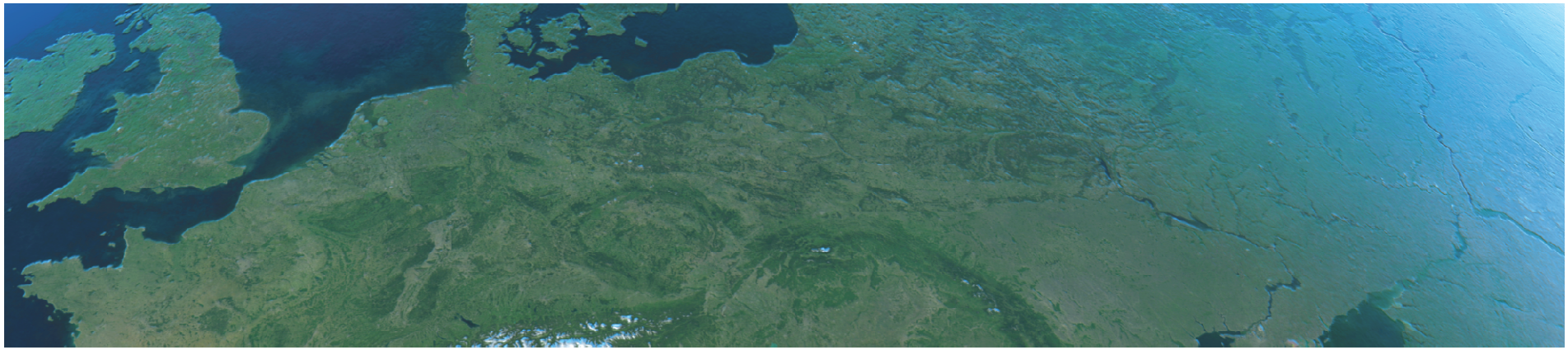


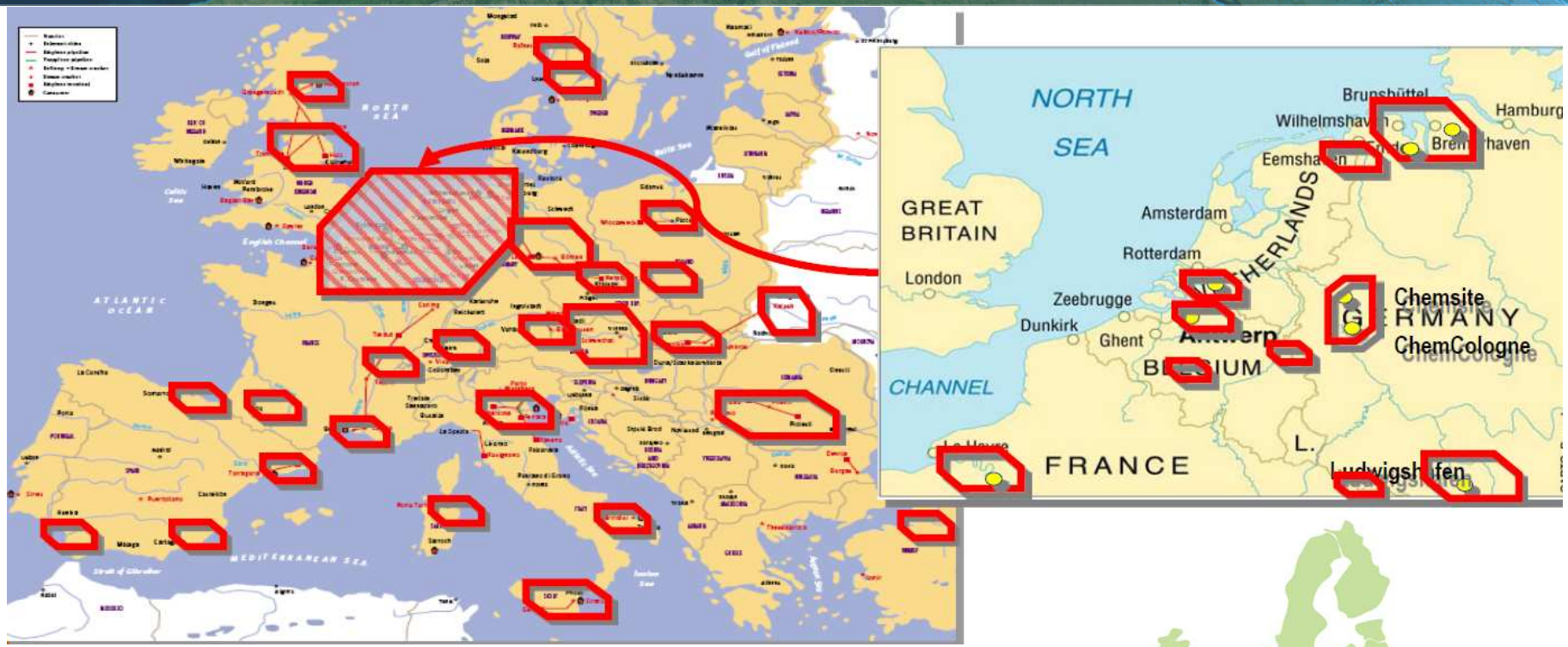
Bioeconomy cross border collaboration between Flanders, Netherlands and NordRhine Westphalia

Ludo Diels, U-Antwerp, Vito

S3 Platform Peer Review Workshop, Cross border collaboration

Baiona, 6 - 7 November 2014

Many chemical clusters, one mega-cluster



Fred du Plessis, (Executive Advisor, Sabic)

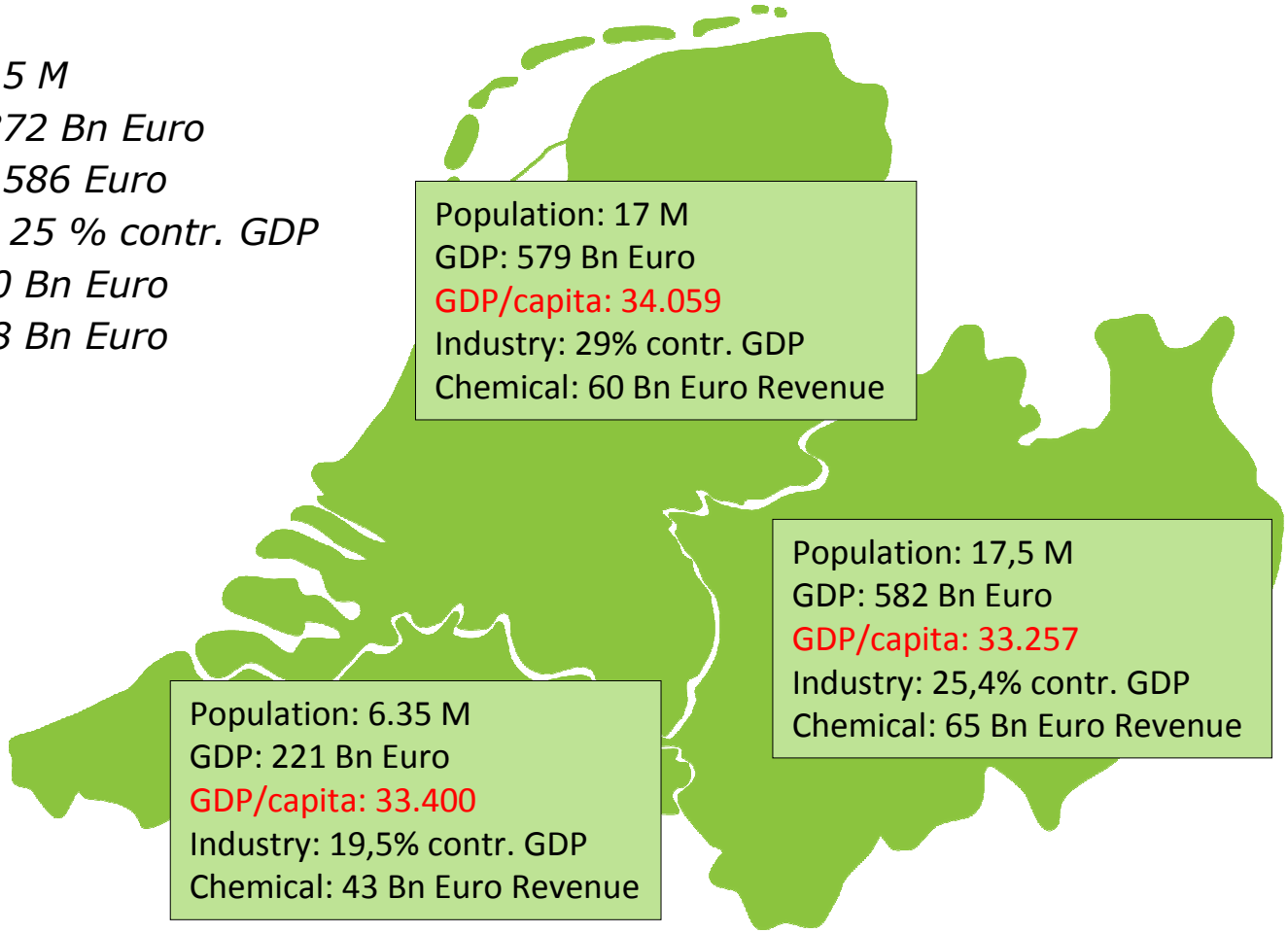
Mega-cluster: NL-NRW-Fl

Chemistry per capita

Source: Feri Q12010, NIS
2009 Figures
* exclusive life sciences

The leading industrial mega-cluster

Population:	*40,5 M*
GDP:	*1.372 Bn Euro*
GDP/capita:	*33.586 Euro*
Industry:	*ca. 25 % contr. GDP*
Agro&Food:	*150 Bn Euro*
Chemical:	*168 Bn Euro*



Mega clusters chemical industry in the world

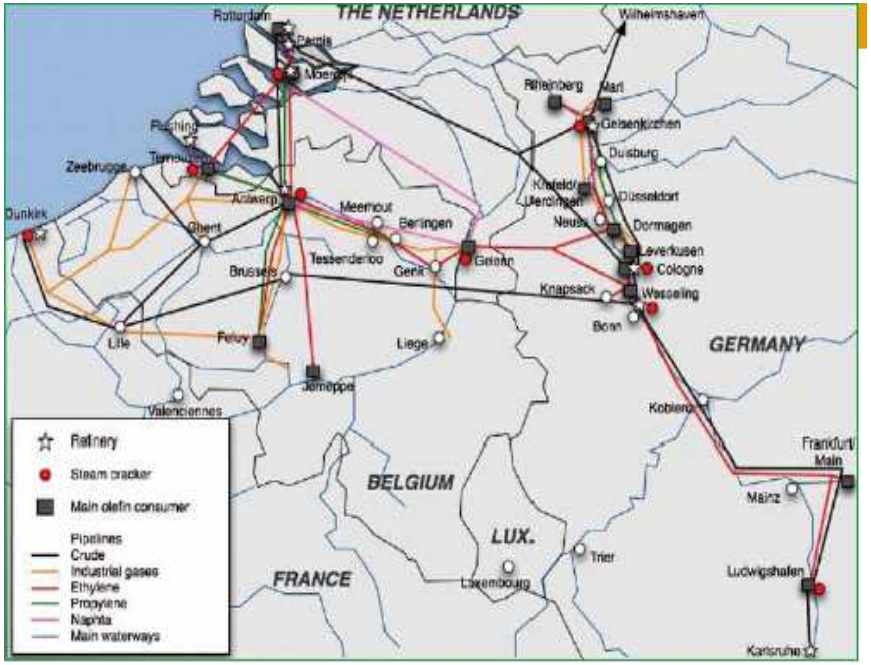
Outline

- NL-NRW-Fl: Megacluster in chemistry
- Smart specialisation to new feedstock
- What is our plan?

The pillars of competitiveness (1)

Basic requirements
- Institutions
- Infrastructure & labour
- Macroenomic environment
- Health & primary education

Key for
Factor-driven
Economies



The pillars of competitiveness (2)

Basic requirements
- Institutions
- Infrastructure
- Macroenomic environment
- Health & primary education

→ Key for **Factor-driven** Economies

Efficiency enhancers
- Higher education and training
- Goods market efficiency
- Financial market development
- Technological readiness
- Market size

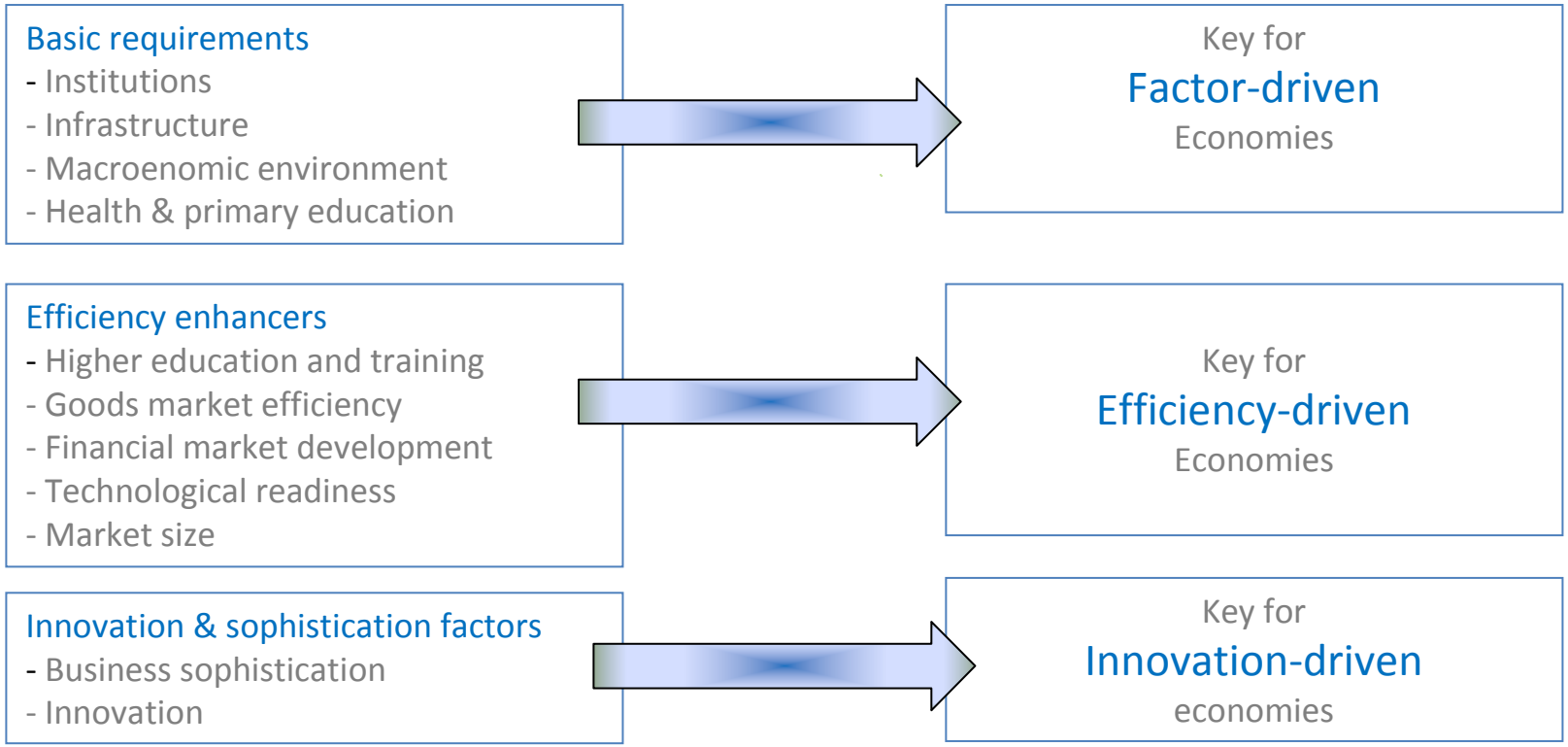
→ Key for **Efficiency-driven** Economies

Key universities in NRW-Fl-Nl

Key Knowledge Institutes & Pilot Plants

TNO innovation for life
WAGENINGEN UR For quality of life
BPF BIOPROCESS PILOT FACILITY
PLANT one
Fraunhofer IPT
Fraunhofer UMSICHT
AMI Biobased Materials
JÜLICH FORSCHUNGSZENTRUM
ILVO Instituut voor Landbouw- en Visserijonderzoek
VIB
Chemelot InSciTe
Fraunhofer IME
Bio Base Europe Pilot Plant
vito vision on technology

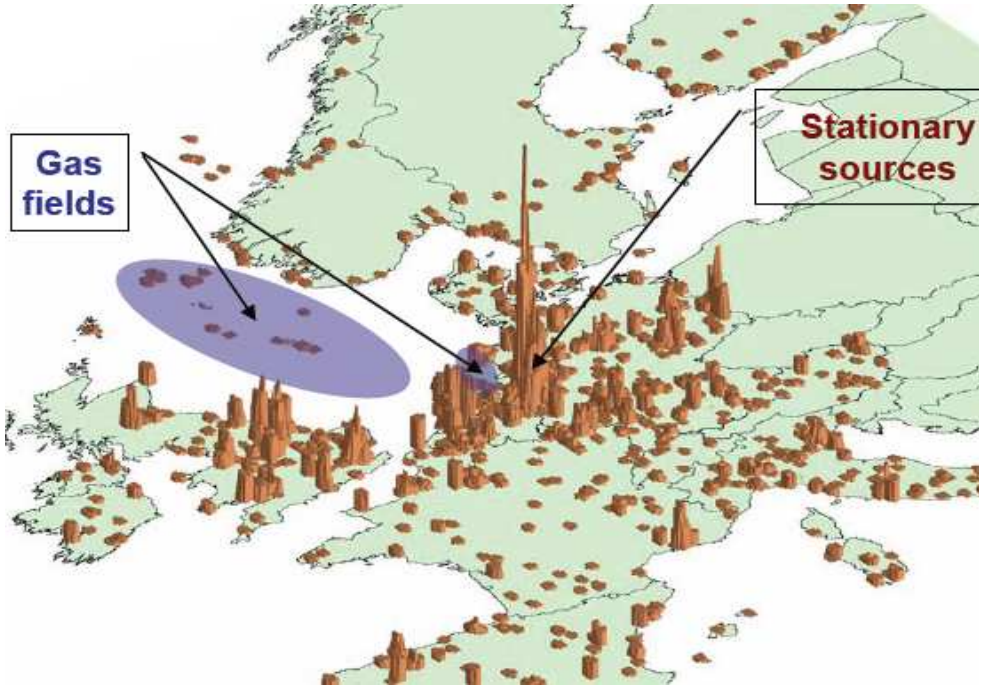
The pillars of competitiveness (3)



Source: partially WEF

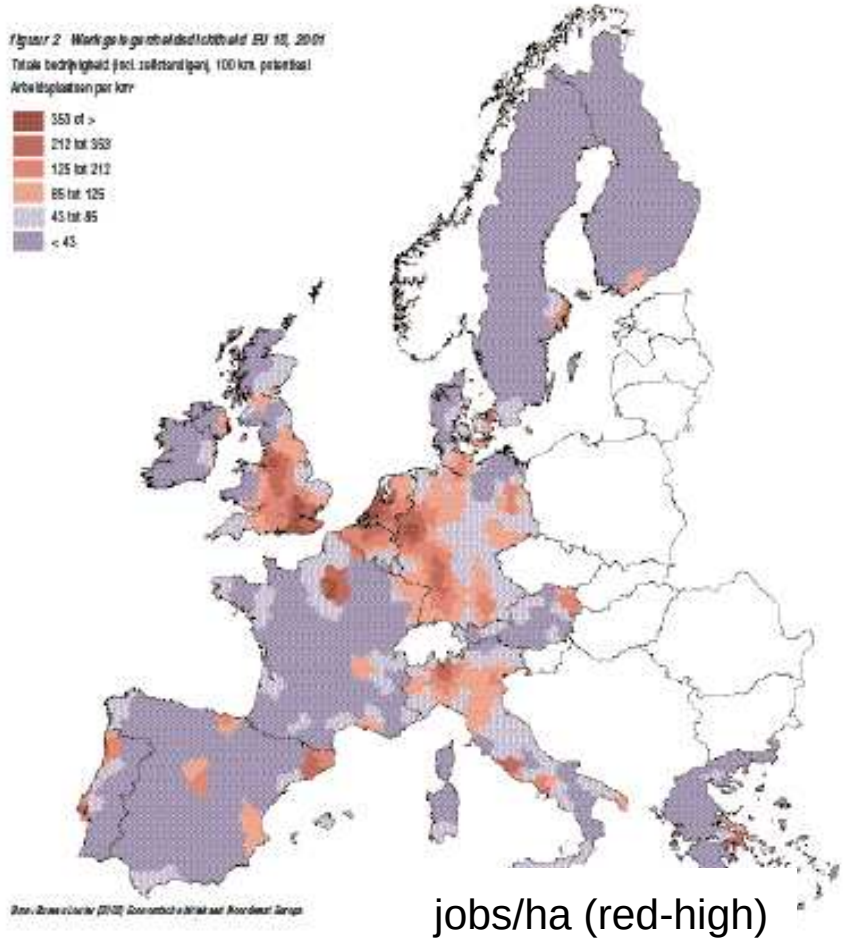
Industrialised and urbanised regions

CO2



CO2/ha/yr

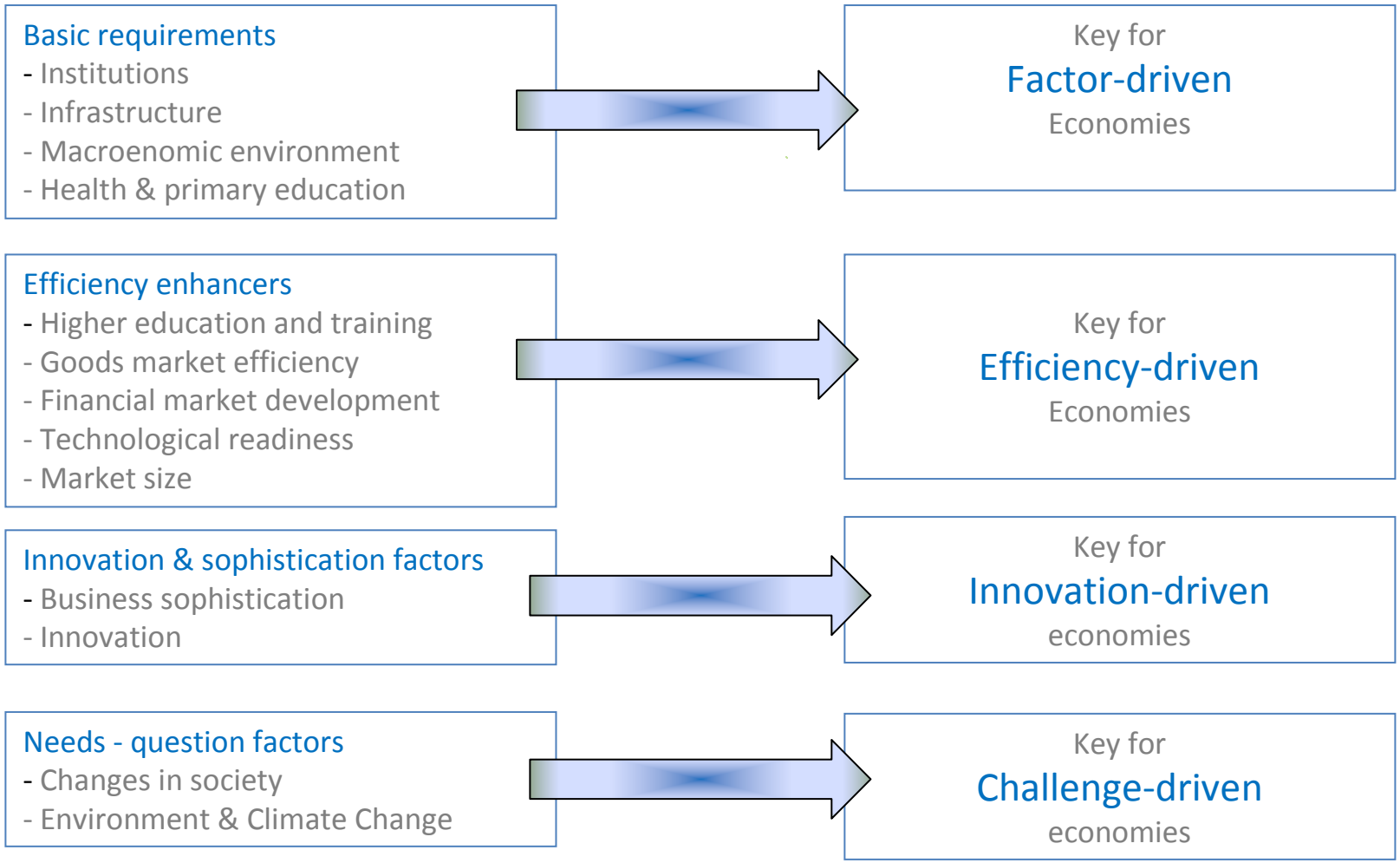
Jobs (Rhine Corridor)



jobs/ha (red-high)

Innovation initatives

Pillars of competitiveness (4)



Source: partially WEF

In 2000 Global chemistry around two centres

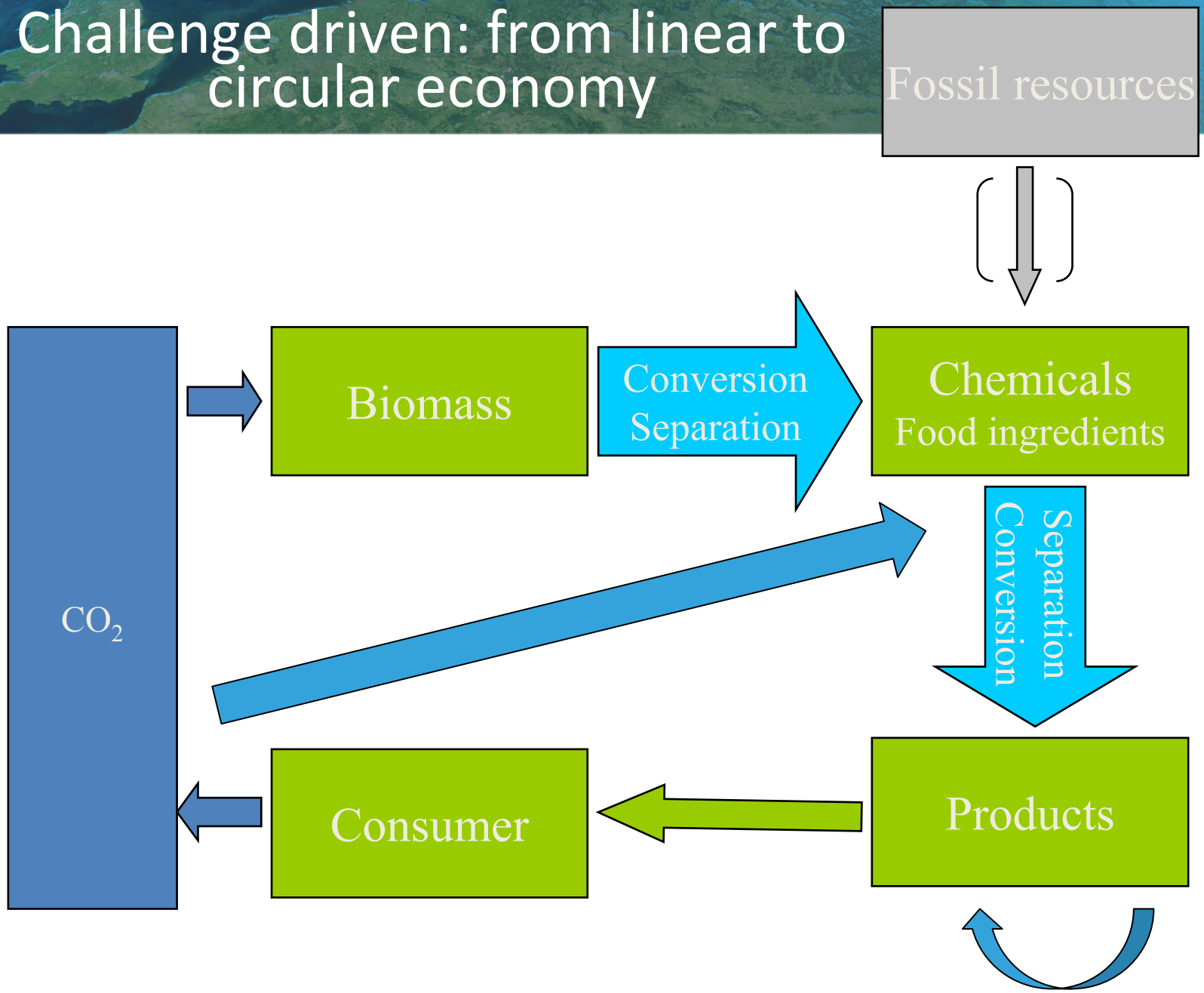
…Then years later, strong competition from BRIC countries

How to renew Industrial Production in Europe? Boundary conditions & Solution

- Europe has no access to cheap energy and resources
- Europe has a strong concern about climate change
- Grand societal challenges!
- European agriculture and rural areas are under transition

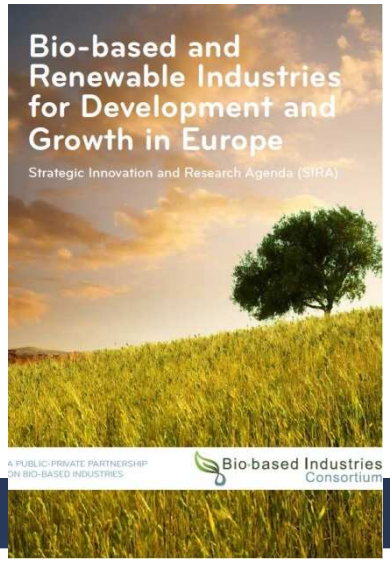
➔ BioEconomy and biobased economy may be a challenge for Europe

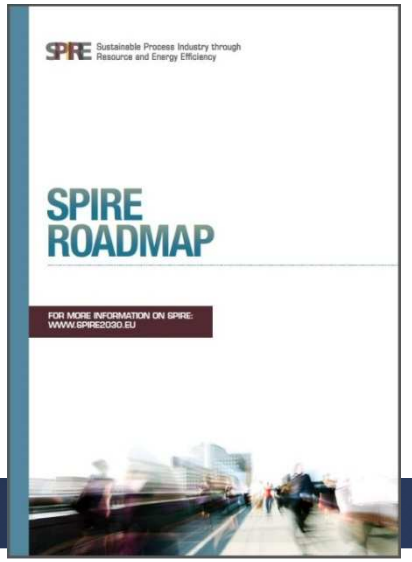
Challenge driven: from linear to circular economy



How to realise this?

- Need for Public Private Partnerships (PPPs)
  - Reduce risks
  - Set up a value chain (based on road map)
  - Supported by regulations and standardisation
  - Value chain up to NEW materials (Performance)
  - Collaborations: Universities – Authorities - Industry
  - Investments in:
    - Pilots
    - Demonstrations
    - Flagships



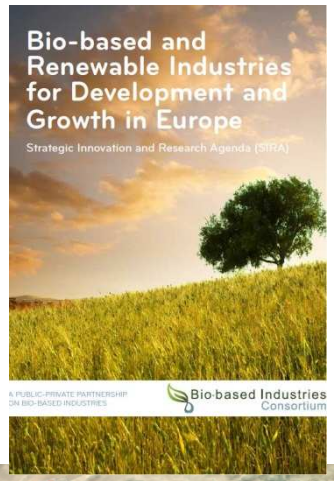


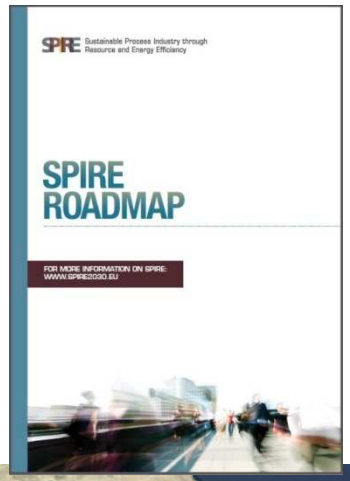
Flagships 2 Products

Biobased Feedstock

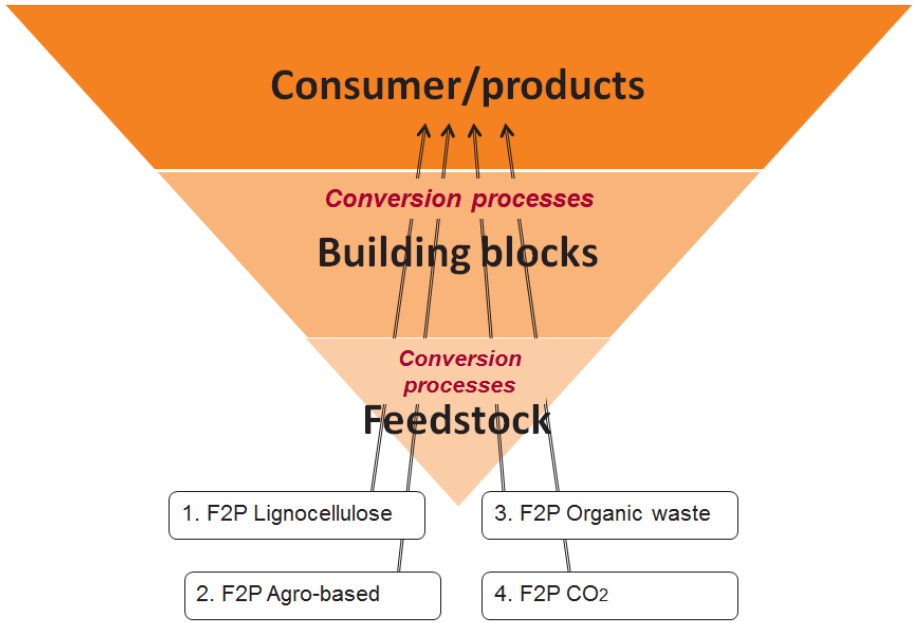
1. Woody Biomass
2. Agricultural Biomass
3. Municipal Waste
4. Industrial Side Streams

incl. CO/CO_2





4 Biobased Value Chains



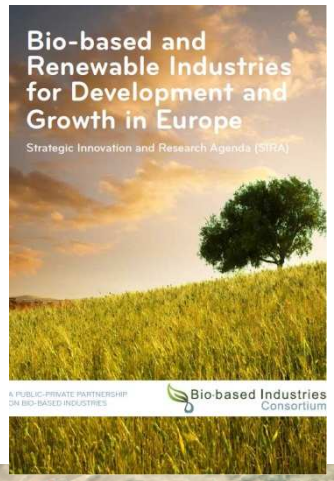
Flagships 2 Products

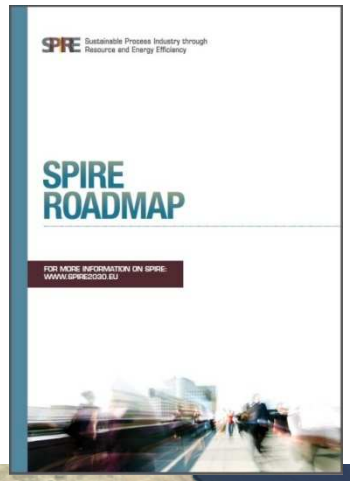
3 flagships

1.CO2 to chemicals

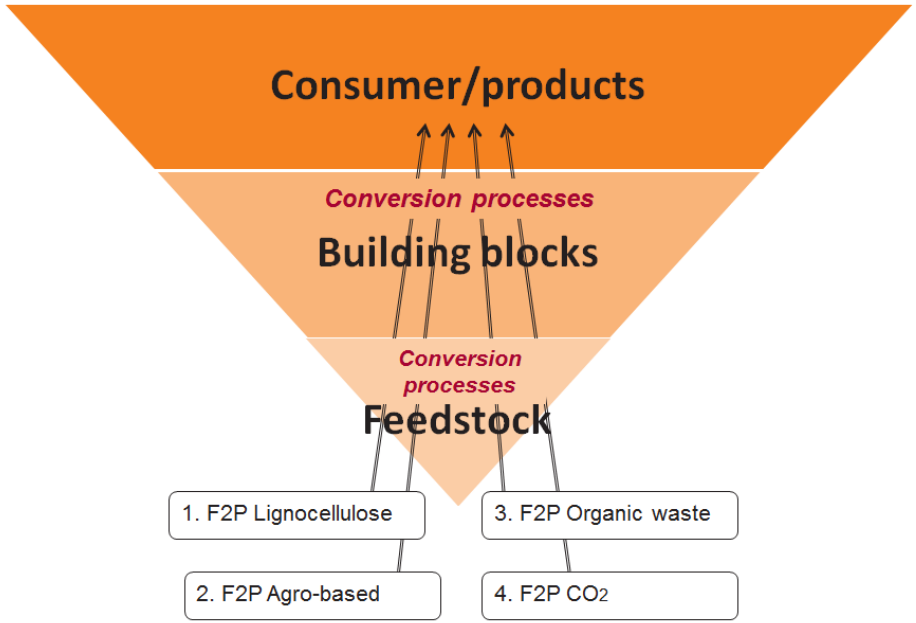
2.Biobased Aromatics

3.Aviation biofuels





4 Biobased Value Chains

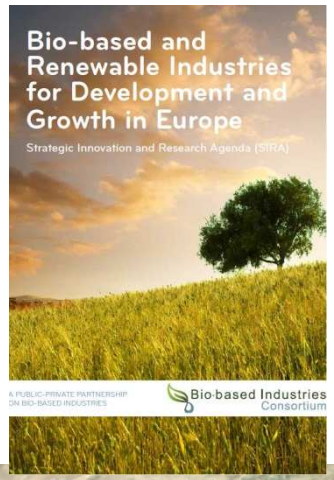


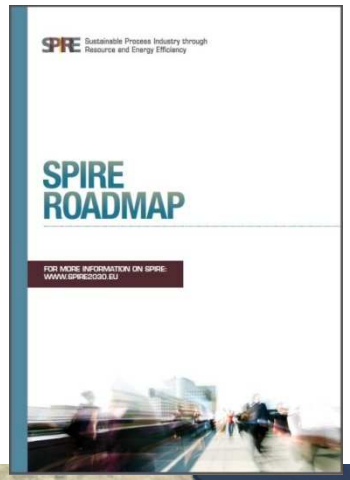
Flagships 2 Products

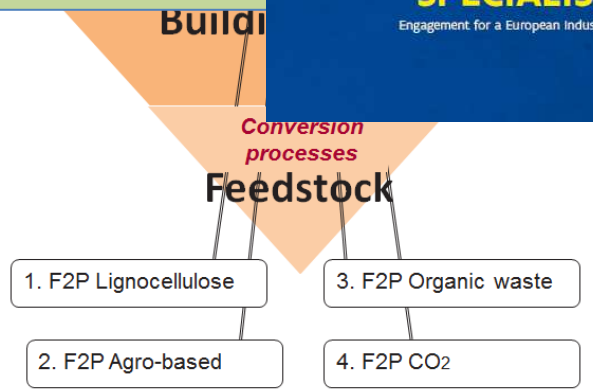
Border denying collaboration to realise the 3 flagships

- Regional funding (FISCH, CLIB2021, BE-Basic,…)
- H2020 (Societal Challenge, LETs, …)
- PPPs (SPIRE, BBI)
- Interreg
- Vanguard Initative

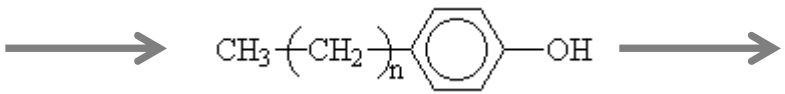
- Private investors



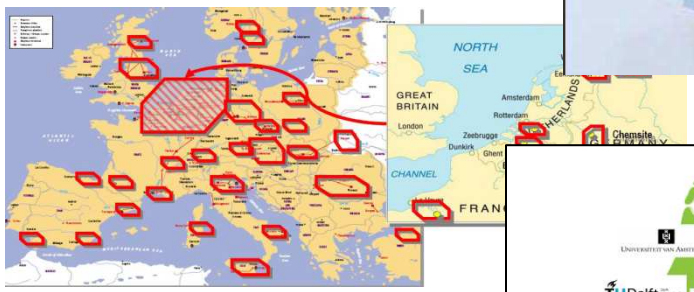




Circular Value chains require Top Specialized Pillars of Competitiveness (1)



- Institutions
- Infrastructure
- Macroeconomic Environment
- Human Capacity Building



Circular Value chains require Top Specialized Pillars of Competitiveness
Smart Specialization of all Stakeholders

Industries

Research Institutes

Technical & academic training and education

Government & Authorities

General Public

- **Share risks**
- **Share budget**
- **Win time (speed up)**

Smart specialisation → Strategic Stakeholder Management

Cross-Border Approaches in top & special

- R&D, Piloting, Flagship Plants
- Infrastructure, Logistics
- Financing (private & public)
- Human Capital Agenda
- Expert Advice to Government, Authorities & General Public

Realistic plan?

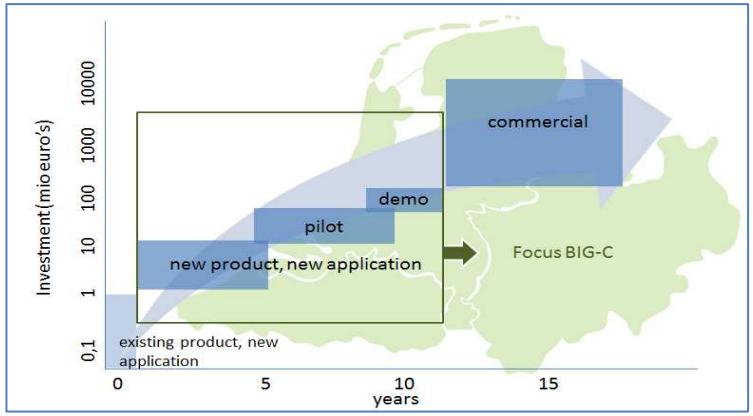
- CO2: abundantly available (even H2)
- Biomass: present, neighbouring states, ports,…
- Industry: R&D centres, lead plants
- Academics: common pot programs
- World: common representations
- Business: common economic missions
- Authorities: strong political will

BIG-C brings bioeconomy's power on ground

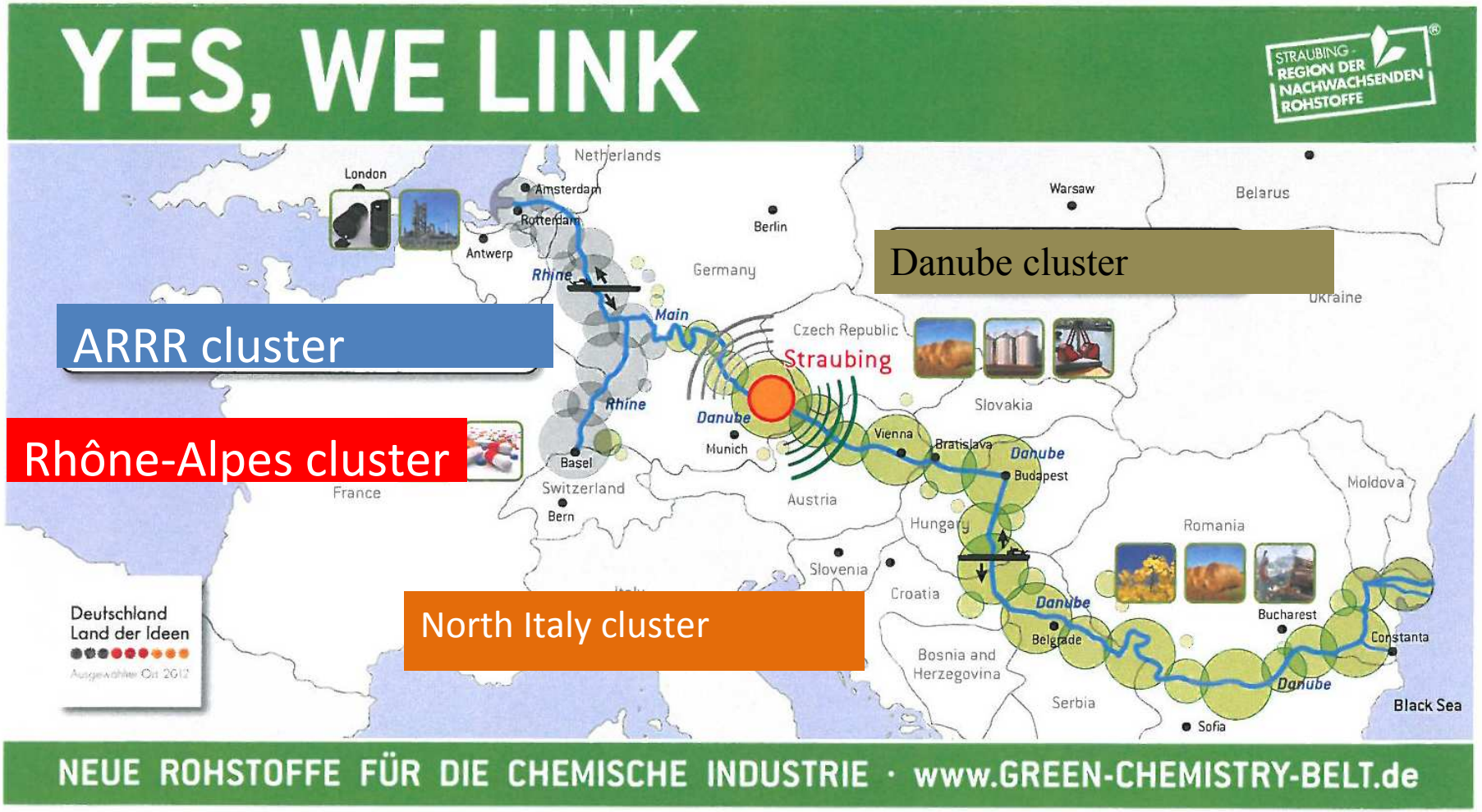
BIG-C adds value by
Regional Smart Specialization

- *building* trust and committment
- *leveraging* Regional USP Synergies
- *synchronzing* EU PPPs & Regional Efforts
- *pushing* Private & Public Investments

Feedstock > Consumer Products



RIS3, Research & Innovation Strategy for Smart Specialisations



International collaboration and innovation

- Clustering of regions (smart specialisation)
- Links between clusters
- Create your market (link to your society)
- Link with other networks in World
  - SAHYOG (EU-India)
  - EU-LAC (EU-Latin America – Caribians)
  - …
- Strategic Bioeconomy Platforms for Engaging Society
  - Participative governance of bioeconomy

➔ And never forget the full value chain!!!

CEO-summit at i-SUP (1 September 2014, Antwerp) in presence of several chemical companies of the delta

- All companies looking to C1-chemistry
- In biomass everybody speaks about lignocellulose

➔ Need for a 'design table' and a small group of chemical companies to make a concrete plan (A. Van Beek, Dow)

➔ What fails are realistic roadmaps (W. De Geest, BASF)

➔ The world look to Europe for sustainability development (challenge) (R. Pachauri)

➔ DNA of your company: 'entrepreneuship + innovation' (J. P. Balkenende)

➔ Entrepreneurial and creative risk appoach (R. Branson)

BIG-C ins and outs

Learn more about BIG-C:

Contact: ludo.diels@vito.be

Next presentation
CLIB2021 Conference 19 – 20 November, Düsseldorf

Contact: kircher@clib2021.de