National Reuse Measurement Guidelines

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Background

The intention of this manual is to provide a framework for measuring the impact of reuse organisations. The primary target audience is members of *Charitable Reuse Australia (formerly Charitable Recycling Australia)*, who have participated in the codesign and testing of this approach to date. These guidelines may also be adopted by other reuse organisations, including commercial enterprises, where measurable social, environmental and economic impact is being created. They are not intended to replace existing impact measurement systems, but to provide an overarching reporting framework that drives sector-level growth through demonstrating the collective impact of reuse organisations in Australia.

Organisational-level data on environmental, social and economic impacts is to be collected from individual reuse organisations and reported annually to Charitable Reuse Australia, who will be responsible for collating, harmonising, interpreting and reporting of the data. Charitable Reuse Australia may also recover and report on specific datasets. For each type of data, options at a number of 'Tiers' are provided, with the assumption that many organisations will report data at a lower level of detail unless there is an appropriate incentive structure (e.g. government funding) to support data collection and reporting at higher levels of detail and accuracy.

This document is based on research and fieldwork conducted by Monash University and Charitable Reuse Australia between 2019 and 2022, and updated based on (Heinrich et al. 2024) and Bontinck and Grant (2024).

Definitions

Reuse

Reuse involves the transfer of goods or materials from one owner to another - often via an intermediary - resulting in the goods or materials being used again. These goods or materials may be reused in exactly the same form, they may be repaired and/or maintained so that they can be used in the same way by the new owner, or they may be altered in some way that affects the way that they are subsequently used.

Although there may be specific cases that challenge this definition, our approach is consistent with that used by similar initiatives, including previous work in Australia (Allen, 2018; McNeill, Barraket & Elmes 2018) in the United Kingdom (James 2011) and in Belgium (Delanoeije & Bachus, 2020). In general, we define reuse as occurring when a previously used item is transferred to a new owner. In practical terms, this allows reuse enterprises to capture data at the point of a reuse transaction – typically via a sale in a reuse shop.

Recycling

Recycling involves a process, typically occurring at an industrial scale, whereby previously used products and materials are turned into feedstock for the manufacture of new items. Unlike reuse, the item being recycled does not retain its original form or function.

Residual Waste

For the purposes of this document, 'residual waste' is defined as products and materials that are disposed of, and not reused or recycled. This includes items that are incinerated (Waste to Energy) or landfilled.

Measurement Guidelines

These guidelines aim to assist reuse organisations with the process of capturing and reporting on reuse data, with the expectation that organisations of different sizes and capabilities will report in different ways, and with different levels of detail. For example, some reuse organisations may report simply how many individuals they employ, while others may specific which employees are provided with additional support and training (e.g. through a work-readiness program). Different levels of data granularity are expressed in this document as 'Tiers' of data, where Tier 1 is the minimum detail required, and Tier 3 is the maximum.

1. Environmental impact

Table 1 shows which data will be sought to understand the environmental impact of reuse, and where appropriate, to establish the relative social and economic impacts of specific item types or categories.

Tier 1 represents the most basic breakdown of items into the three most common categories of reused materials; Tier 2 represents a more detailed breakdown that reflects the most commonly used categories at Point of Sale; and Tier 3 represents a highly detailed breakdown of item types that aligns with the Input/Output (IO tables used by the Australian Bureau of Statistics to classify products and services in Australia. Updates an information about these tables is provided on the ABS website (ABS 2024).

Table 1. Items sold for reuse

Tier 1	***Tier 2***	***Tier 3***	**IOPG**
Clothing and textiles	Clothing	Clothing (knitwear)	1304
		Clothing (general)	1305
		Clothing (not specified)	1305
	Footwear	Footwear	1306
	Textiles	Raw textiles and fabrics	1301
		Textile products and carpet	1303
		Handbags and suitcases	1302
		Other textiles (not specified)	

Household & homewares, toys and games.	Furniture and large appliances	Indoor furniture	2501
		Whitegoods and large appliances	2404
	Smaller items	Cushions and furnishings	2501
		Glassware	2001
		Ceramics and pottery	2002
		Metal homewares, cutlery & cookware	2204b
		Toys, sports, games, art supplies and bric a brac	2502
		Books, magazines, software and video games	5401
		Music and videos	5501
		Computers, peripherals and home electronics	2401
		Homewares/ Bric a brac/ Electronics (not specified)	
Building and hardware	Building materials	Wood and timber products	1402
		Plastic products	1901
		Rubber products	1902
		Ferrous metal	2101
		Non-ferrous metal	2102
	Hardware	Metal tools and hardware	2204a
		Outdoor tools and machinery inc. powered outdoor tools and lawnmowers	2405
	Other building and hardware	Other building and hardware (not specified)	

There are likely to be scenarios where the above classifications do not easily map onto classifications already used by reporting organisations; for example, some organisations may capture data at Tier 2 detail for clothing and textiles, and at Tier 1 level for furniture. In this situation, data should be provided at the most granular level possible, because aggregated sector-level data will be adjusted as needed (see 1.2.)

1.1 Data Sources

The primary data source for environmental impacts of reuse will be Point of Sale (POS) information, which is entered when items are purchased for reuse. Where a POS is not used (e.g. organisations that provide goods for free, or are mainly involved in bulk/ B2B sales), any equivalent transaction data can be used, providing that it meets the criteria for Tier 1 data at a minimum.

The typical unit of measurement will be individual items, meaning that reuse organisations will report on the number and category of items sold for reuse. Where items are measured by weight rather than number, reporting organisations will be asked to estimate the number of items per category.

It is intended that reuse data be reported to Charitable Reuse Australia on an annual basis, either through online survey or via submission of completed Excel reporting template.

1.2 Data Standardisation and Adjustment

Because reuse organisations will be reporting at different levels of detail, some standardisation and adjustment will be necessary before data can be interpreted and reported.

Statistical Outliers

The first step will involve checking the numbers for any statistical outliers (e.g. organisations reporting extremely high or low figures), and ensuring any necessary adjustments are made to account for data entry errors. This might involve contacting reporting organisations to check their data is correct.

The second step will involve making any manual adjustments, if this is not being done automatically by the data entry platform.

Double-counting

There are some cases where double-counting could occur; for example, if a reporting organisation sells bulk materials for reuse to another reporting organisation, it is possible that both transactions could be counted. In this situation, and other situations where multiple reporting organisations are involved in a reuse supply chain, it is recommended that one of the following options be agreed to:

- The organisations provide a 'co-report' that treats them as a single entity, and attributes impacts to their combined efforts.
- The organisations agree to attribute impacts proportionally across the organisations – this could be based on relative effort/ investment, labour-hours, or any other agreed criteria.
- The organisations agree to simply attribute impacts to the organisation that performs the majority of preparation-for-reuse tasks, including customer sales.

Attributing impact to reuse

Many reuse-focussed organisations are also involved in recycling, and some sell new and/or high recycled-content products. In some instances, such organisations may not be able to report the impact created specifically by reuse. For organisations in this situation, the suggested method for attributing impacts to reuse is to use **revenue breakdown** as a proxy measure. This means that organisations involved in multiple forms of resource recovery will be asked to express reuse as a percentage of their overall revenue, which will allow attribution of other impacts (e.g. employment created) accordingly.

Example: 'Pre-Loved Goodies' sells second-hand items, along with a small number of new products. They have a relationship with a scrap metal company, who purchases unwanted metals from them periodically. They employ 100 people in total. Their accounts show that in the 2023 financial year, 90% of their revenue was from reuse sales, 8% was from new items sales, and 2% was from the sale of recycled metals.

When this organisation provides their impact data to Charitable Reuse Australia, they report the breakdown of their revenue. Based on this breakdown, Charitable Reuse Australia automatically adjusts the impact figures to show that 90 people were employed as a result of reuse activities.

Adjusted lower-tier data

If more than 60% of data (measured by number of items) is reported at a particular tier, data reported at lower tiers can be assumed to match the average distribution at higher levels of detail. For example, in Table 2, a total of 20,000 items have been reported as 'Clothing', which is a Tier 1 detail level. At the corresponding Tier 2 level of data, we can see that a total of 80,000 items have been reported in the relevant categories.

Table 2. Breakdown of Tier 2 level categories

Tier 1	Number of items	Tier 2	Number of items	Weighting
Clothing and Textiles	20,000	Clothing	60,000	75%
		Footwear	10,000	12.5%
		Textiles	10,000	12.5%
TOTAL	**20,000**		**80,000**	

Since more than 60% of the total dataset of 100,000 items (20,000 at Tier 1 plus 80,000 at Tier 2) has been reported at Tier 2, we adjust the 20,000 items reported at Tier 1, assuming that they follow the same average distribution as the reported Tier 2 data, as seen in Table 3 below.

Table 3. Indicative adjustment for 20,000 items from Tier 1 to Tier 2.

Tier 2 categories	Weighting	Adjusted number of items
Clothing	75%	15,000
Footwear	12.5%	2,500
Textiles	12.5%	2,500
		80,000

1.3 Interpretation and reporting

One of the most important environmental impact metrics for reuse is the potential savings from avoided energy and virgin material consumption resulting from the sale of reused items. Displacement rates, or the 'offset effect' of reduced new-item consumption resulting from reused item purchases, have been estimated by BehaviourWorks Australia to be approximately 35% for clothing and 54% for furniture.

Life Cycle Assessment (LCA) data for commonly reused products is constantly improving. The data presented in Table 4 below provides environmental impact factors for Tier 3 product categories. This is based on a study commissioned by Charitable Reuse Australia and undertaken by Lifecycles (Bontinck and Grant 2024). These emission factors still carry significant levels of uncertainty and should be used with care. Lifecycles recommend to limit the use of these factors to high-level calculations, with results grouped at Tier 1 or Tier 2 level.

Table 4. Environmental impact factors for products displaced from reuse (Lifecycles, 2024).

Tier 1	Tier 2	Tier 3	GHG Emissions ($kgCO_2e/kg$)	Water (L/kg)	Land (m^2/kg)
Clothing & Textiles	Clothing	Clothing (knitwear)[1]	38	1,039	263
		Clothing (other than knitwear)	29	1,590	44
		Clothing (not specified)	30	1,515	74
	Footwear	Footwear	12	540	57
	Textiles	Raw textiles and fabrics	16	1,456	66
		Textile products and carpet	20	1,442	82
		Handbags and suitcases	17	700	106
		Textile (not specified)	19	1,352	85
Household & homewares, toys and games	Furniture and large appliances	Indoor furniture	6	167	102
		Whitegoods and large appliances	10	295	9
	Homewares, Bric a brac, electronics	Cushions and furnishings	34	1,316	141
		Glassware	1	13	0
		Ceramics and pottery	1	48	1
		Metal homewares, cutlery and cookware	8	178	8
		Toys, sports, games, art supplies and bric a brac	5	175	64
		Books, magazines, software and video games	29	1,086	254
		Music and videos	8	287	32
		Computers, peripherals and home electronics	143	3,596	127
		Homewares, bric-a-brac and electronics (not specified)	10	315	93
Building & hardware	Building materials	Wood and timber products	1	44	176
		Plastic products	6	198	8
		Rubber products	4	152	11
		Ferrous metal	4	69	1
		Non-ferrous metal	9	141	7
	Hardware	Metal tools and hardware	8	178	8
		Outdoor tools and machinery incl. powered outdoor tools and lawnmowers	10	295	9
	Other building & hardware	Other building & hardware (not specified)	3	85	100

[1] The figures provided by Lifecycles relate to woollen clothing. This differs from the category of 'knitwear' in the IOPG which refers to manufacturing process rather than material type.

2. Social impact

Table 5 shows which data will be gathered to understand the social impacts of reuse, and where appropriate, to establish the relative environmental and economic impacts of specific item types and categories. Social impact data will be collected in three general categories; employment and volunteers, education, and community benefit. These categories are based on the most commonly reported social impacts of reuse activity by Charitable Reuse Australia members in a national survey conducted by Monash University in 2021. They also align with an analysis of global reuse impact indicators developed by Lane & Allen (2022).

Table 5. Employment and Volunteers.

Tier 1	***Tier 2***	***Tier 3***
Paid staff*	Open paid employment	n/a
	Targeted paid employment	Long-term unemployed
		Migrant background**
		Disability (including NDIS)
		Other (please specify)
Volunteers	Open voluntary employment	n/a
	Targeted voluntary employment	Long-term unemployed
		Migrant/ refugee background
		Disability (including NDIS)
		Centrelink Mutual obligation (including Work for the Dole)
		Other (please specify)
	Workforce training and support provided (not including EAP)***	General work skills development
		Life skills (e.g. personal presentation, communication etc)
		Case-management support****
		Professional skills development

*All employment figures should be provided as simple headcount (number of people employed) and FTE (Full Time Equivalent staff employed).
**People who have arrived in Australia in the last 10 years, including permanent migrants, humanitarian migrants (refugees), temporary visa holders and those who've gained citizenship.
***All figures relating to workforce training and support should be provided as a simple headcount (number of people trained/ supported) and number of training person-hours provided (duration of training/ support event, multiplied by number of attendees).
****Skills development program designed for individual needs

Education and Community Engagement

Many reuse organisations provide public events and workshops relating to reuse. Furthermore, the existence of reuse organisations provides an opportunity for consumers to engage with the circular economy, both as buyers and as donators. Retail related community engagement is captured in Table 6, and other community benefit activities in Table 7.

Table 6. Consumer engagement and public education

Tier 1	*Tier 2*	*Tier 3*
Total number of customers (unique transactions from POS)	Number of shop sales (unique transactions from POS)	n/a
	Public education and outreach activities provided*	n/a

*All figures relating to public education and outreach activities should be provided as a simple headcount (number of people trained/ supported) and number of person-hours provided (duration of event, multiplied by number of attendees).

Table 7. Community Benefits

Tier 1	*Tier 2*	*Tier 3*
Total expenditure on social/ environmental purpose*	Targeted employment and workforce development	n/a – employee demographic details are captured in Tier 3 of item 4.1. above.
	Support for people with a disability	
	Support for youth, elderly people and families	
	Support for people experiencing homelessness	
	Emergency/disaster relief	
	Promoting reuse and circular economy principles	

*Responses to this question will be anonymous. Organisations are asked to report the total amount of reuse-derived revenue (see section 1.2) spent on social/ environmental purpose. Where supported employment forms a part of the organisation's purpose, expenditure figures should include wage costs as well as support and training costs. When answering this question, organisations must take care to avoid including non-reuse-derived revenue such as government project funding, as the focus of this data is on the specific impact of reuse activities.

2.1 Data sources

The primary data sources for social impact data will be Human Resources (HR) records for staff numbers and support services offered, financial accounts for expenditure on social impact, and POS data for customer transaction information. Some organisations may also keep separate records of public education opportunities and workshops.

2.2 Data Standardisation and Adjustment

Data standardisation is already incorporated into the reporting framework, with reporting organisations asked to express their figures in terms of headcount, FTE, person-hours and expenditure in Australian dollars.

It is suggested that social impact data be reported at the level of detail which has been provided by reporting organisations, with no extrapolation of lower-tier data to higher-tier data. Due to the diversity of approaches to social impact among Charitable Reuse members, it is not possible to make assumptions about the details of unreported social impact data in the way proposed for reused items in Section 1.2.

2.3 Interpretation and reporting

The majority of social impact data will be straightforward to report, as they relate to existing social measures (e.g. FTE employment and person-hours).

In the case of employment-creation reuse organisations, further interpretation and analysis could include a comparison of the ongoing costs of providing supported employment, compared with other potential scenarios including unemployment and under-employment.

In the case of direct service-provision organisations (e.g. homelessness support), further interpretation and analysis could include benchmarking of operating costs against Productivity Commission data on government services expenditure.

3. Economic impact

While some environmental and social impact data might include economic dimensions, this category of data is intended specifically to capture the contribution of reuse to Australia's economy. At Tier 2 and 3 of economic impact data, it is suggested that reporting organisations report total sales value according to the same level of detail as their reuse data is being reported as shown in Table 8. Some organisations may not wish to report specific sales figures for different item types; in this case, they are still encouraged to report reused item numbers/types sold at the highest possible level of detail, and to simply omit any financial data they do not wish to share.

Table 8. Sales Figures

Tier 1	***Tier 2***	***Tier 3***
Total value of reused goods sold	Total value of reused goods sold (segmented as per Tier 2 Reuse data)	Total value of reused goods sold (segmented as per Tier 3 Reuse data)
	Average markdown of reused goods from 'new' price	
Total value of reused goods provided in-kind	n/a	

3.1 Data sources

The primary data source for economic impact data will be Point of Sale records. Where in-kind donations and support provided to community organisations are not recorded via Point of Sale, it is suggested that separate records be kept, or that an appropriate sales category on the Point of Sale system be created.

3.2 Data Standardisation and Adjustment

Data will be reporting in Australian dollars, and therefore no standardisation is required.

Adjusted lower-tier data

If more than 60% of data (measured in dollars) is reported at a particular tier, data reported at lower tiers can be assumed to match the average distribution at higher levels of detail. For example, in Table 9, a total of $30,000 worth of sales has been reported as 'Clothing', which

is a Tier 1 detail level. At the corresponding Tier 2 level of data, we can see that $70,000 of sales have been reported across the relevant, more detailed, categories.

Table 9. Adjusted lower-tier data

Tier 1	$ Sales value	Tier 2	$ Sales value	Weighting
Clothing and Textiles	30,000	Clothing	50,000	72%
		Footwear	10,000	14%
		Textiles	10,000	14%
TOTAL	**$30,000**		**$70,000**	

Since more than 60% of the total dataset of $100,000 of sales has been reported at Tier 2, we can adjust the $30,000 of sales reported at Tier 1, assuming that they follow the same average distribution as the reported Tier 2 data, as seen in the Table 10 below.

Table 10. Adjustment table for $30,000 of sales from Tier 1 to Tier 2:

Tier 2 categories	Weighting	Adjusted $ values
Clothing	72%	21,600
Footwear	14%	4,200
Textiles	14%	4,200
TOTAL		**30,000**

3.3 Interpretation and reporting

Where organisations have provided data on their average rate of discount from 'new item' prices, it will be possible to use that data, combined with sales data, to report on approximate annual consumer savings from purchasing reused goods. In doing so, it is important to note that reused goods are not necessarily a direct equivalent to new goods, but that purchasing second-hand is a viable and cost-effective alternative to purchasing new items.

4. Demographic Data

Depending on the capacity and willingness of reporting organisations, Charitable Reuse Australia may also collect optional general information and demographic data from respondents. This data could include:

- Geographical location and distribution of facilities
- Organisational structure/ incorporation status
- Primary social/ environmental purpose of organisation

Use-cases

The data collected and reported by Charitable Reuse Australia will represent the only systematic and structured reuse data-collection effort covering social, economic and environmental impacts in Australia. The overarching purpose of this data collection and reporting effort is to support reuse organisations, and make the case for the expansion of the reuse sector. Some potential use-cases for specific stakeholders are given below.

Individual reuse organisations

The data and insights generated from this reporting could be used by individual reuse organisations to:

- Gain a better understanding of the types of material being sold, and the associated social and environmental impact.

- Benchmark sales and impacts against sector-wide averages.
- Improve impact measurement processes by planning the collection of higher-tier data over time.
- Access social procurement and cross-sector collaboration opportunities by demonstrating an ability to accurately report on social and environmental outcomes of reuse.

Charitable Reuse Australia

The data and insights generated from this reporting could be used by Charitable Reuse Australia to:

- Demonstrate the contribution of reuse organisations to Australia's economy, society and environment.
- Make the case for targeted investment in specific reuse item streams or initiatives
- Accurately demonstrate the potential return on investment from funding and support targeted at the expansion of charitable reuse in Australia.
- Expand on the environmental impacts related to the data collected by applying further impact measurement processes, including attribution of Life Cycle Assessment data to items reused. Further research into average reused item product life-cycles could create a database of average product life extension for reuse (e.g. the number of years an item can typically be used for), which would create a more accurate and complete picture of reuse's impacts.

Government

The data and insights generated from this reporting could be used by local, state and federal government to:

- Accurately measure the impact of an investment in specific processes or materials.
- Include reuse data in the Annual Waste Report and Waste Accounts, and align reuse data collection with existing waste diversion and recycling data across the country.
- Establish reuse as an official economic sector, with reuse data collected in alignment with the Australian Bureau of Statistics' Input-Output tables, and the social and environmental impacts of reuse recognised and incorporated into future Input-Output table revisions.

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