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CIRCE2020 - Introduction

Project Aims

- Establish circular economy in the productive sector in pilot regions
- Identify the regional needs of the productive sector to implement circular economy
- Develop tailored business models considering the entire cross-value chain
- Close the circular economy loop in two pilot studies
- Transfer regional achievements to other regions

Project Structure

- Duration: 07.2017-06.2020
- Funding by the Central Europe Programme
- 8 Partners: waste management companies, regional environmental authorities, research institutions, regional development companies
- 5 countries: Italy, Austria, Poland, Hungary, Croatia
- 5 pilot regions: Province of Tyrol (Austria), Upper-middle Brenta Basin (Italy), Province of Wielkopolska (Poland), Tatabánya Industrial Park (Hungary), Split-Dalmatia County (Croatia)

Set up & Approach

Parallel work on the three main steps:

1. Status quo assessment
2. Material flow analysis, LCA and LCC
3. Implementation of pilot actions

Task 1.1: Assessment of the status quo of waste management in the pilot regions

Task 1.2: Identifying relevant waste streams

Task 2.1: Material flow analysis of identified waste streams

Task 2.2: Product environmental footprint, life cycle cost analysis, technology readiness rating

Task 3: Closing the loop of the most promising waste streams

Figure 1: Tasks and their sequence of CIRCE2020.

Closing the loop: establishing industrial symbiosis

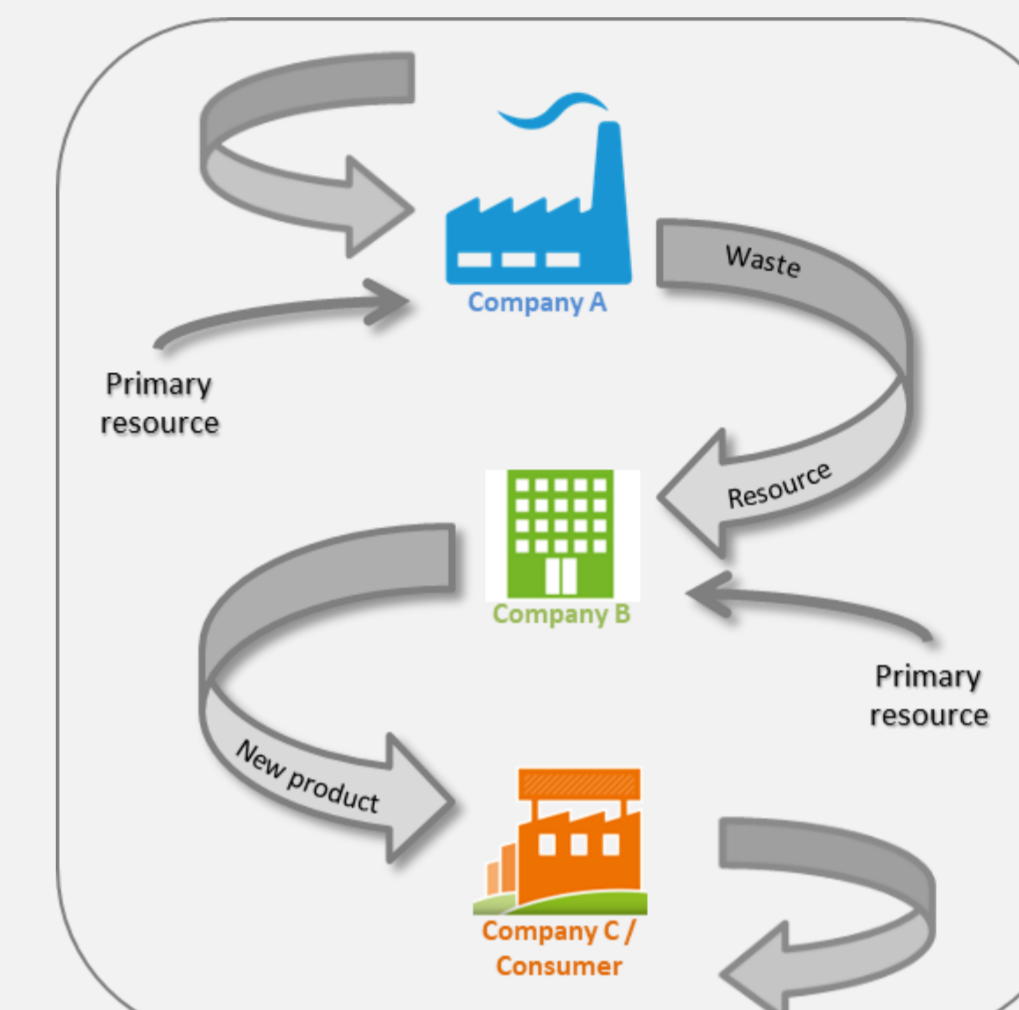


Figure 2: Schematic sketch of the planned industrial symbiosis network (Task 3).

Mid Term Results



Identification of relevant waste streams

Evaluation

Waste Streams	Waste producers	Circular solution idea
Waste wood	several	Activated carbon
Sheep's wool, minor quality	Sheep farmers, breeding associations	Organic fertilizer pellets
Non-saleable vegetables (rejects)	Farmers	Convenience food
Old bread	Bakeries	Animal feed
Organic wastes	Supermarkets, restaurants, hotels	Production of regional soil
Grease trap waste	Restaurants, hotels	Biodiesel
Sewage sludge	Waste water treatment plants (WWTPs)	Phosphorus recycling
Filter cake	Paint producers	not yet defined
Sifted limestone (0-25 mm)	Chemical industry	Soil amendment, pH-neutralizer
Calcium carbide production residue	Chemical industry	Ingredient for cement production

Waste stream	Category	Social		Environmental	Economic		Technical	Sum	Rank
		Weight	15%	10%	25%	15%	10%		
	Description	Ethical / moral	Jobs	Waste hierarchy indicator	Partner structure	Market demand	Feasibility		
Waste wood		2.00	2.11	2.00	4.00	3.22	2.78	2.63	5
Sheep's wool, minor quality		3.22	2.00	4.00	5.00	3.44	4.33	3.86	2
Non-saleable vegetables (rejects)		4.67	3.00	5.00	4.00	3.11	4.11	4.19	1
Old bread		3.67	1.22	4.00	1.00	2.22	2.78	2.74	3
Organic wastes		3.00	2.11	4.00	4.00	2.89	3.56	3.44	3
Grease trap waste		2.56	1.56	3.00	2.00	3.44	2.22	2.49	6
Sewage sludge		2.33	1.67	2.00	1.00	2.44	1.00	1.66	8
Filter cake		0.56	0.33	2.00	1.00	0.44	0.67	0.98	10
Sifted limestone (0-25mm)		1.56	1.00	4.00	1.00	2.22	2.67	2.37	7
Calcium carbide production residue		0.78	0.78	1.00	1.00	1.33	1.33	1.06	9

Organic Waste streams:

1. Separately collected organic wastes
2. Organic fraction of residual household wastes

Two circular solution ideas

Current status & next steps

Selection of the three best circular solution ideas based on their feasibility:

1. Separately collected organic wastes
2. Organic fraction of residual household wastes
3. Sheep wool of minor quality (mixed colours, soiled)

Conduction of detailed analyses

- Technology Rating
- Product Environmental Footprint
- Life Cycle Cost Analysis

Define and compare business-as-usual and circular solution scenarios:

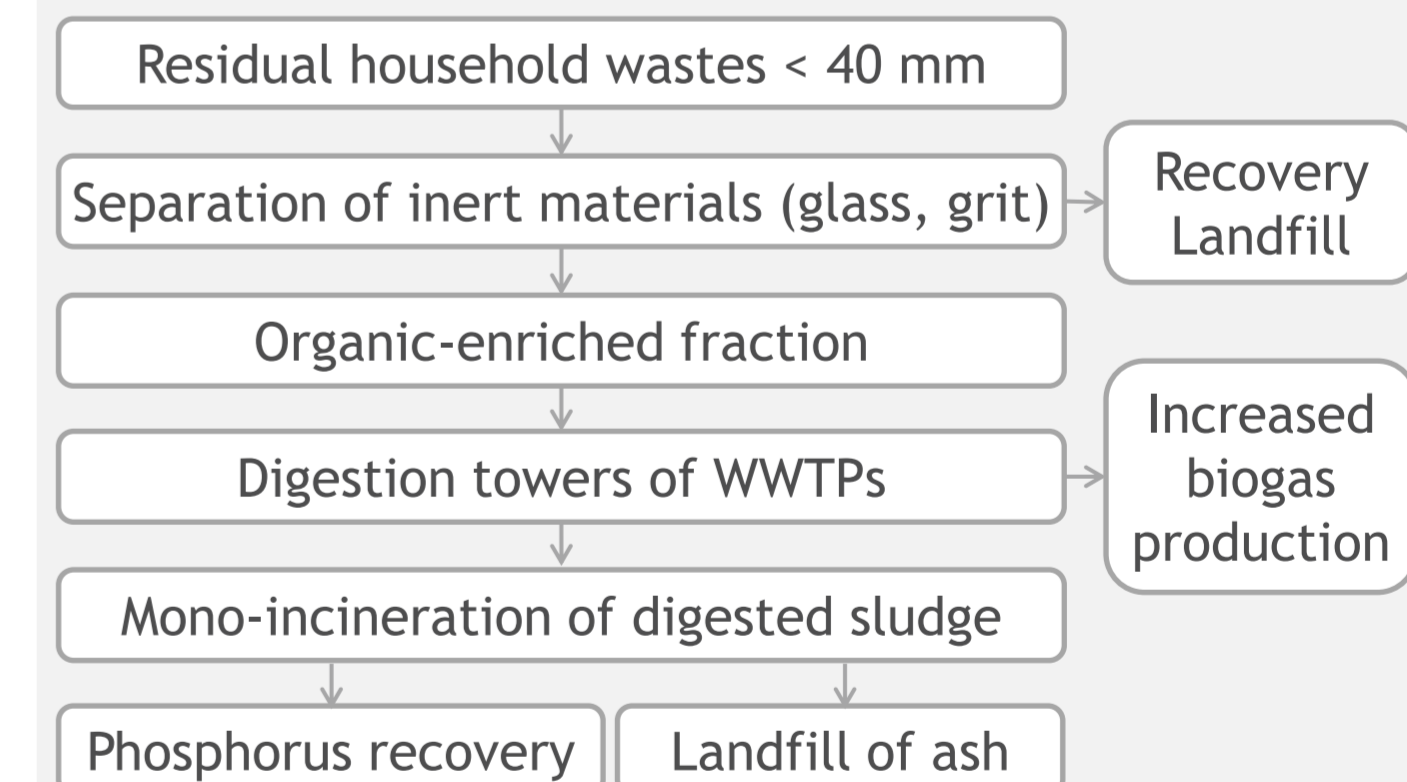


Figure 3: Example for a circular economy solution: Recovery, energetic and material recycling of the organic fraction of residual household wastes

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Cooperating partners:
 Regional Agency for Environmental Prevention and Protection (It), Etra S.p.a.(It), AM Trans Progres Sp. z.o.o. (Pl), IFKA - Public Benefit Non-Profit Ltd. for Development of Industry (Hu), Bay Zoltan - Non-Profit Ltd for Applied Research (Hu), RERA SD - Public Institution for Coordination and Development of Split Dalmatia Country (Hr), CISTOCA CETINSKE KRAJINE -utility company (Hr)

