Plastics Packaging Portal Discovery User Research

A summary of insights drawn from user research conducted between September and November 2021.

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Introduction

The Plastics Packaging Portal (PPP)

The Plastics Packaging Portal has been funded by Innovate UK. It is a collaborative project led by OPRL with Open Data Manchester, Dsposal, RECOUP and Ecosurety.

It aims to:

- Develop an open standard for plastic packaging data
- Extend the Open3R Household Waste Recycling Centre data standard
- Develop online portals to streamline the collection of these two datasets, enable them to be linked and improve access to this data for all along the plastic-packaging value chain.

Discovery User Research

To design a data standard that is fit for purpose, it is important to gather qualitative insights from those involved in the plastic-packaging value chain.

As such, a Discovery User Research project was carried out, with the following objectives:

- To identify and map all the steps of the value chain, as well as the data flow within them
- To understand where the data flow breaks or becomes challenging
- To pinpoint the impact of Extended Producer Responsibility (EPR) on the value chain
- To find out what people might need from an open standard

Hypothesis

- People may be protective about their data due to commercial or other sensitivities
- There may be limited awareness of current data standards
- Participants from different parts of the value chain may be working 'in the dark', with very little visibility of what is happening upstream and downstream
- Participants may want a single system to receive, input and send data, to make their lives easier
- A lot remains unknown about the Extended Producer Responsibility (EPR) reforms, so there may be confusion about what data is best to collect

Methodology

The plastics packaging value chain has a range of actors that need to communicate with each other. They have similarities, while being part of completely different sectors, with disparate needs.

When designing the research, we believed that discussions between these groups would not only be valuable for our team, but would also build shared understanding of the challenges and empathy between participants.

A series of workshops offered a suitable means for collecting qualitative data, while building community, thus transforming participants into stakeholders.

This level of engagement will be beneficial for later stages of the research, where these stakeholders can be involved in usability testing of prototypes.

Recruitment

Organisations engaged:

- Brands: Nestle, Evergreen Garden, Wickes, Muller, Huel
- **Packaging manufacturers:** RAP UK, cethefuture, Root, Ipac, Waddington Europe, Berry, Novolex, Sampling Innovations
- **Product manufacturers:** Nestle, Evergreen Garden, Nice Pak, R Tek, Huel, Muller
- **Recyclers:** Biffa, Suez, ReNew
- Industry bodies: BPF, BRC, PCEP, SC Group
- **Retailers:** Aldi, Coop, Waitrose, Tesco, Studio Retail, Wickes, Tesco, Ocado
- Waste management: Biffa, Suez

Recruitment

- **Compliance schemes:** Ecosurety, ComplyDirect, Valpak
- Third-party developers: Greyparrot, Horizon, Crypto Cycle
- Academia: University of Cambridge
- Local government: Warwickshire, Reigate & Banstead
- **Government agencies:** Advisory Committee on Packaging, Department for Environment, Food and Rural Affairs, UN-Habitat

Recruitment

In total we:

- Engaged 42 organisations
- Ran 6 workshops
- Conducted 5 interviews
- Interacted with 36 participants

Challenges

The workshops coincided with other industry events, which meant some participants dropped out. However, several asked to be updated on progress, which points to positive engagement. This is an important foundation for later stages of research.

Challenges

Insights around the challenges faced across the plastic-packaging value chain

Shifts in legislation

Often the debate got stuck on the lack of clarity regarding changes in regulation that will impact the value chain significantly. EPR, Plastics Tax, DRS (Deposit Return Scheme) and consistent collections create a lot of uncertainty for businesses around the data they might have to collect in the future.

When asked what data they are collecting, participants were usually quite clear of the data fields involved – but when asked about what data they would like to be collecting, or what concerned them about data – these changes were always at the forefront. We are "In the midst of the biggest packaging reform that will take us through the next 20 years."

"At the moment we don't know what EPR consists of, we don't know if they're looking at, in terms of eco-modulation, are they looking at just recyclability? Are we looking at recyclability and recycling rates? Or are we looking at recyclability, recycling rates and resource efficiency?" "It's a very difficult time to be doing this exercise."

Reporting

Brands and manufacturers mentioned that reporting data to many different organisations and schemes was time-consuming and onerous for their teams.

The data requirements were mostly similar, but the diversity in formats meant having to input the same data in many different ways.

"If we could persuade them to use the same thing, it would halve the workload."

Tech debt and lack of standardisation

Participants that have many factories or plants, especially those that have grown via acquisition of other businesses, face a considerable amount of tech debt. They are often already looking at a myriad of systems to collect data, all in different formats.

This sums up one of the main data challenges in the value chain as a whole – there is no system harmonisation, which makes linking up data very difficult.

Data gathering

Compliance scheme operators and membership organisations said one of their biggest challenges is in the lack of a legal requirement for businesses to provide them with information.

For some, it is a contractual clause, but for many, it's voluntary, which means a lot of is resourcing spent collecting this data from suppliers. Some resistance comes from them protecting intellectual property and products in development.

Some, especially brands and retailers, mentioned data-gathering challenges around imports and exports, where components often come from different places. "We still find businesses every year who are non-compliant and have been historically for years. Because there's just not enough impetus and not enough resource through the agencies and Defra to get all of these people in line with the regulations."

Data inconsistency

Participants mention that human error often plays a part in data inconsistency, such as staff inputting a decimal point or unit of measure incorrectly, and the system having no validation checks to flag such errors.

In addition, some organisations have made it their practice to operate using estimates, which can lead to a chain of incorrect calculations downstream.

Compliance scheme operators also mentioned that data quality varies from organisation to organisation.

"The problem with data is that it's all done on averages, it's done through third parties, etc"

> "If they don't know if there's any recycled content in a piece of packaging, they will just put zero instead of finding out"

Data break - at different points

Waste tracking data is one the necessary pieces of the puzzle and yet is very challenging to get hold of. It seems to be a point where data 'breaks'.

Brands, retailers and manufacturers are quite aware of what they put on the market and what is purchased, but there's little clarity of what happens after products are bought. How are they disposed of? Who collects them? What Materials Recovery Facilities (MRF) do they go to? How are they recycled and what happens to that recycled content next?

These are big unknowns for these organisations, and one of the biggest needs for EPR.

"Waste tracking data is the holy grail of the industry" (...) "It would be amazing to have."

"The problem we have is... The value chain becomes really focused towards the beginning or the end. Where material is produced and then goes to be made into a packaging product, and then it's filled. All of this is fairly easy to get data from. (...) "We need waste tracking data to understand what proportion of packaging ends up where. Making sure that the trail is not getting cold"

It becomes so disparate then when it goes past the in-use phase. Or even the use phase, where it goes to be-used. (...) And then it becomes difficult until it gets made back into a product and you can pick it back up again."

Data break - at different points

Conversely, actors downstream, such as waste management organisations and recyclers, can have a lack of clarity on the overall picture of business waste, since competitors don't make their numbers public, and little visibility on what's put out in the market in shops and shelves.

The latter has also been reported as a challenge to retailers themselves.

"Placement of market it's the hardest thing - it's not the best thing to work backwards. But have to do that because none of the brands can give a true figure of how much lands in UK shops and consumers' baskets because of the makeshift of the supply chain"

> "If they know what's being purchased, then we should know what's coming back, and the two should marry up to a good model of consumption"

Lack of consistent data = lack of trust

As a consequence of the previous challenges, there is a general lack of trust and belief when it comes to data. This happens, of course, within the value chain among different actors, but also from a consumer's point of view.

More and more people who buy goods with plastic packaging expect some accountability from brands and retailers. They want to know whether it can be recycled and where it goes when they put it in the bin. They want more information so they can make empowered decisions about what they buy and how they dispose of waste. "I think credibility and belief is a lot about recycling. You put stuff in the bin and you don't know where it goes."

"It's about trusting the system as a whole. And data is enabling that trust and belief to come forward." "Transparency is important so that householders know how their materials are properly handled"

Specific challenges

- Working around GDPR when collecting consumer data and keeping that away from third parties
- Acquiring unique product codes from manufacturers for new digital Deposit Recovery Scheme organisations
- Keeping track of different components for the same stock-keeping unit (SKU) along the year, which can change due to shortages or new prices
- Mass balance accounting seems to be the preferred approach of chemical recyclers for introducing recycled content, but there is currently no certification accepted by Her Majesty's Revenue and Customs. Some brands and retailers didn't particularly trust it, since it is based on estimates

Specific challenges

- Reusables are difficult to track. A Quality Street box might stay in someone's house for years before it gets picked up again by any system.
 End of waste could happen a long time after it's been put on the market.
- Tracking refillable packaging loops around the market is also difficult. Ideally, it would happen at the till point, but there is no set system for retailers to capture, or for recyclers to receive, this data.
- The definitions around litter and what data needs to be extracted from it is very unclear.
- There is a lack of standard terminology, which leads to errors regarding data input. In addition, there is also a lack of standardisation from a certification perspective, which only furthers the lack of trust in data.

Examples of success

Insights around successes that actors have experienced or witnessed in the plastic-packaging value chain.

Full data accountability

One retailer said that its strategy for success is 'full data accountability'.

Since taking its data capture and handling in house, accuracy has gone from 15% to more than 50%.

It then uses a third party for verification and external reporting.

"We feel that in order to satisfy HMRC and Defra as best we can in 2022 and 2023, owning that data ourselves first hand is key to driving that. (...) We think that accuracy in data will mean accuracy in payments. (...) Accuracy in payments will incentivise us even further to make the reductions and the sustainability commitments."

Checks against a database

One compliance scheme is experiencing success by moving its data collection from suppliers to an online system. It makes live comparisons against its SKU database to ensure that weights are as expected.

The system has in-built machine learning and is able to prevent errors, while making data easy to input.

The pass rate has increased from 15% to 60% – and data that usually took four emails back and forth to correct – now only takes one email to check.

"Heading in the right direction moving to an online platform, particularly with that live fig compared to our database. (...) We're already stopping those outliers going into the system because we've got all of this backing data to ensure that we know what the packaging weight should be. (...)

> When we look at data collection methods, that validation is really key to ensure you can't just have a database collection system without that validation. (...) You need that there, otherwise people will misconstrue what they should be putting in and not understanding and making those sorts of mistakes."

Blockchain and serialisation

One third-party supplier said that it has achieved good results using blockchain to hold data, from both manufacturers and consumers, separately and securely.

Furthermore, its data model relies on getting manufacturers' codes as a form of serialisation to enable better tracking from end to end. "What I do know is that serialisation is coming. There's so much information that is useful to a retailer, to a producer, to the government."

Information sharing

One waste management actor mentioned the Kent Resource Partnership Materials End Destinations publication as an example of good practice.

It gives a breakdown of the service suppliers for this Local Authority and all destinations for each type of waste.

It has apparently been successful in answering citizens' questions and the model is being expanded to other local authorities.

Kent Resource Partnership

e KRP comprises all 13 Kent councils, working together for the benefit of Kent taxpavers and t

Materials End Destinations Publication 2019/20



https://www.kent.gov.uk/__data/assets/pdf_file/0006/124476/K RP-Materials-End-Destinations-Publication-FINAL.pdf

Needs that emerged

These are the needs expressed by participants and user stories to easily reflect those needs.

Needs that emerged

Participants seemed to support a solution that promotes transparency and builds trust in the data collected. Some of the needs expressed:

- Visibility of data on all steps of the value chain waste managers need data about what is placed on the market, while retailers and suppliers need to know where their packaging is ending up.
- Tracking a single piece from production to recycling would bring transparency and granularity of data.
- Providing this in an accessible and inclusive manner would make it easy to report to different schemes and build reliability and trust on what's being collected, both for organisations and conscious consumers.

"What I do want from the data is around visibility of detail for each piece of plastic that is currently available in manufacture across the whole end to end plastic supply chain."

Needs that emerged

- A central database would reduce the amount of times that data would need to be inputted, lessening the burden on all those that already need to report on this data in different formats.
- Having features that allows them to export data in ways that suit their needs would make things even simpler.
- There is a need around a database administrator participants expressed that it would need to be an organisation that would work between government and the value chain, making sure that the data is kept consistent and that requirements for reporting are clear.

Needs that have emerged

- The system must also impose some rules, such as units of measurement and the kinds of materials that are recyclable, so as to not allow people to input incorrect data.
- Live checks against a database and in-built validation codes on the platform would also reduce errors.
- A consensus on the codes to use as a unique identifiers for each piece of packaging. This could also help with tracking and declaring end of waste.
- Secondary and tertiary packaging must not be forgotten. They are often a good example of reuse and are not tracked properly.

Needs that have emerged

- Whatever system is built, it needs to be open to innovation and updates. This will help with iterations that come with use, but also to cope with seasonality of materials.
- From a systemic point of view, clarity on new legislation and data requirements, especially from ERP and the Plastics Tax, are vital for organisations to understand what data they need to collect and to what granularity level.

User stories

As someone who works in the plastics-packaging value chain...

I need transparent, accurate and consistent data across the whole value chain, so that I have an understanding of the whole picture and improve decision making

I need validation checks at point of data entry, clear terminology and units of measure, so that errors are minimised and data is inputted more accurately I need data that is easy to access and export, so that I can efficiently report on it for clients, commitments and schemes

User stories

As someone who works in the plastics-packaging value chain...

I need an easy way to input data, so I can spend less resourcing on data capture and the process is less onerous on my clients I need clarity on new legislation, so that I feel well informed on what data needs capturing and I can put things in place to remain compliant

I need to be able to input changes to packaging, so that I can mitigate seasonality and foster innovation

Recommendations

These are the recommended next steps and further rounds of research.

Data fields - current

One of the goals of this research was to understand what data fields are currently being used, and what is desired, to determine what should be included in the standard. There is good visibility on the first, but the latter is more challenging, due to uncertainty around new legislation.

Current fields:

- SKU
- Brand
- Weight
- Volume

- Application
- Level
- Components
- Source
- Recyclability

"Then when people access that data, they know that they have at their fingertips everything that will be needed to determine a modulated fee cost, potential exposure and liability under the plastic tax, or potential DRS obligations."

Data fields - desired

- Breakdown of the composition of each component
- Waste tracking MRF and recycler used. Having information on what kind of material both handle would be important too
- Recycled content amount and certification method
- Consumer-level data for DRS operators, this could help with behaviour design
- To future proof the system, it is important to collect data that allows visibility on carbon emissions

"That tax is based more on the individual package component, rather than a sale unit. (...) "For EPR, recyclability will likely be considered in a componentary basis."

> "What would be amazing isolating the waste management of each individual piece of packaging and effectively you could use that to generate a CO2 equivalent for the waste management side of things for everything in the database"

Data fields - desired

For tracking carbon emissions, these fields might be necessary:

- How far the material has travelled
- What method they were shipped by
- How much dead space was in the pallet
- What the materials are made from
- Weight

Further research areas and outputs

- This Discovery User Research project has been very valuable for shaping a prototype of the standard and getting it ready to test in an 'alpha' product phase. It will be important to test it with stakeholders from all areas of the value chain
- For this round of research, the project focussed very much on primary packaging. For the alpha phase, it will be essential to ask more questions around data fields for secondary and tertiary packaging

Further research areas and outputs

- More research may be needed on exactly what data fields will 'future-proof' the standard, such as impact on biodiversity, oceans and forests, or amount of non-renewable materials used.
- At this stage, especially because we interviewed a large number of different actors, there are no clear personas or user journeys. Both will be good outputs for the alpha phase, as well as a 'to-be' journey from the lens of the data standard.

Open3R standard research

For the Open3R User Research, we faced a lot of challenges recruiting the right participants, especially missing 'bring bank' and 'take-back' schemes. However, the people we did speak to have flagged other organisations for the alpha phase.

Key insights that we got from the stakeholders engaged:

- Many retailers don't run their own bring banks car parks usually belong to local authorities, which determine where bins are placed and either operate internally, or contract to another organisation.
- Retailers that do run some kind of bring bank (e.g. flexible plastics) do so due to demand from customers. They update their store website to include such service information.

Open3R standard research

- The podback scheme has had an increase in demand and currently operates mostly based on Collection+, which owns the database for collection spots.
- Both local authorities we spoke to were very engaged with their waste collection they have an updated database of their collection points and run all of the bring banks themselves. They mentioned that these are difficult to operate since there is a lot of fly tipping and quality is often questionable. They have sent a list of collection points to RecycleNow.