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Identifying best markets for the exploitation of innovative sustainable food packaging solutions

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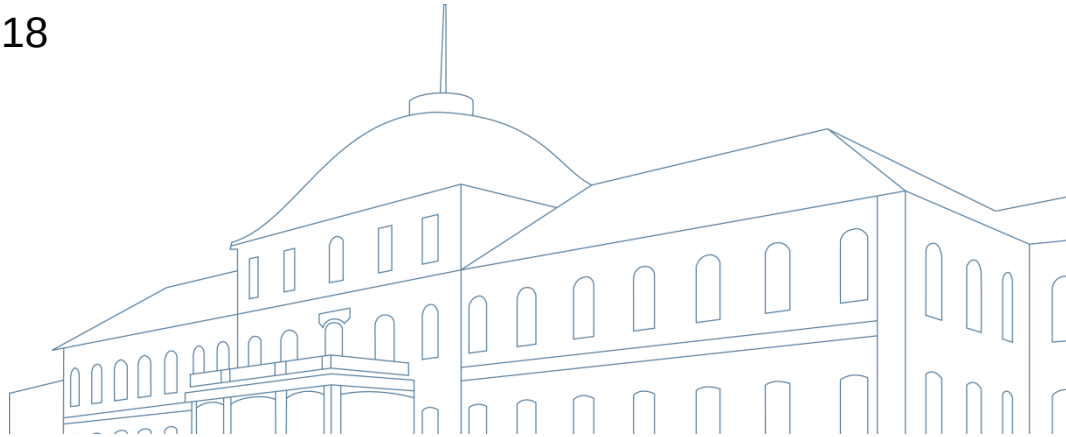
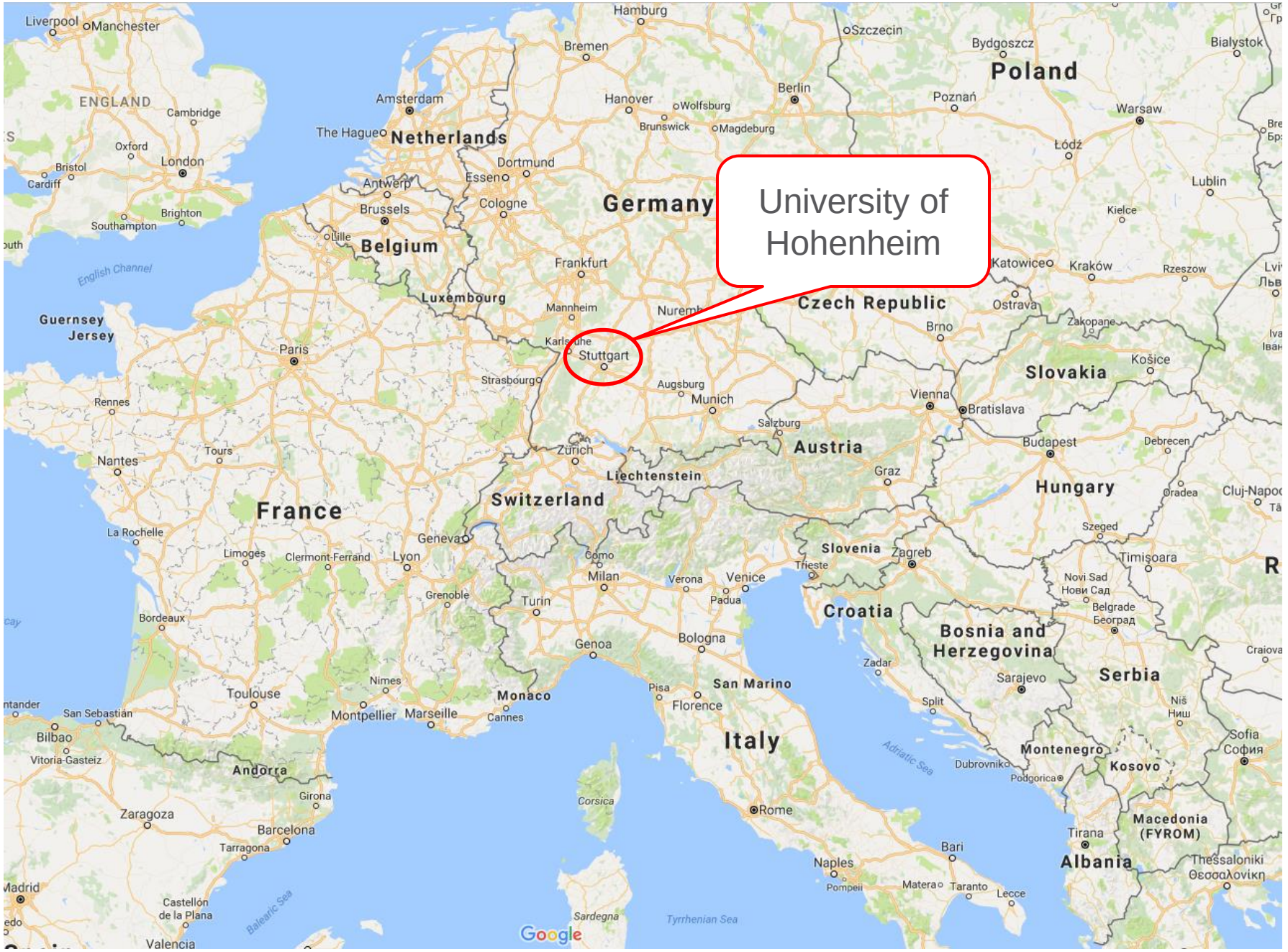
15th International Symposium on Bioplastics, Biocomposites and Biorefining (ISBBB 2018)
Circular Economy for Bioproducts Innovation

ISBBB

Guelph, ON, Canada | 24 – 27 July 2018

MyPack

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University of Hohenheim (UHOH)



University of Hohenheim: brief history

1815: University's Big Bang

(Eruption of the volcano Tambora in Indonesia)

1816: Year without a summer

1817: Famine years

1818: Founding the Agricultural Institute

1819: The Silicon Valley of the 19th Century



Source: https://www.uni-hohenheim.de/en/history-1800-1899

1904: The Hohenheim Agricultural University

1918/1919: Right to award doctorates & habilitations

1964: Faculties of Natural Sciences & Agricultural Sciences

1967: Faculty of Business, Economics & Social Sciences

1968: In the year of its 150th anniversary received the name "University of Hohenheim (Agricultural University)"



2007: The University began to grow quickly: 10,000 students

2018: The University will celebrate its 200th anniversary

UHOH at a glance

Personal (2016) Köpfe, Stand 1.1.2017

Personal gesamt	**2.066**
Wissenschaftliches Personal gesamt	**948**
Professorinnen, Professoren	121
Wissenschaftlich Beschäftigte	827
Nichtwissenschaftlicher Dienst	**1.118**
Betreuungsrelation Studierende je Lehrperson	10,2

Finanzen (2016)

Finanzeinnahmen (2016) in Mio. Euro	
Landesmittel	109,2
Drittmittel	29,5
Ausbauprogramme	12,3
Ergänzende Landesmittel	1,7
Gesamt	**152,7**

Studiengänge (WS 2016/2017)

Anzahl der Studiengänge	**40**
Bachelor	12
Master | Doppel-Master	25
Promotion	3

Studierende (WS 2016/2017)

Studierende gesamt	**9.638**
Frauen	5.462
Männer	4.176
Internationale Herkunft	1.407

Studierende je Fakultät

26,9% Agrarwissenschaften
18,9% Naturwissenschaften
54,2% Wirtschafts- und Sozialwissenschaften









Faculty of Agricultural Sciences

In teaching and research, the Faculty develops sustainable production technology for the agricultural and nutrition sectors. It makes contributions to rural areas and to consumer, animal, and environmental protection. more

Faculty of Natural Sciences

Biology, nutritional sciences and food sciences are the Faculty's primary areas of focus. Research focuses on the key topics of life sciences. more

Faculty of Business, Economics and Social Sciences

Research and modern teaching according to international standards are combined in the Faculty. The Hohenheim Model links business and economic, social science and legal aspects. more



Hohenheim Research Center for Bioeconomy

Bioeconomy opens new paths to new products, new production processes, and to a modern, sustainable economy. Its raw materials are bio-based. more



Hohenheim Research Center for Global Food Security and Ecosystem Research

Innovative and effective research on ensuring food security and fighting global hunger with a special focus on development-oriented research. more



Hohenheim Research Center for Health Sciences

Platform for scientific cooperation in the areas of high scientific and social importance, such as growth, development and aging, lifestyle, nutrition, and preventive healthcare. more

Hohenheim Research Center for Bioeconomy

Bioeconomy: The economy of the future



New food and feed (e.g. from algae), energy from harvest waste, chemicals and plastics from plants: Bioeconomy opens new paths to new products, new production processes, and to a modern, sustainable economy. Its raw materials are bio-based. That means they come from plants, animals, or microorganisms. In production, it also uses biological processes for a more sustainable production that conserves energy and resources.

In order to prevail, Bioeconomy needs a great deal of research, innovation, and a fundamental change in the economy and society. Bioeconomy gives nutrition the highest priority. Climate protection, health, and species diversity are also important aspects.

The University of Hohenheim has made Bioeconomy the focus of its research and teaching. Unique in Germany, it has the comprehensive expertise necessary to cover the entire value chain of Bioeconomy. It covers everything from plant and animal production to new technical processes to the necessary change processes in the economy and society. In this, agricultural, nutritional, and food scientists work hand in hand with physicists, biologists, and biotechnologists as well as economists and social scientists.

Contact

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70599 Stuttgart
+49 711 459 24027
E-mail

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Flyer Bioeconomy
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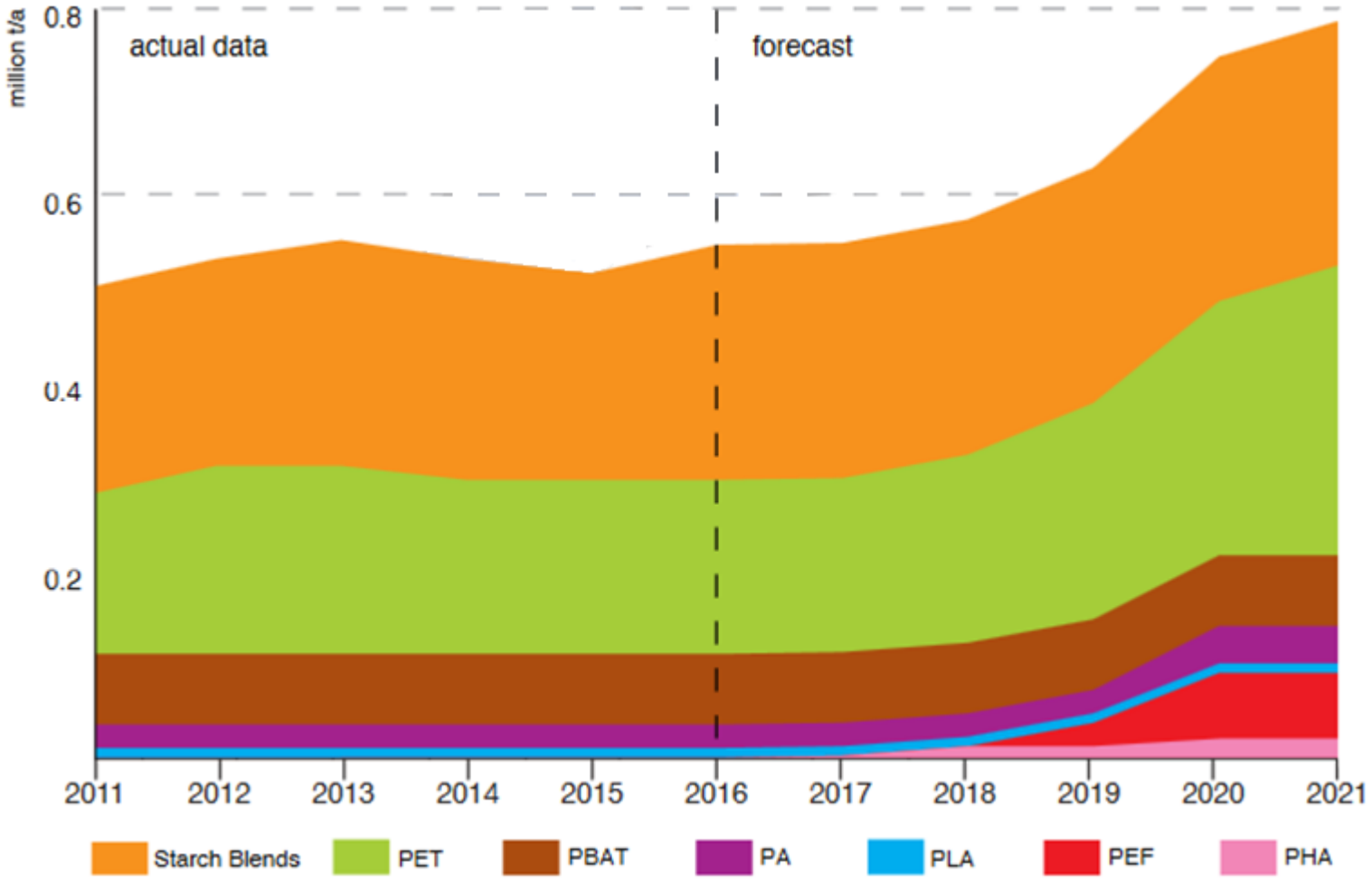
How to beat plastic pollution together?

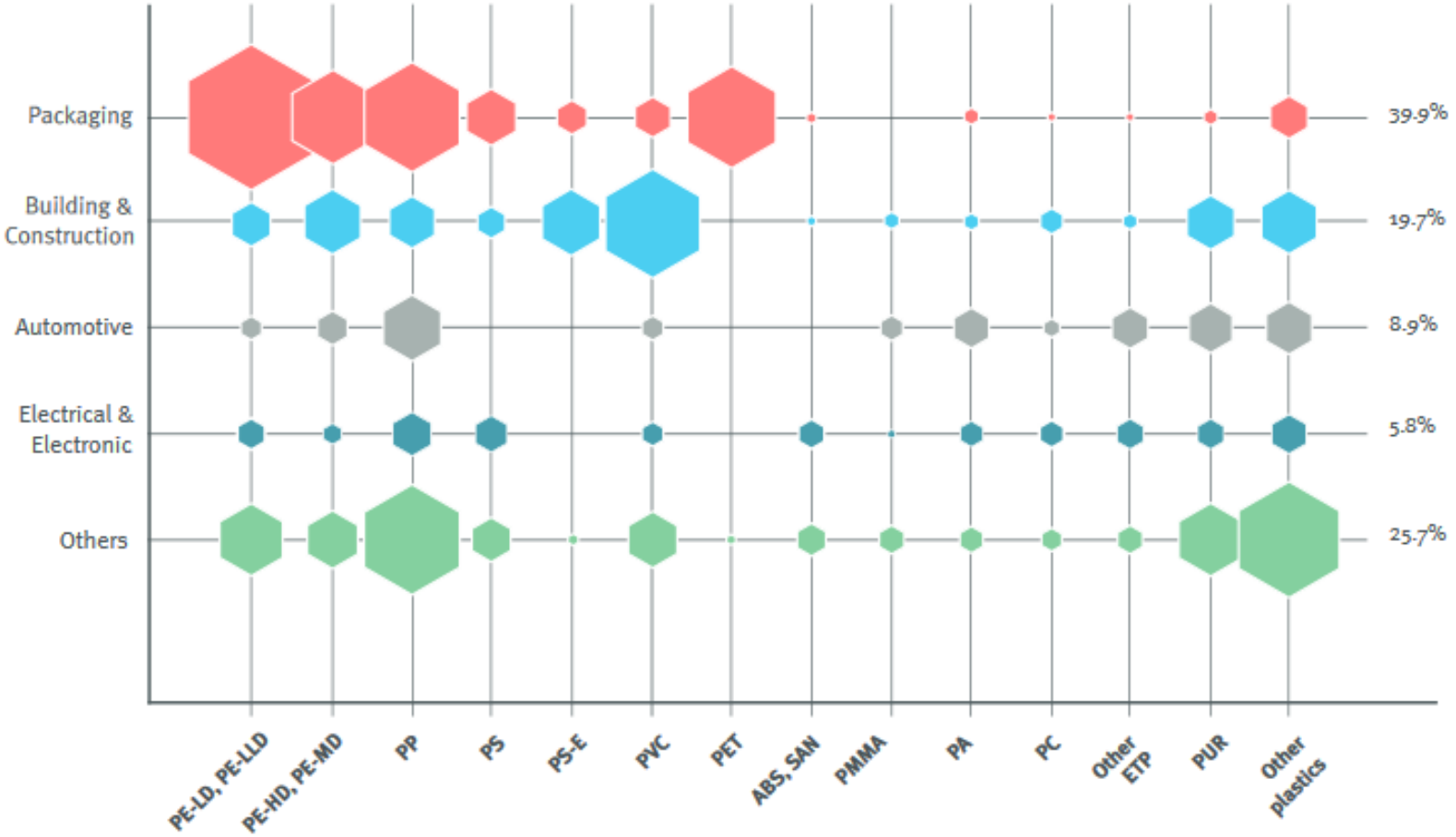


Bio-based polymers: Evolution of production capacities in Europe



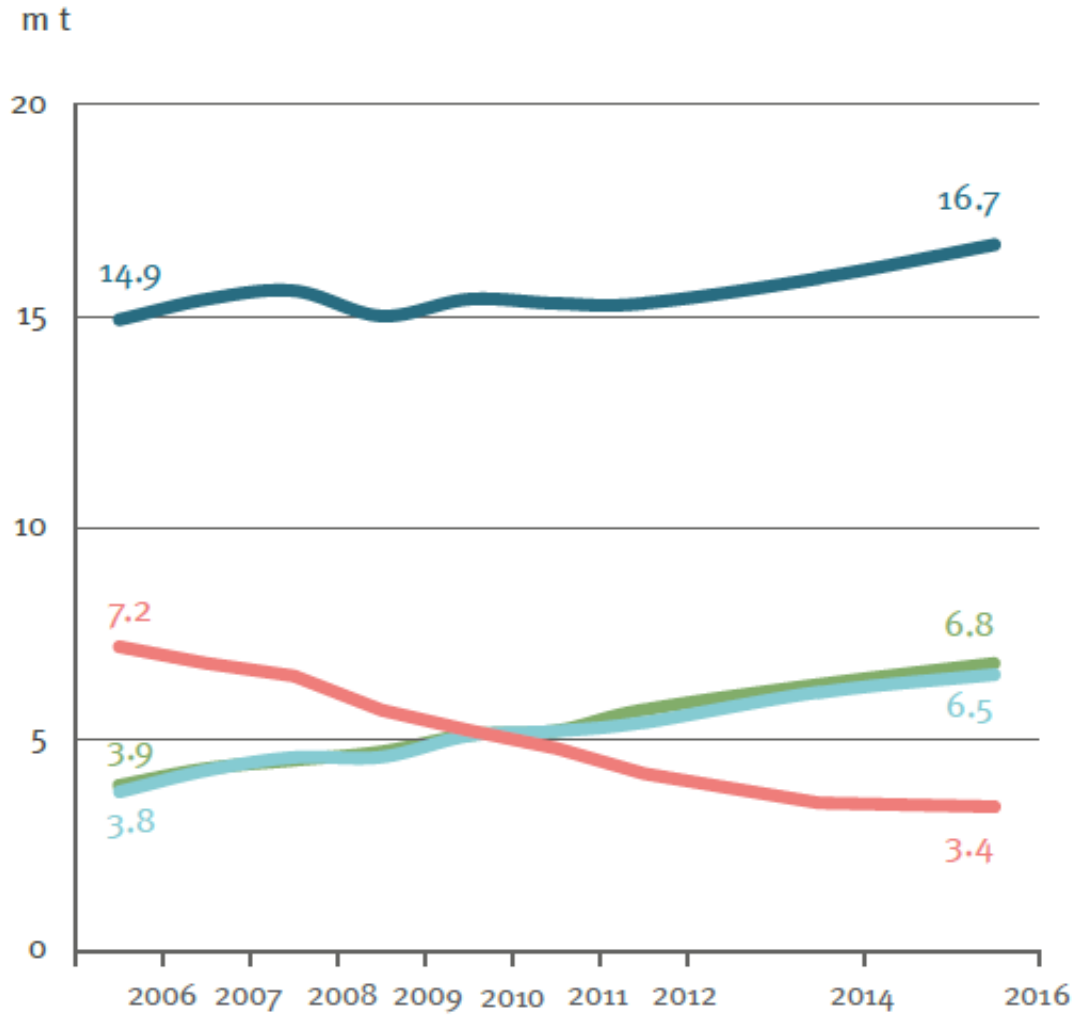
Source: http://www.bio-based.eu/market_study/media/16-12-16-Bio-based-Building-Blocks-and-Polymers-short-version.pdf

European plastics demand by polymer type



Source: https://www.plasticseurope.org/application/files/4315/1310/4805/plastic-the-fact-2016.pdf

Evolution of plastic packaging waste treatment





Source: https://www.plasticseurope.org/application/files/5715/1717/4180/Plastics_the_facts_2017_FINAL_for_website_one_page.pdf

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HORIZON 2020

MYPACK

Project ID: 774265
Funded under: H2020-EU.3.2.2.3. - A sustainable and competitive agri-food industry

Best markets for the exploitation of innovative sustainable food packaging solutions

From 2017-11-01 **to** 2021-04-30, ongoing project

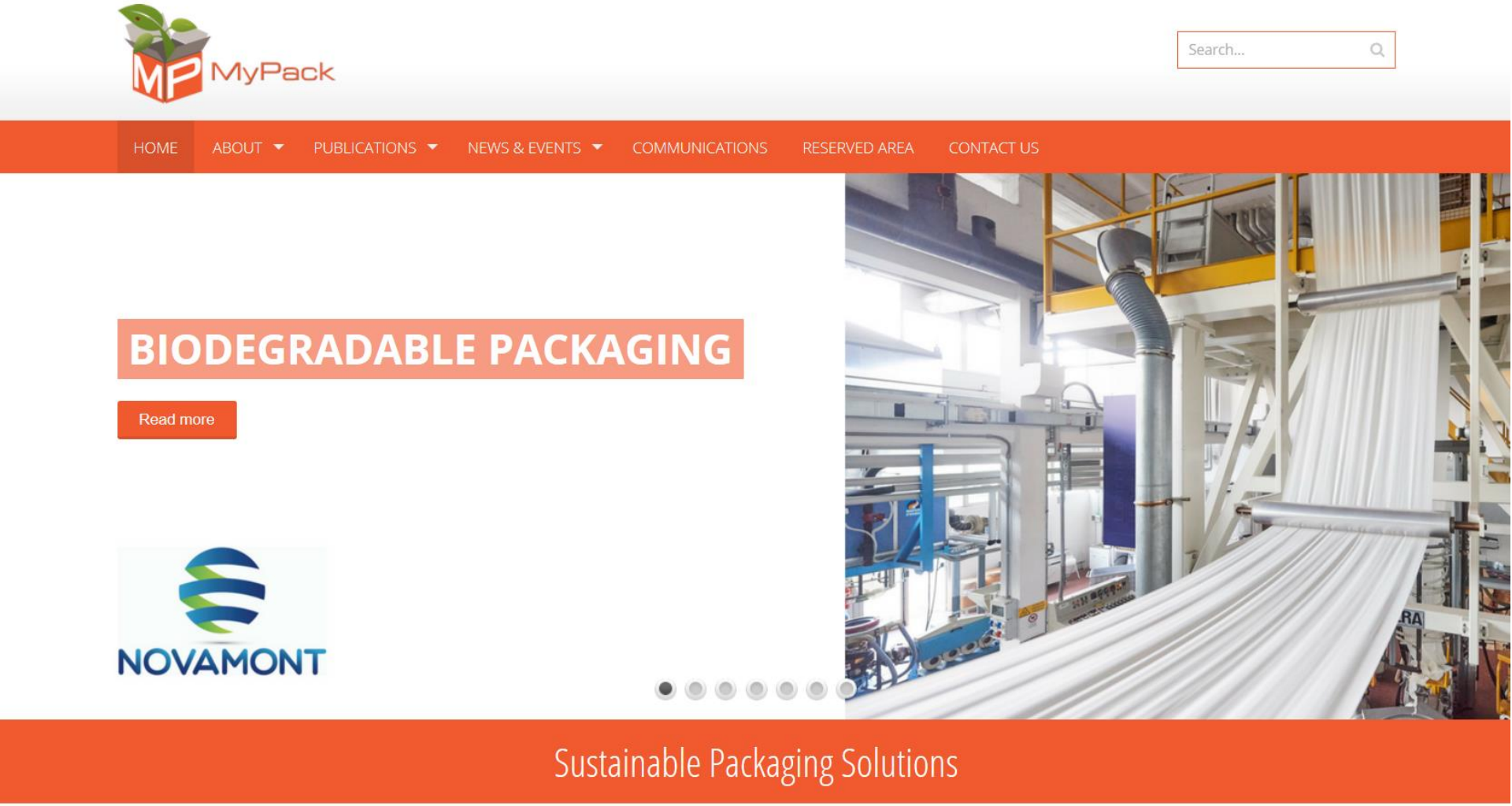
Project details

Total cost:	**Topic(s):**
EUR 5 709 892,50	SFS-35-2017 - Innovative solutions for sustainable food packaging
EU contribution:	**Call for proposal:**
EUR 4 649 860,91	H2020-SFS-2017-1 See other projects for this call
Coordinated in:	**Funding scheme:**
France	IA - Innovation action

Objective

Mypack general objective is to help sustainable food packaging technologies to reach or to extend their market. It will provide general guidelines to select the best market for a new technology and to ensure the best commercial development, through (i) the best environmental efficiency (direct impacts of packaging, food waste impacts, optimized recycling composting combusting end life, preserved consumer health), (ii) the best consumer acceptability, and (iii) an optimized i...

https://www.mypackfood.eu/



KICK-OFF MEETING
11-12 December 2017 - Paris, France







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Bioeconomy & Consumers
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Cyprus

Objectives

Objective	Description
1	PROMOTE THE COMMERCIAL DEVELOPMENT OF BIODEGRADABLE AND COMPOSTABLE PACKAGING
2	PROMOTE THE DEVELOPMENT OF PACKAGING FROM RENEWABLE RESOURCES
3	THE COMMERCIAL DEVELOPMENT OF ELABORATED (HIGH BARRIER AND ACTIVE) PACKAGING TECHNOLOGIES

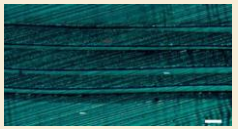
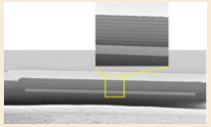
BARRIERS

- Industrial feasibility
- Macroeconomic barriers
- Regulation barriers
- Consumer barriers
- Environmental barriers

EXPLORE THE BARRIERS

- **to improve market readiness**
- **to find the best markets**

Packaging technologies

Technology	Description	
TEC 1 NOVAMONT TRL 6-7	Bio-based and biodegradable materials and multilayer film technology	
TEC 2 PIMM TRL 7	High oxygen by microlayer multiplication technology, and by replacing EVOH by PA	
TEC 3 NATUREPLAST TRL 8	Heat Resistant PLA (rigid packaging) and Soften PLA (film applications)	
TEC 4 UNIBAS TRL 7	Micro technologic insertion conferring breathing properties	
TEC 5 FURSTGROUP TRL 8	SiOx inert barrier	
TEC 6 WIPAK TRL 6	Antimicrobial packaging	
TEC 7 UHOH TRL 5	PEF renewable substitute of PET	

End-user demands

Technology	Activity
HIPP	Baby food
LEA NATURE	Organic products
BARBASTATHIS	Ready-to-eat salads

Key words of specifications

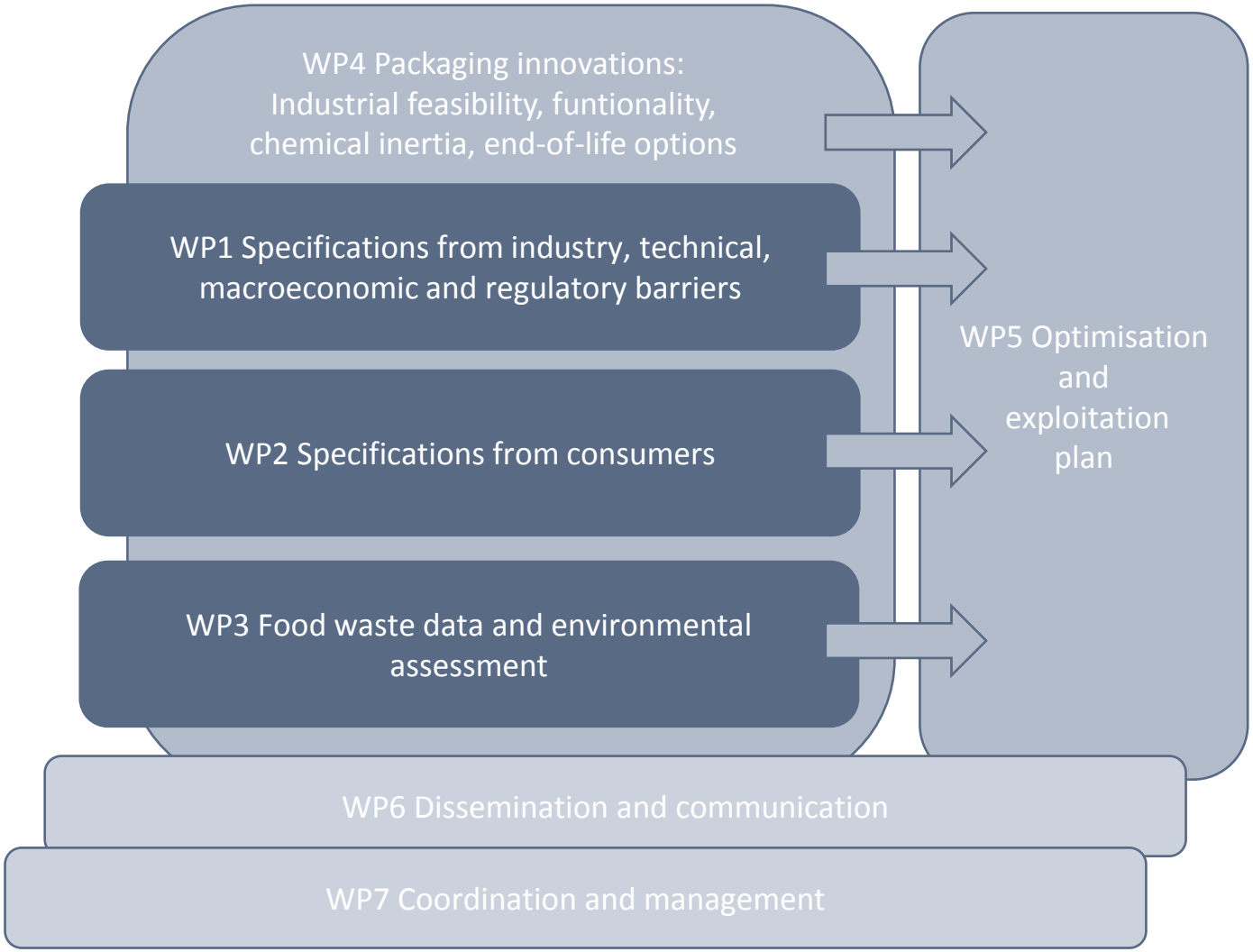
- Adapted to existing food process
- Better environmental footprint
- Better food quality
- Biodegradable or compostable
- Safe, safer
- Consumer expectations
- Cost considerations
- Adapted to retail chain







Conceptual framework



Focus on specifications from industry

MyPack

MyPack AIMS TO CONVERT



INTO SIMPLE TOOLS

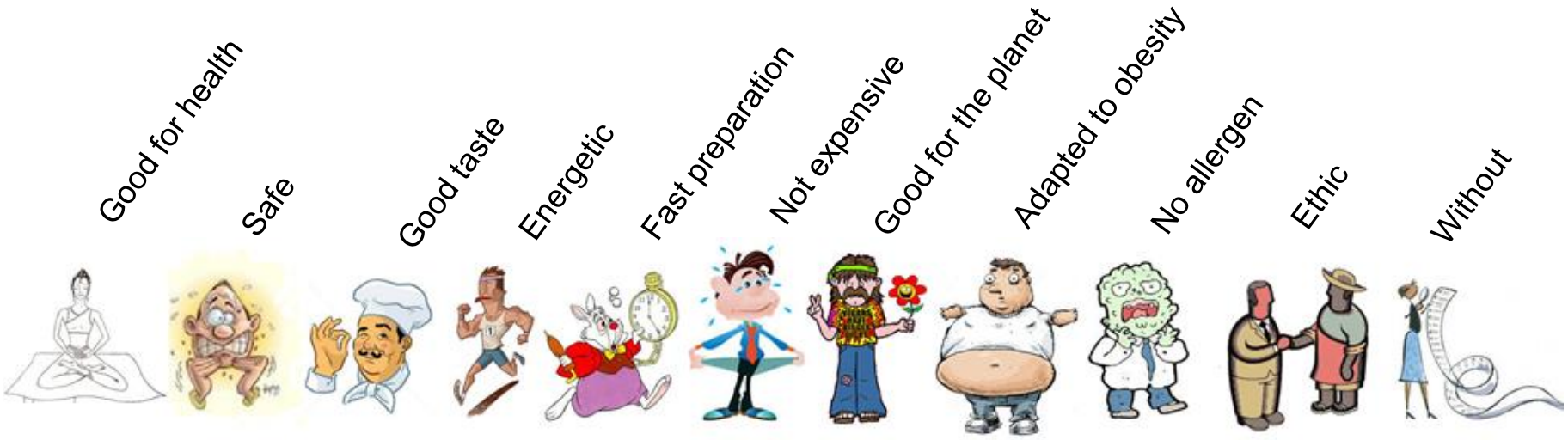
Easy to check the readiness of the technology for a given application

Easy to find the best market to start the development of the technology

Task 1.1: Specifications from packaging industries
Task 1.2: Specifications from agro-industries (Baby food products, fresh cut vegetables, organic food products)
Task 1.3: Specifications from retailers
Task 1.4: Macroeconomic and regulatory barriers, legislation and end of life solutions

WP2 Specifications from consumers

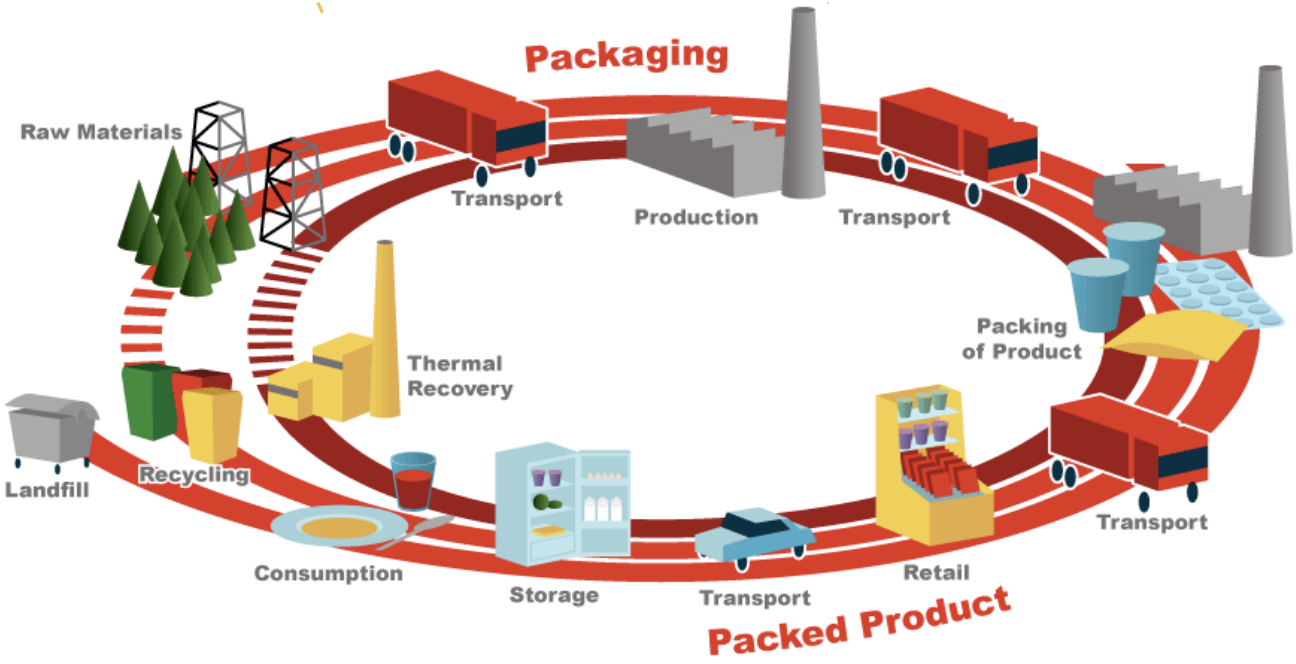
- Each consumer is a different combination of elementary expectations



→ Find relationships between consumer profiles, localisation, and their acceptability of new technologies

WP3 Food waste and LCA

LCA BARRIER	Description
Availability of food waste data?	Food industry and retailers don't want to communicate this information which is essential to evaluate the impacts of a packaging-food system
Availability of the relationships between shelf life and food waste?	It is generally admitted that an increase of the shelf life EQUALS a decrease of food waste; is this assumption correct?
Disadvantages in LCA evaluation of biodegradable material technologies?	A biodegradable packaging has a bad evaluation by LCA because, compared to incineration end-of-life, biodegradation leads to the same CO_2 emission but without energy recovery



Tool structure: Decision tree which will be exploited by a software

Step 1: from a given technology and 1 targeted application, use the simplified specifications to get a score

Step 2: from a given technology, determine the best applications to target

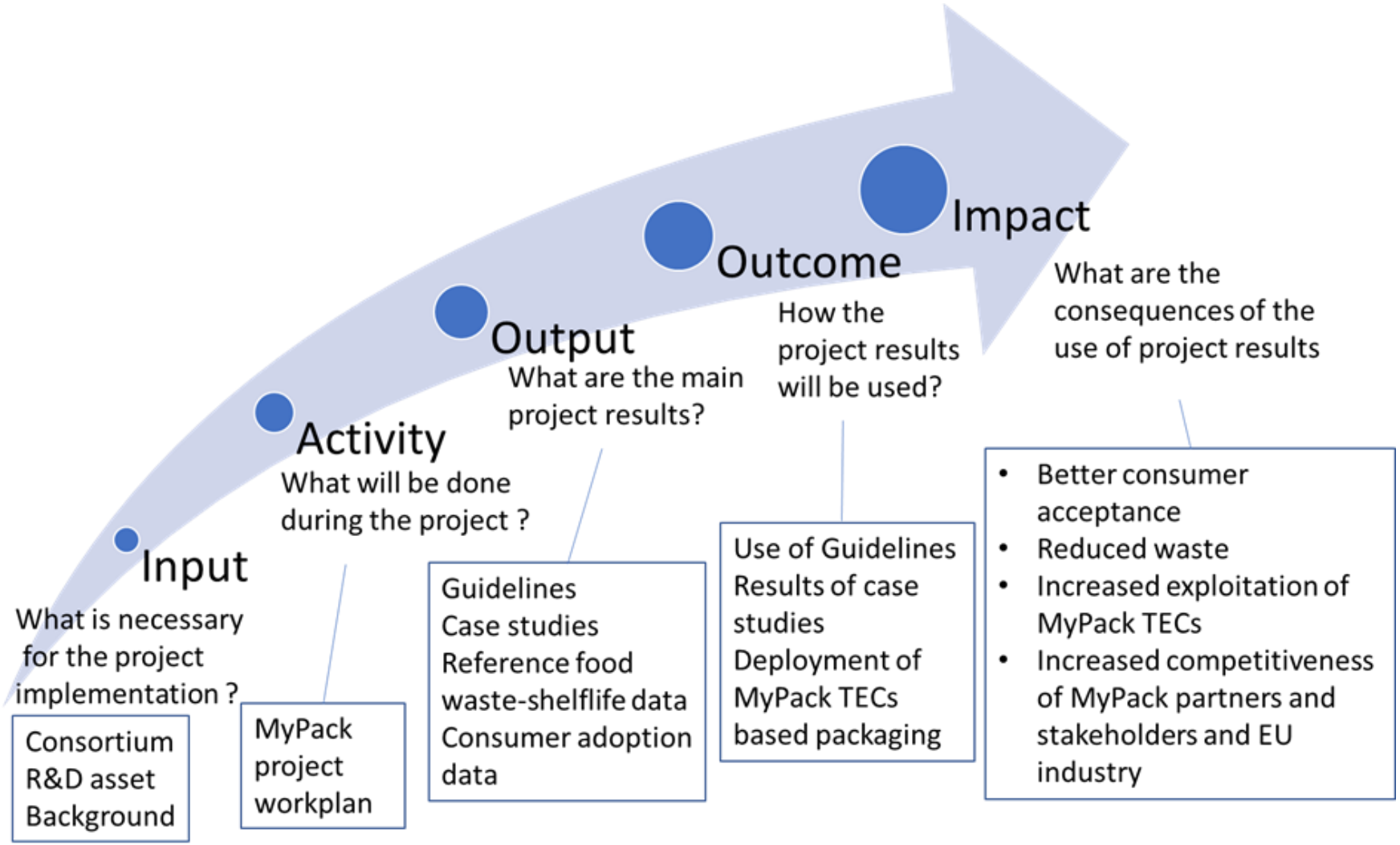
	critical property	values	values or remarks	score	score de référence	coeffic
2						
3	product sold in heterogeneous pallet ?	yes /no	yes	5	5	
4	optimized for euro palet 80 120 ?	yes /no	not relevant	0	1	
5	need of intercalation sheets ?	yes /no		0	1	
6	need of stretch palletising film ?	yes /no		0	1	
7	non self supporting product (or secondary packed product) ?	yes /no		0	1	
8	self supporting product (or secondary packed product)?	yes /no	not relevant	0	1	
9	resistance to vibrations tested ?	yes /no	not relevant	0	1	
10						
11				0	1	

yes
no
I don't know
not relevant

- Answers leading to an increase of the score (Two possibilities: maximum increase if the evaluation was done and led to positive result, and lower score if evaluation was done but with a negative result)
- Answers leading to a zero score
- The possibility to consider the item is “not relevant”

global score	total	max (including "not relevant")
20	30	42

MYPACK expected impacts

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