



# La Bioéconomie : l' économie circulaire par nature

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UK-France Bioeconomy conference

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# PRESENTATION DU GROUPE ROQUETTE



**ROQUETTE**

*Offering the best of nature™*

- Nous livrons mondialement les secteurs de la **Pharmacie**, la **Nutrition**, l'**Alimentation** et des **autres industries**
- Nous innovons avec des ingrédients d'origine naturelle
- Nous sommes une société à capital familial
- Nous sommes fiers d'un siècle d'excellence industrielle et opérationnelle



**NOUS SOMMES UN ACTEUR GLOBAL**



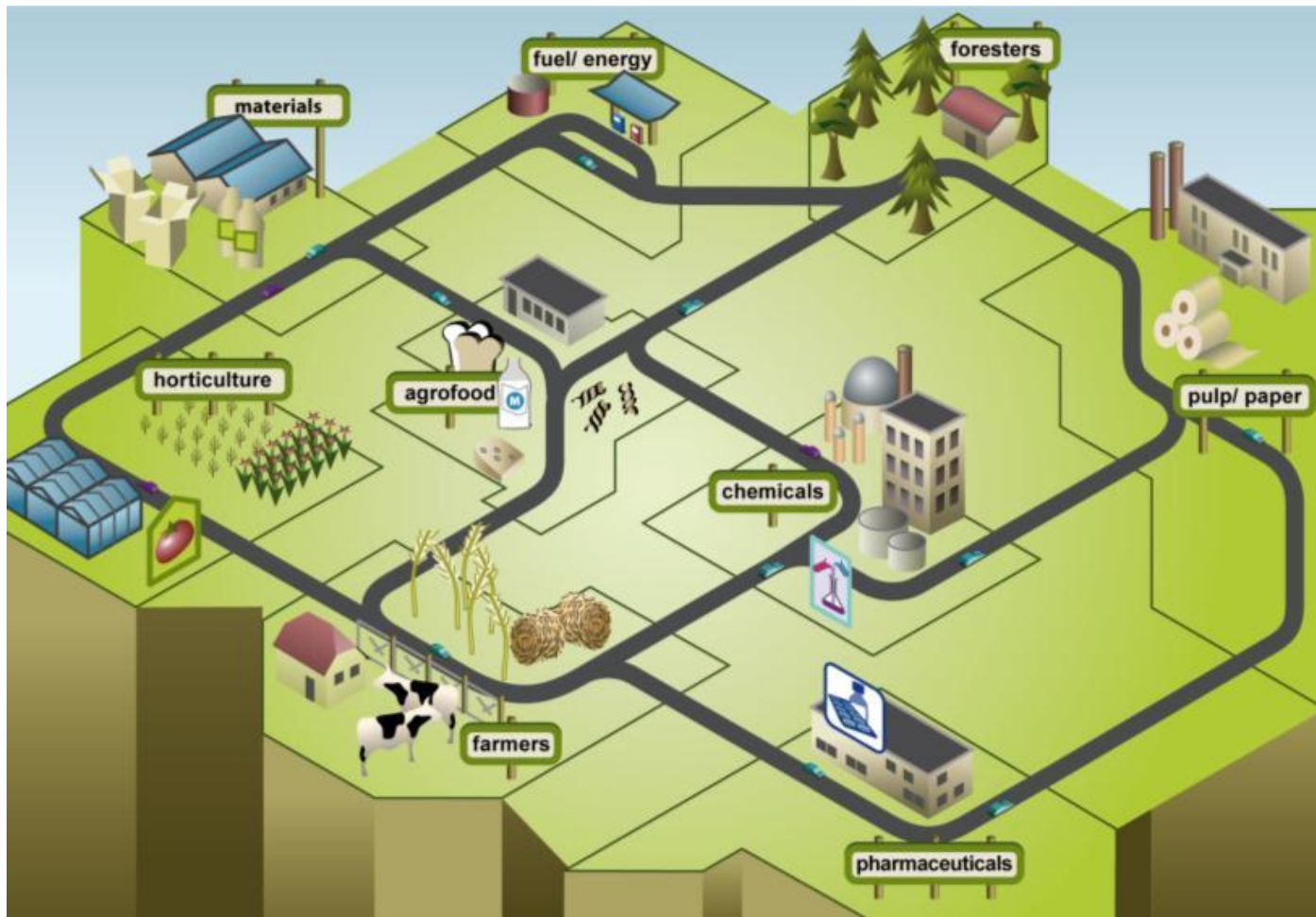


**ROQUETTE**

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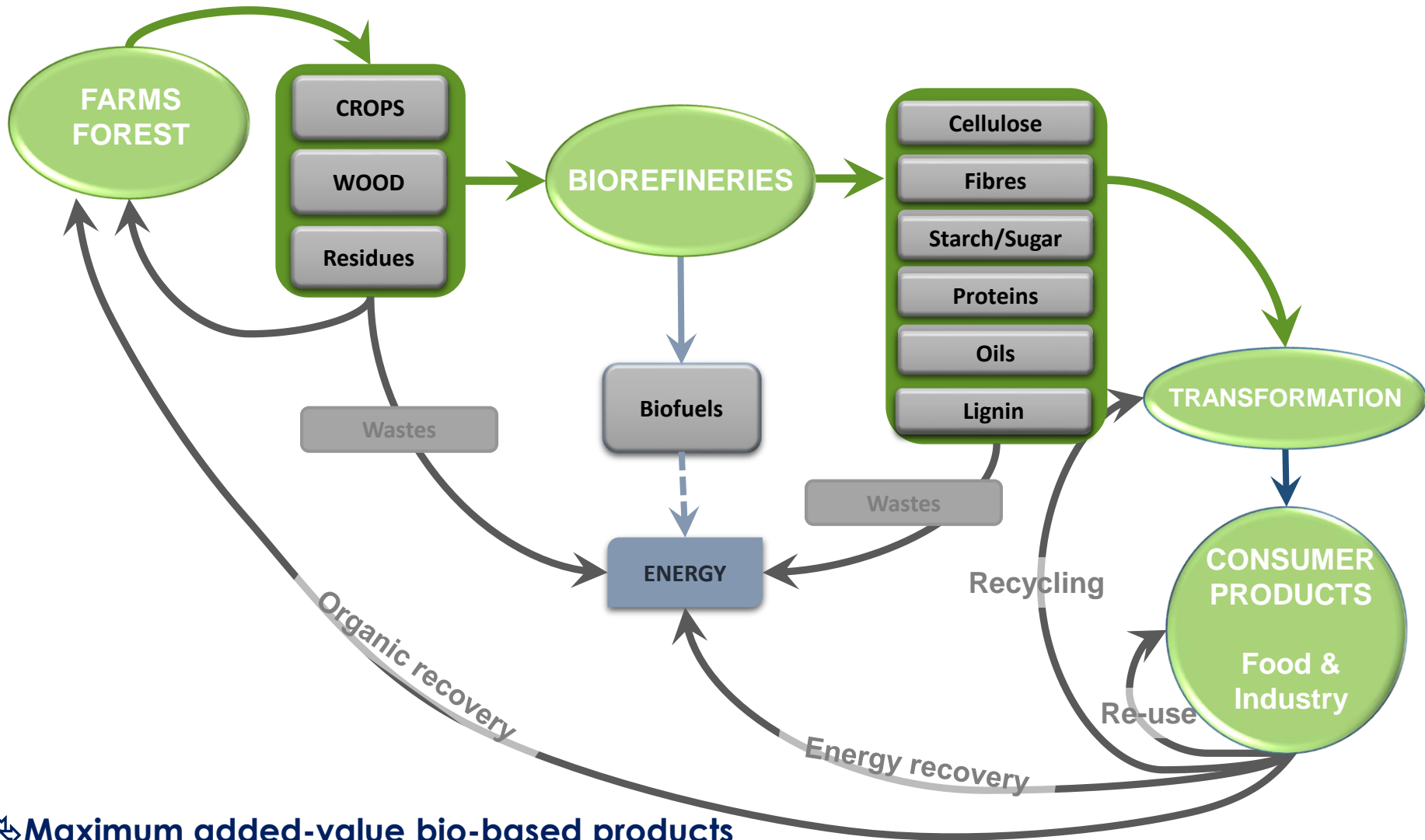
# LA BIOECONOMIE : L' ECONOMIE CIRCULAIRE PAR NATURE

## INTERCONNEXION DES FILIERES DE LA BIOECONOMIE



La bioéconomie recouvre différents secteurs d'activités.  
A terme, tous seront interconnectés en un système économique.

# EFFICIENT BIOREFINERY MODELS / CASCADING AND CIRCULAR



↻ Maximum added-value bio-based products

↻ Closing the loop and ultimate valorization with bioenergy

# EQUILIBRE DES USAGES AVEC UNE BIORAFFINERIE CERREALIERE



Enrichissement des sols  
biocarburants avancés,  
nutrition animale

**CEREALES**  
(grains de blé et de maïs)



**Amidons et Dérivés**  
(glucose, polyols...)  
**2/3**

**Autres fractions**  
(protéines, fibres, huiles)  
**1/3**

**Produits biosourcés & Bio-Matériaux**

**Alimentation, Nutrition humaine, Pharmacie**

**Alimentation et Nutrition humaine et animale**

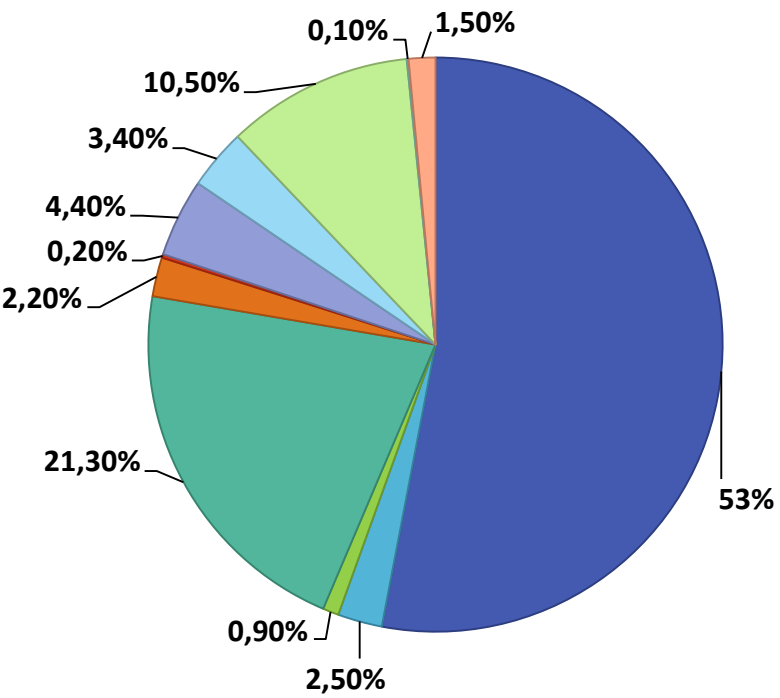
←→  
**Complémentarité des usages des amidons**

←→  
**Toujours en co-production et usage en alimentation et nutrition**

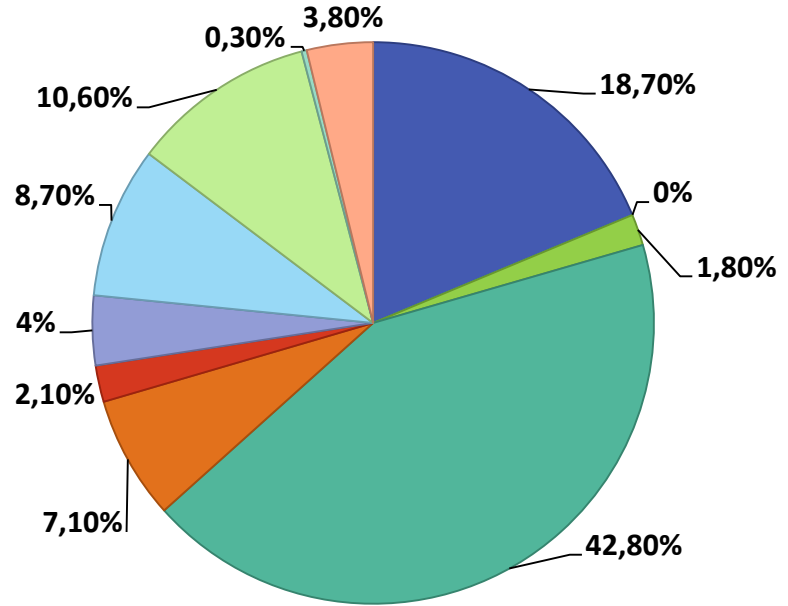


# EMPLOI ET BIOECONOMIE EN EUROPE (EU 28, 2011)

**Situation de l'emploi**  
Total : 19 millions



**Turnover**  
Total : 2 000 milliards €uros

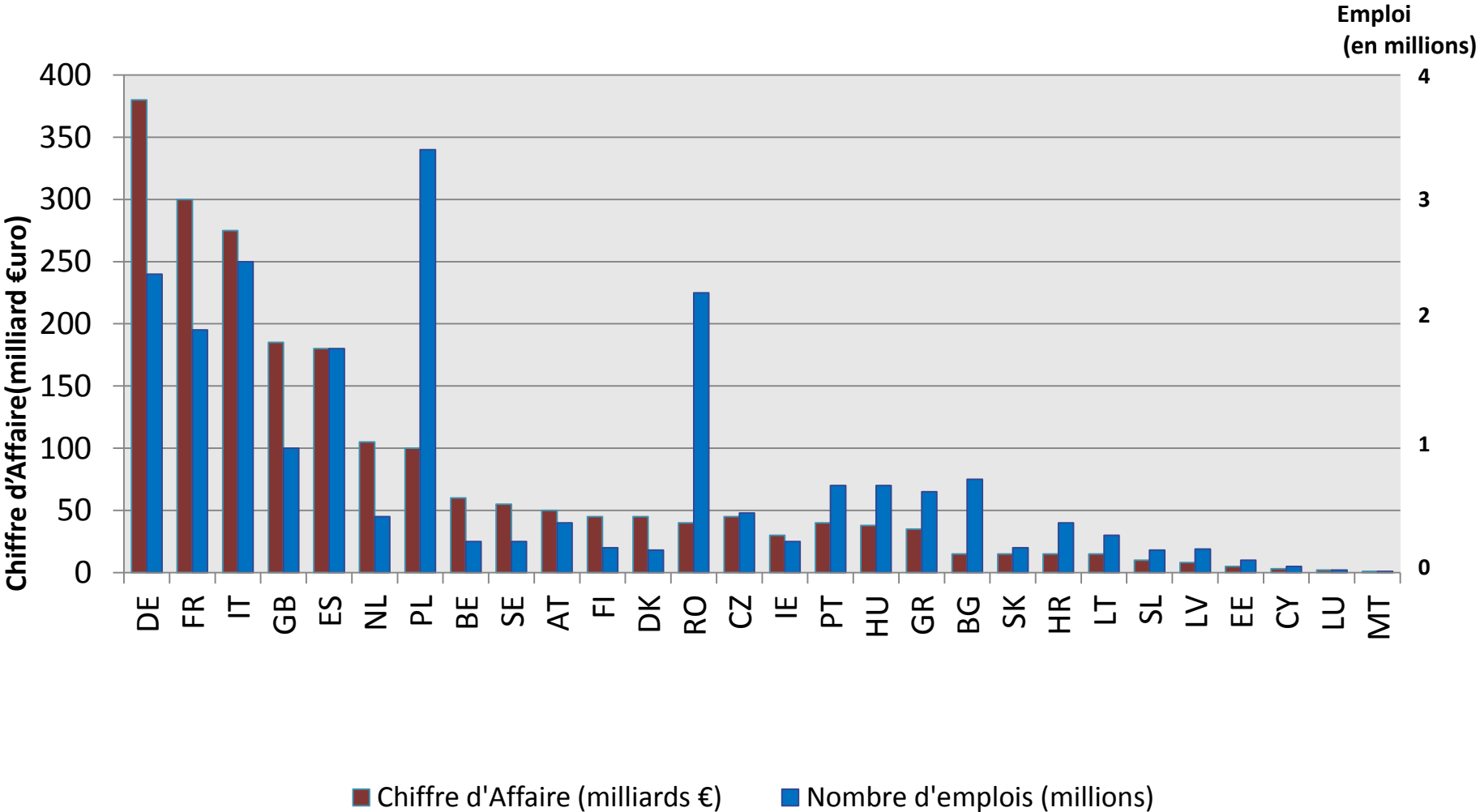


- Agriculture
- Forêts
- Industrie de la pêche
- Alimentation
- Boissons
- Tabacs
- Textiles
- Papiers
- Industrie du bois
- Biocarburants
- Chimie et Plastiques (hors biocarburants)

Source Nova Institute

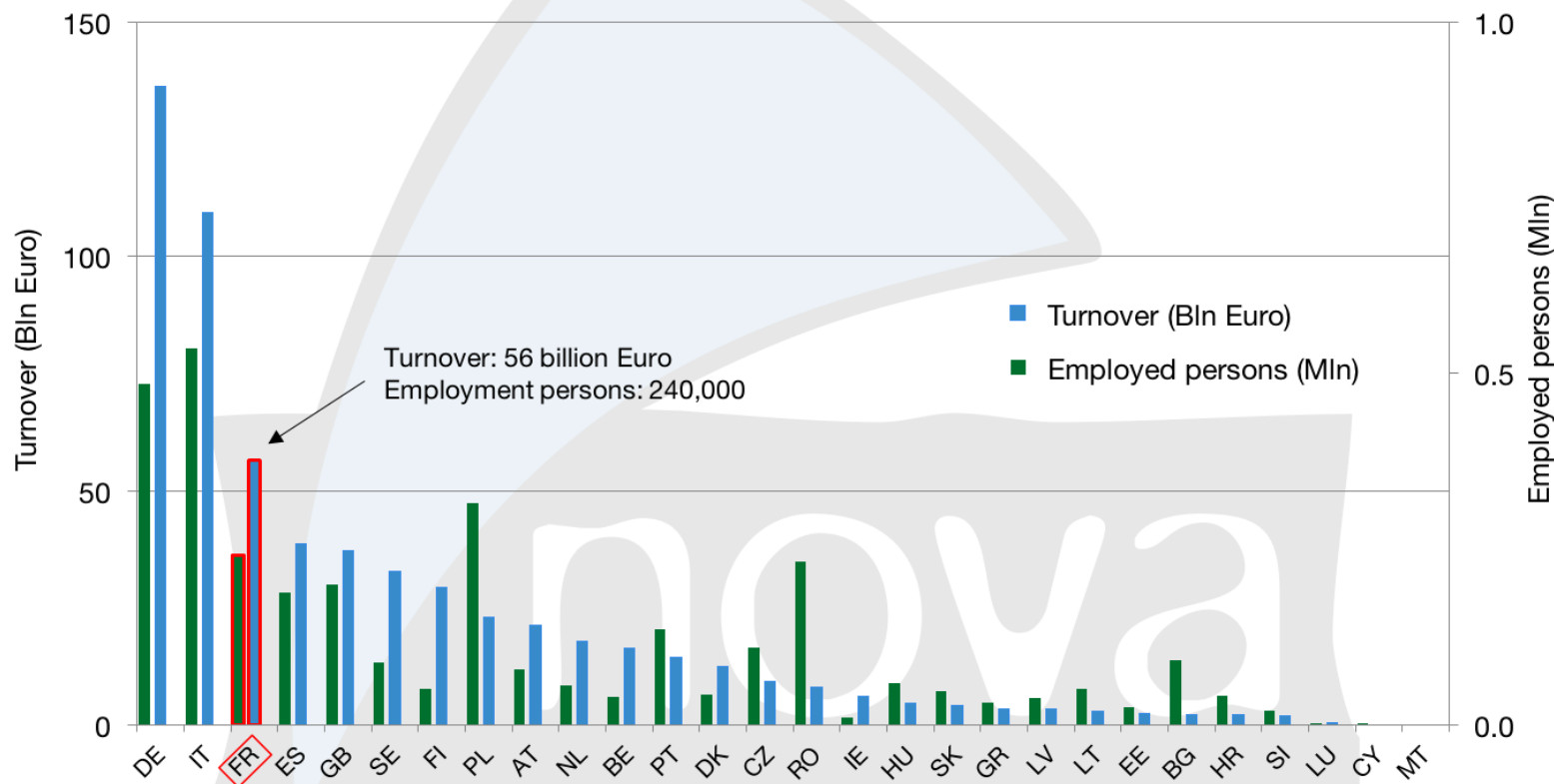
# EMPLOI ET BIOECONOMIE EUROPE (EU 28, 2011)

## Chiffre d’Affaire et Emploi

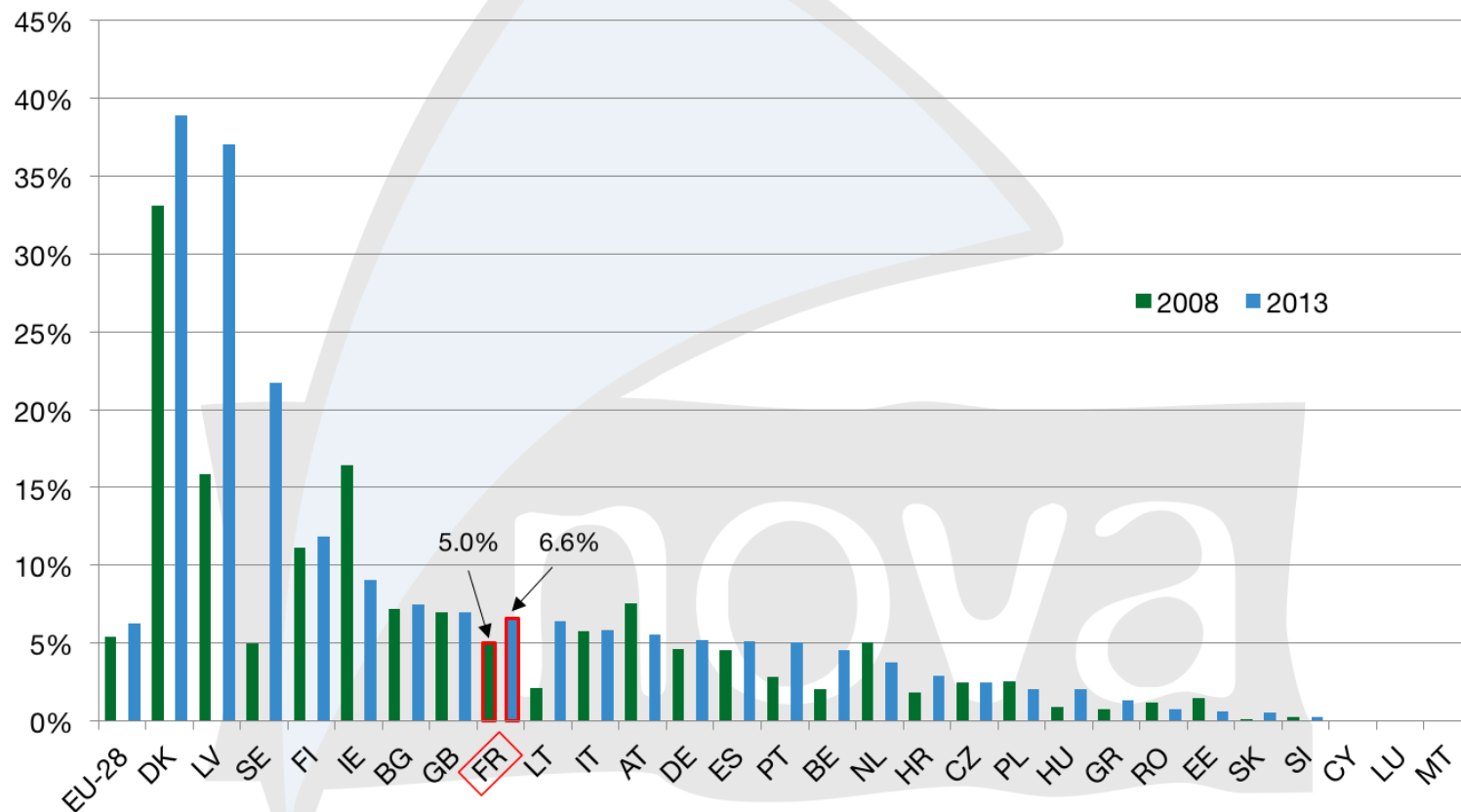


Source Nova Institute

## Turnover and employment in the EU bio-based economy\* (2013)



## Bio-based shares in the manufacture of chemicals and chemical products (NACE code 20)\*





**ROQUETTE**

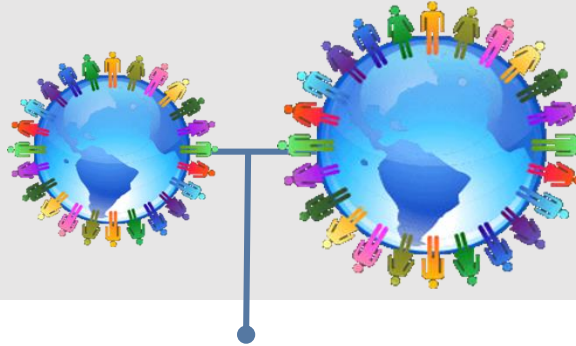
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# ILLUSTRATION DE LA BIOECONOMIE

## PROTEINES DE POIS EN ALIMENTATION

# The indispensable Food revolution

The World is facing a  
**CHANGING &  
GROWING PROTEIN**  
global demand



in 2050\*

9 to 10 billion people to feed  
+ 80 % demand for food  
Different Food consumption  
habits



with **Multiple sustainability challenges\*\***



Over 1,6 billion people are  
facing **water shortage**



By 2020, global emissions will  
increase by **33%** from 2002 levels



+ **82%**  
between **2000** and **2050**



+ **102%**

Consumption of  
meat and dairy  
products should  
increase  
< by

We need between  
**10 and 15 kg** of  
plant proteins...



... to produce  
**1kg of animal  
protein**



Animal feed requires  
**40 to 120 L** of water to  
produce **1 kg** of protein!



\*: [www.fao.org](http://www.fao.org) – FAO, 2009, How to feed the world in 2050

\*\* : McKinsey Global Institute: World Economic Forum: The Guardian: The Climate Group, SMART 2020; IFAD Rural Poverty Report 2011

# YELLOW PEA BENEFITS



## YELLOW PEA is GREEN

An amazing and **exemplary agricultural resource**



**Environment impact\* on growing peas in between 2 wheat crops:**



- **11%** energy consumption

- **14%** greenhouse gases

\* Source: 2015 INRA study on leguminous plants for sustainable food and farming systems

## YELLOW PEA BENEFITS

# YELLOW PEA, a Powerful source of PLANT PROTEIN



More than **20%** raw **protein** on average



**Allergen Friendly**



**Non Genetically modified**



**Gluten-free**



**Zero Cholesterol**



**Vegan / Vegetarian / Flexitarian friendly**



**Sugar free**



**Low Glycaemic index**



Source of dietary **fibre**



**Rich in nutrients**



High content of **iron and zinc**



Balanced **amino acid profile**







**ROQUETTE**

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# ILLUSTRATION DE LA BIOECONOMIE

## MATERIAUX BIOSOURCES DE PERFORMANCE

## FORTE DEMANDE DU MARCHE AVAL POUR DES POLYMERES BIOSOURCES DURABLE



Peter Agrejäll –  
Group President  
and CEO

Sept. 2014 : « the company highlighted a commitment for all plastic material uses in its home furnishing products to be 100% renewable and/or recyclage by 2020. We are determined to make sustainability both affordable and attractive to as many people as possible. »



Klaus Stadler, head  
of Environmental  
Sustainability (EU)

April 2014 : “After introducing its first PlantBottle in 2009, the soda king has been working to improve and expand the technology. Klaus Stadler says that the company's goal for 2020 is for PlantBottle technology to be used for its entire supply of virgin polyethylene terephthalate (PET).”



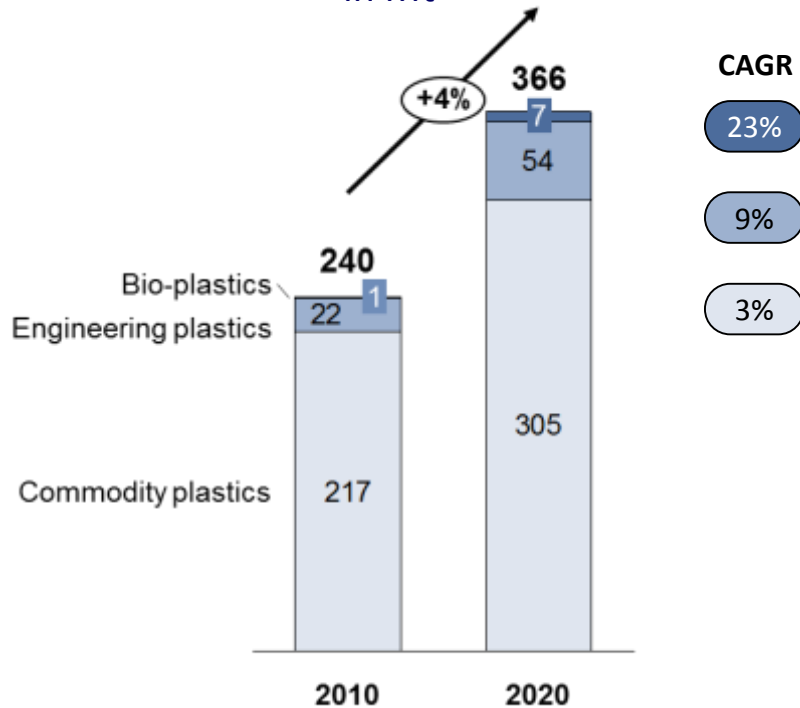
Jørgen Vig  
Knudstorp, CEO  
and President

June 2015 : “The LEGO Group establishes LEGO Sustainable Materials Centre and expects to recruit more than 100 employees. This is a major step for the LEGO Group on our way towards achieving our 2030 ambition on sustainable materials.”

# FORTE CROISSANCE ATTENDUE DES MARCHES POUR DES POLYMERES BIOSOURCES DURABLE

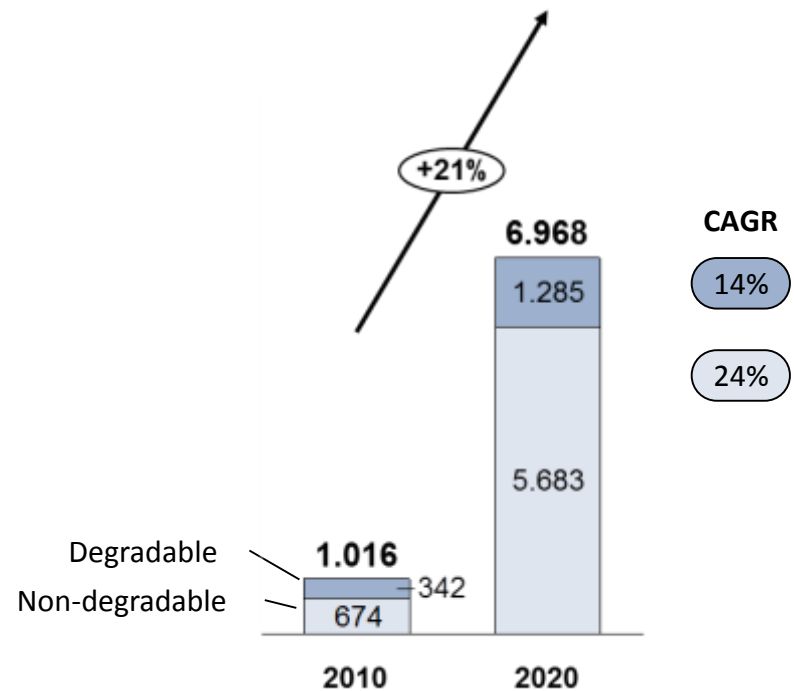
## Global Polymer Market

in Mt



## Global Bio-polymer Market

in kt



# ISOSORBIDE-BASED POLYMERS: PEIT

Go beyond PET



Rigid packaging



Hot fill container

Value creation

Heat resistance

Increased glass temperature

Good chemical and mechanical resistance

Optical properties

Technical polymers

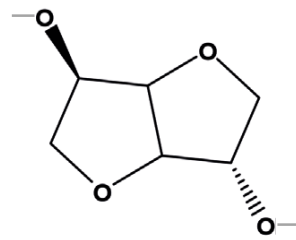


Heat resistant packaging

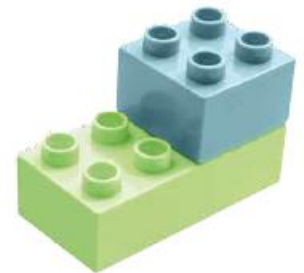


Food contact

POLYSORB® isosorbide  
*building block*



POLYESTERS



# ISOSORBIDE-BASED POLYMERS: PC-ISOSORBIDE

DURABIO® developments in automotive and E&E



New Clio from Renault



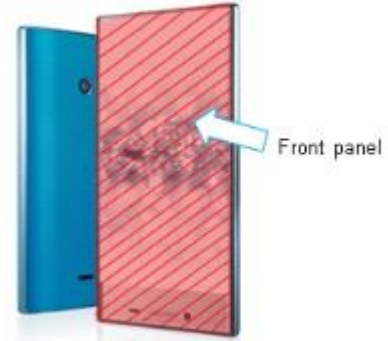
Mazda MX-5



Suzuki Hustler



Mitsubishi Chemical Corporation



Where DURABIO™ is used

Aquos phone from Sharp

iPhone shell cover  
From Elecom

