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Qualifying and Quantifying the Reuse Sector in Ireland

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Rialtas na hÉireann
Government of Ireland

ENVIRONMENTAL PROTECTION AGENCY

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- Office of Evidence and Assessment
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- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

Qualifying and Quantifying the Reuse Sector in Ireland

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EPA Research Report

Prepared for the Environmental Protection Agency

by

The Clean Technology Centre at Munster Technological University, Community Resources Network Ireland (CRNI), The Rediscovery Centre and The Eastern Midlands Waste Region

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DISCLAIMER

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Executive Summary

The environmental, economic and social benefits of reuse are well documented. Reuse is one of the main elements of the EU's Circular Economy Package. As a means of promoting reuse in the EU, the revised Waste Framework Directive (2018) states that Member States must "take appropriate measures to prevent waste generation and monitor and assess progress in the implementation of such measures". The purpose of this research project was to develop methodologies for the quantitative and qualitative assessment of the reuse sector in Ireland to meet this important EU requirement.

Reuse is classified as a waste prevention activity and sits in the top tier of the waste hierarchy, as it keeps products in the economy for longer than would otherwise be the case and, by reducing consumption, can prevent raw materials from entering the production/consumption cycle. In line with the Waste Framework Directive, this study considered reuse to have occurred only if ownership has changed and focused on consumer goods that would otherwise enter the municipal waste stream. Although also classed as reuse, informal reuse between family and friends and the remanufacturing of reused products were outside the scope of the project. Also outside the scope were electrical and electronic equipment, food and construction and demolition waste.

Initially, the research team carried out an international best practice review in 10 countries. The results showed that, while some regions were advanced in the measurement of reuse, others were at an early stage. Best practice examples were noted and informed the project's methodology and recommendations.

Based on parameters imposed by the EU definition of reuse, a decision tree was developed to explore reuse in Ireland and, from this, a database of reuse practitioners was produced. This was populated using existing networks of reuse practitioners and through a comprehensive structured online search. This resulted in the identification of 1276 reuse practitioners in Ireland. Of these, 48.1% were identified as charity/not-for-profit organisations and 46.7% were commercial businesses, with the others being public bodies and

"other". The product category most frequently handled by these operators was bric-a-brac, followed by clothing, media (e.g. books), other textiles, non-antique jewellery, bicycles and other.

A representative subset of the full database was then surveyed, with the profile of respondents broadly reflecting the national breakdown of reuse practitioners. This provided a detailed qualitative overview of the operations of reuse organisations in Ireland. Subsequently, a subset of respondents were interviewed in more detail to gather quantitative data. This approach also allowed a more detailed exploration of the qualitative responses to the initial survey, and these provided valuable sectoral insights on the future of measuring reuse nationally.

Quantitative data were primarily obtained in the form of the number of units exchanged. This was converted to kilograms using 27 product weight conversion factors for commonly used categories of the products within the scope of this research. These weight-based data were extrapolated for 2019 and 2020, to reflect the 1276 reuse practitioners identified in the database. In 2019, an estimated 20.61 million units were sold or exchanged, equating to an estimated 27,983 tonnes of reused products. In 2020 an estimated 26.186 million units were sold or exchanged, representing an estimated 31,990 tonnes of reused products. It is important to note that the 2019 dataset is incomplete, as no estimates for online exchanges or media specialist stores were available. Furthermore, the 2020 figure was affected by the COVID-19 restrictions on retail, which meant that reuse outlets were closed for much of the year. Therefore, a direct comparison of the data for 2019 and 2020 could not be made.

The outputs of this research now provide Ireland with a methodology to effectively measure reuse in the future. The main point at which to measure this has been defined and the data to be collected have been identified. Product categories for measurement have been established and subcategories recommended.

A series of recommendations to facilitate and improve the application of this methodology have also been included. A key outcome noted is that,

as any requirement to measure or report reuse data will introduce a burden on the sector, it will need support (financial and/or technical). Other measurement and policy recommendations have also been included based on input from stakeholders and examples of best practice.

1   Introduction

1.1   Project Details

The project "Qualifying and Quantifying the Reuse Sector in Ireland" (Q2Reuse) is a research project funded by the Environmental Protection Agency (EPA) that investigated methodologies to assess and measure the Irish reuse sector. This project was part of the EPA 2018 research call to meet the requirements of the revised Waste Framework Directive (WFD) (EU, 2018), namely that Member States take "appropriate measures to prevent waste generation and monitor and assess progress in the implementation of such measures".

In March 2019, a consortium led by The Clean Technology Centre at Munster Technological University (MTU) Cork, with the Community Resources Network Ireland (CRNI), The Rediscovery Centre and The Eastern-Midlands Waste Region, began work on the research. A systematic literature review of reuse activities and measurement methodologies used internationally was undertaken, providing insights into how the sector can be qualified and quantified in Ireland.

This report presents the findings of that research.

1.2   Background and Objectives

The circular economy aims to counter the dominant "take, make and dispose" economic model, the negative effects of which threaten the stability of economies and the integrity of natural global ecosystems (Ghisellini *et al.*, 2016).

Reuse is one of the main elements of a circular economy (EC, 2015). Reuse is classified as a waste prevention activity and sits in the top tier of the waste hierarchy, as it keeps materials and products in the economy for longer and it can prevent raw materials from entering the production/consumption cycle by reducing consumption. Preparation for reuse represents the most desirable option for waste once resources have entered the waste regime. This is still a much more environmentally friendly option than lower tiers, such as recycling/recovery, energy recovery and landfill.

One UK study (WRAP, 2009) found that reuse was one of the most effective strategies for reducing greenhouse gas emissions. By increasing the reuse of key household products such as textiles, appliances and electrical equipment, UK greenhouse gas emissions could be reduced by 4 million tonnes of CO_2 equivalent per annum between 2009 and 2020. Thus, reuse is an important potential action that people can take to combat climate change, which is the main threat facing the planet today.

There are also social and economic benefits to reuse or preparation for reuse, which the EU is prioritising, "including jobs and growth, the investment agenda, climate and energy, the social agenda and industrial innovation" (EC, 2015, p. 2). Another UK study (WRAP, 2011) quantified such benefits, including personal/family costs, social benefits (such as training and employment opportunities based around repairing items) and labour benefits. Indirect employment benefits can also arise in localities (especially in socially and economically disadvantaged areas), including:

- additional incomes spent in local economies, leading to an increase in demand for goods and services, in turn creating further jobs;
- a change in a business or project, leading to changes in demand for local goods and services (supplier effects);
- other indirect employment effects arising from, for example, green jobs (WRAP, 2015) and developments that enhance the attractiveness of an area to business supply chains (WRAP, 2011, p. 19).

Since charities also frequently benefit from second-hand shops and the reuse trade, those people in need, whom the charities support, also benefit greatly. Third-sector organisations (such as voluntary and community organisations, social enterprises and co-operatives) have traditionally been heavily involved in recovering reusable products, and their active participation is encouraged and supported by tax and other incentives in the UK and other countries (Alexander and Smaje, 2008).

Reuse is a heterogeneous activity, especially for consumer goods (the main focus of this study). Reuse activities include car boot sales, charity shops, vintage shops, pawn shops, specialist second-hand retail chains, informal sharing of products among family and friends, online auctions (eBay) and the integration of online selling (Amazon, DoneDeal, Gumtree, Adverts. ie, etc.), as well as manufacturing and wholesale and retail activity involving reused products (Gregson *et al.*, 2013).

Reuse is defined in the EU WFD (EU, 2008, Article 3.13) as "any operation by which products or components that are not waste are used again for the same purpose for which they were conceived".

As a means of promoting reuse in the EU, the revised WFD (EU, 2018, Article 29) states that Member States must take "appropriate measures to prevent waste generation and monitor and assess progress in the implementation of such measures". In other words, what cannot be measured cannot be managed. To ensure such measurement takes place, and to ensure that it is achieved uniformly across all Member States, the Directive proposes that "common indicators and targets should be established" (EU, 2018). This is further developed in Article 9(4) of the WFD, which requires that Member States measure reuse, applying the common methodology established by the Commission's implementing decision on a methodology and reporting on reuse (EU, 2021). The revised Directive requires Member States to "promote the reuse of products constituting the main sources of these critical raw materials". Thus, each Member State will have to measure/quantify reuse within its borders and it will then have to implement all policy supports to ensure that EU targets are met and continue to be met.

Article 9 of the WFD specifically requires that Member States shall take measures to prevent waste generation, including the setting up of systems promoting reuse activities, in particular for electrical and electronic equipment (EEE), textiles and furniture. Other measures include:

- promoting reuse activities;
- encouraging/supporting reuse and repair networks;
- facilitating access to waste collection points for such networks;

- promoting the use of economic instruments, procurement criteria, quantitative objectives or other measures.

Circular economy policy in the EU is guided by the Commission's 2015 *European Circular Economy Package: Closing the Loop* (EC, 2015) and, more recently, a new *Circular Economy Action Plan for a Cleaner and More Competitive Europe*, released in March 2020 (EC, 2020). *Closing the Loop* states that "higher recycling rates are limited by administrative capacity, a lack of investment in separate collection and recycling infrastructure and insufficient use of economic instruments (e.g. landfill charges or pay-as-you-throw schemes)" (EC, 2015, p. 9). Rates of reuse are also limited by insufficient end-of-life material separation, an underdeveloped infrastructure, insufficient public awareness, a lack of data and a lack of economic instruments (Miller *et al.*, 2017). The European Circular Economy Package is now one of the cornerstones of EU environmental policy, including the 2019 European Green Deal (EC, 2019). It is also a major pillar of the 2021 recovery plan for Europe (EC, 2021).

According to the European Environment Agency (EEA, 2018), the number of reuse businesses and their level of trading of products such as clothing, children's toys and furniture between consumers are increasing owing to better marketing channels on the internet and social media. This is not only the case in the EU. One study in the USA (Fortuna and Diyamandoglu, 2016) noted that "Reuse of products is an old practice that regained popularity in urban environments in the United States in the last decade due to its favourable impact on climate change, as a result of the worst economic recession in recent memory, or to lift the process out of obscurity as a pollution prevention strategy for municipalities."

In 2009, the EU-27 sector for second-hand goods retailing in stores across all product groups achieved a turnover of €8.1 billion, from which €2.0 billion added value was generated – the smallest level of output among the retail trade and repair subsectors. Across the 65,700 enterprises that sold second-hand goods as their main activity, 120,400 people were employed in the EU-27, equating to 0.7% of the retail trade and repair workforce (Eurostat, 2011).

All EU Member States have been promoting reuse in their regions, but some are more advanced than others. In addition, the approaches taken in different regions have varied according to policies and programmes already in place, the culture of consumption, the local environmental concerns and priorities, and other factors.

The value of reuse over recycling in Ireland is of special significance. Given the lack of processing capacity for Irish recycling, many material streams have to be exported for recycling, thereby reducing its environmental benefit. In addition to analysing international best practice, this project aimed to develop methodologies to assess and measure the Irish reuse sector. In doing so, the Q2Reuse project will provide policymakers, stakeholders and practitioners with a crucial overview of the non-waste reuse sector of Ireland, which is vital information as Europe moves towards a circular economy model.

Note that EEE was considered to be outside the scope of this study from the outset, as it comes under a producer responsibility initiative. It was also agreed that construction and demolition materials were outside the project scope, as these materials are not considered consumer goods.

1.3   Outline of the Report

This report comprises eight chapters. Chapter 1 introduces the project and its aims. Chapter 2 briefly describes the methodology undertaken by the research team. As part of the research project, the project team first looked at 10 regions internationally that have carried out, or are carrying out, the measurement of reuse. The findings were condensed into a synthesis report (Q2Reuse, 2020). This is summarised in Chapter 3 of this report.

With the assistance of reuse practitioners in Ireland, the research team then explored the qualitative and quantitative evaluation of the reuse sector. First, a qualitative mapping of reuse in Ireland was conducted; this is described in Chapter 4. This process informed the development of a flow diagram outlining the definition of reuse, how reuse happens at different levels in Ireland and the different classifications of practitioners involved. This qualitative assessment

is based on a clear definition of reuse, defines the scope of measurement, and provides a systematic process to identify and capture the variety of reuse practices in Ireland. This approach was applied by the research team to catalogue reuse practitioners across the country and was adjusted based on barriers encountered during its application and feedback from stakeholders and practitioners.

To quantify the reuse sector, a quantitative methodology was drafted with a sampling plan designed to support it (referred to as Survey A). Based on the 1276 entries in the database, over 100 practitioners were contacted to participate in the survey. The output from these surveys primarily showed the overall approach by the sector to data collection and the surveys provided some qualitative data. Subsequently, a further 20 practitioners were approached using semi-structured interviews (referred to as Survey B) to explore in more detail the actual flow of products through the various practitioner locations and, where possible, to identify and measure throughput at the appropriate points within this process flow. The results of this process, combined with feedback from further structured follow-up interviews with organisations based in Flanders, the Netherlands, Scotland, Australia and Finland, helped to identify the main areas where data are currently gathered. This was to allow a better understanding of how reuse products should be classified; to develop a methodology for gathering, processing and scaling up data; and to provide a first estimate of the extent of reuse occurring nationally (within the scope and parameters of this research study). This quantification process is described in Chapter 5.

The Q2Reuse project tested the capability of the Irish reuse sector to supply necessary data and, based on the national quantification methodology applied, provides policymakers, stakeholders and practitioners with a crucial overview of the non-waste reuse sector in Ireland. The proposed methodology produced by the research team is outlined in Chapter 6 and a series of recommendations are made in Chapter 7. Finally, Chapter 8 describes the limitations of the outcomes of the project on account of the impacts of lockdowns and restrictions in 2020 and 2021 related to the COVID-19 pandemic.

2   Methodology

To our knowledge, this is the first time that a comprehensive investigation of the reuse sector has been carried out in Ireland. Together with reuse practitioners throughout the country, the research team produced methodologies for the qualitative and quantitative assessment of the sector.

To develop the assessment methodology for this project, the team initially conducted a detailed review of international best practice. Ten international programmes, measurement systems and sets of activities were analysed by the project team. This information was supplemented with a number of targeted interviews (carried out during the project), all of which informed the method employed for the subsequent tasks on qualification and quantification of the sector. It is important to note that this methodology evolved throughout the project as information was gathered, input from stakeholders was included and information gaps identified.

Based on the findings from the international review and input from the various stakeholders engaged with, the main steps employed for quantifying reuse in Ireland included:

1. Defining what was to be measured. This involved scoping the sector by identifying what was to be measured and from whom to gather that information.

2. Carrying out a qualitative assessment. This involved completing a detailed analysis of the parts of the Irish reuse sector that were encompassed within the scope of this study. This gathered information on those involved, their primary point of exchange and the products that they reuse.

3. Undertaking a quantitative assessment of the sector. This was done using the qualitative assessment results, a measurement methodology and a national estimate, which were developed by (1) surveying a representative dataset to explore the information typically collected by these reuse practitioners and gathering relevant qualitative information; and (2) conducting an additional survey, which involved a detailed product flow analysis of the sites identified and the extraction of associated data (i.e. at the different flow points) where possible.[1]

4. Compiling data. Using the information collected through the quantitative assessment, appropriate primary data and scalars that can be used to generate a national reuse value were identified.

5. Scaling the data. Using the information produced through the quantitative and qualitative assessment, along with any relevant national macro data, an estimate of the quantity of goods (in tonnes) reused in Ireland was generated.

6. Developing a national methodology. Based on the current data available, a clear and transparent method to regularly measure reuse in Ireland was recommended. This took into account the qualitative findings from the research, the data gaps identified and including recommendations as to how these can best be overcome.

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1   Based on the initial survey results, it had been planned to conduct a series of site visits to a smaller subset of the representative sample. This aimed to elicit quantitative data from records and, where possible, supplement this with actual weight-based measurements. However, as a result of the impacts of COVID-19, it was not possible to carry out on-site visits and a contingency plan was put in place.

3   International Best Practice Review

The aim of the international best practice review was to inform the development of a methodology for measuring reuse in Ireland. Thus, the project team reviewed measurement systems, supports and reuse activity in regions that have carried out, or are currently carrying out, a measurement of reuse.

3.1   International Best Practice Examples

The following 10 regions were examined in detail for this report:

- Scotland;
- New South Wales, Australia;
- the UK;
- Spain;
- Flanders, Belgium;
- Finland;
- the Netherlands;
- New Zealand;
- Greece;
- New York City (NYC), USA.

Every region took a different approach to measuring reuse, with some regions being more advanced in the reuse of products and/or its measurement than others. Where possible, systems and activities suitable for replication in an Irish context were given special consideration. Similarly, those countries with cultural and socioeconomic similarities to Ireland were noted as being particularly relevant. All available literature was analysed in the research, and this was combined to prepare and publish a summary report (Q2Reuse, 2020).

Observations of note from the study of the 10 regions assessed as part of this international review of best practice are summarised below, followed by additional findings from further research and stakeholder interviews.

3.1.1   Scotland

In 2013, Zero Waste Scotland carried out a mapping survey of reuse in the country (Zero Waste

Scotland, 2013). The methodology included a literature review, mapping research, a questionnaire and in-depth surveys. The scope of the study excluded car boot sales, online exchange and one-off reuse businesses but included construction reclamation, salvage yards and EEE. The survey was done by telephone or online and data were recorded using SNAP survey software, with analysis through the R statistical programming language. A total of 1527 reuse outlets in Scotland were mapped. These included 943 charitable outlets (61.7%), 533 commercial outlets (34.9%) and 51 social enterprises (3.3%). Overall, 591 calls were made to 406 businesses, generating 108 questionnaire responses. Reuse was measured from environmental (actual amounts), financial (turnover) and social (employment and volunteerism) perspectives.

The results showed that Scotland was reusing about 89,000 tonnes of products, including 12,000 tonnes of furniture, 9500 tonnes of EEE and 66,000 tonnes of textiles. By weight, of the total reuse estimated, 73% was textile based, despite the greater comparative weight of furniture and EEE.

The study also found that the quantity of products reused amounts to over 17 kg per person per annum in Scotland, excluding online-based reuse. Across the 1527 reuse outlets in place, the total turnover was *c.*£244 million. The sector employs over 6000 full-time equivalent (FTE) people and supports 3000 FTE volunteer positions.

3.1.2   New South Wales, Australia

A study was carried out in 2018 by Zero Waste Network Sydney (ZWN-S), a regional division of Zero Waste Network Australia (ZWN-A) (Zero Waste Network Sydney, 2018). Its members include community-run enterprises (CREs) that deal with reuse, repair and recycling, which are all non-profit.

ZWN-S does not gather data from its members on a regular basis, and the aim of its study was to quantify the activities of the CREs to advocate on behalf of the sector. The study measured reuse at 4 of the 40 CREs in the region over a 6-week period. An advantage of

the New South Wales approach over that used by Scotland was that products were actually weighed and characterised for the project; however, the weights measured were based on donations and not on actual sales or outgoings. The social impact of reuse in staff and volunteer numbers was also measured. The following recommendations from the ZWN-S study for a sector-wide system for reporting and recording reuse are worth noting:

● adoption of consistent measures to report on products and social and financial impacts of reuse;
● adoption of standard on-site data collection methods (i.e. tablet or point of sale weighing, or weighing using pallet jacks that have in-built scales);
● development and adoption of standard item-type classifications for enterprise point-of-sale systems, to link data from accepted/donated products (incoming) with item sales (outgoing);
● implementation of a regular training, auditing and data validation programme to ensure ongoing consistency and accuracy.

3.1.3   Spain

Spain was of interest to the study because of the high level of activity by the social reuse network Asociación Española de Recuperadores de Economía Social y Solidaria (AERESS) and because the country had set targets in 2015 for the preparation for reuse of waste electrical and electronic equipment (WEEE) and has a system in place to measure it. Since 2013, Spain has also included reuse in the general objectives of its national waste prevention programme and uses indicators to measure reuse, e.g. the number of reuse centres in operation and the number of associated new jobs.

Although detailed data on reuse were received from AERESS (AERESS, 2019a), language difficulties made it challenging to get specific information on the methodology used to officially report reuse in Spain and the specifics of the online system being used to report it. The data from social reuse operators that are gathered by the AERESS network on behalf of its members show that only 5.6% of bulky goods and 2% of WEEE are reused, but 51.5% of textiles are reused. Of the 16,088 tonnes of products reused by AERESS members, 13,478 tonnes, or 84%, is textiles.

It is noted that because the targets focus on preparation for reuse for WEEE, which falls under the waste regime, the measurement system may not be very applicable to Ireland.

3.1.4   United Kingdom

A study carried out by the Chartered Institute of Waste Management (CIWM, 2016) focused primarily on opportunities for the waste industry in the UK and highlights some relevant qualitative insights relating to challenges to reuse, the product type information, benefits of reuse and how to increase demand.

The methodology of the study was similar to the Scottish study (see section 3.1.1). However, of the 278 responses to the questionnaire, 157 were from local authorities, 42 from waste management companies, 27 from housing associations and only 52 from reuse organisations (18.7% of responses), resulting in limited information pertaining to the reuse sector. According to data from the Charity Retail Association, the primary membership organisation for charity shops in the UK, its members reuse about 5 kg of textiles per person in the UK (CRA, 2018).

3.1.5   The Netherlands

Reuse is an important aspect of the circular economy policy in the Netherlands (Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, 2016). Its Raw Material Agreement seeks to promote textiles, furniture and WEEE as priority material streams (CEN, 2019).

BKN (Branchevereniging Kringloopbedrijven Nederland), the Dutch association of second-hand shops, has 66 members, covering 200 shops. Founded in 1994, it has recently developed the "100% Kringloop" (100% second hand) label to certify its members' activities. BKN collects members' data every year through an online survey tool. In 2017, the members' response rate was 80%. The results showed that approximately 13,500 people were working or volunteering in member shops. Approximately 139,000 tonnes of products were reused, of which 32% was furniture, 21% textiles, 13% small household goods, 12% brown and white EEE, and 10% others. Sales revenue was approximately €95 million, 26% of

which came from textiles, 23% from small goods, 18% from furniture and 12% from books and CDs.

Reuse data gathered by members are not directly comparable, as some weigh the products but others only estimate weight. BKN representatives agree that a common methodology would be preferable. However, a large number of data have already been collected and extrapolated to measure reuse for the entire association.

BKN gathers data on social impact (employees, volunteers, training, etc.) and quantitative reuse [weight and product streams including textiles, small goods, furniture, books, CDs, toys, white and brown electrical goods, computers and information and communications technology (ICT) and bicycles]. The online tool used monitors sources, collection points, quality and storage capacity. Economic data are also gathered by the system in the form of total revenue, revenue per product stream and online sales. Cash register data are also provided but are considered unreliable by BKN. The number of visitors to shops, shop floor size, subsidies and donations, and business costs (staff, operations, transport, marketing administration disposal, etc.) are all reported (BKN, 2019).

It is a very detailed and thorough system. The nature of the online tool and its development and management is of interest, given that Ireland will have to report its reuse data in the future.

3.1.6   *Flanders, Belgium*

Flanders is considered to be a global benchmark for reuse infrastructure and activity. Reasons for this include its active umbrella organisation, strong ties between policy instruments and the reuse sector, and the existence of the Waste and Materials Decree, a solid legal basis for waste prevention. The public waste agency of Flanders, OVAM, is responsible for monitoring reuse targets (OVAM, 2015).

The Federation of Flemish Re-use Centres (Koepel van Vlaamse Kringloopcentra, KVK) was established in 1994 as a network of non-profit enterprises in Flanders, with grant aid from OVAM. In July 2008, KVK expanded and became known as KOMOSIE, which recently rebranded to become HERW!N. KVK first surveyed its members in a consistent manner in 1995 using a written questionnaire, moving to a

computerised system in 1998. Thus, there is a long history of data collection in the sector. Reuse centres were legally embedded into the 2003 waste decree and the implementation plan for environmentally responsible household waste management (2008–2015), further strengthening and professionalising the network and raising awareness of reuse centres.

In 1999, KVK developed a quality label, named "Revisie", for reused electronic appliances. Every purchase is sold with a 6-month guarantee. Since 2002, with support from KVK, Flemish reuse shops have benefited from a collective branding system for the "De Kringwinkel" chain to distinguish them from other second-hand shops. Shared communications and marketing benefit the brand. The shops are strongly tied to employment policy and approximately 80% of workers are from vulnerable target groups.

Although subsidies are required to fund approximately 47% of overheads in each shop, stores generate approximately 39% of the turnover. A full account of turnover is maintained across the stores each year. In 2018, the Kringwinkel stores were visited by 6 million customers, who bought 35,440 tonnes of reused goods (up 2% from 2017) through its 145 points of sale. This amounts to almost 5.5 kg per person in Flanders. The turnover of the chain was €55.5 million for the year, with 35.6% attributed to textile sales, 19.8% to home products and 18.6% to furniture (De Kringwinkel, 2019).

Under the Waste Plan 2016–2022 for Flanders, the target for reuse is 7 kg/inhabitant, with a reuse rate of more than 50% (EEA, 2019).

Further information from OVAM, KOMOSIE (latterly HERW!N) and De Kringwinkel on how the system of data acquisition works in practice was identified as being potentially useful for this project. A site visit was planned by the research team in 2020 but ultimately, because of COVID-19 restrictions, this was not possible. Instead, a semi-structured interview with a representative of HERW!N took place (J. Erschaeve, HERW!N, 4 March 2021, personal communication).

3.1.7   *New Zealand*

New Zealand's reuse sector is co-ordinated by Zero Waste Network Aotearoa/New Zealand (ZWNZ), which has 85 members, excluding charity retailers. The sector is at an early stage of development and

has gathered some data from its members, but so far only on an ad hoc basis. The data collected include social, economic and environmental data, but a fully implemented reporting system is not yet in place (Zero Waste Network Aotearoa/New Zealand, 2019).

3.1.8   Finland

A 2018 study of reuse in Finland by the research organisation SYKE examined four product categories: clothes and shoes, electrical and electronic devices, furniture and sporting equipment (Eskelinen *et al.*, 2018*)*. The reuse of products from these four groups in Finland led to 56,000 tonnes of waste being diverted from landfill in 2017, which was equivalent to about 2% of the overall Finnish municipal waste produced. Around 20% (16,450 tonnes) of discarded textiles in Finland were separately collected by charity organisations in 2012. Of the textile waste, 3400 tonnes (21%) were reused domestically, 8280 tonnes (50%) were exported for reuse and 4770 tonnes (29%) were rejected and sent for recycling or energy recovery. Not all outlets participated in the survey.

Kierrätyskeskus is a non-profit social enterprise that runs eight stores and an online store, and which sells reused and upcycled goods (Kierrätyskeskus, 2019). Most of the organisation's revenue is generated through the sale of goods and services, with 65% (€8.7 million) covered by its own activities in 2018. Additional funding is received through government and municipalities' support and national and EU funding. The stores sell reused household items, furniture, media, bicycles, EEE, bulky items, craft materials, flowers and plants, construction materials, sports equipment and textiles. In addition to immediate second-hand reuse, Kierrätyskeskus also upcycles textiles, furniture and accessories, and acts as the official collection point for producer responsibility organisations for certain waste streams.

Kierrätyskeskus collects data from its shops for several relevant metrics. The cash register system used provides real-time information on sales, resource savings, weight and carbon emissions saved. Products are divided into around 300 different categories that are assigned average weights and average product composition. These metrics are used to create approximate CO_2 and natural resources savings.

Items that are free to take are also logged in the cash system when they are moved into the "free" section. Additional metrics collected from the shops include staff numbers, type of employment, shop size, visitor numbers, items purchased, operational costs at company and store levels, and the number of deliveries and collections.

Although Kierrätyskeskus has only eight stores, its measurement system, based on cash registers, may provide some potential for Ireland.

3.1.9   Greece

The 2016–2020 EU LIFE Environment co-funded project (ReWeee) in Greece prevents EEE from becoming waste by promoting reuse (ReWeee, 2018). Although these products are not a focus of this project, some elements of ReWeee are of interest, in particular the identification of reuse life cycle measurement points. The project has also produced many flowcharts relevant to the development of our own decision tree in this project.

Although an electronic system of reporting WEEE reuse values has not yet been developed by the Greek partners, the thinking behind the process of ReWeee and the modelling systems that are being developed were of interest and have been used in this project.

3.1.10   New York City, USA

A large study of the reuse sector in NYC was undertaken in 2017 and updated in 2019, taking into account redistribution, repair and sharing activities (NYCDS, 2019). The Department of Sanitation identified 2755 businesses and organisations active in reuse, repair and rental services throughout the city in 2019. The NYC Center for Materials Reuse (NYC CMR) works to support local reuse organisations and promote reuse by providing support in outreach, public education, research and engagement.

Under the DonateNYC programme, NYC CMR produced the Reuse Impact Calculator, an online tool developed to address challenges in data collection and to show the environmental impact of reuse. As reuse organisations in New York do not uniformly collect data, the Reuse Impact Calculator was developed as a user-friendly tool that standardises products. Reuse member organisations of the DonateNYC Partnership

divert over 45,000 tonnes of products from landfill each year.

Although the methodology of the survey in NYC and the workings of the Reuse Impact Calculator are of interest, their applicability for Ireland appears limited.

3.2   European Methodology

In addition to studying measurement systems, supports and reuse activity in regions, the European guidance on measuring reuse was also taken into account to ensure that any proposed methodology aligns with it.

The Commission Implementing Decision laying down methodology and a format for reporting on reuse was published in January 2021 (EU, 2021). This methodology sets out the following:

1. Member States are required to measure reuse by "carrying out a qualitative and a quantitative monitoring of measures on reuse".

2. Quantitative monitoring will include measuring – at least once every 3 years – "reuse generated by reuse operators or households in accordance with any of the following methods or a combination of those methods or any other method equivalent in terms of relevance, representativeness and reliability:

    (a) direct measurement of reuse by using a measuring device to determine the mass of reused products;

    (b) mass balance calculation of reuse on the basis of the mass of inputs and outputs of products in reuse operations;

    (c) questionnaires and interviews of reuse operators or households;

    (d) diaries of individuals keeping a record or log of information on reuse on a regular basis".

3. Appropriate measures should be taken to ensure the "reliability and accuracy of the data on reuse". In particular, Member States shall ensure that the measurement is "based on a representative sample of the population or of reuse operators or households as applicable".

A format for reporting data is provided, covering reuse by product category and by reuse operators.

3.3   Observations from International Best Practice Review Relevant for Ireland

Some regions, such as Scotland, New South Wales and the UK, have carried out one-off measurements of reuse. Each of these used different data-gathering methods with different assumptions and parameters. As this study is essentially carrying out such a one-off measurement, the methodologies used in those regions are of interest, with a view to replicating the method and/or providing information regarding aspects that are either suitable or unsuitable for Ireland.

Equally important are other regions, such as Flanders, the Netherlands, Spain and Greece, which have set up systematic, online, multi-annual data-gathering systems to measure reuse (although the system in Spain has just begun and appears to focus only on the preparation for reuse of EEE; the system in Greece is also in early development and is related only to EEE).

These monitoring systems are used to measure performance in relation to specific targets or policy commitments. Given the potential upcoming requirement for Ireland to report on reuse levels to the EU, it is expected that these types of systems could offer solutions to meet such requirements in the longer run. Annual or bi-annual studies such as the one carried out in this project are not cost-effective – eventually the reuse sector will need to report its own data.

In addition to the best practice reviews, the team also conducted a number of structured interviews with key organisations and stakeholders from these regions to gain further insight into the practicalities of developing methodologies for measuring reuse. These included Community Resources Network Scotland (CRNS); the Irish Charity Shop Association (ICSA); HERW!N (formerly KVK and KOMOSIE); BKN; Kierrätyskeskus; Matt Allen, former Executive Director of ZWNA; and Zero Waste Scotland.

The key findings from the international review process are summarised below and these have been used to inform the final recommendations in Chapter 7.

3.3.1 *Reuse operations and product categories*

The scope of reuse measurement varies widely from region to region, as identified previously. The Flemish methodology, for example, has focused the data collection for reuse only on officially recognised reuse centres. Stakeholder feedback relating to obtaining data from online platforms was also mixed. Although they provide very detailed information, data from online platforms can be complicated by the inclusion of both new and second-hand products on the same platform.

When literature research favours a preference for reuse measurement methodologies to limit product categories to those most relevant to waste prevention and environmental goals, there is broad agreement that the main product categories for measurement include EEE/WEEE, furniture, textiles and construction materials. However, the Implementing Decision remains open to other product categories and, in many of the international best practice examples, a broader range of product groups was being measured.

3.3.2 *Sampling*

In assessing the optimum sample size for an effective reuse measurement methodology, it was noted that, although ideally this would involve all operators, with a 100% response rate, in practice that was considered unlikely. A comparison of sample sizes from the international best practice review highlighted a wide variety in sample sizes, ranging from 7% to 100% of the total sector. As expected, higher response rates are experienced where strong incentives exist, such as targets, financial rewards and conditions of membership.

3.3.3 *Metrics*

In reviewing approaches to the adoption of national metrics, the international review highlighted *numbers of units* as the most widely used metric in Scotland, the UK (in the charity retail sector) and Flanders. It was also used by some of the Dutch members of BKN. Only two of the international best practice examples involve direct weight-based measurements at the point of exchange. In general, the use of proxy weight data is more widespread than the use of actual weights. The categorisation of products to facilitate these conversions is an important consideration in the accuracy of the measurement.

Turnover data were collected on reuse in several of the international best practice examples, although for some reuse operators it may be difficult to distinguish general earnings (including subsidies, donations and other revenue) from revenue associated with reuse activities. Other retail-related data collected in several of the international best practice examples include number of transactions, number of stores, shop size and number of deliveries or collections.

Many of the international best practice examples also collect data on social impacts, e.g. employment numbers. However, there was no evidence of any of them being converted to reuse levels.

3.3.4 *Data compilation*

The European study, which underpinned the Commission's Implementing Decision on the measurement of reuse by Member States (Öko-Institut, 2019), recommended using point of sale to the final consumer as an appropriate measurement point. From the review, there was general agreement that point of sale is an appropriate point for measurement, although other data (e.g. collections) can help validate this.

In Flanders, Belgium, reuse centres report data on both collected and sale volumes. The data on sales are used to inform the target, while the proportion of collected/sold goods informs the reuse ratio, which must be reported by all officially registered reuse centres. Secondary metrics are calculated by multiplying primary (measured) metrics by conversion factors. These were reported in a number of the international best practice examples, most often in the form of overall weight or carbon impact, based on the data on numbers of units.

In relation to weight-based conversions, the review noted the use of secondary metrics by the Waste and Resources Action Programme (WRAP), the RREUSE Network, HERW!N, Kierrätyskeskus and CRNS. Some concerns were raised by stakeholders about the accuracy of conversions over time, highlighting a noticeable light weighting of textiles, EEE and furniture. Carbon conversions were used by many international best practice examples including WRAP, AERESS, BKN, Kierrätyskeskus, Zero Waste Scotland, the Reuse Network (formerly the Furniture Reuse Network) and Charitable Recycling Australia.

However, as there is no international standard for doing this, each carbon estimate was developed using different methodologies.

3.3.5   Resources

Data collection and reporting needs to be considered in terms of operational resources. International best practice suggests that the use of automated till and electronic point-of-sale (EPOS) systems is preferable, with BKN noting that 70–80% of its members were operating on an EPOS system. In Flanders, all reuse centres must be registered with the central systems, which record goods inwards. CRNS has simplified its members' reporting structure to improve response rates and it now calculates secondary metrics centrally. Zero Waste Scotland is currently working with CRNS data to provide carbon metrics, as the tool has not seen sufficient uptake from individual operators.

3.3.6   Incentives

As collecting and reporting data can involve additional administrative burdens or costs, there was general agreement that motivations or incentives are required to ensure high response rates to data sampling. Different incentives highlighted in the best practice review include subsidies and funding. For example, Flemish reuse operators must report data on reuse to receive official recognition as a reuse centre. Furthermore, small subsidies for reporting are administered, and, more importantly, access to contracts with local authorities is facilitated. CRNS noted that some reuse operators must use data for impact reporting to funders or potential funders. Many of the international best practice stakeholders, including BKN, CRNS and Kierrätyskeskus, agreed that government support, such as the value-added tax (VAT) exemptions applied in Finland, are needed to ensure accurate reporting on data. Access to sales data and promotional material resulting from reuse measurement has also been identified by BKN and others in the international review as a motivation for reporting. For some organisations, for instance Kierrätyskeskus, marketing is a key driver for reporting, as the purpose of their existence is to promote the sustainable use of natural resources.

3.3.7   Online sales

The international review highlighted that reuse data and measurements from online platforms may be complicated by the mix of new and used goods and the uncertainty regarding how many transactions have actually been carried out. The risk of double counting or error due to online sales or repair was considered to be minimal. Methodologies developed by online platforms to measure carbon savings from reuse for marketing purposes also show promise for delivering reuse data through these platforms – although the primary function of these, currently, is for corporate social responsibility reporting.

3.3.8   Repair

As part of the international best practice review, a concern relating to the inclusion of replacement parts in the measurement of reuse was raised. Stakeholders did not view the impact as considerable; however, BKN was exploring opportunities to report repair separately from reuse.

3.3.9   Extrapolation, scaling and accuracy

In the absence of 100% response rates, some form of extrapolation and scaling is typically required to estimate the total amount of reuse taking place. International best practice highlights common scalars used in calculating reuse. BKN uses the retail area as a scalar, for example the ratio of revenue to m^2 to estimate revenue data and a ratio of kg to m^2 to extrapolate the total weight handled.

The ICSA uses financial metrics as a scalar, based on total sales, the percentage of sales that are clothing, the average sale price per item and the average weight per item, to calculate the tonnage of clothing sold through the shops.

In relation to accuracy and trends, the review highlighted the need to find a balance between the pursuit of accuracy and the support of reuse. The number of units is the most widely used primary metric. To convert this to weight, a conversion is required, introducing a level of uncertainty. HERW!N (De Meyer, 2020) reported that this method delivered the expected level of accuracy and quoted a reuse centre study comparing actual weights with unit conversions, which resulted in overall deviations

of only 2–4%. However, some HERW!N members also noted more significant weight deviations, e.g. approximately 30% within the textiles category.

Product weight protocol differences between regions were also highlighted. It was noted that long lists of subcategories can lead to errors. HERW!N suggested that the consolidation of categories would tackle this challenge and improve accuracy.

In addition to this, it was felt that a narrowing of the scope by eliminating difficult product categories or eliminating difficult-to-measure exchanges would also improve accuracy. The importance of regular checks to identify outliers was acknowledged. HERW!N members improve accuracy by visually checking sales data for errors. In Flanders, all official reuse centres are required to have an accountant who reviews and approves submitted data. BKN uses historical data to improve accuracy and note confidence in its quantification methodology, as historically the data have not varied much from year to year. Assessing historical data against trends is also identified as a useful way to check accuracy and forecast future trends.

4 Qualitative Evaluation of Reuse in Ireland

The three main steps in the qualitative assessment of reuse in Ireland were:

1. determining a definition for reuse;

2. creating a reuse decision tree and flowchart diagram;

3. building a database to catalogue reuse practitioners in Ireland.

4.1 Definition of Reuse

4.1.1 Review of definitions

A clear definition of reuse is pivotal, as it sets the scope and guides the range of activities considered in the development of a measurement methodology. Therefore, the team reviewed international reuse definitions in research and policy and decided on the most suitable definition of reuse for the purpose of this project. This definition takes into consideration the specific situation in Ireland and encompasses EU and international definitions. The work undertaken by the Öko-Institut (Öko-Institut, 2019), which is intended to inform future EU policymaking and develop an EU-wide measurement methodology, was highly relevant in setting the scope and informing the definition for the Q2Reuse project.

Previous research has defined reuse as "when an owner continues to use a material for the same or an alternative use, or when the item is transferred to someone else for continued use" (Miller *et al.*, 2017, p. 2). However, reuse has been defined more narrowly in legislation, with the following definition derived from the EU WFD:

> Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived. (EU, 2018, Article 3(13))

As the research project aims to inform Irish legislation driven by EU-level policy, the definition of reuse employed at a European level was considered most relevant by the research team and the team thus decided to adopt the reuse definition provided in the WFD.

The definition provided a clear scope for including or excluding certain operations:

- Reuse applies only to products that are not waste. The European Commission's guidance on interpreting the WFD points to the clear position of reuse as a waste prevention activity, highlighting that it does not fall under waste legislation (EC, 2012). As the guidance states with an example of reuse, "if a person takes over a material, e.g. piece of clothing, directly from the current owner with the intention of re-using (even if some repairing is necessary) it for the same purpose, this comprises evidence that the material is not a waste" (EC, 2012, p. 30). Therefore, the intention of reusing is important in ensuring an item does not become waste.

- The items have to be used for the same purpose for which they were conceived. This was considered a difficult limitation, as it excludes most upcycling operations. For the purpose of this study, the research team decided to interpret this by material. For instance, if a clothing item is taken apart and upcycled into a bag, the textile material retains its original purpose. As a counter-example, if a bicycle wheel is upcycled into a seat, it changes its functionality and does not count as reused according to this definition.

Other decisions regarding the scope of reuse were based on the Öko-Institut's work on developing a reporting format for reuse (Öko-Institut, 2019) and informed by feedback from the steering committee and relevant stakeholders. These included:

- For the purpose of this methodology, and in line with the Commission's Implementing Decision (EU, 2021), the operation of reuse will have to include a change of ownership. Although this excludes products reused by consecutive owners, such as through rental or sharing services, it enables a coherent measurement at a set "point of exchange" or sale.

● It was decided that reuse operations do not need to be accompanied by a monetary transaction. Free exchanges are also eligible if they meet the criteria of a change of ownership, for the same material purpose and with the intention of reuse.

Based on these parameters, the research team initially developed a decision tree to visualise the application of the definition and, from this, a mapping flowchart was produced to track the material flow of reuse in Ireland.

4.2   Decision Tree and Flowchart

Based on the definition of reuse as "any operation by which products or components that are not waste are used again for the same purpose for which they were conceived", the team developed a decision tree to help assess which practices should be included in the research. This decision tree was expanded to a flowchart to highlight the flows of materials in the Irish reuse sector. This section will present the evolution

of the decision tree and flowchart and highlight why certain sections have been amended in the revision process.

As shown in Figure 4.1, the first step of the decision tree was based on the previously agreed definition of reuse. Items that are waste and items that do not change ownership (e.g. are rented or shared) were excluded; the repair of items and pawn broking were also excluded.

To visualise the flow of materials, this first step was complemented by a flowchart that detailed where materials and products move in the Irish reuse system, as demonstrated in Figures 4.2 and 4.3.

Figures 4.2 and 4.3 show the three different channels through which materials enter the reuse stream in Ireland that the research team identified.

The first channel, provisionally named "Do it yourself, informal and relationship-based reuse", represents exchanges between individuals. This primarily covers consumer-to-consumer exchange, for instance through
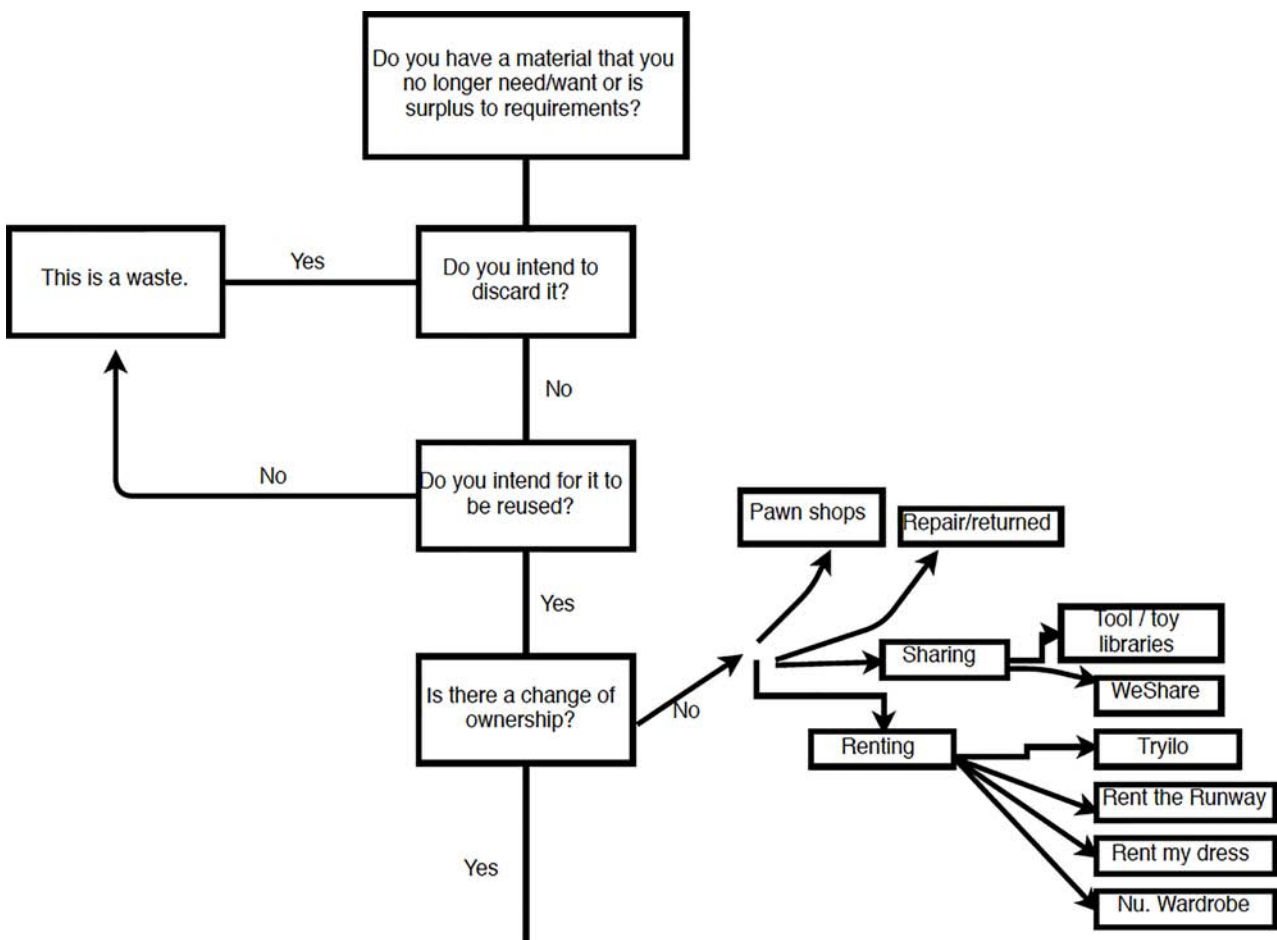
Figure 4.1. Step 1 of the initial decision tree.
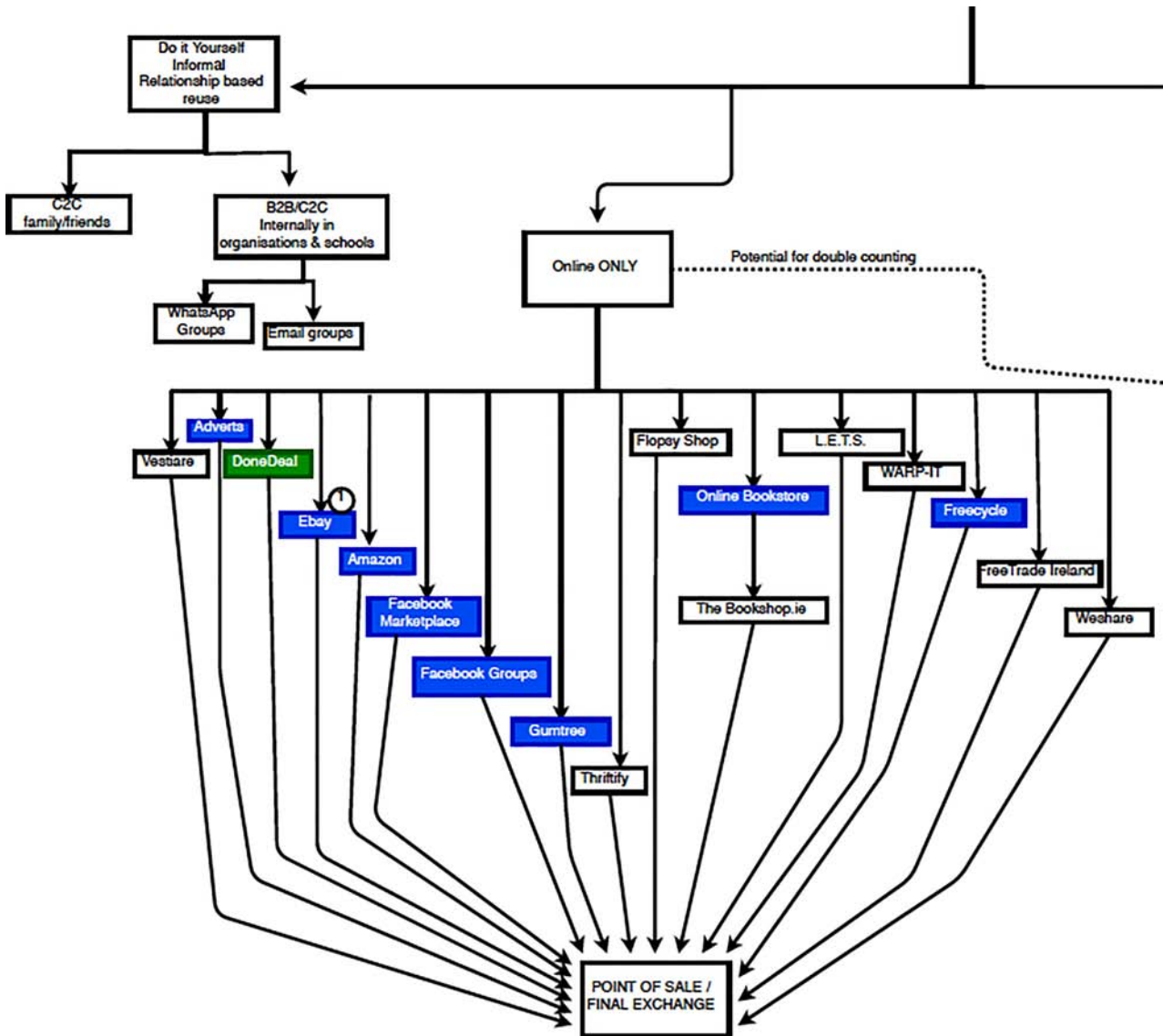
Figure 4.2. Step 2 of the initial decision tree. An excerpt showing relationship-based reuse and online-only sections. The blue boxes indicate points where it would be difficult to establish if an item has been sold, and the green box indicates a mixture of new and used goods being offered through those platforms. The numbered circle indicates a query raised by the research team. See text for further details. B2B, business to business; C2C, customer to customer.

exchanges between family and friends, passing on hand-me-downs and through school uniform swaps, and internally in organisations (offices).

This form of exchange, which is driven by individuals and based around informal relationships, would be very difficult to quantify. As the exchange takes place informally, it was deemed to be outside the scope of this research.

The second channel, named "Online only", represents reuse exchanges and practices that have no physical retail space that customers can visit. Examples

of these include online exchanges through social networks, peer-to-peer sale platforms and businesses that sell only online.

The third channel, "Centralised/managed/organised collection point", refers to those reuse practices that are based around a central intermediary and collection point with a physical base. This channel includes several subsets: shops (charity shops, the private sector and social enterprise), public collection points, depots or redistribution practices and marketplaces. Marketplaces are deemed to be non-permanent places
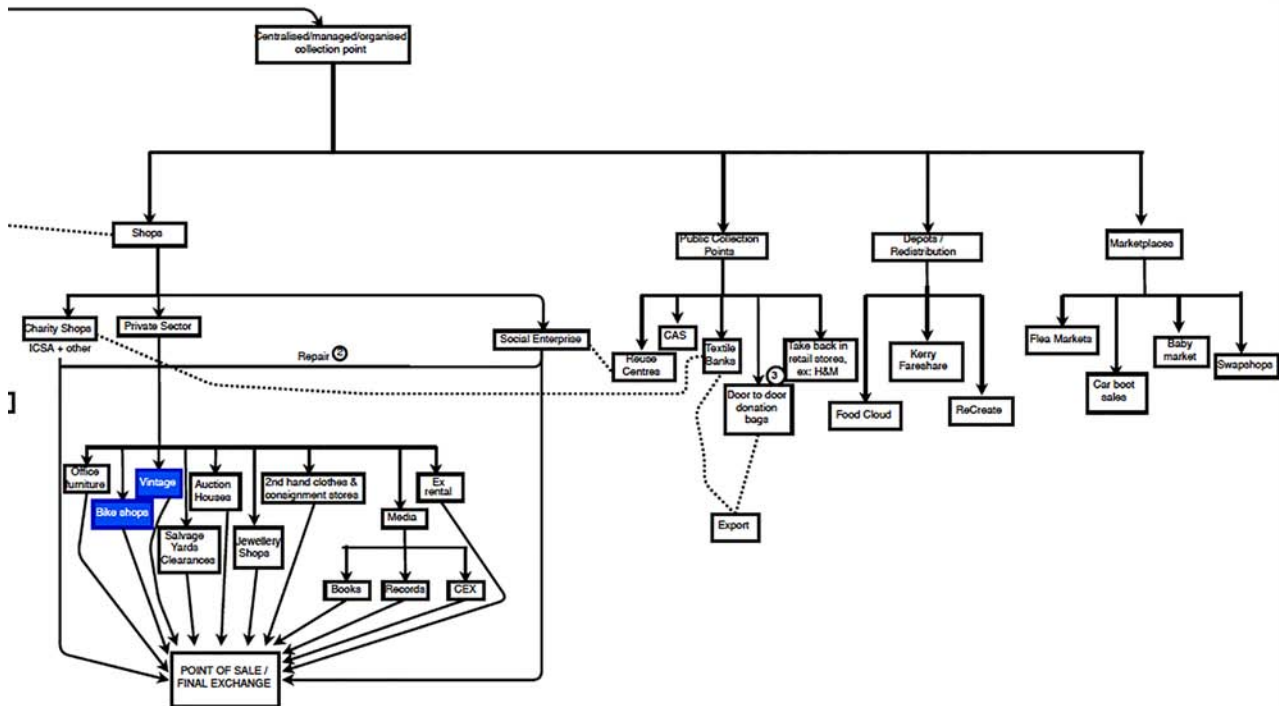
Figure 4.3. Step 2 of the initial decision tree – an excerpt showing the centralised collection point section. Blue boxes indicate when it would be difficult to establish if an item has been sold. The numbered circles indicate queries raised by the research team. CAS, civic amenity site.

of retail with multiple vendors, such as flea markets and car boot sales.

The different colouring of the boxes in Figures 4.2 and 4.3 refers to questions the team had about the collection of data: blue refers to the difficulty in establishing if an item has been sold and green refers to a mixture of new and used goods being offered through those platforms.

Throughout this process, the team explored questions regarding different aspects of the flowchart. While undertaking this mapping exercise it became clear that, no matter how much granularity was achieved in the flowchart, there would always be exceptions. Therefore, it was determined that the flowchart should represent the "standard practice" and any exceptions or explanations would be included as additional notes.

Some of these queries concerning the measurement of imported reused goods coming into Ireland and regarding upcycling and the re-purpose of materials were marked as circles 1 (Figure 4.2) and 2 (Figure 4.3), respectively. The team also marked questions about how to measure the replacement of components before resale/exchange (marked as circle 3, Figure 4.3). Similarly, "harvesting" items for

reuse is a recurring question: when parts are taken from another item and used, should this be considered reuse (e.g. taking a good chain from an old bike and using it to repair another)? The team also noted that door-to-door donations are unregulated in Ireland, unless organised by a charity, and this will be very difficult to accurately measure (marked as circle 4, Figure 4.3). Although the research team know that there are many door-to-door textile collections in Ireland, they are also aware that some of these are unregulated (i.e. some of these collectors claim charity status but are not registered with the Charities Regulator).

With the help of this mapping flowchart, and informed by the international review, the team determined that the most appropriate point of measurement for reuse is at the final point of sale or exchange, as this is the ultimate point of transfer from one user to the next. This decision was informed by the Öko-Institut's work on providing a methodology to report national reuse data to the EU (Öko-Institut, 2019). The reasoning for collecting data at the final point of sale/exchange rather than at interim points or at the initial point of collection is that collected items, particularly textiles, can be exported for reuse. However, as this work is
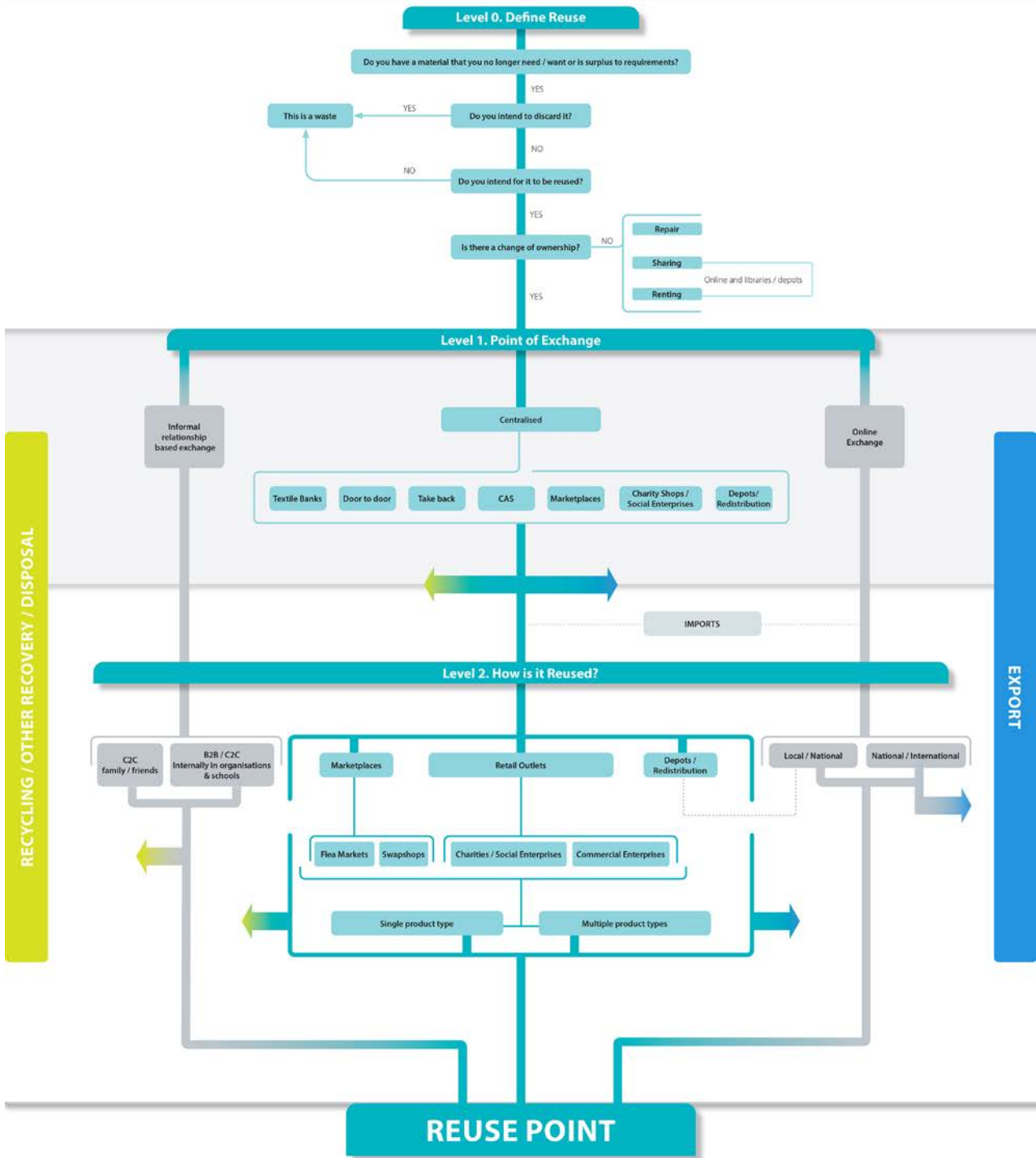
Figure 4.4. Final reuse flowchart. B2B, business to business; C2C, customer to customer; CAS, civic amenity site.

concerned with measuring reuse in Ireland, targeting the final point of sale/exchange ensures that exported items are not included. In addition, double accounting is avoided by setting the measurement point at the

final point of sale/exchange rather than at interim transfer points (e.g. donation to a charity).

Based on the initial mapping exercise, the flowchart was amended to take into account stakeholder

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feedback, including feedback from the steering committee, the Directorate-General for Environment of the European Commission, RREUSE members and the CRNI membership. Amendments included adding in levels and rephrasing the different channels of reuse practice, grouping different activities, and removing examples of specific reuse practitioners. Some of the subsequent drafts are shown in Appendix 1.

The final version of the mapping flowchart is shown in Figure 4.4. This chart includes the decision tree regarding reuse, the channels through which reuse occurs and the main types of organisations involved. This version also acknowledges the fact that some materials end up being sent for disposal or other forms of recovery and that imports and exports also contribute to the reuse landscape.

4.3 Mapping System and Reuse Practitioner Database

Based on the definition and associated channels/ organisation types identified through the development of the flowchart, a database of reuse practitioners in Ireland was compiled. Inclusion in this database followed the rationale behind the flowchart, so, for example, it was agreed that sharing and rental schemes (e.g. libraries, libraries of things, clothing rental, reuse of cups for events/festivals) would be excluded from the database because, although these initiatives are important, they do not fit the definition of reuse, as change of ownership does not take place. It is also noted that EEE and food were excluded from the scope of this work from the outset.

Based on this rationale, the team created a database to catalogue reuse practitioners across the country. This database organised reuse practitioners according to eight broad categories (organisational information, contact details, materials handled, sources of materials, interim activities such as repair, the primary point of sale/exchange, information regarding measurement and metrics, and other comments). This was then populated by including the reuse practitioners from the research team's existing networks and through a structured online search.

Concerning existing networks, the team was able to input relevant members of the Community Resources Network Ireland (CRNI) and the Rediscovery Centre's Circular Economy Academy, as well as details of all charity shops belonging to the ICSA. Where multiple

outlets of one organisation existed, a separate line for each outlet was created. The following sections outline the main information included in the database.

4.3.1 Measurement elements: what to catalogue?

Organisational information

Table 4.1 shows the categories of information that were collected about the organisations identified as reuse practitioners in Ireland.

Qualitative reuse information

Table 4.2 shows the categories of information gathered on all the main qualitative aspects of the reuse organisations.

Quantitative reuse information

The practitioner database was extended to include the questions for quantitative measurement so that all information would be collated and available in the same location. The type of quantitative data to be collected (shown in Table 4.3) was informed by Miller and Purcell's sustainability metrics (Miller and Purcell, 2015), as well as the review of international reuse reporting methodologies.

4.3.2 Search methodology

For the online search for additional reuse practitioners, four different information sources were examined. The main source was a comprehensive Google search. In addition, the team searched the social media platforms Facebook and Twitter and the online marketplace Etsy. For Facebook and Twitter, the team aimed to find social media presence of reuse practitioners and links to interested individuals and reuse operations in Ireland. On Etsy, the team investigated sellers of items classified as reuse and undertook a background check to see whether or not those sellers were operating retail outside the Etsy platform.

Keywords were developed by the team to use in the online searches to identify relevant reuse practitioners, namely:

- reuse;
- second hand;
- vintage;

Table 4.1. Organisational information categories

Category	Selection options	Details
Membership organisation	CRNI ICSA Other (to be specified)	
Umbrella organisation/platform	Free text	Highlighted if an organisation was part of a larger umbrella group (e.g. a charity shop belonging to Saint Vincent de Paul), but also if the organisation was hosted on an external platform (e.g. eBay, Facebook)
Organisational form	Social enterprise Commercial business Public body Registered charity Non-profit Unknown	This category was multiple choice, as some organisations identify as several of the options. Particular overlap exists between social enterprise, registered charity and non-profit The Register of Charities from the Charities Regulator was used to confirm registered charity status of the organisations in question. An "unknown" column was included for instances in which the organisation's status was unclear
Years in operation	Free text	Intended to show a range of how long reuse operations have been running. In the online search, this information was readily available for only a few organisations
Address	Free text	Including street, area and city, if available. Several online-only offerings did not provide a physical address
County	Free text	
Eircode	Free text	Following analysis of the Scottish study on reuse and subsequent mapping, it was agreed that the Eircode of each organisation would be captured in the database
Website	Free text	Referencing the source of the information gained about the organisation. If no organisational website could be found, social media profiles or mentions on other websites were used
Contact person	Free text	
Email	Free text	
Telephone number	Free text	

- repair;
- resell;
- upcycling;
- used;
- refurbish.

Through the search process, a number of additional words that were regularly used to describe reused items were identified, including:

- pre-loved;
- pre-owned;
- re-purposed;
- thrift.

Potentially, these words could be added to the search query in future revisions to extend the directory of reuse practitioners and capture any organisations that were not found through the first set of keywords. However, it is unlikely that these would add a significant number of additional practitioners.

Table 4.4 summarises the different search methods and channels, together with the queries employed, for the online search. These are discussed in more detail in the following sections.

Table 4.2. Qualitative reuse information categories

Category	Selection options	Details
Materials	Furniture Bicycles Clothing Other textiles Media Bric-a-brac Non-antique jewellery Other	This category was multiple choice, as many organisations offer several options. Previously, the options also included separate sections for toys, craft supplies/ stationery and paint. Through the collection of data, it became clear that these materials are sold/exchanged by very few traders specifically, so they were identified as less relevant and merged with the "Other" category
Source of material	In-store donations (private donations?) Door-to-door collection Private sale Business sale Private exchange (swap) Civic amenity sites Business donations Business exchange (swap) Unknown	This category was multiple choice. As organisations often obtain materials from more than one source, many entries include more than one of those sourcing options. The "unknown" category was added, as the source of material was difficult to establish with certainty through only the online search
New material	Yes No (Empty cell)	This category answered the question "Do they also sell/exchange new products?" In doing the mapping exercise, the prevalence of shops selling new and used items became clear. The use of "new" here means not previously owned. In this research project, new items that were previously owned and donated/sold are considered reuse. As an example, a new dress with the tag still on that is donated to a charity shop is considered reuse, as it has changed ownership The empty cell represented when there was uncertainty about whether or not new materials are sold
Interim activities	Repair Upcycling Physical retail Online retail Free exchange Redistribution	This section was intended to capture loss or addition of material (e.g. repair) and to avoid double accounting, for example by identifying where there are sales in both physical and online retail
(Primary) Point of sale/ exchange	Retail outlets Marketplaces Depots/redistribution Online (local/national) Online (international) Relationship-based personal Relationship-based organisation	This section identified where the point of measurement lies in an organisation. The online option was split into local/national and international to account for potential export of products. Online sales were considered international if the organisation stated they were shipping abroad, if their products were hosted on an international platform or the contact details included the international dial code for Ireland (00 353). Although relationship-based reuse is outside the scope of the measurement methodology developed in this research, it was included as an option to catalogue as many reuse practitioners as possible

Web search

As noted, for the main web search, the Google search engine was used. Based on initial experiences with the search by keywords, the team decided to split the search queries by product groups and Irish counties. The different product groups were based on the initial product groups identified for the search categories (see Table 4.2) and keywords were developed for each product group (see Table 4.4). Taking into account the

Table 4.3. Quantitative reuse information categories

Category	Selection options
Measurement methods used (indicators/ units)	We do not track metrics
	Tonnes of goods diverted from landfill
	Number of goods sold or exchanged
	Number of job opportunities sustained
	Number of training opportunities sustained
	Number of volunteer opportunities sustained
	Monetary value generated through reuse
	CO_2 savings
	Other (please specify)
How do you measure your metrics?	Specific measurement
	Using generic factors
	Other (please specify)
Can you share your information?	Yes
	Yes, but later
	No
Measurement information	Data to be provided for:
	• tonnage
	• number of items
	• monetary value
	• number of jobs sustained (FTE)
	• number of training positions provided (FTE)
	• number of volunteer opportunities
	• CO_2 equivalent savings
Annual turnover	Free text

division by counties, an example of the search strings for bike reuse in County Cavan would be:

- "Bike bicycles Cavan reuse"
- "Bike bicycles Cavan second hand"
- "Bike bicycles Cavan vintage"
- "Bike bicycles Cavan repair"
- "Bike bicycles Cavan resell"
- "Bike bicycles Cavan upcycling"
- "Bike bicycles Cavan used"
- "Bike bicycles Cavan refurbish".

For each search, the first 50 Google search results were reviewed to see whether or not the search generated and highlighted any potential reuse practitioners that were not yet part of the directory.

The research team found that, depending on material type searched, certain keywords were more successful than others in providing relevant results. For instance, the material category of clothing produced a large number of results in conjunction with keywords "second hand" and "vintage", but very few relevant results with keywords "repair" and "refurbish". For any future revisions of the methodology, using keywords that are material specific would be preferable, as it would reduce workload while providing information that is more relevant.

Social media scan

The social media scan was limited to two social media platforms: Facebook and Twitter. These were chosen

Table 4.4. Search methodology for the directory of reuse practitioners

Method	Channel	Query
Social media scan	Facebook	Search for keywords "reuse", "second hand", "vintage", "repair", "resell", "upcycling", "used", "refurbish" and "Ireland"
	Twitter	Search for keywords "reuse", "second hand", "vintage", "repair", "resell", "upcycling", "used", "refurbish" and "Ireland"
	Etsy	Look into Etsy for vendors; use "Ireland only" and keywords "reuse", "second hand", "vintage" (the first 50 pages of results were reviewed), "repair", "resell", "upcycling", "used" and "refurbish"
Web search	Google	"Bike"/"Bicycles" and keywords
		"Furniture"/"Chair"/"Table"/"Wardrobe", etc. and keywords
		"Clothes"/"Textile"/"Dress"/"Jeans"/"Shirt", etc. and keywords
		"Media"/"Book"/"CD"/"DVD"/"Vinyl", etc. and keywords
		"Toy" and keywords
		"Craft"/"stationery" and keywords
		"Paint" and keywords
		"Jewellery" and keywords

based on the team members' experience of working in the sector. For Facebook, the team used the platform's search function to enter the keywords presented above, together with "Ireland". Such a search provided different options to narrow down the results. As the research aimed to find reuse practitioners, the results for options "All", "Posts", "Pages" and "Places" were scanned. Once an organisation was identified through this process, the research team checked the search result to determine whether or not the organisation was actively involved in reuse. This determination was based on the previously agreed definitions and whether or not the organisation was still active. If identified as an active reuse practitioner, the organisation and its associated information were included in the database.

For Twitter, the platform's search engine was used in a similar fashion, with search queries using the main keywords and "Ireland". Relevant tweets were reviewed and, where appropriate, practitioners then included in the database. This search provided only a few additional practitioners; therefore, should this work be updated, this search method could be excluded.

Marketplace scan

The online marketplace Etsy was similarly scanned for relevant sellers to include in the reuse practitioner database. According to its website (https://www.etsy.com/ie/about?ref=ftr), Etsy is a customer to customer (C2C) and business to customer (B2C) marketplace for "unique and creative goods, from unique handcrafted pieces to vintage treasures". The marketplace was searched using the keywords and the search was limited using the website's search options.

For all keywords, the search was limited to shop location "Ireland", and for the keyword "vintage" the search was limited to item type "vintage".

For all keywords except "vintage", every result provided by the search was reviewed. For "vintage" results, only the first 50 pages of results were reviewed, as a level of saturation was found at that stage.

Sellers with potentially relevant products were reviewed to assess whether or not they were reuse operators. If identified as such, any other online presence was then checked and, if they were found to operate a website or have a physical retail location, they were included in the practitioner database. In total, 82 Etsy vendors were identified as offering reused products without having an independent organisational presence. These have been logged in a separate spreadsheet, as the team decided it would be more efficient to contact Etsy directly for data rather than contact the vendors individually through the platform. This search provided only a few additional practitioners; therefore, should this work be updated, this search method could be excluded.

4.4   Results

The different searches described in the above sections identified 1276 reuse practitioners in Ireland. These were entered into an online database, an excerpt of which can be seen in Figure 4.5. More information about these practitioners and those surveyed is given in Chapter 5. Of the 1276 final entries, 478 were from CRNI/ICSA databases, with the remainder sourced through the online searches.

Figure 4.5. Excerpt of database of reuse practitioners in Ireland.

4.5   Additional Insights from Methodology Application

It is important to note that the final methodology described here evolved during the mapping of the sector and the gathering and collating of information for the database. Throughout the process, the team reviewed exceptions and decided whether to include those practitioners that did not fit the reuse definition with full certainty. The group also regularly reviewed the categories, including additional ones and/or merging less relevant ones with a view to improving the final methodology.

One discussion centred on the inclusion of organisations active in the trade of antiques. The team initially proposed to not include antiques because of the value difference between antique items and other reused items. However, it was found that many antiques dealers were also dealing with items in the approximate price range of non-antique reuse items. Therefore, it was decided that antiques dealers would be included if their online presence stated that they work with "vintage", "pre-loved", "pre-owned" or "second-hand" items or if they offer items that are obviously less than 100 years old (based on a rule of thumb for antiques) and that are not much more expensive than a modern item of a similar make.

In a final validation of the data, the researchers reviewed the dataset for any duplicates and added missing information where possible.

5   Quantitative Assessment of Reuse in Ireland

Based on the review of best practice and the European Commission Implementing Decision, the main steps proposed for quantifying reuse in this work were determined as follows:

1. scoping of the sector (as addressed through the detailed qualitative assessment in Chapter 4);

2. defining minimum sample size (based on the scoping of the reuse sector, this identifies how many businesses will be sampled to contribute data);

3. defining what will be measured (including which metrics should be measured to quantify reuse);

4. compiling data (how the data will be gathered, collated, assessed and reported, and what implications this has for accuracy and information gaps);

5. scaling of data (based on the sampling plan, and depending on sample size, how best to use the gathered information to quantify the reuse sector as a whole).

The review of each of these steps, provided below, is based on data obtained from reuse operators in Ireland. Key considerations for informing a measurement methodology for Ireland are highlighted throughout.

5.1   Scoping the Sector

The starting point for any measurement exercise is to scope the target group and understand what will be measured. As outlined in Chapter 4, the initial mapping exercise identified 1276 reuse operators that fell within the scope of this study. All subsequent quantification activities are based on this dataset.

The dataset covers a broad range of reuse operators and product groups, from not-for-profit organisations and commercial operators to physical retail and online platforms. Most of the 1276 operators (48.1%) identified as non-profits/charities/social enterprises, as shown in Figure 5.1. This is a significant finding in characterising the reuse sector in Ireland, as it

highlights the important role of social enterprises in reuse activities. The next largest category was commercial businesses (46.7%), followed by "other" (e.g. unincorporated entities) (4.8%). Only 0.4% identified as a public body, and these included Freetrade Ireland (no longer operating) and university associations.

The main product categories handled were bric-a-brac, media, clothing, other textiles, non-antique jewellery, furniture and bicycles, as shown in Figure 5.2.

Although the scope of reuse operators and product groups covered in the dataset is broader than some international review examples, it aligns with the Commission's Implementing Decision, with the exception of EEE (which is outside the scope of this project). The Commission Decision prioritises, but does not limit, scope to four product categories and does not specify operator types.

5.2   Sample Size

Following the qualitative assessment, a sampling plan was developed to identify a statistically acceptable number of operators to be examined in order to extract data and scale up to produce national estimates of reuse. To achieve this, a two-stage process was employed that initially involved surveying a subset of the full list of operators, followed by a more detailed review of a smaller subset of those operators.

Information was complete for 1247 of the 1276 operators included in the database. Therefore, based on 95% confidence and a 10% margin of error, this required 90 sites to be contacted, which represented 7.2% of the total. To allocate these 90 surveys, the reuse operators were initially stratified according to the category of operator, which was based on primary point of exchange and then arranged by operator type and their product specialisations. Then, based on a probability-based, stratified sampling method, the surveys were proportionally allocated to a representative sample of each. These allocations are outlined in Table 5.1.
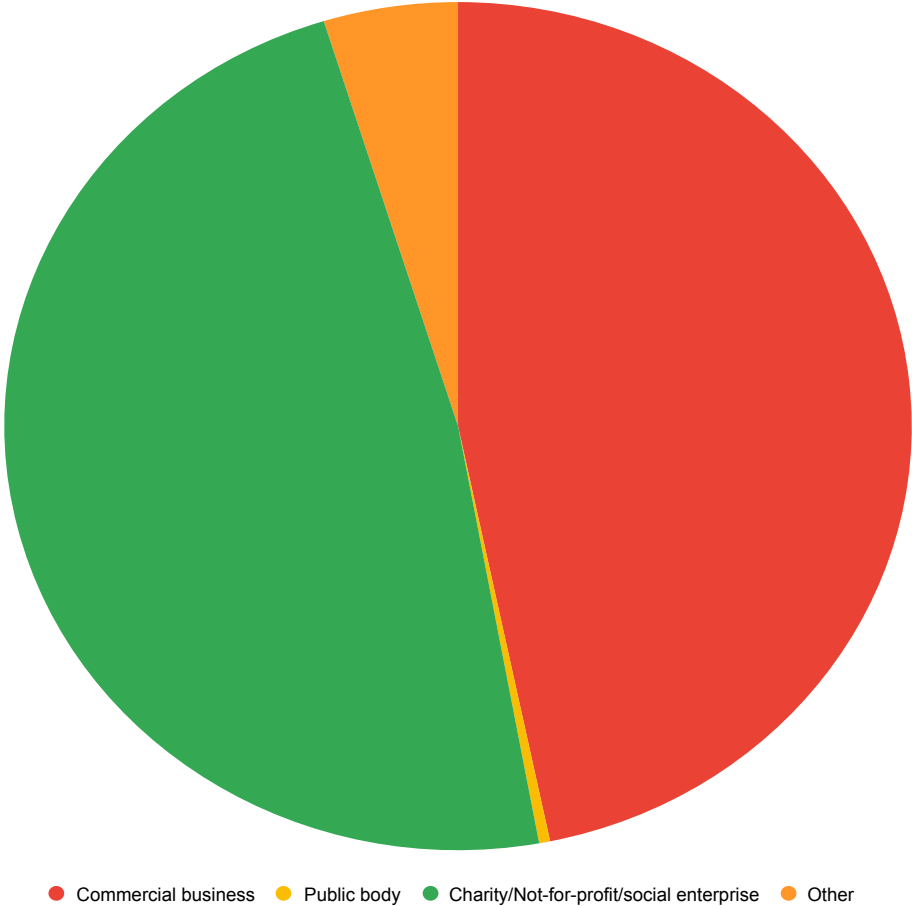
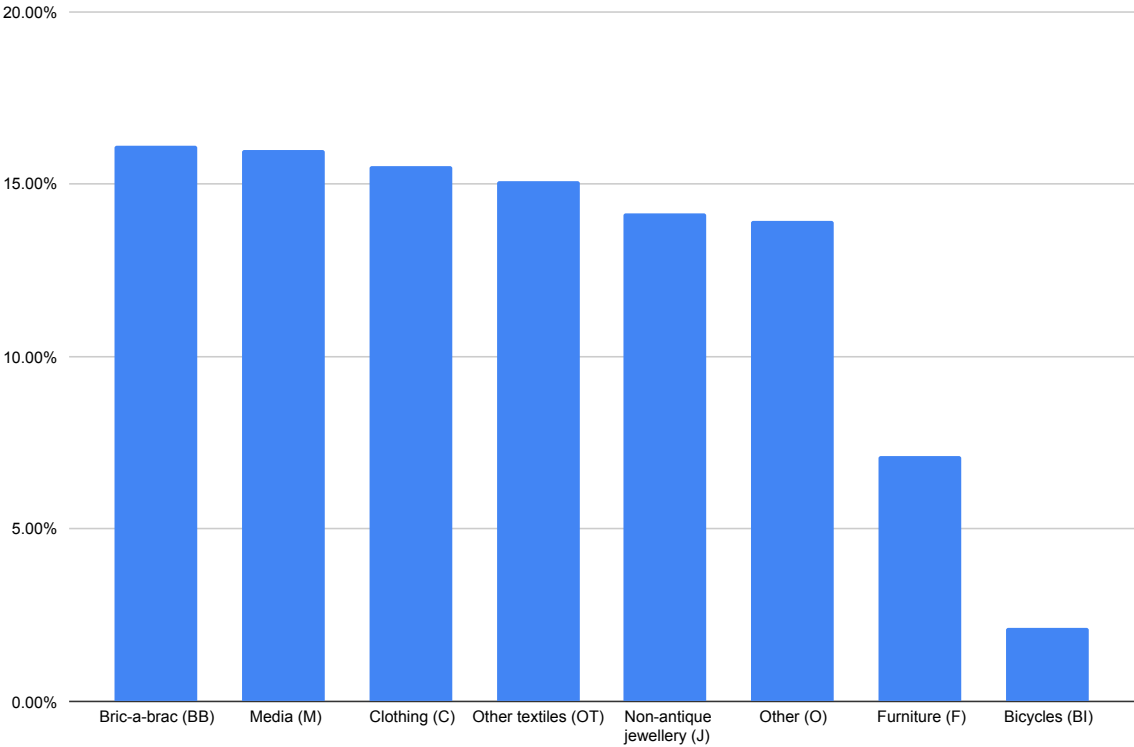**Figure 5.1. Reuse stakeholders by organisation type.**

Figure 5.2. Materials handled (%) by all the stakeholders handling those materials.

Table 5.1. Number of stakeholders by point of exchange

Count	Retail outlets – social enterprise	Retail outlets – charity shop	Retail outlets – private	Marketplaces	Depots/ redistribution	Online (local/ national)	Online (international)	Total
Total	16	600	475	35	3	83	35	1247
Multiple materials	4	580	163	19	3	55	19	843
Furniture specialist	7	12	82	0	0	11	0	112
Bicycle specialist	2	0	52	0	0	2	3	59
Clothing specialist	2	4	13	7	0	7	9	42
Media specialist	0	2	124	8	0	2	1	137
Bric-a-brac specialist	0	0	0	0	0	0	0	0
Jewellery specialist	0	1	22	1	0	0	2	26
Other specialist	1	1	19	0	0	6	1	28
Point of exchange	1	43	35	2	0	6	2	90

It should be noted that instead of 90, a further 24 operators were surveyed (i.e. 114 in total) to ensure a sufficient number of responses was obtained for each category. A total of 57 full responses were received, equating to an overall response rate (for the 90 required) of 63%.

5.3   Survey A – Initial Scoping Survey

The initial survey, conducted using SurveyMonkey and referred to as Survey A, gathered detailed information from the operators under a range of headings. It targeted qualitative and quantitative data and sought feedback on the future potential for data collection against various metrics. Reuse operators were initially contacted by email and then by follow-up phone call.

There were 26 questions in Survey A, which are given in Appendix 2. The questions aimed to provide an overview of the organisation, including its type, size, turnover, the materials it deals in, how it measures its activities and throughput, issues relating to training and volunteerism, and opinions on reuse targeting and reporting.

The profile of respondents to these surveys broadly reflected the national profile. The majority identified as not-for-profit, small to medium-sized operators, and they obtained goods from multiple sources, with goods from private donations dominating and business donations being another important source. This highlights the overall small scale of operators and the important influence of not-for-profit operators in the reuse sector.

Most operators (66%) handled multiple product groups, while the most widely handled individual product group was media (65%) followed by bric-a-brac (60%), clothing (60%), jewellery (58%) and other textiles (54%), as shown in Figure 5.3. Because so many operators handle multiple products streams, any measurement of reuse needs to consider the broad scope of product groups reused in the Irish market.

A closer look showed that 19 out of the 57 respondents (33%) specialised in just one product group (mainly furniture and bicycles), while the remainder handled multiple product categories. Most of these were complementary; for example, textiles are often sold alongside jewellery, while bric-a-brac and furniture are often sold together. Charity shops tend to be open to all product categories except bicycles and furniture (depending on the size of the store).

Feedback from some of the larger charity retailers was that, although their stores retail most of the material groups above, approximately 60–80% of sales comprise women's clothing. Bric-a-brac was an important revenue stream for many charity retailers, even where furniture is also sold (sometimes it can be equal in value).

Of the responses received, 32 identified as not-for-profit organisations (of these, six identified as social enterprises and 26 identified as charity retailers) and 24 identified as commercial enterprises, which roughly reflects the proportions identified nationally. In total, 56% of respondents identified as small to medium-sized operators within the €0–100,000 turnover
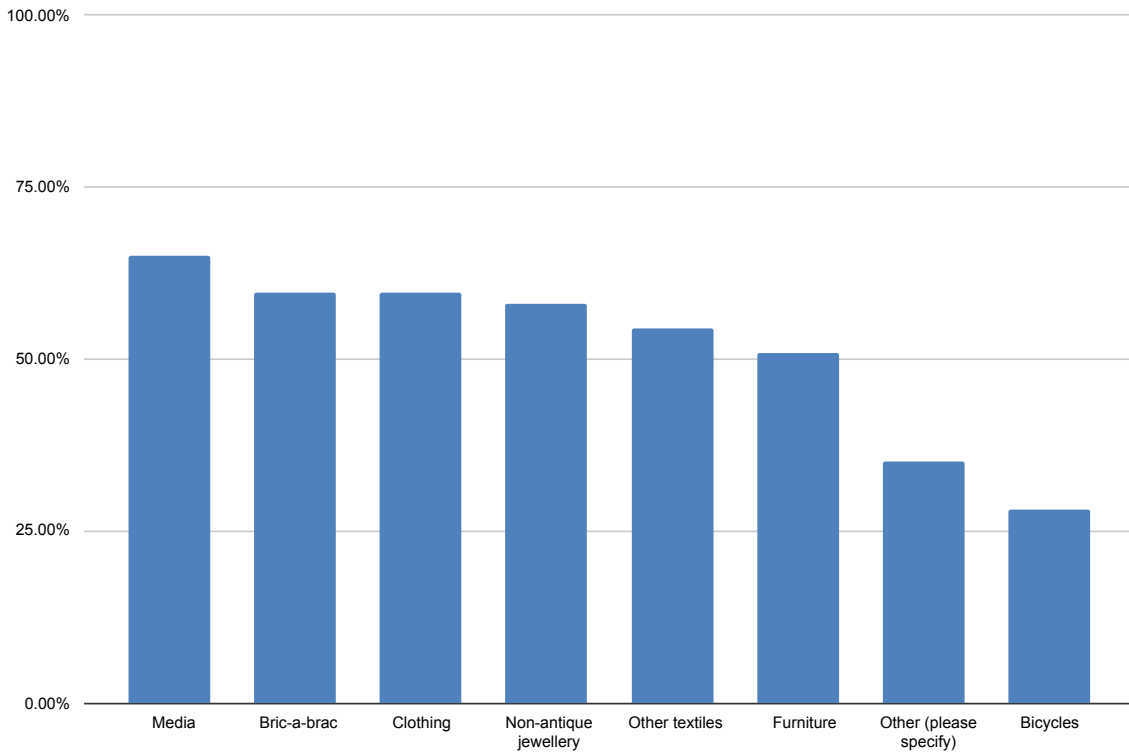
Figure 5.3. Material groups handled by Survey A respondents.

bracket; 14.7% had a turnover of €101,000–250,000 and 14.7% had a turnover of over €1,000,000, as shown in Figure 5.4.

In terms of the main sources for materials, most of the respondents (80%) obtained goods from multiple sources. The majority (70%) obtained goods from private donations (including donations through textile banks and in-store) and 40% obtained goods from business donations. About 30% obtained goods through business sale or private sale. These results are shown in Figure 5.5.

Also of interest, although not shown in Figure 5.5, is that 33% of the respondents sourced new goods as well as the second-hand goods.

Activities carried out by the respondents are shown in Figure 5.6. All except two respondents provided an answer and most offered multiple activities, e.g. physical and online retail. Most of the respondents (88%) provided some form of physical retail, while over half offered online retail (55%) and 40% offered repair services. Of the online retail providers, five were online-only retailers or exchanges, while the remainder used online channels in addition to physical retail.

5.4 Survey B – Detailed Exploratory Survey

Subsequent to Survey A, a subset of 20 reuse practitioners were approached for semi-structured interviews (referred to as Survey B) to explore in more detail the actual flow of materials through the various operator locations and, where possible, identify and measure throughput at the appropriate points within their individual process flows. These were selected by non-probability convenience sampling and included reuse operators who represented a cross section of different strata and were most likely to provide useful information.

Of the 20 approached, 16 operators were interviewed, though three of these did not participate in Survey A. These were identified through stratification and approached to increase the Survey B response rate.

Originally, it had been intended for this second phase of surveying to be carried out on-site and include physical weighing of the material flows through the different operators. However, as a result of public health measures imposed in response to the COVID-19 pandemic, it was not possible to do so. On-site visits would have helped build a better understanding of the exact processes involved and
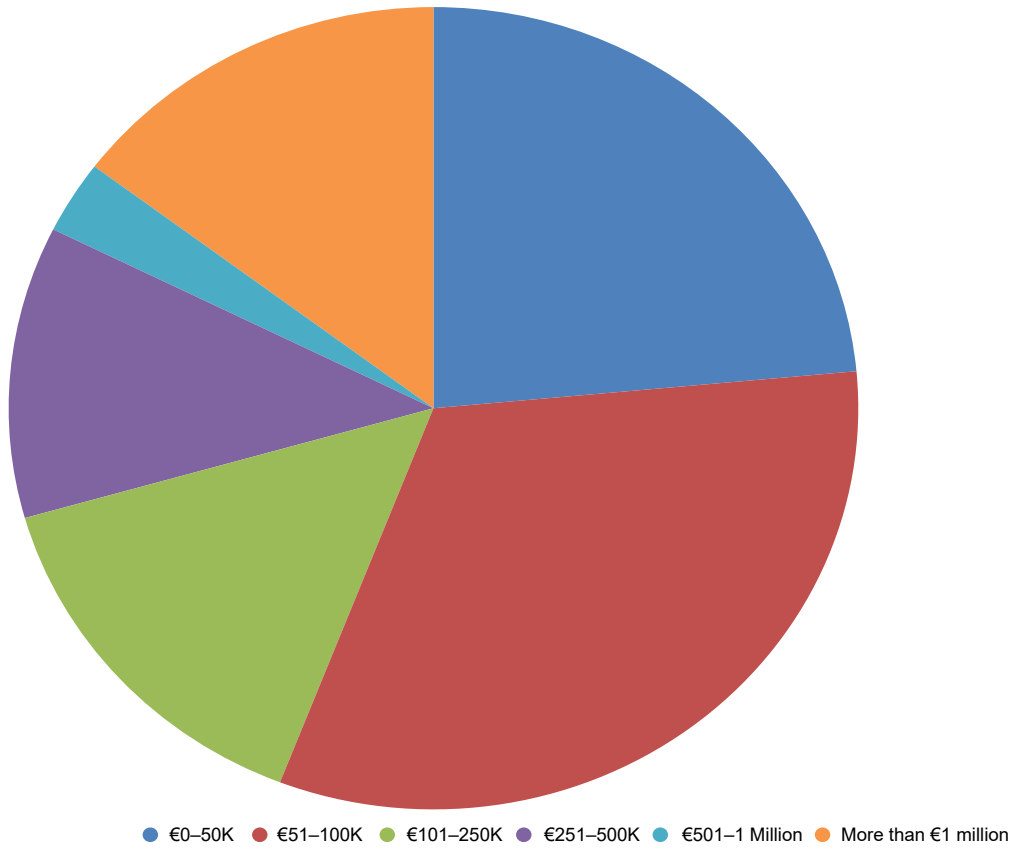
Figure 5.4. Reported turnover bands of Survey A respondents.
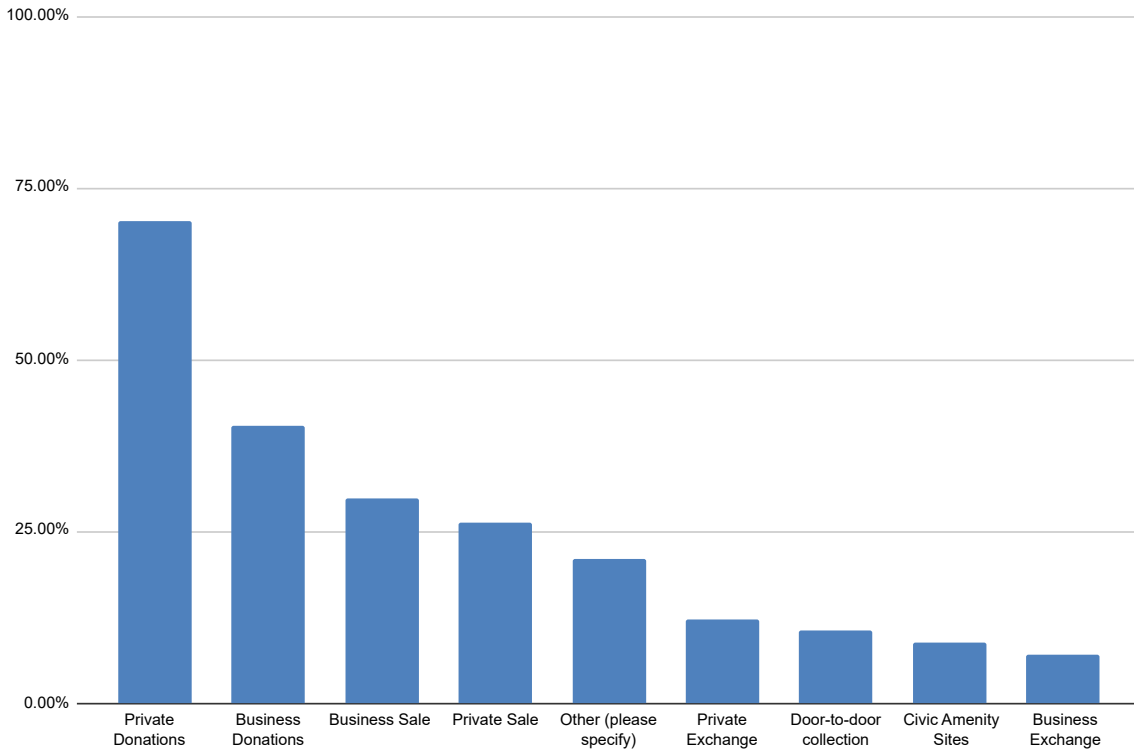
Figure 5.5. Reported source of goods by Survey A respondents.
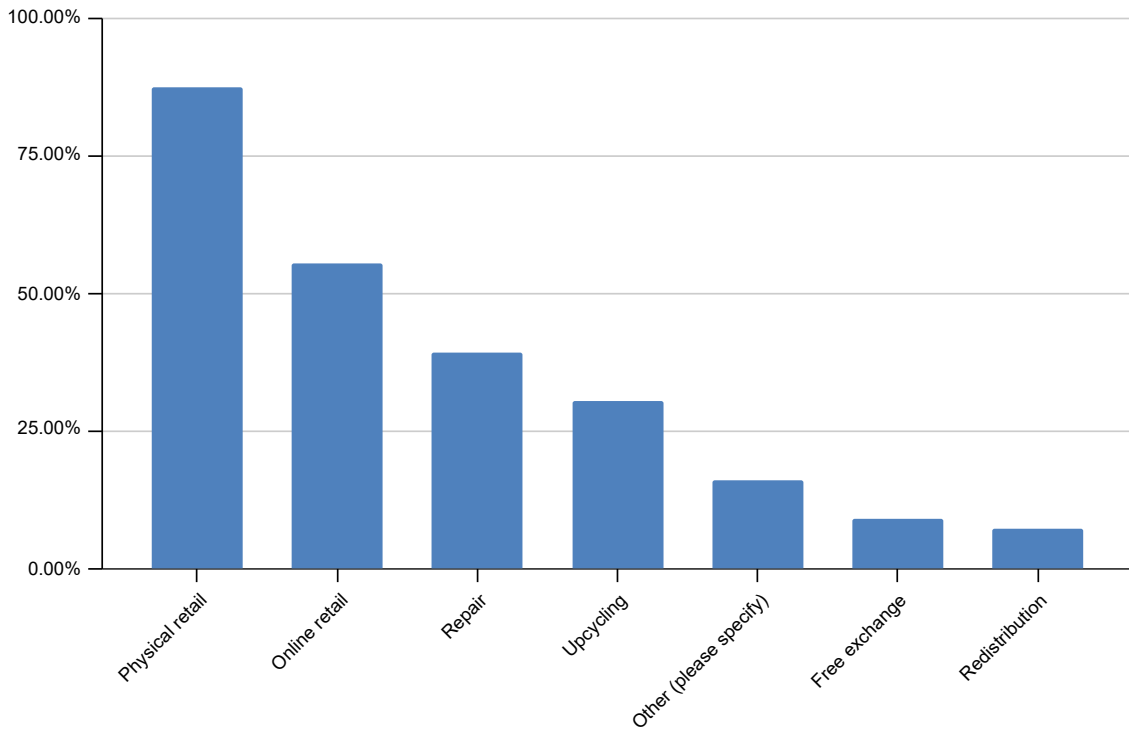
Figure 5.6. Reported activities undertaken by Survey A respondents.

to quantify the levels of reuse in as much detail as possible.

To help extract all relevant information from those involved in Survey B in a consistent manner, a Miro board template (flow diagram) was developed for each stakeholder (see Appendix 3). This mapped in a vertical flow the typical product-handling processes from product sourcing to sorting, point of sale (in-store or online), data collection (current vs potential future) and reporting (current vs potential future). The availability of data at each stage of product handling was also highlighted.

To understand product handling post collection but prior to sales, the Miro board covered product sorting, disposal, recycling, other reuse and repair, and placement of the product (physically or online) for sale or exchange in the retail area. Although the output was mainly qualitative, the availability of data at each stage of product handling was also highlighted and, where possible, extracted.

Questions were asked about whether or not goods are taken anywhere else between collection and point of sale; what the selection process is; whether or not parts are removed/added/repaired; what data are recorded and where (and what is not recorded that could be available); how operators estimate amount in stock versus on the retail floor; estimated levels of

export/recycling/disposal; how much, if anything, is reused elsewhere; and whether or not any outlets for export/recycling/disposal provide receipts with sales or weight-based data (kg).

At every stage of the process, data collection points were identified and detailed. This process was designed to ensure that data collected could be aggregated for each part of the process.

Once the interviews were complete, the data were embedded into the Miro board and questions removed to produce a "mapped" board for each interviewee. Qualitative outputs were summarised into a table and into a combined Miro board. An infographic of data collection points was also created to show the points at which operators typically collected data.

The outputs from this process are summarised in Box 5.1, which outlines the main findings.

5.5   Barriers and Supports

5.5.1   *Barriers to measuring/reporting reuse*

The requirement for additional data collection and reporting needs to be considered in terms of the resource implications involved. With 42% of respondents to Survey A not currently measuring

Box 5.1. Key findings from Miro boards in Survey B

The majority (13 out of 16) of reuse operators make inventories of received goods at the point of receipt, including two operators that make notes at the point of collection (furniture).

Weight data, where captured, appear to be influenced by financial incentive; for instance, weights of textiles sent for rag recycling are available and recorded, as the rag company pays a fixed price per kilogram and, in most cases, issues receipts. This is also true of items sold for scrap (e.g. metal) and books sold for reuse/recycling.

Items may be weighed at several points in the chain. Two operators weigh goods inbound in sorting warehouses. Six out of the eight operators sending rag for recycling obtain weights and receipts back from the recyclers; the other two estimate weights based on conversion factors. None of the respondents weighs goods at the point of sale.

Many operators estimate weights from the number of bags of clothes donated and the number of bags kept in stock. These are estimated to weigh between 9 kg and 10 kg each. One operator estimates that each bag donated will generate an average of €25 in sales.

Of the 16 operators, seven use a barcode inventory system (of which five are linked to an EPOS and the rest are manual) to track goods from inbound to point of sale. While all respondents except one carry out stock-takes, the frequency of these ranges from monthly to yearly.

Revenue is the most tracked metric among respondents. Although 65% of the sales data are captured manually using spreadsheets and receipt books, five operators (31%) have EPOS systems in place tracking goods from reception to point of exchange. Four operators use till data (e.g. Z Report) to determine the daily number of items sold by category.

Of the 16 operators, nine reported an online sales presence. Social media platforms, such as Instagram and Facebook, are being used for marketing and sales. For many, this has been influenced by the COVID-19 pandemic, which has forced them to look to online options. Five operators reported selling goods through Thriftify.

Some of the shops that use Thriftify keep a manual sales count locally and receive a monthly sales report through Thriftify*,* which they tally. Some of the services, such as Thriftify and Clover, provide data that suggest price points for common items such as types of clothing.

Apart from financial incentives, the other reasons noted for tracking data are for setting sales targets, reporting to company boards and, in the case of bike shops, so that there is a record of where a bike came from should there be any suggestion in the future that it had been stolen.

There was a broad range of interest in data capture across the interviewed parties – many capture data in several ways (automatically, manually or through a hybrid manual/automatic system). One organisation does not capture anything – even stock levels – and relies on customers to have a receipt to prove purchase.

Several times, Gift Aid[2] has been referred to as a valuable incentive in the UK. It is suggested that this can be a way to offset the administration costs of maintaining EPOS systems.

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2   https://www.gov.uk/donating-to-charity/gift-aid (accessed 29 November 2021).

or reporting reuse levels (e.g. number of units or weights), and with the large representation of not-for-profit organisations and small to medium-sized operators in the sector (which tend to have limited human resource/financial capacity), additional reporting will pose a challenge. Exploration of this during Survey B identified a number of concerns regarding additional data reporting:

- a general lack of resources or skills within not-for-profit organisations;
- the challenge of engaging volunteers or trainees with new systems, especially when they may have learning or other difficulties;
- the additional cost and labour input associated with EPOS-type systems (barcoding, tagging and scanning), which would place additional burden on managers and volunteers;
- lack of viability – the amount of time and effort required to produce data would outweigh any benefit to the bottom line that this information could provide;
- the additional burden on a small and already challenged industry;
- other priorities taking precedence.

5.5.2 *Supports for measuring, reporting and expanding reuse*

It is clear that the introduction of any requirement to measure or report data in a formal fashion would place a burden on the sector that would need to be addressed through some form of financial incentive, or other support, for it to be effective. A range of financial incentives and other supports that could help overcome these barriers and generally support the sector were identified in the surveys including:

- Gift Aid;[3]
- VAT exemption for second-hand goods;
- introduction of a tax applicable to virgin materials or goods, e.g. on virgin plastic, which would level the playing field with second-hand goods;[4]
- support for labour activation schemes to help facilitate data reporting;
- grants to help automate the data collection (e.g. EPOS systems) and reporting process;

- promotion of reuse and support of local reuse activities by politicians or public servants at the local level;
- networking and cohesion to bring the sector together;
- support for building repair skills, e.g. in the form of a Quality and Qualifications Ireland (QQI) course;
- support for storage and space to work;
- better access to used goods through civic amenity sites.

However, it is noted that many of these may only apply to certain types of operator; for example, Gift Aid would apply only when the operator has a charitable status, while a VAT exemption would not have an impact on charity retailers.

It is notable that, of the other supports, two reuse operators used the opportunity of involvement in Q2Reuse to review and begin to improve their data collection methods. This reflects the fact that there are already internal incentives to collect sales data, to make improvements and set sales targets, track stock for clients or reduce liability. However, this alone does not appear to outweigh the burden of collating and reporting these data for many operators, as outlined in section 5.5.1. Interestingly, there were limited issues identified concerning data and the sharing of collated reuse figures.

5.6 Metrics

As noted previously, data on the metrics available across the sector was explored in both Survey A and Survey B. It was found during Survey A that the availability of quantitative information on reuse varied greatly. Although some operators were able to immediately extract accurate sales data from EPOS systems, with varying levels of detailed breakdown, others relied on till data (Z reads) or manual records (some of which were highly coordinated and accurate). Others, however, were only able to provide estimates (e.g. number of boxes of books sold). A number of respondents reported having just installed, or being due to install, EPOS systems, which would further improve accuracy and accessibility of data.

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3   In this system, a tax value is attached at the point of donation. Most operators involved in Gift Aid use an EPOS system to facilitate the transaction. Gift Aid would also highlight to donors the value of their donation.

4   This is a potential policy initiative referenced in the Waste Action Plan for a Circular Economy.

A full breakdown of metrics currently measured by respondents to Survey A is provided in Figure 5.7, which shows that the most commonly measured metric is turnover, and that the number of jobs and number of goods sold are also frequently recorded. Of the 57 respondents, six (11%) reported not tracking any metrics.

Online platforms also reported varied availability of data. Some commercial platforms do not track the number of items sold second hand but can provide a rough estimate. On the FreetradeIreland.ie[5] platform, the number of items reused was estimated as those logged as being successfully exchanged plus 50% of expired advertisements, based on a protocol agreed with the funder (the EPA).

Based on the more detailed quantitative information extracted from respondents in Survey B, an infographic representing the points at which quantitative data were available was produced (see Figure 5.8).

The infographic in Figure 5.8 shows that 13 out of 16 respondents (81%) have some form of inventory process in place for incoming goods, with only two respondents (13%) collecting weight-based data for incoming goods. The intermediate stages of material management (sorting and management) varied considerably, with only 44% using a barcode inventory system, although 81% tracked materials that leave the operator's business. The largest proportion of this was related to weights of clothing going to rag, with 38% doing this.

For sales, which is the recommended measurement point for reuse, all operators surveyed have some sort of system in place for recording information. However, the mode by which these are recorded (manually or digitally), the base units used and the granularity of these data vary significantly. Certain reuse operator types (e.g. second-hand shops, furniture clearances) require greater data traceability than others and keep detailed records of units sold. Smaller operators tended to have less formal data collection systems and do not typically record the number of units sold but do record financial data or weight of goods donated and sold to rag recyclers. Specialist operators working with furniture reuse, books or bicycles are also less likely to have an EPOS system. Among those operators that do log units sold, the number of product categories recorded ranges from 1 to 20. However, some operators record data against hundreds of
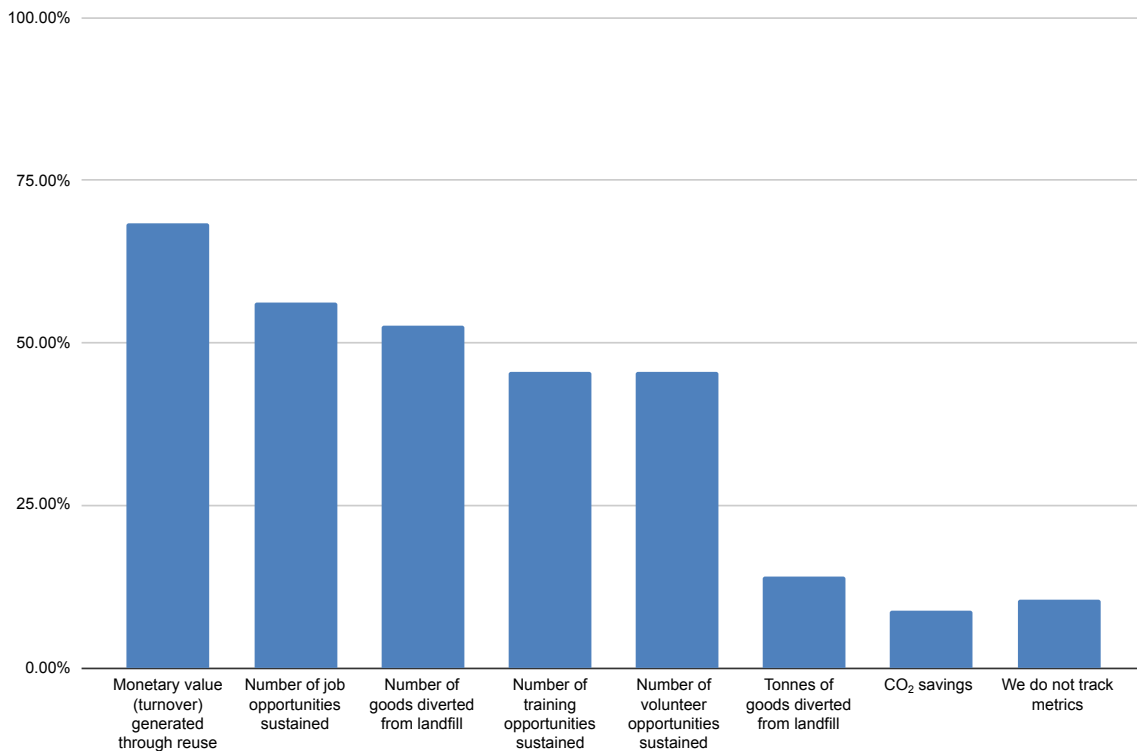
Figure 5.7. Metrics reported as tracked by respondents in Survey A.

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5   Note that this service has since closed.
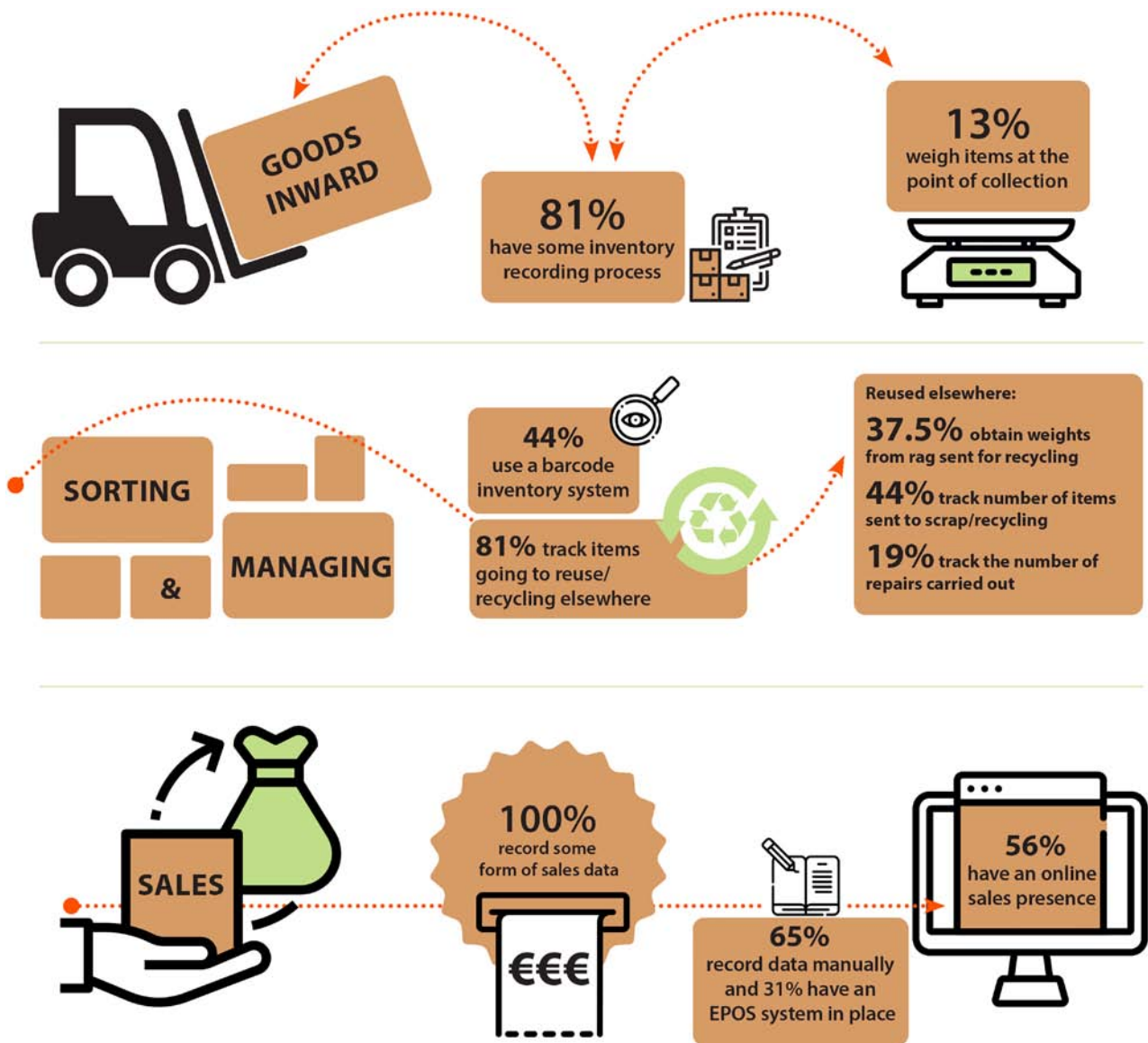
Figure 5.8. Summary of Miro board findings for Survey B.

subcategories (where items are logged by brand, size, colour, etc.). This was the case where both manual and EPOS systems were in place.

For turnover or other sales data to be useful in this methodology, there would need to be a correlation with reuse levels. Challenges identified in terms of correlating financial metrics with reuse levels included inconsistent pricing policies, discounts, a variable level of labour input (upcycling, repair) and the difficulty of separating second-hand sales from other activities. Commercial sensitivities may also be an issue for some operators. However, the average sales value was seen as a useful way to estimate a number of units, as shown by the ICSA.

No data were obtained from reuse operators on retail area (m² retail space). There were also many challenges identified in correlating retail area with reuse levels. The ratio of retail area to back-end sorting and staff area may affect sales. Similarly, large on-site storage capacity, or the use of remote storage facilities, would affect these metrics. Retail area per unit sold will also vary with type of product, and online sales will have very different space requirements.

The surveys found that correlation between reuse and social metrics (jobs, volunteers) depends on many factors that are difficult to measure. However, collecting social metrics through a reporting system would be valuable to demonstrate the social impact

of reuse. Reporting the social value of these metrics could effectively highlight the full impact of reuse.

5.7 Data Compilation – Gathering, Collating and Assessing

As shown above, both surveys found that reuse operators track data at various points in the process from goods inbound to quantities in stock, goods sent elsewhere (e.g. reused/recycled/disposed) and point of sale. There was general agreement that point of sale is the most appropriate point for measurement, although other data (e.g. collected at the point of goods receipt) could help validate this.

To estimate the quantities of products reused, secondary metrics were derived by multiplying primary (measured) metrics by conversion factors. Several respondents to Survey B were applying unit-to-weight conversions, typically those based on common international product weight protocols, which have a minimum of 300 product categories, but can have over 1000 such categories. Some reuse operators used "typical" conversions; for example, black bags used for donating textiles are estimated to weigh around 10 kg. One charity retailer (Dublin Simon) has created its own product weight protocols; this is interesting, as it shows that there is interest within the sector for such information.

From the international best practice review, it is understood that the accuracy of product weight conversions can depend on how products are grouped together and how many categories are covered. While a large number of categories can improve accuracy, a balance must be struck between this and the capacity of reuse operators to report against a large number of categories. In relation to this, the Flemish move to working with high-level product categories to help improve accuracy by reducing the reporting burden and removing room for error is of interest.

With this in mind, the research team identified a minimum number of product categories and subcategories based on those already in use within the sector. The proposed categorisation includes nine primary product categories, with a minimum of 28 subcategories and an optimum of 33 subcategories. This categorisation is sufficiently granular to facilitate accurate product weight conversions without overcomplicating the product reporting requirements.

These categorisations, which were informed by the responses of those surveyed, are shown in Table 5.2.

Weight conversion values have also been included in Table 5.3. These are largely based on the international datasets that were made available to the project team. When national values were available, these were combined with the international values to produce the average weights outlined.

The international best practice review found that, ideally, product weight values need to be determined locally to best represent the local product mix. In addition, they should be regularly updated to reflect product weight trends (generally towards light weighting) over time.

None of the survey respondents reported carbon metrics. CRNI reports carbon savings on behalf of its members, some of whom participated in the surveys. These are derived using conversions from the research work carried out by the Rediscovery Centre on key performance indicators for the reuse sector (Miller and Purcell, 2015) for a limited number of product groups or, where unit data are available, using the AERESS online calculator (AERESS, 2019b).

5.8 Extrapolation, Scaling and Accuracy

As it was not possible to gather data from all reuse activities taking place, extrapolation of available information and scaling was required to generate a baseline or full estimate of the amount of reuse taking place nationally. As noted previously, there are challenges associated with the assumption that either turnover or retail floor area is correlated with reuse levels. Internationally, BKN uses floor area as a scalar, but it is important to note that its membership is uniform in nature. However, as the operators examined within the scope of this study represent a very broad range of business models and product groups, this approach is not appropriate.

To use turnover data as a scalar, appropriate nationally reported macro data would be required for second-hand sales, broken down by reuse operator type and product category. This would then be divided by reported average sales prices (per point of exchange by reuse operator type and product category) to inform a national reuse figure. However, a review of macro data found that available data on consumption or second-hand sales are limited and cannot be used

Table 5.2. Proposed product categories, subcategories and corresponding weight conversion values

Category	Minimum	Optimum	Weights average (kg)	Average (kg)
Clothing	Men's	Men's – summer	0.44	0.30
		Men's – winter		
	Women's	Women's – summer	0.31	
		Women's – winter		
	Children's	Children's – summer	0.15	
		Children's – winter		
		Coats – all	–	
	Bridal	Bridal	–	
Other textiles	Bedding and blankets	Bedding and blankets	0.26	0.28
	Bags	Bags	0.39	
	Other (scarves, gloves)	Other (scarves, gloves)	0.18	
Footwear	Men's	Men's	0.58	0.49
	Women's	Women's	0.61	
	Children's	Children's	0.26	
Bric-a-brac	Homeware	Homeware – heavy	1.27	2.47
		Homeware – light		
	Toys	Toys	3	
	Other	Other – heavy	3.15	
		Other – light		
Books and media	Books	Books – hardback	0.5	0.35
		Books – paperback		
		Magazines		
	CDs/DVDs/games	CDs/DVDs/games	0.15	
	Other	Other	0.41	
Furniture	Large	Large	36.8	31.6
	Small	Small	11.8	
	Sofas	Sofas	46.1	
Jewellery	Jewellery	Jewellery	0.26	0.26
Bicycles	Steel frame – adults'	Steel frame – adults'	13.8	13.8
	Steel frame – children's	Steel frame – children's		
	Other – adults'	Other – adults'		
	Other – children's	Other – children's		
Other	Paint	Paint	1.3	1.3
	Mechanical items	Mechanical items	–	–
	Other	Other	–	–

in their current form to help validate or support a methodology for quantification of reuse.

Although the Central Statistics Office (CSO) was able to provide annual detailed enterprise statistics for the retail sale of second-hand goods in stores, it identified only 377 stores in 2018 (compared with the complete dataset identified in this study, covering 1247 reuse practitioners). Assuming that the same retailers are in

the scope of both sets (which is not clear), the CSO dataset covers 30% of the dataset used in this project. Furthermore, while the CSO dataset includes number of enterprises, various types of financial data (turnover, production value, gross margin, etc.) and various social metrics, there was no breakdown of data according to point of exchange or product category. The turnover data are therefore not granular enough to be used as a scalar.

Another challenge is that turnover data related to reuse from businesses involved in this sector may be complicated by the fact that both new and second-hand goods are typically sold, and other funding sources are included on their balance sheets. Data available from this dataset on purchases of goods and services for resale (which highlight specifically second-hand goods) could also be of interest in future, subject to being broken down further into categories. Therefore, for a top-down approach, a number of discrepancies in current CSO data would need to be resolved.

An alternative approach is a bottom-up calculation, in which the average number of units sold or exchanged (broken down by reuse operator type and product category) is multiplied by the total number of points of exchange for that reuse operator type/product category. This is the model used for the estimate of reuse in the following sections.

5.9   Results

The availability of quantitative information on the preferred metrics – number of units sold at point of sale and average sales price – was low and there were many gaps in the data, particularly for the target year (2019). To address this, data from 2020 were also gathered. However, in 2020 many second-hand retail stores were closed for extended periods as a result of COVID-19 restrictions, which negatively affected the average number of units sold in the combined figure. Consequently, the 2020 data were combined with 2019 data (where available) or information on a "typical" year, which was reported by some operators. This blended dataset is referred to herein as "2020*".

The data used to compile the figures for reuse are shown in Table 5.3. These data have been arranged according to the point of exchange by reuse operator types and product categories. The second column shows the data obtained for 2019 (as this was the

original baseline year) and the third column shows an average figure for 2020* from the combined datasets from 2019, 2020 and "typical" years.

The information generated from these datasets is shown in Table 5.4 and includes data on the number of units sold at point of sale and some financial metrics, e.g. turnover or average sales price for both 2019 and 2020*.

An estimate of the number of units sold nationally was then calculated by multiplying the average number of units sold per point of exchange (from Table 5.4) by the total number of points of exchange per operator type in that product category (see Table 5.1).

Table 5.5 shows the estimated total reuse by point of exchange, with units for 2019 and average units per point of exchange for 2020*. Table 5.5 also presents data for the total number of units reused per point of exchange and by reuse operator type for 2019 and 2020*.

As can be seen, it is estimated that between 20.5 and 20.7 million units were sold or exchanged in 2019 and between 24.8 and 28.2 million units were sold or exchanged in 2020*.

It is important to note that the 2019 dataset is incomplete because no estimates for online exchanges or media specialist stores were available for this period. Furthermore, the 2020* figure was affected by the COVID-19 restrictions on retail, as noted previously.

By using these units, along with the average weight for each product category, a total weight of reuse can be calculated. As there are currently no agreed national product weight values, a combination of local and international values was used. These were shown previously in Table 5.2.

However, there were some data gaps in product weight conversions, particularly for the multiple product operators. To generate a number for these, the ICSA provided information on the estimated mix of goods sold. Then, by using the product weights from Table 5.2, a weight for the average sale in a mixed product charity retailer was calculated. This is shown in Table 5.6.

In the absence of product-related weight data for operators dealing in multiple products, this average weight was applied. The final estimated weight (kg)

Table 5.3. Unit and sales data collected by point of exchange

Point of exchange	Available datasets 2019	Available datasets 2020*
Multiple products – charity retailers	1 full 2019 dataset (data from 192 out of 470 ICSA member shops)	1 full 2019 dataset (data from 192 out of 470 ICSA member shops) 1 full 2020 dataset (data from 374 out of 463 shops)
Multiple products – online	1 partial 2019 dataset[a]	1 partial 2019 dataset 1 partial 2020 dataset 1 "typical" dataset
Multiple products – other (markets, depots)	1 complete 2019 dataset[a]	1 complete 2019 dataset 1 partial average dataset
Furniture – specialist stores (commercial and not-for-profit)	3 complete 2019 datasets 1 partial 2019 dataset	3 complete 2019 datasets 1 partial 2019 datasets 2 complete 2020 datasets 3 partial 2020 datasets
Bicycle – specialist stores (commercial and not-for-profit)	3 complete 2019 datasets	3 complete 2019 datasets 1 complete "typical" dataset 2 partial "typical" datasets 3 complete 2020 datasets
Clothing – specialist stores (commercial and not-for-profit)	2 complete 2019 datasets	2 complete 2019 datasets 1 complete "typical" dataset 1 complete 2020 dataset
Media – specialist stores (commercial and not-for-profit)	Not available	3 complete "typical" datasets
Jewellery – specialist stores (commercial and not-for-profit)		1 partial "typical" dataset[a]
Summary	9 complete datasets 1 partial dataset Representing 205 outlets	10 complete 2019 datasets 7 complete 2020 datasets 2 partial 2019 datasets 5 partial 2020 datasets (representing 374 outlets) 5 complete "typical" datasets 4 partial "typical" datasets Representing 400 outlets
Sample size[b] (%)	16.4%	33.08%

[a]When only one dataset was available, the data were not included to protect commercial sensitivity.
[b]Out of 1247 total in the stakeholder database.

Table 5.4. 2019 and blended data collected by point of exchange

Point of exchange	2019		2020*	
	Number of units per point of exchange	Average sales price (€)	Average number of units per point of exchange	Average sales price (€)
Multiple products charity retailer – average	34,613	4.24	27,898	€3.99
Multiple products online – average	–	–	91,867	–
Multiple products online – range	–	–	8290–175,000	–
Multiple products other – average	–	–	120	58.75
Multiple products other – range	–	–	–	17.5–100.00
Furniture specialist stores – average	628	96.23	449	104.8
Furniture specialist stores – range	248–970	29.27–89.43	137–970	29.27–170.00
Bicycle specialist stores – average	244	134.04	223	154.09
Bicycle specialist stores – range	121–477	85.00–175.00	23–650	65.29–369.23
Clothing specialist stores – average	10,713	44.44	9304	39.81
Clothing specialist stores – range	–	–	234–21,000	6.09–76.19
Media specialist stores – average	–	–	19,933	4.28
Media specialist stores – range	–	–	13,000–30,000	1.49–6.00
Jewellery	–	–	–	–

Note: to protect confidentiality, when only one dataset was available, the data were omitted from the table. "–" denotes that no datasets or insufficient datasets (i.e. only one) were available.

Table 5.5. Estimate of total reuse by point of exchange

Point of exchange	Average number of units per operator		Total number of operators nationally	Total number of units[a]	
	2019	2020*		2019	2020*
Multiple products charity retailer – average	34,613	27,898	580	20,075,404	16,180,819
Multiple products online – average	–	91,867	74	–	6,798,158
Multiple products other – average	–	120	189	–	22,680
Multiple products other – range	–	–		–	–
Furniture specialist stores – average	628	449	112	70,308	50,320
Furniture specialist stores – range	248–970	137–970		27,776–108,640	15,344–108,640
Bicycle specialist stores – average	244	223	59	14,376	13,170
Bicycle specialist stores – range	121–477	23–650		7139–26,373	1357–38,350
Clothing specialist stores – average	10,713	9304	42	449,925	390,753
Clothing specialist stores – range	–	234–21,000		–	9828–882,000
Media specialist stores – average	–	19,933	137	–	2,730,867
Media specialist stores – range	–	13,000–30,000		–	1,781,000–4,110,000
Jewellery	–	–	26	–	–
Other	–	–	28	–	–
Ranges				20,560,244–20,660,342	24,809,186–28,140,647
Total			1247	20,610,014	26,186,766

Note: "–" denotes that no datasets or insufficient datasets (i.e. only one) were available.
[a]Any disparities in the calculation of the total number of units can be accounted for by rounding.

Table 5.6. Estimated breakdown of products from "multiple products charity retailer"

Product group	Estimated fraction of total units (%)	Weight contribution (kg) to average
Clothing	58.40	0.30
Furniture	0.82	31.56
Bric-a-brac	32.58	2.47
Media	6.15	0.35
Other textiles	2.05	0.27
Average weight of typical product mix		1.27

Table 5.7. Estimate of total weight by point of exchange

Point of exchange	Product weight average (kg/unit)	Total weight (kg) 2019	2020*
Multiple products charity retailer – average	1.3	25,432,004	20,498,250
Multiple products online – average		–	8,612,070
Multiple products other – average		–	28,732
Multiple products other – range			
Furniture specialist stores – average	31.6	2,219,087	1,588,219
Furniture specialist stores – range		876,676–3,428,936	484,293–3,428,936
Bicycle specialist stores – average	13.8	197,763	181,170
Bicycle specialist stores – range		98,205–362,790	18,667–527,547
Clothing specialist stores – average	0.3	134,758	117,035
Clothing specialist stores – range		–	2944–264,170
Media specialist stores – average	0.4	–	964,906
Media specialist stores – range		–	629,287–1,452,200
Jewellery	0.3	–	–
Other	1.3	–	–
Ranges (kg)		26,541,644–29,358,489	30,274,242–34,811,905
Total (kg)		27,983,612	31,990,381

"–" denotes that no datasets or insufficient datasets (i.e. only 1) were available.

of materials reused nationally in both 2019 and the combination dataset (2020*) is given in Table 5.7.

As shown, the overall estimated quantity of materials reused in 2019 was 27,983,612 kg (range 26,541,644–29,358,489 kg) and the estimated quantity for the combined dataset was 31,990,381 kg (range 30,274,242–34,811,905 kg). Based on a population of 4.904 million people in 2019, the average weight of materials reused (within the scope of this study) per person in Ireland is:

- 5.71 kg per person in 2019 (range 5.41–6.0 kg per person);
- 6.52 kg per person in 2020* (range 6.17–7.09 kg per person).

Internationally, the 2013 Scottish study on reuse (Zero Waste Scotland, 2013) found that reuse of materials amounted to over 17 kg per person per annum in Scotland, although this included EEE and excluded online-based reuse. The reuse target in Flanders is 7 kg per person per annum, but this applies only to social enterprise reuse stores. Therefore, owing to the scope of this study, it is difficult to meaningfully compare the figure for weight of materials reused per person with those for other regions.

6   Proposed National Methodology

Based on the research carried out during this project, the following outlines a proposed methodology to quantify reuse in Ireland on an ongoing basis.

6.1   Scope – Database Review

As a first step in a national methodology, the scope should be continuously reviewed in line with emerging trends, and the national database of reuse operators, generated during this work, should be periodically updated.

6.1.1   Review scope and update qualitative assessment of reuse operators

Reuse operators should be grouped according to seven main points of exchange, which are thought to share common data practices, including retail outlets, marketplaces, depots/redistribution, online (local) and online (international).

The retail outlets could be further subdivided into business type: social enterprise, charity retail and commercial/private. This scoping, shown in Box 6.1, should be reviewed subject to any changes in best practice or European Commission guidance.

Box 6.1. Categorisation of reuse operators by point of exchange and product groups

Business type/product group

- multiple products charity retailers;
- multiple products online;
- multiple products other (markets, depots);
- furniture specialist stores (commercial and not-for-profit);
- bicycle specialist stores (commercial and not-for-profit);
- clothing specialist stores (commercial and not-for-profit);
- media specialist stores (commercial and not-for-profit);
- jewellery specialist stores (commercial and not-for-profit).

It is noteworthy that some international methodologies for measuring reuse focus on not-for-profit reuse operators only, while elsewhere there is growing interest in capturing data from the wider reuse sector. Similarly, there are diverging opinions on whether or not online platforms should also be included in measurements. For Ireland, it is recommended that both remain in the scope of this methodology and that relationship-based exchanges are excluded.

To achieve this, and depending on the frequency of measurement, the reuse operator database should be periodically updated in line with the methodology outlined in Chapter 5.

6.1.2   Review of product categories

It is proposed that the scope includes the nine main product categories, with the associated subcategories (of which there are between 28 and 33), listed in Tables 5.2 and 6.1. These are based on the different broad activities of the sector in Ireland, but also on how the sector currently refers to, and gathers information on, products.

The nine categories are:

1. clothing;
2. other textiles;
3. footwear;
4. bric-a-brac;
5. books and media;
6. furniture;
7. non-antique jewellery;
8. bicycles;
9. other.

The subcategories are shown in Table 6.1.

It is proposed that these categories are used for reporting purposes to develop a statistically robust weight-based dataset that can be used to generate a national profile of reuse in Ireland. Therefore, any

Table 6.1. Recommended main product categories and associated subcategories for reuse quantification

Category	Minimum	Optimum
Clothing	Men's	Men's – summer
		Men's – winter
	Women's	Women's – summer
		Women's – winter
	Children's	Children's – summer
		Children's – winter
		Coats – all
	Bridal	Bridal
Other textiles	Bedding and blankets	Bedding and blankets
	Bags	Bags
	Other (scarves, gloves)	Other (scarves, gloves)
Footwear	Men's	Men's
	Women's	Women's
	Children's	Children's
Bric-a-brac	Homeware	Homeware – heavy
		Homeware – light
	Toys	Toys
	Other	Other – heavy
		Other – light
Books and media	Books	Books – hardback
		Books – paperback
		Magazines
	CDs/DVDs/Games	CDs/DVDs/Games
	Other	Other
Furniture	Large	Large
	Small	Small
	Sofas	Sofas
Non-antique jewellery	Jewellery	Jewellery
Bicycles	Steel frame – adults'	Steel frame – adults'
	Steel frame – children's	Steel frame – children's
	Other – adults'	Other – adults'
	Other – children's	Other – children's
Other	Paint	Paint
	Mechanical items	Mechanical items
	Other	Other

changes to product categories or subcategories would need to be reflected in the reporting methodology and sectoral training. For instance, it is noted that EEE was outside the scope of this project, although EEE does warrant consideration in future iterations of the methodology.

6.2 Defining the Minimum Sample Size

Based on the reuse operator and product categorisations identified above, data should be collated annually. Ideally, as large a sample as possible should be involved and for some categories (e.g. the charity sector) this should be possible, as a result of the sectoral involvement of the ICSA. For other categorisations, when this may not be the case (e.g. bookshops or commercial operators), then representative sampling may be possible on a periodic basis only.

A sampling plan that is based on 95% confidence and 10% margin of error is recommended for determining a minimum sample size from the reuse operator dataset. These reuse operators should be selected using a probability-based, stratified sampling method, initially based on the point of reuse and then by the material types handled as shown in Box 6.1.

In future, in addition to applying the proposed methodology involving representative sampling and stratification, it would be worth considering the BKN recommendation to focus (at least in the early stages of data collection) on piloting a reuse measurement methodology with reuse operators that have EPOS systems and grow sectoral reporting from there.

6.3 Measuring – Establish an Agreed Reporting System/Format

As outlined in Chapter 5, the most realistic metrics to be considered in the short term are the number of units under the subcategory headings listed above. The recommendation is to obtain data on units measured at the point of exchange, where these are collected according to the subcategory headings in Table 6.1.

Obtaining data on the number of units at the point of exchange will be assisted by the increased adoption of EPOS systems, improvements in data collection through online platforms and/or incentives that facilitate data collection and systematic reporting.

6.4 Data Compilation

Obtaining a representative sample of data on reuse, in a format that facilitates the measurement and tracking of reuse in a clear and transparent way, will require significant changes in how the "sector" currently reports. It is important to remember when considering reuse from the perspective of the circular economy that those in this sector are involved for a wide range of reasons, with resource conservation often low down on their priority list. As noted throughout this report, collecting and reporting the appropriate data will probably involve additional administrative burden or costs, and these pose a challenge for a sector that is often operating on very tight margins. Consequently, some form of incentivisation or support will probably be required for sufficient data to be produced and reported on regularly.

Financial support to establish an appropriate reporting system, contingent on agreeing to use that system according to the requirements outlined above, would be a good start. This would probably work particularly well for the charity sector. For the private/commercial operators, a different approach may be required.

Linking reuse to a national brand (e.g. ReMark[6]) is also recommended, as this would promote trade in reuse materials. Ensuring that accreditation to the quality mark requires annual reporting would help incentivise reuse reporting (this is included as part of the ReMark accreditation system). The advantages of such a national brand for reuse operators would include added credibility for the sector, improved operational oversight and also marketing and promotions under a national brand.

Once the information on the number of units (and, where available, weight and financial data) has been collected, it must be converted to secondary metrics or weight using product weight values. It is recommended that bespoke national protocols be developed through regular material category characterisation surveys using a base metric of number of units for the identified set of subcategories.

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6 ReMark, Ireland's Reuse Quality Mark of Excellence, was established to address consumer concerns regarding the quality and safety of reused goods. It is an organisational-level accreditation process for the reuse sector. See https://crni.ie/re-mark/ (accessed 29 November 2021).

6.5   National Scale-up

In the absence of appropriate national macro data (e.g. turnover associated with second-hand sales by material subcategory/operator type) and corresponding micro data (i.e. turnover associated with the sale of second-hand goods according to the different operator categories), a scale-up similar to that employed here is likely to be the most viable option. This proposed bottom-up approach for determining a national reuse figure will require either (or a combination of):

1. the whole sector (or a representative proportion) to report into a formal national system; or

2. a subset of the sector to be assessed and then used to scale up against an appropriate national dataset (e.g. turnover).

Both options currently have major data gaps that would need to be addressed for them to be applicable.

The approach used here is a bottom-up calculation, in which the average number of units sold or exchanged (broken down by reuse operator type and product category) is multiplied by the total number of points of exchange for that reuse operator type/product category. Therefore, in the current calculation, data on the number of items reused per shop and average sales prices were compiled for 2019, as well as a blended dataset 2020* (which included 2019, 2020 and a "typical year" when no formal figures were available). It is clear from the data compilation process that, as a result of the limited number of datasets available, there are many gaps and wide ranges in the data. This is expected to improve as EPOS systems are increasingly adopted and through improvements in data collection through online platforms and/or incentives that facilitate consistent data collection and reporting.

7   Recommendations

This research project has tested the capability of the Irish reuse sector (the practitioners that fall within the scope of this project) to supply the necessary data to quantify the extent of reuse currently occurring. Through the process applied, this project acquired valuable information to inform policymakers regarding the steps required to support the sector to report reuse in the future. By developing a national quantification methodology for the assessment of the sector, this research will provide policymakers, stakeholders and practitioners with a crucial overview of the non-waste reuse sector in Ireland – vital information to have as Ireland and the EU move to implement reuse targets and support reuse as an essential tool for climate action and in the circular economy.

A methodology for the ongoing qualitative and quantitative assessment of reuse in Ireland was presented in Chapter 6. To apply this methodology, the following section provides a series of recommendations to be considered.

7.1   Qualifying Reuse

7.1.1   Building a database to catalogue reuse practitioners in Ireland

Concerning the database of 1276 reuse practitioners, the existing results from this research will need to be updated regularly as new operations start and others are closed. The impact of COVID-19 and the lockdown of business has negatively affected reuse businesses, and it is possible that several of those listed in the database will not reopen.

Regarding the methods used to update this dataset, it would be advisable to work within existing structures and consult active practitioners and networks. For this research, input from the CRNI, the ICSA and the Rediscovery Centre Circular Economy was particularly valuable. It is recommended that close links be fostered with these and other relevant networks, such as the Irish Social Enterprise Network. Furthermore, it would be more effective to focus on online search avenues that yield the largest number of results (Google and Facebook) rather than Etsy and

Twitter, which provided few additional hits. A potential future avenue for searches could be Google Maps, which provides a large number of entries for reuse practitioners and might include some that are not active online. However, Google Maps entries are not kept up to date and can include inactive operations.

The research team also found a large number of reuse and private sales through online platforms such as Depop and Instagram, and through marketplaces such as Adverts and DoneDeal. The parent companies of a number of these online operators are moving towards improved data collection, specifically relating to second-hand sales. However, future revisions of the methodology will need to place a larger focus on online sales and swaps to capture those exchanges. As these online platforms are private operators, with parent companies outside the state, it may be challenging to get access to these data for Ireland.

7.1.2   Review of scope

Overall, the scope of reuse operators included in the database and sampling aligns with the Commission's Implementing Decision and, although it is broader than those identified in some of the best practice examples, it reflects emerging trends. One interesting finding was that the majority (48.1%) of practitioners in the Irish database identified as not-for-profit operators, highlighting the important influence of not-for-profit operators in the reuse sector. Furthermore, because of the project scope, the product categories EEE, food and construction and demolition were not included. For EEE in particular, this warrants consideration in future iterations of the methodology.

As best practice and EU guidance continue to evolve, the scope applied here will need to be reviewed and updated.

7.2   Quantifying Reuse

7.2.1   Measuring metrics

The recommended primary metric to be measured in the short term at the point of exchange is the number

of units under a fixed set of subcategory headings. Other metrics could help validate the results, such as units or weights measured at the point of intake. Social metrics would also be valuable to collect, to help demonstrate the social impact of reuse. If possible, these should be included in any reporting system.

Financial data (average sales price) could also be considered for future use as a scalar for extrapolation. However, challenges such as different approaches to pricing, the impact on cost of repair/upcycling and the difficulty of isolating trading income that is specific to second-hand goods would need to be addressed. It would also be contingent on having the correct macro data to support its use for a national scale-up.

7.2.2   *Data compilation*

For the recommended methodology, bespoke national weight values need to be developed through regular material category characterisation surveys, using a base metric of number of units for the identified set of subcategories.

As highlighted previously, some form of incentivisation or support will be required for sufficient data to be produced and reported on regularly. Recommended supports include financial support to establish an appropriate reporting system (conditional on agreement to use that system to report according to the requirements outlined), training for the sector on reporting, and supporting a national quality mark (e.g. ReMark) that requires data reporting in return for sectoral recognition, national marketing of the brand and promotion of participants. If effective, these measures could, in due course, facilitate a shift away from representative sampling and lead towards access to a full dataset.

Although current reporting on carbon savings from reuse is minimal, further work could be done to develop secondary metrics that also express

the carbon savings associated with national reuse levels. This could be based on adapting the Zero Waste Scotland carbon calculator to the proposed methodology. As accuracy of reporting against subcategories improves and the number of subcategories grows, any estimate of carbon savings will become more accurate.

7.2.3   *National scale-up*

The proposed methodology developed for quantifying reuse was based on obtaining unit data from a representative sample of reuse operators identified in the mapping exercise, converting this to weights using product weight values according to a fixed set of subcategories and scaling this up by multiplying by the total number of points of exchange per reuse operator type/product category.

To help validate or refine the accuracy of this calculation, it is recommended that the CSO data collection system be explored as a potential source of detailed macro data on the second-hand sector. For example, if it were possible to widen the scope of second-hand retailers in the CSO dataset to include all those in the Q2Reuse database, in line with the operator categorisation, and if data on turnover could be refined to ensure that they capture only second-hand sales, or even a new data point for number of units sold, it would help to refine the accuracy of scaling. However, it is not certain that this will be feasible, and it is likely that the bottom-up approach outlined in this methodology will remain the best option.

It is also recommended that any future methodology include a series of data checks to improve accuracy both at the point of exchange and during national data manipulation (conversion/extrapolation). For example, adding checks at the micro level, or auditing and adding checks at the macro level (collective data compared with historical data), should be considered.

8   Research Limitations

The research was limited because of the COVID-19 pandemic and the related lockdowns of Irish businesses beginning in March 2020. Many traders relevant to this study were closed for some time during the research and could not be contacted for further information, and businesses may potentially not reopen as a result of the pandemic. Furthermore, the retail closures due to repeated lockdowns disrupted the flow of all product types in the reuse sector during 2020 and 2021. In addition, as many reuse outlets are small spaces with limited possibilities for social distancing, there may be longer term impacts on the reuse sector.

Tracking business closures to update the database, which was compiled between late 2019 and mid-2020, was outside the scope of this research.

Finally, the online-based nature of an element of the research methodology meant that reuse practitioners without a website or active online presence might not be included in this research.

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Abbreviations

|	
AERESS	Asociación Española de Recuperadores de Economía Social y Solidaria
BKN	Branchevereniging Kringloopbedrijven Nederland (Dutch association of second-hand shops)
C2C	Customer to customer
CRE	Community-run enterprise
CRNI	Community Resources Network Ireland
CRNS	Community Resources Network Scotland
CSO	Central Statistics Office
EEE	Electrical and electronic equipment
EPA	Environmental Protection Agency
EPOS	Electronic point of sale
FTE	Full-time equivalent
ICSA	Irish Charity Shop Association
KVK	Koepel van Vlaamse Kringloopcentra (Federation of Flemish Re-use Centres)
NYC	New York City
NYC CMR	NYC Center for Materials Reuse
VAT	Value-added tax
WEEE	Waste electrical and electronic equipment
WFD	Waste Framework Directive
ZWN-S	Zero Waste Network Sydney

Appendix 1   The Flowchart
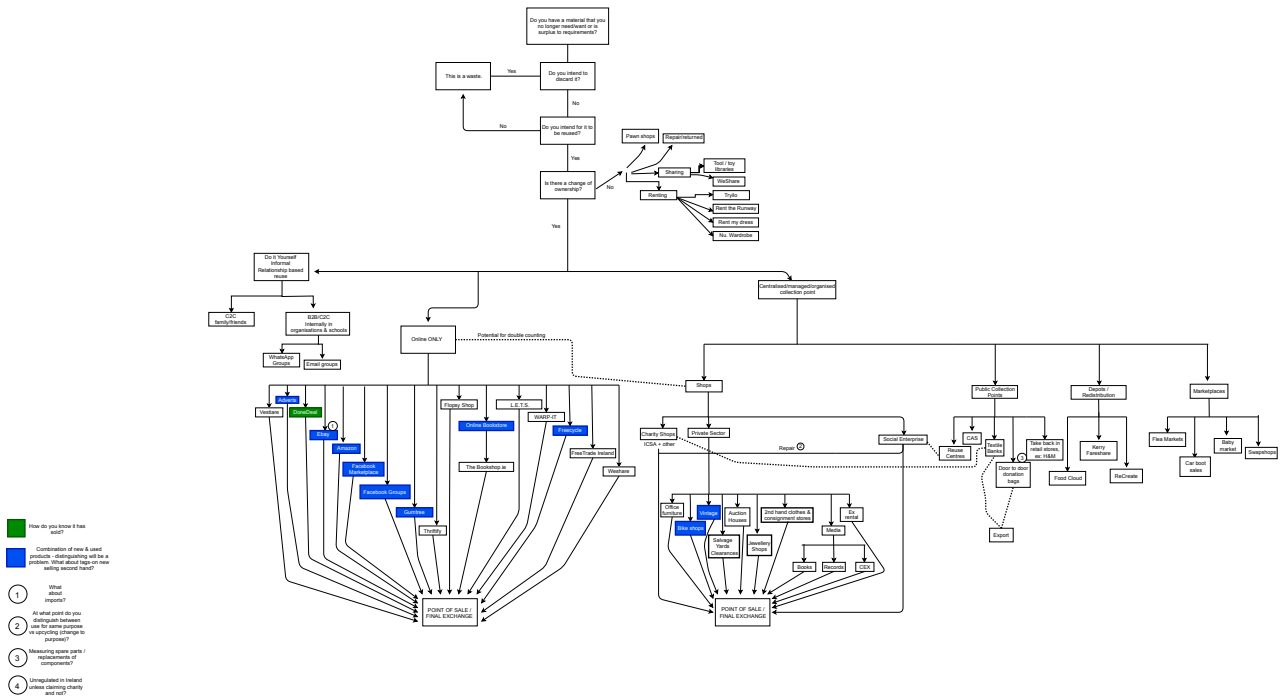
Figure A1.1. Draft number 4 of the flowchart. B2B, business to business; CAS, civic amenity site.
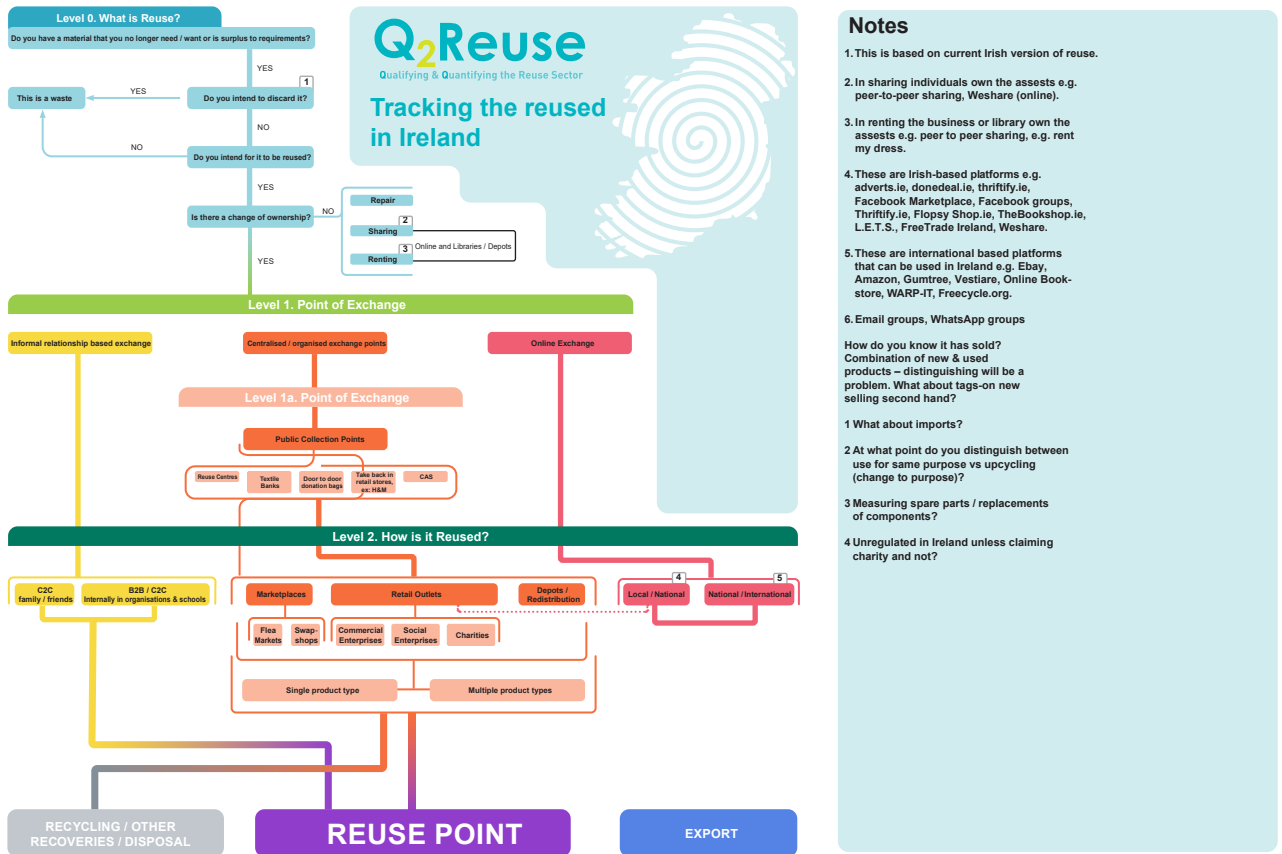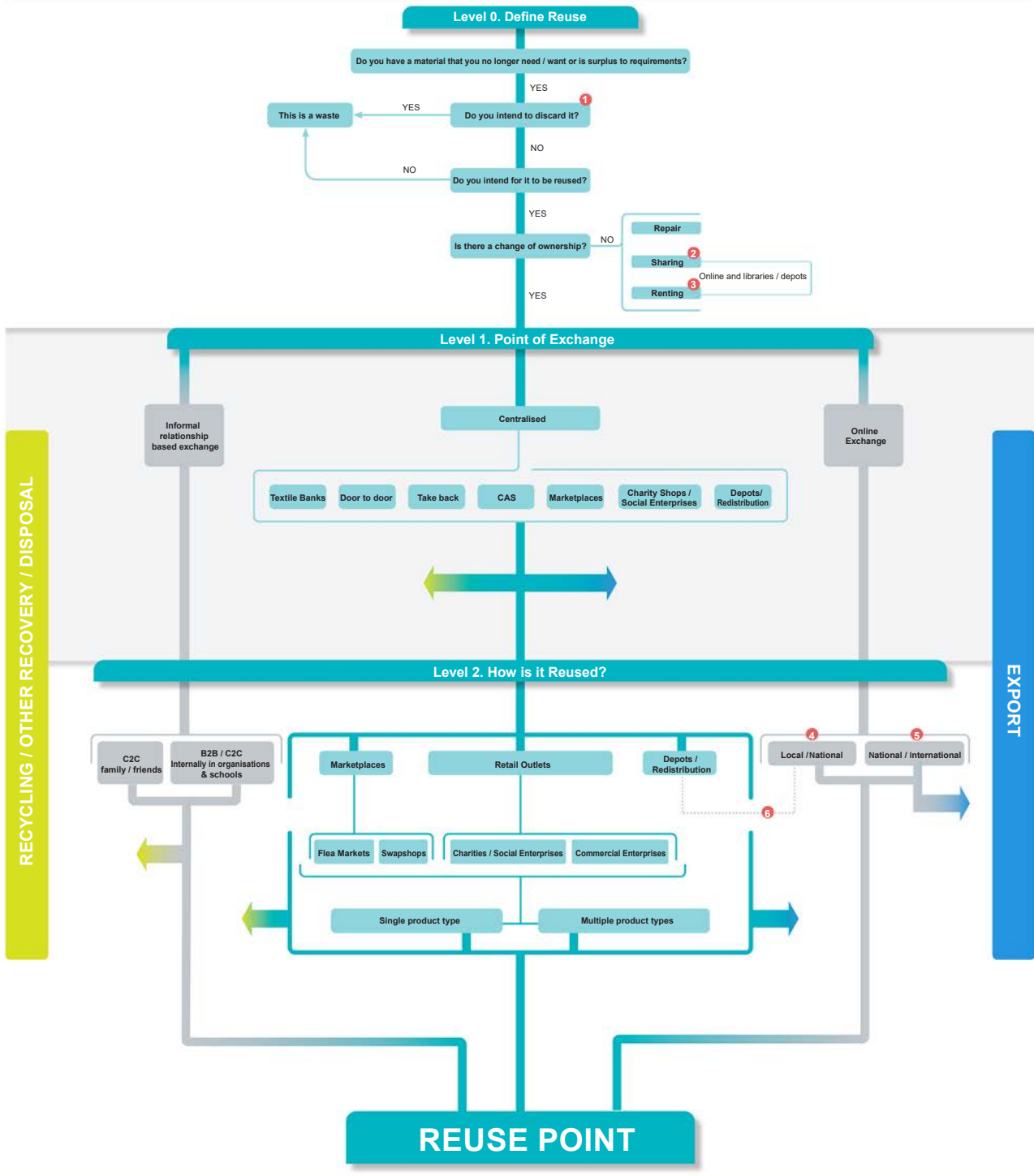

Figure A1.2. Draft number 7 of the flowchart. CAS, civic amenity site.

Q₂Reuse Tracking Reuse in Ireland

Qualifying & Quantifying the Reuse Sector

Level 0. Define Reuse

Do you have a material that you no longer need / want or is surplus to requirements?

YES

Do you intend to discard it? ❶ — YES → This is a waste

NO

Do you intend for it to be reused? — NO → This is a waste

YES

Is there a change of ownership? — NO → Repair / Sharing ❷ / Renting ❸ — Online and libraries / depots

YES

Level 1. Point of Exchange

RECYCLING / OTHER RECOVERY / DISPOSAL

Informal relationship based exchange | Centralised | Online Exchange

Textile Banks | Door to door | Take back | CAS | Marketplaces | Charity Shops / Social Enterprises | Depots/ Redistribution

Level 2. How is it Reused?

EXPORT

C2C family / friends | B2B / C2C Internally in organisations & schools | Marketplaces | Retail Outlets | Depots / Redistribution | Local /National ❹ | National / International ❺

Flea Markets | Swapshops | Charities / Social Enterprises | Commercial Enterprises ❻

Single product type | Multiple product types

REUSE POINT

❶ There is a point to go here. This is based on current Irish version of reuse

❷ Individuals own the assets e.g. peer to peer sharing such as weshare.ie

❸ The business or library own the assets e.g. peer to peer sharing such as rentmydress.ie

❹ These are Irish based platforms. e.g. Adverts.ie, DoneDeal.ie, Thriftify.ie, Facebook Maketplace, Facebook Groups, FlopsyShop.ie, Thebookshop.ie, L.E.T.S., FreeTrade Ireland, Weshare.ie

❺ These are international based platforms that can be used in Ireland. e.g. Ebay, Amazon, Gumtree, Vestiare, Online Bookstore, WARP-IT, Freecycle.org.

❻ Interim repair step

Figure A1.3. Draft number 8 of the flowchart. B2B, business to business.

Appendix 2   Survey A

*1 Name of the organisation

*2. Organisational form

☐ Social Enterprise   ☐ Not for Profit

☐ Registered Charity   ☐ Public Body

☐ Commercial Business

☐ Other (please specify)

3. How many years has your organisation been in operation?

4. What is your annual turnover from reuse operations?

○ €0 – 50K   ○ €251– 500K

○ €51– 100K   ○ €501K – 1 million

○ €101– 250K   ○ More than € 1 million

* 5. Where do you source your materials for reuse? Select all that apply.

☐ Private Donations   ☐ Private Exchange

☐ Door-to-door collection   ☐ Civic Amenity Sites

☐ Private Sale   ☐ Business Donations

☐ Business Sale   ☐ Business Exchange

☐ Other (please specify)

<div style="background:#e0e0e0; height:1.5em;"></div>

* 6. Do you also sell/ exchange new materials? NB: New refers to sourced from market as opposed to end of line goods from businesses or donations of used goods.

○ Yes

○ No

* 7. Do you perform any of the following activities?

☐ Repair   ☐ Online retail

☐ Upcycling   ☐ Free exchange

☐ Physical retail   ☐ Redistribution

☐ Other (please specify)

<div style="background:#e0e0e0; height:1.5em;"></div>

* 8. Where is your primary point of sale / exchange for reuse goods? Only one of these can be selected and should represent the main channel for goods to be sold / exchanged for the purposes of measurement.

- ◯ Relationship-based FAMILY FRIENDS
- ◯ Relationship-based ORGANISATION
- ◯ Centralised coll. SHOPS
- ◯ Centralised coll. PUBLIC
- ◯ Other (please specify)

- ◯ Centralised coll. DEPOT
- ◯ Centralised coll. MARKETPLACE
- ◯ Online only

* 9. Which material groups do you reuse?

- ☐ Furniture
- ☐ Bicycles
- ☐ Clothing
- ☐ Other textiles
- ☐ Other (please specify)

- ☐ Media
- ☐ Bric a brac
- ☐ Non-antique jewellery

Measurement

* 10. Do you track any of the following metrics in relation to your reuse activities?

☐ Tonnes of goods diverted from landfill

☐ Number of goods diverted from landfill

☐ Number of job opportunities sustained

☐ Number of training opportunities sustained

☐ Number of volunteer opportunities sustained

☐ Monetary value (turnover) generated through reuse

☐ CO_2 savings

☐ We do not track metrics.

☐ Other (please specify)

11. If you track tonnes or number of goods reused, at what point are the goods measured?

○ Incoming donations

○ Point of sale

○ Items placed on shop floor (e.g. from workshop)

○ Recorded exchanges / sales on platform

○ Other (please specify)

12. If you track tonnes or number of goods for reuse, how do you measure them?

◯ Number of bags donated / average bag weight

◯ Till receipts / average value per item

◯ Items sold / average weight per item

◯ Other (please specify)

13. If you do track any of the metrics above, would you be willing to share this information? They would be used in an aggregate with other organisations' data and not shared on an individual basis.

◯ Yes, please see metrics below.

◯ Yes, I can provide at a later date

◯ No, I am unable to provide metrics

14. If measured, please provide tonnes of goods reused by goods type where possible for the most recent available year (specify year)

15. If measured, please provide number of goods reused (if measured) by goods type where possible for the most recent available year (specify year)

16. If measured, please provide number of job opportunities sustained for the most recent available year (specify year)

17. If measured, please provide number of training opportunities sustained for the most recent available year (specify year)

18. If measured, please provide number of volunteer opportunities sustained for the most recent available year (specify year)

19. If measured, please provide monetary value generated through reuse for the most recent available year (specify year)

20. If measured, please provide CO_2 savings generated through reuse for the most recent available year (specify year) (specify calculation method)

21. Other measures (please specify year and calculation method)

22. If sharing data on items, value or tonnes sold would lead to greater supports for your business, how would you most easily or effectively do this?

23. Are you aware of any other organisations practising reuse that we could include in this research?

24. Do you have any views on the introduction of a national target for (non-waste) reuse in Ireland?

25. Do you have any comments about the possibility of measuring and reporting your reuse activity levels in the future?

26. Do you have any feedback on this survey, the project or reuse in general?
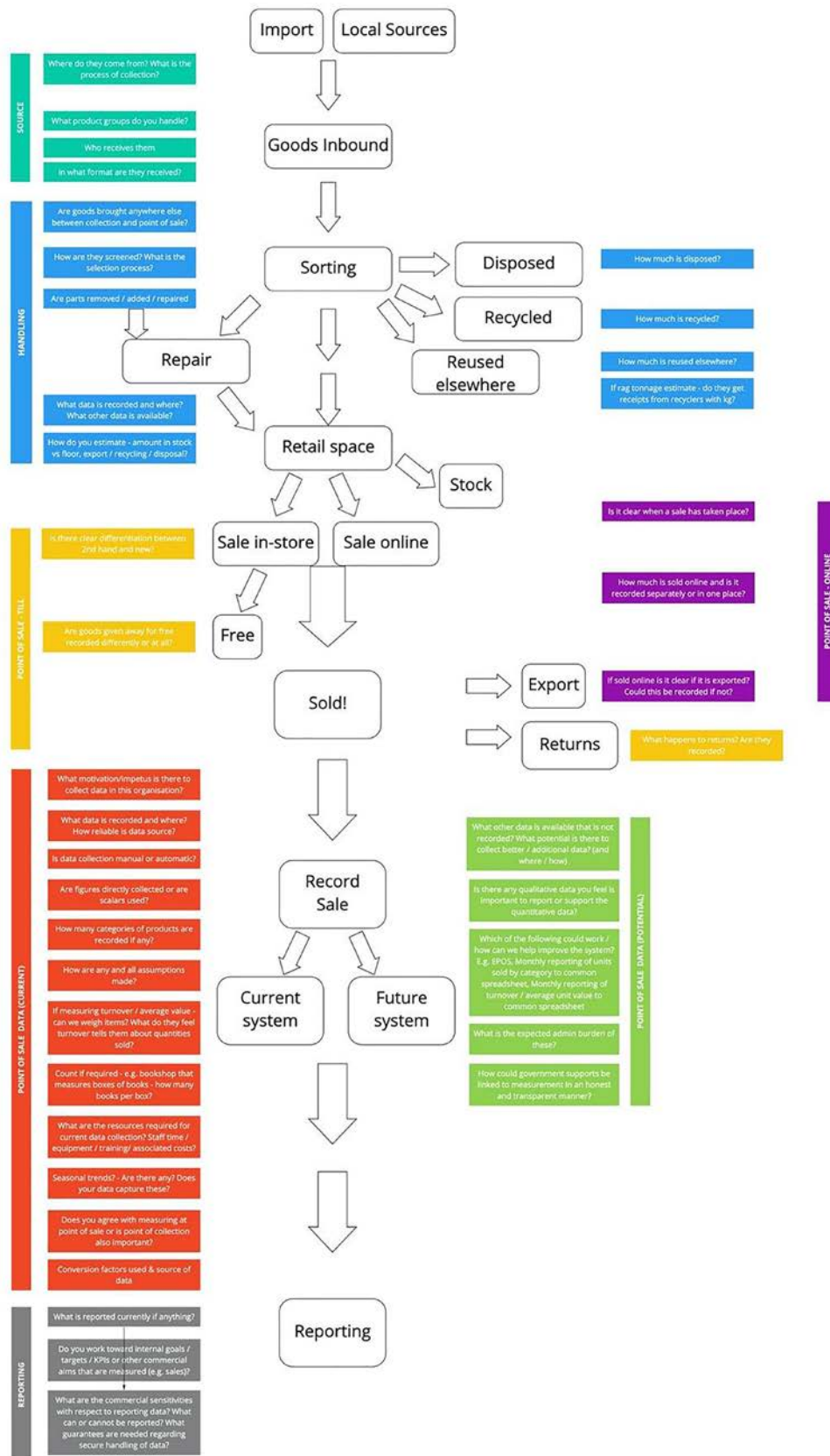
Appendix 3   Survey B

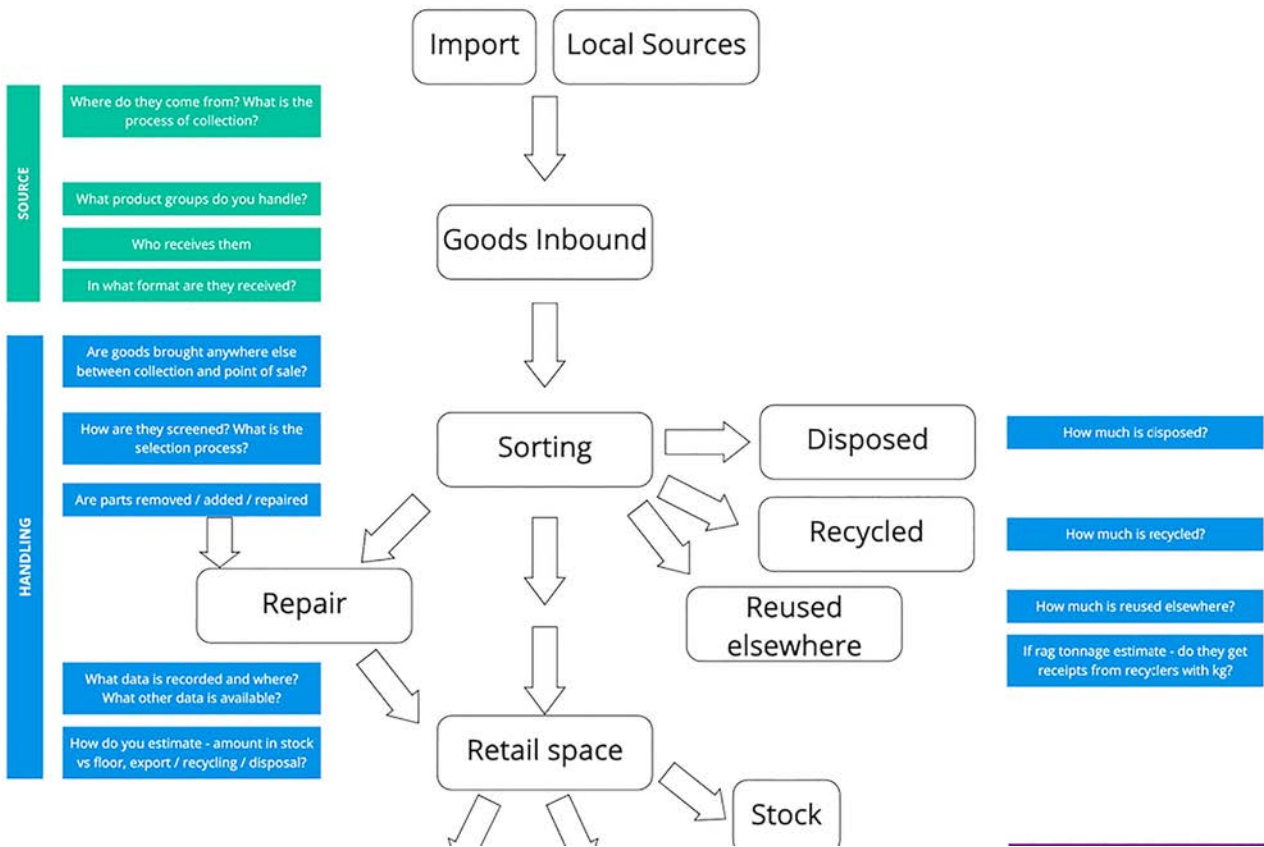**Figure A3.1. Complete Miro board flow diagram for reuse stakeholders.**

Figure A3.2. Close-up of the top section of the Miro board flow diagram for reuse stakeholders.
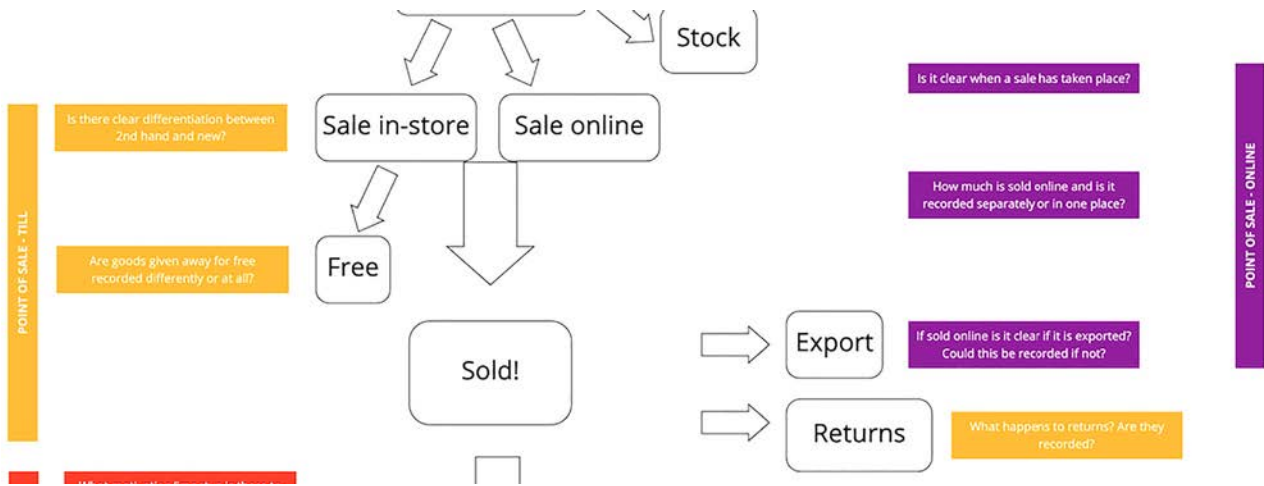

Figure A3.3. Close-up of the upper-middle section of the Miro board flow diagram for reuse stakeholders.
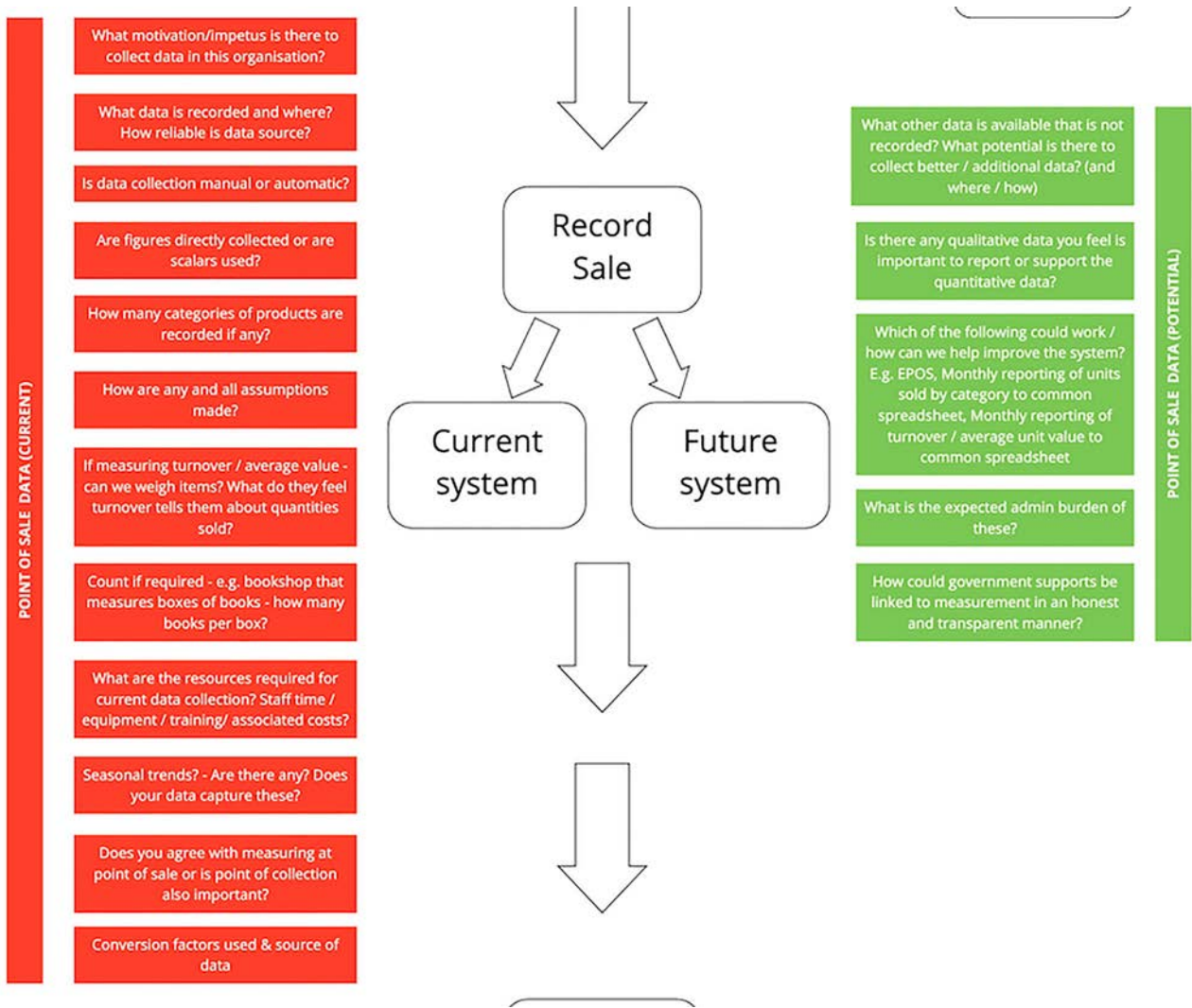
Figure A3.4. Close-up of the lower-middle section of the Miro board flow diagram for reuse stakeholders.

Figure A3.5. Close-up of the bottom section of the Miro board flow diagram for reuse stakeholders.

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialú: *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.*

Eolas: *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

Tacaíocht: *Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaol atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaol inbhuanaithe.*

Ár bhFreagrachtaí

Ceadúnú
Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:
- saoráidí dramhaíola *(m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola)*;
- gníomhaíochtaí tionsclaíocha ar scála mór *(m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta)*;
- an diantalmhaíocht *(m.sh. muca, éanlaith)*;
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe *(OGM)*;
- foinsí radaíochta ianúcháin *(m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha)*;
- áiseanna móra stórála peitril;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil
- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhíriú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Uisce
- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol
- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil *(m.sh. tuairisciú tréimhsiúil ar staid Chomhshaol na hÉireann agus Tuarascálacha ar Tháscairí)*.

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn
- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

Taighde agus Forbairt Comhshaoil
- Taighde comhshaoil a chistiú chun brúnna a shainaithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúnacht Straitéiseach Timpeallachta
- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaol in Éirinn *(m.sh. mórphleananna forbartha)*.

Cosaint Raideolaíoch
- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas
- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaol ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaol *(m.sh. Timpeall an Tí, léarscáileanna radóin)*.
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

Múscailt Feasachta agus Athrú Iompraíochta
- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil
Tá an ghníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:
- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

Qualifying and Quantifying the Reuse Sector in Ireland

Authors: Colum Gibson, Keelin Tobin, Claire Downey, Sarah Miller, Laura Niessen, Roberta Bellini and Tadhg Coakley

Recent EU legislation aims to strengthen reuse in all Member States and asks Member States to measure reuse, with the option of setting national targets in the future. By gathering information on the scale and size of the reuse sector in Ireland, we can benchmark and compare our reuse sector against others. This will allow the sector to be improved for all (practitioners, users, volunteers, etc.) and will also provide a picture of the scale of reuse, which can be compared with overall material flows, consumption rates, waste arisings and rates of recovery and recycling.

Identifying Pressures

The current take, make and dispose economic model cannot be sustained. It is estimated that 40% of all greenhouse gas emissions are associated with the extraction and production of goods. By keeping these goods in the economy for longer than at present, through reuse, we can reduce the pressure on upstream activities and move towards a circular economy while also addressing climate breakdown. There are also significant social and economic benefits to reuse, including creating jobs, stimulating business development and growth, and providing training opportunities.

However, the reuse sector in Ireland is currently far from mainstream. The sector has evolved organically and is largely made up of small and medium-sized enterprises, most of which are not-for-profit organisations. They are involved in reuse for a wide range of reasons, with resource conservation often low among their priorities. These operators tend to have limited capacity and resources, operating on very tight margins. Ensuring that these operators can contribute effectively to national policies and reuse targets requires a detailed level of understanding of the reuse sector so that it can be supported to address our national reuse commitments.

Informing Policy

To highlight and drive efficient resource use, the revised Waste Framework Directive (2018) requires Member States to monitor and assess progress in supporting reuse, with a view to assessing the feasibility of targets by 2025. To ensure such measurement takes place, and is achieved across all Member States, the Commission published an implementing decision on a methodology and reporting on reuse. The decision requires that reuse is measured at least once every 3 years, although the methodology to be employed remains uncertain.

This project developed a methodology for Ireland to quantify reuse to meet EU requirements. In line with the definition of reuse, this involved quantifying non-waste activities that involved an exchange of ownership, for example second-hand trade via charity shops, vintage shops, pawn shops, specialist retail chains and online platforms. In developing a national quantification methodology for the assessment of the sector, this research also presents policymakers, stakeholders and practitioners with a crucial overview of the reuse sector of Ireland, which is vital information as Europe moves towards a circular economy model.

Developing solutions

This study assessed the capability of the Irish reuse sector to supply the data necessary for quantifying the extent of reuse in Ireland and informing Irish policymakers on the steps required to support the sector to report in the future. This included researching and mapping a database of over 1200 reuse practitioners, sampling and surveying practitioners to obtain targeted qualitative and quantitative data, identifying challenges associated with data collection and reporting, and developing a suitable calculation methodology.

Based on this, the proposed national methodology developed involves obtaining unit data from a representative sample of reuse operators from specific reuse activity areas, converting these to weights using product weight values (based on a fixed set of material subcategories) and scaling up to a national reuse figure by multiplying the average weights estimated by the total number of points of exchange per reuse operator type/product category.

This proposed methodology provides a solution for the measurement of reuse that is anticipated within the Waste Action Plan for a Circular Economy and which will be enabled through the circular economy bill and underpinned by the national circular economy strategy.

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