European Commission

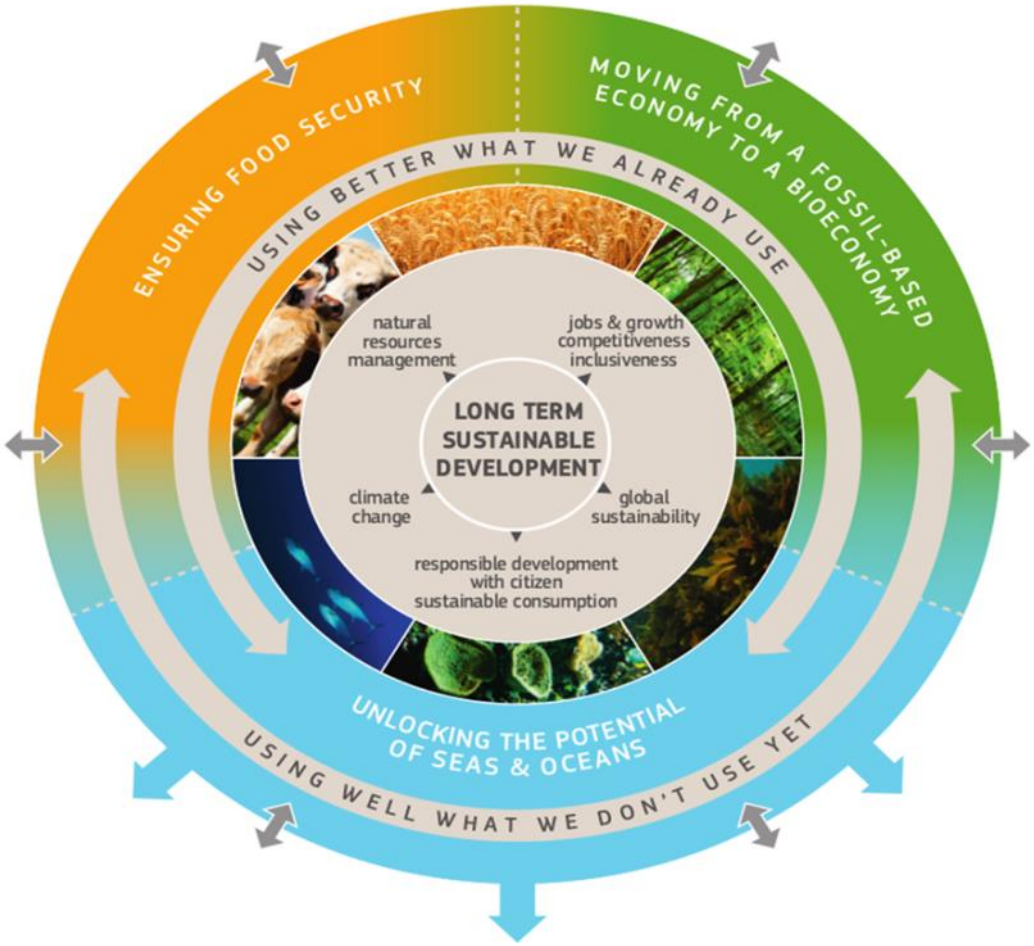
A Bioeconomy for Europe

Using resources from land and sea for a post-petroleum economy

Tomasz Calikowski
DG RTD Bioeconomy
Biobased Products and Processing Unit

" The Bioeconomy encompasses those parts of the economy that use **renewable biological resources** from land and sea to produce food, bio-materials, bio-energy and bio-products."

EU bioeconomy strategy, 2012



EU Bioeconomy Strategy & Action Plan

Investment in R&I

- **Horizon 2020 (€3,8b SC2)**
- Increase multi-disciplinary & cross-sectoral R&I
- ESIF - Smart Specialisation
- EFSI

Policy interaction & stakeholder engagement

- EU Policy coherence
- Development of regional and national bioeconomy strategies
- Bioeconomy Panel
- Bioeconomy Observatory
- International cooperation

Enhancement of markets & competitiveness in bioeconomy

- Sustainable intensification of primary production
- Expansion of new markets
- Increase EU competitiveness
- **BBI JU**

BioE review timetable

December 2016

Launch review expert group

May 2017

- Committee of the Regions Opinion on BioE
- Report on mapping of EU regions on BioE

June 2017

-Report from review expert group

-BioE stakeholders Manifesto

-Mapping BioE in the MS (JRC+SCAR)

July 2017

Report of BIOMASS study

14-16 Nov 2017

Conference on SWD BioE, review, Manifesto and showcasing BioE (SC2)

Q1 2018

Council conclusions on review (tbc)

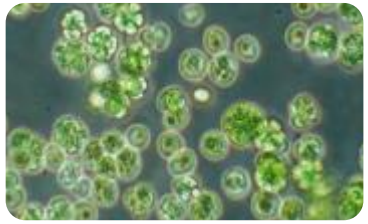
2018

Revision of bioE strategy?

Creation of new bio-based value chains

Primary sector

Sugar beets



Algae

Wood residues

Waste

Biological waste

Fish waste

Cosmetics

Plastic bottles
Natural colourants for candy

Car dashboards

Bio-based plastics

Oils
Pharmaceuticals

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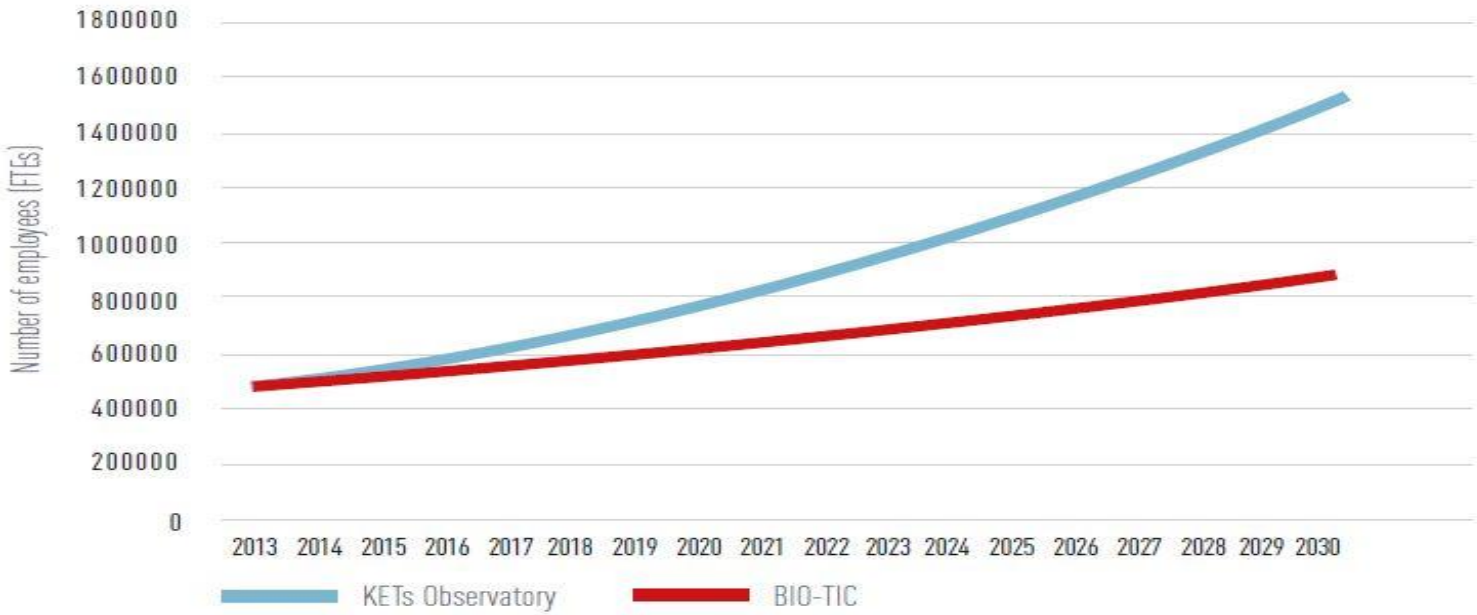
Bioeconomy in the EU and global policy context

- ✓ **Circular Economy Package**
  - Food waste, Plastics, Biomass and bio-based products, cascading use of biomass, investments in biorefineries
- ✓ **Revised legislative proposal on waste**
  - Separate collection of biowaste, ban on landfill of waste that is separately collected, waste to energy
- ✓ **Plastics Strategy**
  - Replacing fossil by bio-based feedstocks. Development of biodegradable and bio-benign plastics. Reduce marine litter
- ✓ **COP 21 and Energy Union R&I and competitiveness strategy**
  - Deployment of biorefineries, reducing agriculture emissions, boosting carbon sink
- ✓ **Creation and expansion of markets** (Standardisation, public procurement, awareness raising, etc.)
  - Ongoing FP7, H2020 and BBI projects supporting policy actions

Industrial biotech as a key driver for a bio-based economy and jobs

Figure 2-7 IB value chain employment forecasts



Source: IDEA Consult

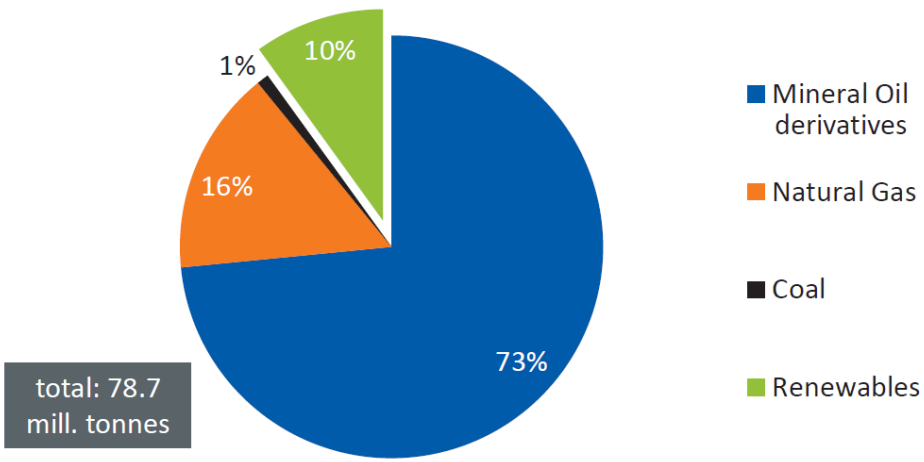
IB creating between 1 m and 1,5 m direct jobs by 2030

Source: EuropaBio study (Sept 2016)

The bioeconomy/bio-based chemicals

Organic raw material use
Draft results shares

Shares in total organic raw materials – material (feedstock) use only
EU chemical industry, **2014**



Source: CEFIC 2014

Chemical industry – underpins nearly all sectors of the economy – 1,2 million jobs in EU – 3rd highest soure of industral emissions after steel and cement (and they both rely on chemicals)

Transforming the EU chemical industry into an industry based on renewable carbon.

90% of EU chemical industry feedstocks for non-energy material use come from fossil resources.

COP21 calls for net zero emissions during 2nd half 20th century, but "net zero emissions cannot be met by using fossil resources for materials" (OECD).

Today biomass is the only source of renewable carbon present in vast quantities.

- How to sustainably exploit biomass as feedstock for chemical industry without endangering food security?
- How use R&I to explore new sources of renewable carbon?

OECD: Governments should also bear in mind that bioenergy and biofuels are likely to be transient. Chemicals and materials, in contrast, are here to stay and will become even more important in the future as new manufacturing demands new materials.

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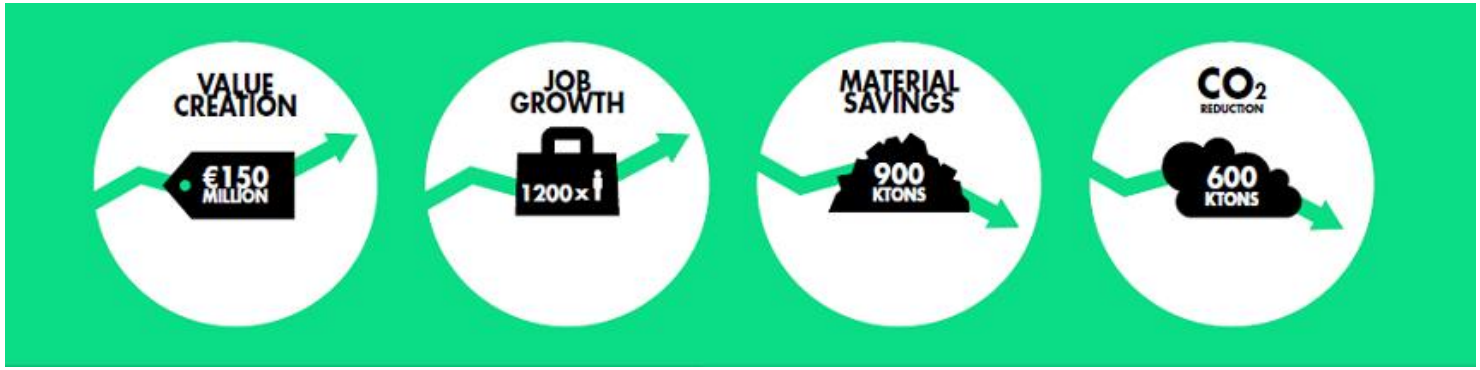
Predicted gains from high value recycling of organic residue streams in Amsterdam



Scaling up: the total gains if the top 50 EU cities were to copy Amsterdam's vision…

VALUE CREATION	JOB GROWTH	MATERIAL SAVINGS	CO2 REDUCTION
€7.5-€12 billion	60.000-97.000 jobs	45-73 million MT	30-49 million MT

Lower estimate assumes that effects are the same size for each city irrespective of its population. Higher estimate assumes that effects increase in proportion to population size of city. The combined population of the 50 largest EU cities is 56 million, about 11% of the total EU population.

Chemical products made from agricultural raw materials & waste

Source photos: matrica.it

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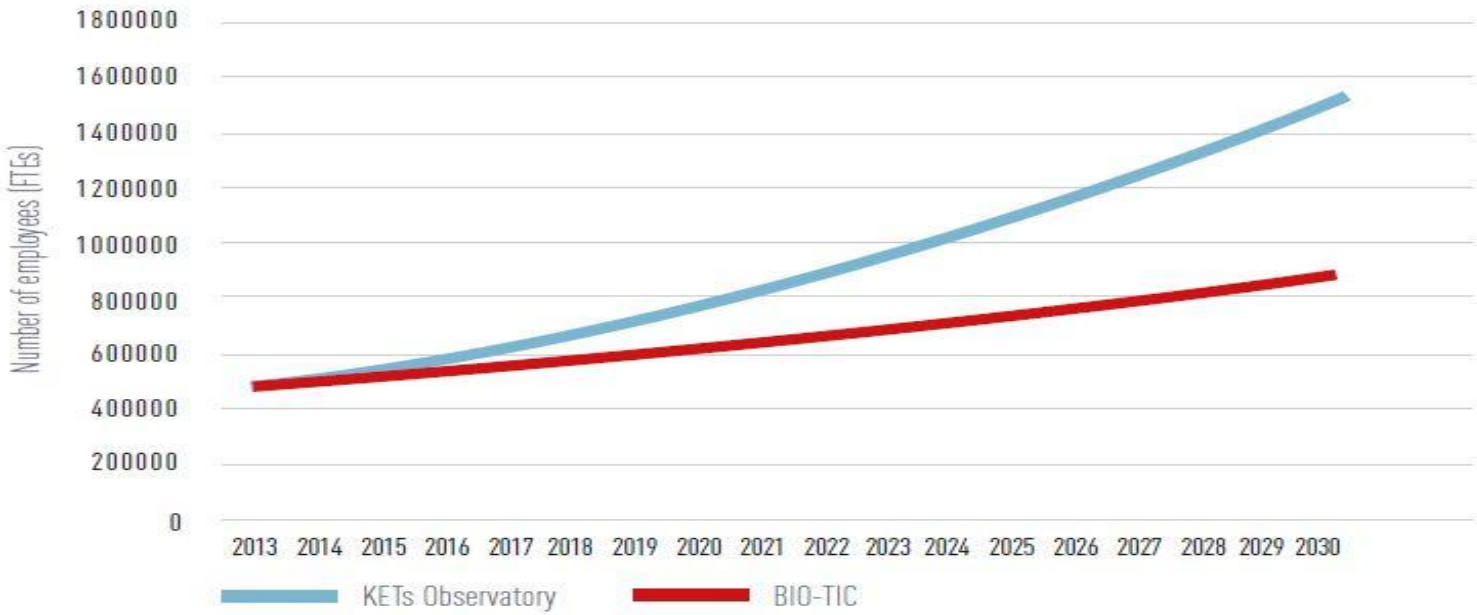

Source: IDEA Consult

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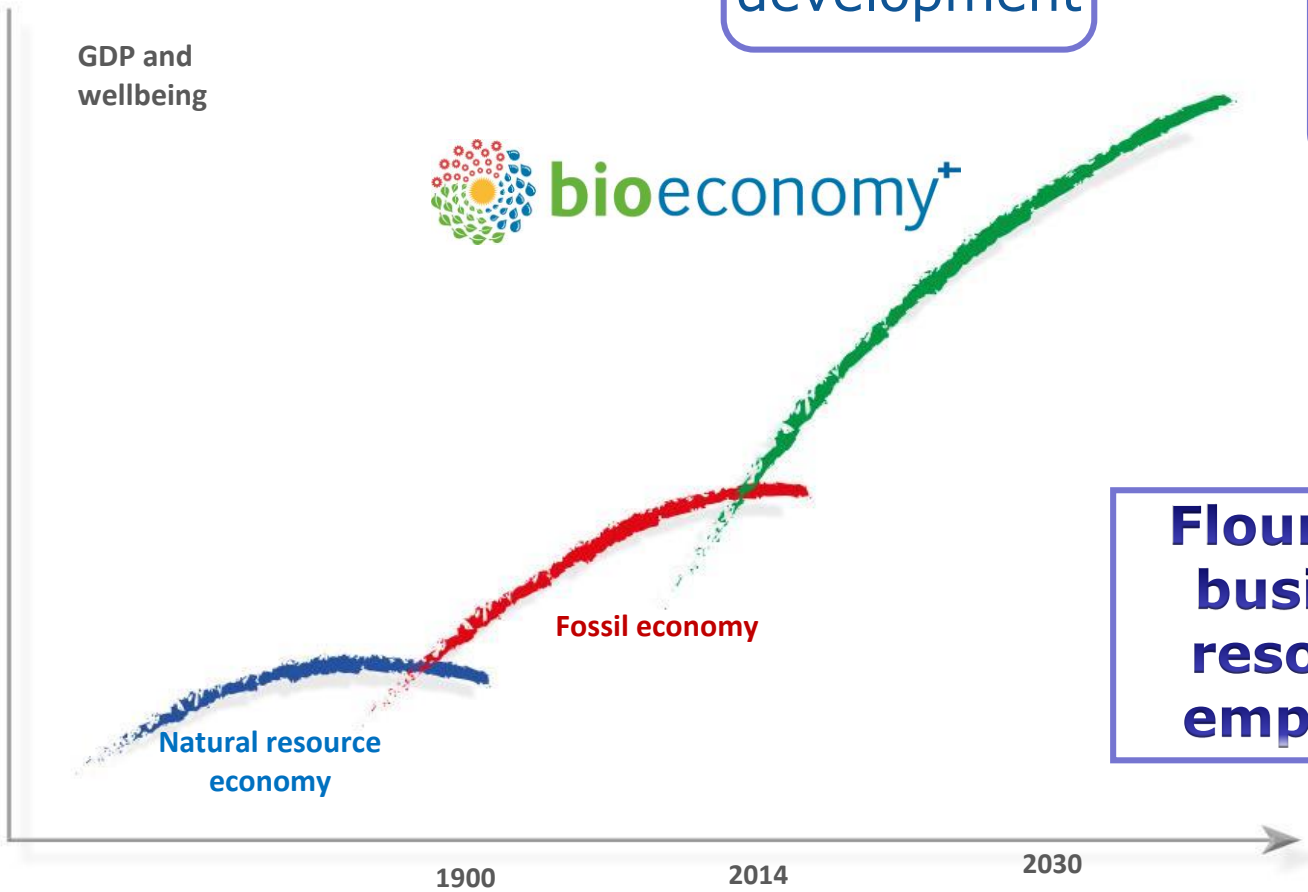
Sustainable development

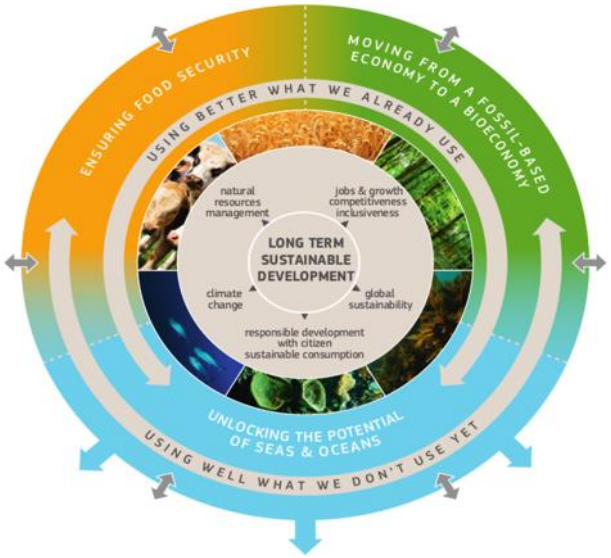
Non-fossil, post-petroleum society



Source: Finnish Bioeconomy Strategy, 2014

Flourish local businesses, resources & employment

Thank you for your attention!



For more information:

www.ec.europa.eu/research/bioeconomy