

# UPLIFT PROJECT

by Cristiano Varrone



UPCYCLING BIO-PLASTIC OF FOOD & DRINK PACKAGING

# CE-BIOTEC-09-2020 - Upcycling Bio Plastics of food and drinks packaging (RIA)

## MAIN SCOPES OF THE CALL

- Design of bio-plastics that are recyclable and/or bio-degradable
- Develop new biotechnologies, based on enzymes or enzyme combinations and microorganisms, for improved recycling or biodegradation of plastics
- Develop novel standards and certification schemes applicable to packaging materials made from recyclable and biodegradable bio-plastics
- Include Social Sciences and Humanities (SSH)
- Take a systemic approach and involve cooperation among actors in the supply chain, from producer to final consumer

## EXPECTED IMPACT

- 60% food and drink packaging is upcycled by 2030
- 60% of the plastics used for packaging of foods and drinks produced from renewable sources
- New and upgraded waste recycling facilities to facilitate recycling via biotechnological or biochemical methods
- Novel standards and certification schemes to be applied together with market pull measures such as public procurement and tax exemptions

# UPLIFT - sUustainable PLastics for the Food and drink packaging induSTry



Nº	PARTICIPANT ORGANISATION NAME	SHORT NAME	COUNTRY	TYPE
1	Aalborg Universit (Coordinator)	AAU	Denmark	RTO
2	Forschungszentrum Julich GmbH	FZJ	Germany	RTO
3	Austrian Centre of Industrial Biotechnology GmbH	ACIB	Austria	SME
4	Technical University of Denmark	DTU	Denmark	RTO
5	Lunds Universitet	LUND	Sweden	RTO
6	TECNARO GmbH	TECNARO	Germany	SME
7	Bio-Mi d.o.o	BIO-MI	Croatia	SME
8	Bio Base Europe Pilot Plant	BBEPP	Belgium	SME
9	Leibniz-Institut fuer Naturstoff-Forschung und Infektionsbiologie - Hans Knoell Institut	HKI	Germany	RTO
10	Asociación de Investigación de Materiales Plásticos y Conexas	AIMPLAS	Spain	RTO
11	University College Dublin	UCD	Ireland	RTO
12	Bioplastech Ltd.	BIOPLASTECH	Ireland	SME
13	Sustainable Innovations Europe SL	SIE	Spain	SME
14	Rheinisch-Westfaelische Technische Hochschule Aachen	RWTH	Germany	RTO
15	I/S Vestforbrænding	VFB	Denmark	LE

## UPLIFT consortium



15 Partners from 8 different Countries

## Advisory Board

Nº	ADVISORY ORGANISATION NAME	COUNTRY	TYPE	ACTIVITY
1	Corbion	Netherlands	LE	To support with conversion and the techno economic evaluation
2	Novozymes	Denmark	LE	Engineering of the enzymes and microbes for depolymerising plastic
3	Tetra Pak	Sweden	LE	Sharing requirements for end-producer for Food & Drink packaging
4	Pack4Food	Belgium	NPO	Food & Drink packaging industries' point of view



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# UPLIFT - sUustainable PLastics for the Food and drink packaging induSTry

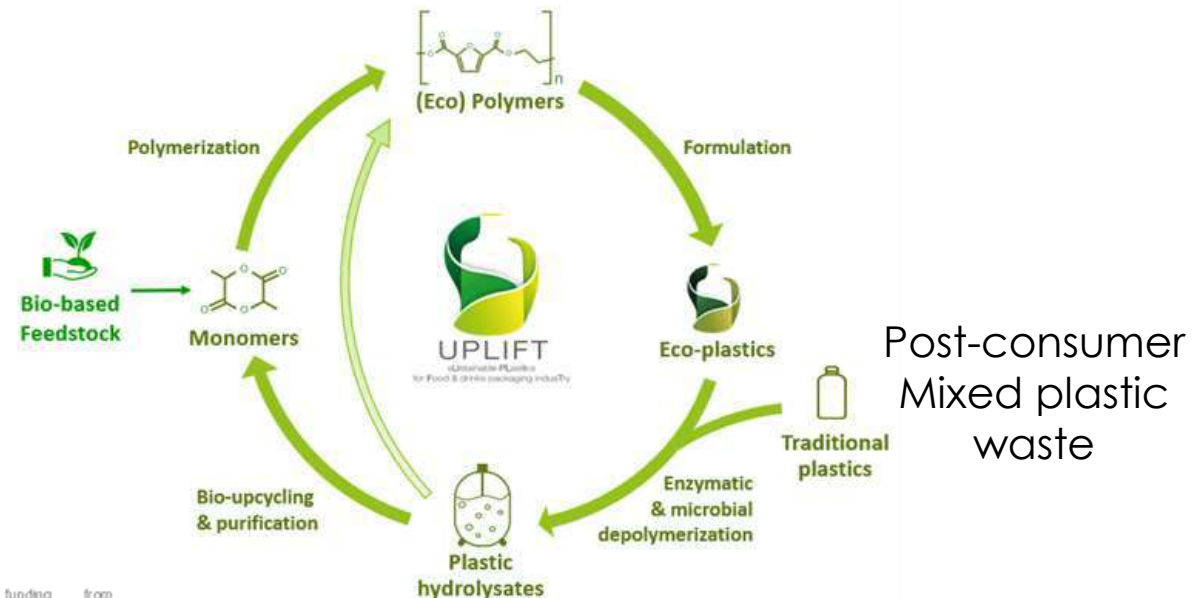


## PROJECT OVERALL CONCEPT

- Couple bio-depolymerization with the bio-based building blocks to obtain smarter carbon-neutral eco-plastics (Integrate the biological upcycling within already existing and more mature recycling processes to reach large volumes)

## PROJECT AMBITION

- Redesign the F&D packaging value-chain by introducing chemoenzymatic recycling and eco-designed materials, to back up the transition of the plastic packaging sector in its way to 2030 goals.

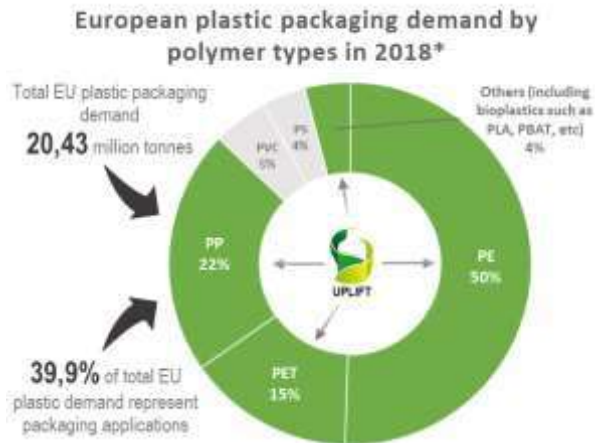


# UPLIFT - Sustainable PLastics for the Food and drink packaging industry

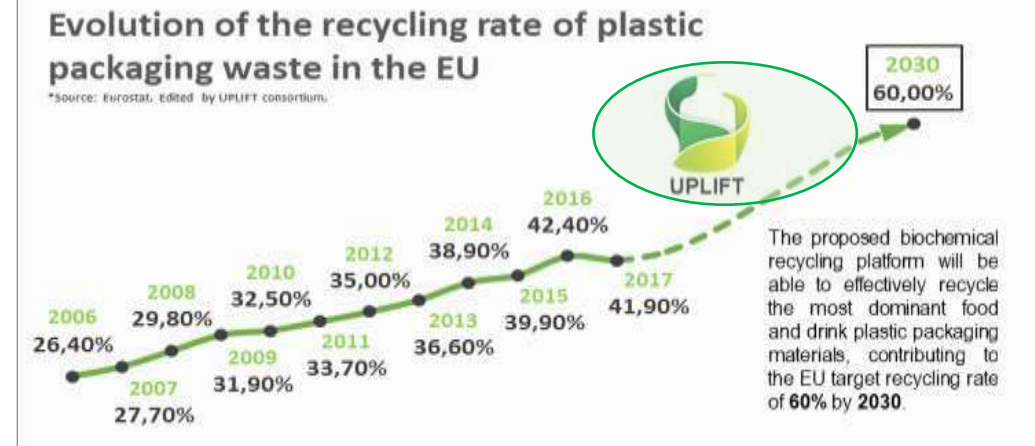


## EXPECTED IMPACT

- Contribute in the medium – long term (5 to 10 years after the project ) to a higher share of bio-based and upcyclable packaging in the sector by 2030.
- The UPLIFT biochemical upcycling platform will be able of handling the currently dominant plastic materials, which are expected to also represent the highest market share by 2030.



Distribution of the EU plastic packaging demand by polymer types

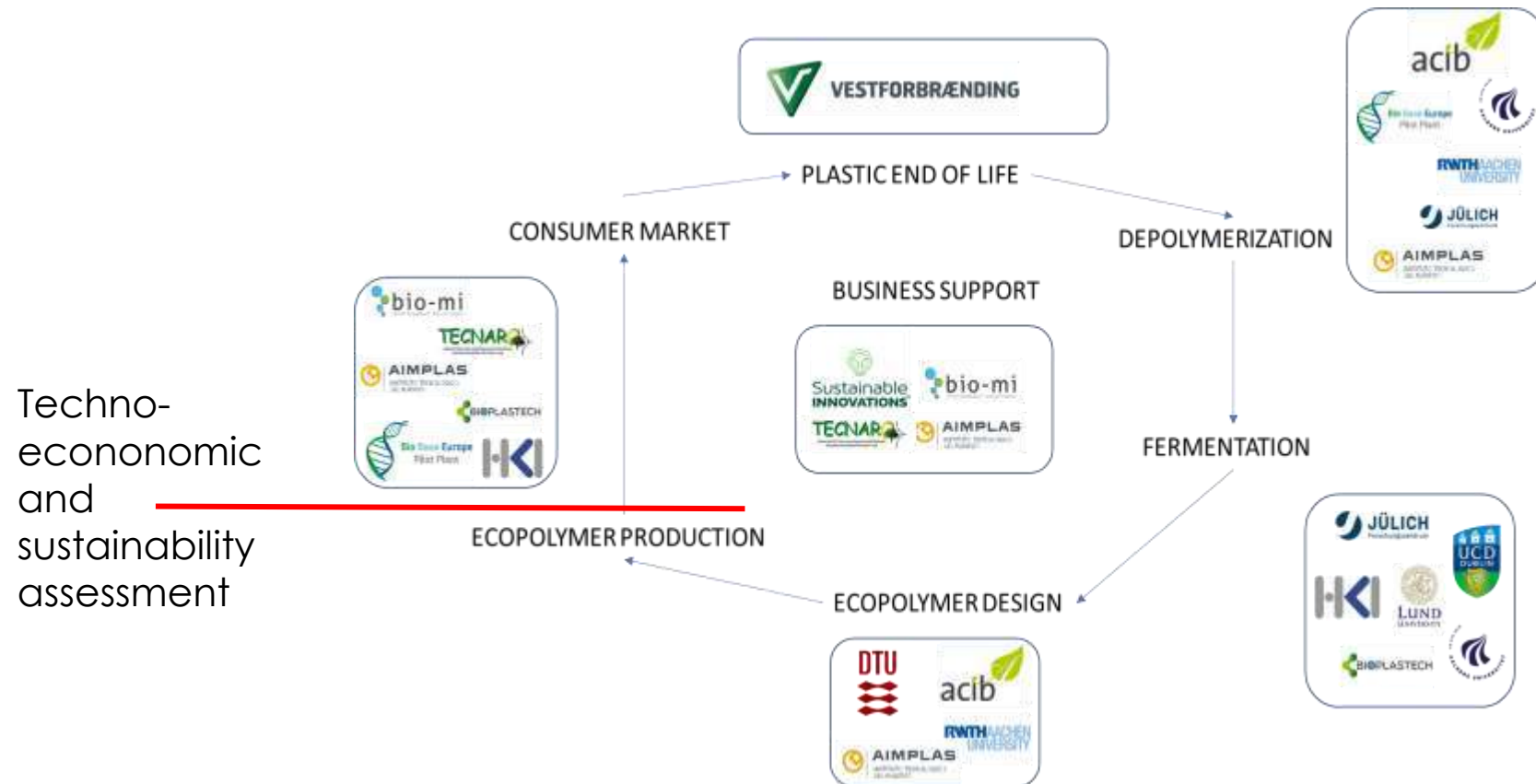


Evolution of the recycling rate of plastic packaging waste in the EU

# UPLIFT - sUustainable PLastics for the Food and drink packaging industry



## How will UPLIFT reach this goal?

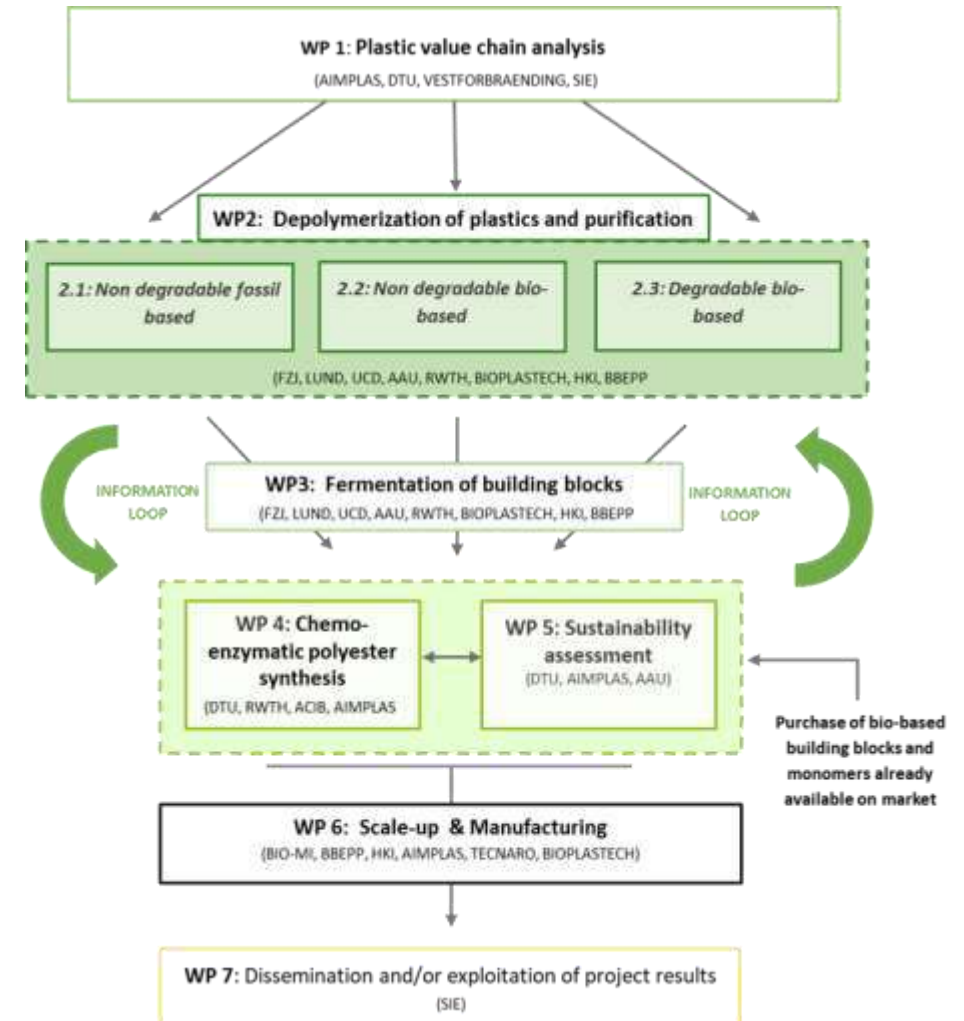


# UPLIFT - sUustainable PLastics for the Food and drink packaging industry



## WP Organization

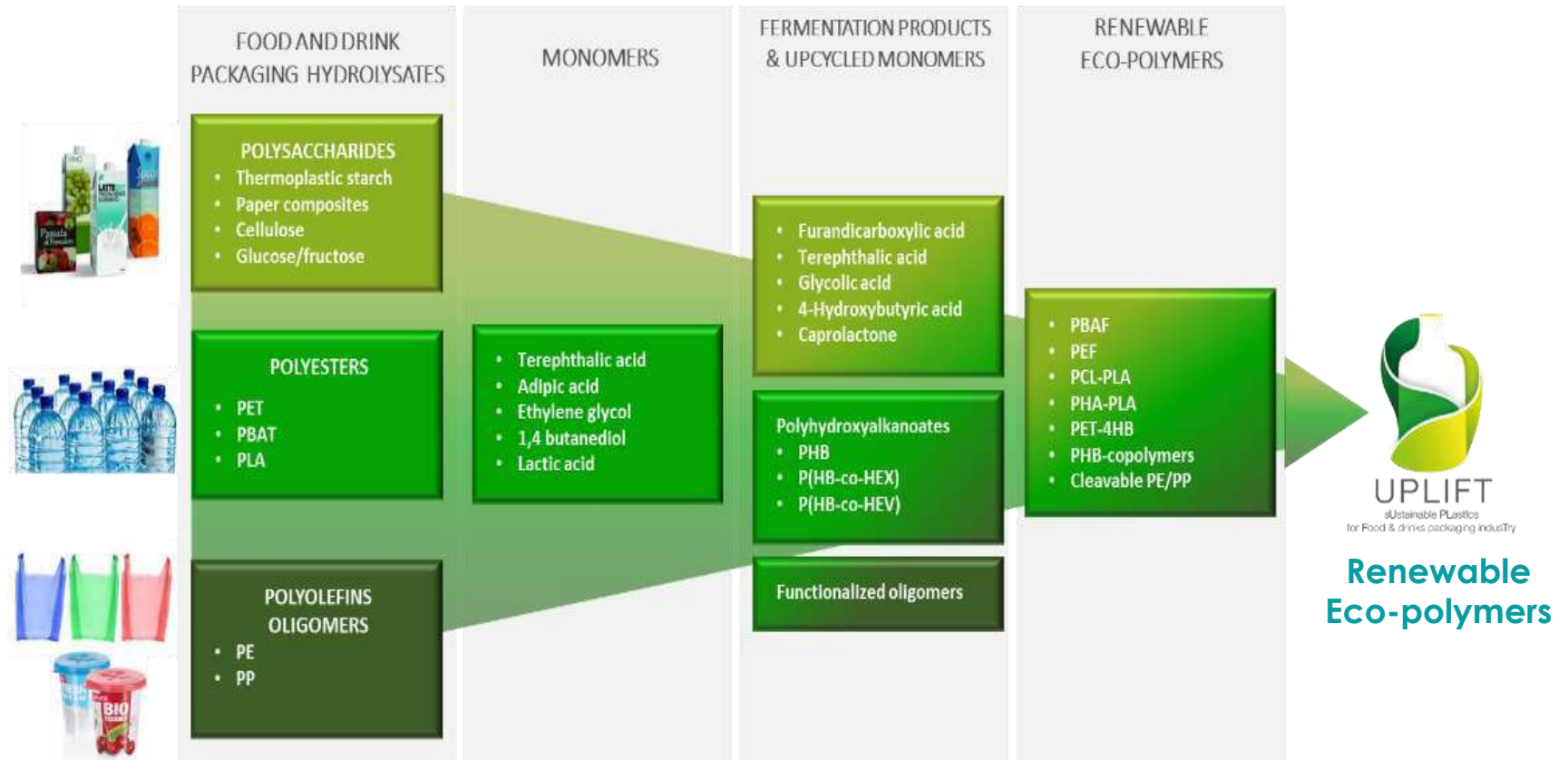
- WP1: Food&drink packaging value chain
- WP2: Depolymerization and purification
- WP3: Fermentation of building blocks
- WP4: Chemo-enzymatic polyester synthesis
- WP5: Sustainability assessment
- WP6: Scale-up and manufacturing
- WP7: Dissemination and exploitation of results
- WP8: Management



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## UPLIFT Material Flow



Depolymerization and purification

Fermentation and Upcycling

Eco-design

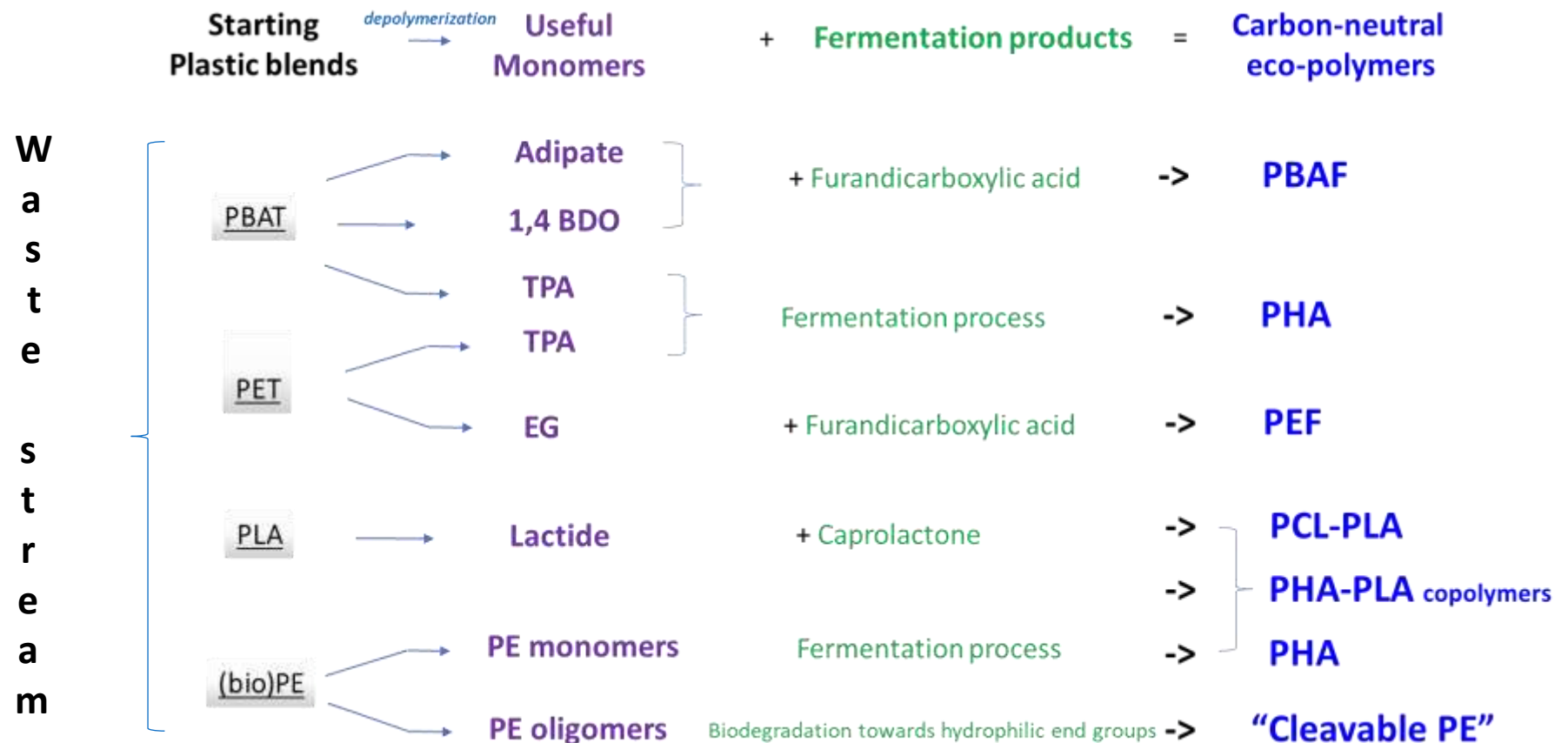




# UPLIFT - sUustainable PLastics for the Food and drink packaging industry

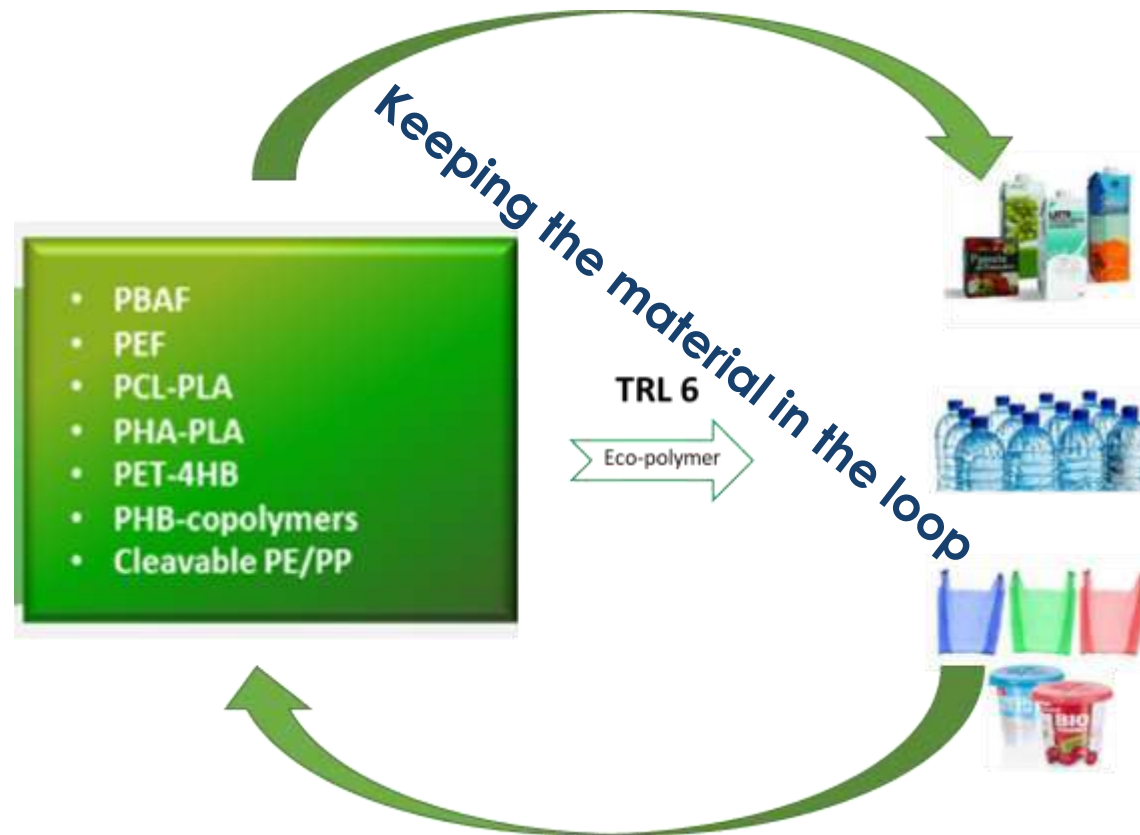


## UPLIFT pathways: towards a “plastic biorefinery”





## Towards a plastic circular economy



# UPLIFT - sUustainable PLastics for the Food and drink packaging industry



## The AAU Team



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### AALBORG UNIVERSITY





UPLIFT Official Video:

<https://www.youtube.com/watch?v=jdXl1Dmrkvo&t=4s>



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sustainable PLastics  
for Food & drinks packaging industry



**UPLIFT - PLASTICS**



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