



# Guidance for accelerating the adoption of circular business cases

Feedback, findings, learnings of the  
Upcycle Your Waste project



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# Introduction

The findings are alarming: Only 25% of SMEs' waste are repurposed.

SMEs experience greater difficulties than large enterprises in adopting circular practices due to limited organisational, technical and financial capacity. Large companies are better equipped to deal with waste management because they have more financial/technical means, and often operate a CSR policy.

Based on these findings, the purpose of the Upcycle Your Waste project was to accelerate the adoption of circular business cases by our local SMEs, transforming waste flows into resources at local level. We aimed to achieve this by developing research, training, tools, processes, procurements and tips that enable SMEs and local authorities to introduce more circularity in their economic ecosystem. The introduction of circular business cases to transform business waste into resources is a key facilitator in the transition towards a circular economy.

Circular implementations, like eco-design of products, processes and greener procurements bring EU companies economic benefits of 3–8% of their annual turnover. The Upcycle Your Waste project aimed at improving the capacities of local authorities, business district managers and SMEs within pilot areas and in other parts of the 2 Seas region by introducing and disseminating circular business case studies.

Since 2019, the experiments conducted in the pilot areas have revealed what can really be done, what can be achieved with difficulty, or what cannot be implemented. Using interviews with SMEs and scientific analysis of the data, the project allowed partners to gather and process information on SME waste within pilot areas. The partners carried out literature reviews on the existing upcycling business cases and on the SMEs' barriers and drivers to upcycling. Our experiments, literature reviews and data collection focused on understanding the opportunities for upcycling from practical/on-the-ground and scientific perspectives.

All the feedback and findings from pilot areas can inspire local authorities, business district managers and SMEs in the 2 Seas region. This guidance, combined with all the other tools developed in the framework of this project, aims at disseminating our results, practices and knowledge to local authorities, business district managers and SMEs in the 2 Seas region and beyond.

In fact, there is growing demand from SMEs for:

- Knowledge of their waste streams and corresponding circular business cases
- Demonstrated solutions and tools to improve resource efficiency
- Better cooperation among companies and develop processes to upcycle waste collectively

Local authorities and business park managers can enable SMEs at local level to join this transition by facilitating SMEs to build their knowledge base, get organised & incorporate circular business cases into existing waste processing practices.



# I. Presentation of the partners: a cross-border approach

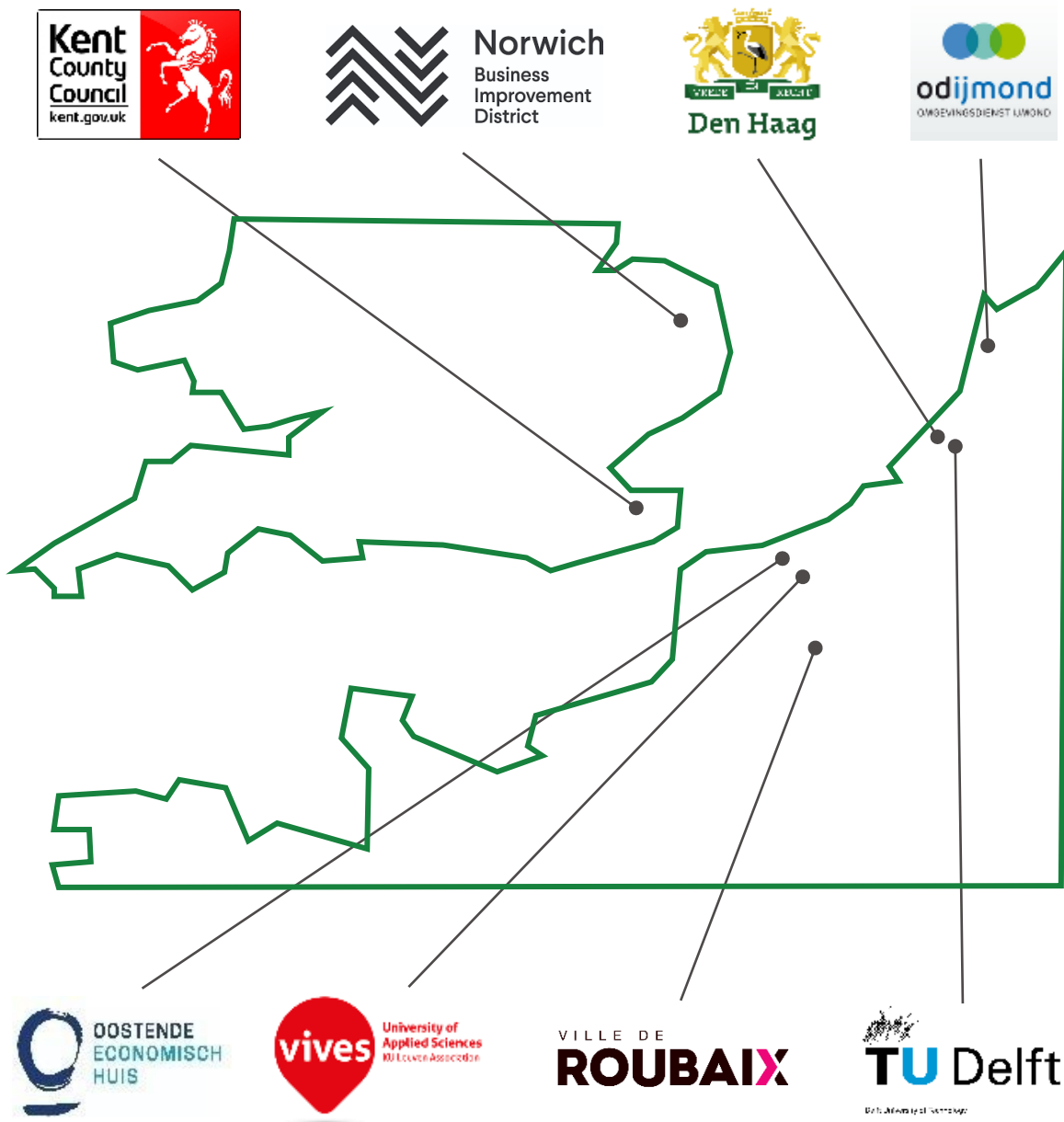
The Upcycle Your Waste project gathered 6 pilots working with groups of SMEs in a specific business area, facilitating the adoption of circular business cases based on collective waste stream analysis, tendering processes, dissemination and implementation of existing circular business cases.

The partners were in charge of different activities/work packages throughout the project. Some of the activities were locally run by the partners, such as the tenders and circular protocol procurements, but other activities were collaborative between the activity pilot and other partners, as in the case of the analysis of barriers/drivers and regulations for upcycling, the inventory of waste streams, capacity building and the guidance.

The project outputs were:

- An analysis of barriers/drivers and regulations for upcycling
  - › Partners produced an overview of rules and regulations with regard to waste management, recycling, waste collection, re-use of waste in their state, regional and local level.
  - › A common interview approach, designed to maximise relevance for SMEs, has been developed and deployed in the pilot areas.
- An inventory of waste streams
  - › Partners adopted a common waste analysis methodology including, a common method and parameters for analysis (e.g. waste type, grade of waste separation, quality, volume, costs, transport), analysis tools for data collection, an interview delivery plan. Local interviewers were trained to a common interviewing standard.
- A benchmark identifying circular processes, products, and business case solutions for upcycling:
  - › A broad inventory describing processes, products and solutions that involve upcycling of business waste streams, based on examples and concepts from around Europe (and beyond).
  - › The aim was to show the potential socio-economic benefits of upcycling and the diversity of possible solutions, inspiring SMEs to rethink their 'waste' and start seeing it as a resource.
- Training and capacity building programme for SMEs on regulation, waste stream analysis, circular business cases and procurement.
  - › Training and capacity building materials covering barriers and solutions for upcycling, regulations governing upcycling /circularity of waste materials, waste analysis, business cases and procurement for circular solutions, have been created and disseminated in pilot areas.

- Upcycling Guidance for local authorities and business district managers on working with SMEs to adopt circular business cases.
  - › Partners worked collaboratively on comprehensive practical guidance for local authorities and business district managers on how to engage and support SMEs in the transition to circular business. It is based on the research on regulations and barriers, waste stream analysis & business cases and tendering procedures developed in this project.





## A. Presentation of the pilots

### 1. DEN HAAG

The Hague has a strong reputation as an international city of peace and law. As such, it draws many heads of government, international organisations and knowledge institutions. This also entails the responsibility to set a good example, so we are transforming into a more resilient, smart and sustainable futureproof city. The Hague, the third-biggest city in the country, counts 260,000 households and 49,000 businesses. The municipality is responsible for the collection of household waste and runs several projects to improve waste stream separation. Although no such responsibility exists for commercial waste, the city also explores and drives initiatives to improve circularity sustainable waste management for companies.

The Zichtenburg-Kerketuinen-Dekkershoek (ZKD) business park in the south-west of The Hague covers approx. 80 hectares and is home to around 400 companies employing over 8000 staff. Businesses vary from self-employed to multinational companies with diverse activities ranging from industrial to services, including automotive, packaging, metal works, construction, electro-tech, wholesale and several office buildings. This diversity generates a great variety of waste flows. No information is available about the exact volume and recycling rate of these streams, and each company has an individual waste processing contract. In our pilot, we aimed to collect and connect waste streams across ZKD companies to generate local upcycling solutions.

### 2. NORWICH

Established in 2012 Norwich Business Improvement District (BID) is a not-for-profit organisation run for local businesses by local businesses in a city of 142,000 inhabitants and some 5,000 businesses. BIDs are business led partnerships, which are created through a ballot process to deliver additional services to local businesses. In 2014, we undertook a major survey to identify company waste streams and volumes and tendered for our businesses a collective waste recycling service as the local authority only collects waste and recycling from households.

The BID covers a defined area of the city in which a levy is charged on all business rate (property tax) payers. This levy is used to develop projects which will benefit businesses in the local area and works to improve the trading environment and identify projects and services that develop the city.

For us in Norwich, this project supports the introduction of circular business cases to transform company waste (the by-products of doing business) into resources as a key enabler for the transition to a circular economy. Our aim is to support SMEs to overcome difficulties in adopting circular practices, due to limited organisational, technical and financial capacity. We have found a growing demand from SMEs for:

- Knowledge of their waste streams and corresponding circular business cases
- Demonstrated solutions and tools to improve resource efficiency
- Better cooperation among companies to organise sufficient scale and develop processes to upcycle waste

Through this project, the BID wanted to enable SMEs at local level to join this transition, by facilitating SMEs to build their knowledge base, collaborate and get organised & incorporate circular business cases and waste processing practices.



### 3. KENT COUNCIL

Kent County Council (KCC) is one of the largest local authorities in England, housing around 1.6 million residents covering just under 1,400 square miles, with 350 miles of coastline. There are around 67,700 SMEs and 123,000 companies active in Kent alone.

The county of Kent benefits from a competitive, innovative and resilient economy, with our natural and historical assets enhanced and protected for their unique value and positive impact on our society, economy, health and wellbeing. Through the work of the Kent Resource Partnership (KRP) and the Kent Environment Strategy, businesses and communities have gone a long way to enhance and make the most of Kent's environmental benefits. It is the desire of KCC to build on these successes and learn from our experiences; evaluating progress, bridging gaps in our knowledge and delivering activities that we know have positive benefits for our environment, our health and our economy.

Kent has strong sector specialisms in medical services, business and professional services, creative and media, and retail and leisure. Innovation and entrepreneurship is alive in the county with over 8,500 start-ups at the last count. The county is home to companies operating in many sectors which are strategically important to the local economy, as well as the wider regional economy. These diverse companies generate a great variety of waste flows such as paper, cardboard, organic, wood, plastics and glass. In this pilot we wanted to work with local companies to generate local upcycling solutions through bespoke or collective procurement of waste processing in the pilot area.

### 4. IJMOND

Omgevingsdienst IJmond (ODIJ) legally represents local environmental government bodies in the IJmond region. ODIJ performs tasks in the field of environmental management, nature conservation and law enforcement. ODIJ has years of experience in sustainability and cooperating with SMEs to reduce their environmental impact by adopting processes to reduce and upcycle waste streams by cooperation with knowledge institutes.

IJmond, formerly also known as Midden-Kennemerland, is part of the Kennemerland region in the province of North Holland. The municipalities that make up the region are Velsen, Beverwijk, Uitgeest and Heemskerk. These municipalities are all around the North Sea Canal. In 2021, about 150,000 inhabitants lived in this region. The largest municipality is Velsen with about 68,500 inhabitants. In its supervisory role, the IJmond Environmental Service has contact with approximately 10,000 companies in IJmond in connection with environmental legislation.

IJmond is an area with a great diversity of companies. We have a large, heavy steel industry with homes in the vicinity. This industry attracts a lot of SME metalworking companies. There is a large fishing and energy port for wind turbines with large distribution centres and cold stores. The business park differs greatly and therefore also the residual flows of waste. In our pilot, we set ourselves the goal of involving approximately 300 companies in the project by having them participate in the waste inventory, or by having them participate in a (partial) project.

### 5. OOSTENDE

The city of Ostend, situated in the middle of the Belgian coast with a seaport and airport, is an important tourist and economic centre. It has approximately 72,000 inhabitants and 36,700 households. The city is on the verge of transformation, becoming more resilient, smart and sustainable.

The Economic House of Ostend is an external organisation of the City of Ostend which serves and supports the interests of all entrepreneurs and potential investors in the city, with its broad network of private companies, non-profit companies and public authorities. In addition, our non-profit association establishes several creative projects with local public authorities,



employers' and employees' organisations to promote and accelerate economic life in the Ostend area.

Participating in the European programme Upcycle Your Waste, the Economic House of Ostend supported local businesses by encouraging the conversion of waste streams into new resources, and thus supporting the circular economy. This contribution to a sustainable planet is fully in line with the intention of the local policy to make the City of Ostend an environmentally and nature friendly city by exploiting the opportunities of the circular economy. The mission is to guide SMEs step-by-step to get greater value out of their business waste, thereby reducing waste related costs.

## 6. ROUBAIX

The city, with 96,000 inhabitants, is an economic area mixing mostly major textile and industrial companies. Since 2014, the municipality has implemented a zero waste policy with a focus on stakeholder (inhabitants, retails, companies, e.g.) cooperation and engagement.

The pilot involves a bottom-up approach through the involvement of Roubaix inhabitants' and top-down approach by the support of circular measures by public authorities. Roubaix aims to be a truly Zero Waste City with projects accessible to all of its population and businesses. A Circular Economy roadmap has been deployed by ballot by the city council in 2018 and updated again in 2022. Economic actors showed an interest in engaging in circular transition, whereby 60 small and big enterprises were already active in circular economy processes within the pilot area prior to the beginning of the project.

Furthermore, the City of Roubaix strategy aims to cultivate an ecosystem of circular economic actors and projects, creating sites committed to accelerate the establishment of a circular economy for all stakeholders.

- Le Couvent des Clarisses, future House of Zero Waste and Circular Economy,
- Tissel, a 10 000m<sup>2</sup> incubator for enterprises that are in a circular approach.

This project was an opportunity to reach larger audiences, sharing the circular economy concept and exploring new opportunities. The Upcycle Your Waste project aimed to increase the scope of net zero waste policies from small independents to cultivate a large circular economy ecosystem.

## B. Presentation of academic partners

### 1. TU DELFT

With expertise on materials, circular economy and industrial ecology, the Delft University of Technology shared their knowledge in this Interreg 2 Seas project. Delft University of Technology, is the oldest and largest Dutch public technical university in the Netherlands. The TU Delft has eight faculties and numerous research institutes. The university, established in 1842, has more than 26,000 students and 6,000 employees (teaching, research, support and management staff).

The TU Delft is active in several areas on waste management and circular economy, such as industrial ecology, design for recycling and reuse, separation technologies for waste, and pyro- and hydrometallurgy. The TU Delft (DUT) has expertise in the field of circular economy, business models, life cycle assessment, waste management, and design of products. The university is actively engaged in several research projects and education programs pertaining to waste management, including urban strategies for waste management in tourist cities, resource



management in peri-urban areas: going beyond urban metabolism, blended learning course (MOOC) waste management and critical raw materials, and circular electronics.

## 2. VIVES

The Vives University College offers over 50 professional bachelor and graduate programs divided over 6 study areas: biotechnology, healthcare, commercial sciences with business management and informatics, applied engineering and technology, education and applied social studies. These are spread over 5 campuses in West Flanders: Brugge, Kortrijk, Oostende, Roeselare and Torhout, and host around 17,000 students and 1,700 employees.

Vives is committed to research and services, offering companies and organisations solutions to various complex challenges. We have 6 centres of expertise (agro and biotechnology, business management, education innovation, smart technologies, social innovation and healthcare innovation) and 9 specialised labs to support these challenges.

The Expertise Centre of Smart Technologies is a multidisciplinary cluster working in the field of new and innovative technologies. We have a clear focus on applied research and expertise in sustainable techniques and ecodesign, trying to find the most environmental positive solution. We not only have knowledge of the different sustainable techniques, but also management skills to analyse and balance products and services not only from a technological point of view, but also from an ecological, economical, legal and social ethical perspective. We will implement our expertise from past projects on valorisation of residual flows and creation of sharing platforms, turning residual flows into commodities.

Vives University of Applied Sciences has a focus on circular economy, innovative (re)use of materials and sustainability in a regional and cross-border context. Insights and knowledge gained from this project will be used to improve education and to disseminate to companies and organisations in order to facilitate a faster transition towards a more circular economy and the upcycling of residual flows.

"Upcycle Your Waste" was an opportunity for Vives to permanently invest in knowledge and skills with a focus on innovation, sustainability and the circular economy, through interactions with students, researchers and for and non-profit organisations.

Our aim was to monitor and evaluate the 6 pilots in the project to learn lessons and draw conclusions regarding the scope and different tools delivered. The pilot hosting partners could manage and improve the delivery of their pilots on an ongoing basis, building on the reflections from the partnership at a cross-border level. Moreover, our aim was to support the overall project deliverables, and in the more specific challenges of the pilot area of Oostende-Plassendale, by creating an online exchange platform.





## II. Phases of the “Upcycle Your Waste” approach

### A. General presentation of the main phases of the “Upcycle Your Waste” project

The Upcycle Your Waste project ran through different phases:

- Exploration phase:

This phase aimed at acculturating the different stakeholders of the project to the circular economy, and spreading academic knowledge in pilot areas. Activities during the learning phase targeted economic actors (SMEs, associations, e.g.), students in pilot areas, and individuals that were interested in circularity and want to increase their circular economy skills.
- Data collection:

This phase consisted of understanding the waste management landscape of the economic ecosystem in pilot areas, and the difficulties that economic actors face dealing with waste. Data collection was critical, as from this information we could work on improving waste management in the pilot areas.
- Developing and launching circular relationships:

This phase mapped waste streams and initiated potential existing synergies. The launch of circular relationships may have developed through the tender process framework in the pilot areas, or by a simple linking between two economic actors. This phase of the project was the moment whereby different industrial symbiosis tools have been utilised by partners.
- Mobilisation of the relevant stakeholders and communication

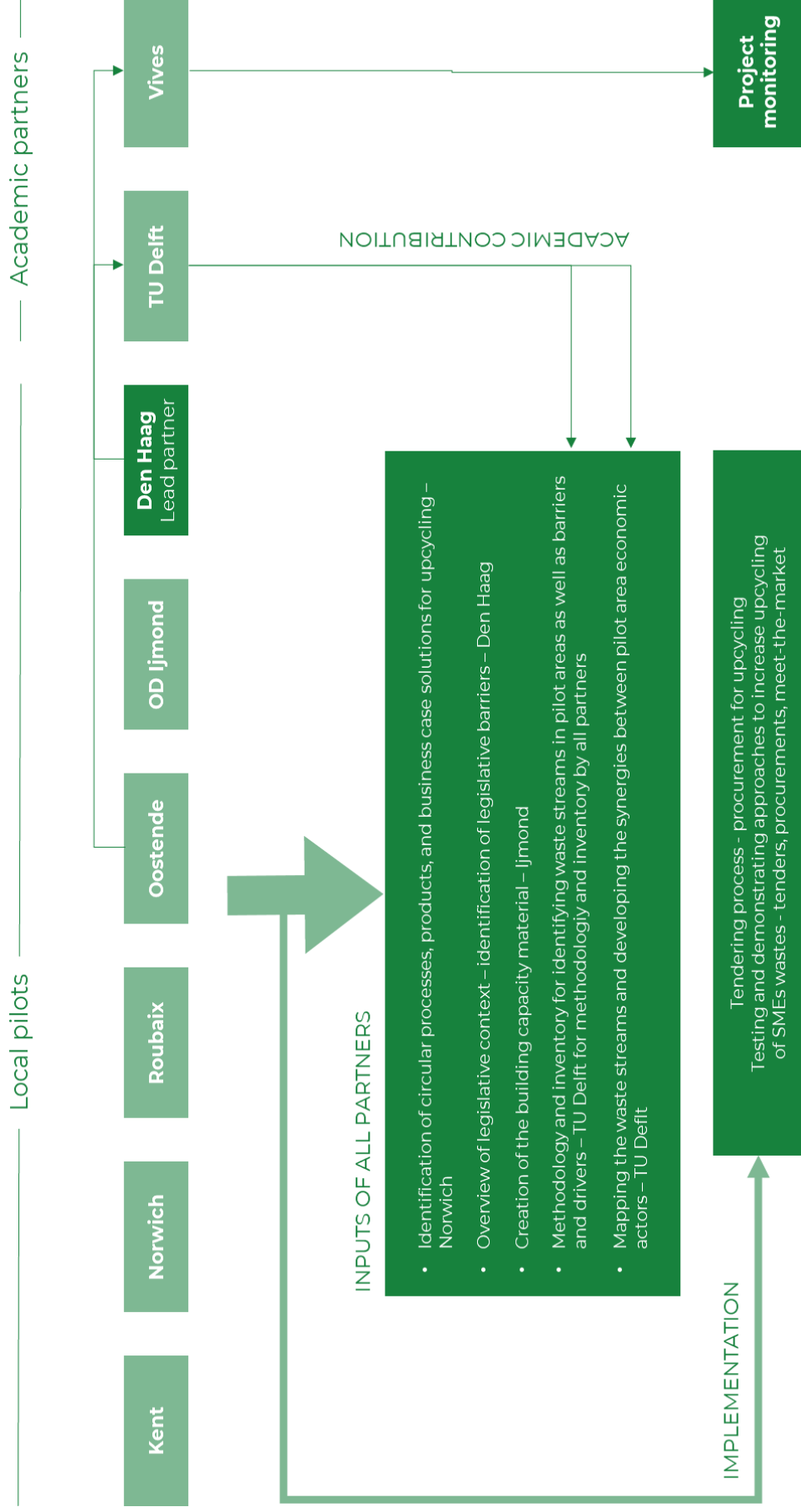
This phase of the project was a bit particular because it took place throughout the project. This activity aimed at actor mobilisation and realisation in the different pilot areas by using communication tools, such as newsletters or events, to keep its circular economy ecosystem mobilised.

### B. Role Delegation

The Upcycle Your Waste project gathered different kinds of partners: local authority, chamber of commerce, business improvement district and local environment agency.

Each partner was responsible for a deliverable, assisted by inputs from all the pilots.

Timeline of the Upcycle Your Waste project												
2020				2021				2022				2023
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
<b>Exploration phase - Acculturation to circular economy</b>	Identification of circular processes, products, and business case solutions for upcycling											
	Overview of legislative context : identification of legislative barriers				Dissemination of the overview of legislative context							
	Creation of the building capacity material				Dissemination of building capacity material : training, academy page							
<b>Data collection - Understanding territory concerns and potential upcycling opportunities</b>	Methodology and inventory for identifying waste streams in pilot areas as well as barriers and drivers											
	Continual updating of the inventoried waste streams											
<b>Developing and launching circular loops</b>	Mapping the waste streams and developing the synergies between pilot area economic actors											
	Tendering process - procurement for upcycling - Testing and demonstrating approaches to increase upcycling of SMEs wastes - tenders, procurements, meet-the-market											
<b>Mobilisation and creation of a circular economy community</b>	Mobilisation of the relevant stakeholders and communication											







### III. Toolbox

The toolbox is a compilation of feedback from the pilots on the different activities carried out during the duration of the Upcycle Your Waste project. The toolbox consists of chapters recording the different phases and progress made throughout the project.

The chapters are structured as follows:

- Presentation of the activity in the pilot area by the responsible partner,
- Feedback of other pilots about the implementation of this specific activity in their pilot areas
- External partners testimonies (observers, SMEs, e.g.)
- Do's and don'ts

These feedback aim at being honest about the results we reached in the different activities. It is really interesting to see that along the activities implemented by the pilots there is no good or wrong path to follow but just different approaches because the different economic ecosystems and the local contexts are not the same.



## A. Exploration phase – Understanding of circular economy

One phase in the project was to facilitate the transition towards a circular economy. This transition is important because it enables the pilots to better understand circular economic processes, and draw SMEs away from the non-linear economy. This work provided the opportunity to generate insights regarding existing cross-border circular business cases, to work on the legal aspects of circular economy, and knowledge about circular economy, resources and waste in general.

### 1. IDENTIFICATION OF CIRCULAR PROCESSES, PRODUCTS & BUSINESS CASE SOLUTIONS FOR UPCYCLING

One of the objectives of the Upcycle Your Waste project was to implement circular business cases in the different pilot areas. An inventory of the existing circular processes has been conducted in order to directly replicate these examples in the pilot areas.

This activity has been mostly conducted by Norwich, represented by Martin Blackwell.

Norwich's ambition was to undertake a broad inventory describing processes, products and solutions that involved the upcycling of business waste streams based on examples and concepts from around Europe and beyond. The aim was to show the great potential and socio-economic benefits of upcycling and the diversity of possible solutions, and to inspire SMEs to rethink their 'waste' and start seeing it as a resource.

A key step in the transition to large-scale upcycling of business waste is for companies to understand that it is possible and that it actually makes business sense.

We contributed to this in two steps:

1. Identify circular processes, products and solutions – to show the diversity and benefits of upcycling solutions for all common business waste streams applied around Europe.
2. Develop detailed business cases for selected upcycling solutions for our pilot areas fitting local conditions, waste streams and rules. These will be developed as 'value cases', factoring in commercial, environmental & societal benefits.

The inventory has provided the processes, products, and solutions to 29 methods of upcycling business waste streams. These come from a broad range of 10 different fields, with multiple material variations within these fields. The studies come from a wide range of 17 different countries, 10 of which are European and five of which are beyond. The inventory has also helped to show the great potential and socio-economic benefits of upcycling. Browsing through the inventory, there are many different studies showcasing how they provide economic, environmental, and social value creation in a variety of ways. By providing solutions to a broad range of wastes, the inventory can inspire SMEs who have identified a particular waste material with ideas on sustainable solutions, rather than just sending it to landfill.

These cases show SMEs the conditions (financial, practical, legal, e.g.) to create feasible and advantageous routes to position their 'waste' as a resource for circular processes/products.





*Figure 1: Martin Blackwell  
Head of operations, Norwich  
Business Improvement District  
(BID)*

## Norwich feedback on the benchmark of existing circular business cases and its implementation

Norwich led on this research and we utilised our academic partner, the University of East Anglia, to identify a PhD student to undertake this work for us. Sifting through information from academic journals and articles from Scopus was much more difficult due to their focus on the process of upcycling and not its real world implementation. These difficulties may have come because of upcycling being a relatively new method of mainstream waste processing.

One of the main barriers identified through screening many studies was the reliability and volume of waste streams. To be successful, a project needs a steady flow of materials at a suitable volume, otherwise it will fail. This could be the main reason why biowaste and construction were the two most popular fields, as waste from these sectors is readily available.

The inventory can also enable us to create detailed upcycling business cases for the future. This can be done by identifying similar projects within the inventory to provide information relevant to the business case. Due to this project, objectives and outcomes can be proven to successfully work in similar markets, improving the likelihood of funding.

The experience helped us develop and tender to organise and support local SMEs to collectively procure and implement services for the upcycling of their waste streams, to replace existing non-circular practices. On the basis of this we launched the Norwich Upcycling Exchange.



*Figure 2: business cases upcycling hair identified by Oostend*

### Oostende feedback on the benchmark of existing circular business cases and its implementation

Oostende read the examples of upcycling in the identification of circular processes, products and solutions inventory. Identifications of circular processes, products and solutions made by Norwich, as they mentioned themselves, focuses mainly on biowaste and big industrial recycling examples with a steady waste flow.

That is why in Oostende we started focusing on existing business cases in Belgium and abroad to attract and implement those circular projects in our own city, with support from our organisation. We helped the organisations by delivering the needed information, by introducing them directly to the companies or to the regional government. We also used our media channels to give a platform to existing circular solutions, and support upcycling initiatives. When we met a new upcycling initiative that would be a plus to the city of Oostende, we did everything to attract it and implement it in the city.

The business cases suggested in the Identification of Circular Processes, Products and Solutions inventory, were not implementable in Oostende. We did, however, find other interesting circular business cases of which some are listed below.

- 1) We started to collect wooden pallets to repair and resell in cooperation with an external partner.
- 2) We also collect inner bike tubes at bike shops to send them back to the Schwalbe company. This is a take-back system whose purpose it is to recycle the rubber of the tube which otherwise would have been incinerated.
- 3) Hair which is cut at hair salons is collected to use as a resource for floating oil catching carpets used at seaports and watercourses.
- 4) Other take-back systems are being identified to be implemented in Oostende as well.



*Figure 3: Arne Rossel, European Projects Coordinator, Economisch Huis Oostende*

### Example of a circular business implemented in Oostende

In the quest to achieve our Sustainable Development Goals (SDGs), we came into contact with Upcycle Your Waste (UYW).

Thanks to UYW, we were able to work together with someone who comes to collect our materials (barrels, jerrycans and pallets), repairs them and gives the high-quality materials a second life with a second user instead of having them immediately recycled into other raw materials.

In addition, there are other advantages for us:

- Fewer rides are needed
- There is less combustion of the high-quality materials
- We also have less administration, because the collections are done automatically.

Thanks to Upcycle Your Waste, we have been able to take the first steps in the SDGs.



*Figure 4: Torsten Kuhn, Senior engineering and prevention manager, Metagenics*

## TIPS

- Go on a journey by yourself and get to know waste collectors, take-back systems and such. They can have plenty of existing solutions for circular entrepreneurs that you may not know. Some solutions to your problems can be closer than you expect.
- Do not hesitate to benchmark the existing circular business cases. Sometimes the SMEs need an external point of view to tell them: "You can use this material. Do this and this and then you will save money."
- Provide your SMEs with viable and realistic business cases, they need to get inspired by business cases that fit their environment.

## 2. OVERVIEW OF LEGISLATIVE CONTEXT

This activity has been mostly conducted by Den Haag, leading partner of the project, represented by Patrick Krom.

The partners produced an overview deliverable of the rules and regulations that SMEs and local authorities have to deal with when they adopt upcycling approaches in their companies and cities.

The Hague produced this deliverable with contributions from TUD, VIVES, ACR+ (observer) and input from all partners.

### **Purpose of the overview**

The purpose of the overview of legislative context is to organise and clarify to SMEs the legal restraints and possibilities when it comes to waste management. Especially for smaller businesses, ensuring compliance with waste regulations can be quite complicated and time-consuming, this overview was created to help SMEs along in this process and offer them an easily accessible overview of their legal obligations tailored to their relevant (national/regional/local) legislation. What is more, besides obligations, the document should rather give them a better picture of what is possible with their waste.

### **Methodology to structure the legislative overview**

As the document should be as accessible to SMEs as possible, the introduction is directly followed by actual questions asked by business owners, separated per Member State to account for national differences. In order to have businesses engaged, it is important to provide them information from their point of view. These questions, based on practical examples, should be immediately recognisable to businesses in each pilot region and be helpful without having to read the entire document. The answers are enhanced with hyperlinks and/or illustrations where needed, to make the document as practically usable as possible.

Followed by the general questions is a top-down overview of applicable waste legislation, starting at the EU level, explaining the European Waste Framework Directive, and working down to the participating Member States' national/regional/local law.

The two parts combined should give businesses a good idea of what circular waste management would mean for their company both at a quick glance (by reading the questions) and after more thorough research (by reading about the exact legislation applicable).

## IJmond feedback on the overview of legislative context

In OD IJmond, we deployed experts to write this document, lawyers from the municipality of The Hague and IJmond supported us in setting up the document. After writing the overview of the legislative context document, we felt that it was a complete document, but not really accessible to the SMEs. We worked on how we could make the document more accessible, and we have come up with a list of questions that SMEs can ask. The questions and answers are in the first chapter, the answers refer to detailed explanations in the document.



*Figure 5: Erna Hilbers, Project manager, OD IJmond*

OD IJmond team regularly consults the document, especially if we encounter an issue while carrying out the Upcycle Your Waste project activities. For example, we have stumbled upon a grey area during the realisation of the residual materials hub. By informing ourselves comprehensively, we were a good discussion partner with the competent authorities.

We also refer to the document for asked questions from SMEs.

OD IJmond communicated the overview, the document can be found on a tab on the Website of GreenBiz IJmond/ circular and on the Upcycle Your Waste website.

There is a large grey area between what is not allowed according to the law and what is tolerated because it is very logical. By having a good picture of it, you can choose your path together with entrepreneurs in a substantiated and careful manner. It has helped to make agreements about the grey area in close and mutual understanding collaboration.

We use it for ourselves for the frameworks to set up the residual materials hub. We do notice that the legislation offers little room for circular solutions and that many entrepreneurs do not adhere to this. As long as this benefits sustainability goals, this is tolerated by regulators.

From our point of view, this overview of legislative context was really important because there is still too much ignorance among entrepreneurs and it enabled the identification of gaps in the current waste legislation about upcycling.

There are volunteer organisations that use residual flows commercially and there are companies that make furniture from the neighbour's wood, but this is not registered anywhere because these are not recognized processes. The problem is also that process certification procedures requiring official recognition take far too long. This is too bureaucratically organised.



## Ostend feedback on the overview of legislative context

The city of Ostend used the available information from VLAREMA (waste legislation in Flanders) and OVAM (Flemish Public Waste Handling Society). Waste is handled by the three regions in Belgium and not at a federal level. To get the information needed, the Economisch Huis Oostende contacted collaborators at OVAM to give me more details on waste separation, trading and processing. They also proofread the written document. The guiding document starts with a preface, followed by FAQ for Flemish entrepreneurs.



*Figure 6: Arne Rossel, European Projects Coordinator, Economisch Huis Oostende*

The legislative overview helped us to understand how the waste landscape is in Belgium, because it is complicated. As an organisation, in constant contact with entrepreneurs, it was an enrichment activity for us and thus also for the companies while we can explain to them more thoroughly the existing regulation if they want more information.

Nevertheless, the way the document has been made hardly helped companies. They don't need a summary of Belgian or European waste legislation since the beginning of the 1960's. Entrepreneurs want answers on specific waste questions. They want someone to communicate existing information, or a frequently asked questions booklet where they can easily find answers to their issues. If we would have to redo it, we would not put so much time and effort into it.

The added value for the companies is low. Instead, we could have made a small summary about the existing instances (federal, regional, municipal) and which ones companies should address their questions about waste management.

## TIPS

- If needed, do not hesitate to be supported: Involve any other relevant authorities/specialists or professionals (training courses, designers, lawyers, legislation external expertise involved with waste management (legislation, permits, etc.).
- Do write a small summary or guideline from the most important institutes and what they do so the companies can find their way easier.
- Popularising the information/knowledge (ask external expertise if needed: designer, instructors, etc.). The information you give your entrepreneurs should not be theoretical, too long and too complex.
- Educate businesses on what is and what is not possible from a legal point of view.

### 3. CAPACITY BUILDING MATERIAL

This activity has been mostly conducted by OD IJmond, represented by Erna Hilbers. The dissemination in pilot areas was the responsibility of the different pilots.

Training and capacity building material covering regulation and barriers & solutions for upcycling, regulations governing upcycling /circularity of waste materials, waste analysis, business cases and procurement for circular solutions have been integrated into an online module and tailored training for SMEs.

#### **Disseminating knowledge about upcycling and circular economy in the pilot areas**

We wanted to encourage our target groups to get started with upcycling. The material is mainly addressed to the SMEs.

OD IJmond aimed at offering a training module which ensures that entrepreneurs can get started with making their company circular, informing and inspiring about the circular economy and the UYW project. This also includes broadening knowledge and how to deal with residual materials.

The large-scale introduction of circular business cases in SMEs requires new knowledge and skills and a big change in mindset. SMEs should no longer consider waste as an unavoidable business expense, but start approaching “waste” materials as a secondary resource with value that can find a market of their own.

In this activity we aimed to train professionals working in SMEs, business associations and resource and waste management to improve their circular knowledge and capacities.

An exploration has been made of new education opportunities. OD IJmond and all the partners looked at what is already there and what would be a good addition. Defining the target group was also quite a challenge as initially we wanted to achieve a level of education, but realised that this is not comparable between the countries.

We found an expert third party offering a very nice digital education. In addition, a specialist in the field of circular economy has been asked to write the substantive texts for us.

We developed and delivered training material for professionals involved in the project. The material will also be integrated in Continuous Professional Development (CPD) courses on resource management and existing curricula at vocational and applied academic level on sustainable business.

The OD IJmond aspired to create training material on three different levels.

- I. General online course. This is the level where someone does an online course at home to be generally informed.
- II. Secondary Vocational Education. This is the level where we create study material to be integrated into existing vocational studies.
- III. Higher Professional Education. This is the level where we create study material to be integrated to existing professional studies. The amount of detail and depth will be higher than from the Secondary Vocational Education.

The reason why OD IJmond believes that different educational levels should be developed is to ensure that all potential target groups will be reached.

We also have developed a monitor plan to follow the progress made in the different pilot areas. Every two months we receive the figures on the number of participants per country and how far they have come in the training.

	Target group				
	Students	Freelancer	SME's	Business associations	Government institute
General online course		✓	✓	✓	
Secondary Vocational Education	✓	✓			
Higher Professional Education	✓		✓	✓	✓



Figure 7: broadcast of an academy course in IJmond

## OD IJmond feedback on the capacity building material

We wanted the academy to be accessible yet complete. Our own critical review of the academy is that it has become a tough course. The way the information is being shared is rather monotonous and could be made more light-hearted or enticing. If we'd redo the academy, we'd add a fun element to keep participants engaged. For instance by giving more real-life examples, adding different speakers and adding room for interaction between participants.

However, we did notice that - through the efforts of the academy - we created support for Upcycling applications. We've offered companies a free in-company training in which we walk through the contents of the academy together. This way we can make it more fun at the spot and register how participants are experiencing the academy. It's more time-consuming for us, but it improves the experience with the academy, strengthens our relationship with the organisations and encourages participants to get started with upcycling activities right away. It gives participants concrete ideas on how to improve their waste management activities and reduce residual waste.



Figure 8: Erna Hilbers, Project manager, OD IJmond

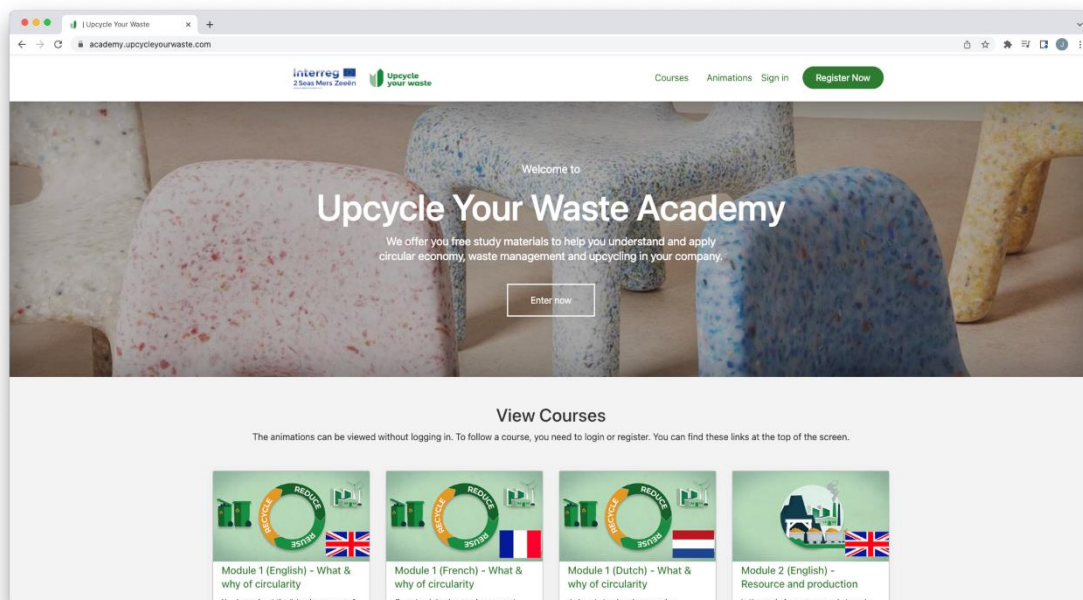


Figure 9: Upcycle Your Waste Academy: <https://academy.upcycleyourwaste.com/>

## Testimonies of Academy Page users

“The content/message is perfect, and some good points came out of doing this course. But the way in which it's being communicated is not good. It's a struggle to get through the course. If it had been communicated clearly and cheerfully in a kind of animation/cartoon, for example, then we would reach a larger audience.”

*Max Kwantes, Patina Dakdekkers*

“The content of the training was easy to follow. It is nice that you can "rewind" if you do not understand certain concepts/words. That's well done. It's important that it's kept digital and that you can rewind if you don't understand something.

I would recommend the training to other companies but I think it should be (much) shorter. At a certain point you know what it entails in the first module and that is why I often wandered off afterwards. Moreover, as an entrepreneur, you can also think for yourself about how you can apply the concept of circularity and what its advantages are, but in a second module, it is possible to briefly state (in the form of a summary of facts) what the advantages are. Module 1 and 3 are essential, however, 2 and 4 could be processed in 1 module (from 30 to 40 minutes).”

*Don de Vries, Intern at GreenBiz IJmond*

## TIPS

- Integrate learning modules into onboarding of SMEs across networks.
- Outline benefits of training ahead of formal training.
- Test the content on a range of local audiences, so you can see if the learning modules are interactive and not theoretical
- Don't lose heart. The content will remain relevant and useful going forward.
- Don't think that sending links and asking SMEs to sign up will be enough, they need to be shown how it works and how it can help them.

## **B. Data collection - Understanding territory concerns and potential upcycling opportunities**

The first step for developing upcycling in the different pilot areas was to determine the opportunities that exist in the bins of pilots areas' enterprises. Collecting data following a unified methodology allowed the partners to have a common language and structure the interviews and data collection.

### **1. METHODOLOGY AND INVENTORY FOR IDENTIFYING WASTE STREAMS IN PILOT AREAS AS WELL AS BARRIERS AND DRIVERS**

One of the objectives of the Upcycle Your Waste project was to understand the problems that enterprises face in the different pilot areas concerning their waste streams. An inventory was conducted by the partners to better understand the waste streams, as well as the barriers and drivers for upcycling in the pilot areas.

This activity has been mostly conducted by TU Delft, one of the two academic partners of the project, represented by Jan-Henk Welink. The partners implemented the methodology in their pilot areas.

#### **A common approach for the waste streams and barriers-drivers for upcycling identification**

At the beginning of the project, the inventory was created to define a common method and parameters of analysis, perform a detailed inventory of business waste streams, and deliver specific waste stream maps for pilots. With this knowledge we could identify the most common types of waste in our different business areas. This allows us to develop business cases for upcycling those types of waste and to further detail the scope of the upcycling pilots.

This inventory was an important tool to seize the upcycling opportunities in pilot areas and understand the exact types, volumes and quality of waste material from companies. This was an elaborate, detailed analysis that required us to go through the wastage materials of each individual company. The objectives of identifying the barriers & drivers for SME's for realising upcycle solutions in the pilot areas were:

1. Determining what hinders or encourages SMEs to separate and or re-use residual materials and products;
2. Learning the SMEs needs in order to use this in the next steps of the project, which is expected to improve the realisation of the project goal.

These objectives were achieved by interviewing the participating SMEs in the pilot areas to produce a final inventory report based on the findings and literature studies on generic barriers for upcycling. The objective of the waste scans of participating companies in the pilot areas were to:

1. Determine types, volumes, quality and cost for collection & processing of the current waste streams as accurate and detailed as possible;
2. Determine options for cost reduction of waste;
3. Providing the basics for the development of collective upcycle business cases;

The methodology to obtain the barriers/drivers and undertake the waste scans was based on interviews rather than questionnaires, providing the opportunity to answer and queries the interviewee may have about the approach. The interview questions derived from the Porter Diamond model and literature studies. The Porter Diamond model relies on the premise that firms must stay competitive to exist. Controlling costs and corporate social responsibility are

important aspects of competitiveness. To analyse waste minimization applying Porter's Diamond model, different factors need to be studied. The literature shows constraints on firm and condition factors; knowledge (staff, time) and a lack of awareness of options and benefits to minimise waste. It was observed that a large number of SMEs did not have sufficient knowledge about the opportunities of their discarded materials and products, although many SMEs did point out this would help.

The training of the interviewers is also crucial; the better they are trained, the better they can conduct the interviews and grasp the issues dealing with waste management and its impacts on the enterprises' business model. The method of interviewing the companies by telephone was necessary due to COVID-19 restrictions prohibiting face-to-face methodologies. Under normal circumstances it is better to visit the companies and get a better understanding of the residual materials and products. The partners that trialled the two interviewing methods (on-site and call) showed that the on-site interview is much more efficient because only on-site visits allow you to see what is inside container bins (taking photographs, if allowed), but in person meetings are always worth the effort to develop good working relationships.

To identify waste streams in pilot areas, as well as barriers and drivers to businesses participation in upcycling activities, companies were called for an interview, (or visited on-site when possible). The answers were collected and analysed. The responses to the barriers and drivers did not differ much as those found in the literature. The interviews on the waste scans covered questions on specific residual materials and products, differing from the classifications used by waste collectors. This classification helped to identify residual materials and products that could be monitored better than perceived as waste.



*Figure 10: Roubaix on-site visits*

## Kent feedback on the methodology and inventory

Kent employed consultancy support to carry out the surveys and due to the pandemic, almost exclusively via telephone or video call, though some were done face-to-face during the first phase of interviews. We chose to deliver this externally with a specialist business engagement contractor and an environmental science graduate. It was felt that given time and resource pressures caused by COVID-related delays and engagement difficulties, this was the best course of action to outperform the original target of 50 SMEs engaged in interviews and waste scans.



*Figure 11: Rob Robinson,  
Sustainable Business Project  
Manager, Kent County Council*

The inventory was an important phase so as to get the businesses to understand where they are and what might be the reasons why they've not already implemented improvements. The barriers and drivers section did show that the theory played out in practice so though it might not give the project more insight, it suggested to the companies that they're not alone in the challenges and opportunities. The similarity between the suspicions of the partnership and the practical and 'real life' validation of the results was interesting. How smaller, more space-limited firms tended to aggregate waste compared to larger organisations, and those with a more specialised workforce makes sense when juxtaposed but not when dealt with in isolation interviewed individually. To develop a solution, one must first ascertain and agree the problem, if indeed it is even viewed as such.

The inventories gave a great opportunity to capture 'real life' scenarios across the pilot area, including options for improvement. It also showed that many of the main opportunities for smaller companies might only be viable when working together. That suggested that 'tenders' might not be as viable as originally thought given the average size of many of those that came forward, many were micro-businesses where cost savings alone would not realise sufficient impacts but the value of doing business differently might be in local social value exchanges. This includes the like of small independent shops and restaurants working collaboratively to reducing food waste and synergies in forming recycling routes.

The inventories summary suggested the commonalities and main waste streams, quantifying volumes across the piece for key themes so we could communicate to some of the target network findings. It remains an important opportunity to add weight to suggestions for new SMEs coming into the project, but was not utilised as much as was anticipated. This is perhaps due to the results not making as compelling reading through predominantly micro and small SMEs interviewed in the first phase. It has nonetheless led to a second wave of recruitment to give the critical mass needed to realise the ambitions.

As a project, this showed some of the similarities and differences. We noted that another run of engagement is needed to attract larger, non-high street businesses to give rise to the required synergies and savings required locally and as a project. As such it was insight that was invaluable in re-evaluating what would be required going forwards, even if it did not show as many opportunities instantly as perhaps some other partners.



## Roubaix feedback on the methodology and inventory

To implement the methodology developed by TU Delft in the City of Roubaix, we decided to conduct the interviews ourselves. It is important for the Upcycle Your Waste project manager to go in person and meet the companies to develop a trust-based relationship and understand these actors well. This is why we have prioritised on-site visits to have a more qualitative exchange and be able to have a look by ourselves with the managers in the companies' waste bins. This moment of exchange, without judging current waste management practices, allows a better understanding of the problems that entrepreneurs face.

Despite 1-2 hours of on-site interviews, it remains difficult to obtain precise and exhaustive information on the quality, the quantity, and the cost of a company's waste management. It is long term work, for both us and the companies. During the interviews, we realised that many SMEs do not understand what waste they produce, not because they do not care, but because waste management is not a priority and their waste is already collected by a waste management company on their behalf. Sadly, the fact their waste is processed by an external company means that SMEs do not realise all the potential they have in their own bins.

However, these audits allowed us to better understand the reality of the companies and build a database to have a global vision of the resources available in companies' waste bins. We were able to use it to establish the first waste matches between companies and also identify the waste stream with the best potential for upcycling to put them in the spotlight in our material library and in the challenges launched by the circular economy team of the city of Roubaix.



Figure 12: Hugo Delahaye, Project Manager – Interreg project “Upcycle Your Waste”, Ville de Roubaix



Figure 13: QR code to the online material library



Figure 14: Second Material Library of Roubaix

### Insight from Norwich pilot area

Although the terms 'recycling', 'upcycling' and 'the circular economy' are used commonly and interchangeably, discovering the method by which this can be applied to the business world often proves very difficult. To better understand this, the Norwich Business Improvement District (BID) conducted an academic literature review to understand the challenges and opportunities for upcycling and for the circular economy across and within industries (Literature Report on Barriers & Drivers, Jan 2022 - Phil Churchman for Norwich BID). This work recognised two major barriers to upcycling lie in (a) the lack of knowledge that businesses have regarding circular processes and (b) a lack of platform from which to facilitate such processes easily and conveniently.



*Figure 15: Dr Mike Brock, Associate Professor in Microeconomics, School of Economics, University of East Anglia*

Consequently, two of the major contributions of the Norwich BID have sought to overcome these two barriers and hence facilitate greater opportunities for upcycling and circular processes in Norwich. To tackle the first issue, they commissioned an audit of businesses in the Norwich BID region, so as to identify and better understand current waste streams and practices for tackling waste products. To tackle the second, they have launched an upcycling platform, offering local businesses the opportunity to engage in circular practices.

## TIPS

- Find the good contact (director, Quality Health Safety and Environment manager, etc.) and use simple language that SMEs can relate to.
- Prefer on-site waste scan instead of online inventories because only on-site visits allow you to see what is inside container bins (taking photographs if allowed), in person meetings are always worth the effort to develop a good working relationship, but do not spend more than one hour on-site all but there is an interest to stay more (in order not to bother the entrepreneurs).
- Fill up the database right after the inventory and don't waste too much time between expression of interest and survey and follow ups and, even if it's a brief progress update.
- Don't lose sight of the practical/human aspects affecting each business, sustainability might not be top of the agenda but it can transcend/permeate many parts (so open up wider thoughts!), so do not judge the waste management of the entrepreneurs who welcome you.
- Don't assume that a business really is already 'doing all we can' and they understand the term "Upcycle".

## C. Developing and launching circular relationships

Whilst early phases of the project focused on facilitating the transition to the circular economy and understanding our pilot areas concerns to better develop potential circular synergies between businesses, the latter phases prioritised the implementation of circular loops based on the previously identified waste streams.

Here are some tools to facilitate the development of circular loops. Some loops are born by simply connecting actors together, and some were much more complex to launch.

### 1. MAPPING THE WASTE STREAMS AND DEVELOPING THE SYNERGIES BETWEEN PILOT AREA ECONOMIC ACTORS

One of the objectives of the Upcycle Your Waste project was to understand the waste streams existing in the pilot areas. An inventory of the flow of residual materials and products ("waste streams") was based on collectively agreed parameters and methodology. The data have been sent to TU Delft which synthesised the data to facilitate the data processing by the pilots.

This activity has been mostly conducted by TU Delft, one of the two academic partners of the project, represented by Jan-Henk Welink. The partners worked from these data in their pilot areas.

#### The waste streams mapping

The purpose of waste stream mapping in the pilot area's was to provide an overview of the different material and product flows in that area, to identify upcyclable materials and explore business cases. The waste map is based on the inventories, and the results were used to make the waste stream maps, which have the following parts:

- A description of the area concerning the residual materials was made using data on the amount of full-time equivalent of a company, and the branch where it operated (e.g. services, manufacturing)
- An overview of the amount of different residual materials (e.g. paper, plastic) and products (e.g. cardboard boxes, plastic barrels) including the seasonal fluctuation (if any) of these materials and products
- The collectors of the materials
- An overview of materials and products that were mentioned that could also be separately collected, but was not done at the moment

For information, entrepreneurs have been questioned or interviewed on these waste streams, but the answers could be fairly subjective. A company can have the perception that all waste minimization options are tried, but unaware of options to minimise waste. Therefore, questions were asked on the description of discarded materials and products, rather than the description used by waste collectors. For example, plastics are collected and recycled in all kinds of shapes and materials (polyethylene, polypropylene, crates, vessels, pallets etc.). This classification was different to the one used by waste collectors (e.g. old paper and cardboard) in order to identify usable and valuable residual materials and products (e.g. cardboard boxes). The classic classification in recyclable waste types (e.g. plastics, old paper, wood) that is used by the waste collectors and widely known, did not help in the waste scan. These overviews were presented in pie charts and tables in reports and form the waste stream maps. These maps are used for strategies to upcycle waste at companies.



## Kent feedback on the waste stream mapping

The waste stream mapping showed that of those firms coming forward and interested in the themes, many were not perhaps in a position to regularly deliver the sorts of savings we need as a project and an SME needs to make the exercise worthwhile.

As a result, we worked on this economies of scale theme in engaging Kent food producers and growers with retail and restaurants. We have included some of the learning into supporting the development of the Food Loop app with Produced in Kent.



Figure 16: Rob Robinson, Sustainable Business Project Manager, Kent County Council

We revisited the raw data and notes captured from the waste scans to actively link 'wants' and 'needs' via a basic waste matching platform and project management software.

This could ultimately sit on the VIVES platform model but for now we enacted a local NISP model (akin to the National Industrial Symbiosis Programme, which was a waste matching service once backed by WRAP - Waste and Resources Action Programme). This essentially meant running workshop sessions of groups of SMEs and local actors across sectors and areas that could work together, whether that be industrially/chemically, built environment and surplus stock or food/beverage possibilities. Finding more local supply for existing solutions is one arm, finding/creating local demand for new solutions is another.

The food loop app has helped uncover food and drink solutions and also open opportunities across other sectors. Enviromate as a building equipment solution has created some local Folkestone interest for community re-use.

Consultant	District	Initial contact made?	Dominant Waste...	Supply or Deman...	Interested in?	Upcycling Status	Data source?	Had waste scan?	Barriers & Drivers survey?	Attending Event?	Waste match made?
			TBC	TBC		TBC				No	TBC
	Carterbury	Yes	TBC	TBC		TBC	Event: Folkestone	No	No	No	TBC
	Carterbury	Some contact - reconnect	Paper/Cardboard	Supply		Working on it		No		October	TBC
	Folkestone	No	TBC	TBC		Stuck		No		No	TBC
	Folkestone	Yes	Mixture	Demand	Metal for construct...	Working on it	Event: Folkestone	No	No	October	yes
	Maidstone	Some contact - reconnect	Paper/Cardboard	Demand		Already Upcycling		No		No	TBC
	Maidstone	Some contact - reconnect	Mixture	Supply		Stuck		No		No	TBC
	Sevenoaks	No	Hardcore	Supply		TBC		No		No	TBC
	Maidstone	Some contact - reconnect	Wood	Demand		Working on it		No		Potentially in othe...	TBC
	Folkestone	Yes	Plastic	Demand	Waste plastics for...	Working on it	Event: Folkestone	No	No	No	Working on it
	Kent	Yes	Food	Demand		Working on it		No		No	TBC
	Medway	Some contact - reconnect	Mixture	Supply		TBC		No		October	yes
	Ashford	Some contact - reconnect	Wood	Demand		Already Upcycling		Yes	Yes	October	TBC
	Faversham/Carter...	Some contact - reconnect	Mixture	Supply		Working on it		No		October	TBC
	Folkestone and oth...	Yes	Mixture	Supply		Working on it	Event: Folkestone	No	No	October	TBC
	Folkestone	Some contact - reconnect	Mixture	Supply		Stuck		No		October	TBC
	Sittingbourne	Some contact - reconnect	Mixture	Demand		Already Upcycling		No		October	TBC
	Folkestone	Some contact - reconnect	Paper/Cardboard	Supply		Already Upcycling				October	TBC
	Medway	Some contact - reconnect	Paper/Cardboard	Supply		Stuck				October	TBC
	Folkestone		Mixture	Supply		Stuck				October	TBC
	Ashford	No	TBC	TBC		TBC				No	TBC
	Thanet	No	Hardcore	TBC		Stuck				No	TBC
	Thanet	No	TBC	TBC		TBC				No	TBC
	Carterbury	Some contact - reconnect	Wood	TBC		TBC			Yes	No	TBC

Figure 17: waste matching platform and project management software





*Figure 18: Hugo Delahaye, Project Manager – Interreg project “Upcycle Your Waste”, Ville de Roubaix*

## **Roubaix feedback on the waste stream mapping**

The analysis of our database by TU Delft provided an overview of the waste streams. We communicated the main results to our ecosystem.

However, in our everyday work, we directly used the database, instead of the analysis of our database.

To go further in the analysis of data, we are part of the collaborative approach initiated by the Chamber of Commerce and Industry of Hauts-de-France, around the ACTIF platform which is a cross-company synergy tool to identify possible matches. This is the ACTIF platform of the French Chamber of Commerce and Industry. This is an

online tool where moderators, the circular economy team, populates the platform with data collected during the different networking events. Companies are able to post announcements of waste streams they have or they are looking for. The tool works more or less like a platform, making it easier to identify possible matches between companies. The ACTIF tool enables us to make the database accessible to companies, which can participate in the online platform. We hope that companies will become more active in the ACTIF platform and better in managing their waste.

We have also used the data to highlight certain waste streams through a material library and two challenges.

There are also other ways to collect this data and get this information more efficiently. Once the COVID-19 restrictions were lifted, we organised inter-enterprise workshops based on the “Programme Territorial de Synergies Inter-entreprises” method (french adaptation of the National Industrial Symbiosis Program) developed by ADEME (french agency for environment and energy management) and INEC (french institute for circular economy). It saves time and allows us to focus the on-site audits only with the most important companies, qualitatively rather than quantitatively.

It allowed us to link many companies in only two mornings, collect many announcements, and identify potential matches. For example, the inter-enterprise workshops gathered more than 40 enterprises who exchanged their “offer” and “needs/wants” (storage space, secondary material, e.g.), revealing around 260 potential synergies between attendees.

The method is really easy : Same sector SMEs are gathered around different tables. SMEs exchange information about their “offer” and “needs/wants”; they write down their announcements on note cards which are passed from person to person. If a person is interested in an announcement, they fill in the note cards and explain in detail their requirements.

The note cards are collected and the information processed. Once it is processed, we can link the SMEs with the most promising synergies and follow the progress made about the specific synergy.

These different tools helped us identify possible matches between SMEs and gather economic actors which have the same waste. During the last phase of the project, we help the companies to realise the identified circular loops.



Figure 19: Roubaix inter-enterprise workshops

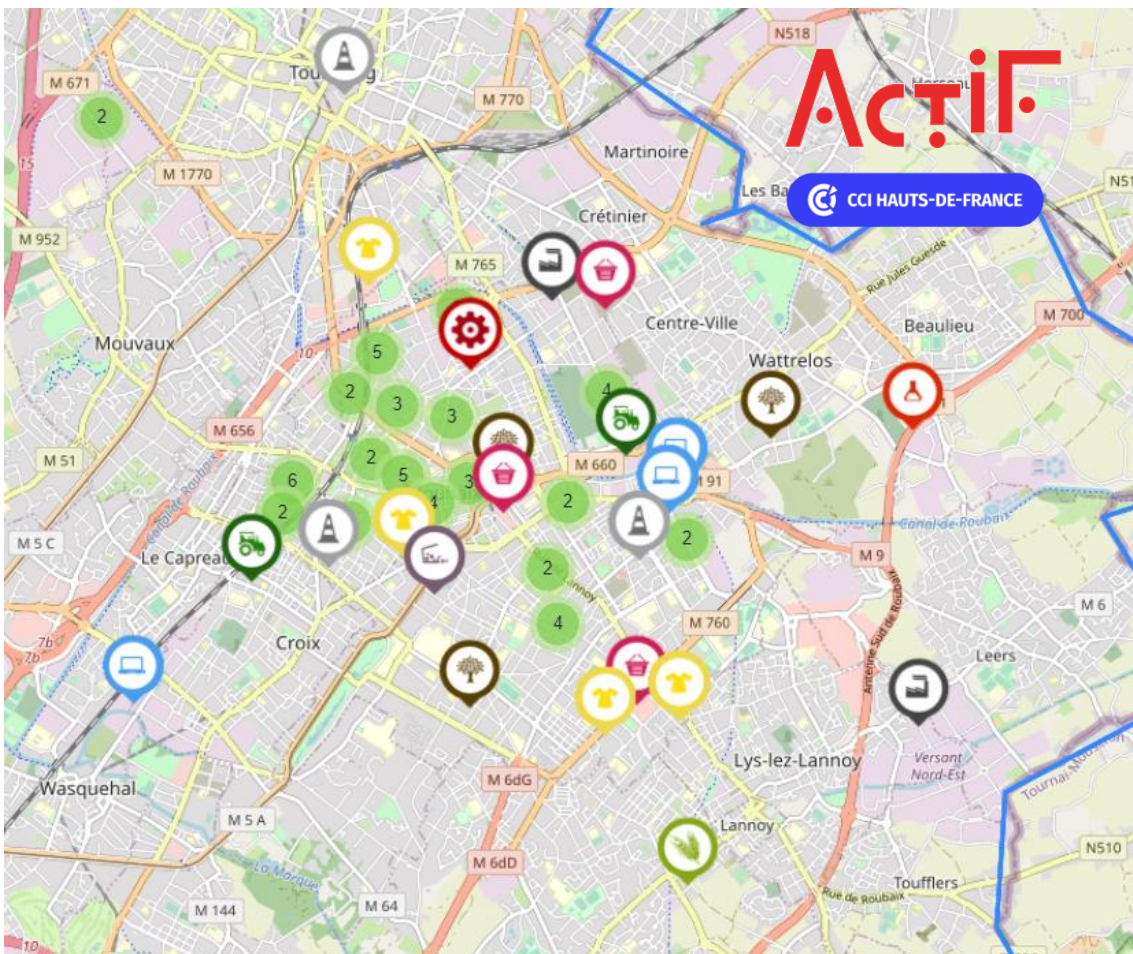


Figure 20: Map of Roubaix from ACTIF



*Figure 21: Valentine Tordeur, Industrial symbiosis project manager, Hauts-de-France Chamber of Commerce*

### Testimony about the industrial symbiosis approach of Roubaix

As part of its circular economy dynamic and its European Interreg project "Upcycle your Waste", the city of Roubaix uses the CCI tool "ACTIF".

This Industrial symbiosis tool facilitated the identification and mapping of the companies involved in the approach, as well as their waste streams (incoming/demand and outgoing/supply). The aim was to simplify the detection and creation of synergies, and the implementation of recycling, reusing, and upcycling projects.

Initially, the "urban miners" of the city of Roubaix conducted interviews with companies to collect their "needs" and their "offers". All the data is now available in the ACTIF platform. As a result, the organisations

involved in this process were given the possibility to create for free an account (or activate for free an account already created by the city of Roubaix) on ACTIF, post announcements, consult other announcements, request contacts and monitor their synergies.

This is done under the control and with the help of two facilitators: Thibault Pfeiffer and Hugo Delahaye.

In parallel, the city of Roubaix has also developed a material library and conducted cross-companies workshops to detect potential synergies.

All of their actions over 3 years have made it possible to involve 87 companies in a waste recycling process, reference 350 announcements, identify more than 260 synergies and hold B2B meetings to further develop the implementation of the identified synergies.

## TIPS

- Don't think that data will solve everything. Data can be a first step to see where you could be heading, but the data has to be taken into your hand and in real life projects have to be started.
- It is necessary to anticipate because it takes a lot of time to fill in all the data and analyse the database
- Having a good knowledge of the industrial ecology symbiosis tools (exchange platforms, and so on) that exist in the market and fit your needs
- Don't over-complicate things, simple, user-friendly tools could be the way forward because you need to keep in sight that the tool is devoted to work even when funding is removed.
- Be sure that the data given is clear and useful before starting to make conclusions - pay extracare to the naming convention of the waste/material

## 2. TESTING AND DEMONSTRATING APPROACHES TO INCREASE UPCYCLING OF SMES WASTES - TENDERS, PROCUREMENTS, MEET-THE-MARKET

This activity has been mostly conducted by Den Haag, lead partner of the project, represented by Patrick Krom.

The original goal was to apply the knowledge and tools developed in WP1 in 6 pilots in the partner cities to test, demonstrate and evaluate these tools in practice and to achieve concrete results in upcycling of business waste.

Each pilot targets a specific business area in a partner city. The pilots focus on organising and supporting local SMEs to collectively procure and implement services for upcycling of their waste streams (waste as a resource) to replace existing non-circular practices (landfill, incineration, re-/down cycling).

### The tendering process

As part of the project, the city of The Hague intended to kickstart collective circular procurement at business area level. This would, in theory, allow (groups of) SMEs to effectively procure removal and upcycling of their waste materials by means of collective tendering or complementary approaches such as auctions, swaps or waste banking. Collective waste removal would bring down costs and reduce unnecessary transport kilometres as waste removal traffic is made more efficient. A procurement protocol was to be developed, containing procedures, contractual and organisational arrangements, criteria and procurement strategies for SMEs to select for (innovative) circular solutions at local level. Local SMEs were to be united in a business resource board, representing them in the tendering and subsequent contractual relationships.

### Difficulties that came from this one-size-fits-all approach

Applying theory to practice turned out to be difficult, however. It quickly became clear that a one-size-fits-all solution was not going to be feasible given the many differences that exist in each local SME configuration.

The main challenges to collective tendering that were found were related to legislation, economic feasibility, and the ability to share crucial information.

Market research into successful initiatives active across all Member States yielded few results, besides showing that few similar initiatives exist and that they were mostly commercial in nature (i.e. not organised by SMEs themselves as envisioned in the original project plan).

Working with the businesses in the ZKD area, it became clear that setting up a self-sustaining collective entity was not realistic at this point in time, as the business case for such an initiative was not feasible in terms of finances or human resources. Although circular initiatives in the area do exist, they are not scalable enough to attract a larger number of companies for a collective tendering structure to be structurally profitable.

Specifically to The Hague, insufficient attention was paid towards the legal ramifications of setting up a collective tendering agreement. Internal legal research showed that national competition law ('Wet Markt en Overheid') prohibits the city from driving such an initiative to the degree that was envisioned for this project. Thorough attention should therefore be paid to all relevant legislation applying to all actors involved, i.e. not just waste legislation applicable to businesses. For municipal governments, such as The Hague (especially given the degree of its involvement), it is important to be well aware of one's position in the waste management market.

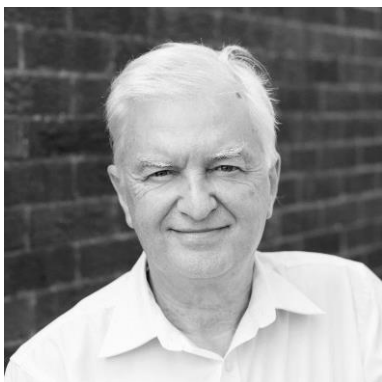


As the original generic protocol was deemed to be practically infeasible, the project abandoned the idea in favour of more locally oriented initiatives. The Hague chose to go forward with a matchmaking approach, linking local companies to upcyclers without being a formal partner in this process.

### Description of the different kinds of tendering protocols

Some partners chose a different path than the one planned at the beginning of the project: collective circular procurement. It worked well for some of them which choose different ways of conducting the tender process, meaning that there are no “bad approaches” but only different approaches that must be tailored to the local context and the local legislation about waste management and involvement of public authorities.

The differences in approaching the tendering process can be the result of the size of the ecosystem or the possibilities given to the local authority in charge of implementing a more circular waste management.



*Figure 22: Martin Blackwell  
Head of operations, Norwich  
Business Improvement District  
(BID)*

### The tendering protocol approach in Norwich

In Norwich, we have organized a Meet-the-market event(s) with potential upcycling partners. We ran an event, called “Trash to Treasure - A Circular Dream”: an Upcycling Fair with a high profile keynote speaker that attracted a broad audience and used this to give businesses the opportunity to learn how upcycling would benefit them, and the planet. Exhibitors at the fair ranged from large commercial organisations such as Aviva, waste experts like Norfolk Recycles, and sole traders such as Tamara/Stand who upcycle material to produce couture clothing. Also present at the event was Scoop, who won the hackathon in July by creating an app to allow business to business upcycling, maximising cost and efficiency.

Max McMurdo, designer, author and TV presenter, gave the keynote speech, and inspired the audience with stories from his vast experience of upcycling waste: from turning old shopping trolleys into chairs and shipping containers into floating homes. It is important to bring in celebrities from the upcycling/recycling world because it inspires the companies present and shows that it is possible and desirable to recycle waste.

- Launched the Norwich Upcycling Exchange: Norwich BID hosted a free webinar on 23 March for anyone interested in supplying or using the Norwich Upcycle Exchange. We provided more details on the support we could provide – including how Upcyclers could qualify for a £1000 cash grant.

The purpose of the approach was to create a "marketplace" for waste that would be sustainable beyond the life of the project. We were delighted to announce the launch of the Norwich Upcycle Exchange – as a gateway to a reliable source of free raw materials for upcycling into profitable products. We wanted to help creative upcyclers make the most of these resources and provide a range of services to support them. These include advice on the main materials available – see our fact sheets – and a chance to qualify for one of five £1000 cash grants. Joining the Norwich Upcycle Exchange as a user will give you access to a steady supply of free raw materials for

your enterprise. In the process this will be helping Norfolk businesses become more sustainable by reducing the amount of waste they send to landfill or for incineration. That's good for you, good for them – and great for our net zero ambitions and the planet.

One of the major outcomes from the research phase we wanted to achieve was to create a protocol and methodology allowing SMEs to effectively procure removal AND upcycling of their waste materials. This focused on techniques for collective tendering by SMEs bundling their waste streams: increasing volumes while combining 'easy' and 'complex' waste types to give them greater procurement power.

We divided SMEs into two groups:

A waste producer is a Norwich based SME generating waste who is contributing to the scheme.

And a Waste User, that is an organisation or individual upcycler of SME waste.

The advantages for Producers - to redirect your business rubbish towards Users to create something of equal or greater value. For Users - to access the free waste of hundreds of small businesses we have surveyed in Norwich city centre and the opportunity to receive a small grant in doing so.

The proposed procedures, contractual and organisational arrangements and selection criteria need to be taken into account when developing the possible selection criteria for choosing an upcycle approach.

Once an SME is aware of the possibility and feasibility of upcycling solution(s) for their waste, the challenge is to make it happen. This may not be within the competence or interest of 'traditional' waste companies. So how can SMEs put this resource in the market for upcycling at local level? And how to ensure not only 'easy', high value materials get upcycled (e.g. scrap metal, high grade plastics), but also complex, less attractive ones (like conveyor belts, electrical equipment, bicycle tires, cable gutters, citrus peels).

We're building a community where dozens of Norwich businesses are creating new and exciting products, and doing so using the smallest possible number of virgin resources. Where dozens more can reduce their impact on the environment by better understanding their waste.

It is important to keep up the momentum and profile. We organised a further, wider reaching event "The Journey to Net Zero" that featured other aspects, as well as Upcycling Waste. In this way some companies that had an interest in another area saw the potential in Net Zero Waste that they had not previously considered.



Figure 23: Norwich Upcycling Exchange Launch



Figure 24: Norwich Business Upcycling Fair Keynote Speaker Max McMurdo

### Testimony from Norwich

Norwich BID looked to the Public Contracts Regulations (2015) as the source for creating a competitive procurement process that could be taken to the market. They selected the Dynamic Purchasing System as a foundation model to utilise.

This enabled engagement with suppliers at the earliest opportunity, across a number of different waste streams or categories, providing a submission document comprising responses to key criteria which delivered a Directory of Waste Users, published via a procurement portal.

Initial responses however were limited. This was found to be due to the language used and the location for the publication of the documentation. Norwich BID simplified the document, made the language more relevant and advertised it on the Norwich BID website.

Thus, the Dynamic Purchasing System became the Norwich Upcycling Exchange and Suppliers became Producers of Waste or Users of Waste.

Engagement in the process increased, and via discussion sessions and a launch event, a directory was created where Producers and Users engaged directly. This now continues as a forum supported by Norwich BID.

Lessons learnt: keep it simple, make it accessible, and ensure flexibility



*Figure 25: Lee Maskell, Equity Partner, Fathorn Farrell Timms*

## Roubaix's approach

From the beginning of the project, Roubaix chose the challenges approach, for legal reasons and simplicity. With a classic tender, it would have been complicated for a local authority to manage company waste and contract with other companies as a regular private actor.

We launched a total of two challenges, which focused on business waste and rewarded entrepreneurs who implemented the best upcycling, reusing or valuable recycling solutions.

The challenges were divided into 3 phases:

- Phase 1: the teams present their project through a note of intent with an intermediate jury deciding on which candidate to progress
- Phase 2: the selected teams have two more months to experiment, polish their solution before a final presentation to the jury
- Phase 3: payment of prizes and follow-up of winning projects

For each edition, we used data from the waste analysis to highlight the most interesting waste streams (large quantity, high quality, problematic for several companies, upcycling potential...) through a material library exhibited at the Couvent des Clarisses (an online version is available).

In 2021, 18 candidates participated in the challenge, with 6 candidates selected to progress to phase 2, with 3 winners awarded a prize to help them pursue their projects and assisted by the Circular Economy team.

In 2022, the second edition proposed 6 prizes divided in two categories, depending on the lifespan of the structure: emerging organisations (-2 years) and mature organisations (+2 years). Six winners were selected out of the seventeen applications.

A challenge is a good way to highlight the project, to make known unexploited resources, and bring entrepreneurs with new solutions in Roubaix together. It also allowed us to meet entrepreneurs and make new contacts. However, it requires a lot of time and energy, and it creates frustration for the losers or for the companies that do not find a solution to their waste (there are only 3 winners).

This is why the call for projects should not be the only tool used to find upcycling solutions.



*Figure 26: Hugo Delahaye, Project Manager – Interreg project “Upcycle Your Waste”, Ville de Roubaix*



Figure 27: First Material Library of Roubaix



Figure 28: Winners of the Roubaix challenge

### Testimony from Roubaix: Nogashi, one of the Roubaix call for projects laureate

I submitted the Nogashi project to the Upcycle Your Waste challenge. The basis of my project was the revalorization of brewery spent grains. About 40 tons are produced each year in the Roubaix area.

At the beginning, Nogashi's ambition was to produce brewers' grain flour. Quite quickly, the project turned to creating a range of finished products.

Being a winner of the Upcycle Your Waste has allowed Nogashi to gain visibility and be contacted by the press.

We used the 12,000 euros grant to buy production machinery. So since October 2021, we have created a complete range of products, composed of flour, pasta, sweet cookies and finally delicious cookies.

Winning this prize has been a real boom for the take-off of Nogashi.



Figure 29: Mickaël Duvette, founder of Nogashi

## TIPS

- Make SMEs aware of the fact that some materials can be useful for certain kind of companies who want to pay for it (or take it for free)
- The role of a local authority is to facilitate the discussion between the upcycling entrepreneurs and the SMEs that have the waste to be upcycled
- Take extra care of legal aspects :
- involving public money is not easy, so be aware of the legal position you have as a local government when dealing with private businesses and tendering,
- define in precise, clear and unequivocal terms the objectives of the laureates/winners
- Do not put too much effort in trying to tender different kinds of waste if it's not possible to bundle them or if there's uncertainty about the amount of waste. It means that you should not try to implement a tendering protocol that is abstract to your pilot area
- Do not be afraid to research other options beyond standard tenders, there's developing models coming through now (which may work locally).



## D. Mobilisation and creation of a circular economy actors community

A big part of the project success relied on the capacity of engaging SMEs in the project. Getting in touch with SMEs is not easy, but involving them in the project for the whole duration of the project is much more difficult. Communication and mobilisation of our SME ecosystems requires everyday work to avoid demotivating SMEs. The activities launched during a full-scale project combining academic studies and economic development can take a long time to show results, when SMEs prefer a hands-on approach with short-term results and achievements. Here are some tools that we implemented to avoid demotivation.

An important part of the Upcycle Your Waste project relies on the mobilisation of the relevant stakeholders and communication. In order to keep the local actors mobilised, local pilots organised events to communicate about the project, engage SMEs, and disseminate the good practices and findings of our activities.



Figure 30: Roubaix inter-enterprise workshops



## 1. OOSTENDE COMMUNICATION ACTIONS

### How we mobilised our local ecosystem?

We have a newsletter where we disseminate case studies and information about the project. It will be kept sending, so in the future we still have this medium. We develop events of all kinds for entrepreneurs and companies maintaining the opportunity to talk about the project and disseminate the results.

We have a database with the contact details of all companies involved in the project, whereby the Economisch Huis Oostende has explained and disseminated the project. The communication between companies and the Economic House of Ostend is very accessible.

The Vives platform is almost ready and this is our connection of waste producers and waste processors. Designers and people with inspiring ideas can also share their knowledge on the platform and get in contact with each other.

### A thing we could have done differently:

We could have done a hackathon earlier in the project to see if something develops, but the issue with hackathons however is, if the participants do not wish to continue with their cases then the 'inspiring case' gets somehow lost.

Bringing projects to a good end is much easier when the projects work bottom-up. It would have been interesting to unite people with different perspectives on the economy and sustainability. Brainstorming with them could bring inspiring ideas. New people would come on board to create what could lead to a network of inspirational, creative thinkers. If there is also a location where the group can regularly gather and is easily accessible for outsiders and new members, the network will be self-sustaining.

### Added-value of the connection between entrepreneurs initiated during the project:

They find each other more easily and they can thus start up new projects. The aspect of working bottom-up (get entrepreneurs involved in the first stage) will work more efficiently. They will carry out the message through their social media channels.

Talking to entrepreneurs was very inspiring. Sometimes they heard somewhere about a circular project, but they didn't have the time to research the scheme themselves. This was an opportunity for Economisch Huis Oostend to search for a solution and discover existing projects which are fed back to the businesses, inspiring them. However, this didn't always lead to new initiatives due to the difficulties of implementation.



*Figure 31: Arne Rossel, European Projects Coordinator, Economisch Huis Oostende*

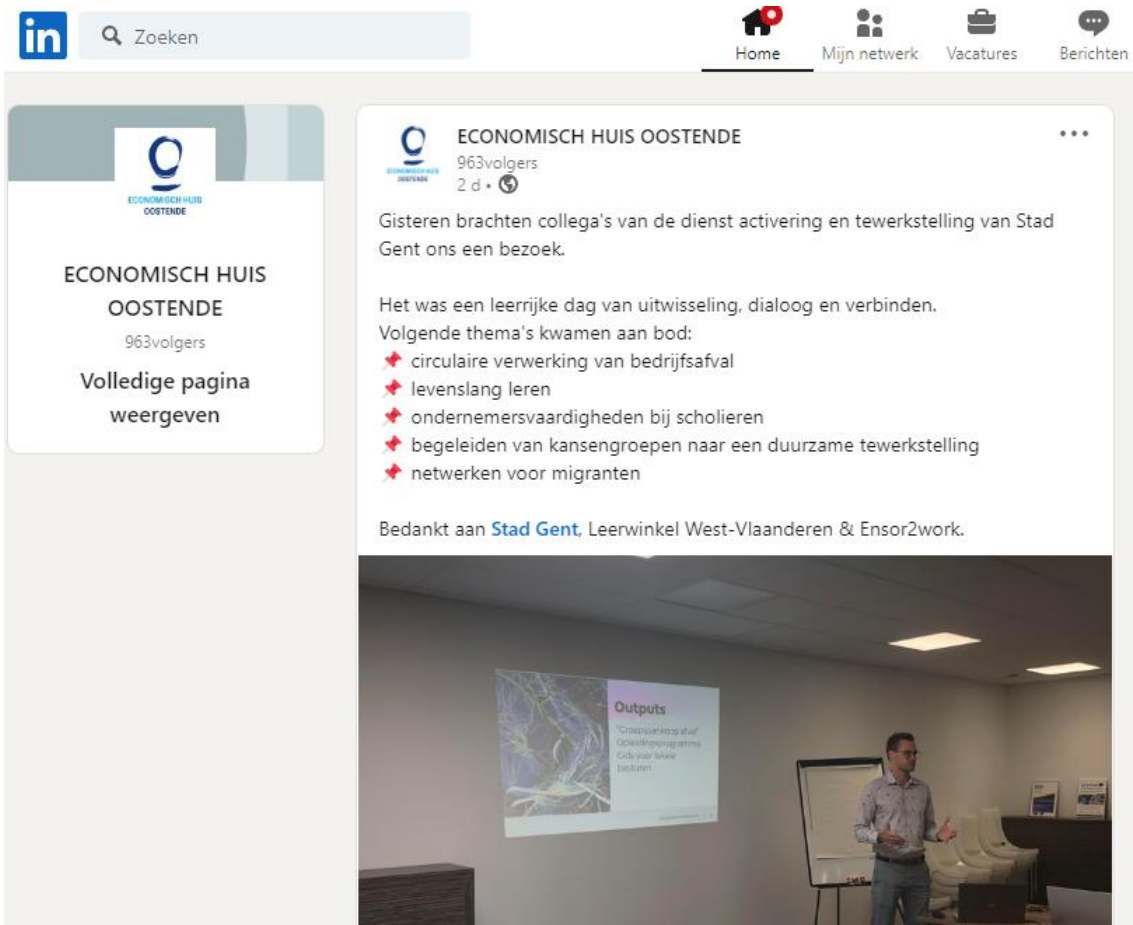


Figure 32: Ostend's linkedin post



Figure 33: Oostend event

## 2. KENT COMMUNICATION ACTIONS

### How we mobilised our local ecosystem?

We engaged a range of networks with the themes and aims, trying where possible to align across the common theme of enhancing sustainability across a range of sectors. This included appearing on a regional business radio station to outline the circular economy and how it was relevant to our communities and business opportunities linked to it. We used existing business forums and officer groups to reach out to the business community across Kent and Medway. Linking in directly with active programmes with shared aims, like Low Carbon Across the South and East (LoCASE), BLUEPRINT to a Circular Economy and Inn2POWER, did offer some results but we needed to engage two rounds of independent consultants to recruit and engage SMEs to the project. Adapting the messaging with background issues seems to now be working.



*Figure 34: Rob Robinson, Sustainable Business Project Manager, Kent County Council*

We moved forward with the next stage of engagement, with a set of waste-matching workshops and troubleshooting seminars planned at roughly 1 per month in different areas, with a specialist consultant ensuring pull through and results-orientated follow up wherever likely business cases exist. We are working these across a number of themes (building waste, food waste, wood waste etc) and mixing between 3 or 4 key areas of Kent depending on numbers engaged in 'eco-clusters'. We have linked this with some extensive social media output which will then be followed with snippets and bite-sized reports on real-life waste matches and business cases. We've found that only when a firm can resonate with an outlined scenario do they mobilise themselves.

### A thing we could have done differently :

We would have mobilised key players/actors in each 'local ecosystem/economy' given the geographical spread of businesses currently engaged. This would make it easier to establish links across Kent from the outset. Having these 'key player' businesses would refine the circular ecosystem by directing SME waste to a few key places. Building on current activity and 'on the ground' successes far earlier with an in-depth desk-based review would have enabled us to work up this content far earlier so not just horizon scanning but taking a proper look at circular economy businesses already active and supporting exposure of these SMEs first would have been an excellent early step.

### Added-value of the connection between entrepreneurs initiated during the project :

Having just spoken to three that are now linked (at the recent Kent Construction Expo), I would say that there is some real camaraderie, togetherness and relief that they have found some allies to help augment and enhance the impacts of their initial desire to test the market and seek collaboration. The local CSR opportunities we are now looking to realise along with them but it is less that and more the practical, common sense benefits that seem to be outweighing the public relations as a driver. This is refreshing as an enabler.

We truly realised the value added collaboration opportunities in marketing collateral and positive social value benefits, together with local skills and employment

opportunities upcoming as a result. Links between local colleges, construction firms looking to connect training and employment opportunities with community building projects could be a huge local success with which we, as a local authority, can be linked. Further work between community initiatives like repair cafes and bicycle repair initiatives could connect these solutions, making it a community resource opportunity, rather than purely one on an SME level. We feel that this is where the real power could be, as well as attracting larger firms, and wider attention about basic good business practice (firms actively separating out recyclable waste streams and then thinking more about raw materials, process and costs involved).

Inspiration from those who've been through the initial processes and outlining huge footprinting benefits of business cases for their supply chains have helped put this into context for small businesses being a huge part of a wider solution.

There's real benefit in showing how relevant solutions from other pilot areas can be applied in their own area.



Figure 35: Kent's event

### 3. ROUBAIX COMMUNICATION ACTIONS

#### How we mobilised our local ecosystem?

In Roubaix, we used different tools to mobilise our SMEs ecosystem.

Firstly, one of our communication channels we utilised was a newsletter, conveying the different events and information about the Upcycle Your Waste project. We tried to target communication, making it as efficient as possible, so as not to drown our SMEs under a huge amount of emails.

We did not only use newsletters but were also present on LinkedIn. Posting often on this professional social network was useful because it made our communication visible and we did not have to worry about overwhelming our SMEs, as SMEs that follow us on LinkedIn do so voluntarily.

It also grants the SMEs the opportunity to repost our posts, so we can reach new audiences that we are unable to reach. We also created a group called “circular economy in Roubaix” that aimed at gathering circular entrepreneurs on this page.

In Roubaix, whilst we believe that digital marketing approaches are beneficial to reach wider audiences, we recognise that is not sufficient as a network cannot exclusively live online. That’s why we organised an afterwork event every two months. These afterworks were much-awaited, even the least attended events gathered at least 15 persons. The afterworks are as follows :

- Participative agenda: attendees exchanged details about their news, needs, questions, fears or information worth to be shared with the other attendees. It is an opportunity where SMEs can freely exchange information together. All the feedback and information shared by the attendees is collected by the circular economy team and summed up in the minutes of the meeting.
- Networking moment around a buffet to strengthen ties between zero waste and circular entrepreneurs

Obviously, the two meet-the-market events are part of the communication strategy we have in Roubaix to engage SMEs in more circularity. Aside from the work on the synergies that are the main goal of these events, these events are also a communication tool to engage new SMEs and keep getting in touch with SMEs involved since the beginning of the project.

During the two meet-the-market events, the welcome introduction by one of our elected representatives is also a moment where we can show them that their waste management problems matter and we are at their disposal to find a solution. The meet-the-market events are also a big networking event between circular economy-friendly economic actors from different sectors and degrees of maturity.

#### A thing we could have done differently :

We would hire a communications expert to strengthen our communications plan, our newsletters and social media posts.

After 3 years of the Upcycle Your Waste project, we realised that our communication could have been improved. Even though we communicated a lot about the project,



*Figure 36: Hugo Delahaye, Project Manager – Interreg project “Upcycle Your Waste”, Ville de Roubaix*

our communication did not follow a global strategic approach, we had a much more “case by case” communication to meet short-term requirements (need to send right away a newsletter to inform our SMEs that an afterwork would take place in two weeks). We would have liked to be able to have someone dedicated to the communication working on the website, the social media posts, the press relation, the invitations for our events, e.g.

### **Added-value of the connection between entrepreneurs initiated during the project :**

The good connection with our local economic actors was highly valuable. In fact, a good network of SMEs well connected to each other allows us to create links between the professionals of the territory and share knowledge and experiences; it can be the origin of projects.

Creating a spirit of community between these actors allows information to circulate, so everyone can meet, inspire each other and set up new projects.

For example, one of the Upcycle Your Waste challenges laureates is a group of Roubaix entrepreneurs that join their skills to launch an upcycling and reusing project combining :

- A textile dyer with ends of wire reels of high value but unusable without transformation
- A clothing producer interested in circular economy and upcycling
- A social integration company prone to develop its circular economy activities

## **TIPS**

- Inspire by challenging the normal 'take, make, waste' model across sectors and showcase successes which entrepreneurs can relate to.
- Give useful and locally targeted information in order not to drown the VSE-SMEs under a huge amount of information communication - target the right audience
- Keep a regularity in your relationship with your entrepreneurs
- Do not act alone. Mobilise networks, partners, join up linked projects (Blueprint, Plasticity etc), so it makes your communication and the mobilisation of your entrepreneurs easier.

# Conclusion

Through the Upcycle Your Waste project, we have implemented six upcycling pilots in England, France, Belgium and The Netherlands. In it, we explored what works and what does not and collated our knowledge in this Guidance. Although its readers may represent diverse institutions with various ambitions and competences, and different local, legal and commercial conditions apply, the lessons collected here might offer them the inspiration to undertake similar initiatives. We, the Upcycle Your Waste partnership, will continue to work towards a circular economy, and doubtlessly so will many other like-minded governments, businesses, researchers, citizens and other stakeholders. We hope that this document provides them with the valuable knowledge and insights that we collected in the Upcycle Your Waste Project, and that it can help them in their own journey towards a sustainable future.

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