CAPTURE

TOGETHER WE BECOME CIRCULAR

CENTRE FOR **A**DVANCED **P**ROCESS **T**ECHNOLOGY FOR **U**RBAN RESOURCE **RE**COVERY

www.capture-resources.be

WHAT IS **CAPTURE** ?

CAPTURE

"CAPTURE is a **research platform** that wants to deliver a disruptive contribution to the circular economy.

Its main focus is **on technological innovations** in the field of sustainable resource recovery, driven by multidisciplinary collaboration between stakeholders.

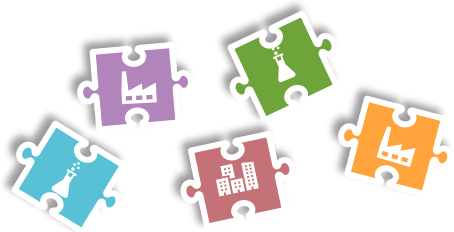
That is why our tagline is **#Together We Become Circular."**

WHY **CAPTURE** ?

CAPTURE

Scattered approach in the field of circular economy:

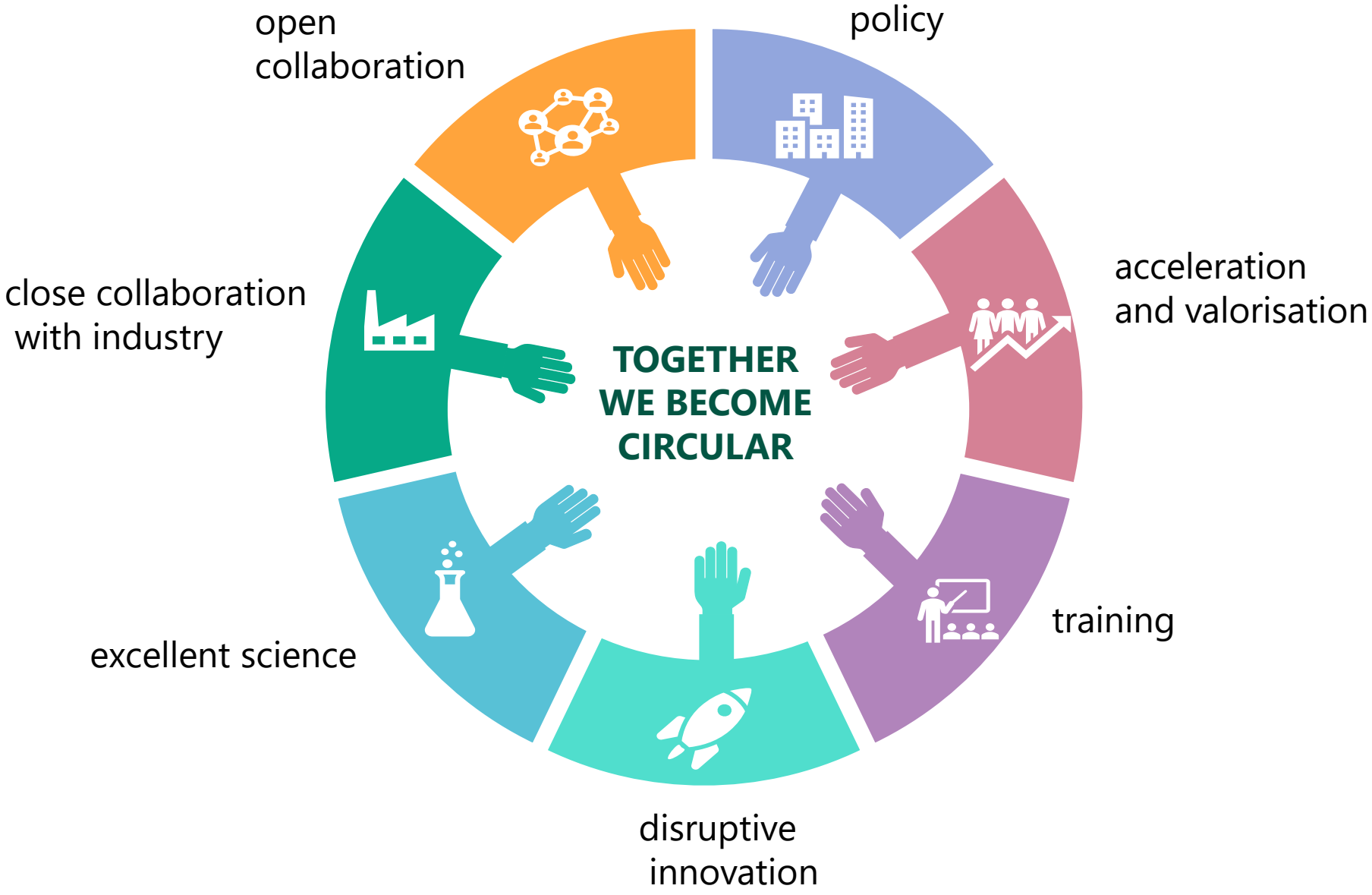
- Research institutes and industrial stakeholders (and hence supply and demand) are **not alligned**, both internally and externally.
- Inefficient and ineffective use of capacities
- Slow process of **identifying market needs and valorizing new technology developments**.



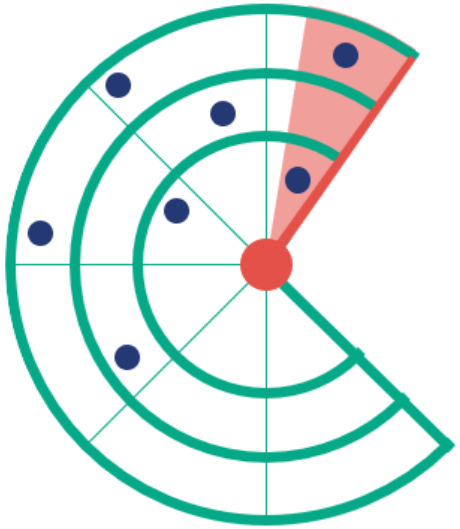
Need for an efficient and effective **open market place**, resulting in:

- **Open collaborations** between researchers (not hindered by institutional boundaries) and industrial stakeholders **is key**
- Creation of **common vision on re-use of resources**
- A one-stop-shop for policy and industry offering the latest insights on re-use of **water, CO_2 and plastics** with a core of **excellent integrated researchers**

CAPTURE **VALUES**



WHY JOINING **CAPTURE**?



CAPTURE as a radar

INFORMATION

- Direction/trends;
- Research intelligence;
- Funding feedback;
- Collaboration contacts
- Talent

INFLUENCE

- Research projects;
- Insight discussions;
- Talent;
- Collaboration contacts.

TRAINING

- Courses
- Seminars
- Workshops

CAPTURE **HISTORY**

CAPTURE

2014

START
First Idea
setting up CAPTURE
Initiated
@Ghent University

GHENT UNIVERSITY

2015

First Business Platform
Structural collaboration within the water business platform (R2T-Platform)

Thematic focus
on plastics,
CO_2 and water

2016

CAPTURE building
Approval of the EFRO/EFRD project

2017

Official launch

CAPTURE

2019

New partners
joined as key partners

Universiteit Antwerpen

vito vision on technology

Second business platform (CO_2)

2020

New partner
joined as key partner

VUB VRIJE UNIVERSITEIT BRUSSEL

2021-2022

Growth of
the CAPTURE platform

From a virtual to a
physical platform

CAPTURE **ACCELERATOR**

CAPTURE

Level 1+ 2: Technology Accelerator (Testing facilities, benches and chairs)

Level 3 + 4: Business Accelerator

TECHNOLOGY – ACCELERATOR: 4.157 m2 BVO

BUSINESS – ACCELERATOR: 3.036 m2 BVO

Level 0: Tech Hall: upscaling & demonstration

GHENT UNIVERSITY

incubatie & innovatiecentrum Universiteit Gent
Technologiepark-Zwijnaarde 3, 9052 Gent (Zwijnaarde)

AGENTSCHAP INNOVEREN & ONDERNEMEN

EFRO EUROPEES FONDS VOOR REGIONALE ONTWIKKELING
Europese Unie

provincie Oost-Vlaanderen

BLUE APP **ACCELERATOR**

CAPTURE

BlueApp
Powered by UAntwerp

Universiteit Antwerpen

open innovation and training hub
for potential entrepreneurs and innovators from knowledge institutions, large and smaller industries.

- Labs (2000 m^2): Top-notch range of utilities available
- Pilot facility (400 m^2): from lab-scale to production – ceiling height up to 7m
- Offices: flex desks for researchers and companies
- Meeting/conference rooms: collaborations in a professional environment

BLUE APP **ACCELERATOR**

Universiteit Antwerpen

BlueApp
Powered by UAntwerp

Water as a resource

- Chemical analysis
- Ecotoxicological analysis
- Waste water treatment
- Recovery of nutrients and precious materials
- Internet of water

Carbon Capture and Utilization

- Material and catalyst development
- Electrochemistry
- Plasma technology
- Chemical reactor technology
- Process control (AI…)

Hydrogen

- Production
  - Photocatalysis
  - Electrochemistry
  - Plasma chemistry
- Transport and storage
  - Reactor technology for hydrogen release

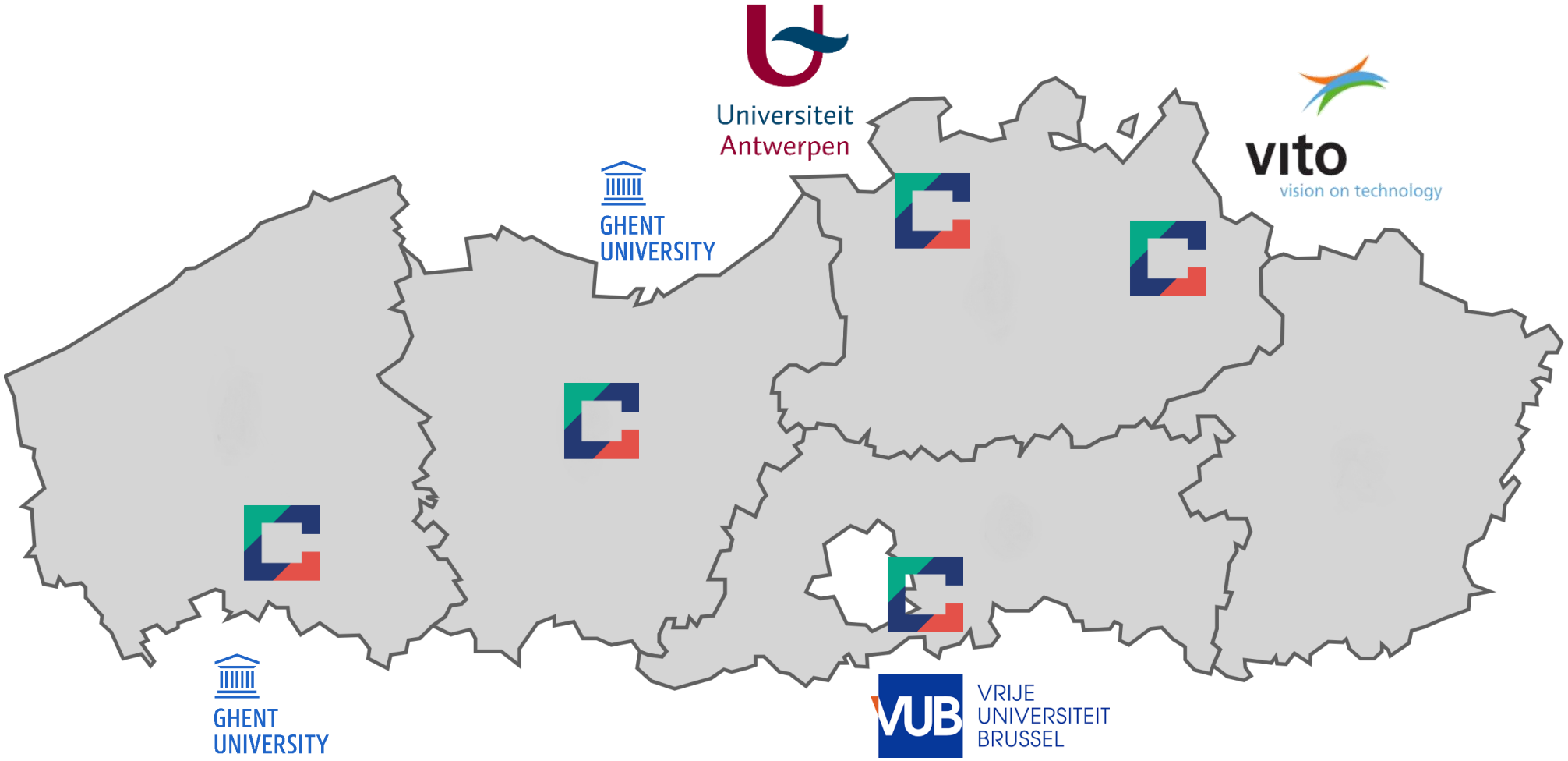
Air quality

- Indoor and outdoor
- Analysis
  - Chemical (VOC…)
  - Biological
- Sensoring/monitoring
- Air purification
  - Photocatalysis

LCA/TEA | Material development | Efficient upscaling

WHERE IS **CAPTURE** ?

CAPTURE



CAPTURE **SUMMARY**

CAPTURE

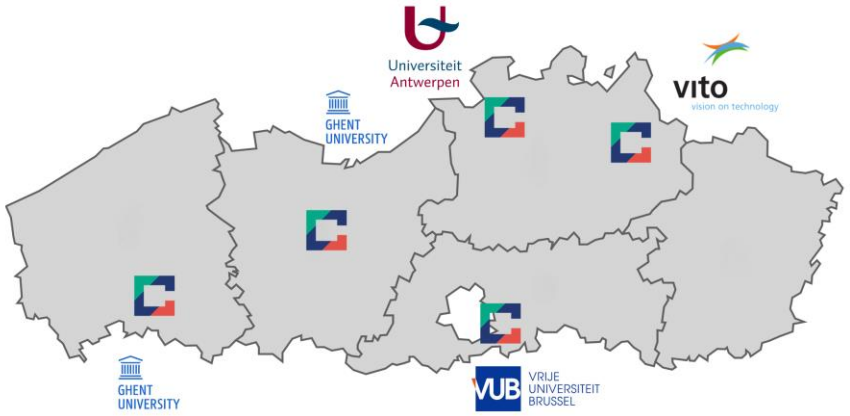
Powered by

Universiteit Antwerpen

GHENT UNIVERSITY

vito vision on technology

VUB



3 Pipelines

14 Programs

>65 research group leaders

>45 research groups

>300 researchers involved

2 business platforms

>25 business members

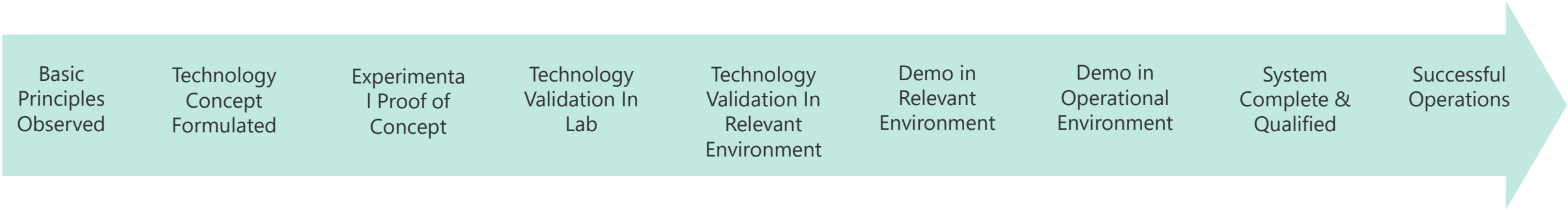
>100 companies we work with

11 staff members

22 supporting members

6 business developers

CAPTURE



PILLAR 1

Integrated excellent research -crossing institutional boundaries, TRL-levels and value chains- working in close collaboration with industry on **water, CO_2 and plastics**

PILLAR 2

Effective valorisation in **open collaboration**

By core partners, industrial actors or other stakeholders

PILLAR 3

Training

By CAPTURE and core partners
For and together with stakeholders

CAPTURE **STRUCUTRE**

CAPTURE

Pipelines

CO_2 to product

CO_2 PIPELINE

Water 'fit for use'

WATER PIPELINE

Plastics to resource

PLASTICS PIPELINE

Pillars

RESEARCH

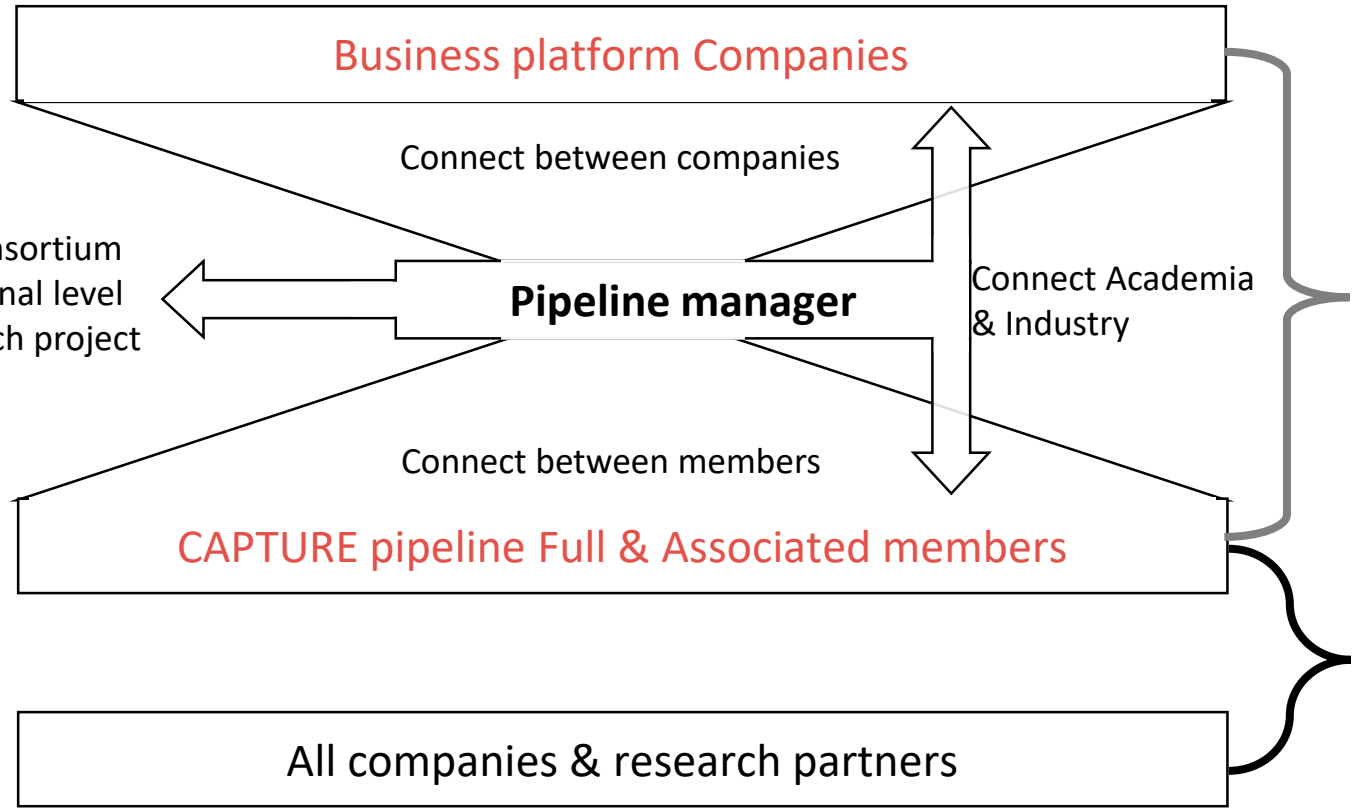
TRAINING

VALORIZATION

CAPTURE **PIPELINE MANAGER**



- Represent consortium at (inter)national level
- Define research project opportunities



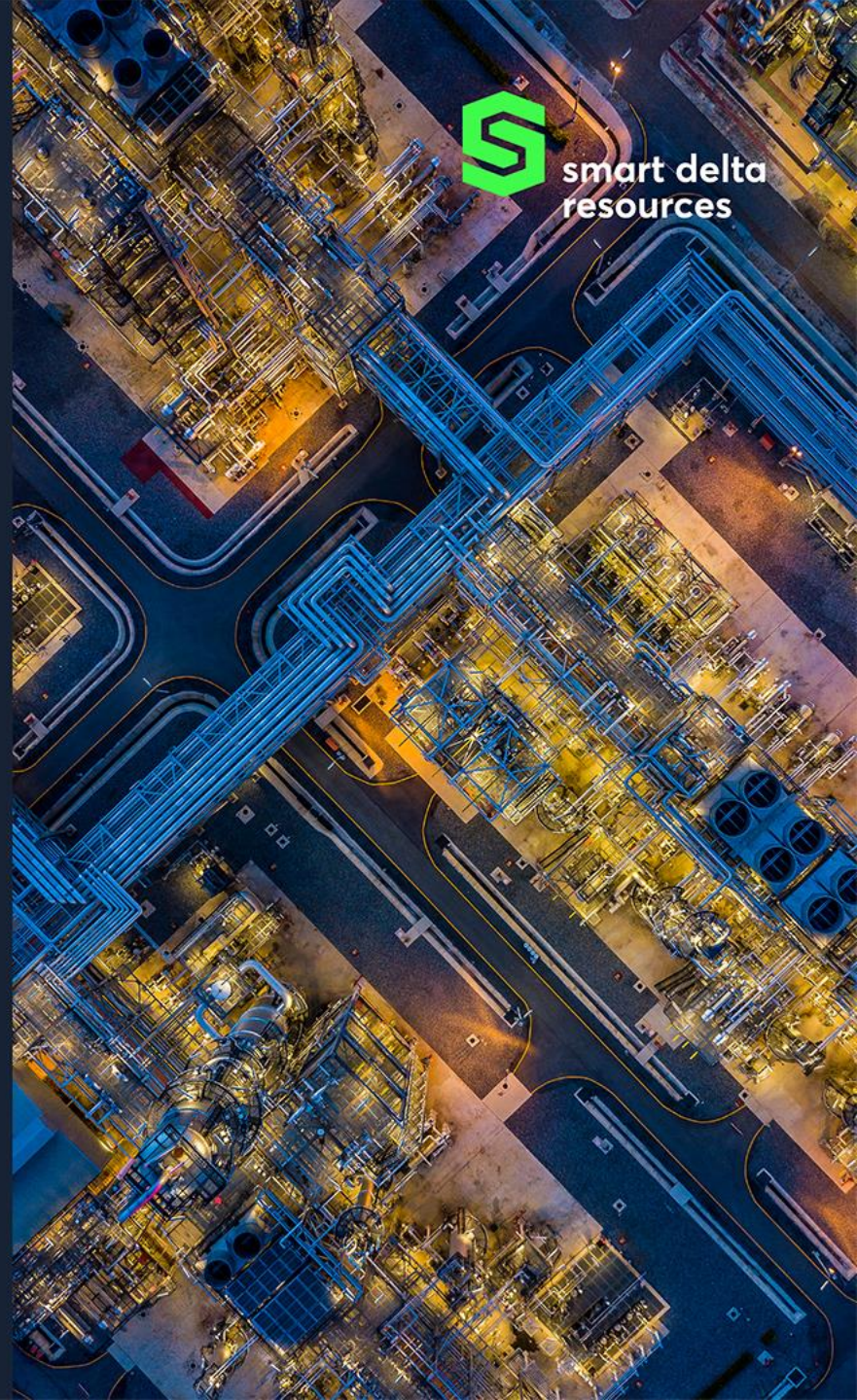
- ❑ Detailed disclosure
- ❑ Collaborative, open development
- ❑ confidentiality within consortium

- ❑ Disclosure of publically available info
- ❑ no details of bi-lateral research are communicated to consortium
- ❑ IP is protected

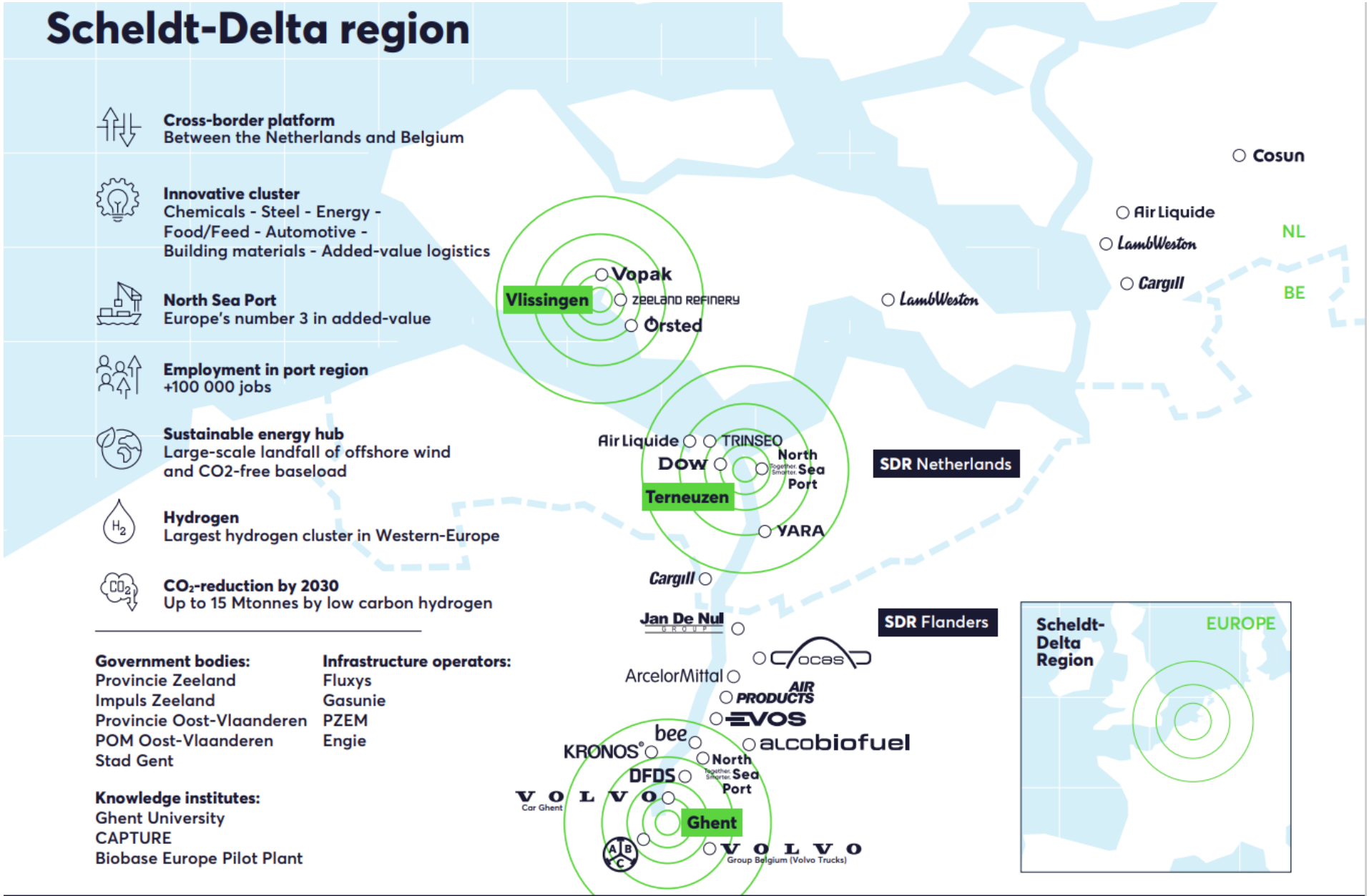
Smart Delta Resources Flanders

Goal: Regional triple helix coördinaten for implementation & demo projects

_Together for a future proof industry

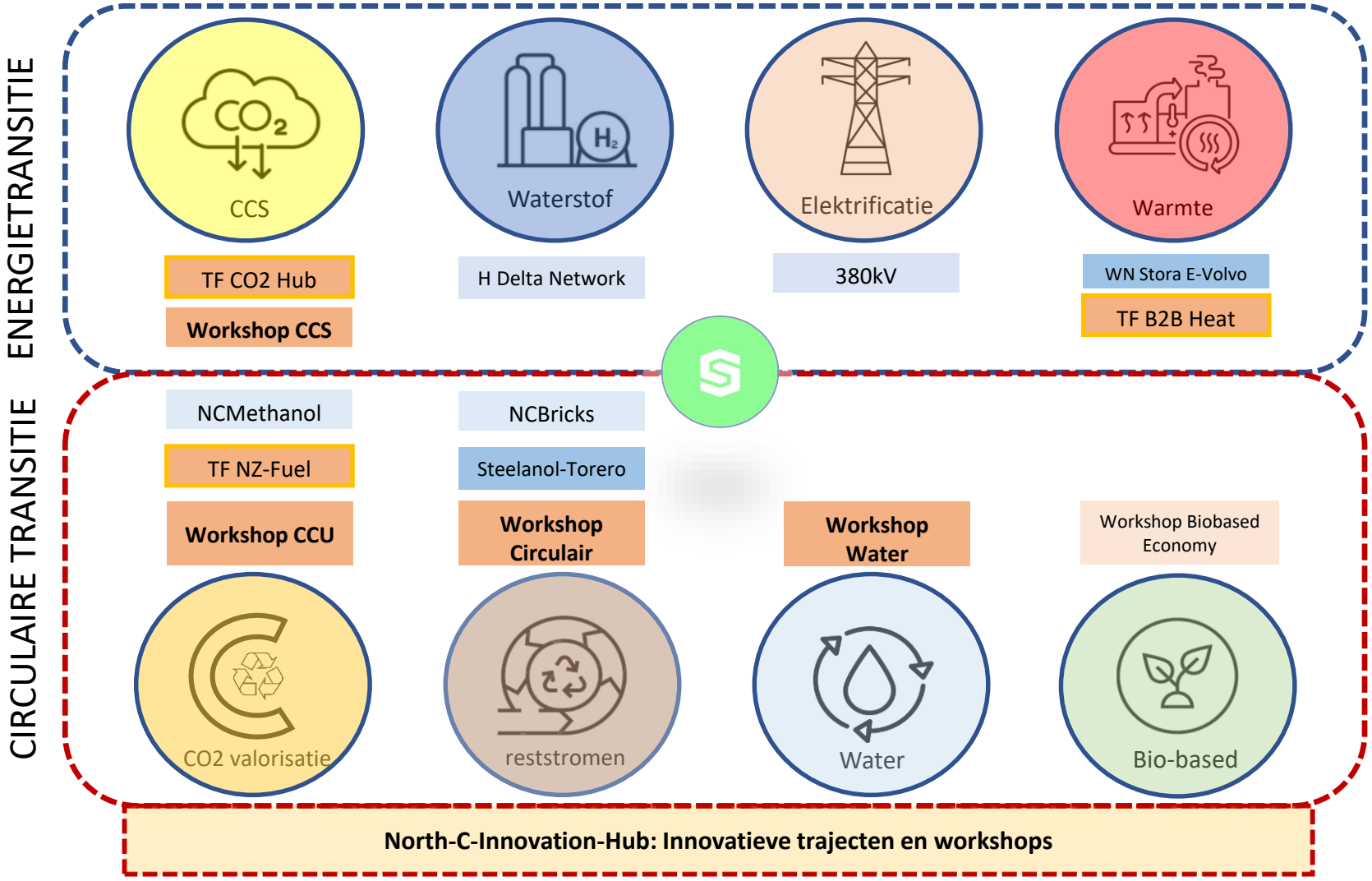


REGIONAL TRIPLE HELIX COORDINATION
FOR IMPLEMENTATION PROJECTS



SDR FLANDERS THEMATICS

SDR Flanders Focus: create taskforces to enable demo & implementation project in the region.



SDR FL activiteit (1)

- Actieve werkgroep
- In voorbereiding

Projecten in regio (2)

- In uitvoering
- In voorbereiding

(1) SDR FL coördinatie
(2) SDR FL niet langer betrokken

Communication is essential when bringing together and updating all members and stakeholders

- Supporting our academic and industrial members
- Quarterly newsletter
- Active on LinkedIn and Twitter
- Sharing presentations and information through YouTube

CAPTURE TRAINING

Training coordinator
elise.meerburg@capture-resources.be

Massive open online courses (MOOC)

- 1 for each pipeline coming years

Regular courses

- Summer courses
- Seminar series on CCU technology

MSc.

- Sustainable and Innovative Natural Resource Management

PhD.

- C-Planet
- Super-W

WATER ‘FIT-FOR-USE’

Energy & Organics

Identification of useful resource streams

Water fit for use

Nutrient Recovery

Wastewater treatment of the future

Advanced modelling & design for efficient pilot development

Metal recovery

Pipeline manager: marjolein.vanoppen@capture-resources.be

WATER ‘FIT-FOR-USE’

7 domains translated into dedicated programs

1. High Quality Drinking Water
2. Secure Water for industry / process intensification
3. Microbial proteins
4. Digital Twins
5. Electrification
6. Metal/organics separation
7. Microfluidics

CAPTURE
WATER FIT FOR USE

www.capture-resources.be/water-fit-use

WATER EXPERTISE

CAPTURE

GHENT UNIVERSITY

Korneel RABAEY
electrification
biotechnology

Arne VERLIEFDE
Phys/chem WWT
Membrane technology

Jan VERWAEREN
Artificial intelligence

Stijn LUCA
Statistical analysis

Eveline VOLCKE
Biological domestic wwt
Monitoring & control

Steven DE MEESTER
Sustainable design

Filip TACK
Trace elements
analytics

Di Wu
Saline water
Sulfur-cycle biotech

Ingmar NOPENS
CFD Modelling
Advanced modelling

Gijs Du Laing
Trace Elements
sorbentia

Nico BOON
Drinking Water
Microbiology

Kristof DEMEESTERE
Micropollutants
Trace organics

Bart DEGUSSEME
Drinking water
Technology

Frederik RONSSE
Gassification
pyrolysis

Jo DE VRIEZE
Anaerobic Digestion
Molecular Biology

Tom DEPOVER
Metal corrosion
Hydrogen embrittlement

Kim VERBEKEN
corrosion

Ramon GANIGUÉ
biocatalysis
gas fermentation

Stijn VAN HULLE
Advanced oxidation
Nutrient removal

Emile CORNELISSEN
Membrane technology

Elena TORFS
Ontologies

UNIVERSITY OF ANTWERP

Siegfried VLAEMINCK
Nutrient valorization
microbial env. tech

Jan Dries
Industrial WWT
Granular systems

Iris CORNET
Fermentation
Phenolics valorization

Pegie COOL
Photocatalysis
sorbentia

Karolien DE WAEL
Sensors
Electrochemistry

Marc SPILLER
Technology assessment
Material flow (N, P, protein)

VITO

Inge GENNÉ
General Water Roadmap

Piet SEUNTJENS
Digital Water
IoT monitoring

Janelcy CASTANO
Data Science
Digital Water

Dores CIRNE
Bioprocesses
(waste)water

VRIJE UNIVERSITEIT BRUSSEL (VUB)

Wim De MALSCHE
Microfluidics

Heidi OTTEVAERE
Photonic sensors

Ann VAN GRIENSVEN
Hydrological modelling

#PRINCIPLE MEMBER *ASSOCIATED MEMBER

WATER BUISNESS PLATFORM

Aim:

Develop long-lasting relationships to build develop **future water technology** solutions with focus on **pre-competitive research** so companies are more eager to interact openly.

19 companies

- 3 drinking water
- 3 WWT
- 3 Large industry
- 9 technology providers
- 6 consulting

- 4 small
- 4 SME
- 11 Large

WATER CURRENT PROJECTS

CAPTURE

BIOSTABLE

safe drinking water now and in the future
Nico Boon, Bart De Gusseme (UGent)
Flemish drinking water companies

AquaSPICE

Advancing Sustainability of Process Industries through Digital and Circular Water Use Innovations
Arne Verliefde (UGent)
Evides Industriewater, Dow

Interreg 2 Seas Mers Zeeën
European Regional Development Fund
EUROPEAN UNION

SOCORRO

Seeking out corrosion
Kim Verbeken, Korneel Rabaey (UGent)
Evides Industriewater
Lead by Antwerp Maritime Academy

RUSTICA

Demonstration of circular biofertilisers and implementation of optimized fertiliser strategies and value chains in rural communities
Emile Cornelissen (UGent)
Avecom, Dranco

PLASTIC TO RESOURCES

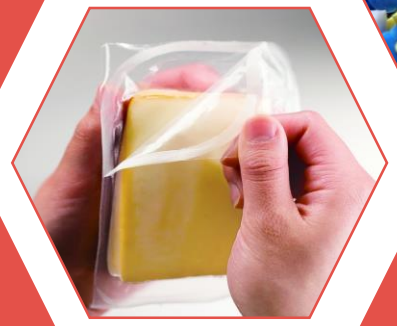
Mechanical Recycling

Chemical design

Thermochemical recycling

Product design

Pre-treatment



LCA /TEA

System approach

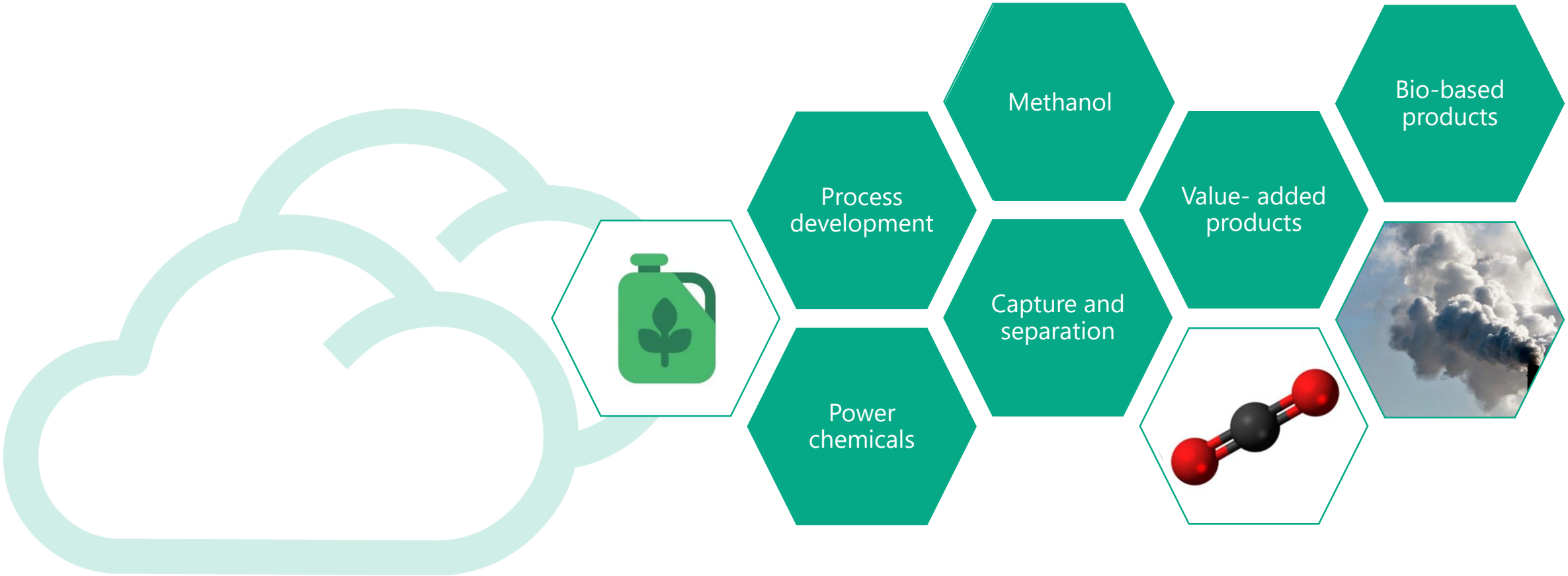
Pipeline manager: Ilse.christiaens@capture-resources.be

PLASTICS INDUSTRIAL COLLABORATIONS

BOREALIS Keep Discovering
ExxonMobil
DOW
CLARIANT
INEOS STYROLUTION
SIEGWERK
suez
VANHEEDE.COM ENVIRONMENT GROUP
INDAVER
van werven
ECO-oh! let's recycle for life
EASTMAN
MGG POLYMERS
SITRAPLAS engineered plastics
ECODOM
GOVAERTS
attero energiek met milieu
RECTICEL
COLRUYT GROUP
PHILIPS
Whirlpool CORPORATION
Electrolux
Fostplus
BASF We create chemistry
P&G
amcor
VOLVO
faerch
Bostik smart adhesives
Samsonite
TOTAL
TOMRA
PEZY GROUP
deceuninck
OWS Organic Waste Systems
adidas
ubuntoo
covestro
CEFLEX A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING
PlasticsEurope Association of Plastics Manufacturers
Fraunhofer
CATALISTI WE MEAN BUSINESS
SAMEN MAKEN WE MORGEN MOOIER OVAM
gent:
PLASTICS RECYCLERS EUROPE
Pack4Food
ELLEN MACARTHUR FOUNDATION
UN environment
OECD
DPI The Polymer Research Platform
HolyGrail 2.0 Intelligent Sorting

www.capture-resources.be/plastics-resource

CO_2 TO PRODUCT



CO_2 CAPTURE AND CONVERSION

Pipeline manager: barbara.sowa@capture-resources.be

CO_2 EXPERTISE

CAPTURE

GHENT UNIVERSITY

Korneel RABAEY
electrification
biotechnology

Mark SAEYS
heterogeneous catalysis

An VERBERCKMOES
catalyst and material development

Steven NOLAN
homogeneous catalysis

Vladimir GALVITA
heterogeneous catalysis
chemical looping

Ramon GANIGUÉ
biocatalysis
gas fermentation

Catherine CAZIN
homogenous catalysis
green chemistry

Pascal VAN DER VOORT
porous materials,
sorbents, catalysis

Veronique VAN SPEYBROECK
supramolecular systems
nanoporous materials

UNIVERSITY OF ANTWERP

Annemie BOGAERTS
plasma catalysis for CO_2

Tom BREUGELMANS
electrochemical reduction of CO_2

Vera MEYNEN
materials and
catalytic CO_2 conversion

Pegie COOL
materials and catalytic CO_2 conversion

Shoubhik DAS
organic synthesis
catalysis

Sammy VERBRUGGEN
photocatalysis

Silvia LENAERTS
sustainable energy
photocatalysis

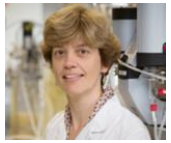
Patrice Perreault
sustainable energy
photocatalysis

FREE UNIVERSITY OF BRUSSELS (VUB)

Joeri DENAYER
capture and separation of CO2,
heterogenous catalysis,
microreactor technology

Tomas WYNS
European and
international
climate policy

VITO



Heleen DE WEVER
gas fermentation
biocatalysis
biotechnology

Marleen ROMBOUTS
material science, porous materials
for heterogeneous catalysis and
sorption

Jan VAES
electrochemical process
development and
engineering

Deepak PANT
bioelectrochemistry

Miet VAN DAEL
applied economic
sciences

#PRINCIPLE MEMBER *ASSOCIATED MEMBER

CO_2 EXPERTISE

EXPERTISE	TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Biocatalysis									
Biotechnology; electrification									
Catalyst development									
Heterogenous catalysis									
Homogenous catalysis									
Chemical looping									
Supramolecular systems									
Porous materials									
Plasma catalysis									
Catalytic CO2 conversion									
Electrochemical reduction									
Photocatalysis									
Organic chemistry									
Gas fermentation									
bioelectrochemistry									
Electrode development									
Applied economic science									

CO_2 PROGRAMMES

CAPTURE AND SEPARATION

- CO_2 sorption technologies to capture CO_2 from point sources (chemistry, steel, waste and waste incineration, energy production; both post- and pre-combustion capture)
- direct air capture;
- efficiently coupling to subsequent conversion;
- GAS SORPTION & SEPARATION (SOLID AND LIQUID TECHNOLOGY) AND CHEMICAL LOOPING.

CO_2 ACTIVATION TO C1-C2

- molecular level insights, catalyst design, process development, separation development, integration of technologies.
- ELECTROCHEMISTRY;
- HOMO- AND HETEROGENOUSE CATALYSIS;
- PLASMA WITH/WITHOUT CATALYSIS
- PHOTOCATALYSIS

E-FUELS

- the renewable production of methanol from CO_2
- Improve the competitiveness of existing and new CO_2 to methanol plants,
- HETEROGENOUS AND HOMOGENEOUS CATALYSIS; ELECTROCHEMICAL AND PHOTOCATALYSIS

FROM C1 TO MULTICARBON PRODUCTS

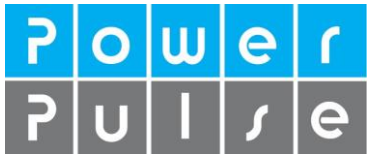
- conversion of CO2-derived methanol into >C4 products
- carboxylation and carbonylation reactions, starting from already multicarbon building blocks
- production of >C4 products starting directly from CO2
- BIOTECHNOLOGY; ELECTRIFICATION; BIOCATALYSIS, CATALYSIS, GAS FERMNTATION

CO_2 PROGRAMMES

	Program	Leader/Coordinator	Contributors
1	**Capture and separation**	 **Marleen ROMBOUTS** material science, porous materials for heterogeneous catalysis and sorption, Plasma catalysis, chemical looping  **Joeri DENAYER** capture and separation of CO2, heterogenous catalysis, microreactor technology	Vladimir Galvita Pascal Vandervoort Pegie Cool Miet van Dael Vera Meynen Jan Vaes Deepak Pant
2	**Methanol**	 **Mark SAEYS** heterogeneous catalysis	Tom Breugelmans Marleen Rombouts An Verberckmoes Pegie Cool Vera Meynen Annemie Bogaerts
3	**CO2 activation to C1-C2 products**	 **Steven NOLAN** homogeneous catalysis  **Tom BREUGELMANS** Electrocatalysis & Electrochemical Engineering  **Jan VAES** electrochemical process development and engineering	Catherine Cazin Vladimir Galvita Pascal Vandervoort An Verberckmoes Pegie Cool Sammy Verbruggen Shoubhik Das Deepak Pant Annemie Bogaerts Vera Meynen Mark Saeys
4	**From C1 to multicarbon products**	 **Korneel RABAEY** electrification biotechnology  **Heleen DE WEVER** gas fermentation biocatalysis biotechnology	Marleen Rombouts Deepak Pant Ramon Ganigué Shoubhik Das Steven Nolan

CO_2 BUISNESS PLATFORM

CAPTURE



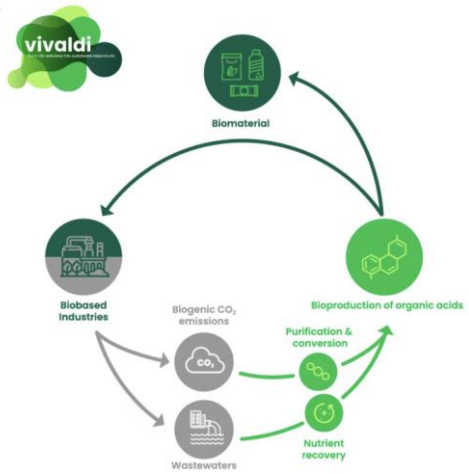
CO_2 PROJECTS EXAMPLES

VIVALDI

innoVative bIo-based chains for CO2 VALorisation as aDded-value organIc acids

EU Horizon 2020 project

June 2021



T-REX

The transition to more renewable energy in power-to-X applications

Energy Transition Fund

1/11/2021 - 31/10/2026

VITO, UAntwerp

Threading-CO2

VALORISATION OF CO2 WASTE STREAMS INTO POLYESTER FOR A SUSTAINABLE CIRCULAR TEXTILE INDUSTRY

HORIZON-CL4-2022-TWIN-TRANSITION

2022 - 2026

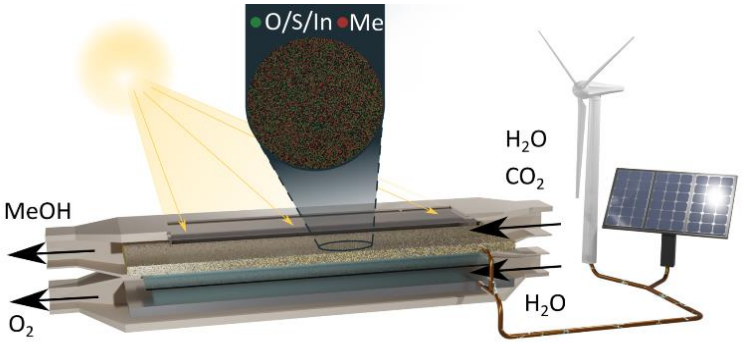
SYN CAT

cSBO in MOT3 Electrification & Radical Process Transformation

Synergetic Design of Catalytic Materials for Integrated Photo- and Electrochemical CO2 Conversion

March 2021

UAntwerp, Ugent, VUB



COBICAT

COupling BIocatalysis and heterogeneous CATalysis for the production of aviation fuel from renewable resources

Regional and community funding: Special Research Fund

01 October 2022 → 30 September 2026

Novel microbial protein-based polymers produced from CO2 and CO derivatives

VITO successfully optimised biopolymer production from C1 feedstocks in the **VLAIO-Intercluster project Prometheus** and will now broaden this work in the **FWO Bioeconomy project PROMIPOL**.

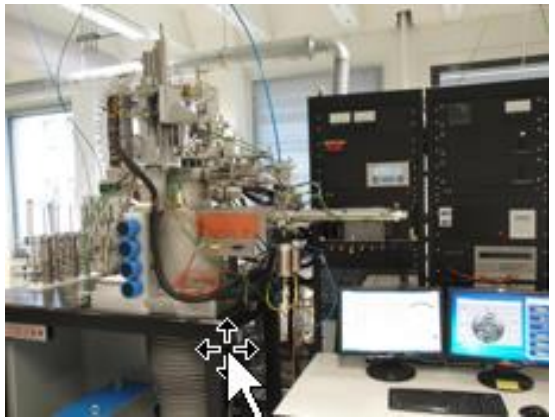
CO_2 INFRASTRUCTURE

UNIVERISTY OF GHENT

CAPTURE

Laboratory for Chemical Technology

- High-Throughput Intrinsic Kinetics (HTK) Reactor Systems
- Temporal Analysis of Products (TAP) Reactor
- System Steady-State Isotopic-Transient Kinetic Analysis (SSITKA) (technique for the kinetic study of heterogeneous catalytic reactions)
- Step Response Reactor
- lab-scale set ups (more than 10)
- GCxGC (online):5
- Computer resources : Flemish Supercomputer Center (VSC)



Center for Microbial Ecology and Technology

- 60 potentiostat channels (Bio-logic, BANK-IC, Dropsens, IC), RDE, RRDE
- An extensive electrochemical reactor infrastructure including 4 EC ElectroCell Syncells, and 1 ProdCell,
- ~20 in house produced reactors
- Microbial laboratories and molecular biotechnology
- Analytical laboratories including ICs (anion / cation), HPLC, AAS, GCs
- Turnkey plant for microbial CO2 conversion, 10L scale
- 4 fully automated fermenters, 5L each, that can be used for CO2 conversion
- Gas flushing system
- Anaerobic chambers

Center for Sustainable Chemistry

- Glovebox
- FT-IR
- solution calorimeters
- gas evolution apparatus

CO_2 INFRASTRUCTURE

UNIVERISTY OF ANTWERP

CAPTURE

LADCA:
Laboratory for Adsorption and Catalysis

SPECTROSCOPIC TECHNIQUES:
- Fourier transform infrared (FTIR) spectrometer
- Raman microscope spectroscopy (FT-RAMAN)

SORPTION TECHNIQUES
- Quadrasorb SI ; Autosorb-1-MP; Autosorb-IQ-C; Chemstar: TPX-TPD-TPR; Manual sorption equipment

ELEMENTAL ANALYSIS
- Total organic carbon analyser (TOC)

THERMOGRAVIMETRIC ANALYSIS
- Thermogravimetric analysis (TGA)- coupled to Mass spectrometry (MS)/ Differential Scanning calorimetry (DSC)

CATALYSIS
- Photocatalytic lamps
- UV/Visible diffuse reflectance spectroscopy (UV-VIS-DR)
- DBD plasma reactor (shared with PLASMANT)
- Gliding arc plasmatron reactor (shared with PLASMANT)
- Catalytic reactor for automotive gas exhaust conversions
- Transmission and DRIFT measurements

www.uantwerpen.be/en/researchgroups/ladca/research/equipment/

PLASMANT:
Plasma (with / without catalysis)

PLASMA REACTORS USED FOR THE CONVERSION OF GREENHOUSE GASES
- Three home-built dielectric barrier discharge (DBD) plasma reactors, with AFS and TREC power supply
- Reverse vortex-flow gliding arc plasmatron (GAP) reactor
- Rotating gliding arc (RGA) reactor
- Magnetically driven gliding arc (MGA) reactor
- Atmospheric pressure glow discharge (APGD) with fast gas flow
- Electrical characterisation tools for the plasma reactors

EQUIPMENT FOR GAS ANALYSIS (shared with LADCA)
- 3 Gas chromatographs and Mass spectrometer

ELCAT:
Applied Electrochemistry & Catalysis

- Potentiostats and cells for electrodeposition
- Reflux setups, centrifuge and calcination ovens
- ICP-MS metal leaching and initial metal content
- Potentiostats (parstat, biologic autolab) with booster and impedance
- Electrochemical cells both batch (H-cell) and flow-cells for initial and larger scale testing, including oven for temperature control
- In-line GC for gas products analysis
- Off-line HPLC and GC for liquid product analysis
- GC-MS for identifying unknown species
- Polishing setup for electrode cleaning
- Spraying setup for electrocatalyst application to carbon electrode paper
- CNC milling machine and 3D printer for fabrication of in-house designed electrochemical cells

DuEL:
Sustainable Energy, Air & Water Technology

MODELLING RESEARCH
- Modelling of the light-matter interaction, profilometry of coated surfaces

GAS RESEARCH
- fully equipped gas test setup that can accommodate various types of (photo)reactors
- FTIR spectrometer (online VOC detection)
- GC-FID/TCD (VOC (ppb-ppm level concentrations; detection; CO_2 detection)
- GC-PDD (H_2 detection)
- Quantum Cascade Laser (NO, NO_2, N_2O, NH_3, CO and CO_2)
- Reactors (gas phase photocatalytic reactors in batch mode, single pass continuous flow, or multiple pas with gas recirculation)
- Reactor design of both photoreactors and photo-electrochemical cells is entirely performed in-house
- FTIR-ATR and operando FTIR during gas phase (photo)catalysis

MATERIAL RESEARCH
- UV-DRS spectra powder samples
- UV-VIS spectrophotometry of various solutions
- Potentiostat
- Viscosity measurements
- Surface Photovoltage Spectroscopy,

Organic synthesis

- Photocatalytic set up
- NMR machine
- GC-MS
- HPLC machine
- Column chromatography

CO_2 INFRASTRUCTURE

VITO

CAPTURE

ELECTROCHEMISTRY

- 9 potentiostats including advanced functions(LSV, CV, impedance)
- 3 multipotentiostats (total 45channels)
- Current booster up to 20 A for fast electrode processes
- 2 Oscilloscopes
- HIOKI 3560 AC m Ω HiTester to measure internal resistances
- Electrode & membrane production facility
- Vito's electrodes (VITO CoRE®, VITO CasE®)
- Class II certified lab facilities
- ED lab and pilot scale for electro dialysis
- Supporting software (COMSOL, Matlab)
- Supporting characterization infrastructure *
- Supporting analytical infrastructure †

*Ionic resistance , Electronic resistance , Porosity , Absorption rate , Pore size distribution , Specific surface area, SEM

† GC, MS, GC FID, HPLC UV/ELSD, IC, 2D GC, TOC

SCT BIO

- Permit for work with GMOs and at Biosafety level 2
- General purpose bioreactors: 10-15 L working volume
- Integrated membrane separation unit
- Integrated product recovery unit
- Advanced process monitoring and control
- ATEX certified
- High pressure fermentor (up to 10 bars)
- Online GC
- General purpose equipment: (spectrophotometers, centrifuges, growth chambers, sterile hoods, an aerobic chamber)

CAPTURE

TOGETHER WE BECOME CIRCULAR

www.capture-resources.be

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