Production of new bio-products NoAW (www.noaw2020.eu)
- •Food for Growth Erasmus + (www.food4growth.eu)
- * Logistics and trade centres for woody and non-woody biomass in AT
- -Value creation use of local resources
- -Sustainable both from economic and environment point of view
- *"Miscanthus: a smart solution to fight erosion and to promote renewable energy production" Valbiom (Belgium)

Food 4 Growth

Companies As Schill Companies As Set I Companies As

- Better understand consumers' resistance to new and emerging technologies
- Better feed the debate with consumers and stakeholders on the most appropriate risk using more "evidence - based" information
- Better undestand the role of social media in the innovation perspective



Educational systems need professional technical skills, new key skills able to improve company's ability to





MARKET

Rightly communicate
the
dimension of product
/process innovation
that requires time and
content in
order to be understood
and
evaluated by the
market.



CONSUME RS NEEDS

Identify consumer needs and design innovative products, promoting social accetpability and develop collaboration with EU/National and local policies



Food 4 Growth AIMS

DEVELOP

•a set of technical and cross-cutting skills to promote a bottom-up approach to the innovation and facilitate communication of innovation

VET PROVIDER

R&D

CONSUMER

LOCAL AUTHORITIES

COMPANY

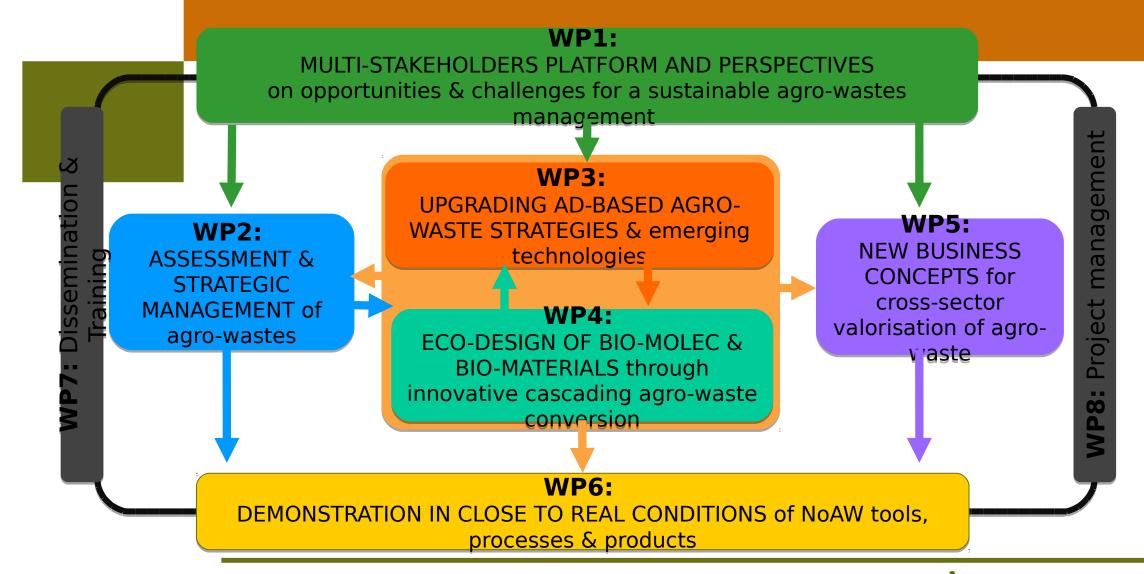
DEFINE

 a training course prototype supplementary to technical POST SECONDARY VOCATIONAL EDUCATION systems dedicated to the food industry

PRODUCE

 learning methods to approach the skills identified as relevant to foster the dialogue between industry and consumers

Structure of NoAW:



UPGRADING AD-BASED agro-waste strategies & emerging technologies in NoAW

Objectives from the beginning:

Optimised use of nutrients in anaerobic digestate from agro-waste

Improve biogas technologies: enlarge possible feedstocks for biohythane production, biogas upgrade, sustainable PHA production

Achievements:

Nutrient studies showed that NIR application helps the better use of nutrients for AD digestate

Pilot plants were established:

- for innovative technology \rightarrow for producing hydrogen, biogas, PHA and bio-methane in the same plant
- for enlargement of platform of feedstocks by using pre-, post treated ligno- cellulosic biomass



ECO-DESIGN OF BIO-MOLECULES & BIO-MATERIALS through innovative cascading agro-waste conversion

Main Objectives:

To develop cascading activities to convert agro-wastes and AD by products into biomolecules, chemicals, building block

Develop high value added final products in order to substitute non-renewal equivalents

New skills required......

