



RECOUP

Project Portfolio

2023

About RECOUP

RECOUP, founded in 1990, is the UK's leading independent authority and trusted voice on plastics resource efficiency and recycling. As a registered charity, our work is supported by a network of over 180 members who share our commitments including a more sustainable use of plastics, increased plastics recycling, improved environmental performance and meeting legislative requirements. We achieve these by leading, advising, challenging, educating and connecting the whole value chain to keep plastics in a circular system that protects the environment, underpinned by evidence and knowledge.

Introduction

Much of RECOUP's work is carried out as core activities which are funded through RECOUP membership, however, there are some areas that we can only carry out further work with additional support.

The RECOUP project portfolio has been developed to communicate projects that the RECOUP team have identified as areas that will further advance understanding, knowledge or evidence around plastics resource efficiency and recycling.

We are therefore seeking member and stakeholder support for the projects outlined in this document. The project concepts within this document represent brief project outlines which would be fully developed into a project proposal should there be interest to progress with the work. Projects range in budget requirements and we are open to partnerships and collaborations on individual projects.

If members would like to input into a project proposal development or propose their own project ideas this would also be welcomed.

If you would like to find out more about any of the proposed projects or express your interest in supporting a project then please contact us at enquiry@recoup.org.



Project summary

Litter Composition & Pathways Project

Develop a standardised, evidence-based methodology for litter composition analysis to support evidence-based interventions to challenge issues of litter pollution.

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Review existing reports and information, raise attention to the current challenges and solutions, recommend and support best practice approaches for the UK.

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Investigate the journey of the small items fraction from the MRF to recycler to final destination to determine recommendations for this difficult to recycle fraction.

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Recyclability Guidelines for Films and Flexible Packaging

Research and development of recyclability by design guidelines for films and flexible packaging based on current and future UK infrastructure.

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Research focused on creating a circular economy for pet toys to provide an easy to access database to be used by industry for design, manufacturing, and end of life processing of plastic pet toys.

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Produce a UK infrastructure report to identify and map UK washing facilities, reverse logistic providers, complete service providers and waste management companies operating in the reuse sector.

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Litter Composition & Pathways Project



Background

Littering is a widespread issue that affects our environment daily. Shockingly, Keep Britain Tidy estimates that more than two million pieces of litter are dropped in the UK each day, leaving our streets and natural spaces untidy and uncared for.

In response to the growing concern over litter pollution, the UK government, industry leaders, and stakeholders are calling for better data and evidence to inform policy decisions and drive effective solutions. Proposed reforms aimed at reducing litter rely heavily on accurate and robust data sets. A comprehensive understanding of litter composition is essential to assess the impact of these reforms and determine the most effective strategies for curbing litter pollution. However, current litter projects often face limitations in data collection methods, leading to a lack of consistency and reliability. Many studies rely on citizen science, which, while valuable, may not always provide the most reliable data.

Approach

In response to the urgent need for better litter data, RECOUP has launched the Litter Composition & Pathways Project (LCPP). The project's primary goal is to review, challenge, and provide robust evidence regarding the composition of litter. To achieve this, RECOUP aims to develop a standardized, evidence-based methodology for collecting and analysing litter, creating a comprehensive data set. Peer reviewing of the methodology will ensure the reliability and validity of the collected data.

Developments in Artificial Intelligence (AI) technology have seen investigations into its use to analyse the composition of litter and binned materials. As part of this project, RECOUP will be exploring the possibilities around AI technology and its potential to be a highly efficient, highly effective option for generating scalable data on litter in the future.

Outcome

The robust litter collection and sorting methodology developed in this project will become a model that can be adopted by other litter studies. This creates standardisation towards the collection of litter, thereby assisting the development of more reliable

and robust datasets that can be utilised by the UK government and key stakeholders to make informed decisions and develop effective environmental policies. The evidence-based insights gained from this project will aid in the development of targeted interventions to combat litter pollution effectively.

Project Requirements

The project requires the undertaking of litter picks across a variety of location types, which will then be analysed and an online dataset created. Initially the project will be focussed locally to test the methodology in a familiar environment as well as increase the number of litter picks that are able to be carried out during the project timeframe. RECOUP plans to collaborate with local litter picking groups to collect litter for analysis.

RECOUP will investigate the use of AI technology in analysing the composition of litter, and this will involve discussions and testing of potential technologies on offer. Other options for the collection of litter, such as sea bins and road sweepings, will also be considered.

The project is currently ongoing, with a draft methodology for litter collection and sorting having been developed. The initial phase of analysing litter through AI technology has also taken place. To further enhance the project's capabilities, RECOUP is in the process of establishing a dedicated "Litter Lab" at their offices, where advanced litter analysis will be conducted. It is hoped that the collection of litter will begin imminently, with the project looking to be completed early/mid 2024.

Artificial Grass Recycling & Recovery

Background

It is estimated that over 150 artificial grass pitches (AGPs) are in need of recycling per year in the UK; these will comprise old 3G and sand-based AGPs. The need to ensure effective recycling / disposal of these old surfaces is fundamental to all companies involved in their construction including funding partners, suppliers and other organisations.

In the AGP industry there is currently a lack of a coherent approach for the recycling / re-use of old artificial grass pitches. The ad hoc situation as it stands involves a disparate mixture of typically the most economically viable means of disposal including field dumping, 2nd life re-use (golf courses, farms, etc) and other less desirable approaches. Landfill is not commonly used due to the prohibitive cost. A government funded Danish facility appeared to be best in class for recycling sports pitches.

A typical 3G artificial sports pitch has a mass of 250 tonnes and contains proportionately 20 tonnes of plastics, with a variable 1:1 ratio of green PE yarn and black PP/Latex crumb, broken down as 11 tonnes of green PE yarn and 9 tonnes of black PP. It has been established that the sand and rubber crumb can be extracted from the pitches and re-used, leaving the green PE yarn and PP backing.

About 5 years ago RECOUP conducted a piece of work to explore the recyclability of the plastic fraction within an artificial pitch. A range of issues were raised, including the range of different types of pitch with differing compositions. We connected with a company called Turftec to develop an outline plan to respond to an FA request. The FA explored the options available, and decided to work with a sand offtaker who was already established. We do not believe they did anything with the plastic pitch and backing.

Through a different name (Assured) we were approached again in 2022 by the Turftec contact to provide a proposal to assist with the development of a business case and assess the feasibility of recycling. The proposal includes background, costs and method for the recyclability testing requirements. The objective was to determine if the green PE can be handled by a UK plastics recycler and has an end-of-life use, the value

and cost implications and commercial viability of ongoing supply. This would also include the same investigation for the PP backing mat and if the latex coating has a detrimental effect. This was never progressed.

There is also a growing interest from the landscaping sector who face the same challenges, but the additional challenge of lack of scale as individual operators and local areas tend not to generate the quantities required.

Currently, there are some companies offering limited means of recycling in the UK but the scale of scope of these have not been validated for their suitability. Other approaches to RECOUP have not led to facilities being developed yet.

Aims and Outcomes

Phase 1 : To summarily revisit the existing reports and information, raise attention to the current challenges and solutions, to review and research up to date information regarding recovery and recycling of sports pitches, and to recommend best approaches for the UK. To promote this publicly and explore memberships and further working with relevant organisations.

Phase 2 : To undertake funded work to further develop and trial technologies and opportunities, assess the costs and environmental benefits of potential systems.

Phase 3 : To work with relevant partners to establish a pilot facility or support a third-party facility.

Project Requirements

Phase 1 : 5 days research time

Phase 2 : 20 days plus costs of trials and tests.

Phase 3 : Dependant on partner(s) and scale of activity





Small Plastic Items Recycling Research

Background

Small plastic items and packaging are disposed of into kerbside recycling, during the sorting process these items if smaller than 50mm in diameter can be lost in holes in the machinery that separate off glass from other materials. Or through a sieving process that removes these smaller fractions so the larger materials, card, paper, cans, tins and bottles can be captured.

RECOUP members that produce small packaging items or have small separate components on packaging have a particular interest in this area and are keen to understand the process and its challenges.

In 2019 RECOUP held a focus group meeting in London for members to discuss small plastic items, this included brands, waste management companies and local authority. A discussion was held about the current process for sorting small items and ideas on how this can be changed. It was agreed that some follow up research should be undertaken to assess samples of this material and follow its journey through to the glass recycler.

RECOUP produced a report with the findings and recommended some possible solutions. Although challenges remain around the technology of the sorting and some packaging designs.

Approach

There is still strong interest in this subject with members asking if we can form a working group. Although it was established that current technology and sorting systems cannot be modified there is still further research and investigation that can be carried out into the composition of this material fraction.

A mapping exercise will be carried out to establish the MRFs in the UK that accept glass and those that don't to build on previous RECOUP work that found small items predominantly end up in the glass recycling fraction. The journey of the small items fraction will be documented from the MRF to recycler to final destination for both MRFs that sort glass and those that don't. A sample of the material from up to two MRF's will be analysed for identification of polymer type and quality. Establish

the final destination for the material.

Outcome

To provide a reliable resource for the journey of small plastic items. Document the current infrastructure, the challenges and any opportunities for improvement.

Project Requirements

Approx. 14 days incorporating:

- Site visits x 2
- Lab testing
- Report writing

Understanding Blister Pack Material Compositions and Implications for Recycling

Background

Blister pack packaging (commonly used for medical/pharmaceutical products) presents a number of challenges when it comes to their recyclability. Firstly, taking in to account the materials used in the packaging there is often a mix of materials, a polymer forming the main packaging component and a sealing film which is commonly metal. Some manufacturers of blister packaging have moved away from this construction to a more recyclable structure however there are still challenges when it comes to the collection, sorting and recycling of these products. If the blister packaging is collected at kerbside (currently an uncommon pack format cited by local authorities for collection) then the packaging is unlikely to make it through the MRF sorting as the item is too small and lightweight to be captured. The other barrier here is the mix of materials which highlights the question of whether even if its captured is the material of value to a recycler. If the packaging is collected through a takeback scheme specifically for blister packs (e.g., Terracycle) what is the compositional analysis of materials used and can recyclers actually get value from this material?

RECOUP has attended a number of forums looking at the challenge of blister pack recycling, all attempting to find a solution. There is often a lack of solid evidence and data to support the direction in which blister pack recycling can be developed.

Approach

Either through collaboration with a company/organisation already collecting blister packs for recycling or by purchasing/gathering a representative sample of packaging, we would complete a compositional analysis to understand the different blister pack materials used on the market. Desk based research could also be completed alongside this for newer/novel formats entering the market.

The second step would be to take the knowledge/sample of formats available on the market and to determine if there are any UK reprocessors that can recycle these through discussions with our network.

Outcome

There is currently a lot of interest around blister pack recycling but few tangible projects actually looking at how this material can potentially be processed. This work would firstly give a greater understanding of the different packaging formats for blister packs in the UK and would provide some evidence as to their recyclability if collected in large quantities and potential end markets for collected materials.

Project Requirements

Purchasing/sourcing of blister packaging samples.
Resource time (material composition analysis, research, report writing).
Cost of any potential trials with reprocessors.



Research on the Effects of Logistics and Storage on Produce Shelf Life



Background

Food waste is a serious issue which influences the environment, economy and society in the UK.¹ According to the Waste and Resources Action Programme (WRAP), the UK generated 9.5 million tonnes of food waste in 2018, which equated to the average person in the UK individually wasting 143 kg of edible food each year.

There are many studies into food waste, including several conducted by WRAP. These studies tend to be focused on consumer activity with a bias on plastic packaging and food storage at home. Many studies have concluded that foods wrapped in plastic perform just as well if stored correctly without plastic wrapping.² However, there are equally as many studies that counter this argument with widely different results indicating that plastic wrap in some applications helps drastically reduce food waste.³

Approach

Many studies conducted seem to carry a bias towards a specific aspect of food waste. Plastic packaging has been targeted in many of the studies with no regard for how the foods are handled, transported, and stored prior to purchase. The reports all specify target storage temperatures in many cases below 5° C. A brief look through any supermarket produce department reveals that many produce items are not stored in well chilled cabinets and many products such as potatoes and mushrooms, which are sensitive to light are stored in bulk and completely exposed.

Study areas:

- Temperature controlled storage during transport and back of store storage.
- Temperature controls of shelf displayed produce.
- Ambient lighting of displayed produce.
- Affects of storage conditions on shelf life of wrapped and unwrapped produce.

Approach:

- Site visits at supermarket members sites.
- Interviews and data provided by supermarket members.

- Observations made on visits to local supermarkets and grocery stores.
- Advice on food storage practices from experts in food packaging.

Outcome

An independent and impartial study into the wider impacts of supermarket and logistics practices on the effects of proper temperature control and storage for the shelf life of produce sold in UK supermarkets. With a comparison against previous studies conducted into the effects of plastic packaging and its contribution to reducing food waste.

Project Requirements

Research and report writing: 15 days
Site visits

¹ [Action on food waste | WRAP](#)

² [WRAP Reducing household food waste and plastic packaging](#)

³ [Frontiers | To Wrap Or to Not Wrap Cucumbers? \(frontiersin.org\)](#)

Background

While a number of business-to-business reuse systems have been in place for some time, it is clear that business-to-consumer focused reuse systems will have a significant role to play in the future as progress is made to find long term solutions for resource efficiency and the circular economy. Whilst single-use packaging models are well developed, efficient reusable packaging systems are still in their infancy and there is work to be done to implement and exploit the best and most viable models. Many retailers and brands have attempted to implement reuse systems, but often struggle to scale because of the lack of commonly available infrastructure to make it financially and environmentally viable. There is a gap in the understanding of the infrastructure available in the UK for reuse and also the requirements of infrastructure for implementation of reuse at scale.

Approach

Produce a UK infrastructure report based on desk-based research and interviews with members/companies within our network to source required information. To specifically cover areas such as:

- Identification and mapping of UK washing facilities
- Identification and mapping of reverse logistics providers
- Identification and mapping of complete service providers
- Identification and mapping of waste management companies dealing with reuse
- Scenarios: scale of infrastructure needed if certain % of product categories move to reuse (based on voluntary or regulatory commitments)

Outcome

Report detailing the current status of reuse infrastructure in the UK and the requirements of future infrastructure for the implementation of reuse at scale.

Project Requirements

The cost of this project is based on resource time requirements as it is a research-based project.

Estimate: 50 days of resource time



Pledge2Recycle Plastics Event Support



Background

The RECOUP UK Household Plastics Packaging Survey 2022 evidenced citizens are only recycling 42% of all plastics that they buy. (38% of plastic pots, tubs and trays, 45% of non-drinks bottles, 75% PET & 78% HDPE drinks bottles). Adults receive messaging through their own network, the media and from their own Local Authority on what to do, although this advice and information is not always used and is often misleading. Packaging that isn't recycled may be mis-sorted, often ending up as general waste, or is at risk of being littered and causing damage to the environment.

RECOUP and Pledge2Recycle Plastics have a long history of delivering educational roadshows at events as well as supporting event environmental commitments through bottle collection and recycling and litter picking.

Approach

To support an event by delivering the below activities at an organised event:

- Educational roadshows to inform citizens about the recycling process and why it is important. Explaining in clear language what happens after items are placed in the recycling bin, myth-busting the misconceptions about recycling.
- Collect and recycle plastic bottles used during the event. At large scale events where plastic is used (e.g., stall holders using plastic bottles) collection and recycling of this material can be arranged. This can be used as a positive marketing message for the event and build trust that the event will be run in a sustainable way.
- Arrange litter picking across the event. Litter causes damage to the environment and is also a waste of resources. Collecting and recycling protects the environment both from the material dropped and by minimising the need to take virgin material.
- Provision of branded event recycling bins to promote the responsibility of the event organisers

Outcome

Engaging with citizens and having direct conversation with them can lead to behaviour change. By explaining the process and what happens to their waste, they are happier in making

more of an effort. The Pledge2Recycle Plastics roadshow supply resources to demonstrate the full recycling journey of household products. Ahead of any event the team research the local issues and recycling process specific to the local area, this allows them to not only explain the full circularity of plastic products, but also to provide specific answers to the audience.

We know from previous projects and the evidence collected that building the trust in the industry and the collection process helps increase this participation which drives recycling rates up. (Ref: [RECOUP Best Practice Guide for the UK Plastics Recycling Communications 2022](#), [Citizen Plastics Recycling Behaviours Insights Study - February 2022](#), [INCPEN & WRAP: UK survey 2019 on citizens' attitudes & behaviours relating to food waste, packaging and plastic packaging](#))

Project Requirements

Staff time and equipment - Dependant on activities to be delivered and length of event.

Background

Material collected for recycling by local authorities is predominantly through kerbside and bring back schemes (e.g. HWRCs), but a significant amount of material is disposed of and lost from circular collection schemes, through litter and general waste 'on the go' bins. While much of this material is unrecyclable, and the introduction of policy changes such as Deposit Return Schemes may help to capture some of this valuable material, there is a fraction which remains uncaptured and even in scenarios where 'on the go' recycling bins are offered, are likely to end up in non-circular destinations due to their low value and high contamination, likely in landfill or incineration with general waste.

In 2008, RECOUP was a key partner in launching the Recycle Zone project which aimed to establish sustainable and effective recycling initiatives. Between 2008-2011 the project delivered 'on the go' recycling collections in the following sectors; shopping centres, transport hubs, Academia, Leisure attractions, workplaces and outdoor events.

RECOUP now own the rights to the Recycle Zone branding. As a concept, Recycle Zone is a very simple one and one that could be easily replicated. In essence, it is about installing recycling collection units, for consumers to deposit their recycling in a manner which would produce a clean and contaminate free waste stream to then be sent to partners to recycle.

Approach

Working with a local authority or interested organisation, Recycle Zone would be set up in public spaces to capture recyclable plastic packaging that is disposed of 'on the go'.

A number of years has passed since Recycle Zone last sought to capture material, and new technological solutions are available to identify, and ultimately recycle, previously 'hard to recycle' formats and polymers.

Outcome

Providing new infrastructure will help to capture valuable material that would otherwise be lost to non-circular end of life solutions or, worse still,

disposed of in the natural environment. This would ultimately help in efforts to achieve recycling rates for plastic packaging and reduce litter.

A better understanding of material disposed of away from home, and the viable end markets for this.

Potential costs & timeframe

Sufficient infrastructure, equipment and staff time would be required dependant on scale of activation.

Recycle Zone: 'On the go' Plastic Recycling



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