



SmartPilots
Interreg Europe



European Union
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Development Fund

SmartPilots Partners

Brecht Vanlerberghe, Project Coordinator

14-16 March 2017 | CPI - UK



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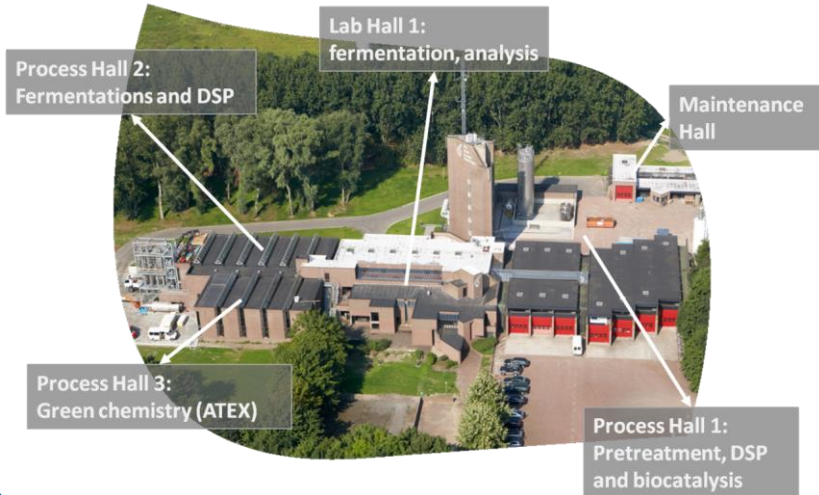
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Bio Base Europe Pilot Plant

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Bio Base Europe Pilot Plant:



- **Multi-purpose pilot facility** in the Port of Ghent (B)
- **Bio-Based** products & processes
- Current number of employees: 47
- **Independent** non-for-profit SME

Investment in infrastructure

- Interreg VL-NL 2008-2013: 13 m€ (85% overall funding)
- Interreg NWE 2013-2015: 1,35m€ (80% overall funding)
- ERDF 2015-2015: 1,26m€ (85% funding)

From lab to industrial environment:

- Process development & optimisation: proof of concept, opex, capex, LCA
- Upscaling mg to g, kg, ton scale: prototypes for product & market validation
- First series production: Market development

Bio Base Europe Pilot Plant: daily operations

PRIVATELY FUNDED PROJECTS

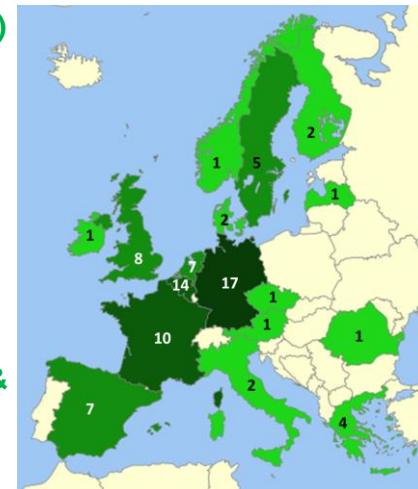


40-45 projects/year

PUBLICLY FUNDED PROJECTS:

Technology development, scale up and
Creating awareness & building new value chains

- NANO3BIO (FP7) (**chitosan**)
- 2GBIOPIC (H2020) (**2G ethanol**)
- MARISURF (H2020) (**marine biosurfactants**)
- ERIFORE (H2020-infradev) (**RI's for circular economy forestry based**)
- REHAP (H2020-spire) (**valuable compounds from forestry residus**)
- Superbio (H2020-innovsup) (**support actions for biobased value chains**)
- NanoPack (H2020-NMBP) (**nanotubes in foodpackaging**),
- DAFIA (H2020-NMBP) (**macromolecules from organic waste fractions**)
- FALCON (H2020-biotec) (**chemicals from lignin**)
- Pulp2value (H2020-BBI-Demo) (**valorisation sugarbeetpulp**)
- Carbosurf (H2020-BBI-R&IA) (**speciality carbohydrates & biosurfactants**)
- DEMETER (H2020-BBI-demo) (**enzymes for anaerobic digestion**)
- BioBase4SME (Interreg NWE) (**Support actions to SMEs**)
- SmartPilots (Interreg EU) (**shared pilot facilities for Bio Economy**)
- BioHart (Interreg VL-NL) (**RI's for renewable aromatic molecules**)
- Pilots4U (H2020-BBI-CSA) **netwerkbio economy research & demonstration infrastructure**
- Resolve (**Biobased solvents**)
- Afterlife (**Bioplastics from waste water**)





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Flemish Government Department, Science, Innovation and Economy

*Hilde Vermeulen,
Policy Advisor , Unit Innovation and Entrepreneurship*

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EWI, one of the 11 policy domains of Flemish government (2017 budget of 1,3 billion euros)

**Department
Economy,
Science and
Innovation**
*responsible for
policy preparation,
policy monitoring
and evaluation
(representation in
Horizon2020, etc)*

*(109 FTE)
743 million €*

Agencies, *Responsible for policy implementation*
AIO (innovation & entrepreneurship funding, ERDF managing authority, E.E.N NCPs, 322 FTE)
FWO (research fund, NCPs 59 FTE)
PMV (risk capital and equity financing, 116 FTE), LRM (Limburg reconversion investment holding, 85 FTE)
Botanic Garden Meise (horticulture, 138 FTE)

Advisory councils, *relating to policy lines and strategic policy issues*

SERV for socio-economic advice
VARIO for entrepreneurs and innovation

Actors, *receiving EWI funding*
Strategic Research Centres
Companies
Cluster organisations
Other knowledge institutes



Public support to cluster and innovation actors

Applied research and innovation co-operation on topics relevant for knowledge value chains in transition

Smart Specialisation clusters (cfr New Cluster Policy, 2016)

- **Catalisti** Sustainable chemistry and plastics
- **Strategic Initiative Materials (SIM)**
- **Smart Energy Platform** Smart Grids Platform
- **VIL** Flanders' logistics institute

Others

- **Waterstofregio** Hydrogen and Fuel Cells cluster
- **Bio Base Europe** bio-based economy
- **DSP Valley** Digital Signal Processing – Designing Smart Products
- **Flanders District of Creativity** cultural and creative industries
- **Microsoft Innovation Center** ICT
- **Flanders InShape** product development and industrial design
- **Flanders' Synergy** innovative labour organisation
- **Social Innovation Factory** social entrepreneurship and innovation
- **MIP** energy technologies
- **VIM** mobility institute
- **iCleantech** environment
- **Flanders' Food** innovative foods



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BPF – Bioprocess Pilot Facility

Peter Flippo

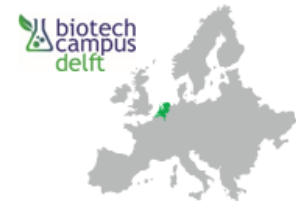
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BPF highlights



- Deliver **technical and economical viable solutions** for enabling a smooth scale-up to full scale on **pilot-scale**
- **Longstanding experience** in industrial scale up/ scale down (originating from DSM/Gist Brocades)
- **Modular concept** based on Pretreatment, Hydrolysis, Fermentation and/or Downstream Processing modules
- **Our approach**
 - *Scale down targeted commercial scale plant*
 - *Run pilot scale to confirm / modify proof of concept*
 - *Data generation for commercial scale engineering & safety*
 - *Advise on further development and road towards production*
- **Track record** with startup's, SME's and large enterprises for wide range of applications
- **Open access, IP secure, highly flexible**





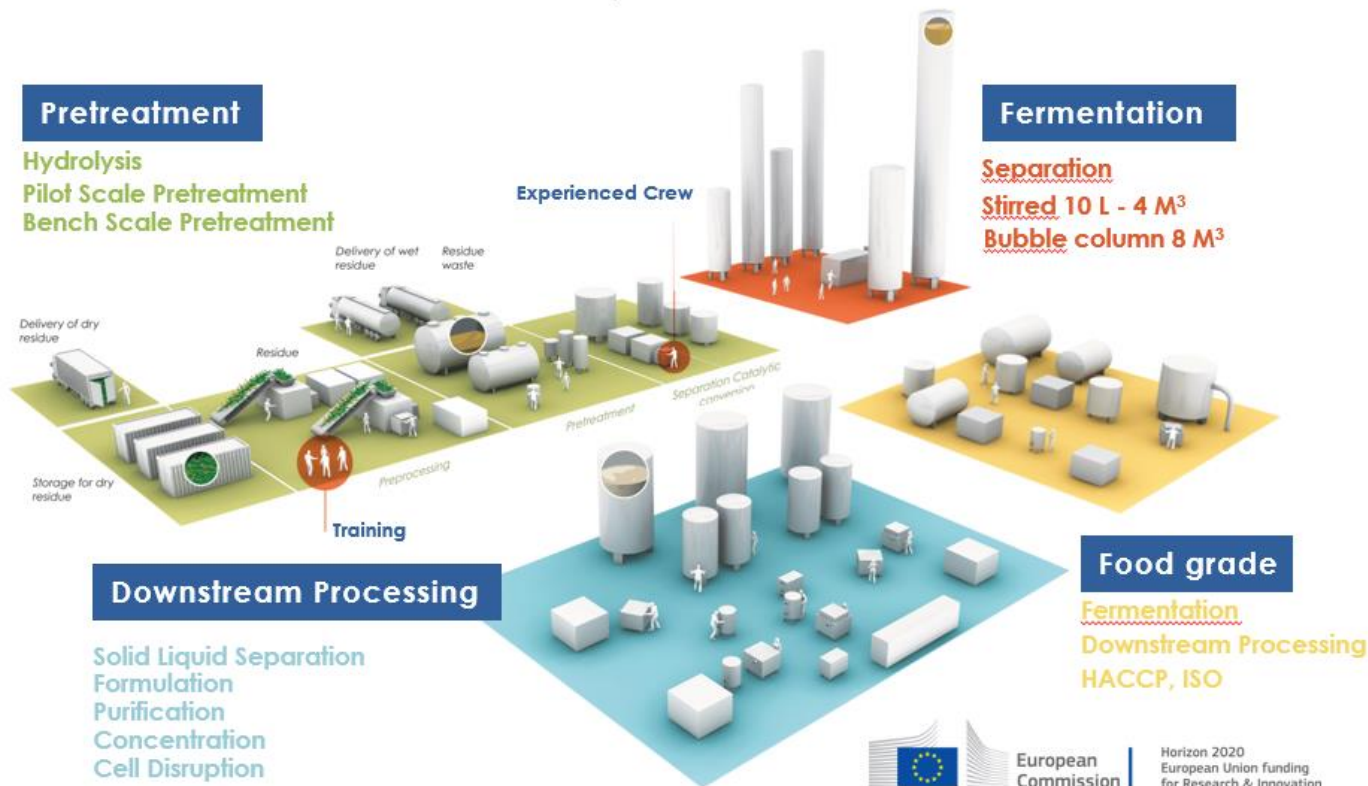
BPF facilities

BPF is a truly multi-purpose pilot

- modular concept
- customized unit operation build up of pilot project
- continuous or batch
- complete value chain possible from biomass to end product
- highly flexible, access to rental equipment if needed

Pilot Plant

Structure: 4 sections, modular operation



European
Commission

Horizon 2020
European Union funding
for Research & Innovation



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Province of South-Holland

Marije Groen

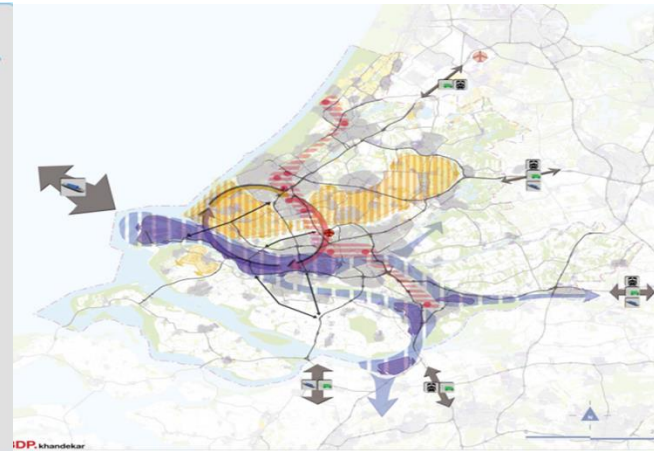
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provincie **HOLLAND**
ZUID

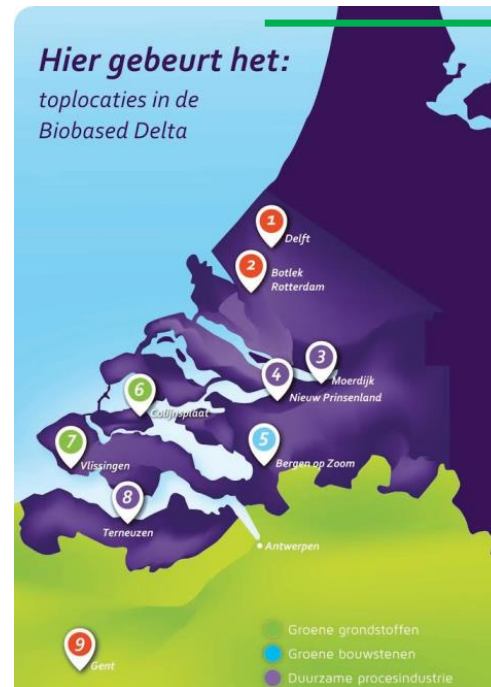
Strong position:

- Port of Rotterdam
- Greenports
- Knowledge Institutions



Programs:

- OP Kansen voor West 2
- Innovation and valorisation for SME's
- Low Carbon Economy;





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CPI

Steven Pearson

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VTT pilot plants for bio and circular economy

Mika Härkönen

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VTT Technical Research Centre of Finland Ltd

- A leading R&D organisation in Nordic countries
- We provide expert services for our domestic and international customers and partners, both in private and public sectors

TOP 2

VTT is second most active patenting organisation in Finland (2014)

36%

of Finnish innovations include VTT expertise

We use
4 million hours

of brainpower a year to develop new technological solutions



Net turnover and other operating income 272 M€ for VTT Group in 2015
(VTT Group's turnover 185 M€ in 2015)



Personnel 2,470
(VTT Group 31.12.2015)



Unique research and testing infrastructure



Wide national and international cooperation network

Value for customers in bio and circular economy with extensive pilot infrastructure



Industrial biotechnology

Fermentation and bioprocessing

High throughput robotics

Culture collection



Biomass deconstruction and fractionation

Biomass fractionation and pulping



Process chemistry

Green chemistry

Metals recovery



Thermochemical conversions

Gasification

Pyrolysis

Energy storage

Fluidised bed combustion



Fibre and composite technology

Fibre based web production

Roll-to-Roll surface treatment

Polymeric materials processing

Cellulose fibre spinning



Food technology

Food and brewery

in Bioruukki Pilot Centre

Advanced analytical platform

Environmental engineering



Modelling and computational platform

Process modelling and concepts





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ARD

Jean-Christophe Duval

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R&D – International Bioeconomy Services Company

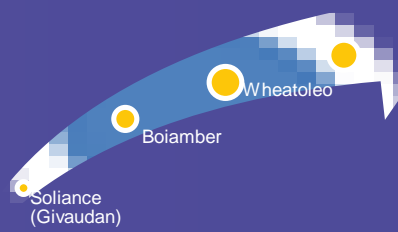
85 highly qualified staff cumulating 30 years experience



■ For internal use



Business Creation



- Green Chemistry

- Plant fractionning & Purification

- Industrial Biotech – fermentation & DSP



At the heart of the Biorefinery Platform of Pomacle-Bazancourt near Reims (F) 18



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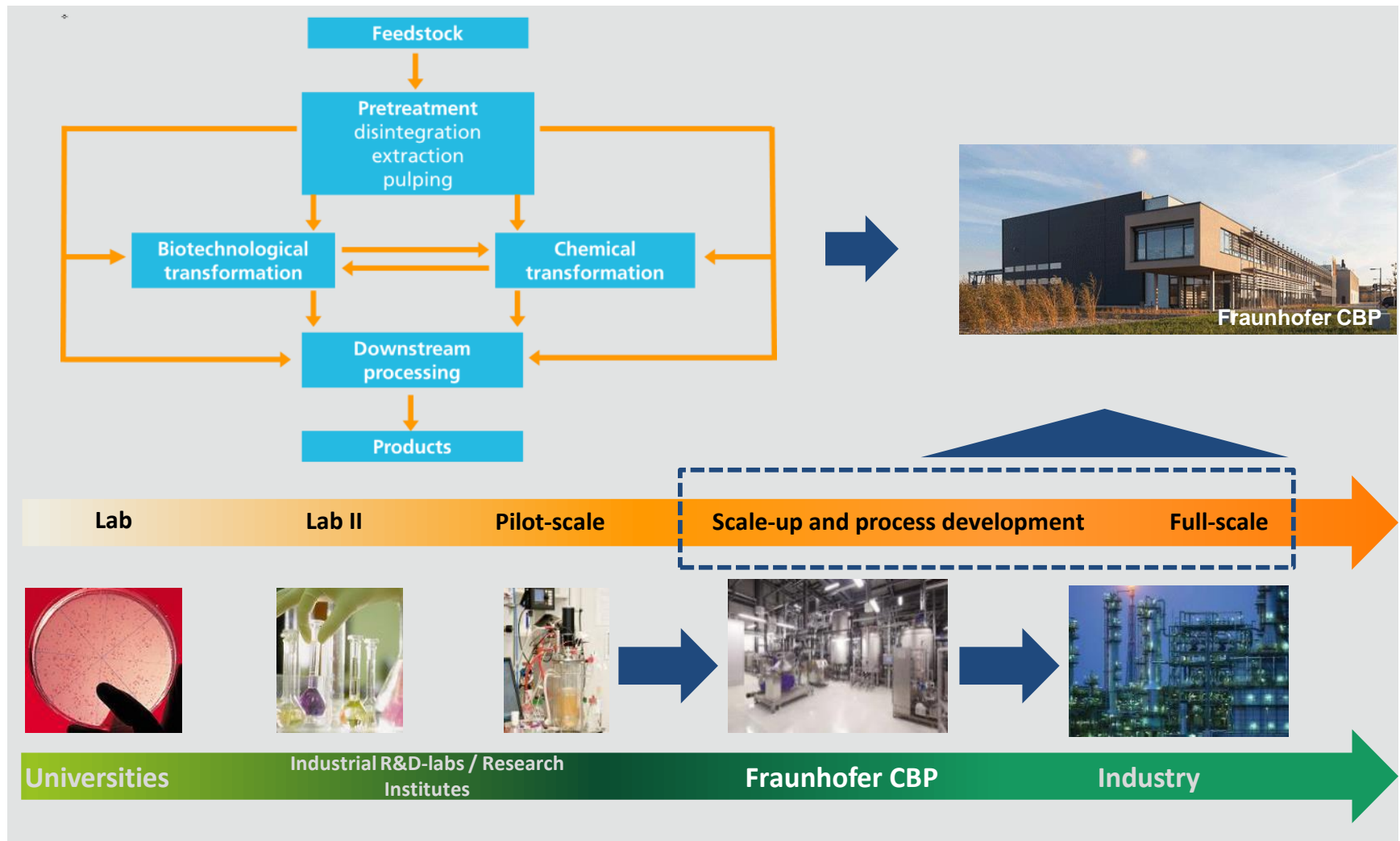
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Fraunhofer Center for Chemical-Biotechnological Processes CBP

Gerd Unkelbach

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From laboratory to industrial scale



Modular pilot plants for biorefinery processes



- Obtaining high-quality extractives from biogenic raw and residual materials
- Pulping of lignocellulose, separation and use of its components to make further products
- Development of processes to obtain new technical enzymes
- Functionalization and modification by way of enzymatic or chemical catalysis
- Manufacturing of platform and fine chemicals using fermentation and chemical processes
- Cultivation of microalgae for the production of high-quality ingredients



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Innovhub – Stazioni Sperimentali per l'Industria

Name

Ilaria Bonetti – Project Manager Innovation Division

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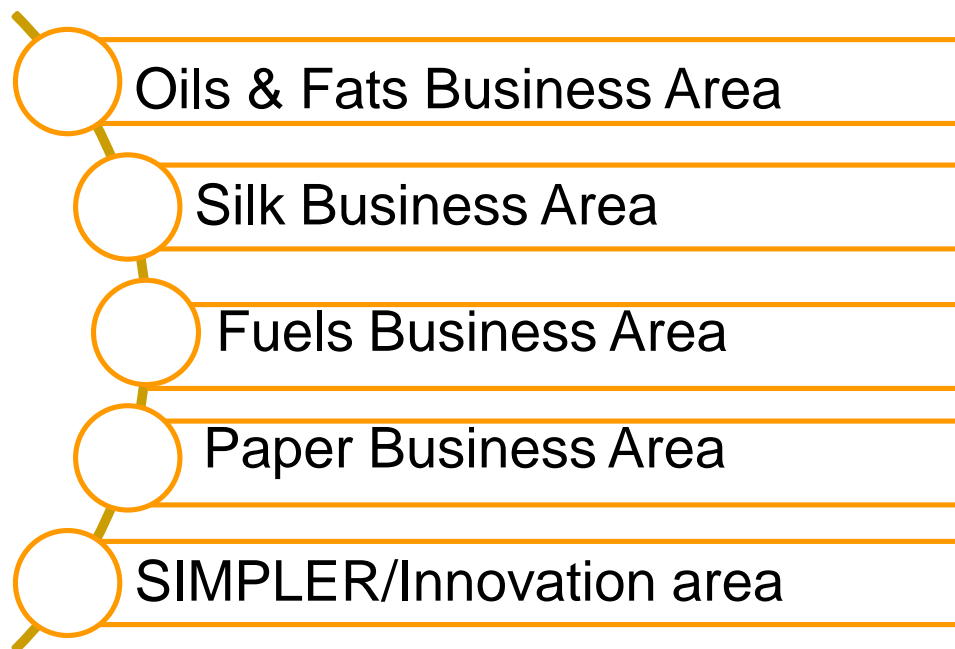
Structure and organisation

Mission: Improve the competitiveness of the national manufacturing system through the provision of high quality technological support, the promotion of innovation, research and training of the staff in the relevant sectors



INNOVHUB
STAZIONI SPERIMENTALI
PER L'INDUSTRIA

Innovazione e ricerca





Activities and services

- ✓ Industrial research and development;
- ✓ Analysis, tests and control;
- ✓ Certification of products and manufacture processes;
- ✓ Training, information, documents, exploitation, promotion and dissemination;
- ✓ Technical rules at national and international level;
- ✓ Support to companies for research, development and innovation, also in collaboration with external partners;
- ✓ Participation to EU and international projects on bioeconomy

Green Chemistry Cluster

A Regional Government initiative to support its innovation and Smart Specialisation strategies on eco-industries, the cluster, created in 2014, is industry driven and market oriented.

Its mission is to create the best possible framework conditions for the development of a bio-based economy in Lombardy and Innovhub SSI is one of the founding members - with two Universities and an industry consortium .

The actual members (industry, research, stakeholders) are 25 and has just drafted its strategic paper identifying focus areas (industrial waste, biogas digestate, wood)



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Questions welcome