



WaysTUP!

VALUE CHAINS FOR DISRUPTIVE TRANSFORMATION OF URBAN
BIOWASTE INTO BIOBASED PRODUCTS IN THE CITY CONTEXT

WHY WaysTUP?

- **Turning urban biowaste into a resource is major key to a circular economy**
- **Urban biowaste is an abundant source** for the production of alternative biobased products, but is largely unexploited

- the complexity,
- heterogeneity ,variability
- and the purity of the urban biowaste
- the lack of feedstock security



To overcome this, there is a need to focus on the full value chain of biowaste, promote business models which create a setting where all parties involved perceive a win-win situation.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 818308.



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WHY WaysTUP?



To overcome the barriers:

- circular economy needs to go far beyond the pursuit of waste prevention and waste reduction
- to inspire technological, organisational and social innovation across and within value chains.
- It demands **a system change** with parallel actions along the value chain rather than a purely sector and/or product focused approach, regulatory, institutional, and cultural changes.



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WaysTUP!:

Transforming urban wastes into valuable products



WaysTUP! will address these issues by demonstrating innovative technologies and new business models, contributing to a change of mind-set of citizens and policy makers through an interdisciplinary framework.

Aims to establish new value chains for urban bio-waste. The project will display a range of new products produced from urban bio-waste to bio-based processes starting from different feedstocks,

The project is expected to produce a behavioral change in citizens and local communities, improving and changing longstanding perceptions of urban bio-waste during its implementation. This will overall contribute to a more circular economy.



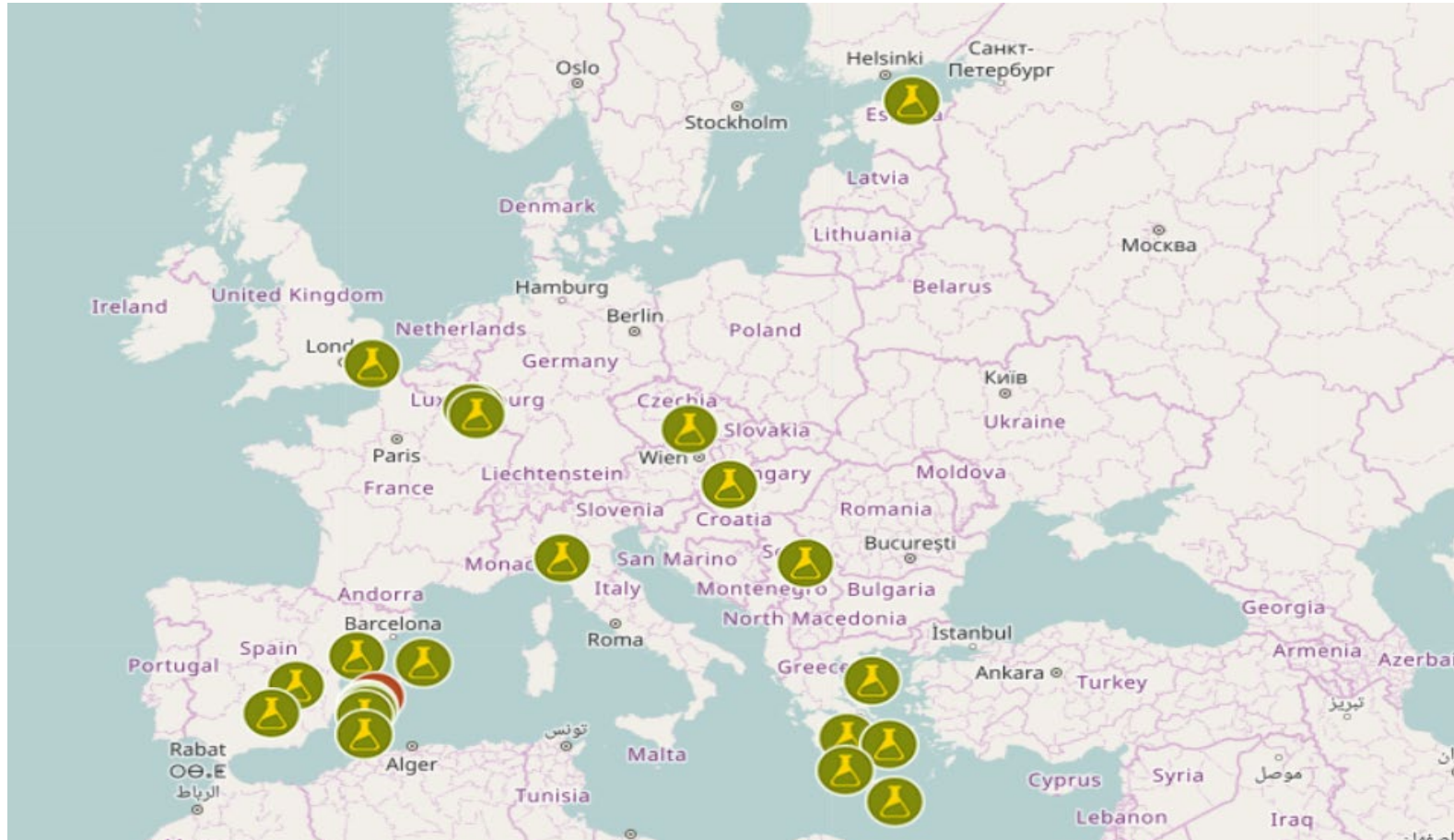
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Comsortium overview map



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The beginning: September 2019

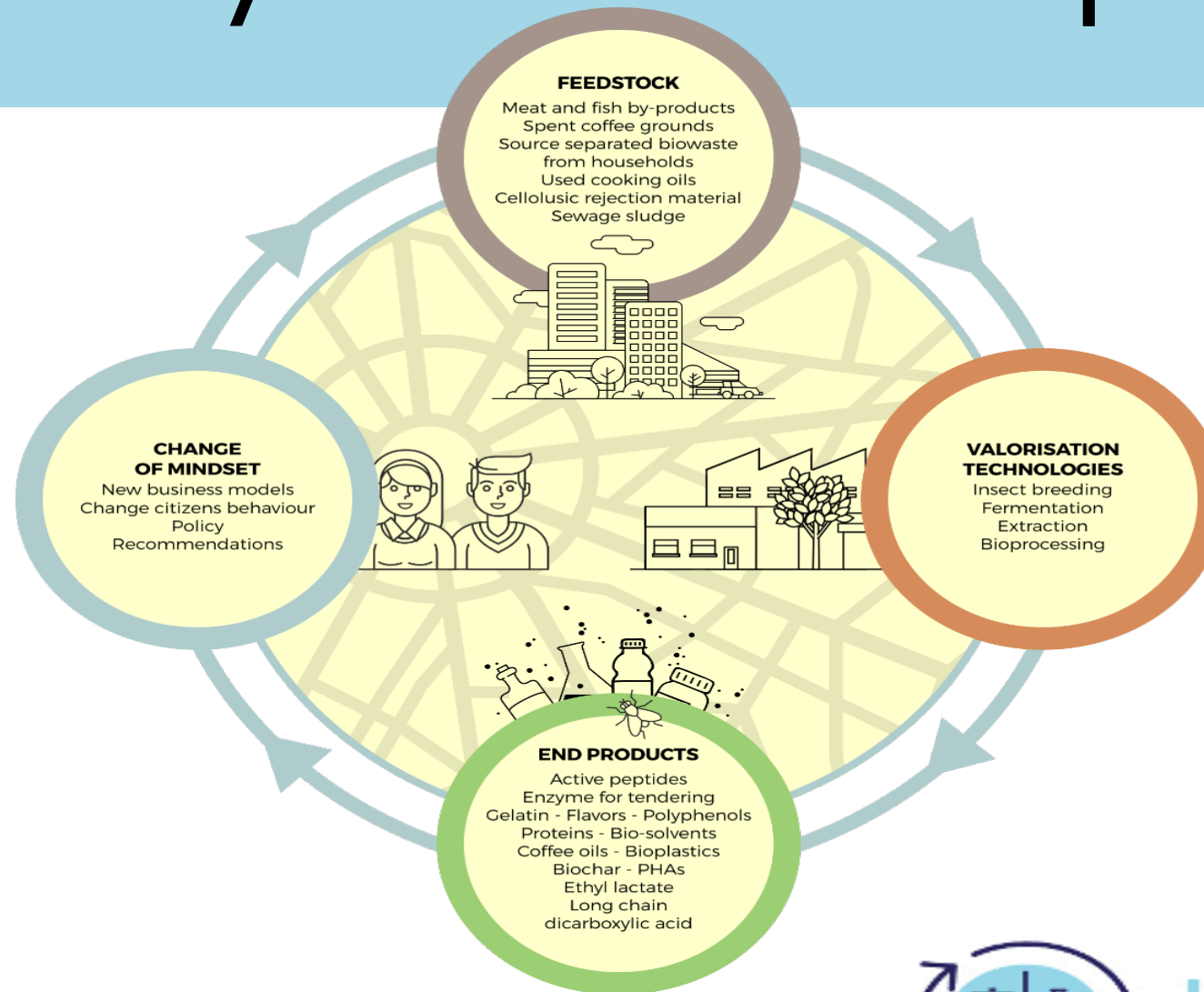


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WaysTUP! concept



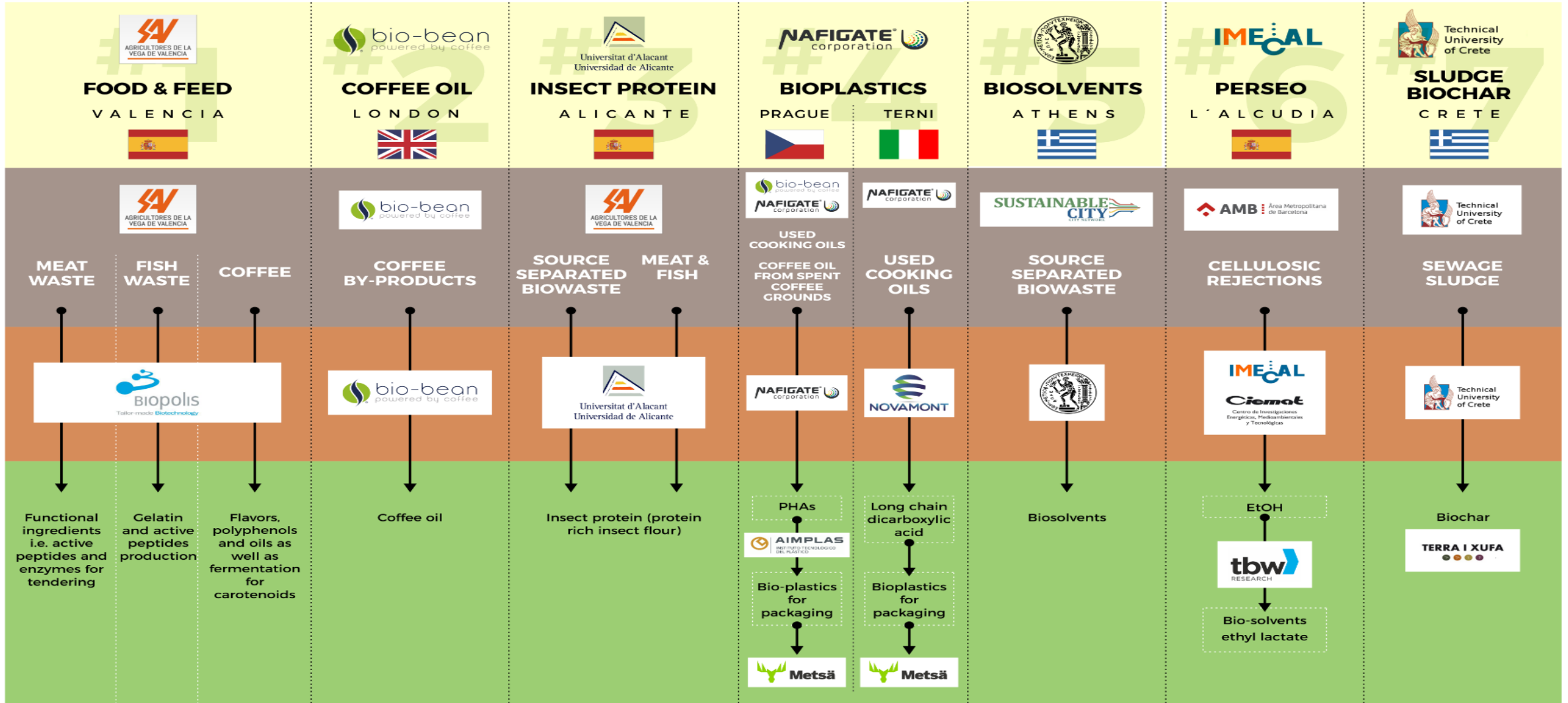
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Pilots' overview



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Pilot demonstrations

7 pilots

10 new
value chains



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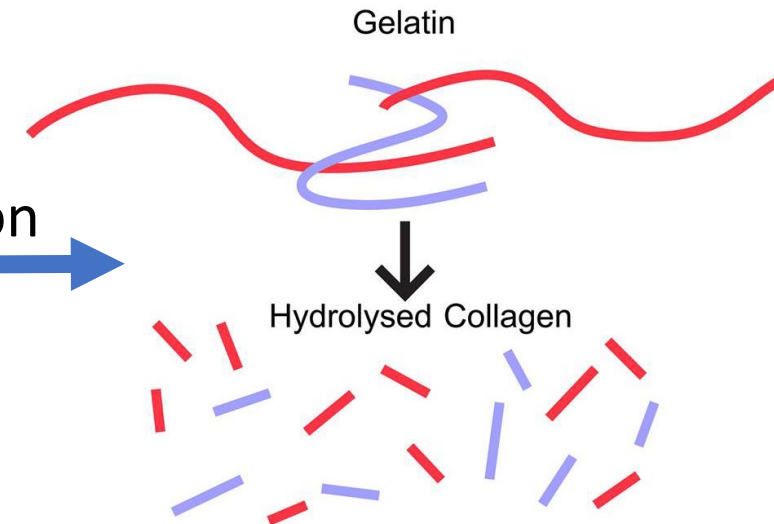
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VALUE CHAIN 1.	Feedstock type	Technology solution/PILOT	End-products
	Meat waste	Fermentation/ PILOT 1	Functional ingredients i.e. active peptides & enzymes for tendering
	Feedstock providers	Technology solution providers	End-user/Industry
	SAV	BIOPOLIS	Consumers, NS, ADMW

Meat by-products



Extraction + hydrolysis + nano-filtration



VALUE CHAIN 2.	Feedstock type	Technology solution/PILOT	End-products
	Fish waste	Fermentation/ PILOT 1	Gelatine and active peptides production
	Feedstock providers	Technology solution providers	End-user/Industry
	SAV	BIOPOLIS	Consumers, NS, ADMW

Fish by-products



Extraction + ultra-filtration



Gelatine



VALUE CHAIN 3.	Feedstock type	Technology solution/PILOT	End-products
	Spent coffee grounds	Fermentation/ PILOT 1	Flavours, polyphenols, oils, carotenoids
	Feedstock providers	Technology solution providers	End-user/Industry
	SAV	BIOPOLIS	Consumers, NS, ADMW

Spent coffee grounds



Fermentation



Carotenoids



VALUE CHAIN 4.	Feedstock type	Technology solution/PILOT	End-products
	Coffee waste	Extraction/ PILOT 2	Coffee oil
	Feedstock providers	Technology solution providers	End-user/Industry
	BIOBEAN	BIOBEAN	Chemical industry, plastic industry

Spent coffee grounds



Supercritical extraction with CO₂



Coffee oil



VALUE CHAIN 5.	Feedstock type	Technology solution/PILOT	End-products
	Source separated biowaste	Insect breeding/ PILOT 3	Protein-rich flour for feed
	Feedstock providers	Technology solution providers	End-user/Industry
	SAV	UA	Feed industry

Fish and meat by-products



Insect breeding



Insect protein



VALUE CHAIN 6.	Feedstock type	Technology solution/PILOT	End-products
	Used cooking oils	Fermentation/ PILOT 4	PHAs, long chain dicarboxylic acid, bioplastics
	Feedstock providers	Technology solution providers	End-user/Industry
	AMB	AIMPLAS, NFG, NVMT	Consumers, plastic industry

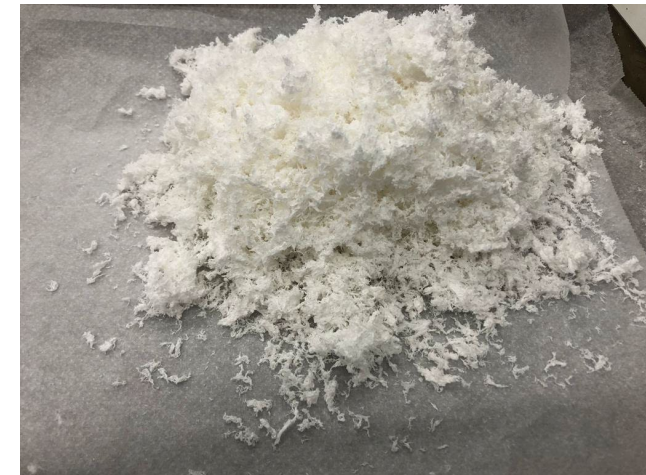
Used cooking oils



Fermentation



PHB



VALUE CHAIN 7.	Feedstock type	Technology solution/PILOT	End-products
	From waste coffee grounds	Fermentation/ PILOT 4	PHAs, long chain dicarboxylic acid, bioplastics
	Feedstock providers	Technology solution providers	End-user/Industry
	BIOBEAN	AIMPLAS, NFG, NVMT	Consumers, plastic industry

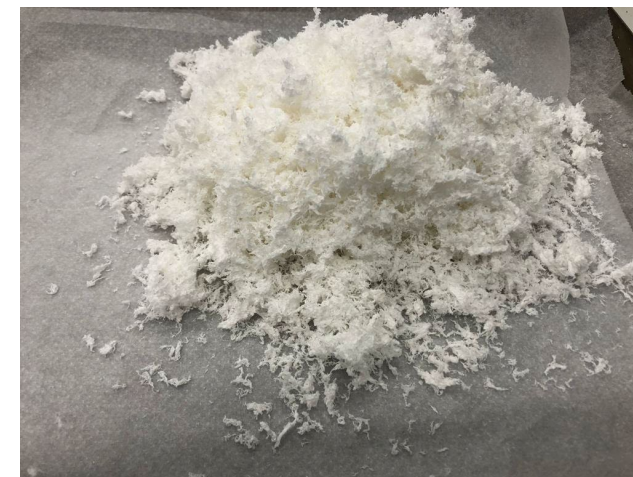
Coffee oil



Fermentation



PHB



VALUE CHAIN 8.	Feedstock type	Technology solution/PILOT	End-products
	Source separated biowaste	Fermentation/ PILOT 5	Biosolvents
	Feedstock providers	Technology solution providers	End-user/Industry
	SUST	NTUA	Chemical industry

Separated organic fraction



Fermentation



Bio-ethanol



VALUE CHAIN 9.	Feedstock type	Technology solution/PILOT	End-products
	Cellulosic rejections	Fermentation/ PILOT 6	Bioethanol, Biosolvents
	Feedstock providers	Technology solution providers	End-user/Industry
	AMB	IMECAL, CIEMAT, TBWR	Chemical industry

Cellulosic rejections



Fermentation



Bio-ethanol



VALUE CHAIN 10.	Feedstock type	Technology solution/PILOT	End-products
	Sewage sludge	Slow pyrolysis/ PILOT 7	Biochar
	Feedstock providers	Technology solution providers	End-user/Industry
	TUC	TUC	TiX, farmers

Sewage sludge



Slow pyrolysis



Biochar





THE NEW VALUE
CHAINS
will achieve
improved citizens'
perception on urban
bio-waste as a local
resource,



New profitable
BUSINESS MODELS
& organizational
models
Will be developed



POLICY CHANGES
will be promoted
to public
authorities.



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Encourage behavior change towards participation in bioeconomy

Aim:



Improving the current perception of citizens and local communities on urban biowaste as a local resource;



Enhancing the active participation of citizens in separate collection initiatives of urban bio-waste



Improving customer acceptance of urban biowaste derived products, including food and feed ingredients.

→ The outcome **will serve as a basis for the development of marketing strategies for producers.**



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Policy implications and recommendations in WaysTUP!

- **Objective:**

The overall aim is to support the successful incorporation of integrated system innovation approaches aiming the valorisation of urban biowaste into existing and future local, national and EU-level policies



Assesment of policy framework

– Policy baseline analysys



Guidance for cities on adopting new organizacional models



Evidence – based EU level policy recommendations

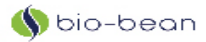
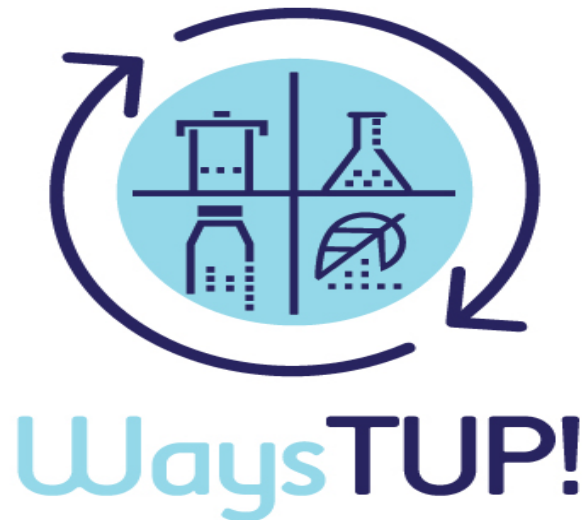


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THANK YOU!



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