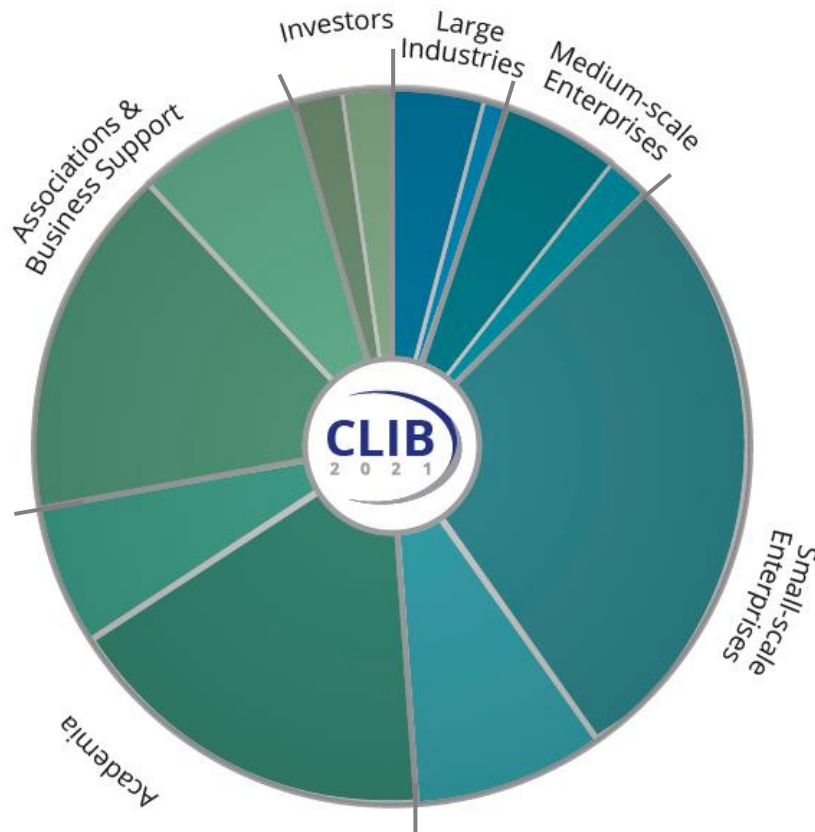
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Contribution to ECRN – CoR Joint Event  
Harnessing the Bioeconomy Potential of European Regions  
07 June 2017, Dr. Tatjana Schwabe

# CLIB<sup>2021</sup> at a glance



- Open innovation cluster in industrial biotechnology and the biobased economy
- Founded in 2007
- **About 100 members**
  - 50 % SME
  - 25 % international
  - > 70 bn EUR accumulated sales
- **Cross-Sector Network** (chemistry, energy, steel, agricultural, forest, paper, plant construction, food & feed, consumer products)
- **International network** with cluster core in Germany

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**BIO:NRW**  
Cluster Biotechnology  
North Rhine-Westphalia



Federal Ministry  
of Education  
and Research



Federal Ministry  
of Food, Agriculture and  
Consumer Protection



# Biotechnology today



## Drivers

- Alternative feedstocks
- CO<sub>2</sub> reduction
- Sustainability
- Increased efficiency
- Novel functionalities



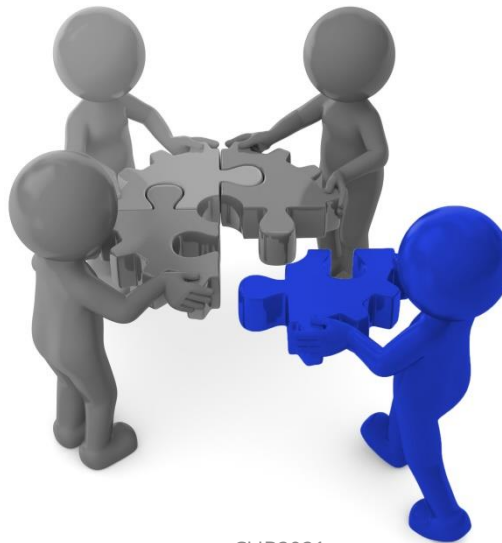
## Hurdles

- High availability of fossil feedstocks
- Efficiency of petrochemical processes
- Lower TRL of biotechnological processes compared to petrochemical routes

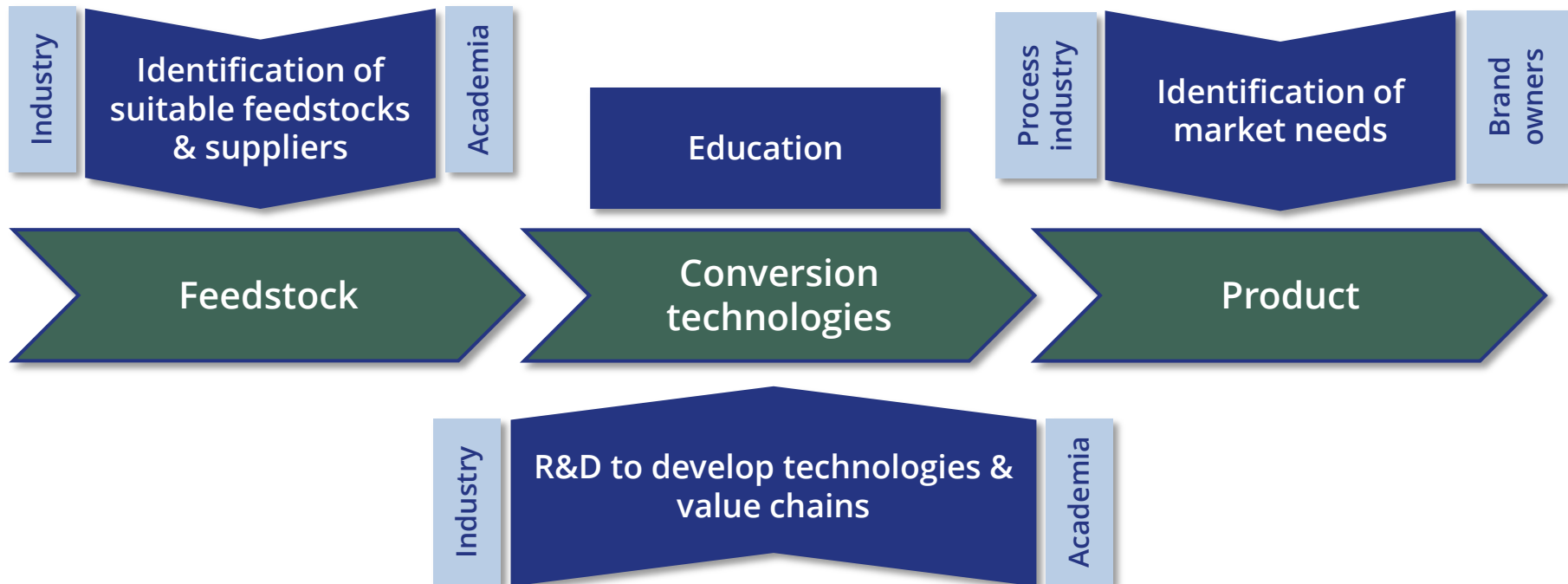




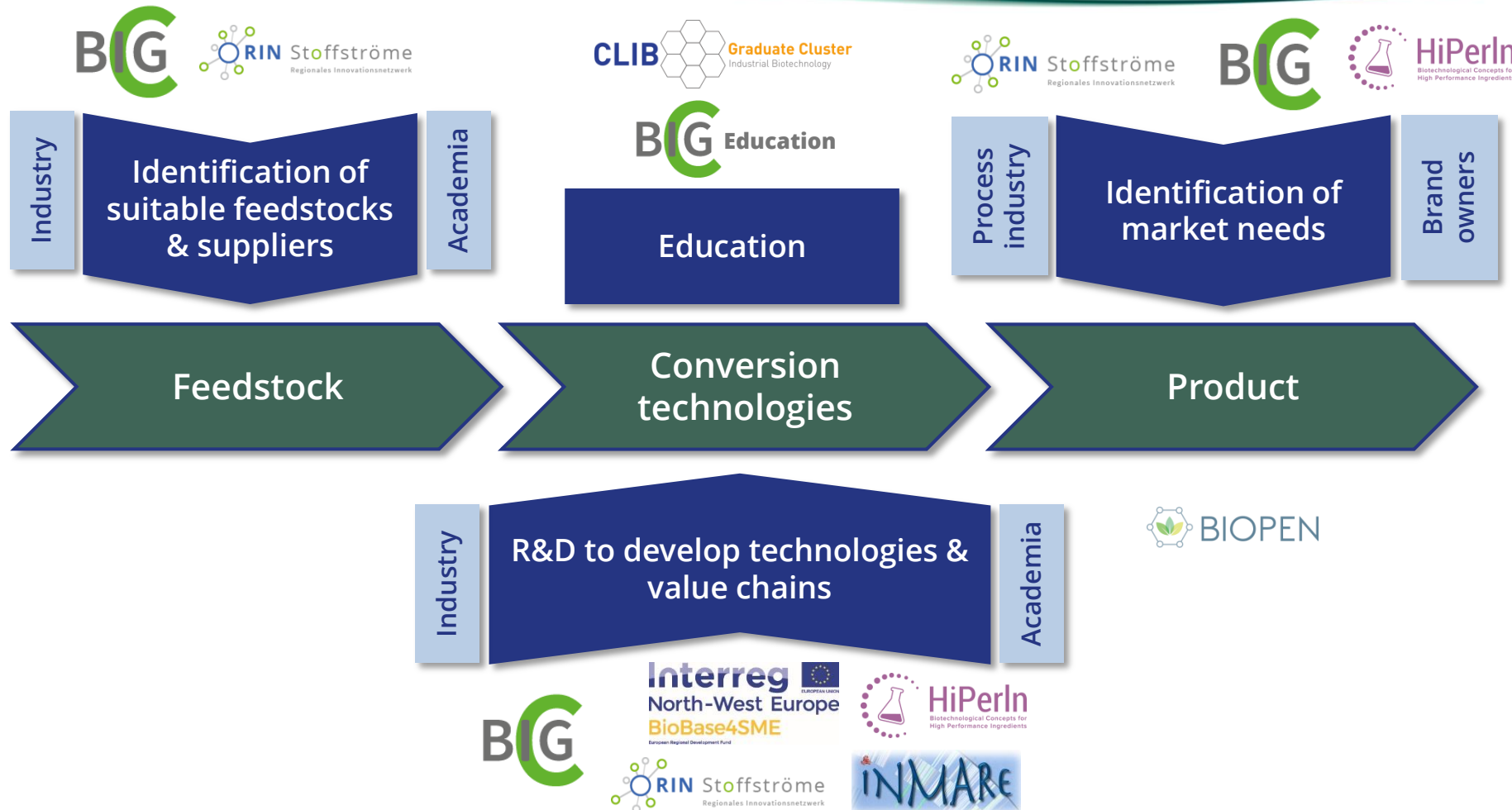
To establish the bioeconomy and the circular economy in industry



# CLIB<sup>2021</sup> Strategy: Structured networking process



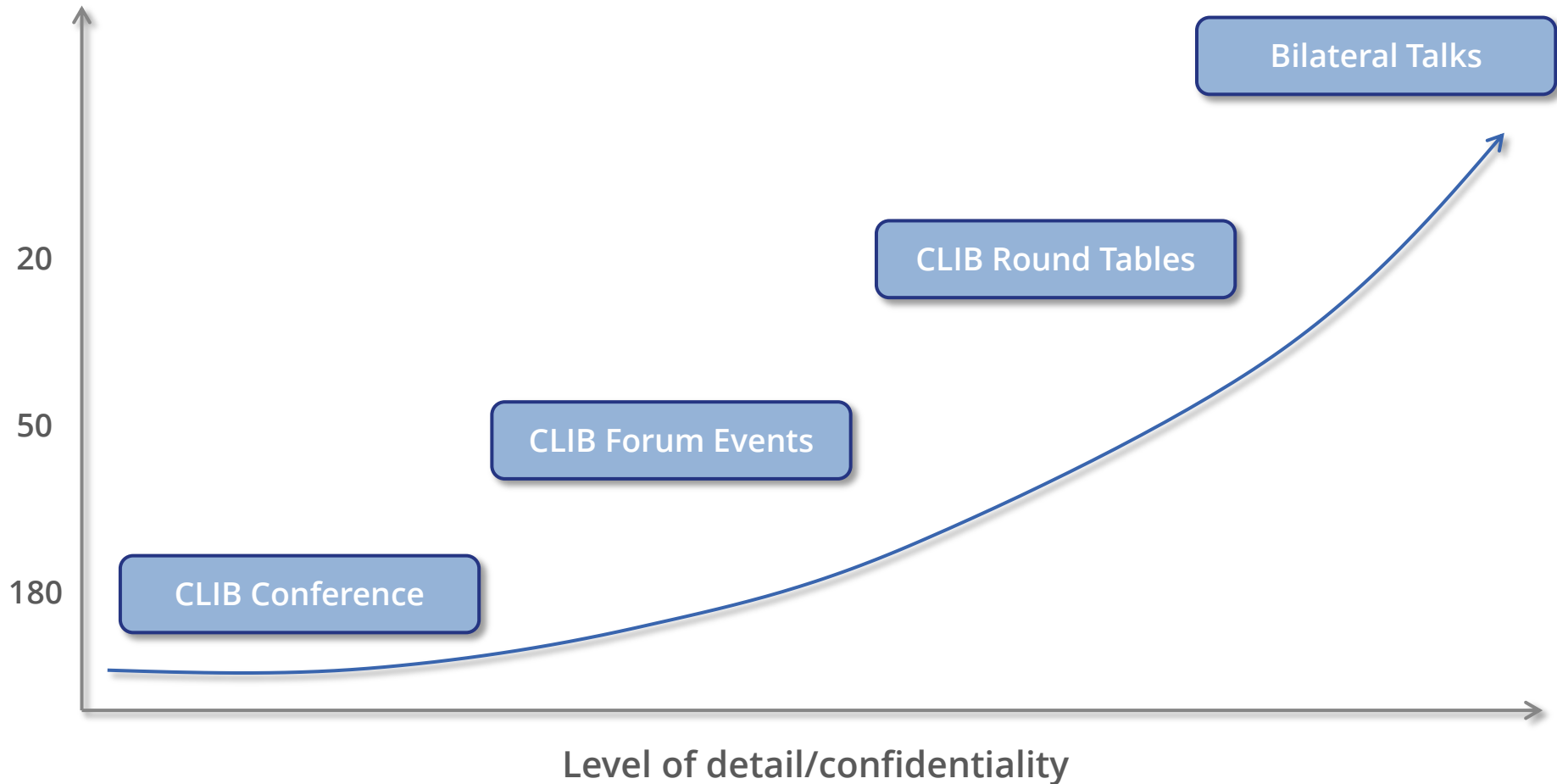
# CLIB<sup>2021</sup> Strategy: Structured networking process



# CLIB<sup>2021</sup> Strategy: Structured networking process



Participants



## Added value

Cluster profile for **distinct positioning and visibility** on a national and international comparison

**Knowledge building** in relevant topics, markets, technologies as well as trends in biotechnology and clean technologies

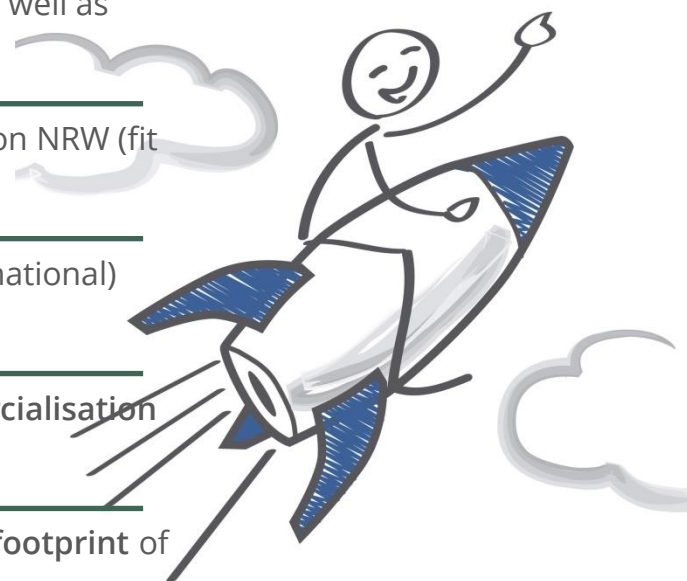
**Identification and support in key technologies** with relevance on NRW (fit accuracy to calls)

**Formation of tailored consortia** (intersectoral, national & international) leading to higher success rate of project acquisition

**Demonstration of technologies** as well as subsequent **commercialisation and application** in NRW

Enhancement of **resource efficiency and reduction of carbon footprint** of industrial sites in NRW

**Contribution to sustainability** of chemical industry in NRW, ensuring continued employment in this important industry area





- Most populous state in Germany
- Largest metropolitan area in Europe (Rhine-Ruhr)

- Strong chemical industry  
(30% of total German sector)

**Ministry of Innovation, Science  
and Research of the German State  
of North Rhine-Westphalia**



- Bioeconomy as a regional focus:
  - Roadmap towards KBBE in 2010
  - Bioeconomy strategy through stakeholder involved process in 2012/13
    - chemical industry, agriculture, energy, health

## **Eckpunkte einer Bioökonomiestrategie für Nordrhein-Westfalen**

### **A. Ausgangslage**

Die Lösung der globalen gesellschaftlichen Herausforderungen wie Klimawandel, Ressourceneffizienz, Biodiversitätsverlust, Gesundheit und demografischer Wandel ist eine der vordringlichsten nationalen und internationalen Aufgaben. Die Erarbeitung entsprechender Lösungsansätze steht im Fokus der Landesregierung.

Die Landesregierung versteht unter Bioökonomie die Entwicklung neuer Produkte und Dienstleistungen unter nachhaltiger Nutzung von biologischen Ressourcen- u.a. für den Wandel von einer auf Erdöl basierenden hin zu einer auf nachwachsenden Rohstoffen basierenden Gesellschaft. Dies ist insbesondere für Nordrhein-Westfalen als einer der in Europa führenden Chemie-, Pharma- und Energie-Standorte von Bedeutung.

Die Bioökonomie kann fast alle industriellen und wirtschaftlichen Sektoren und ihre dazugehörigen Dienstleistungen betreffen, da Produktion und Nutzung biologischer Ressourcen bzw. die Ver- und Bearbeitung schon immer weit verbreitet war und immer mehr Branchen erschlossen werden. Besondere Potentiale liegen in der Entwicklung neuer Wertschöpfungsketten, neuer Produkte und Verfahren. Dabei werden u.a. durch die Biotechnologie technologische Lösungsansätze ermöglicht.

# Focus: inter-sectoral and inter-regional collaborations

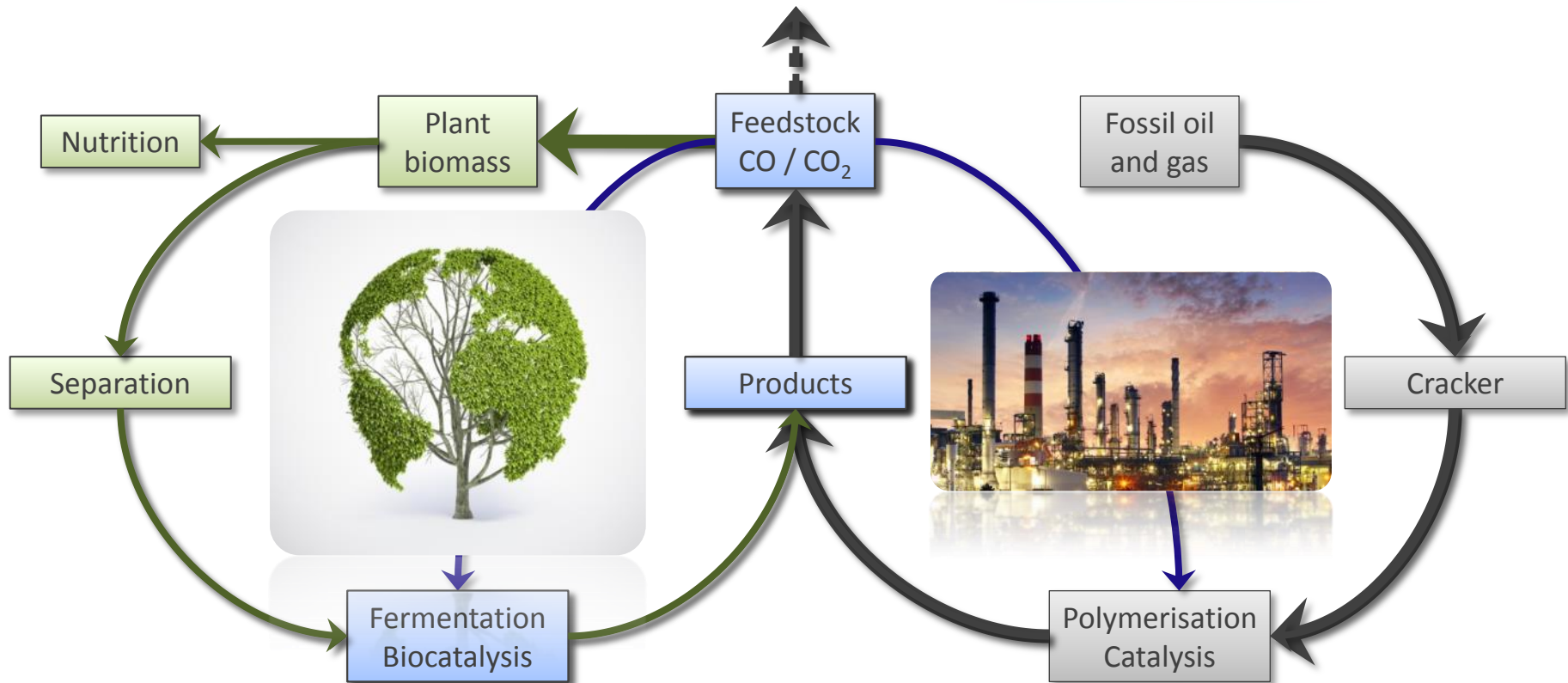


Three projects of special relevance to the questions of today's meeting will be presented:

- **Project RIN Stoffströme**
  - **Regional, German, inter-sectoral, transdisciplinary, bi-national**
- Project BIG-Cluster
  - Trinational region, strong chemistry, focus, inter-sectoral
- Project Biobase4SME
  - Regions in large INTERREG project, SME focus

# RIN Stoffströme

## Circularisation of Carbon Streams



Circularisation of Carbon Streams – either bio-based or fossil.  
Sustainability and resource efficiency as deciding drivers

# Regional approach needed

## Bio-based side and waste streams are a challenge:

- De-centralised
- Often seasonal
- Often heterogeneous
- Availability unclear
- Not transport-worthy



## Local industrial location factors

- Local feedstocks (biomass, agriculture)
- Local markets (chemical industry, their customers)
- Logistics (businesses, infrastructure)
- Professionals (universities)

→ new opportunities



# Regional Innovation Network



- Model region for innovative and sustainable feedstock use (since 5/2014)
- Core partners: CLIB, DGAW, EnergieAgentur.NRW



- Funded by state ministry, local strategy

Ministry of Innovation, Science  
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- Aims  
Improved use of side and waste streams from industry, agri- and silviculture in the Rhineland; encouraging cascade use by engaging relevant stakeholders from society, science, and industry.



# Pillars of RIN Stoffströme

- Define **feedstock potential**
  - Study Krefeld/Venlo
  - Study food industry
- Discuss **technical options**
  - Workshop Biorefineries
  - Workshop Logistics
  - INTERREG-Project BIVAC
- **Networking & acceptance**
  - Workshop Bioeconomy in Krefeld
  - Discussion Bioeconomy, state parliament NRW
  - Project (BioDisKo)  
federal funding for bioeconomy communication
  - INTERREG Networking project



# BIVAC: Bio-Value Chains for novel value-added products and compounds

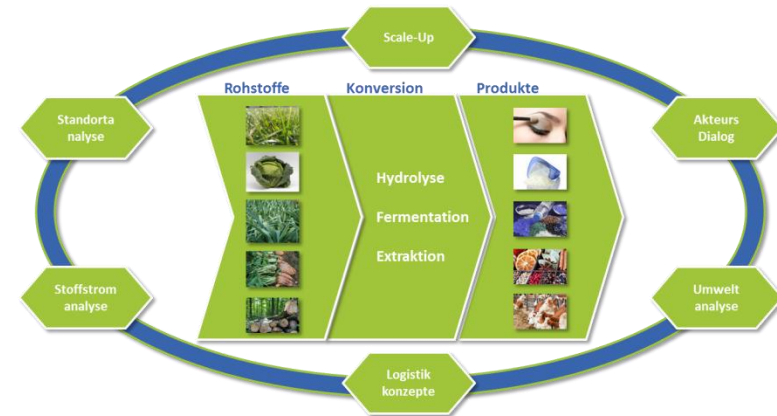


Develop new value chains, based on existing side streams from agriculture/forestry

- Higher-value use of side streams
- Efficient conversion through direct extraction or fermentation
- Link practice and research
- 

Integrated Supporting research

- Selection of conversion sites
- Development of concepts for logistics
- Life cycle analysis of new value chains
- Develop scale-up concepts for demonstration plants

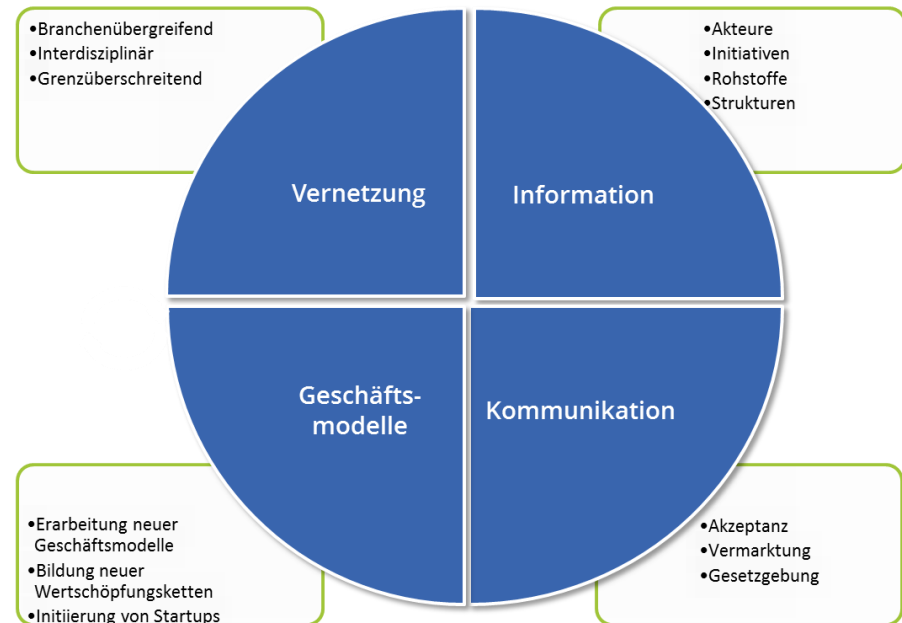


*INTERREG project in final evaluation*



[www.deutschland-nederland.eu](http://www.deutschland-nederland.eu)

- **Build bridges between professionals** in agriculture, chemistry, logistics, waste processing, and administration **and researchers** in natural sciences, business, and social sciences
- Identify and work on **relevant research topics** to establish the bioeconomy in the region
- Develop **new business models and value chains** in the region
- Numerous **partners from NRW** (Agrobusiness Niederrhein, BIO.NRW, City of Krefeld, RIN) **and the Netherlands** (Greenport Venlo, Keyport2020, City of Venlo) already involved
- *INTERREG project in preparation*



# Focus: inter-sectoral and inter-regional collaborations



- Project RIN Stoffströme
  - Regional, German, inter-sectoral, transdisciplinary, bi-national
- **Project BIG-Cluster**
  - **Trinational region, strong chemistry, focus, inter-sectoral**
- Project Biobase4SME
  - Regions in large INTERREG project, SME focus

# BIG-Cluster Initiative

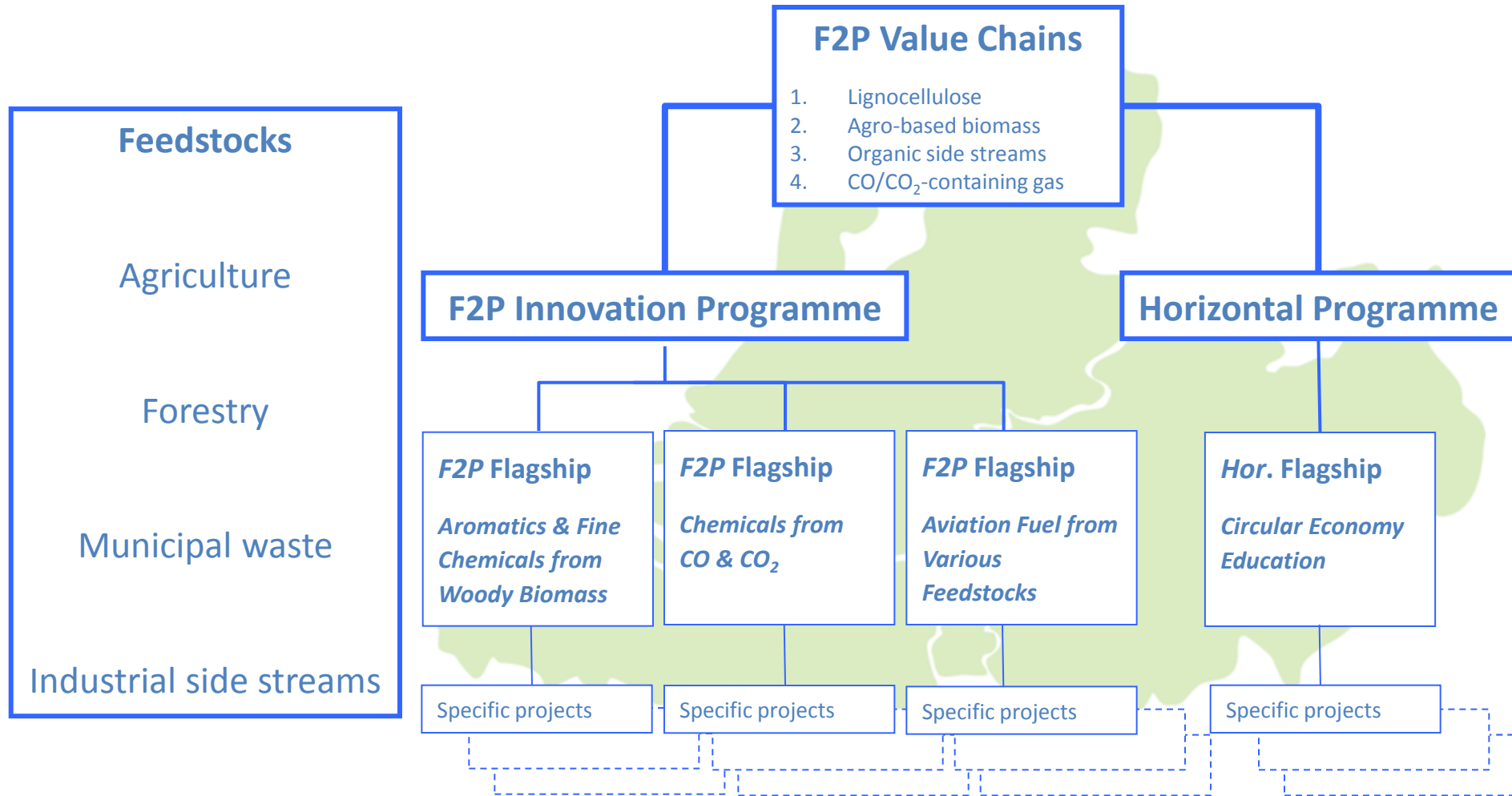


- BioInnovation Growth mega-Cluster
- Cross-border Smart Specialisation Initiative
  - NRW
  - Flanders
  - The Netherlands

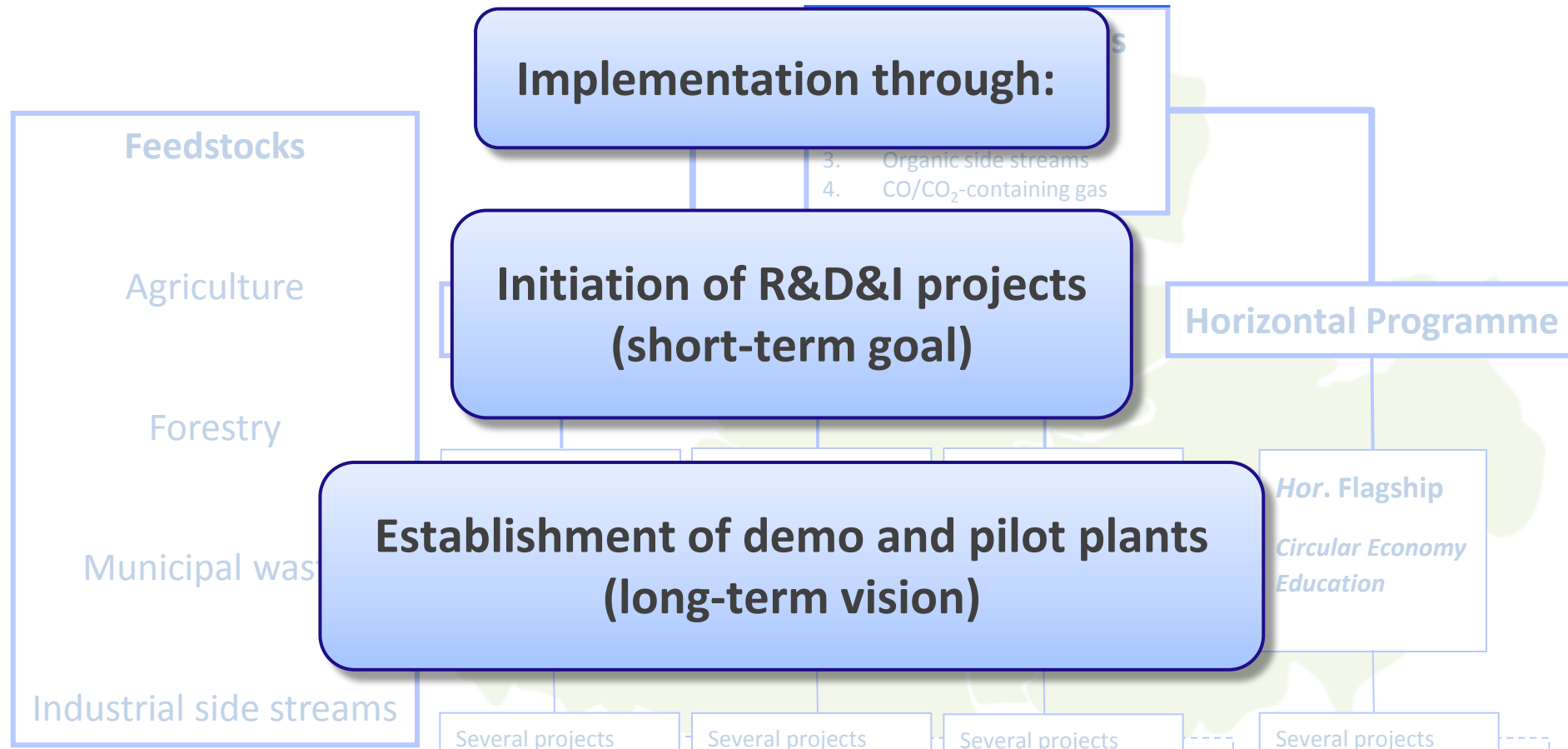




# BIG-Cluster *Flagship-to-Product Value Chains*



# BIG-Cluster *Flagship-to-Product Value Chains*



New funding opportunities: EU → **H2020 (BBI, SPIRE, MSCA, etc.), Interreg** (NWE, GER/NL, **FI/NL** etc.), ERA Net, Eurostars, ...; National funding → **BMBF, BMWi** (ZIM, ZIM int., etc.) **Catalisti/Flanders, STW, NWO, ...**

# Focus: inter-sectoral and inter-regional collaborations



- Project RIN Stoffströme
  - Regional, German, inter-sectoral, transdisciplinary, bi-national
- Project BIG-Cluster
  - Trinational region, strong chemistry, focus, inter-sectoral
- **Project Biobase4SME**
  - **Regions in large INTERREG project, SME focus**

**Funded by:** INTERREG North-West Europe

**Project term & volume:** 2016 - 2019, 5.8 million EUR

**Project partners:** AC3A (France), Bio Base Europe Pilot Plant (Belgium), CLIB2021 (Germany), Flanders Bio-Economy Valley (Belgium), Materia Nova (Belgium), NNFCC (UK), REWIN (NL), TCBB Resource (Ireland), York University (UK)

**Responsible at CLIB:** Carolin Lange

**Project website:** [www.nweurope.eu/BioBase4SME](http://www.nweurope.eu/BioBase4SME)

Voucher system to support industrial biotechnology and biobased economy SMEs/start-ups in the following services:

- Upscaling at Biobase Europe Pilot Plant
- LCA
- Business development
- Non-technological hurdles: acceptancy, regulations
- Workshops, trainings

# Conclusions: Challenges to establish the bioeconomy (cluster's view)



- Base support for clusters, continued networking
- Funding for bi-/trilateral projects, matching funding across borders
- Funding for inter-cluster structures
- Clear strategies for long-term planning
- Positive message towards society
- **Regional clusters – a sustained effort**
  - Regions excel and interact w/ each other
  - Groundwork to sustain network and initiate projects
  - Network successfully developed – new challenges arise (e.g. from technology providers to market understanding)

**Regional clusters need to continually evolve and improve  
– and need support to deliver the network and resources to their  
members and stakeholders**



A stylized globe centered on the Atlantic Ocean, showing the continents of North and South America on the left, and Europe and Africa on the right. The globe has a blue-to-white gradient background.

