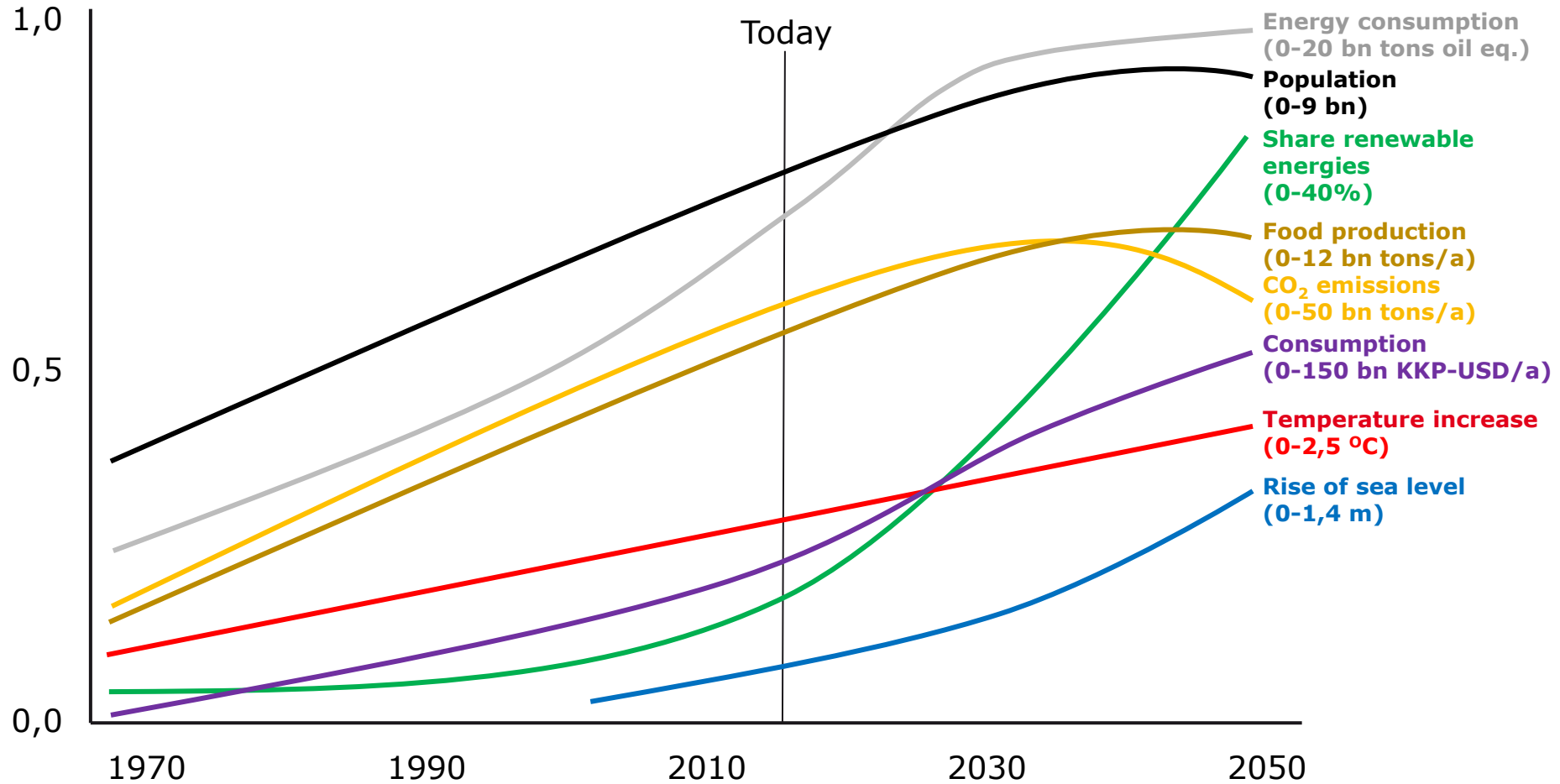


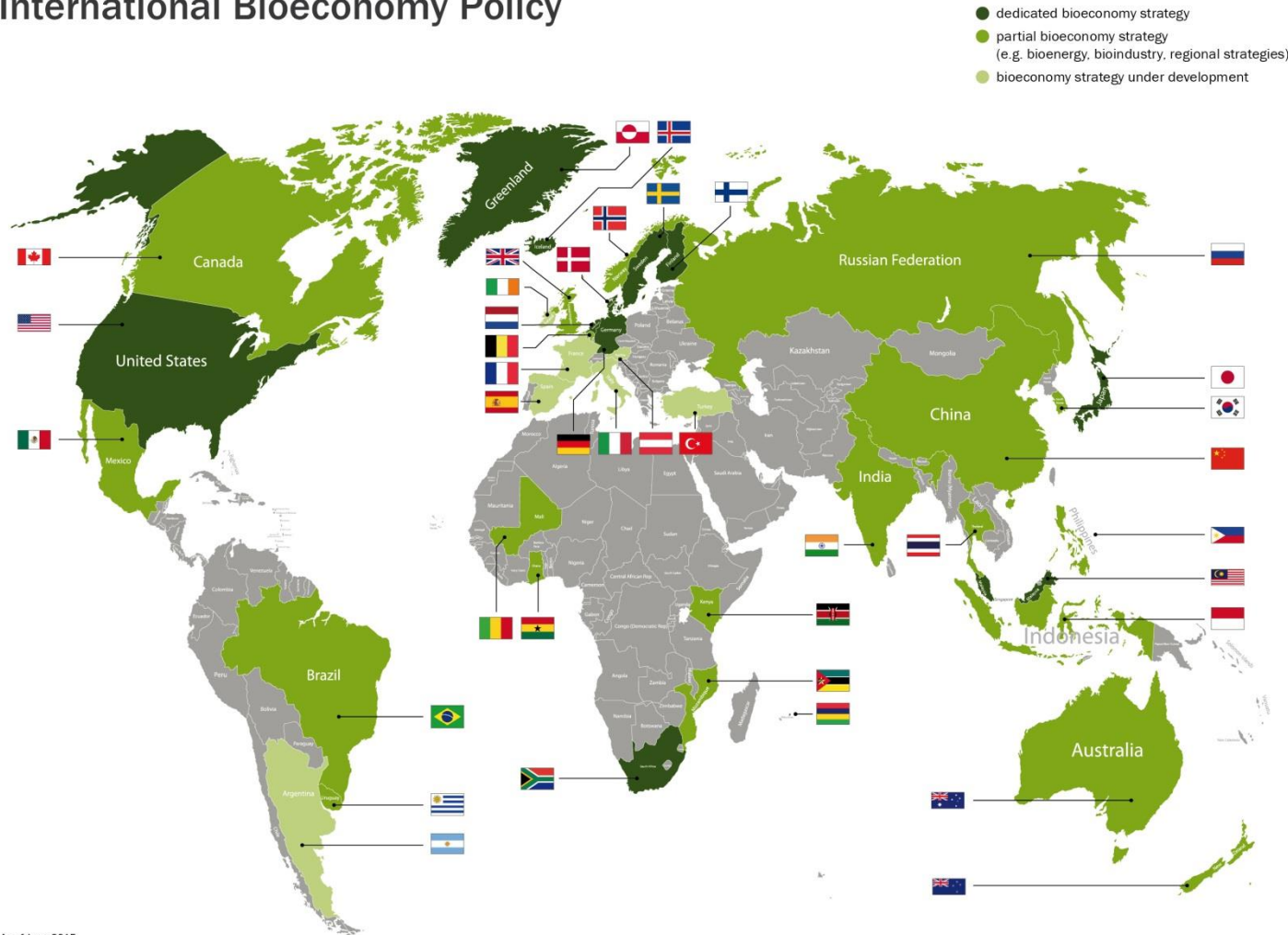
©Chris Schmidt - istockphoto

German National Research Strategy *BioEconomy*: Industrial Biotechnology to Substitute Crude Oil

Forum Chemical Industry 2015 (FCI 2015), Palace Hotel Tokyo
September 30, 2015
Dr. Thorsten Bug, Senior Manager Chemicals



International Bioeconomy Policy



The Policy Strategy BioEconomy (2014): Result of many Concepts and Strategies focusing on Biobased Change

2015

2014: Policy Strategy BioEconomy

2012: Green Economy (UN)

2012: Horizon 2020 (EU)

2012: Roadmap Biorefineries

2011: Forest Strategy 2020

2010: Research Strategy BioEconomy 2030

2010

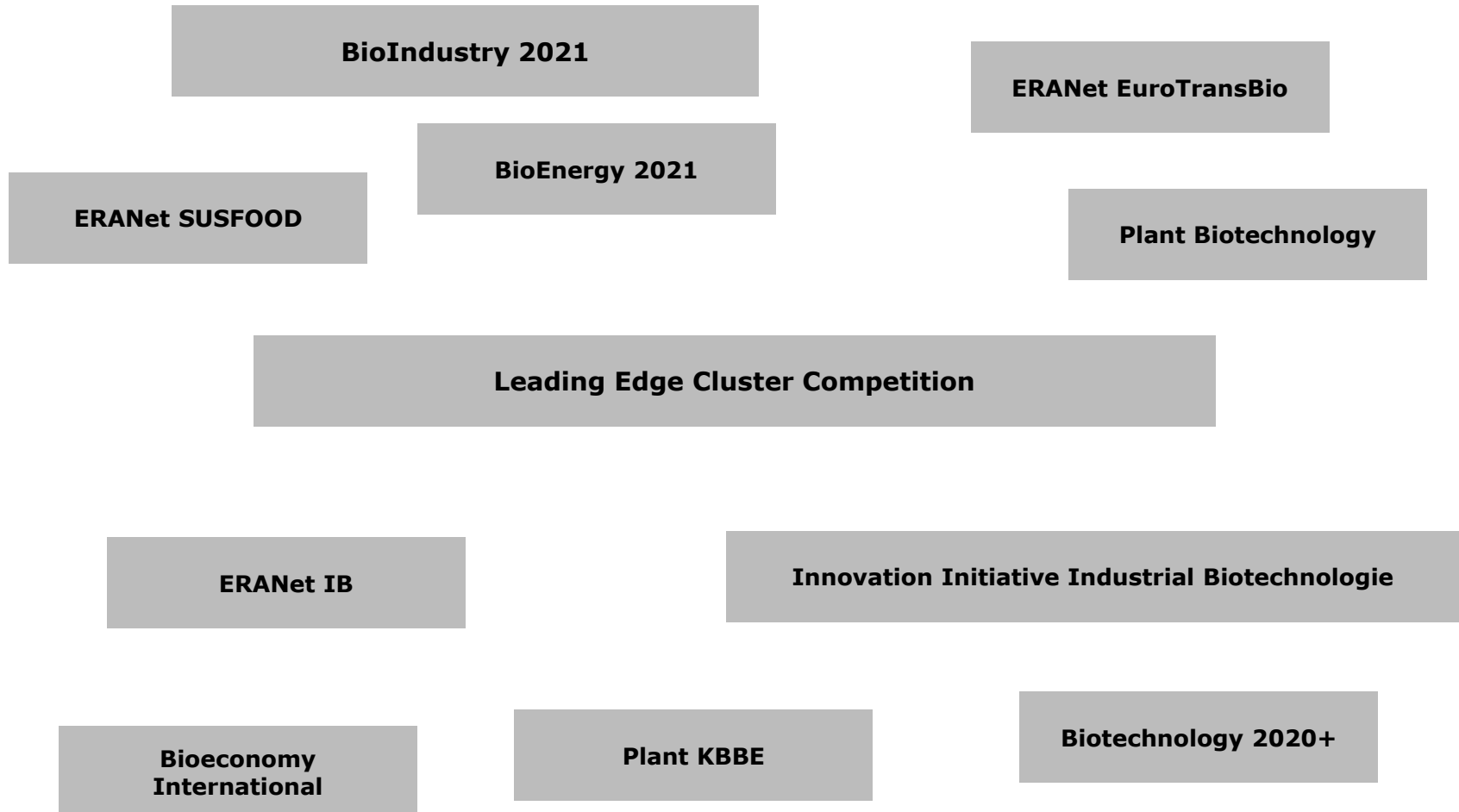
2010: Strategy on Raw Materials

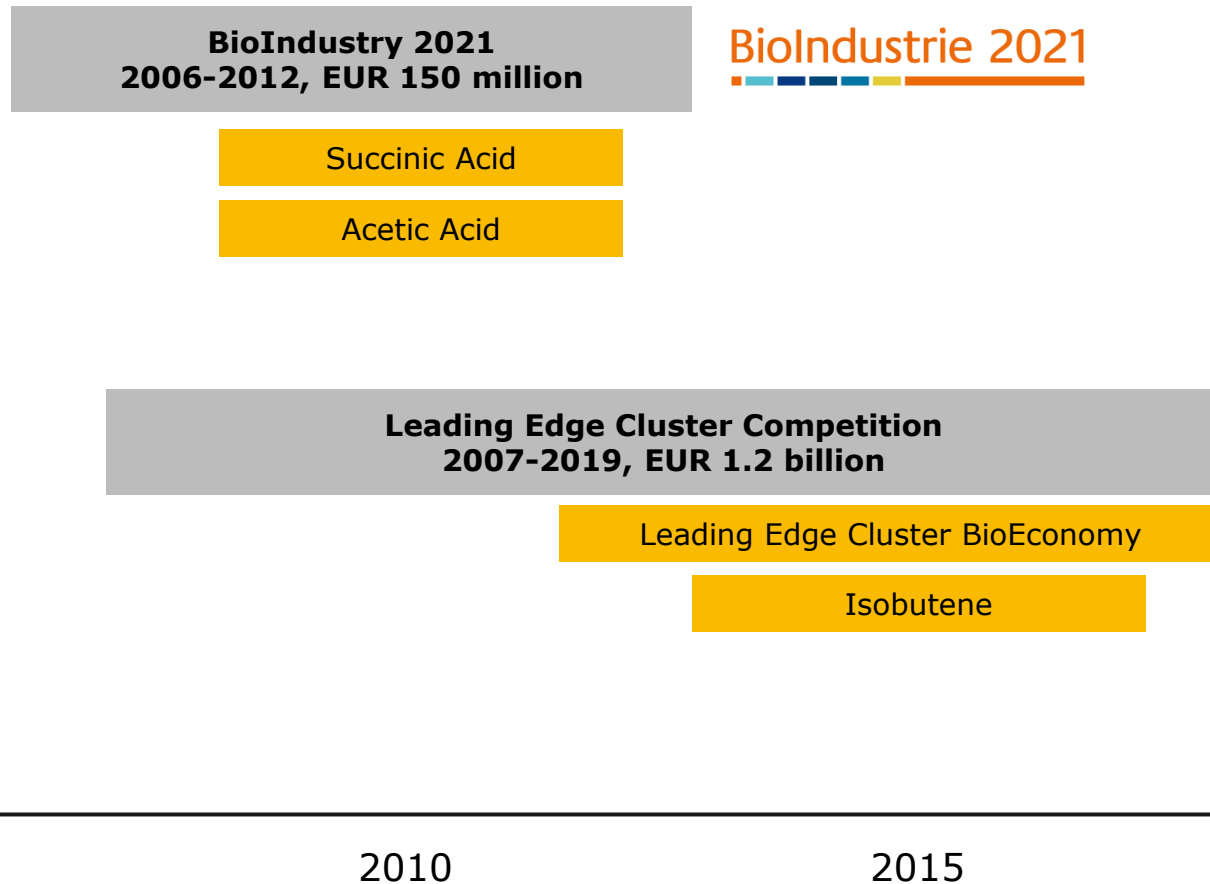
2010: Hightech-Strategy 2020

2009: Bioeconomy Council

2007: Strategy on Biological Diversity

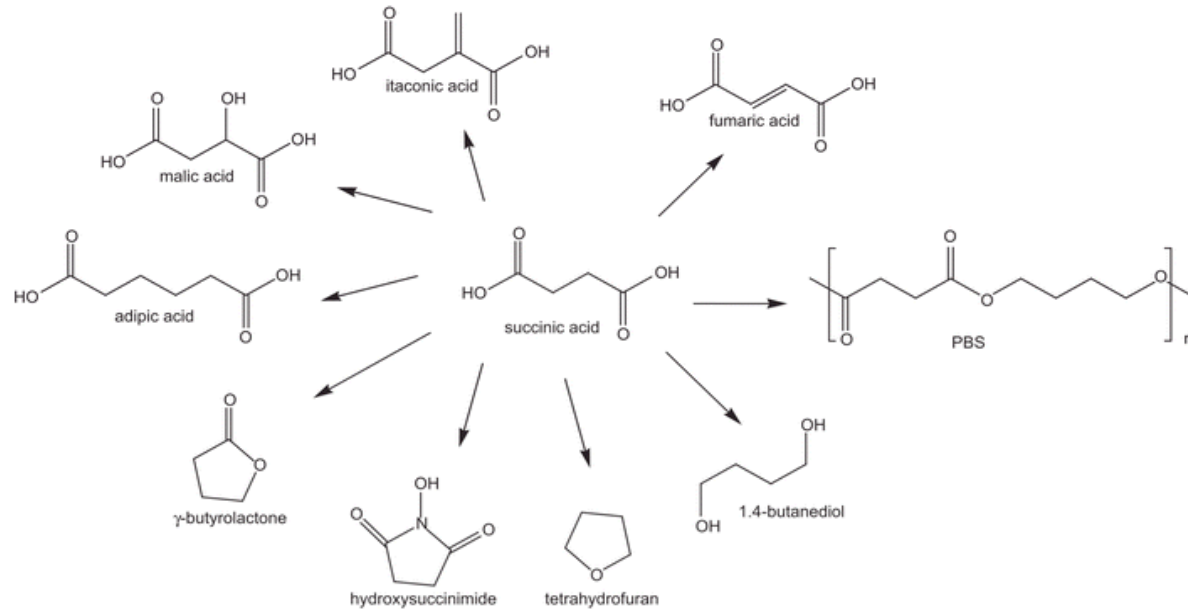
2005





Exchange rates (EUR 1 = Yen 136, as of 19 September 2015): EUR 150 million = Yen 20 billion, EUR 1.2 billion = Yen 160 billion.

BioIndustry 2021 (No. 1): Fermentative Succinic Acid Production for Polyesters



Goal:

- Finding an efficient fermentative path for an economic production of succinic acid from sugar derivatives with high yields by modified *Basfia succiniciproducens*
- Polymerization of this Bio-Succinic acid with Bio-BDO to PBS

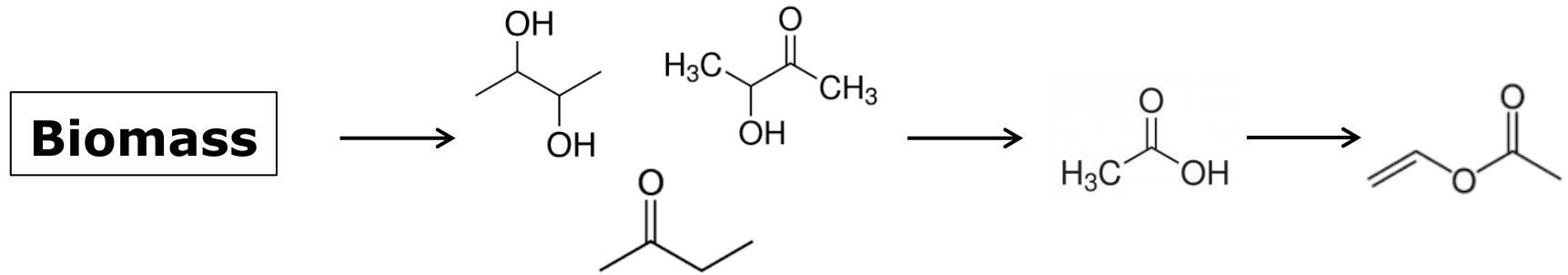
Project Funding (2008-2011):

- EUR 2.6 million

 **BASF**
The Chemical Company

 **ibvt**
Institut für Bioverfahrenstechnik

BioIndustry 2021 (No. 2): Acetic Acid from Non-Food Biomass



Goal:

- Finding an efficient fermentative path for the production of an acetic acid precursor
- Gas phase oxidation of the acetic acid precursor

Project Funding (2008-2011):

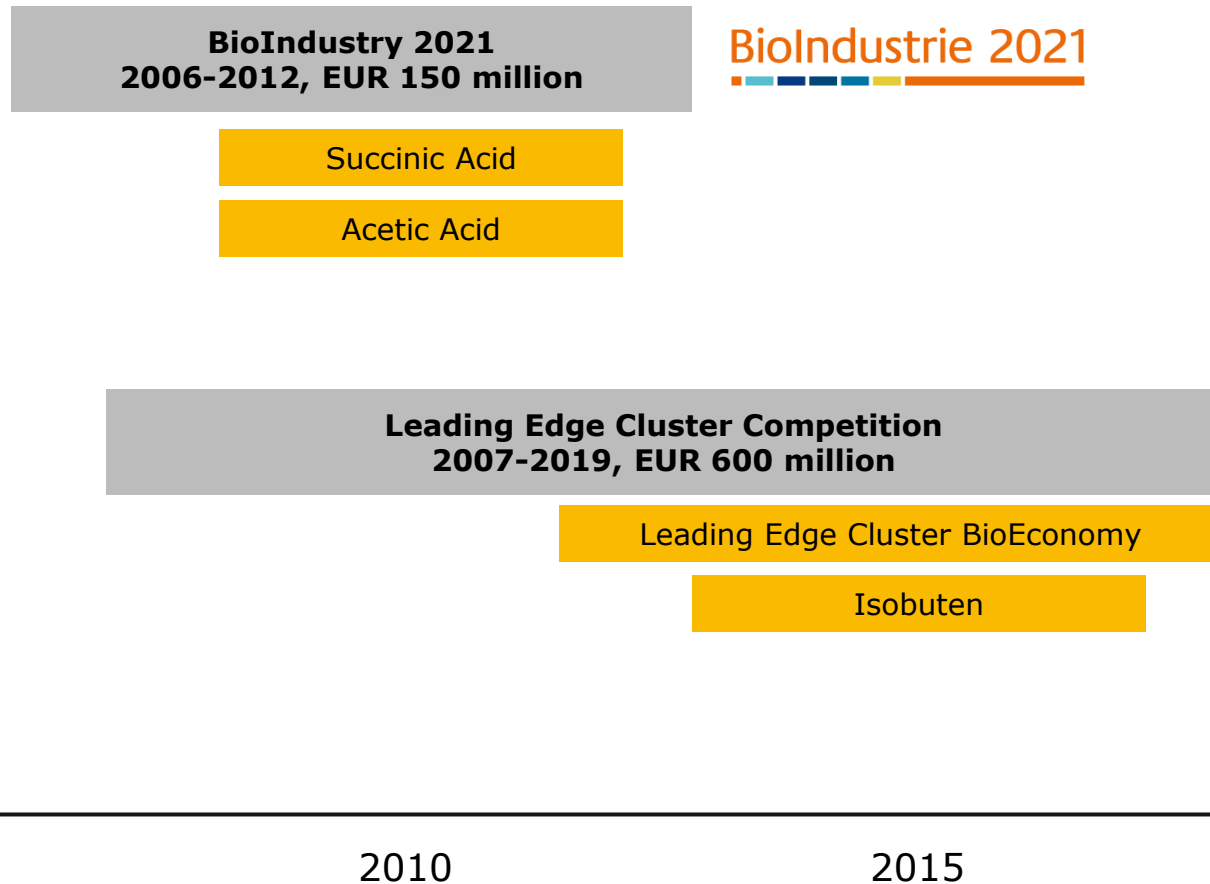
- EUR 2.1 million

WACKER

 **Fraunhofer**
IGB

TUM

Technische Universität München



Exchange rates (EUR 1 = Yen 136, 19 September 2015): EUR 150 million = Yen 20 billion, EUR 600 million = Yen 80 billion.

Strategic Alliances: Leading Edge Cluster *BioEconomy*

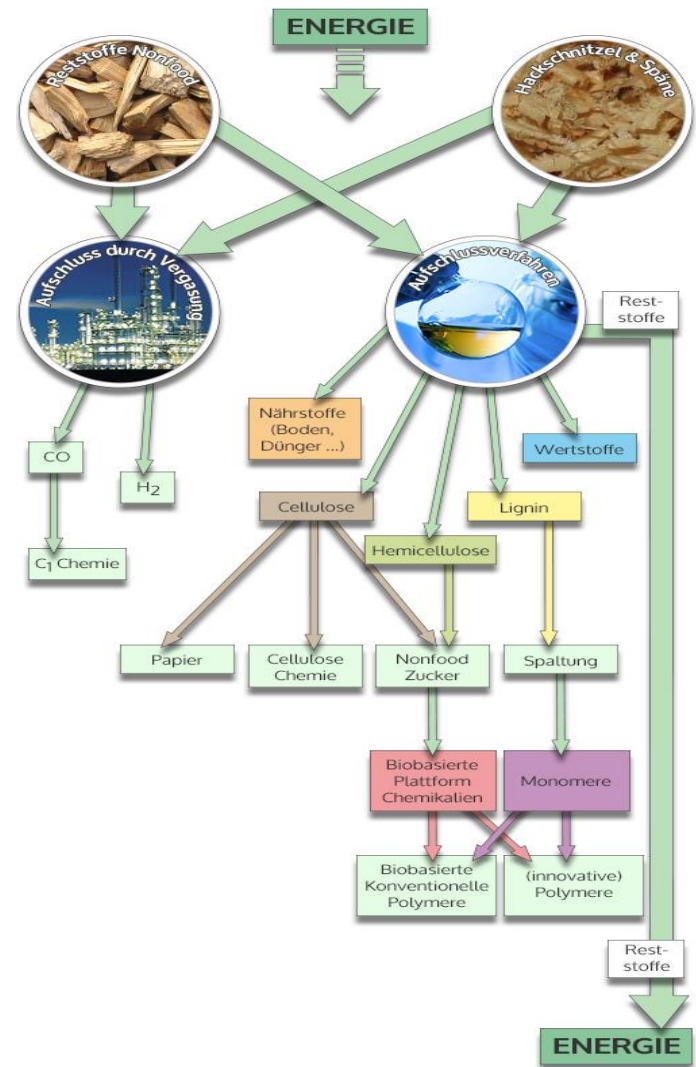


Strategic objectives:

- Maximize value added of non-food biomass (wood)
 - Materials
 - Energy
 - Chemicals
- Speed up innovation through up-scaling from lab to demoplant with existing multi-purpose-plants

Details:

- 2012-2017
- Budget: EUR 80 million (Funding: EUR 40 million)
- 70 active partners
- 145 projects and subprojects



Strategic Alliances: Leading Edge Cluster *BioEconomy*

Project: Fermentative Production of Isobutene from Sugars



Goal: next step from lab to commercialization

Pilot plant with 2 fermenter each 5,000 liter volumina to produce 100 tons/a isobutene including purification.

Project Funding (2013-2016):

EUR 5.7 million

Worldwide Contacts for Chemical Industry

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