METROPOLREGION MITTELDEUTSCHLAND

DBFZ

circular biobased delta

1. Mitteldeutscher Bioökonomiekongress

Die Bioökonomieregion Mitteldeutschland im europäischen Kontext

Willem Sederel

Altenburg, 2. Mai 2022

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Accelerating the Green Economy together

The global sustainability challenges

Reduce CO_2 emissions

Responsible and sustainable handling of waste

(Plastic) Circularity

NET ZERO CO2, Waste, Fossil by 2050

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The Renewable and Circular Carbon Challenge

Fossil oil value chain via oil refineries and crackers, naphtha, chemicals and plastics

Integrated Energy and Feedstock Transition, coupled with new value chain development & logistics

Biobased value chain via biorefineries, intermediates, chemicals and bioplastics

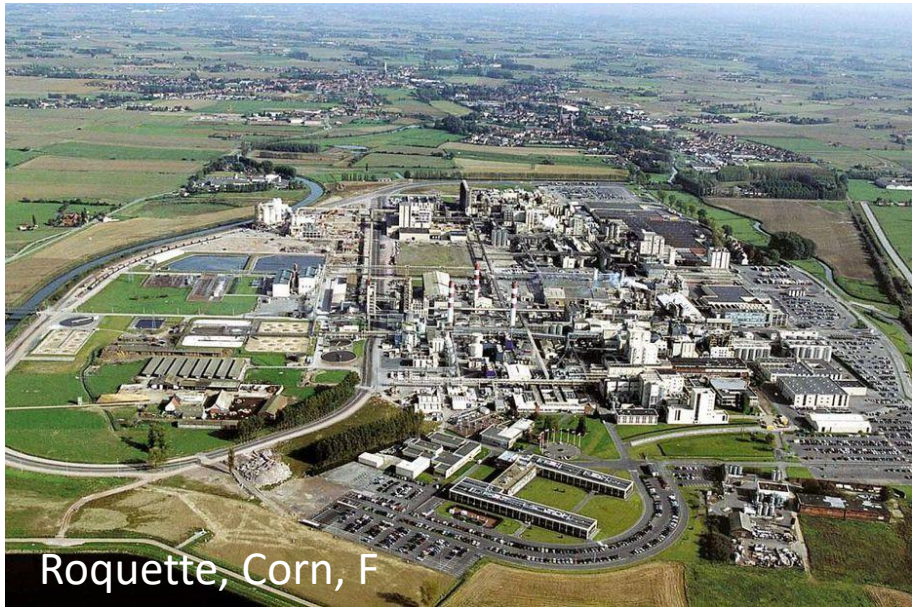
Biorefinery

- Biorefinery, being the sustainable processing of biomass into a spectrum of marketable products (food, feed, materials, chemicals) and energy (fuels, power, heat)

- Biomass feedstock can be: vegetable oils, carbohydrates, wood, grass, lignin or mixed agro waste

VANGUARD INITIATIVE
New growth through smart specialisation

Large Agro & Forestry Biorefineries in NW Europe



Biorefineries according to EC report 2018

European Commission

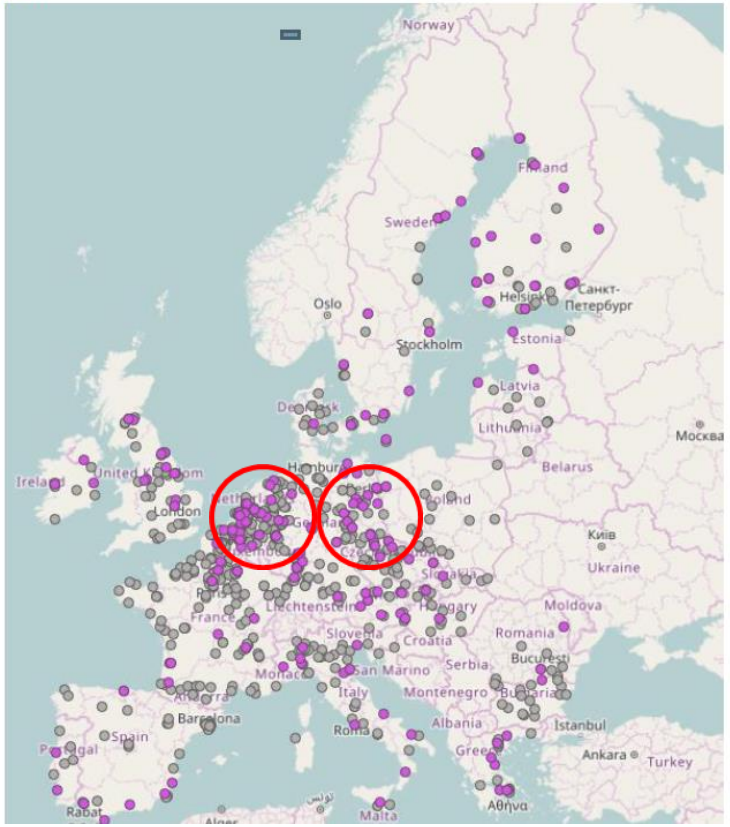
Biorefineries distribution in the EU

Research Brief

HIGHLIGHTS

- 803 biorefineries have been identified in the EU, of which 507 produce bio-based chemicals, 363 liquid biofuels and 141 bio-based composites and fibres (multi-product facilities are counted more than once).
- Of those facilities, 177 are reported as *integrated biorefineries* that combine the production of bio-based products and energy.
- The location of most biorefineries shows correspondence with chemical clusters and ports.
- Generally, the highest concentration of biorefineries is located in the central part of the EU, particularly in Belgium and the Netherlands.
- Agricultural resources are the feedstock source used by most biorefineries in all EU countries with the exception of Finland, Sweden and Portugal.
- Marine and waste resources are relevant in some countries but not yet highly exploited in biorefineries.

Map of biorefineries producing bio-based chemicals, liquid biofuels and composites and fibres in the EU



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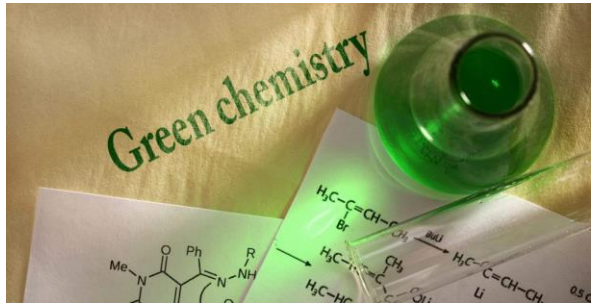
VANGUARD INITIATIVE

Circular Biobased Delta Focus towards 2030

Biogenic routes

Green Chemistry



Programs

Biofeedstock

Bioprocessing

Biochemicals & Materials

Circular Solutions

Chemical recycling

Programs

Solvolysis

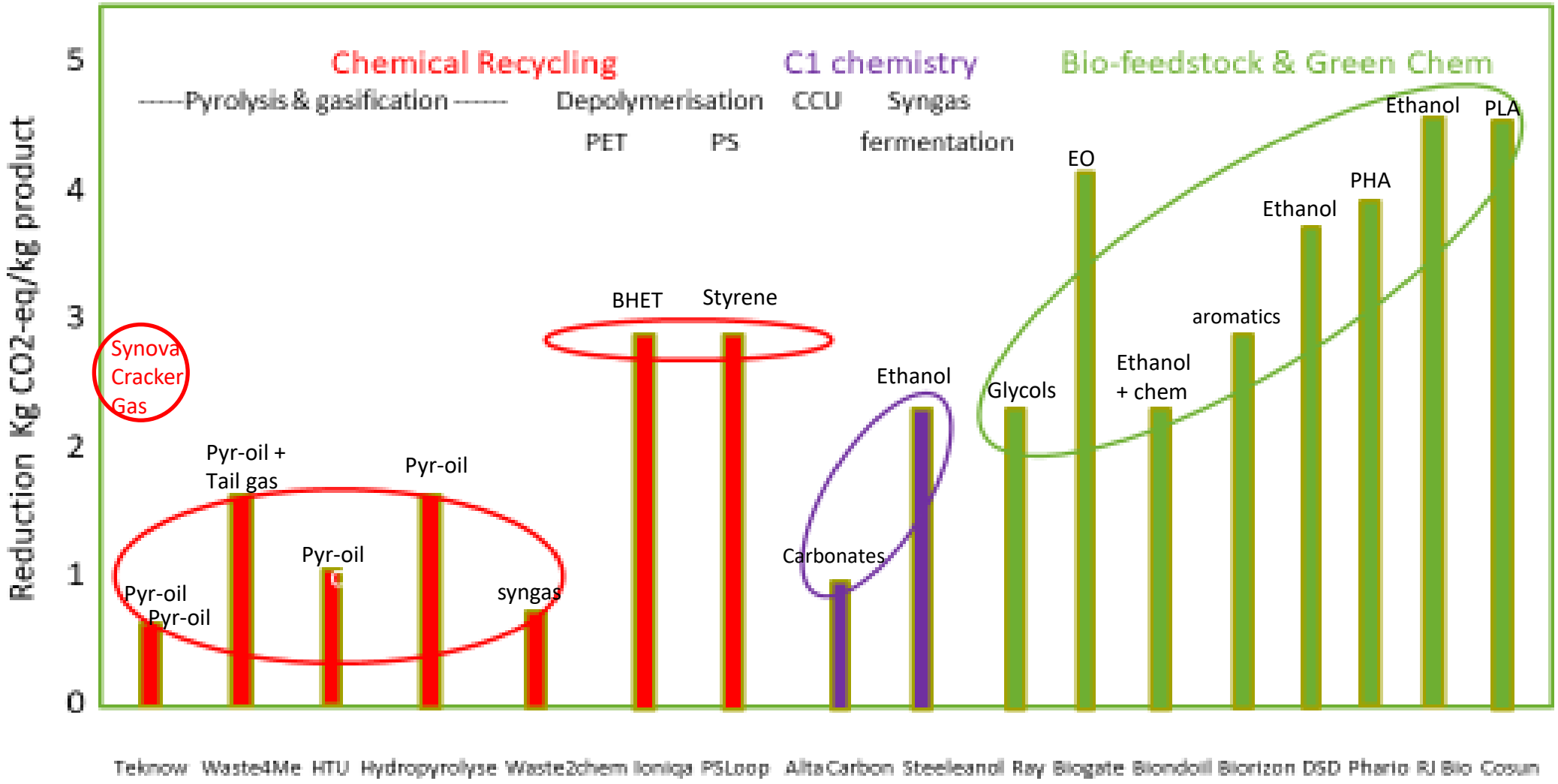
Depolymerisation

Pyrolysis

Gasification

How effective are the various routes in terms of CO2-reductie?

Values on the basis vof product comparison vs fossil route (CBBD Roadmap CE Delft)



Circular Biobased Delta Model for Renewable Carbon

Renewable carbon from Biomass and CO2 together with circular carbon from recycling become THE feedstock for chemicals and materials after 2030

We support
nova-Institute's initiative on

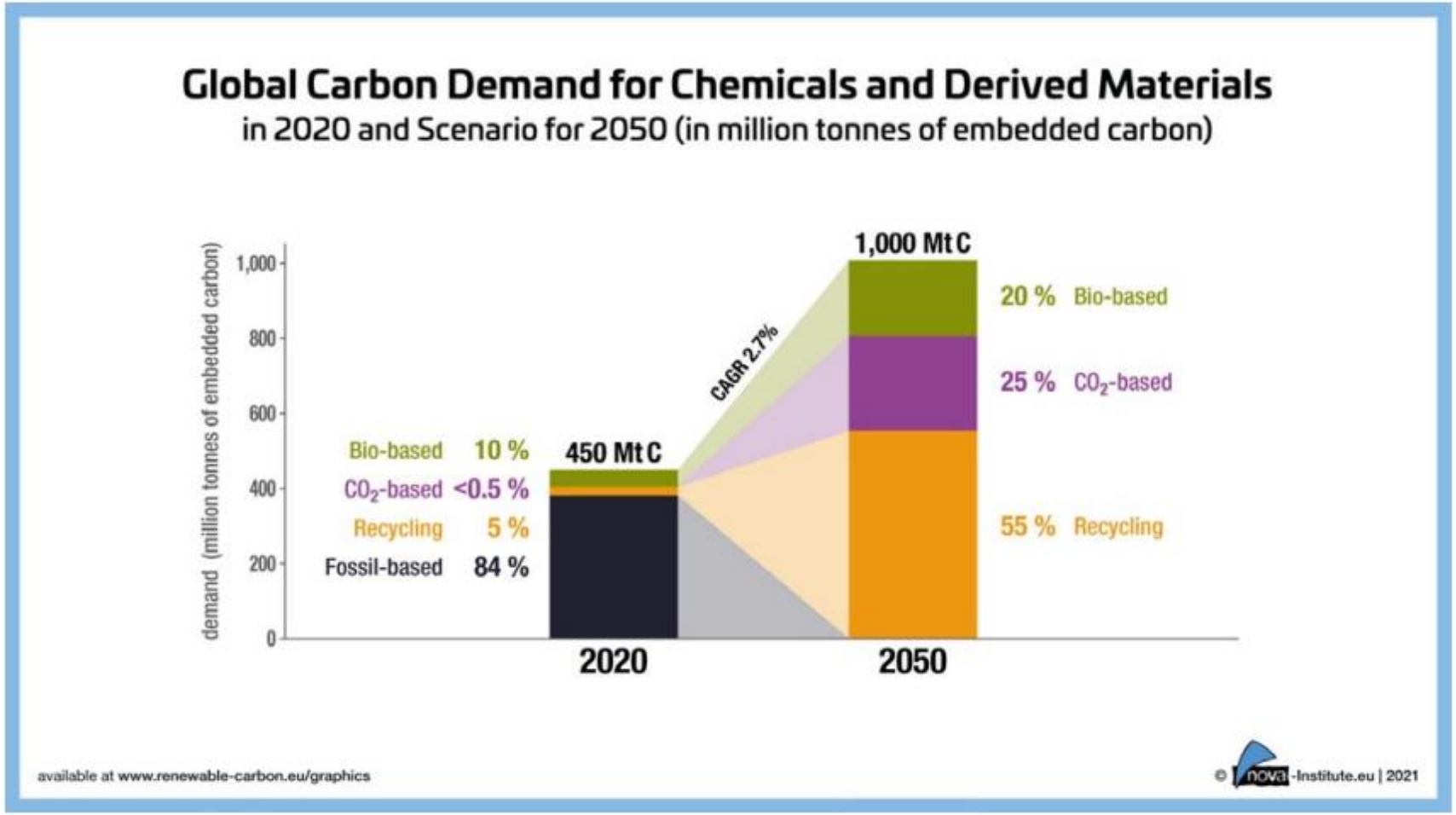
RENEWABLE CARBON

www.renewable-carbon.eu

Bio-based issue:

10% feedstock yields:
- 4-5% chemicals & polymers
- 3-4% CO2, H2O
- 1-3% other residues

- Integral valorization
- Utilize biomass structure

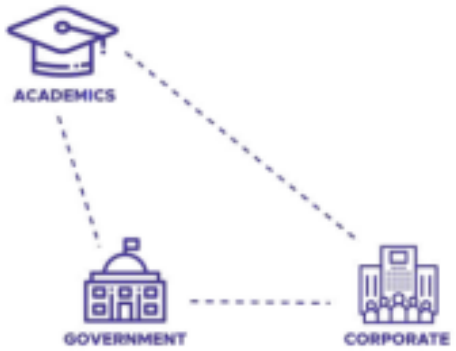


Significant Challenges and barriers need to be overcome

- Technology scale-up
- Technology effectiveness
- Adoption of the technology *and even more* of the initiative(s)

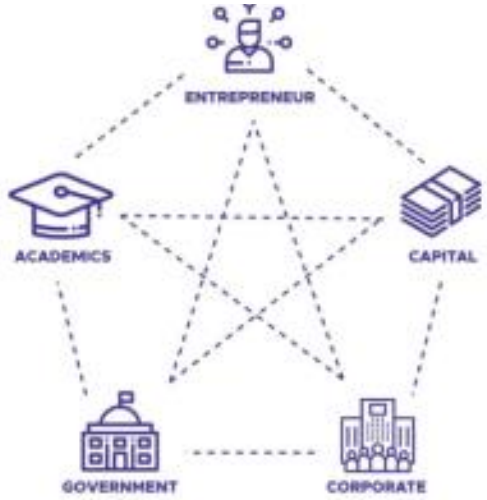
- Cross-sectoral and value chain development
- Developing deep insight into the market (pull)
- Financing of the initiatives and scale-ups with viable business case

- Subsidizing the right routes: bioenergy *vs* biomaterials
- Policies for biofeedstock and feedstock transition – e.g. end of waste
- Be good and tell so society can understand and support



Triple Helix
1990's – 2010's

Pentagon
2010's –



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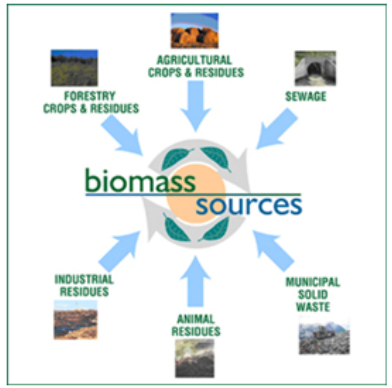
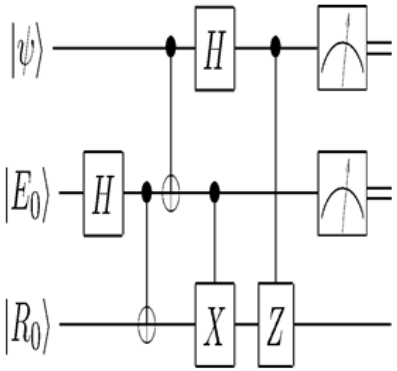
CBBD eight pack for de-risking investment

- The Business Case

The Feedstock



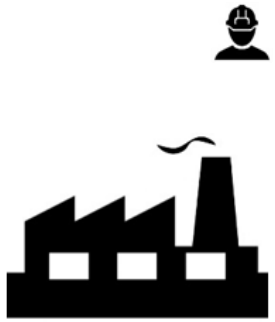
The Technology



The Market

- The supply chain

The Operator and Management



The Location

The Policy

The Policy & The Permits

Plus many possibilities for collaborations: regional, clusters, international, Triple Helix, Pentagon

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The Bioeconomy partnership at a glance

VANGUARD INITIATIVE
New growth through smart specialisation

Long term Goals

Support the creation of new integral bio-based value chains and connections between chemistry, agro-food, bioenergy, biofuels sectors

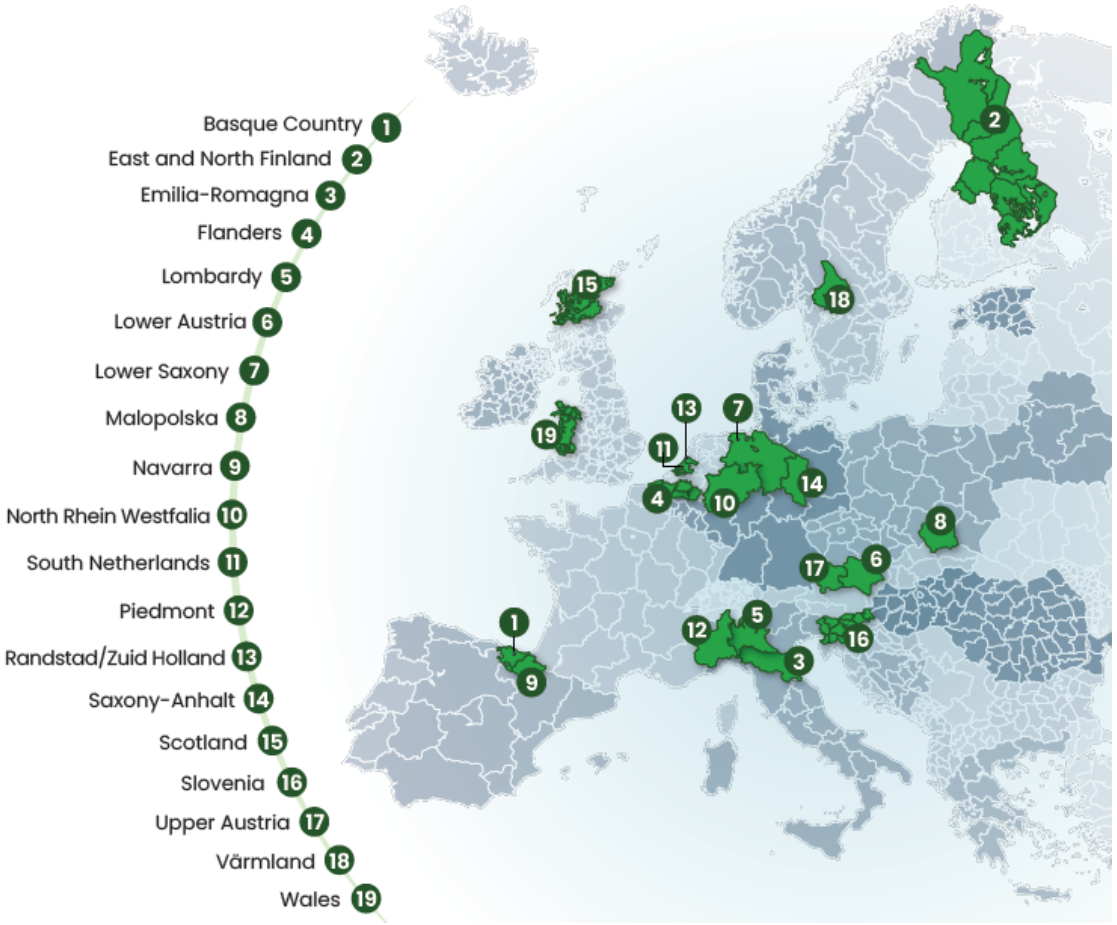
Promote new business opportunities through interregional cooperation and exchange of ideas*

Encourage projects at the demonstration stage towards their upgrading and business exploitation (beyond TRL 5)

Support the establishment of investment pipelines based on industry-driven business cases coherent with the smart specialisation strategies of the participating regions

Promote the political engagement to position the Smart specialisation agenda at the centre of the EU's drive for a sustainable economy

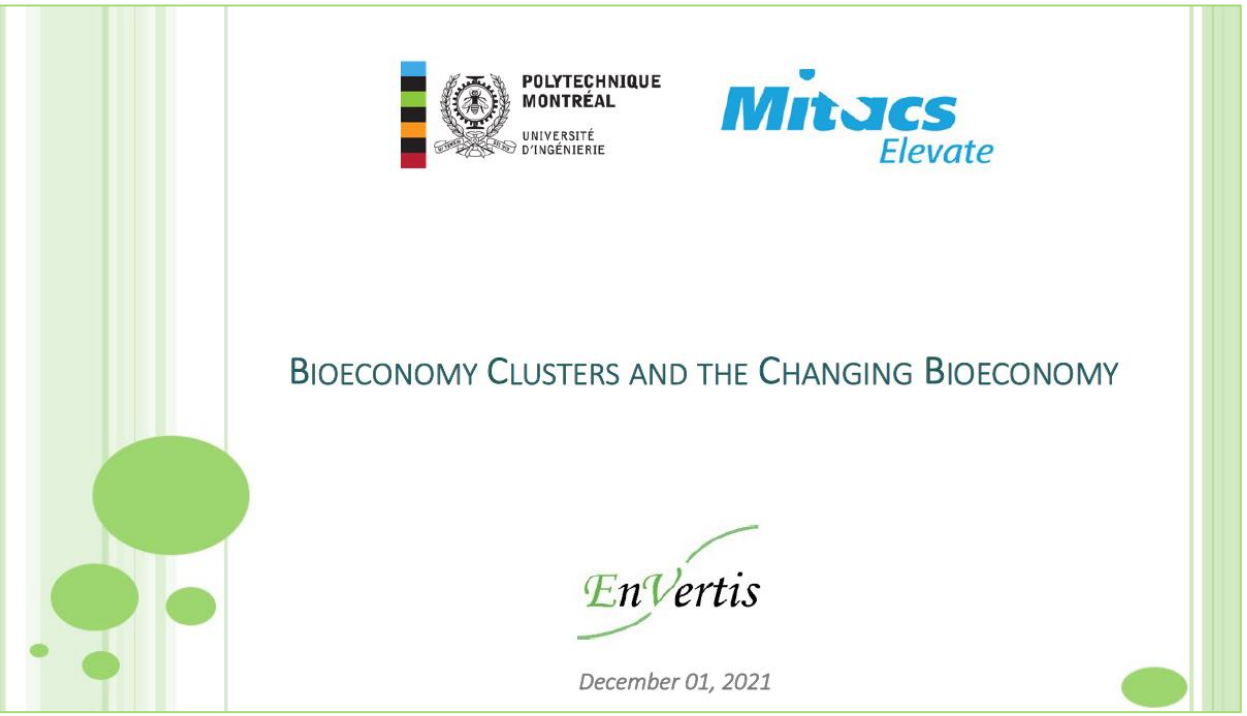
The Vanguard initiative regions participating in the Bioeconomy Pilot

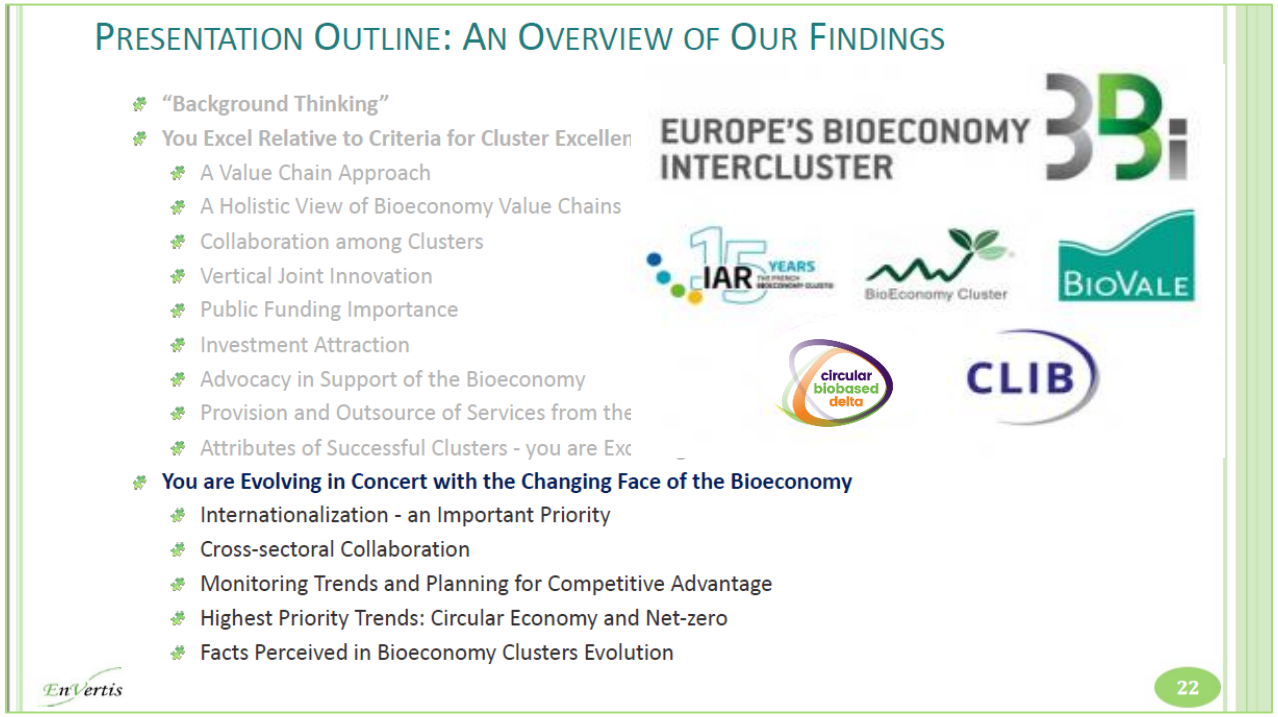


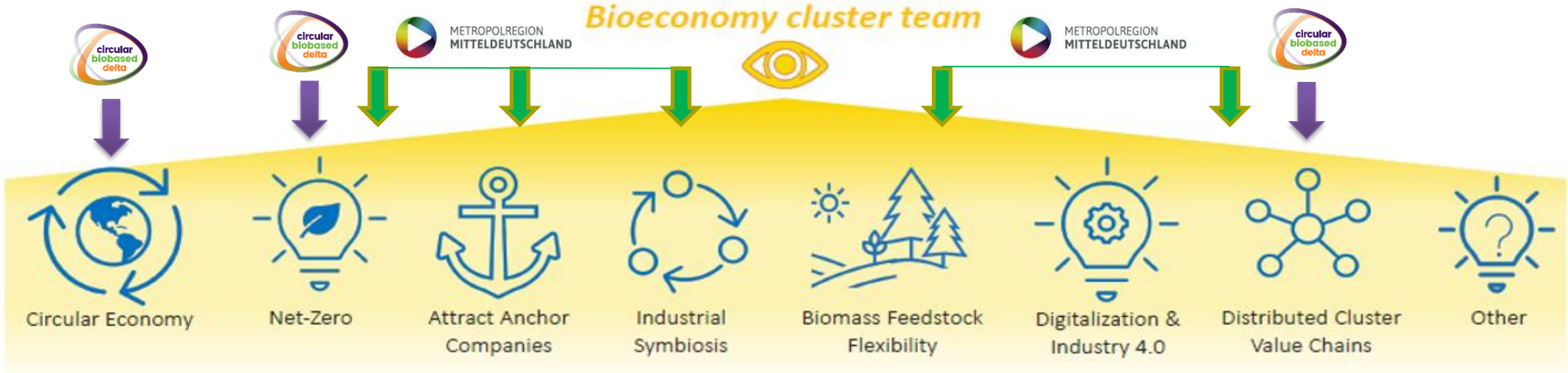
OUR COMMITMENT

- Co-led by **Lombardy** (IT) and **Randstad** (NL) Regions
- Technical coordination led by the **Lombardy Green Chemistry Cluster** (IT)
- **19 VI regions** involved
- Works for getting **better engaged** VI regions and increasing the number of **new members**
- **monthly matchmaking and investing forums, 1to1 meetings** and **new partnerships.**

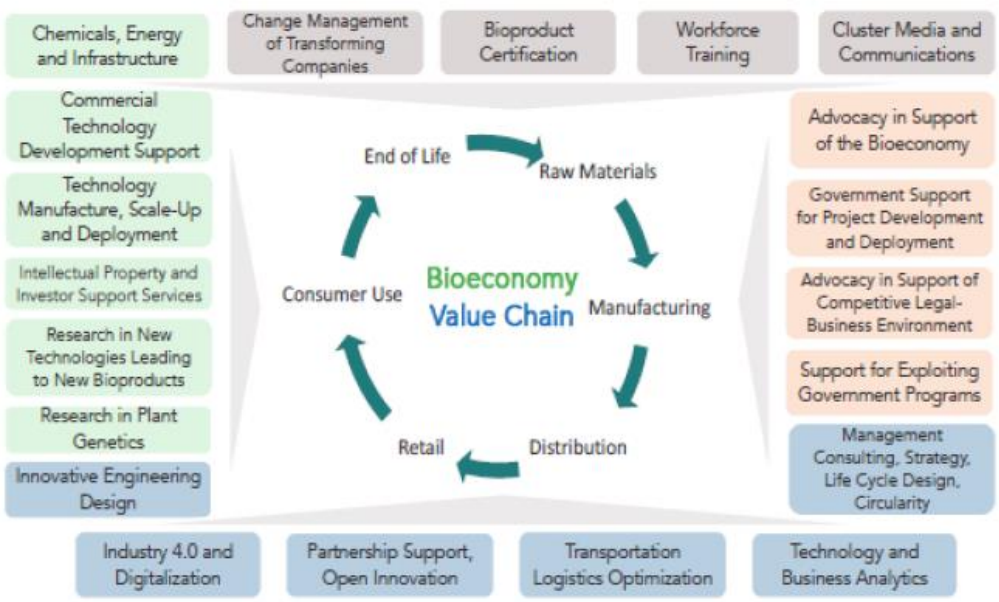
Recent clusterstudy by Polytechnic Montreal







Attributes of successful clusters



- Spawns innovation to improve **competitiveness** on a **global basis**
- Facilitates **access to funding** throughout research, development and deployment
- Assists with value chain operating **flexibility**, supply chain **efficiency** and **effectiveness** globally
- Communications to **promote the growth of firms** and attract entry of new ones
- Intensity of cluster is increased and **refined over time**, and gives rise to further growth
- Innovation clusters play an increased role in the **definition and implementation of future innovation policies**

Jointly we need to excell in these aspects
to be competitive in a European (global) context

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Thank you for your attention

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