

EXPANDING

THE BIO-BASED ECONOMY

OF EUROPEAN REGIONS

21 JANUARY 2020

11:10 to 12:40

ONLINE

Structure of the presentation:

- Presentation of European Chemical Regions Network
- Groningen, Drenthe, Limburg, South Holland, Wallonia, Usti
- Overview of the region
- Chemical sector in the region
- Bioeconomy in the region
- Potential for cooperation
- Bibliography

European Chemical Regions Network (ECRN)

- **ECRN** was originally started as an INTERREG IIIc project in 2004 with member regions from 6 different European countries. The idea was to bring chemical regions from all over Europe together in order to better tackle the special challenges for these regions by exchanging information, exploring solutions for common problems and by speaking with a single voice.



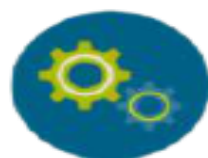
ECRN at a glance



10
REGIONS



6
EU COUNTRIES



7
AREAS OF WORK



44
POLICY PAPERS



7
EU PROJECTS



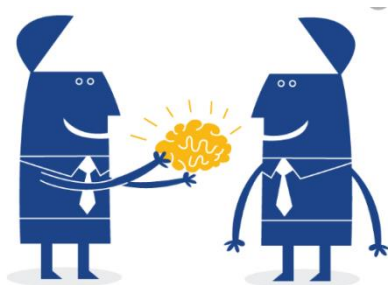
Give a single voice of the chemical regions' interests

We are engaged in the preparation of the joint positions of chemical regions towards EU Institutions concerning the competitiveness and the sustainable development of the chemical industry, to shape policies at the European level.

Foster interregional cooperation



We organize regular internal and public events, together with the European Institutions – European Commission, European Parliaments, and Committee of the Regions – as well as with regional partners. We provide the speakers that represent the chemical sector for the events organized by different institutions.



Create regional knowledge exchange

We facilitate the transfer of know-how and best practices between regional administrations and regional industrial and research actors (COVID-19 best practices website).



Facilitate the projects' participation

We raise awareness about EU funded projects and initiatives and provide a platform where they easily can find partners. We support cross-border projects, funded by EU Programmes (Horizon 2020, Interreg Europe).

Groningen

- the northeast province of the Netherlands
- borders with Friesland to the west, Drenthe to the south, the German state of Lower Saxony to the east, and the Wadden Sea to the north
- population of 585,881 and a total area of 2,960 km²



Drenthe

provincie Drenthe

- a province of the Netherlands located in the north-eastern part of the country.
- borders by Overijssel to the south, Friesland to the west, Groningen to the north, and the German state of Lower Saxony to the east
- population of 493,449 and a total area of 2,680 km²



Northern Netherlands – also known as Chemport Europe



- Chemport Europe is an innovative ecosystem for chemicals and materials in the Northern Netherlands. Companies, government and knowledge institutes work together towards greener growth.
- Chemport Europe is formed by the provinces of **Groningen** (capital Groningen), **Drenthe** (capital Assen) and **Friesland** (capital Leeuwarden).
- The region has a total of 125.000 companies (99% are SME's)
- Production value of ca. € 65 bln.

Chemical sector in the regions (Chemport Europe)

Chemport Europe has a unique combination of elements that creates ‘the right chemistry’ for attractive business cases:

- Guaranteed supply of raw materials (feedstock), such as sugar beets and potatoes, grass, grains, salt and water
- Opportunity to import biomass via seaports
- Excellent connections with purchase and sales markets by sea, rail, road and air
- Extremely reliable supply of energy - local, green and sustainable

Chemical sector in the regions (Chemport Europe)

Chemport Europe has a unique combination of elements that creates ‘the right chemistry’ for attractive business cases:

- Knowledge institutes such as the University of Groningen, Hanze and Stenden Universities of Applied Sciences, Van Hall/Larenstein and NHL, cooperate in **BERNN (BERNN is the alliance of the four Northern universities of applied sciences and the University of Groningen. The shared ambition is to strengthen the position of green chemistry in the region even further. Demand-driven cooperation between companies and universities is essential)**
- Unique cooperation between companies, government and universities (Triple Helix), ensuring that policy, facilities and financing are focused on successful business operations
- Access to the financial recourses in the form of investments, credits and subsidies
- Smooth permitting process

Bioeconomy potential in the regions

Three most important economic carriers for the biobased economy:

- molecules from biomass that can be converted into functionalized ones chemicals, from which, for example, bioplastics can be made
- materials from biomass with valuable functional properties
- protein for animal feed, which can be bio refined. In addition, the use of the residual flows to, for example, material applications or energy.

❖ On the basis of these economic carriers the 9 clusters that have been established:
(Carbohydrates from bio refinery for the chemical industry, Cellulose, old raw material for new chemistry; Protein shed for Dutch and German animal feed; Amino acids as raw materials for the production of commodity chemicals; Biobased chemistry in Delfzijl; From carbohydrates to polyesters and other bioplastics; Bio composites, testing ground for new materials; Value from complementary or residual flows, material applications; Value from complementary or residual flows; caloric uses and high temperature processes)

Potential for cooperation:

- **new biorefinery processing** (e.g. *Bioclear, Imenz, Syncom*: process technology, biotechnology, advanced separation technologies),
- production of green chemicals (e.g. *BioBTX, Cumapol, BioFuran*: **aromatics from wood-chips, collaborative production of bio-PET, furans**),
- **use of new (biobased) functional polymers, building blocks and materials** (*API, Dynaplak, KNN Bioplastics, Machinefabriek Emmen, Drentea*: **biopolymers for industrial applications, advanced starch technology for coatings, paints, binders and glues, production of bioplastics from wastewater, bio-composites in civil construction applications, 100% biobased office furniture**)
- **use of natural fibres in industry** (*Dunagro, Hempflax, KNN Cellulose*: **use of hemp fibres in automotive, constructions and textile-industry: and refinery of cellulose from waste for use in paper & board industry and in road construction, in bio composites and production of biofuels and bioplastics**)

UPCOMING EVENTS



EU INDUSTRY WEEK 2021
Local event organised in partnership with the European Commission.

#EUIndustryWeek

ECRN | European Chemical Regions Network

CHEMPORT EUROPE

provincie groningen

SACCHARIDE AGENDA
THE FUTURE OF THE BIOBASED CHEMICAL INDUSTRY

28 JANUARY 2021
FROM 9.30 TO 11.00

ONLINE

EVENT

Under the umbrella of the **EU Industry Week 2021**, the **ECRN**, the **Province of Groningen** and **Chemport Europe** organise the event "**Saccharide Agenda: the Future of the Biobased Chemical Industry**".

South Holland



provincie **HOLLAND**
ZUID

- It borders North Holland to the north, Utrecht and Gelderland to the east, and North Brabant and Zeeland to the south.
- population of just over 3.7 million and a total area of 3,419 km²
- most populous province and one of the world's most densely populated areas
- Europe's busiest seaport, the Port of Rotterdam, is located in South Holland.



Chemical sector in South Holland



- **Biobased Delta** is an alliance of Dutch provinces, businesses and knowledge centres in the delta region of North Brabant, Zeeland and **South Holland**. Together, they are pioneering in sustainable biobased economy. They support initiatives to **use biomass as a raw material in the chemical, construction and packaging industries**. They are applying natural residual flows from agriculture, forestry and horticulture – such as sugar beet, sweet corn, hemp and timber – to reduce their reliance on fossil raw materials.

Chemical sector in South Holland



- **Green Chemistry Campus** is part of the Biobased Delta network. This is an ecosystem in the Netherlands consisting of various companies, biobased application centres and knowledge and educational institutions that are involved in greening existing products and / or processes.

Green Chemistry Campus accelerates biobased enterprises on the interface between agro and chemistry by offering state-of-the-art lab and office facilities and business development programs.

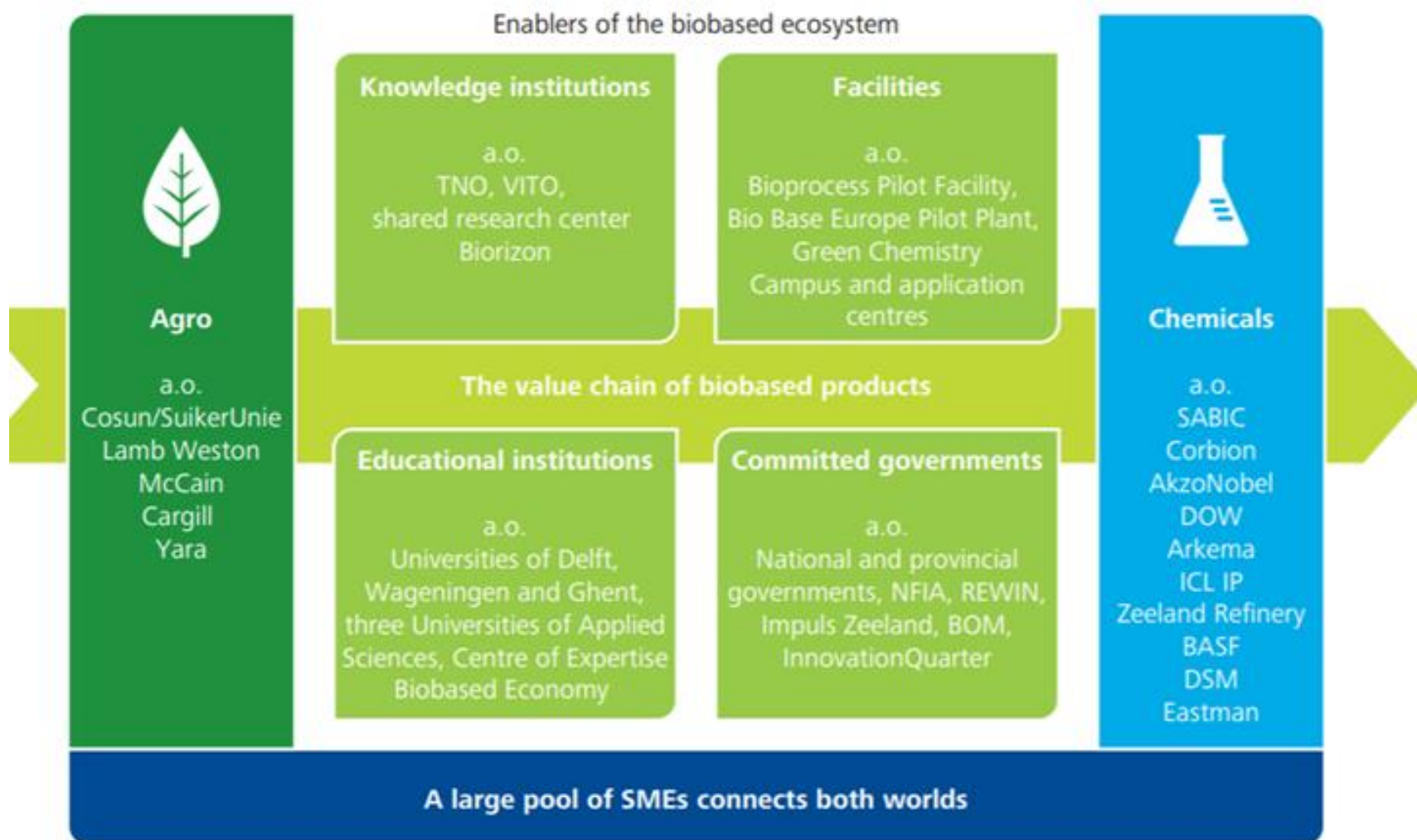
Bioeconomy in South Holland

- The Biobased Delta also focuses on the potential of **(ligno)cellulosic** (2nd generation) biomass (agricultural side streams or from plants). Next to cellulosic, the **lignocellulosic material** also provides for lignin. Lignin can currently be used for co-firing but is also promising for the production of aromatics.
- The Biobased Delta also looks into **third generation feedstock such as algae and waste** (municipal and industrial). Algae, frequently referred to as the “new gold,” will be the most likely so-called 3rd generation feedstock. In the province of Zeeland, located right on the North Sea, several projects involving algae production in aquaculture are already running.

Potential for cooperation

- Various reports endorse the Biobased Delta as a European frontrunner in the biobased economy. It is best positioned to capitalize on its favourable and regionally available **sugar feedstock** position due to the presence of the **worlds' most efficient and large-scale sugar beet producing industry**. Alternative feedstock (a.o. **agricultural waste streams, woody biomass**) can be regionally sourced or imported via the (deep) sea ports of Rotterdam, Antwerp, Moerdijk, Terneuzen, Vlissingen and Ghent. As such, supply of feedstock can be ensured.
- **Large industry players in agro and chemistry** such as SABIC, Royal Cosun, Suiker Unie, DSM, Dow Chemicals, Cargill and Corbion are committed to the Biobased Delta. In addition to a concentration of multinationals, the region has **many highly innovative small and medium-sized enterprises (SMEs)**.

Potential for cooperation



Limburg



- It borders with Gelderland, North Brabant, North Rhine-Westphalia in Germany and Flemish province which is also named Limburg
- population almost 1.2 million and a total area of 2,210 km²

provincie limburg



Chemical sector in Limburg

- Limburg is part of the Trilateral Region - the largest chemical cluster in the world. It is a cooperation between Flanders (Belgium), The Netherlands and Nordrhein-Westphalia (Germany).
- The Trilateral Region is a global player and represents a market share of the pharmaceutical and chemical industries of 3.1%. The per capita sales are higher than important competitors such as China and the US.

Bioeconomy in Limburg

- **Brightlands** is an international community where more than 24,000 innovative entrepreneurs, researchers and students work together on the major challenges in the fields of sustainability, health and digitalization. The four campuses (Brightlands Campus Greenport Venlo, Brightlands Chemelot Campus, Brightlands Maastricht Health Campus and Brightlands Smart Services Campus)
- On four Brightlands campuses, partners from different areas work together on ground-breaking innovations in the fields of **food, health, circular chemistry and materials, data science and smart digital services.**

Brightlands

BE

**Brightlands
Chemelot Campus**
Smart materials and
sustainable production
of chemicals

DE

**Brightlands
Maastricht Health Campus**
Regenerative medicine,
precision medicine,
innovative diagnostics

**Brightlands
Smart Services Campus**
Data science and
smart services

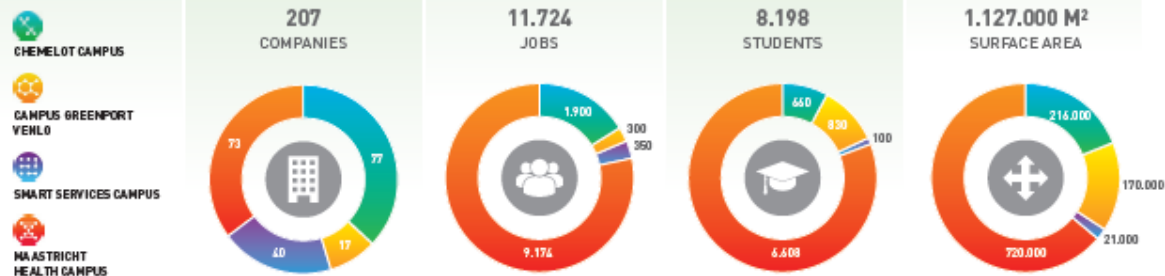
**Brightlands
Campus Greenport Venlo**
Healthy and safe nutrition,
future farming and
bio-circular economy

LIMBURG ECOSYSTEM

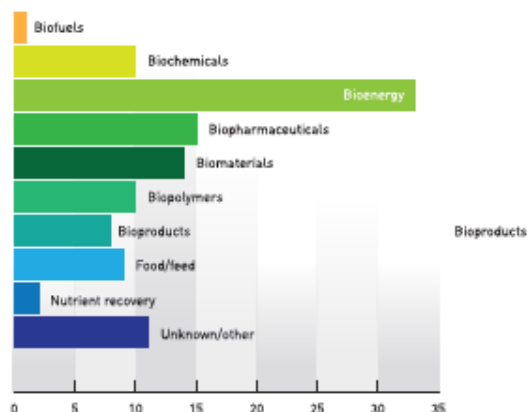
In Limburg, fossil mineral resources (coal!) has led to the emergence of what is now one of the largest chemical industrial complexes in Europe. That, in combination with a healthy agriculture and horticulture, the presence of an (agro)logistics complex of significant size, international toplevel knowledge institutions, a strong entrepreneurial mentality and active support from the province formed the basis for the Limburg green ecosystem. An ecosystem that makes Limburg the leader in the circular, biobased economy of the future.

Sources RVO, Province of Limburg, Brightlands

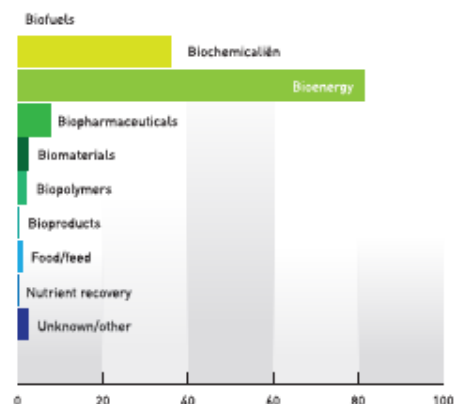
4 BRIGHTLANDS CAMPUSES



WHAT IS THE BIOMASS IN LIMBURG USED FOR? IN NUMBER OF PROJECTS



HOW MANY MILLIONS OF € ARE SPENT ON BIOBASED PROJECTS IN LIMBURG?



WHERE DOES THE BIOMASS IN LIMBURG COME FROM? IN NUMBER OF PROJECTS



1. WANSSUM

- Feed Design lab

2. VENLO

- Brightlands Campus Greenport Venlo
- Bio Treat Center
- HAS, Citaverde
- Circular Design Group
- C2C Expo Lab

3. GELEEN

- Brightlands Chemelot Campus
- InScite
- Chill
- AMIBM

4. MAASTRICHT

- Brightlands Maastricht Health Campus
- Zuyd University of Applied Sciences
- Province of Limburg
- Maastricht University



6

5. HEERLEN

- Brightlands Smart Services Campus
- Zuyd University of Applied Sciences

6. BELGIUM

- Hasselt
- Leuven
- Gent

7. GERMANY

- Various institutes in the Aachen region
- CLIB2021 (Düsseldorf)

8. NORTH-BRABANT

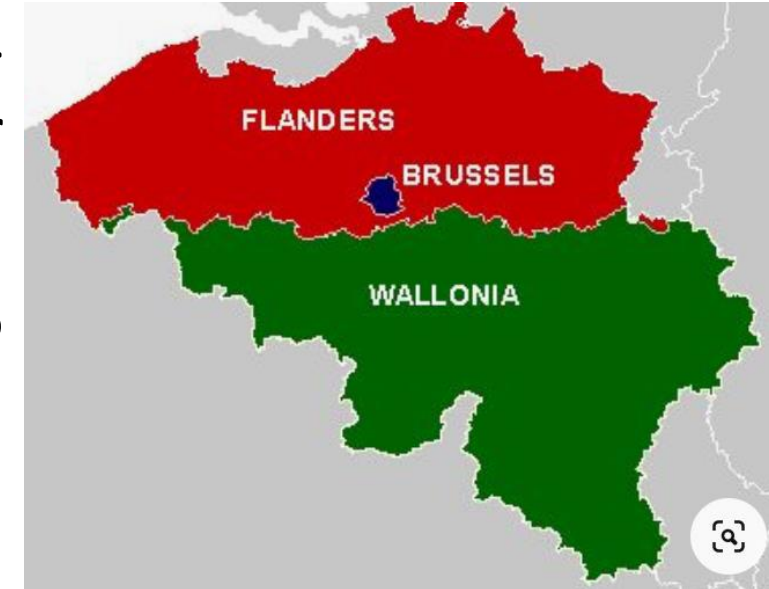
Potential for cooperation

- Limburg and the surrounding border regions have plenty of agricultural land at their disposal. However, even if the region's hinterland has a great diversity biomass, cultivated crops, etc. this does not meet industry demands in terms of volumes. For this reason, projects in the region are therefore mainly aimed at research and development of products, chains and (technical) processes. **The focus on bio-based economy in Limburg is mainly on knowledge and technology development for the (pre-) processing of a variety of biomass into various high-quality application fields, with an emphasis on nutrition / health and biobased materials.**
- Examples of projects: [BioTreatCenter, AMIBM, BIVAC, Triple F, BioTex Fieldlab, Pure Nature: 100% Biobased, Plants for Plants,](#)

Wallonia



- Wallonia is primarily French-speaking, and accounts for 55% of Belgium's territory,
- Population around 3.6 inhabitants
- GDP: 93.330 billion euro



Chemical sector in Wallonia

- Turnover: 11,0 billion euros
- Added Value: 5,3 billion euros | 38% of total industrial added value in Wallonia
- Job Creation: 28.318 direct jobs & 65.000 indirect jobs
- R&D: 1,9 billion euros
- Export oriented: 22,8 billion euros | 44% of Wallonia total exports
- Industry composition: small and medium enterprises (pharmaceutical industry excluded)
- Location: Walloon Brabant (pharmaceutical products) and Hainaut (basic chemistry)

Bioeconomy in Wallonia

The development of a bioeconomy strategy in Wallonia has been entrusted to the project [Coq Vert](#), a public-private partnership founded in 2013 for the creation of a competitive bioeconomy system in the region, composed by [AWEX](#), [Essenscia Wallonie](#), [GreenWin](#), [OEWB](#), [ValBiom](#) and [Wagralim](#). The deployment of the Walloon bio-based chemical industry will include:

- **active support for first-generation projects** (in particular for the production of PLA plastic)
- **the development** of research with a view to the **second generation biorefineries** (grouping and coordination of scientific expertise present in universities and research centers, support for industrial projects in particular via the Greenwin Cluster);
- **support for small or medium-sized companies specializing in niche products with high added value.**

Bioeconomy in Wallonia

- Policies to support innovation and R&D related to the bioeconomy
- **Very strong food, sugar and paper industries**
- **biomass resources with the highest production yields in Europe:** by-products from the **beet industry, lignocellulosic resources** (particularly forestry or by-products of the cereal sector)
- Access **biomass waste resources** (high population density in the area)
- Geographical position & efficient logistics infrastructure
- Skilled labour force
- Availability of industrial land in 'chemical' zones
- Competitiveness & Clusters

Potential for cooperation

- **GreenWin R&D projects'** (natural resins from vegetable sources; bioethanol production; valorization of lignin, CO₂ capture and transformation, PLA ...) with industrial implication.
- **GreenWin's** SME and BIC members: Syngulon, Celabor, Biorem Engineering, Realco, Artechno, Xylowatt, Pollet, Lambiotte, ...
- **Wagralim** R&D projects (bioplastics/biobased packaging, flax valorization, wheat bran valorization, ...)
- **BioWin** R&D projects
- **FEDER projects:** Tropical plant factory (Ulg), Algae factory (UNamur), Intense4chem (Certech)
- **Research centers:** Materia Nova (BIC Member), Certech (BIC Member), Celabor (BIC Member), CoRI, CRA-W, CER, ...
- **Higher Education Schools:** 5 Universities: Ulg (Liège), UMons (Mons), UCL (Louvain-la-Neuve), ULB (Bruxelles), UNamur (Manur) and their laboratories.

Usti



Ústecký kraj

- located in the north-western part of the historical land of Bohemia, and named after the capital, Ústí nad Labem.
- Population 820,789 inhabitants
- Area: 5.339 km² (6.8% of the area of the Czech Republic)



Chemical sector in Usti

- The total number of chemical companies is around 215, with 20 enterprises larger than 100 employees which have their head office in the region.
- 50% of activity is dedicated to the production of chemicals, cosmetics, pharmaceuticals and synthetic fibres, 45% to production of rubber and plastics and 5% production of coke, fissionable fuel and crude oil processing.
- Regional strategic priorities in the field of chemical businesses are related to: **petrochemistry polymers, inorganic chlorine chemistry, fertilisers, qualified chemistry, nanomaterials, nanotechnologies, lithium, green chemistry, nonenergetic utilisation of coal and alternative fuels.**

Bioeconomy in Usti – no bioeconomy strategy on regional level

The priorities presented on national level:

- sustainable agriculture, forestry, water management, sustainable food and feed production and strengthening the role of primary producers and their integration into the value chain of the bioeconomy,
- Increasing consumers confidence in organic farming
- Recycling of bio-waste and its use as eg. fertilizers, mulching material, biogas or advanced biofuels for transport purposes.
- New opportunities in the processing and material use of forest, especially wood products as a substitute for non-renewable materials.
- Energy use of biomass and hydropower.

Potential for cooperation

- Ministry of Agriculture <http://eagri.cz/public/web/en/mze/>
- Czech technological platform PLASTY, <https://www.tp-plasty.cz/>
- Czech technological platform SUSCHEM, <https://www.suschem.cz/>
- Czech technological platform for Biofuels, <https://www.biopaliva-ctpb.cz/index.php>

Thank you for your attention!

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POWER4BIO
REGIONS FOR BIOECONOMY

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- [Changing the nature of chemistry](#), Chemport (2018)
- At national level the bioeconomy vision for the Netherlands is described under “[The position of the bioeconomy in the Netherlands](#)”, [A Circular Economy in the Netherlands by 2050](#), “[The Transition Agenda](#)” and [Biomassa 2030 \(english verison\)](#)).
- The country has developed a bioeconomy strategy in [2007](#), with a follow-up in 2012. The Netherlands has also appointed the [national enterprise agency \(RVO\)](#) to implement its bioeconomy policies.

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- [Monitoring Biobased Economy in Nederland 2017](#), Netherlands Enterprise Agency (RVO) (2017) – including a breakdown on Dutch regions
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- ["Coq Vert" : Towards a bio-based economy in Wallonia "](#) (Janvier 2014, Véronique Graff, GreenWin)
- [La chimie verte « biobasée » en Wallonie : perspectives et chiffres clés](#) (Mai 2014 - Véronique Graff, GreenWin)
- [Benchmarking de l'économie biobasée](#) (ValBiom, 16 janvier 2015)
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- [Strategic Framework Czech Republic 2030](#), Government of the Czech Republic, Department of Sustainable Development Strategic Framework Czech Republic 2030 (2017)
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