

directTM

User Guide
May 2022

© Empauer Pty Ltd 2022

CONTENTS

CONTENTS	2
Basic Information	5
Overview	6
DIRECT's Key Features.....	6
Typical Workflow for a New Assessment	6
Pre-assessment Checklist	7
How to Access DIRECT	9
How to Search for an Assessment	10
How to Search for and Add Materials	13
Search for Materials	13
Add Materials	14
Step by Step to Create a New Assessment	16
Create Assessment Wizard / Pop-up Windows.....	16
Step 1 – Start a New Assessment and specify general data in the first pop-up window	16
Step 2 – Specify Parameter data in the second pop-up window	19
Create Assessment Wizard / Resource Management Window	20
Step 3 – How to Specify Material Inputs via Categories.....	21
Step 4 – How to Specify Food and Non-Food Material Destinations	26
Step 5 – How to Specify Costs and Income for Material Outputs	29
Step 6 – How to Specify Business Costs.....	31
Step 7 – Life Cycle Stage Carry Over (only applicable for multiple life cycle stage assessments)	
33	
Working with the Assessment Navigator tab of your Assessment	38
View your Assessment Data, for each Life Cycle Stage	38
Copy or Delete the Assessment	38

How to make a Copy of an assessment	38
How to Delete an assessment	39
Share the Assessment	40
How to Share an assessment.....	40
Accessing and Editing the Assessment Data	40
How to Access and Edit the assessment data	40
Export data to Excel	42
How to Export data to Excel	42
View your Assessment Results via Charts and Tables	43
Assessment Results.....	43
Results are shown for the following Key Production Mass Ratios	44
Results are shown for the following Key Production Financial Ratios	45
Results are shown for Food Material Losses – Not Inc. Inedible Parts – (t) Per Destination	46
Results are shown for the True Cost of Waste Breakdown	47
Access the Assessment Dashboard window to Aggregate Life Cycle Stages and Compare Assessments	48
Assessment Dashboard.....	48
Material Loss Mass Across Life Cycle Stages & True Cost of Waste Across Life Cycle Stages...	51
True Cost of Waste Breakdown Radar Comparison	51
Key Production/ Financial Ratio Comparison	52
Food Material Losses	53
Glossary	54
Assessment	54
Assessment Navigator	54
Assessment Dashboard.....	54
Business Costs.....	54
Co-Product	54
Energy Cost	54
FLW Standard.....	55

Food	55
Food Rescue	55
Inedible Parts	55
ISO 14051	55
ISO 14052	56
ISO 14053	56
Level of Organisation	57
Life Cycle Stage(s)	57
Material Cost	57
Material Destinations	57
Material Flow	59
Material Inputs	59
Material Loss	59
Material Loss Destinations	60
Material Outputs	60
MCFA	60
Output Costs (as related to material loss)	60
Product	60
Product Classification	60
Process	60
System Cost	60
True Cost of Waste	60
Waste Management Cost	61

Basic Information

Dynamic Industry Resource Efficiency Calculation Tool (DIRECT) helps business understand:

- material inputs and outputs across the supply chain
- the destinations of material flows
- associated business costs including the true cost of waste
- how to calculate resource efficiency
- how to identify the business value of improving resource efficiency

These analyses align to:

- the globally recognised Food Loss and Waste Accounting and Reporting Standard (FLW Standard), developed by the multi-stakeholder FLW Protocol (convened by the World Resources Institute)
- ISO 14051 - a general framework for material flow cost accounting (MCFA) - to scaffold mass/material and cost flow analysis of your inputs/ reporting [see also the derivative/affiliated MCFA ISO standards 14052 (supply chain) and 14053 (phased implementation)]
- the Champions 12.3 coalition dedicated to inspiring ambition, mobilizing action, and accelerating progress toward achieving Sustainable Development Goal (SGD) Target 12.3 by 2030.

Business can use the data from DIRECT to identify opportunities to reduce food loss and waste and the associated costs. New income streams may eventuate, leading to a pivot from food waste costing industry to providing revenue opportunities.

Overview

DIRECT's Key Features

DIRECT has two key user features to make creating and accessing your assessments easy and informative:

Create Assessment Wizard
This will take you through the assessment creation process step by step, allowing you to enter your data as prompted.

Assessment Navigator
<p>This is the tab that contains the details of a created assessment. From an assessment's Assessment Navigator tab, you can:</p> <ul style="list-style-type: none">• Copy, share and delete the assessment• View assessment results and charts for each life cycle stage input.• View and modify assessment input data• Access the Assessment Dashboard window to view results aggregated across multiple life cycle stages, where relevant, and compare - aggregate - results between [up to four] different assessments.

Typical Workflow for a New Assessment

1. Complete the Pre-assessment Checklist
2. Access DIRECT
3. Devex toolbar > New Assessment > Create Assessment Wizard
 - 3.1. Create Assessment Wizard / Pop-up Windows
 - 3.1.1. Pop-up Window 1 - enter general information
 - 3.1.2. Pop-up Window 2 - enter assessment parameters
 - 3.2. Create Assessment Wizard / Resource Management
 - 3.2.1. Add Material Inputs
 - 3.2.2. Specify Food Material Destinations
 - 3.2.3. Specify Non-Food Material Destinations
 - 3.2.4. Specify Costs and Income for Material Outputs
 - 3.2.5. Add Business Costs
 - 3.2.6. Repeat for each life cycle stage
 - 3.2.7. Exit Wizard
4. Tab bar> Use the Assessment Navigator tab for the New Assessment
 - 4.1. View and navigate input data and results for each life cycle stage on main tab window
 - 4.2. Open Assessment Dashboard window
 - 4.2.1. View assessment results combined across all life cycle stages for the assessment
 - 4.2.2. Compare those aggregated results to different assessments

Pre-assessment Checklist

Answering these questions will help you to fit your individual organisation's data into a format which is compatible with DIRECT. Different entities will have specific categories and definitions for their processes. By matching them to standard inputs you can make your assessment compliant with the international standards listed above.

Data may be sourced from: financial systems, inventory management software e.g. SAP, invoices, receipts etc.
Data may be measured, estimated or projected.

We recommend utilising resources such as the guidance for collating and utilising data found in the FLW Standard and the MCFA ISOs (14051, 14052 & 14053) as starting points for gathering the relevant data to enter into DIRECT. Furthermore, the FLW Protocol provide several [tools and resources](#) to help you use the FLW Standard. While the United Nations Industrial Development Organization (UNIDO) have created MCFA Guidelines for SMEs, based on ISO 14051, as part of the [TEST toolkit](#) created for their Transfer of Environmentally Sound Technology (TEST) approach. UNIDO's MCFA Guidelines, for example, provide a step-by-step MCFA assessment approach that can assist businesses, amongst other things, in mapping process flows and cost centres. In addition, we note that the recently introduced ISO 14053's phased approach to MCFA implementation complements the similarly simplified approach of UNIDO's MCFA Guidelines, not to mention the FLW Standard's modular and diverse quantification approach, as they all aim to flexibly assist organisations in starting with the basics/stepping stones to collate, report on and respond to environmental management data.

What product(s) are you measuring?

This could be a SKU, crop, variety, or any other categorisation you use to describe the product(s) you want to assess. For each product or process to assess, consider:

- How is the product sold? i.e. bulk mass, per unit, per shipping unit – pallet, tray etc.
- Are multiple products produced that will need to be measured in the same assessment? This could include different grades, retail package sizes or co-products generated from the same material input stream.
- At what level do you want to assess the process? Per retail unit, bulk mass?
- How much gross product is produced? i.e. Total product mass in tonnes (t)
- What is the gross income from the product(s) you're assessing in dollars (\$)?

What life cycle stage(s) are you measuring?

- At which stage would you like to begin the assessment? i.e. post-harvest, at arrival to a processing facility, at a particular stage in the manufacturing process etc.
- At which stage would you like the assessment to end? i.e. at the point of sale (wholesale or retail), at delivery to the next stage in a supply chain.
- Are you only modelling one life cycle stage, or multiple stages?

Does your data apply to company-wide operations, or only one part of the organisation, e.g. factory, production line, geographic region etc.?

What is the period this assessment is measuring?

The recommended timeframe for an assessment to start with is 12 months, but any timeframe can be specified depending on your available data and goals.

To effectively map production mass and cost flows for the assessment time period you will need to know and enter data for the following four key areas:

1. What are the Material Inputs (mass & cost)?

- What are the ingredients or raw materials that go into the product?
 - This can include food and non-food ingredients, materials and substances consumed during manufacturing or processing, any packaging, and water consumed during the process.
- What are the mass quantities of the material inputs?
 - This is input as the total mass of the material inputs input into your process. The unit of measurement for mass is tonnes (t).
- What are the costs of each of the material inputs?
 - This is the corresponding cost of the material inputs into your process. The unit of measurement for cost is dollars (\$).
- Are there any 'inedible' parts of the food material inputs, not fit for human consumption, that need to be discarded during the relevant life cycle stage? Do you know, or can you estimate what percentage of the total mass of any given food input should be regarded as inedible parts? Examples of inedible parts could include shells, rinds, and bones.

2. What are the Material Destinations (material flows/mass balance)?

- Where does the material go, and what are the quantities?
 - This is reported in total percentage by mass per material destination. DIRECT requires this information as a percentage; we can work with you to convert quantitative data you have into a percentage measurement.
 - Note: Outputs from a process include the product(s), any co-product(s), food rescue and/or more destinations traditionally considered 'waste' such as landfill, composting, recycling etc.
- Does any of the product go to co-product streams (2nds, further processing etc)?

3. What are the Material Outputs – Cost/Income

- As well as your standard operating or business costs are there any costs (\$) associated with the collection or treatment of output materials (material outputs) that are not destined to form part of the main product(s)?
- As well as your product incomes, are there any income streams (\$) associated with material outputs that do not form part of the main product(s)? If so, what are these? E.g. income from co-products or tax rebates from food rescue.

4. What are the business costs associated with the production process you are modelling?

This includes overheads such as fuel bills, wages, rent, equipment purchase/repair, asset depreciation, etc., that relate to the production process you are modelling in the assessment, i.e. if you are modelling for the whole organisation, all related business costs should be entered, however, if you're modelling a specific product, facility, etc., the business costs only relating/allocated to the modelled process should be entered, for each life cycle stage of your assessment.

How to Access DIRECT

Access DIRECT via: https://dxcloud.selerant.com/e10990_direct_qa

A login form for the DeveX system. At the top is the 'devex' logo with 'Ver 3.10' next to it. Below the logo are two input fields: 'Username:' and 'Password:'. Under the password field is a button labeled 'Enter Devex Web'. At the bottom of the form is a link that says 'Regenerate Password'.

Login using username and password provided (N.B. to reset your password, click on **Regenerate Password**).

Once you are in DIRECT, you may either want to:

- [Search for/quickly access an existing assessment](#),
- [Create a New Assessment \(for the first or tenth time\)](#), or
- [Return to review/update a previously submitted and open assessment](#).

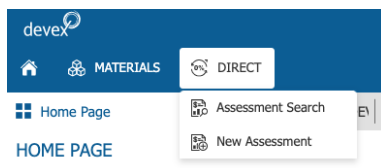
At the top of the DIRECT interface is the Devex toolbar, in blue, with tabs displayed below in the Tab bar (with tabs showing in white when active/selected and grey like the rest of the Tab bar when not active/selected). N.B. the Home Page tab will be available if no other tabs are open and is where you can manage/toggle device viewing settings -



Widescreen/Desktop/Laptop.

To access an open assessment, click on the tab - e.g. "Melbourne Muffins"- to view the Assessment Navigator tab for that assessment.

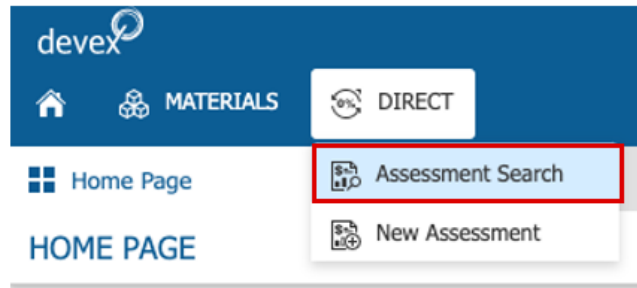
To search for and open an existing or start a new assessment, click on the DIRECT button at the bottom left-hand side of the Devex toolbar. Here you have two drop-down menu options for selection – 'Assessment Search' where you can search for previous assessments you have already entered, or 'New Assessment' to create new assessment.



Note: You are able to view & edit assessments of all users within your organisation.

How to Search for an Assessment

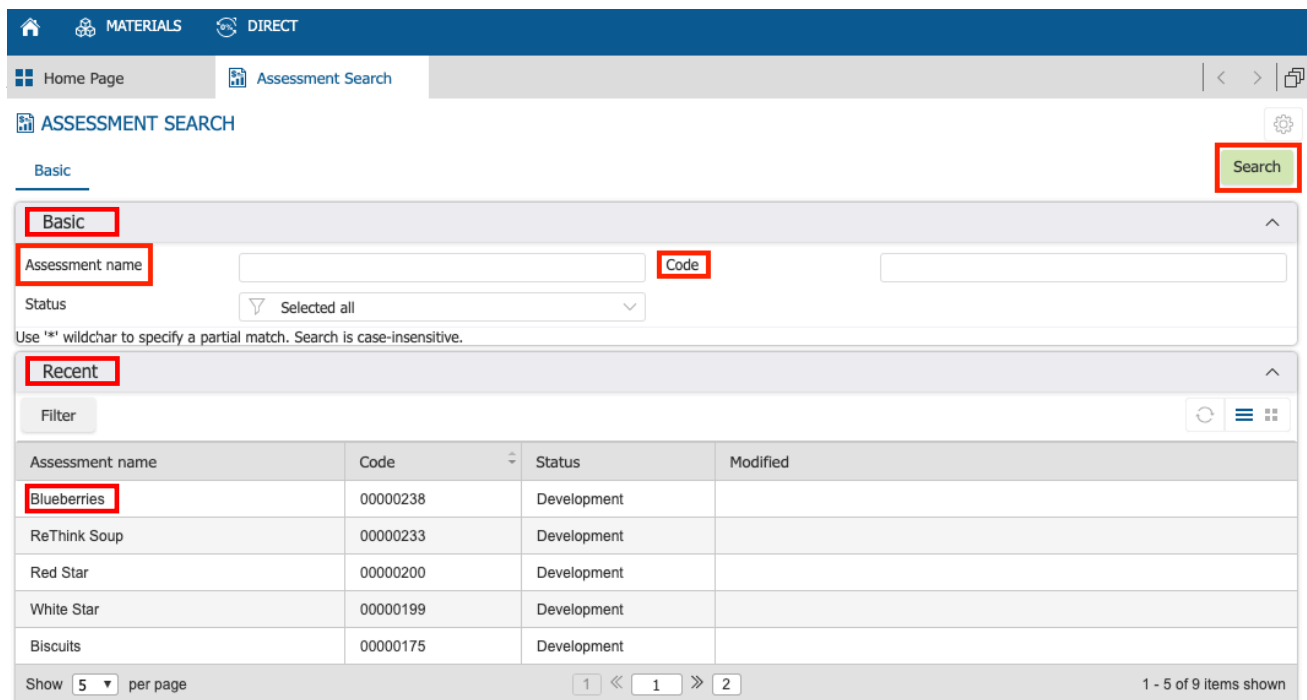
Click on the **DIRECT** button, followed by clicking on the **Assessment Search** button from the **DIRECT** drop-down menu on the Devex toolbar.



An **Assessment Search** tab will open, on the Tab bar, with a list of recent assessments created by your user profile.

To search for an assessment created by you or other members of your organisation, when in the **Basic** sub-tab, in the **Basic** box enter the **Assessment name** and/or **Code** in the relevant field and click on **Search**, and wait for the **Results** box window to be populated.

To quickly access one of your previously completed assessments, in the **Recent** box click on the Assessment name – e.g. **Blueberries** – to open.

The image shows the 'ASSESSMENT SEARCH' interface. At the top, there is a blue header bar with 'devex' logo, 'MATERIALS' button, and 'DIRECT' button. Below the header, there is a tab bar with 'Home Page' and 'Assessment Search'. The 'Assessment Search' tab is active. Below the tab bar, there is a sub-tab bar with 'Basic' and 'Recent'. The 'Basic' sub-tab is active. In the 'Basic' sub-tab, there are two input fields: 'Assessment name' and 'Code'. Below these fields, there is a 'Status' dropdown menu with 'Selected all' selected. To the right of the 'Basic' sub-tab, there is a 'Search' button. Below the 'Basic' sub-tab, there is a 'Recent' section. It contains a table with the following data:

Assessment name	Code	Status	Modified
Blueberries	00000238	Development	
ReThink Soup	00000233	Development	
Red Star	00000200	Development	
White Star	00000199	Development	
Biscuits	00000175	Development	

At the bottom of the 'Recent' section, there is a 'Show 5 per page' dropdown and a pagination bar showing '1 - 5 of 9 items shown'.

N.B. the **Status** of assessments will be tagged as either **Development** or **Draft**. In the event that the system times out or the browser window or tab is closed while you are in the [Resource Management section of the Create Assessment Wizard](#), the system will save a draft of the assessment. Note that no draft will be saved if the wizard window within

DIRECT is closed – this applies only to the browser window. To search for saved drafts only, select only the **Draft** option in the **Status** field, in the **Basic** box (you can search for all drafts by clicking on **Search** and leaving the other field empty).

A dropdown menu with a search icon and the text 'Draft'. Below it are three checkboxes: 'Check all', 'Development', and 'Draft' (which is checked and highlighted in blue).

Results				
Filter		Total rows: 25		
Assessment name	Code	Status	Modified	Actions
Blueberries	00000250	Draft		Continue
Snozzberries	00000254	Draft		Continue
Fantastic Juice	00000275	Draft		
Mixed Nut Meal - MP - CO Merge 2	00000285	Draft		
Mixed Nut Meal - MP - CO Merge 2	00000286	Draft		

Show 5 per page 1 << 4 >> 5 16 - 20 of 25 items shown

Scroll through the list to find the required assessment. Once you have found it, either click on the name of the assessment or **Open/Continue** in the Actions column [hovering over the row in the Actions column brings up the options Continue – for those with Draft status – Open and Recent – for those with Development status].

Results				
Filter		Total rows: 5		
Assessment name	Code	Status	Modified	Actions
Almonds	00000145	Development		Open Recent
Almonds, Bulk	00000170	Development		Open
Almonds, Bulk 2	00000171	Development		
Almonds	00000225	Development		
Almonds	00000257	Development		

Show 15 per page 1 << 1 >> 1 1 - 5 of 5 items shown

N.B. In the example above “Almonds*” was entered in the **Assessment name** search field in the **Basic** box when searching. Inputting “*” before and/or after your search text extends the search parameters. Furthermore, clicking **Edit Search** when in the **Results** box window will take you back to your previous entries in the **Basic** window, while **New Search** will bring up a refreshed **Basic** window.

You can filter your own recent assessments by clicking on the Filter button, in the **Recent** or **Results** box and entering the name, code or status of the assessment you are looking for. N.B. The Filter criteria is pre-set to filter on “~Like” so, in general, you do not need to use other search parameters such as “*” to filter for assessments.

Recent

Filter

Assessment name

~

almonds

Code

~

Status

~

Modified

=

Filter

Clear

~ Like

= Equals

≧* Starts With

≧ Ends With

Assessment name	Code	Status	Modified
Almonds, Bulk 2	00000171	Development	
Almonds, Bulk	00000170	Development	

Show

5

per page

1

<<

1

>>

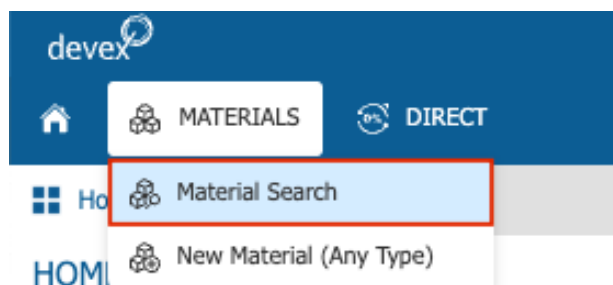
1

1 - 2 of 2 items shown

How to Search for and Add Materials

Search for Materials

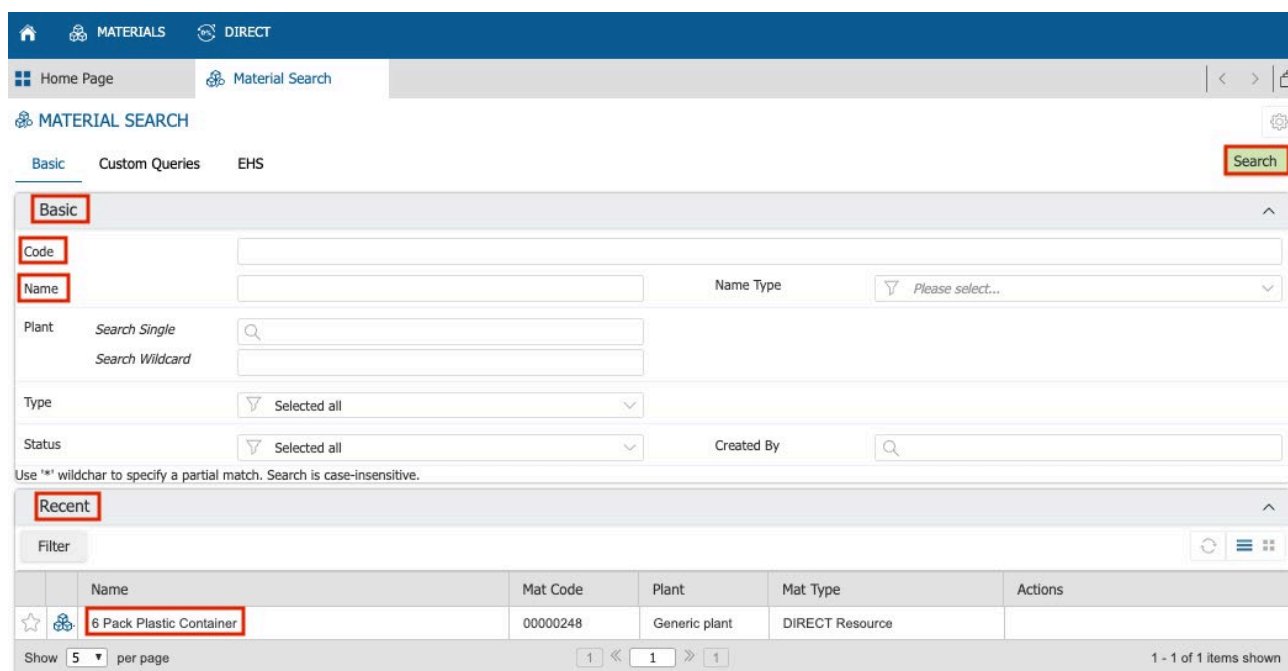
To search for materials click on the MATERIALS button, followed by clicking on the **Material Search** button from the **MATERIALS** drop-down menu on the Devex toolbar.



A **Material Search** tab will open, on the Tab bar, with a list of recent materials created by your user profile.

To search for a material from the pre-populated system list or created by you as an additional DIRECT Resource, when in the **Basic** sub-tab, in the **Basic** box enter the **Name** and/or **Code** in the relevant field and click on **Search**, and wait for the **Results** box window to be populated.

To quickly access one of your previously completed assessments, in the **Recent** box click on the Material name – e.g. **6 Pack Plastic Container** with the Mat Code no. 0000248 – to open.



Name	Mat Code	Plant	Mat Type	Actions
6 Pack Plastic Container	0000248	Generic plant	DIRECT Resource	

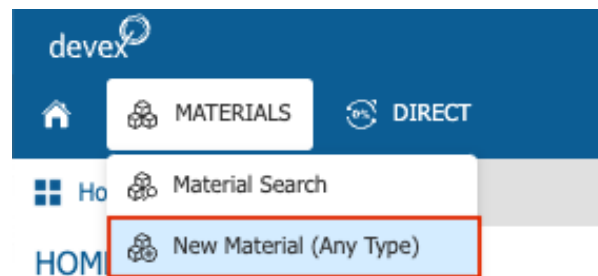
N.B. the search fields **Plant**, **Type**, **Status** and **Name Type** are not currently relevant for DIRECT and tied to other Devex modules – all Mat Types will be DIRECT Resource. The search features accessed via the **Custom Queries** and **EHS** sub-tabs are also not relevant to DIRECT either.

You can filter your own recent materials by clicking on the Filter button, in the **Recent** or **Results** box and entering the name, code or status of the assessment you are looking for. N.B. The Filter criteria is pre-set to filter on “~Like” so, in general, you do not need to use other search parameters such as “*” to filter for assessments.

Name	Mat Code	Plant	Mat Type	Actions
6 Pack Plastic Container	00000248	Generic plant	DIRECT Resource	

Add Materials

To add materials click on the MATERIALS button, followed by clicking on the **New Material (Any Type)** button from the **MATERIALS** drop-down menu on the Devex toolbar.



A **New Material (Any Type)** pop-up window will open be sure to select DIRECT Resource from the **Type*** box. Enter your new material name in the **Name*** box and click “Ok”.

Selecting the Type

Type *

Name *

DIRECT Resource

Application Formula

Application Ingredient

DIRECT Resource

Dummy Material

Equipment

Once you click Ok a **NEW MATERIAL** navigator tab will open, on the Tab bar, with the details of the Material you have created – most of which is not relevant for the DIRECT module of Devex.

Home Page

NEW MATERIAL

NEW MATERIAL

DIRECT Resource: Generic plant / 000003...

SCP Actions Go to Reports Export Material

Manage Panels

General

Edit

Prefix of Name

NameNEW MATERIAL

Material Reference

Creation Date24/3/2022Created ByPiloting, RMIT

Replaced by Material CodeERP Material Plant

ERP Material CodeERP Material Name

ERP Material TypeERP Specification Code

Production Type

StatusOn Creation

Standard Unit of Measure

Recipe type

SCP General

Edit

Procurement category

Names

NewCreate multipleExport

Name Type	Na...	Prefix	Language	Country	Partner Type	Partner	Custom Code	Reference Mate...	Actions
There are no entries to display									

Show 15 per page1<1>>1No records to view

Vendors

References

Mat Comparison

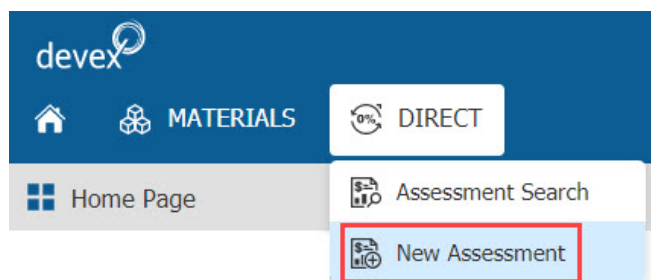
Related Quality Records

Step by Step to Create a New Assessment

Create Assessment Wizard / Pop-up Windows

Step 1 – Start a New Assessment and specify general data in the first pop-up window

1. Click on the **DIRECT** icon and then click the **New Assessment** button from the **DIRECT** drop-down menu on the Devex toolbar.



2. A **Create Assessment Wizard pop-up window** will appear on screen, requiring the following information to be entered:
 - **What is your name?** – your system name will be automatically pre-filled.
 - **What is the company name?** – please enter the name of the operational company producing the product.
 - **What is the name of this assessment?** – please enter the name of the assessment. This will likely be a SKU, crop, variety, or any other categorisation you use to describe the assessment of food products being undertaken. You may also want to add indicators like year or specific site information if that aids clarity.
 - **Product classification?** – please search the name and select the relevant food classification for your product.
Note: The list is currently drawn from the United Nations Central Production Classification system (CPC Ver 2.1). This will be the equivalent to the “Food Category” boundary dimension of the FLW Standard.

Note: If you input “*” into the field it will display the full classification list to scroll and tab through

The screenshot shows the 'Create Assessment Wizard' interface. The form has five fields: 'What is your name?' (filled with 'Piloting, RMIT'), 'What is the company name?' (empty), 'What is the name of this assessment?' (empty), 'Product classification?' (open dropdown), and 'What is the assessment time frame?' (empty). The dropdown menu for 'Product classification?' is open, showing a list of food categories. A red arrow points to the search icon in the dropdown. The categories listed are: Fish livers and roes, fresh or chilled; Fish livers and roes, frozen; Fish livers and roes dried, smoked, salted or in brine; Fish, dried, but not smoked; salted, but not dried or smoked; or in brine; Fish including fillets, smoked; Edible fish meal; Edible fish offal ; fish fins, heads, tails, maws and other edible fish offal; Prepared dishes and meals based on fish, molluscs and crustaceans; Fish, otherwise prepared or preserved; and Caviar and caviar substitutes. At the bottom of the dropdown, there are navigation buttons: 1, <<, 1, >>, 52.

- To search for a specific term or word input “*” before and after your term/phrase
- For instance, to view a list of juices in system, input *juice*. The system then displays all classifications with the word “juice” in a list.

The screenshot shows the 'Create Assessment Wizard' interface. The form has five fields: 'What is your name?' (filled with 'Piloting, RMIT'), 'What is the company name?' (empty), 'What is the name of this assessment?' (empty), 'Product classification?' (open dropdown), and 'What is the assessment time frame?' (empty). The dropdown menu for 'Product classification?' is open, showing a list of juice categories. The categories listed are: Tomato juice; Other vegetable juices; Orange juice; Grapefruit juice; Pineapple juice; Grape juice; Apple juice; Other fruit juices, n.e.c.; and Extracts and juices of meat, fish, crustaceans, molluscs or other aquatic invertebrates. At the bottom of the dropdown, there are navigation buttons: 1, <<, 1, >>, 1.

- **What is the assessment time frame?** – The time frame is the period that you want to report on for this assessment.
On entering the start date, the end date will automatically be set to 12 months from the start date, however you can also change this end date to suit your assessment.
3. Click **Next** button.
- Note:** Clicking the **Cancel** button on any page of the wizard will close the Create Assessment Wizard. Your assessment will be lost.

Create Assessment Wizard

What is your name? ⓘ

Piloting, RMIT

What is the company name? ⓘ

Muffin Maka

What is the name of this assessment? * ⓘ

Melbourne Muffins

Product classification? * ⓘ

🔍 Bread and other bakers' wares

×

What is the assessment time frame? * ⓘ

07/01/2020

📅

06/30/2021

📅

All fields marked with an * are required.

Cancel

Next

Step 2 – Specify Parameter data in the second pop-up window

Specify data in the next **Create Assessment Wizard** pop-up window:

1. **Level of Organisation?** – Enter the level of organisation you will be reporting on. This constitutes your unit of analysis. This level could be defined as: organisation wide, a business unit, an individual factory/ farm/ store, down to an individual piece of equipment or segment of a facility. All results will be in reference to this level.
2. **What is the location?** – This is the geographic location where the product life cycle stages are being measured. Currently this is limited to nations so search (*name*) for and select your country (e.g., Australia).
3. **Material destinations?** – These are the destinations where materials e.g., ingredients used to produce the product may flow to. Please select from the list, here, any destinations that the material inputs used to produce the product may flow to (e.g. Animal Feed, Recycling and/or Landfill). This list excludes the material that makes it into the final product(s), co-product(s), food rescue, is lost to the environment and/or other destinations, as these other material destination options are provided by default later in the assessment without having to nominate them.
4. **What are the product life cycle stages?** – Please select from the list of life cycle stages across the food supply chain that you want to report on for this assessment.
Note: The product life cycle stages selected will be displayed in the header of the [Create Assessment Wizard / Resource Management window](#)
5. **Data collection type?** – Please indicate whether the majority of data has been measured, estimated, or are future projections, by selecting the relevant label.

Create Assessment Wizard

Level of Organisation? * ? Melbourne PDW

What is the location? * ? Q AUSTRALIA

Material destinations? * ? Animal feed, Recycling, Landfill

What are the product life cycle stages? * ? Processing, Distribution, Wholesale

Data collection type? * ? Measured

All fields marked with an * are required.

Previous Cancel Next Finish

6. When you click on the **Next** button you will move onto the **Create Assessment Wizard / Resource Management** window. This is where you will be prompted to enter key resource data for each product life cycle stage selected. See [next section](#).
7. Clicking the **Finish** button will close the **Create Assessment Wizard** without entering resource management data and an **Assessment Navigator** tab for the assessment will appear, on the Tab bar, with the information entered so far. While data can be added in the [Assessment Navigator](#) tab it is not recommended for new assessments as some features are only available to use through the wizard.

Note: Click **Previous** button to change information added in the previous window. Clicking the **Cancel** button on any page of the wizard will close the Create Assessment Wizard and your assessment will be lost.

Create Assessment Wizard / Resource Management Window

After clicking the **Next** button in [Step 2](#) of a new Assessment creation, a **Create Assessment Wizard / Resource Management** window will appear.

Note: If you close this window or click **Cancel**, your New Assessment will be deleted from the system.

The **Create Assessment Wizard / Resource Management** window will display product life cycle stages selected in the “What are the product life cycle stages?” field in [Step 2](#).

The screenshot shows the 'Create Assessment Wizard' window with the following fields and values:

- Level of Organisation? *: Melbourne PDW
- What is the location? *: AUSTRALIA
- Material destinations? *: Animal feed, Recycling, Landfill
- What are the product life cycle stages? *: Processing, Distribution, Wholesale
- Data collection type? *: Measured

Below the wizard, the 'Create Assessment Wizard / Resource Management' window is shown with a red box around its title bar. A red arrow points from the highlighted field in the wizard to the 'Processing' stage in the lifecycle diagram below.

The lifecycle diagram shows three stages: Processing (highlighted with a green bar), Distribution, and Wholesale.

Below the diagram, there is a 'Material Inputs' section with an 'Add New Category' button.

Steps 3 to 6 – Entering Resource Data for Each Product Life Cycle

For each product life cycle selected in [Step 2](#), the **Create Assessment Wizard / Resource Management** consists of 5 tabs for data entry:

- [Specify Material Inputs via Categories \(Step 3\)](#)
- [Specify Food Material Destinations \(Step 4\)](#)
- [Specify Non-Food Material Destinations \(Step 4\)](#)
- [Specify Cost and Income for Material Outputs \(Step 5\)](#)
- [Specify Business Costs \(Step 6\)](#)

Step 3 – How to Specify Material Inputs via Categories

Material Inputs Tab

Create Assessment Wizard / Resource Management

Processing

Distribution

Wholesale

Material Inputs

Add New Category

Category	Product/Co-Product material desti...	Packaging	Mass per time ...	Cost per time period ...	Food (%)	Inedible parts (...)	Data collection type	Actions
----------	--------------------------------------	-----------	-------------------	--------------------------	----------	----------------------	----------------------	---------

Notes

Save Notes

In this section of DIRECT you will be required to define the material inputs (e.g. food ingredients, packing materials, and any other relevant material inputs) that flow through the different product life cycle stages. You will now be guided through the various steps to compile your material input inventory, as shown in the example image at the end of this step [N.B. this will be repeated for each product life cycle selected].

Individual material inputs (e.g., food ingredients, packing materials (including packaging) are grouped under “Categories”.

To add a new material category in **Create Assessment Wizard / Resource Management** window:

1. Click **Add New Category** button.
2. Input category name in **Title** field. Then select the **Type** as either ‘Food’ or ‘Non food’ from the drop-down list.

Note: If Type is not selected the Category will default to ‘Non food’.

Material Inputs

Title * Packing Materials Type Non food

Food

Non food

Ok Cancel

Category	Product/Co-Product material desti...	Packaging	Mass per time ...	Cost per time period ...	Food (%)	Inedible parts (...)	Data collection type	Actions
----------	--------------------------------------	-----------	-------------------	--------------------------	----------	----------------------	----------------------	---------

Create Assessment Wizard / Resource Management

Processing

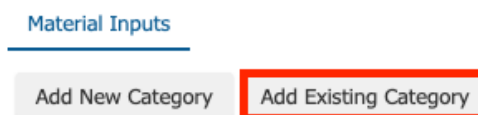
Material Inputs

Add New Category Add Existing Category

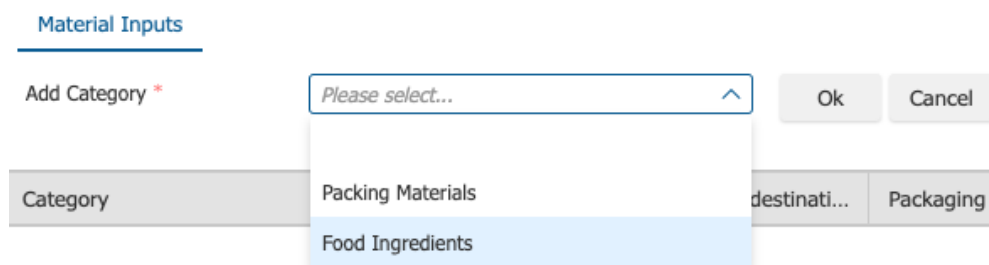
Once entered, click the **Ok** button.

To add an existing material category

2.1 Click **Add Existing Category** button.




Select the category from the drop-down list and select **Ok**



Note: All material inputs listed/ entered for each category must only be food or non-food, so that they can be accounted for under the FLW Standard. Material inputs identified as part of a 'Food' category are then separated into the elements that are, either, intended for human consumption or not (inedible parts). The FLW Standard definitions of those elements are as follows:

- **Food:** Any substance—whether processed, semi-processed, or raw—that is intended for human consumption. Food elements, of food material inputs, includes drink, and any substance that has been used in the manufacture, preparation, or treatment of food. Food also includes material inputs that have spoiled and is therefore no longer fit for human consumption¹.
- **Inedible parts:** Components associated with a food that, in a particular food supply chain, are not intended to be consumed by humans. Examples of inedible parts associated with food could include bones, rinds, and pits/stones².


Note: It is not possible to change the “type” of a category after it is created. If you have assigned the wrong type, delete the category and create a new one.

3. Click  icon to add your material inputs in this category.

¹'Food' does not include cosmetics, tobacco, or substances used only as drugs. It does not include processing agents used along the food supply chain, for example, water to clean or cook raw materials in factories or at home.


²'Inedible parts' do not include packaging. What is considered inedible varies among users (e.g., chicken feet are consumed in some food supply chains but not others), changes over time, and is influenced by a range of variables including culture, socio-economic factors, availability, price, technological advances, international trade, and geography.


Note: Food items must be listed under a category designated as "food", and non-food items must be listed under a category designated as "non-food". Categories cannot contain a mix of food and non-food items.



Category		Product/Co-Product
▼ Food Ingredients		

As with Product Classification, in [Step 2](#), you can search for material inputs from a pre-defined list.

To view a full list, enter "*" and scroll or tab through. Or use "*" before and after your term – e.g. *Flour*. Select the appropriate field label when found.

Category		Product/Co-Product ...
▼ Food Ingredients		
<input type="text" value="*Flour*"/>		<input type="text"/>
<div>Blood Flour</div> <div>Buckwheat Flour</div> <div>Carbon Flour</div> <div>Corn Flour</div> <div>Cottonseed Flour</div> <div>Flour</div> <div>Flour, Barley</div> <div>Flour, Barley Malt</div> <div>Flour, Corn</div> <div>Flour, plain</div>		
<div>1 << 1 >> 3</div>		

If you can't find the field label that you require, enter your material input item label ("Flour Milled" is the example below) into the field, and hit enter. The 'Add material name' icon,  will appear to the right. Click on this icon to create a new material.

Category		Product/Co-Product ...
▼ Food Ingredients		
<input type="text" value="Flour Milled"/>		<input type="text"/>
<div>No results</div> <div>Add material name</div>		
<div>1 << 1 >> </div>		

Select "Yes" when prompted to create the new material label in a pop-up window.

Are you sure you want to create new material with name Flour Milled?

No Yes

4. Enter the data for the material in the relevant columns, including:
 - a. **Product/Co-Product material destinations.** Here you can specify whether the material forms part of the final product(s) or co-product(s). Multiple products/co-products can be selected if required.
 - b. **Packaging.** Check the box in this column if the material is part of the packaging of the product.

Material Inputs

Add New Category Add Existing Category

Category	Product/Co-Product material destinati...	Packaging
▼ Packing Materials	+	
4 Pack Plastic Container	1 selected	<input checked="" type="checkbox"/>

- c. **Mass per time period (t).** Enter the mass of the material input in tonnes. Remember you are entering data for the total of the time period you defined previously in Pop-up Window 1 of the Wizard.
 - d. **Cost per time period (\$).** Enter the cost of material input for the defined period. This refers to direct material cost, not other indirect costs like freight, etc
 - e. **Food (%).** This column does not require an input, and is not editable, as it is calculated based on the input to the next column.
 - f. **Inedible parts (%).** This column is only applicable to food materials. Inedible parts are defined as components associated with a food that, in a particular food supply chain, are not intended to be consumed by humans. Examples of inedible parts associated with food could include bones, rinds, and pits/stones. The percentage refers to the proportion of the total mass of the food item that is considered inedible. Only specify a percentage of inedible parts if these parts are sent to a destination other than the main product. If the inedible parts form part of the product and are either sold together with it or are passed on to the next life cycle stage with the product, then leave this column blank.
 - g. **Data collection type.** Although entered in the general information included at the start of the assessment, this can be modified on an individual basis for each material input as appropriate.
5. Save your material input data either by hitting “enter” while the cursor is in an editable field, or by clicking “Save” in the “Actions” column on the right. Options to save and cancel will appear in the **Actions** column when the mouse cursor hovers over the column before it is saved.
6. Notes or extra information for your reference can be added in the “Notes” field if required.
7. **Note:** After saving a material input you can edit or delete it from the table. Click on the button in **Actions** column or double-click a field in the row. Options to edit and delete will appear in this column when the mouse cursor hovers over the column. You can also delete a Category altogether via the Actions column.
8. Add new categories as required by repeating procedures 1 to 2 listed above, and/or add additional materials to categories by following procedures 3 to 5 listed above.
9. Click **Next** button to move to the [Food and Non-Food Material Destinations step](#).

Note: If you close this/ the Wizard window or click **Cancel**, your New Assessment will be deleted from the system. In the event that the system times out or the browser window or tab is closed, the system will save a draft of the assessment. See [How to Search for an Assessment](#) so as to how to find the saved draft.

Create Assessment Wizard / Resource Management

Processing

Distribution

Wholesale

Material Inputs

Add New Category

Category		Product/Co-Product material destinations	Packaging	Mass per time period (t)	Cost per time period (...)	Food (%)	Inedible parts (%)	Data collection type	Actions
▼ Food Ingredients	⊕								
Flour, Wheat		Product 1,Product 2,Co-Product 1		80.000	\$16,000.00	100%	0%	Measured	
Sugar		Product 1,Product 2,Co-Product 1		20.000	\$20,000.00	100%	0%	Measured	
eggs		Product 1,Product 2,Co-Product 1		10.000	\$35,000.00	90%	10%	Measured	
Canola Oil		Product 1,Product 2,Co-Product 1		10.000	\$34,000.00	100%	0%	Measured	
Baking Powder		Product 1,Product 2,Co-Product 1		2.500	\$2,500.00	100%	0%	Measured	
Milk		Product 1,Product 2,Co-Product 1		20.000	\$140,000.00	100%	0%	Measured	
Blueberries		Product 2		1.000	\$4,000.00	100%	0%	Measured	
▼ Packing Materials	⊕								
6 Pack Plastic Container		Product 1	Yes	4.000	\$4,000.00			Measured	
4 Pack Plastic Container		Product 2	Yes	1.000	\$1,000.00			Measured	
Cardboard Box		Product 1,Product 2,Co-Product 1	Yes	10.000	\$2,500.00			Measured	
Total				158.500	\$259,000.00				

Notes

Product 1 is plain muffin
Product 2 is blueberry muffin
Co-Product 1 is baby plain muffin
Testing 4 packs for blueberry

Step 4 – How to Specify Food and Non-Food Material Destinations

This step allows you to specify where the input materials end up – i.e. the material destinations. It is split into two parts – the first specifies destinations for food material, and the second for non-food material. [N.B. this will be repeated for each product life cycle selected]

Tab 2 – Food Material Destinations

Create Assessment Wizard / Resource Management

Processing Distribution Wholesale

Food Material Destinations

Manage Destinations

Type	Product 1	Product 2	Product 3	Co-Product 1	Co-Product 2	Food Rescue	Animal Feed	Recycling	Landfill	Environ...	Other	Actions
▼ Food												
Flour, Wheat												
Sugar												
eggs												
Canola Oil												
Baking Pow...												
Milk												
Blueberries												
▼ Inedible Parts												
eggs												

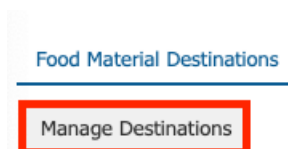
The breakdowns are in percentages and they must total 100%.

Notes

Save Notes

Cancel Back Next

1. **Managing Destinations.** Each destination you selected when entering the general data for the assessment will appear across the top of the table as a column on this screen, in addition to several generic columns.



Clicking on the “**Manage Destinations**” button, above the table on the left-hand side, will bring up the **Manage Material Destinations** pop up and allow you to add or remove destinations as required (such as adding ‘sewer’ as a destination for milk disposal in our example).

Resource Management / Manage Material Destinations

Available Destinations

Bio-material
Codigestion
Composting
Controlled combustion
Land Application
Incineration w en.recovery
Not harvested
Refuse
Sewer

Add

Used Destinations

Animal feed
Landfill
Recycling

Remove

In case of the Material Destination removal, Food and Non-Food Material Destination percentage distribution could potentially be disrupted, leaving the total distribution lesser than 100%.

Material Destinations appearing under Available Destinations are selected for all assessment lifecycle stages.

Cancel
Save

After clicking save you will be provided a pop-up reminding you that if you remove a destination you will lose any data saved to it.

Changes you have made might include removal action. Are you sure you want to continue?

No Yes

Note: Only destinations relevant to food will appear on the **Food Material Destinations** page, as will destinations relevant to non food materials on the **Non Food Material Destinations** page.

- Entering Destination Data.** To allocate the percentage of the total mass of each material input that goes to each destination, click **Edit** button in the **Actions** column. Option to edit will appear in the **Actions** column when the mouse cursor hovers over the column. The percentages entered in each row must sum to 100.

Note: Food material inputs are split into **food** and **inedible parts**, to allow for cases where **inedible parts** of **food** material input are sent to a different destination. For example, if on the **Material Inputs** tab, you have entered “eggs” and have specified that **inedible parts** (the shell in this case) make up 10% of the mass:

Category		Product/Co-Product material destinations	Packaging	Mass per time period (t)	Cost per time period (\$)	Food (%)	Inedible parts (%)	Data collection type
Food Ingredients	⊕							
Flour, Wheat		Product 1,Product 2,Co-Product 1		80.000	\$16,000.00	100%	0%	Measured
Sugar		Product 1,Product 2,Co-Product 1		20.000	\$20,000.00	100%	0%	Measured
eggs		Product 1,Product 2,Co-Product 1		10.000	\$35,000.00	90%	10%	Measured

Then the **Food Material Destination** tab will allow you to specify that the eggs end up in the product(s) and co-product(s), but the eggshells are sent to animal feed and landfill. Remember to only specify a percentage of inedible parts if these parts are sent to a destination other than the main product(s). If the inedible parts form part of the final product(s) and are either sold together with it or are passed on to the next life cycle stage with the product, then the column should have been left blank on the **Material Inputs** tab.

Type	Product 1	Product 2	Product 3	Co-Produ...	Co-Product 2	Food Rescue	Animal ...	Recycling	Landfill	Sewer	Environment...	Other	Actions
▼ Food													
Flour, Wheat	72.0%	18.0%		2.0%			3.0%		5.0%				
Sugar	72.0%	18.0%		2.0%			3.0%		5.0%				Edit
eggs	73.0%	19.0%		2.0%			3.0%		3.0%				Edit the grid row
Canola Oil	72.0%	18.0%		2.0%			3.0%		5.0%				
Baking Powder	72.0%	18.0%		2.0%			3.0%		5.0%				
Milk	70.0%	17.5%		2.0%			3.0%			7.5%			
Blueberries		90.0%					4.0%		6.0%				
▼ Inedible Parts													
eggs							10.0%		90.0%				

The breakdowns are in percentages and they must total 100%.

Notes Had a milk spillage incident.

- Note:** If a destination receives no materials, leave the column blank, as you are unable to enter 0.
- Click **Save** in the **Actions** column after you have finished entering data for each row. Options to save and cancel will appear in the **Actions** column when the mouse cursor hovers over the column before it is saved.
 - Click **Next** to move on to the **Non-Food Material Destinations** page, and follow the same procedure as above to allocate the non food materials to their destinations by proportion of total mass. In the example below, 95% of the 6 pack plastic container is used to contain the product, while there is some loss at the production site and 3% goes to landfill and 2% is recycled.

Non-Food Material Destinations

Manage Destinations

Type	Product 1	Product 2	Product 3	Co-Product 1	Co-Product 2	Food Rescue	Animal Feed	Recycling	Landfill	Sewer	Environm...	Other	Actions
▼ Non-Food													
6 Pack Plastic Container	95							2	3				Save Cancel
4 Pack Plastic Container		95.0%						3.0%	2.0%				
Cardboard Box	78.0%	19.0%		2.0%					1.0%				

The breakdowns are in percentages and they must total 100%.

- Click the **Next** button to move to the [Material Outputs – Cost/Income step](#).

Note: If you close this/ the Wizard window or click **Cancel**, your New Assessment will be deleted from the system. In the event that the system times out or the browser window or tab is closed, the system will save a draft of the assessment. See [How to Search for an Assessment](#) so as to how to find the saved draft.

Step 5 – How to Specify Costs and Income for Material Outputs

This is where you will specify additional costs for managing material that is outputted to non-product destinations as well as the income received/material value for all material destinations [N.B. this will be repeated for each product life cycle selected].

Material Outputs - Cost/Income

Destination	Output Cost (as related to material loss) ⓘ	Income	Actions
Product 1		\$2,000,000.00	
Product 2		\$60,000.00	
(Loss) Co-Product 1		\$4,000.00	
▼ (Loss) Food			
Animal feed	\$100.00	\$500.00	
Landfill	\$300.00		
Sewer	\$100.00		
▼ (Loss) Inedible Parts			
Animal feed	\$10.00	\$50.00	
Landfill	\$25.00		
▼ (Loss) Non-Food			
Recycling	\$50.00	\$150.00	
Landfill			

Notes

Recycling income is the value of the plastic containers reused.

- 1. Enter Output Cost (as related to material loss) for each destination.** This includes costs incurred specifically in the disposal, handling and transport of the material output to that (Loss) destination. This can include additional costs for the management and movement of Co-Product and Food Rescue, as well as other waste collection and treatment costs, all of which are considered material losses.

Click on **Edit** button in **Actions** column and enter income where applicable. Option to edit will appear in the **Actions** column when the mouse cursor hovers over the column. Click **Save** when done.

Note: Non-product material destination output costs contribute to the waste & loss collection and treatment (waste management as per ISO 14051) costs that DIRECT reports on – these output costs are not offset against any corresponding income for that destination.

- 2. Enter Income generated from each destination.** For products and co-products, this includes income from sales. For multiple life cycle stage assessments, this income should represent the value of the product as it passes from one stage to another. Other materials that are sent to animal feed, food rescue or other destinations may also generate an income. For example, inedible parts of a food material input may be sold as animal feed.

Click on **Edit** button in **Actions** column and enter income where applicable. Option to edit will appear in this column when the mouse cursor hovers over the column. Click **Save** when done.

Note: DIRECT uses non-product material destination income to offset the direct material and indirect business costs of material loss that DIRECT reports on, relative to product income (i.e. accounting only for the lost margin of not turning material inputs into products). These lost-margin offsets, against the direct cost of material loss and associated indirect business costs - effectively credits that reduce the True Cost of Waste - are based on the income per tonne (income over mass) value of the non-product ratioed against Product 1, so

please ensure that your Product 1 is the baseline you want to go off. This could be the highest income per tonne or the highest mass volume of product sold/produced; it is up to your organisation to decide which product to prioritise as Product 1 for each assessment.

Point of Interest: As lost-margin offsets in DIRECT do not work correctly when the income per tonne value of a non-product divided by the income per tonne value of Product 1 (i.e. the ratio of non-product to product value) is equal to or greater than 1; therefore the income per tonne value of a non-product can not be equal to or greater than that of Product 1.

For example, our Melbourne Muffin Product 1 income is \$2,000,000.00, and the Co-Product 1 income is \$4,000.00 – with respective masses of 113.17 t and 3.03 t (not shown).

The income per tonne for Product 1 is \$17672.53, and Co-Product 1 is \$1320.13, which means the ratio of income for every tonne of Co-Product 1, as compared to Product 1, is 0.075. Therefore, the direct costs of material losses and indirect business costs (associated with facilitating the material flows) of the 3.03 t of Co-Product 1 can be reduced by 7.5%.

Co-Product 1 would have to sell for at least \$53,550.00 to be worth more than Product 1 per tonne. This is somewhat unrealistic (a more realistic example would be a jam co-product selling for more than the raw fruit it is made of/ a co-product to); however, if \$53,550.00 was entered, you would get a message (see below) noting that the income per tonne value of a non-product can not be equal to or greater than that of Product 1 and the entry would not be allowed.

The income per tonne value of a non-product can not be equal to or greater than that of Product 1. Please refer to the User Guide for an explanation of this issue and suggested solutions.

To progress, you would have to either make the income for Co-Product 1 \$53,547.50 or less, reconfigure your co-product to be a product (perhaps even as Product 1, but Products 2 and 3 will also suffice as they do not impact lost-margin offsets) in your allocations. For some non-products, it may just be easier to put the maximum income in the cell and make notes [in the notes boxes] as to what has happened and what the actual figure is – the Income data has no other impacts on calculations outside of the application of credits against the True Cost of Waste.

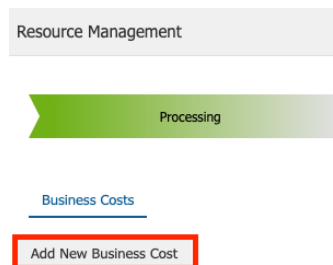
3. Click **Next** button to move to the [Business Costs step](#).

Note: If you close this/ the Wizard window or click **Cancel**, your New Assessment will be deleted from the system. In the event that the system times out or the browser window or tab is closed, the system will save a draft of the assessment. See [How to Search for an Assessment](#) so as to how to find the saved draft.

Step 6 – How to Specify Business Costs

This page is used to input the business costs (covering both energy and system costs as per ISO 14051), of your operations, as related to the product(s) and time period being assessed [N.B. this will be repeated for each product life cycle selected].

1. Click **Add New Business Cost** button.



2. Choose a business category from the drop-down list.

A screenshot of a web application interface for 'Business Costs'. At the top, there is a blue link labeled 'Business Costs' and a grey button labeled 'Add New Business Cost'. Below the button is a table with the following columns: 'Business Cost', 'Cost per life cycle stage (\$)', 'Carried over cost', 'Total Cost', 'Portion of cost related to material losses (\$)', and 'Actions'. The 'Business Cost' column has a dropdown menu open, showing a list of categories: Electricity, Facilities, Freight, Gas, Management, Other, Rent, Storage, and Wages. To the right of the table is a 'Notes' section with a text area and a 'Save Notes' button.

3. Specify cost in **Cost per time life cycle stage (\$)** column and click **Save** Button. Remember you are entering the total cost for the time period defined previously for this life cycle stage.

Note: Portion of cost related to material losses (\$) will be automatically calculated when **Cost per life cycle stage (\$)** is entered.

In alignment with ISO 14051 DIRECT apportions costs attributable to material loss, as a proportion of the mass of material inputs that flow into material losses/non-product outputs, which is used to calculate these 'indirect' business costs related to material losses.

Going beyond ISO 14051, and as noted in [Step 5](#), DIRECT uses non-product material destination income to offset the costs of material loss that DIRECT reports on, relative to product income (i.e. accounting only for the lost margin of not turning material inputs into products). Therefore, this column may contain lost-margin offsets/credits.

To add more Business Costs categories click **Add New Business Cost** button, choose category and input data in the field. Categories currently include: Electricity, Gas, Rent, Wages, Management, Facilities, Storage, Freight, Other. Electricity and Gas being the obvious energy costs, while the remainder may be considered systems costs, as per ISO 14051.

If you add an 'Other' category – a text box **Notes/details for the business costs included under "Other"** is presented for you to enter notes in.

Business Costs

Add New Business Cost

Business Cost	Cost per life cycle stage ...	Carried over cost	Total Cost	Portion of cost related to material losses (\$)	Actions
Facilities	\$50,000.00	\$0.00	\$50,000.00	\$5,001.28	
Electricity	\$7,000.00	\$0.00	\$7,000.00	\$700.18	
Wages	\$150,000.00	\$0.00	\$150,000.00	\$15,003.83	
Rent	\$5,000.00	\$0.00	\$5,000.00	\$500.13	
Other	\$500.00	\$0.00	\$500.00	\$50.01	

Notes/details for the business costs included under "Other"

Unspecified 'Other' costs accrued this assessment.

Notes

- If your assessment includes only one product life cycle stage (e.g., Processing) – as specified in [Step 2](#), clicking **Finish** will save the assessment and take you to the [Assessment Navigator](#) tab for your assessment. Clicking **Next** will take you to [Step 7 – Life Cycle Stage Carry Over](#).

Step 7 – Life Cycle Stage Carry Over (only applicable for multiple life cycle stage assessments)

1. Life Cycle Stage Material Input Carry Over (via the Wizard)

If the assessment concerns multiple life cycle stages, clicking **Next** on the **Resource Management** page of the **Create Assessment Wizard** will check whether you would like to use the outputs from the current life cycle stage as the inputs for the next product life cycle stage. For example, processing through to distribution.

Would you like to bring through the previous stage product(s) to the next life cycle stage?


Clicking **Yes** will pre-populate the Material Inputs for the next life cycle stage. These inputs will include only material mass (and associated cost) specified with/flowing to the **Products 1 – 3** destinations in the previous life cycle stage – maintaining mass and cost balance for material flows. These values can be edited once carried over, if required (impacting mass and cost balance). If you click **No** the Material Inputs for the next stage will all need to be entered manually and product mass and cost balance will not be maintained by DIRECT (though they may be correct if entered with accurate/balanced material flow data).

2. Material Input Merge

You have the option to combine multiple materials into one input from a previous life cycle stage using the merge function.

Would you like to merge the material inputs of the product(s) being carried over?

Clicking “Yes” will bring up the **Merge** dialogue box, where you can specify a name for the new merged product inputs. For example – if during the previous stage the inputs were flour, sugar and eggs which were combined into muffins, you could merge the “Food Ingredients” category for Product 2 and rename it as “Blueberry Muffin”. This will then populate your Material Inputs for the next life cycle stage with an item labelled “Blueberry Muffin” which will have the mass and cost of the product (output) from the previous stage.

If the material name is not in the data base you will have to create a new name, by clicking on the ‘**Add material name**’ icon,  and then confirming the process.

Note: If you choose to merge – materials within every category will be merged for each product type. Categories cannot be merged with each other.

Resource Management / Merge Dialog

#	Category	Product	Name for Merged Inputs
1	Food Ingredients	Product 2	Blueberry Muffin
2	Food Ingredients	Product 1	No results
3	Packing Materials	Product 1	
4	Packing Materials	Product 2	

Are you sure you want to create new material with name Blueberry Muffin?

Once all your names for the Merged Inputs are entered, clicking “Ok” will take you to your prefilled material inputs for the next life cycle stage.

3. Material Inputs Tab

When presented with the Material Inputs tab, if nothing has been carried over, you will have to enter all your data and tags from scratch (see [Step 3](#)). However, if data has been carried over, you will still need to specify if each item ends up in a product, and whether it is packaging or not [with a handy indicator of product designation for material inputs carried over- P1, P2 etc. – in the second column]. The other fields are also editable if they need to be adjusted. Data can be added to each life cycle stage by repeating the steps outlined above.

Create Assessment Wizard / Resource Management

Processing
Distribution
Wholesale

Material Inputs

Category		Product/Co-Product material ...	Packaging	Mass per time period (t)	Cost per time period (\$)	Food (%)	Inedible pa...	Data collection ty...	Actions
▼ Food Ingredients	⊕								
Blueberry Muffin	P2	Product 2		26.360	\$47,135.00	100%	0%	Measured	
Plain Muffin	P1	Product 1		101.570	\$173,195.00	100%	0%	Measured	
▼ Packing Materials	⊕								
Plain Muffin Packing	P1	Product 1	Yes	11.600	\$5,750.00			Measured	
Blueberry Muffin Packing	P2	Product 2	Yes	2.850	\$1,425.00			Measured	
Total				142.380	\$227,505.00				

Notes

Note: The Product/Co-Product material destinations and Packaging selection column entries will be defaulted to nothing/”No” so you will have to select the appropriate entry for each material input, when carrying products over.

Product/Co-Product material destinations	Packaging
No	
No	
No	No
No	No

Note: If you want to maintain mass and cost balance for product material flows it is best to add new material inputs, at this stage, as editing the mass and cost for a carried over material input does not flow backward to the previous life cycle stage. This is the case while in the Wizard and after. The calculations are done via the Wizard carry over function itself.

4. Food and Non-Food Material Destinations Tabs

You will have to specify where the input material inputs for this life cycle stage end up, as per [Step 4](#).

- Output Costs and Income for Multiple Life Cycle Stage Assessments

These values can be entered in the same manner as the previous life cycle stage (see [Step 5](#)). If the value of the product in this life cycle stage is unchanged from the previous one, please enter the same amounts for “Income”. If the life cycle stage adds value to the product – for example through processing or moving from wholesale to retail, then the income amount would be greater than that of the previous stage.

Create Assessment Wizard / Resource Management

Processing
Distribution
Wholesale

Material Outputs - Cost/Income

Destination	Output Cost (as related to material loss)	Income	Actions
Product 1		\$2,100,000.00	
Product 2		\$63,000.00	
(Loss) Food Rescue	\$100.00	\$1,000.00	
▼ (Loss) Food			
Landfill	\$150.00		
▼ (Loss) Non-Food			
Landfill	\$150.00		

Notes

Save Notes

Cancel Back Next

- Business Costs for Multiple Life Cycle Stage Assessments

Business costs incurred during the current life cycle stage can be entered in the same manner as the previous stage. The column **Carried over cost** shows the product costs carried over from the previous life cycle stage. Additional cost categories and/or additional costs for cost categories already used in the assessment can be entered in the **Cost per life cycle stage (\$)** column.

Create Assessment Wizard / Resource Management

Processing
Distribution
Wholesale

Business Costs

Add New Business Cost

Business Cost	Cost per life cycle stage (\$)	Carried over cost	Total Cost	Portion of cost related to material losses (\$)	Actions
Rent	\$0.00	\$4,499.87	\$4,499.87	\$195.69	
Electricity	\$0.00	\$5,399.85	\$5,399.85	\$234.83	
Other	\$0.00	\$449.99	\$449.99	\$19.57	
Wages	\$0.00	\$35,998.98	\$35,998.98	\$1,565.52	
Facilities	\$0.00	\$17,999.49	\$17,999.49	\$782.76	
Freight	\$10,000.00	\$0.00	\$10,000.00	\$434.88	

Notes

Cancel
Back
Next

- Life Cycle Stage Management

If at any stage you would like to add or remove life cycle stages from the assessment, click the small gear icon in the top left corner of the window.

Create Assessment Wizard / Resource Management

Processing
Distribution
Wholesale

Material Inputs

Add New Category

Category		Product/Co-Product materi...	Packaging	Mass per time period (t)	Cost per time period ...	Food (%)	Inedible pa...	Data collection t...	Actions
▼ Food Ingredients	⊕								
Blueberry Muffin	P2	Product 2		25.833	\$46,192.30	100%	0%	Measured	
Plain Muffin	P1	Product 1		96.492	\$164,535.25	100%	0%	Measured	
▼ Packing Materials	⊕								
Plain Muffin Packing	P1	Product 1	No	11.020	\$5,462.50			Measured	
Blueberry Muffin Packing	P2	Product 2	No	2.793	\$1,396.50			Measured	
Total				136.138	\$217,586.55				

Notes

Cancel
Back
Next

This will bring up the Manage Assessment LC Stages Dialogue Box:

Resource Management / Manage Assessment LC Stages

Available LC Stages

Primary Production
Post harvest
Retail
Food Service

Add

Used on Assessment

Processing
Distribution
Wholesale

Remove

In case of the Lifecycle Stage removal all the data entered for this stage will be deleted.

CancelSave

This will allow you to add and remove lifecycle stages from the assessment as required.

Note: If you remove a life cycle stage, all data entered for that stage will be deleted.

Create Assessment Wizard / Resource Management

Processing
Distribution
Wholesale

Business Costs

Add New Business Cost

Business Cost	Cost per life cycle stage (\$)	Carried over cost	Total Cost	Portion of cost related to material losses (\$)	Actions
Freight	\$0.00	\$9,565.12	\$9,565.12	\$135.88	
Rent	\$0.00	\$4,304.18	\$4,304.18	\$61.15	
Electricity	\$0.00	\$5,165.02	\$5,165.02	\$73.38	
Other	\$0.00	\$430.42	\$430.42	\$6.11	
Wages	\$0.00	\$34,433.46	\$34,433.46	\$489.17	
Facilities	\$0.00	\$17,216.73	\$17,216.73	\$244.58	
Storage	\$5,000.00	\$0.00	\$5,000.00	\$71.03	

Notes

CancelBackFinish

Click **Finish** once data has been entered for all life cycle stages to go to the [Assessment Navigator](#) tab for your assessment.

Note: After using the Wizard to create an assessment with multiple life cycle stages, the tables (excepting 'Carried over cost' on the Business Costs tab) are not connected between life cycle stages and mass and cost balance, for product material flows, is not maintained if fields are edited.

Working with the Assessment Navigator tab of your Assessment

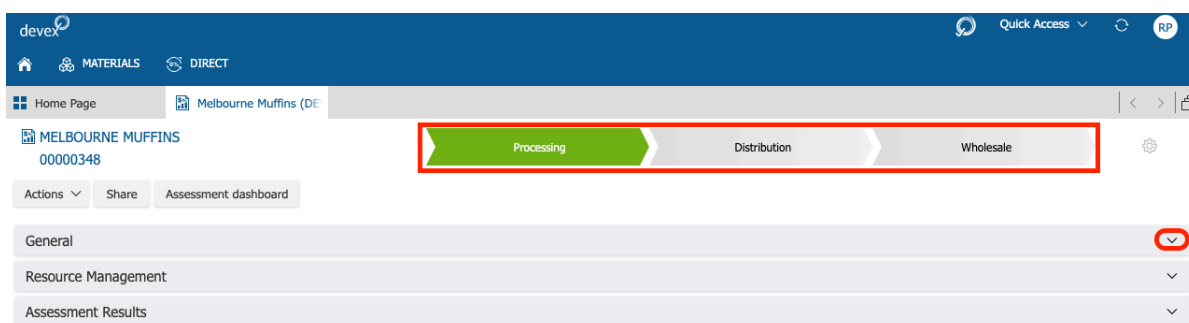
The Assessment Navigator tab, accessed from the Tab bar, shows an overview of your assessment and is divided into three sections: **General**, **Resource Management** and **Assessment Results**. Here you can:

- View your assessment data, for each life cycle stage
- Copy or Delete the assessment
- Share the assessment
- Edit the assessment
- Export data to Excel
- View your Assessment Results via charts and tables
- Access the Assessment Dashboard window to view aggregated life cycle stage data and compare assessments

View your Assessment Data, for each Life Cycle Stage

You can select the life cycle stage of the assessment that you would like to view by clicking on the ribbon at the top of the Assessment Navigator tab. The stage that is currently being displayed will be coloured green.

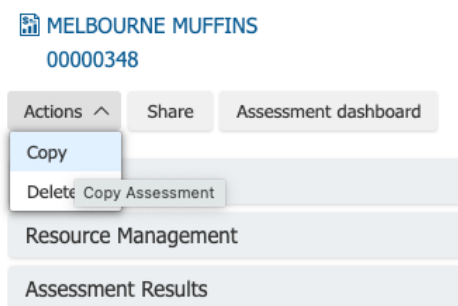
The assessment data is displayed in three sections: **General**, **Resource Management** and **Assessment Results**. These sections can be expanded or collapsed by clicking the arrow to the right.



Copy or Delete the Assessment

How to make a Copy of an assessment

1. Click the **Actions** button in the [Assessment Navigator](#) tab of the assessment you want to copy.
2. Choose **Copy** from the drop-down list.



3. In the **Copy Assessment pop-up window** input general information.

The following fields are editable:

- Assessment name
- Product classification
- Assessment time frame
- Location
- Data collection type.
- Comments

4. Click the **Ok** button to save changes.

Copy Assessment

Assessment name * Melbourne Muffins 21-22

Product classification * Bread and other bakers' wares

Assessment time frame * 01/07/2021 30/06/2022

Location AUSTRALIA

Data collection type Projected

Auditor Piloting, RMIT

Phone number

Company name Muffin Maka

Organisation level Melbourne PDW

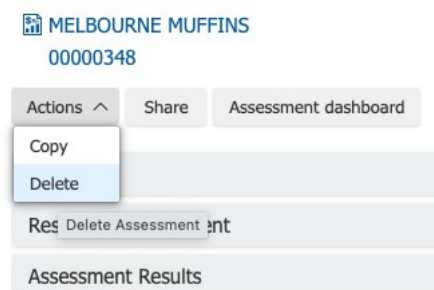
Comments Projected Melbourne Muffin production for 2021-22

Cancel Ok

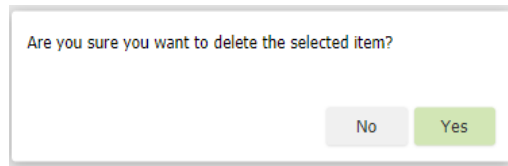
Note: Copied assessments with multiple life cycle stages are the equivalent to a completed assessment, created after using the Wizard, in that the tables (excepting 'Carried over cost' on the Business Costs tab) are not connected between life cycle stages and mass and cost balance, for material flow, is not maintained if fields are edited. If editing such copied assessments with multiple life cycle stage, you will need to manually ensure mass and cost balance between stages when any changes are made (likewise for any edits that have affects between stages for any models with multiple life cycle stages). You will have to use the Wizard and create an assessment from scratch if you want to maintain mass and cost balance for product material flows between life cycle stages.

How to Delete an assessment

1. Click the **Actions** button in the [Assessment Navigator](#) tab of the assessment you want to copy.
2. Choose **Delete** from the drop-down list.



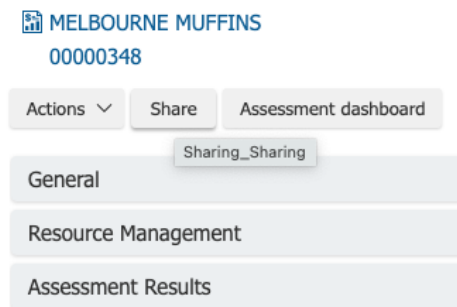
3. Click the **Yes** button to confirm deletion.



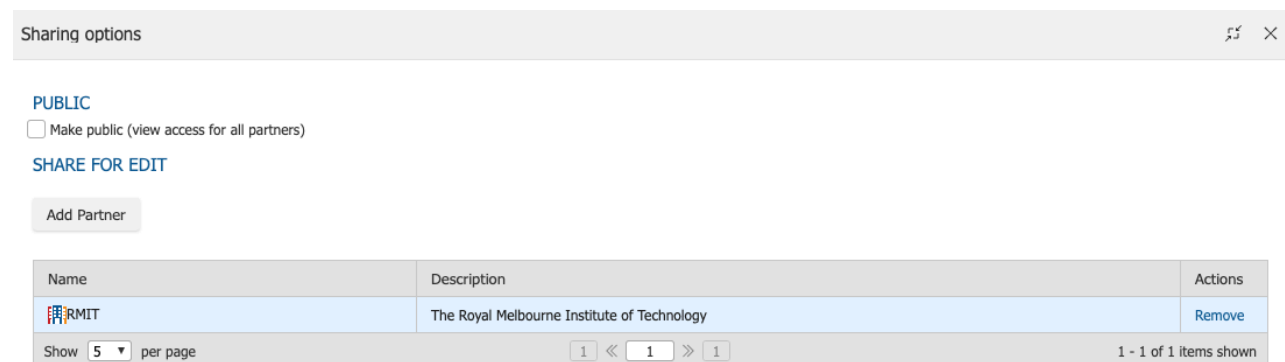
Share the Assessment

How to Share an assessment

Note: Assessments are automatically shared with other DIRECT users in your organisation.



1. To edit the sharing settings, click **Share** in the [Assessment Navigator](#) tab of the assessment you want to share.
2. You can make your assessment visible to all organisations using DIRECT, including RMIT by selecting the **make public** checkbox.
3. You can remove access to other users within your organisation by clicking **Remove** in the **Actions** column.



Accessing and Editing the Assessment Data

How to Access and Edit the assessment data

1. The **General** and **Resource Management** sections give you access to the assessment data entered and can be edited when viewing.
2. The data in the **General** section can be edited by clicking the **Edit** button to the top left.

MELBOURNE MUFFINS
0000348

Processing Distribution Wholesale

Actions Share Assessment dashboard

General

Edit Export to Excel

Assessment name: Melbourne Muffins Auditor: Piloting, RMIT

Product classification: Bread and other bakers' wares Phone number:

Assessment time frame: 01/07/2020 30/06/2021 Company name: Muffin Maka

Location: AUSTRALIA Organisation level: Melbourne PDW

Data collection type: Measured Comments:

3. Navigate to view and edit the various data elements of **Resource Management** by clicking the tabs at the top of the section.
4. The data in the **Resource Management** section can be edited or deleted by clicking **Edit** or **Delete** in the **Actions** column on each row

MELBOURNE MUFFINS
0000348

Processing Distribution Wholesale

Actions Share Assessment dashboard

Resource Management

Export to Excel

Material Inputs Food Material Destinations Non-Food Material Destinations Material Outputs - Cost/Income Business Costs

Add New Category

Category	Product/Co-Product material d...	Packaging	Mass per time period (t)	Cost per time period (\$)	Food (%)	Inedible part...	Data collection type	Actions
Food Ingredients								
Flour, Wheat	Product 1,Product 2,Co-Product 1		80.000	\$16,000.00	100%	0%	Measured	Edit Delete
Sugar	Product 1,Product 2,Co-Product 1		20.000	\$20,000.00	100%	0%	Measured	Edit the grid row
Eggs	Product 1,Product 2,Co-Product 1		10.000	\$35,000.00	90%	10%	Measured	
Canola Oil	Product 1,Product 2,Co-Product 1		10.000	\$34,000.00	100%	0%	Measured	
Baking Powder	Product 1,Product 2,Co-Product 1		2.500	\$2,500.00	100%	0%	Measured	
Milk	Product 1,Product 2,Co-Product 1		20.000	\$140,000.00	100%	0%	Measured	
Blueberries	Product 2		1.000	\$4,000.00	100%	0%	Measured	
Packing Materials								
6 Pack Plastic Container	Product 1	Yes	4.000	\$4,000.00			Measured	
4 Pack Plastic Container	Product 2	Yes	1.000	\$1,000.00			Measured	
Cardboard Box	Product 1,Product 2,Co-Product 1	Yes	10.000	\$2,500.00			Measured	
Total			158.500	\$299,000.00				

Notes: Testing 4 packs for blueberry

Save Notes

Note: If you clicked "Finish" in the **Create Assessment Wizard / Pop-up Windows**, after entering the parameter data in Pop-up Window 2, this section will be empty, but the assessment will not be considered a draft. If you enter your resource management data at this stage, you miss out of the life cycle stage carry over and prompting functionality of the Wizard. Please also remember for assessments with multiple life cycle stage, you will need to manually ensure mass and cost balance between stages when any changes are made in the Assessment Navigator (likewise for any edits that have affects between stages for any models with multiple life cycle stages). You will have to use the Wizard and create an assessment from scratch if you want to maintain mass and cost balance for product material flows between life cycle stages.

Export data to Excel

How to Export data to Excel

Each section has an “**Export to Excel**” button in the top left corner, under the section label. Clicking this will download an Excel spreadsheet file to your computer that contains all of the data in that section in tabulated form.

Resource Management

Export to Excel

	A	B	C	D	E	F	G	H
	Category	Product/Co-Product mat	Packaging	Mass per time period (t)	Cost per time period (\$)	Food (%)	Inedible parts (%)	Data collection type
2	Food Ingredients							
3	Flour, Wheat	Product 1,Product 2,Co-Product 1		80.000	\$16,000.00	100%	0%	Measured
4	Sugar	Product 1,Product 2,Co-Product 1		20.000	\$20,000.00	100%	0%	Measured
5	eggs	Product 1,Product 2,Co-Product 1		10.000	\$35,000.00	90%	10%	Measured
6	Canola Oil	Product 1,Product 2,Co-Product 1		10.000	\$34,000.00	100%	0%	Measured
7	Baking Powder	Product 1,Product 2,Co-Product 1		2.500	\$2,500.00	100%	0%	Measured
8	Milk	Product 1,Product 2,Co-Product 1		20.000	\$140,000.00	100%	0%	Measured
9	Blueberries	Product 2		1.000	\$4,000.00	100%	0%	Measured
10	Packing Materials							
11	6 Pack Plastic Container	Product 1	Yes	4.000	\$4,000.00			Measured
12	4 Pack Plastic Container	Product 2	Yes	1.000	\$1,000.00			Measured
13	Cardboard Box	Product 1,Product 2,Co-Product 1	Yes	10.000	\$2,500.00			Measured
14	Total			158.500	\$259,000.00			

◀ ▶
Material Inputs
Food Material Destinations
Non-Food Material Destinations
Material Outputs - Cost Income
Business Costs
+

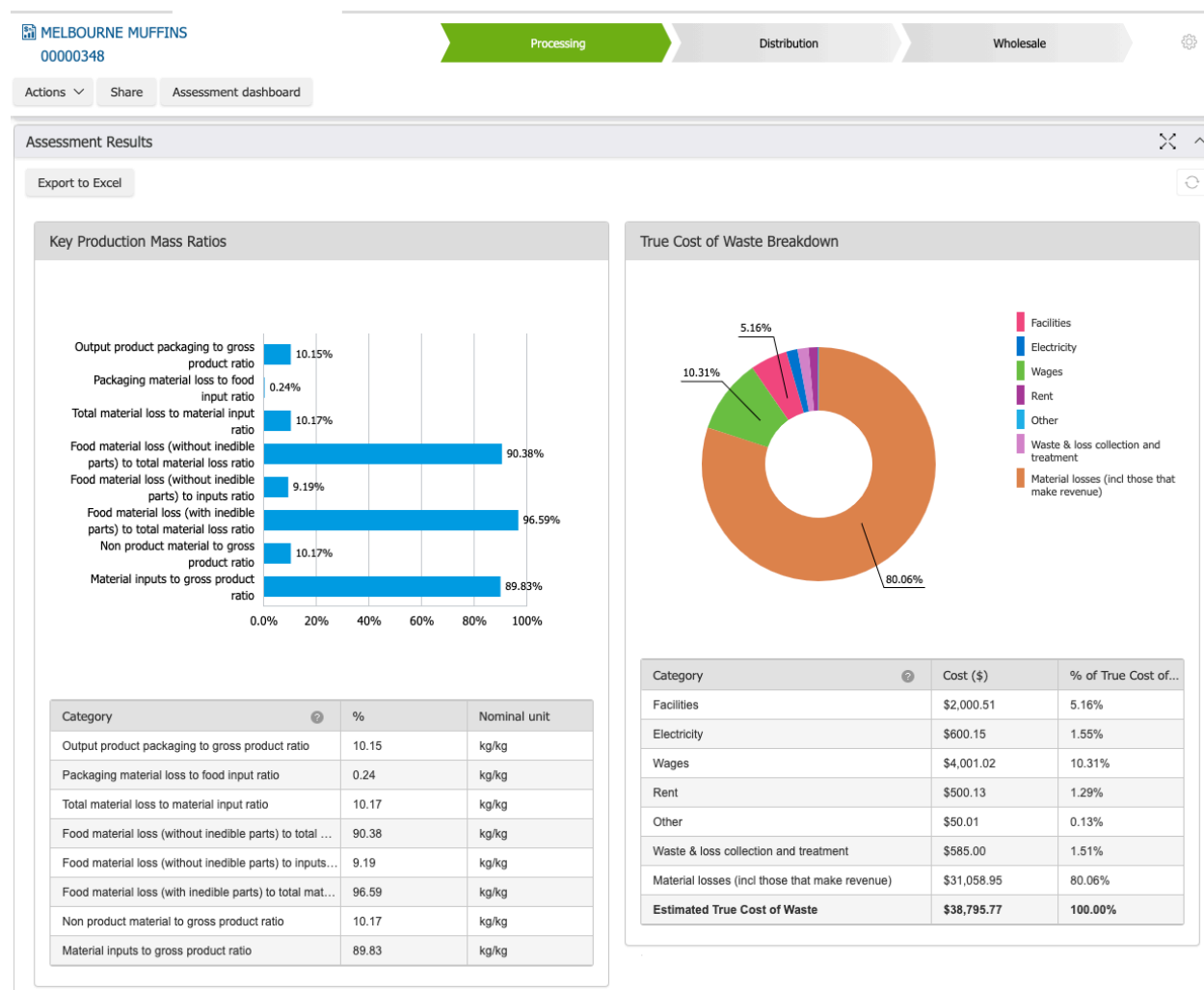
View your Assessment Results via Charts and Tables

Assessment Results

The **Assessment Results** section displays summary information in charts and tables, divided into the following segments:

- Key Production Mass Ratios
- Key Production Financial Ratios
- True Cost of Waste Breakdown
- Food Material Losses – Per Destination

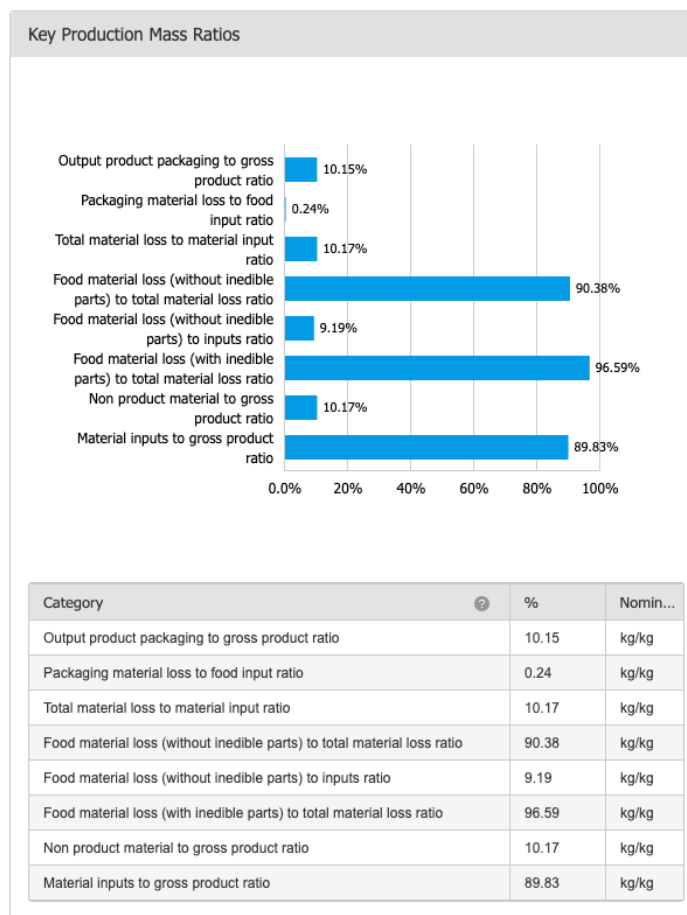
The collection of segments display data according to each product life cycle stage reported. Select from the reported life cycle stages (e.g., processing, distribution, wholesale) at the top of the Assessment Navigator tab to view corresponding results. The selected stage will appear green.



Each segment displays graphical data in a chart at the top and detailed data in a table below.

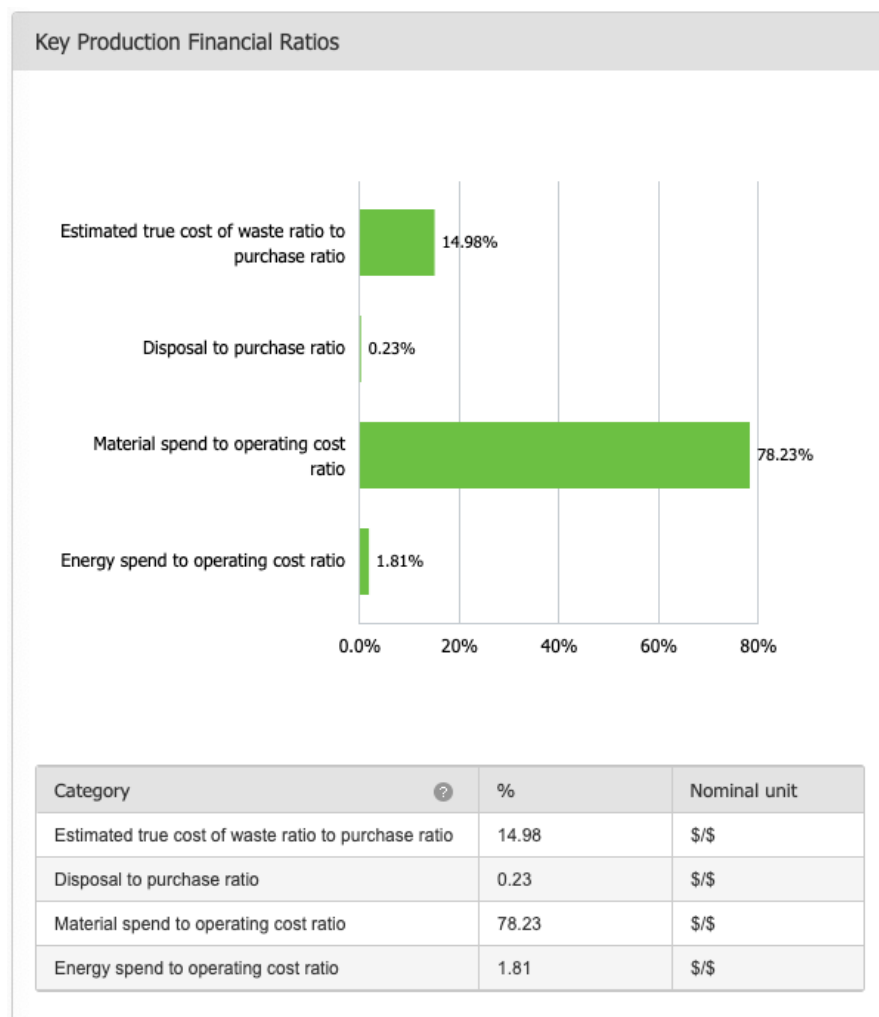
Results are shown for the following Key Production Mass Ratios

- **Output product packaging to gross product ratio:** This measures, by weight, the ratio of output product packaging to output product.
- **Packaging material loss to food input ratio:** This measures, by weight, the ratio of packaging losses compared to food material inputs. Packaging material loss includes all packaging going to food rescue and co-product, as well as other non-product losses.
- **Total material loss to material input ratio:** This measures, by weight, the ratio of material (food and non-food) losses compared to all material (food and non-food) inputs.
- **Food material loss (without inedible parts) to total material loss ratio:** This measures, by weight, the ratio of edible food material losses compared to all material losses. Total material loss includes food and non-food material going to destinations such as co-products and food rescue, as well as other non-product losses.
- **Food material loss (without inedible parts) to inputs ratio:** This measures, by weight, the ratio of edible food material losses compared to all material inputs.
- **Food material loss (with inedible parts) to total material loss ratio:** This measures, by weight, the ratio of edible and inedible food material losses compared to all material losses. Total material loss includes food and non-food material going to destinations such as co-products and food rescue, as well as other non-product losses.
- **Non-product material to gross product ratio:** This measures, by weight, the ratio of input material that is lost or discarded to a non-product destination as compared to output product.
- **Gross product to material inputs ratio:** This measures, by weight, the ratio of output product compared to all material inputs.



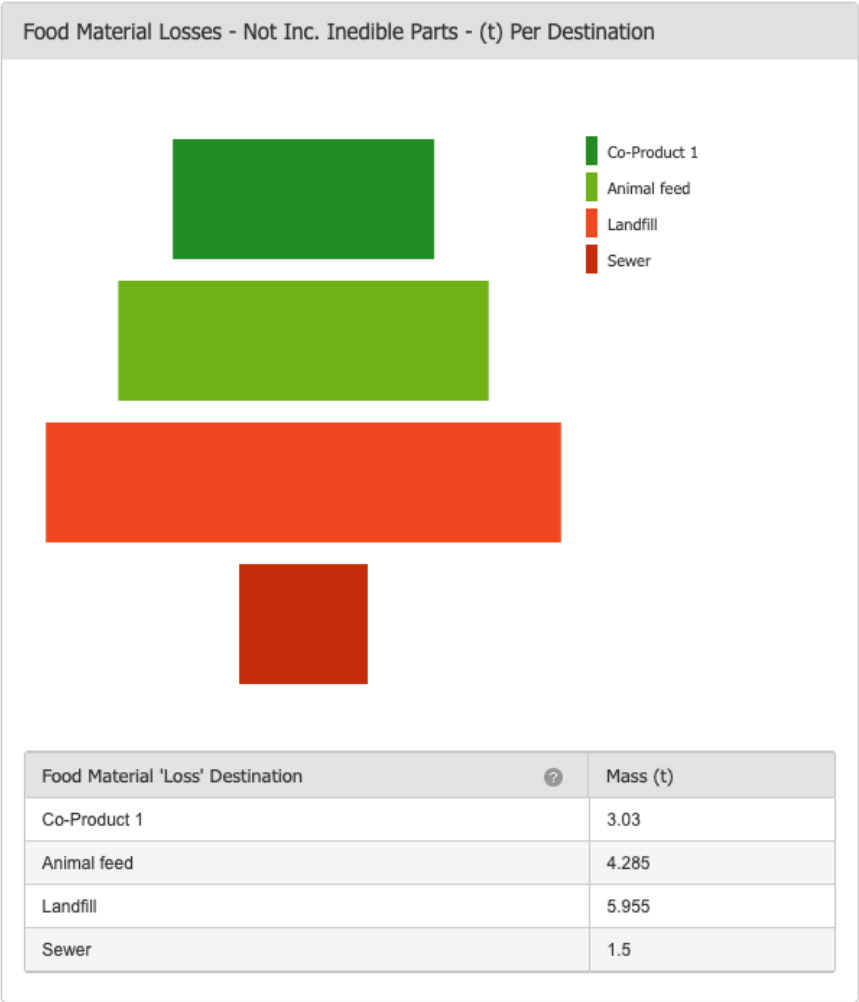
Results are shown for the following Key Production Financial Ratios

- **Estimated True Cost of Waste ratio to purchase ratio:** This measures the ratio of the estimated True Cost of Waste as compared to the cost of material inputs (food and non-food). Non-food inputs could include packaging, auxiliary materials etc.
- **Disposal to purchase ratio:** This measures the ratio of material loss output costs as compared to the cost of material purchase inputs (food and non-food) ratio. Material loss costs include costs such as landfill, recycling, etc.
- **Material spend to operating cost ratio:** This measures the ratio of the cost of material inputs (food and non-food) as compared with all operating costs (business costs such as energy, labour, overheads etc.). Non-food materials could include packaging, auxiliary materials etc.
- **Energy spend to operating cost ratio:** This measures the ratio of the business costs of electricity and gas as compared with all operating costs (business costs such as energy, labour, overheads etc.).



Results are shown for **Food Material Losses – Not Inc. Inedible Parts – (t) Per Destination**

This displays the mass of non-product food material losses (excluding inedible parts) stacked as a nominal hierarchy, descending in order of preference – following guidance provided by Champions 12.3 (champions123.org). Starting with destinations that prevent food materials from leaving the human food supply chain (such as co-products and food rescue), the hierarchy then descends – from high to low valorisation – the list of (potential food loss and waste) destinations that do leave the human food supply chain, as per the FLW Standard.

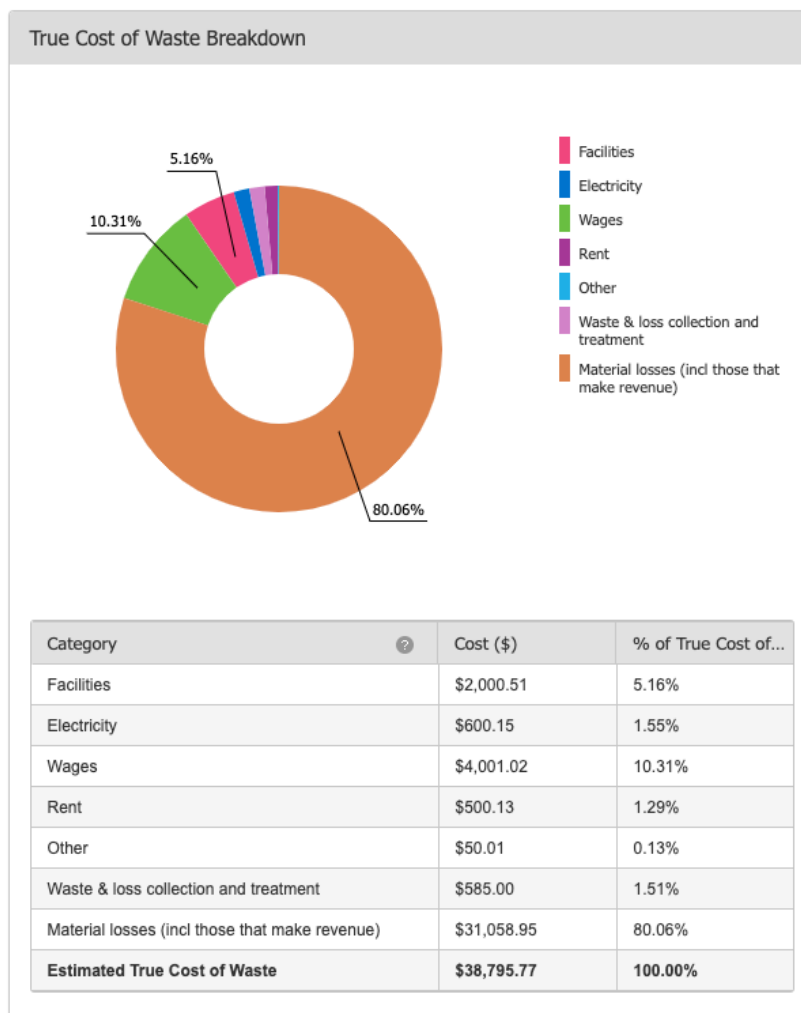


Results are shown for the True Cost of Waste Breakdown

This displays the 'True Cost of Waste', as per WRAP & ISO 14051 [which offers a general framework for material flow cost accounting (MCFA)]. The associated costs of material flows, within the process/life cycle stage assessed, have been separated into product and non-product costs. The results here show all direct and indirect costs of the non-product material losses in the process. This includes:

- Indirect business costs (covering both energy and system costs) related to the proportion of material losses
- Direct waste & loss collection and treatment (waste management) costs
- Direct costs of material losses

Note: Also includes any lost-margin offsets (against the direct cost of material loss and associated indirect business costs)/credits that reduce the True Cost of Waste, for income on non-product material destinations.



Access the Assessment Dashboard window to Aggregate Life Cycle Stages and Compare Assessments

Assessment Dashboard

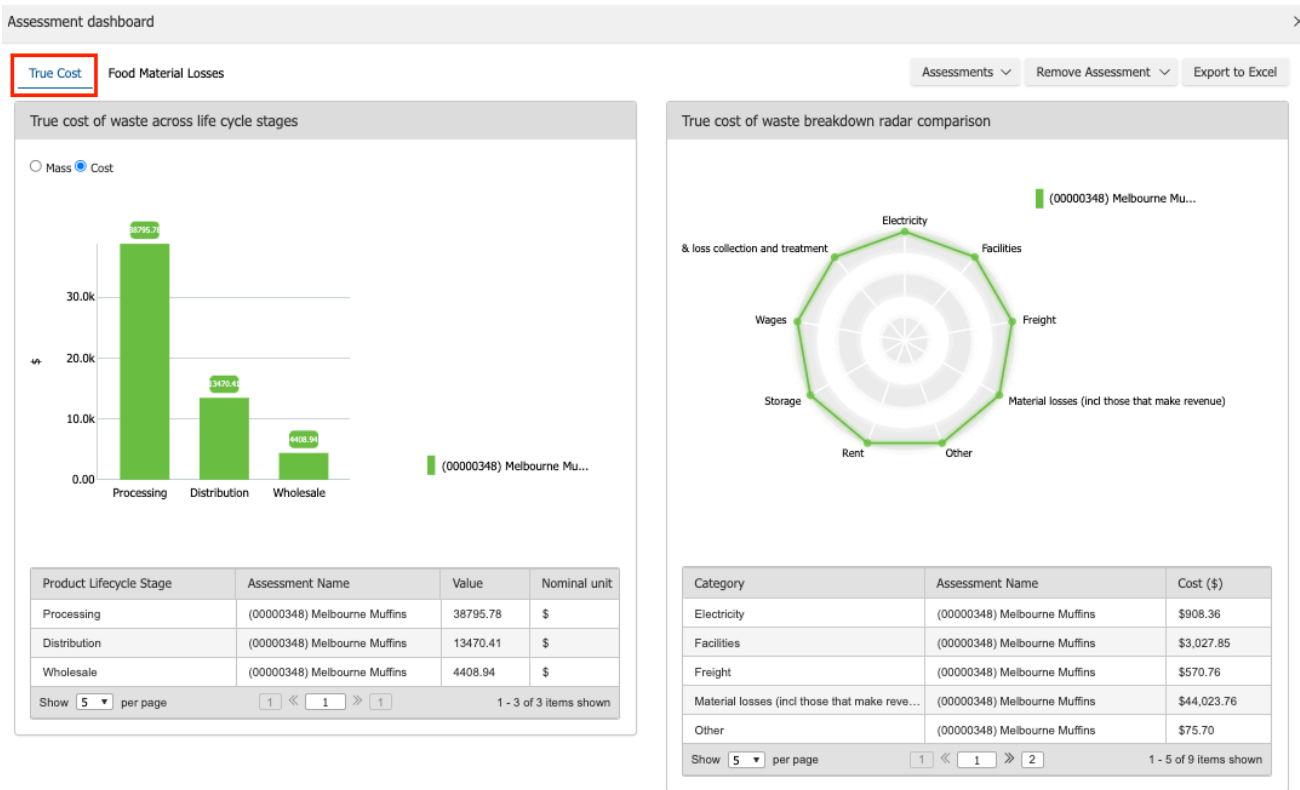
You can view combined/aggregated data, from all product life cycle stages (where relevant), within an assessment, in the **Assessment Dashboard** window.

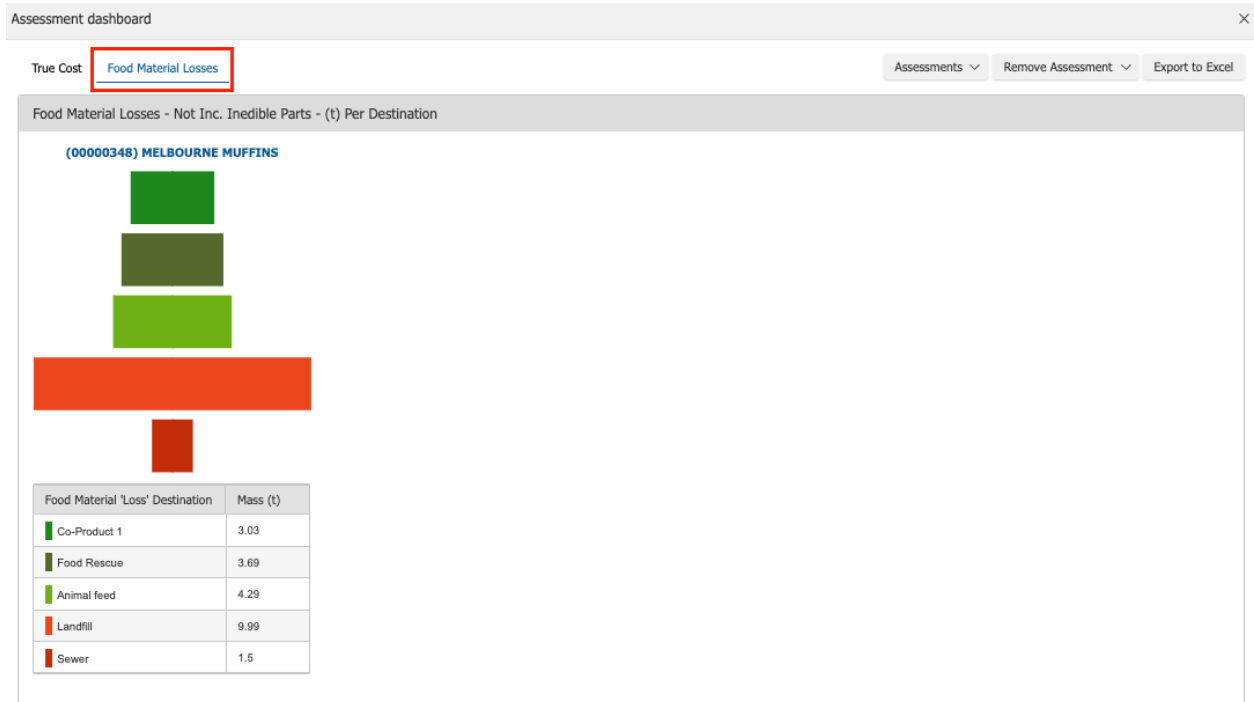
The **Assessment Dashboard** also allows you to compare those aggregated results between assessments (up to four) created by yourself or other DIRECT users in your organisation.

1. To access the **Assessment Dashboard** window, click the **laand app** button – on the Assessment Navigator tab of the assessment you want to aggregate and/or compare to.



2. This will open the **Assessment Dashboard** window, which can display either **True Cost** or **Food Material Losses**. Results can be shown in terms of either **Mass** or **Cost** by selecting the appropriate metric at the top of the **True cost of waste across life cycle stages** graph.





1. The Assessment Dashboard can show comparative results between multiple assessments. To add an assessment for comparison, click **Assessments** and choose **Add Assessment(s)**. To remove an assessment, click **Remove Assessment**.
2. Clicking **Add Assessment(s)** will open the **Assessment Dashboard/Assessment Search** window. Choose one of your assessment(s) from the list or use search fields to display a full list of assessments, including those from other users in your organisation.

Assessment dashboard / Assessment Search

Basic **Search**

Basic

Assessment name *Muffin* Code 349

Status Selected all

Use '*' wildcard to specify a partial match. Search is case-insensitive.

Recent

<input type="checkbox"/>	Assessment name	Code	Status	Modified
<input type="checkbox"/>	Melbourne Muffins 21-22	00000349	Development	
<input type="checkbox"/>	Melbourne Muffins	00000348	Development	
<input type="checkbox"/>	Blueberries	00000238	Development	
<input type="checkbox"/>	ReThink Soup	00000233	Development	
<input type="checkbox"/>	Red Star	00000200	Development	

Show 5 per page 1 << 1 >> 2 1 - 5 of 10 items shown

Cancel Select

3. Select the assessment(s) you would like to add and hit **Select**.

Assessment dashboard / Assessment Search

Edit Search New Search

Results

Filter Total rows: 2

<input type="checkbox"/>	Assessment name	Code	Status	Modified
<input type="checkbox"/>	Melbourne Muffins	00000348	Development	
<input checked="" type="checkbox"/>	Melbourne Muffins 21-22	00000349	Development	

Show 15 per page 1 << 1 >> 1 1 - 2 of 2 items shown

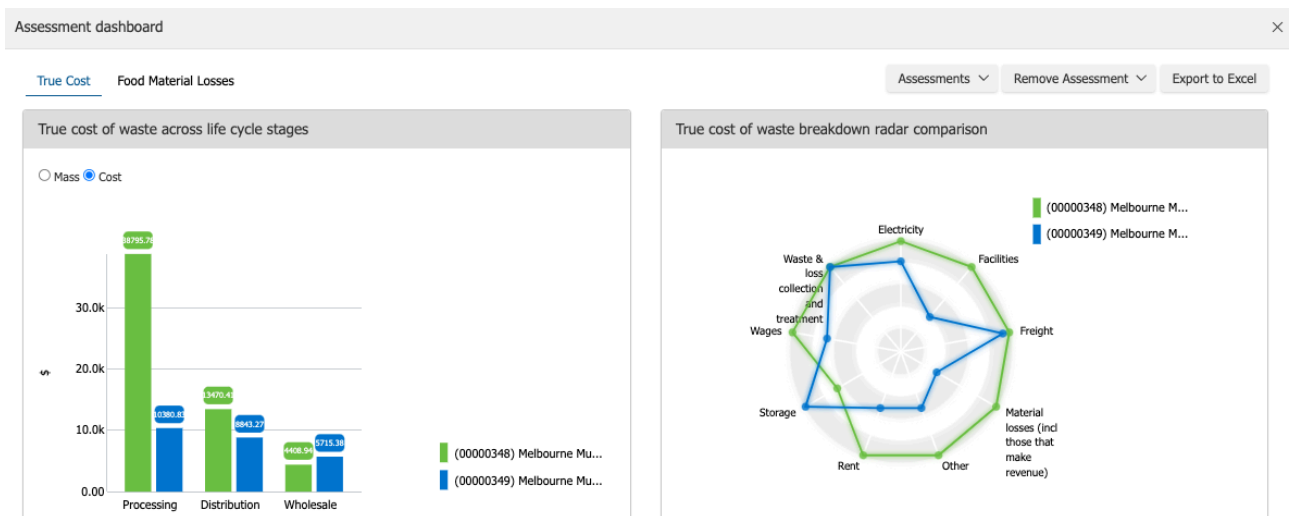
Cancel Select all **Select**

Charts will now display data comparing the selected assessment(s).

The **Assessment Dashboard – True Cost** tab displays summary information [via charts with tables below] for up to four assessment(s) divided into the following 4 segments:

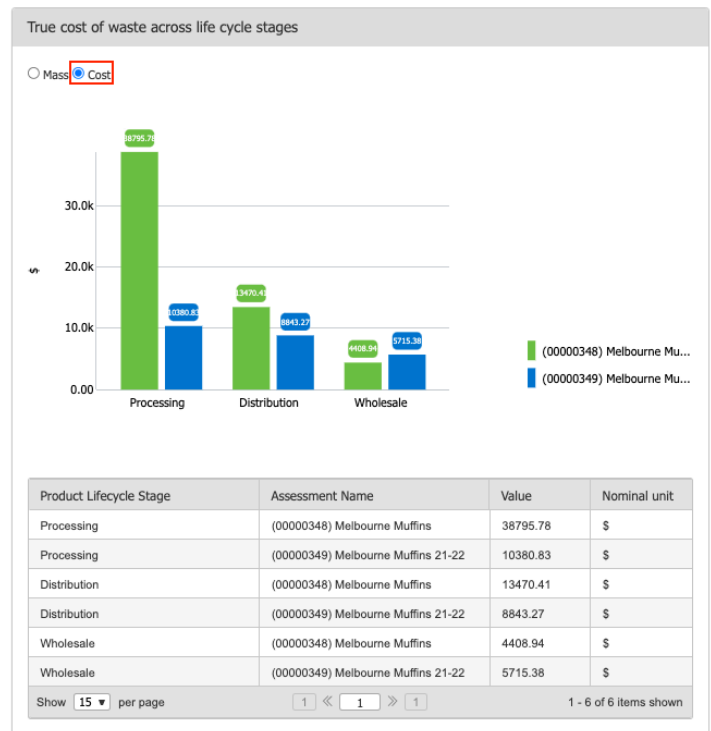
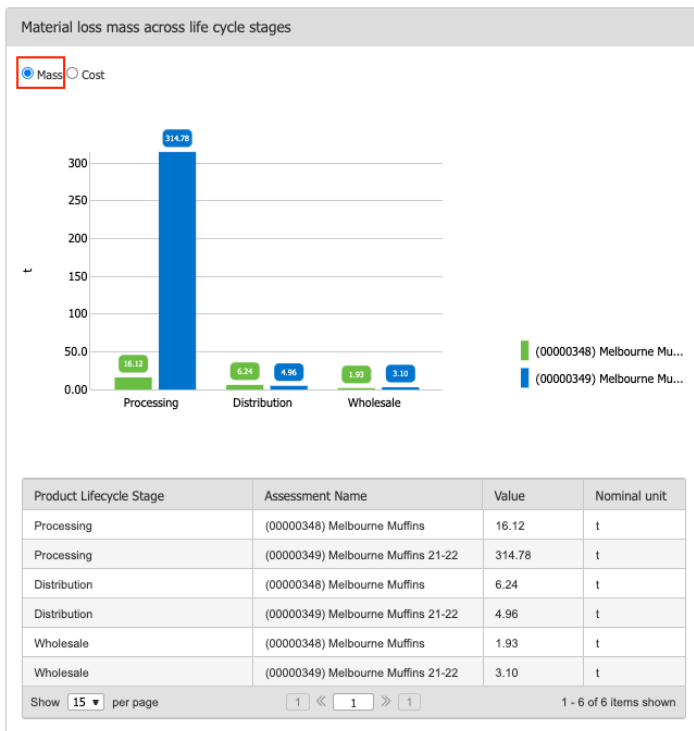
- Material Loss Costs Across Life Cycle Stages / Material Loss Mass Across Life Cycle Stages
- True Cost of Waste
- Key Production Ratios Comparison Assessments
- Key Financial Ratios Comparison Assessments

Scroll down to view Key Production Ratios and Key Financial Ratios.



Material Loss Mass Across Life Cycle Stages & True Cost of Waste Across Life Cycle Stages

- These graphs display material loss mass (t) and true cost of waste (\$) across all reported life cycle stages for each selected assessment(s)
- Select the **Mass** or **Cost** button to alternate between units.



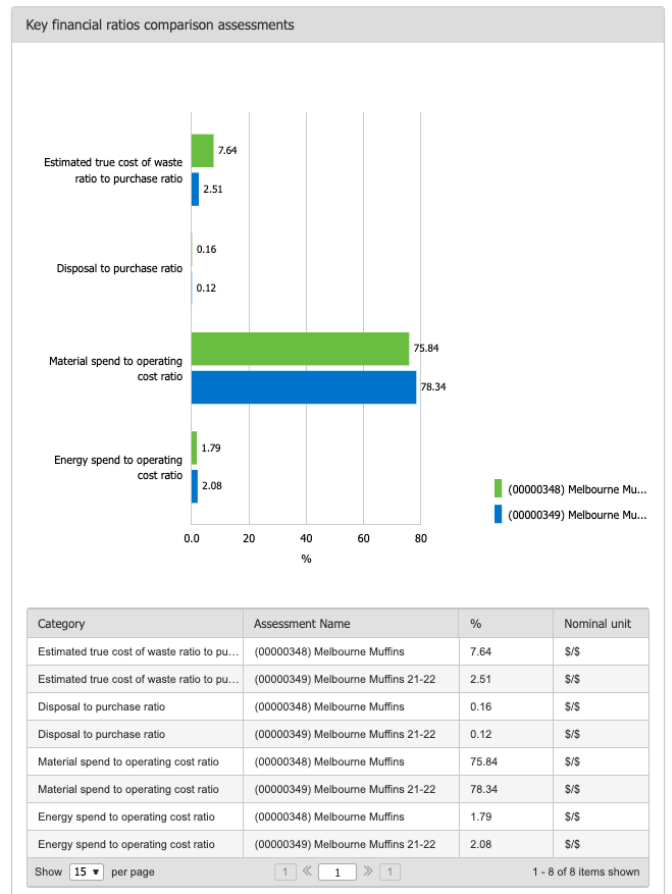
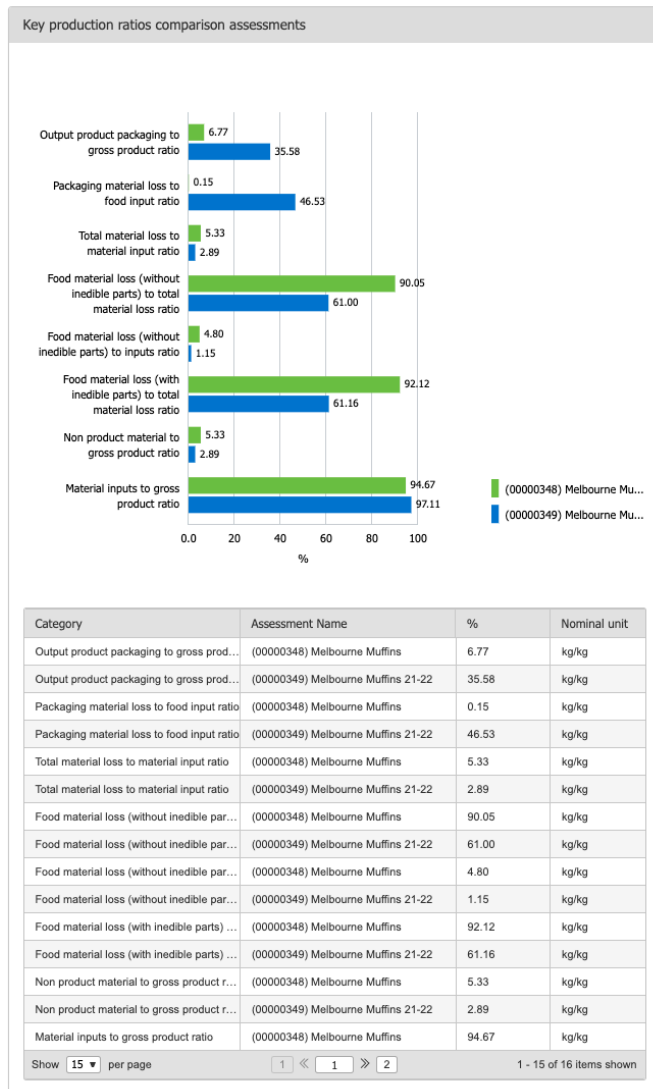
True Cost of Waste Breakdown Radar Comparison

Radar/ Spider chart provides a visual comparison of the **True cost of waste** breakdown elements aggregated across all reported product life cycle stages, between selected assessment(s).



Key Production/ Financial Ratio Comparison

These graphs show the same ratios as in the [Assessment Results](#) of an Assessment Navigator tab but are aggregated across all product life cycles and allow for comparison across assessments.



Food Material Losses

The **Assessment Dashboard – Food Material Losses** tab displays summary information [via charts with tables below] for up to four assessment(s) divided into the following two segments:

- Food Material Losses – Not Inc. Inedible Parts – (t) Per Destination
- Food Material Losses – Inedible Parts Only – (t) Per Destination



Note: To exit the **Assessment Dashboard** and return to the DIRECT interface and the [Assessment Navigator](#) tab you opened it from, click the X on the top right of the **Assessment Dashboard** window.

Glossary

Assessment	The data analysis model that you will create with your data using DIRECT, it can cover one or multiple life cycle stages.
Assessment Navigator	<p>This is the tab that contains the details of a created assessment. From an assessment's Assessment Navigator tab, accessed via the Tab bar, you can:</p> <ul style="list-style-type: none"> • Copy, share and delete the assessment • View assessment results and charts for each life cycle stage input • View and modify assessment input data • Access the Assessment Dashboard window to view results aggregated across multiple life cycle stages and compare aggregate results between [up to four] different assessments.
Assessment Dashboard	<p>You can view combined/aggregated data, from all product life cycle stages (where relevant), within an assessment, in the Assessment Dashboard window, accessed via that assessment's Assessment Navigator tab.</p> <p>The Assessment Dashboard also allows you to compare those aggregated results between assessments (up to four) created by yourself or other DIRECT users in your organisation.</p>
Business Costs	<p>The standard operating or 'business costs' associated with the production process being modelled in the assessment.</p> <p>This includes overheads such as fuel bills, wages, rent, equipment purchase/repair, asset depreciation, etc, that relate to the production process you are modelling in the assessment, i.e. if you are modelling for the whole organisation, all related business costs should be entered, however, if you're modelling a specific product, facility, etc, the business costs only relating/allocated to the modelled process should be entered, for each life cycle stage of your assessment.</p> <p>Business Cost categories currently include: Electricity, Gas, Rent, Wages, Management, Facilities, Storage, Freight, Other. Electricity and Gas being the obvious energy costs, while the remainder may be considered systems costs, as per ISO 14051.</p>
Co-Product	<p>A non-product output/ material loss destination, co-products are secondary goods that are generated during a manufacturing process and can be sold or reused profitably. For DIRECT's purposes, these have to be products that are intended for human consumption and will stay in the food supply chain. These may include 'unusable' by-products that previously had to be disposed of as waste and flow out of the chain, but are now being repurposed as consumable food products.</p> <p>N.B. In line with ISO 14051 it is advised that by-products can be considered as either material losses or products, at the discretion of the organisation.</p>
Energy Cost	<p>As per ISO 14051: 'cost for electricity, fuels, steam, heat, compressed air and other like media'</p> <p>N.B. ISO 14051 also notes that energy cost can be either included under material cost or quantified separately, at the discretion of the organisation. However DIRECT specifically allocates electricity and</p>

	gas energy costs as business costs and is not currently envisioned to map energy inputs like coal, oil, natural gas, biomass etc as material inputs.
FLW Standard	<p>The Food Loss and Waste Accounting and Reporting Standard (simply known as the FLW Standard), developed by the global and multi-stakeholder FLW Protocol (convened by the World Resources Institute).</p> <p>‘The Food Loss and Waste Accounting and Reporting Standard enables companies, countries, cities and others to quantify and report on food loss and waste so they can develop targeted reduction strategies and realize the benefits from tackling this inefficiency.’</p> <p>https://flwprotocol.org/flw-standard/</p>
Food	<p>As per the FLW Standard</p> <p>‘Any substance—whether processed, semi-processed, or raw—that is intended for human consumption. “Food” includes drink, and any substance that has been used in the manufacture, preparation, or treatment of food. “Food” also includes material that has spoiled and is therefore no longer fit for human consumption. It does not include cosmetics, tobacco, or substances used only as drugs. It does not include processing agents used along the food supply chain, for example, water to clean or cook raw materials in factories or at home.’</p>
Food Rescue	A non-product output/ material loss destination, food rescue, or food recovery, is the practice of collecting edible food that would otherwise go to waste and distributing it to people facing hunger, or are in need. Although the food is edible it may not be something that food distributors will or can purchase – such as food past it’s best before date. Food banks and second harvest are the names often associated with organisations that assist in redistributing this food.
Inedible Parts	<p>As per the FLW Standard</p> <p>‘Components associated with a food that, in a particular food supply chain, are not intended to be consumed by humans. Examples of inedible parts associated with food could include bones, rinds, and pits/stones. “Inedible parts” do not include packaging. What is considered inedible varies among users (e.g., chicken feet are consumed in some food supply chains but not others), changes over time, and is influenced by a range of variables including culture, socio-economic factors, availability, price, technological advances, international trade, and geography.’</p> <p>N.B. If the inedible parts form part of the product(s) and are either sold together with it or are passed on to the next life cycle stage with the product(s) they should not be demarcated in an assessment lifecycle stage, as they do no flow out of the food supply chain during that assessment life cycle stage. When inedible parts are demarcated in a process, they can only flow to non-product output/ material loss destinations (excluding co-products and food rescue).</p>
ISO 14051	<p>International Standard ISO 14051:2011: Environmental management — Material flow cost accounting — General framework</p> <p>ISO 14051 is the International Standard that provides a general framework for material flow cost accounting (MFCA). Under MFCA, the flows and stocks of materials within an organization are traced and quantified in physical units (e.g. mass, volume) and the costs associated with those material flows are also evaluated. The resulting information can act as a motivator for organisations and managers to seek opportunities to simultaneously generate financial benefits and reduce adverse environmental</p>

	<p>impacts. MFCA is applicable to any organization that uses materials and energy, regardless of their products, services, size, structure, location, and existing management and accounting systems.</p> <p>https://www.iso.org/standard/50986.html</p>
ISO 14052	<p>International Standard ISO 14052:2017: Environmental management — Material flow cost accounting — Guidance for practical implementation in a supply chain</p> <p>Based on the principles, philosophy and general framework for material flow cost accounting (MFCA) described in ISO 14051, ISO 14052 is the International Standard that provides guidance for the practical implementation of MFCA in a supply chain. MFCA fundamentally traces the flows and stocks of materials within an organization, quantifies these material flows in physical units (e.g. mass, volume) and evaluates the costs associated with material flows and energy uses. MFCA is applicable to any organization that uses materials and energy, regardless of its products, services, size, structure, location, and existing management and accounting systems. In principle, MFCA can be applied as an environmental management accounting tool in the supply chain, both upstream and downstream, and can help to develop an integrated approach for improving material and energy efficiency in the supply chain.</p> <p>ISO 14052 extends the scope of MFCA to multiple organizations in a supply chain to facilitate an integrated approach to more efficient use of materials and energy, and thereby engendering a variety of economic and environmental benefits for different organizations in that supply chain – including the reduction of material losses, costs and enhanced environmental performance. While at the same time, working towards increased trust, collaboration, and fruitful business relationships.</p> <p>ISO 14052 includes scenarios for improving material and energy efficiency in a supply chain, principles for successful application of MFCA in a supply chain, information sharing, and practical steps for the implementation of MFCA in a supply chain.</p> <p>https://www.iso.org/standard/50986.html</p>
ISO 14053	<p>International Standard ISO 14053:2021: Environmental management — Material flow cost accounting — Guidance for practical implementation in a supply chain</p> <p>Based on the principles, philosophy and general framework for material flow cost accounting (MFCA) described in ISO 14051, ISO 14053 is the International Standard that gives practical guidelines for the phased implementation of MFCA that organisations, including small and medium-sized enterprises (SMEs), can adopt to enhance their environmental performance and material efficiency. Large organisations can also use ISO 14053 as a starting point for their implementation of MFCA in a specific department or process.</p> <p>ISO 14053 can be used independently of ISO 14051 and ISO 14052 and advocates a more simplified approach to MFCA than ISO 14051, to foster the take up of MFCA (and ultimately ISO 14051) by organisations. The approach in ISO 14053 gets the MFCA ball rolling by focusing attention on the most relevant production process to enhance material efficiency along with cost reductions, possibly leading to additional business opportunities.</p> <p>The phased approach of ISO 14053 provides flexibility that allows organisations to develop their MFCA activities at their own pace, according to their own circumstances. The resulting information can act as a motivator for organisations to seek opportunities to simultaneously generate financial and environmental benefits by reducing material losses and energy consumption.</p>

	<p>ISO 14053 has been explicitly tied to contributing to the achievement of the UN's Sustainable Development Goals (SDGs) – including Goals 11, 12 and 13, with a particular emphasis on Goal 12.</p> <p>https://www.iso.org/standard/73338.html</p>
Level of Organisation	<p>The level of organisation you will be reporting on. This could be: organisation wide; a business unit; an individual factory/farm/store; down to an individual piece of equipment or segment of a facility. This is the equivalent to the 'Organization' boundary dimension of the FLW Standard.</p>
Life Cycle Stage(s)	<p>As per the FLW Standard Boundary Dimension 'The stage(s) in the food supply chain or food life cycle within which reported food loss and waste occurs'</p> <p>A life cycle stage in DIRECT is the equivalent of a 'quantity centre' in ISO 14051 (simplified to 'process' in ISO 14053 – see also entry under 'Process') 'selected part or parts of a process for which inputs and outputs are quantified in physical and monetary units'</p> <p>Currently DIRECT uses the following life cycle stage clusters, representing seven broad supply chain stages.</p> <p>Primary Production</p> <p>Post-Harvest</p> <p>Processing</p> <p>Distribution</p> <p>Wholesale</p> <p>Retail</p> <p>Food Service</p> <p>It is recommended that you also write, in the comments, one or more of the relevant United Nations International Standard Industrial Classifications of All Economic Activities (ISIC) codes, or that of a regional or national classification system, often derived from ISIC – such as NACE for Europe or ANZSIC for Australia and New Zealand.</p>
Material Cost	<p>As per ISO 14051: 'cost for a substance that enters and/or leaves a quantity centre'</p> <p>N.B. ISO 14051 also notes that material cost can be calculated in various ways, e.g. standard cost, average cost, and purchase cost. The choice between cost calculation methods is at the discretion of the organisation.</p>
Material Destinations	<p>DIRECT builds upon the FLW Standard's use of the term 'Destination'. Where the FLW Standard uses 'Destination' to refer to where food and/or the associated inedible parts go when removed from the food supply chain, DIRECT includes Product(s), Co-Product(s) and Food Rescue as 'Material Destinations' for mass balance.</p> <p>Animal Feed</p>

	<p>As per the FLW Standard</p> <p>'Diverting material from the food supply chain* (directly or after processing) to animals</p> <p>*Excludes crops intentionally grown for bioenergy, animal feed, seed, or industrial use'</p> <p>Bio-material</p> <p>As per the FLW Standard – [Bio-based Materials / Biochemical Processing]</p> <p>'Converting material into industrial products. Examples include creating fibers for packaging material, creating bioplastics (e.g., polylactic acid), making "traditional" materials such as leather or feathers (e.g., for pillows), and rendering fat, oil, or grease into a raw material to make products such as soaps, biodiesel, or cosmetics. "Biochemical processing" does not refer to anaerobic digestion or production of bioethanol through fermentation'</p> <p>Codigestion</p> <p>As per the FLW Standard – [Codigestion/anaerobic digestion]</p> <p>'Breaking down material via bacteria in the absence of oxygen. This process generates biogas and nutrient-rich matter. Codigestion refers to the simultaneous anaerobic digestion of food loss and waste and other organic material in one digester. This destination includes fermentation (converting carbohydrates—such as glucose, fructose, and sucrose—via microbes into alcohols in the absence of oxygen to create products such as biofuels)'</p> <p>Composting</p> <p>As per the FLW Standard – [Composting/aerobic processes]</p> <p>'Breaking down material via bacteria in oxygen-rich environments. Composting refers to the production of organic material (via aerobic processes) that can be used as a soil amendment'</p> <p>Controlled Combustion</p> <p>As per the FLW Standard</p> <p>'Sending material to a facility that is specifically designed for combustion in a controlled manner, which may include some form of energy recovery (this may also be referred to as incineration)'</p> <p>N.B. See also 'Incineration with En.Recovery'.</p> <p>Environmental Loss</p> <p>Not included in the FLW Standard</p> <p>This can be used for mass balance of losses such as the evaporation of liquids during processing or leaching into the environment when growing crops.</p> <p>Incineration with En.Recovery</p> <p>Not included in the FLW Standard</p> <p>Incineration with energy recovery refers to the combustion of waste under controlled conditions to generate electricity and/or heat. Organisations that wish to track energy recovery specifically can use this destination as well as/ instead of 'Controlled Combustion'.</p> <p>Land Application</p> <p>As per the FLW Standard</p> <p>'Spreading, spraying, injecting, or incorporating organic material onto or below the surface of the land to enhance soil quality'</p>
--	--

	<p>Landfill As per the FLW Standard 'Sending material to an area of land or an excavated site that is specifically designed and built to receive wastes'</p> <p>Not Harvested As per the FLW Standard – [Not harvested/plowed-in] 'Leaving crops that were ready for harvest in the field or tilling them into the soil'</p> <p>Recycling Not included in the FLW Standard This can be used for mass balance of materials that are recycled, including that which may be reused again in assessment processes.</p> <p>Refuse As per the FLW Standard – [Refuse/discards/litter] 'Abandoning material on land or disposing of it in the sea. This includes open dumps (i.e., uncovered, unlined), open burn (i.e., not in a controlled facility), the portion of harvested crops eaten by pests, and fish discards (the portion of total catch that is thrown away or slipped)'</p> <p>Sewer As per the FLW Standard – [Sewer/wastewater treatment] 'Sending material down the sewer (with or without prior treatment), including that which may go to a facility designed to treat wastewater</p> <p>Other Included in the FLW Standard Sending material to a destination that is different from the main 10 listed in the FLW Standard and the additional ones noted above. This destination should be described in the notes.</p>
Material Flow	Adapted from ISO 14051: movements of a material or group of materials from inputs to destinations and across life cycle stages in an assessment.
Material Inputs	The material inputs at the start of the life cycle stage being assessed. These may include food as well as non-food ingredients - such as packaging and packing materials, water, emulsifiers etc. Material inputs may be unprocessed 'raw materials' or fully processed 'products' depending on what life cycle stage is being accessed.
Material Loss	<p>Adapted from ISO 14051: all material outputs generated in an assessment, except for that intended for/output to products. I.e. all materials inputs that flow to non-product material destinations in a process. Can also be considered/ referred to as Non-Product Outputs (NPOs).</p> <p>N.B. ISO 14051 also notes that material losses include air emissions, wastewater and solid waste, even if these material outputs can be reworked, recycled or reused internally, or have market value.</p>

Material Loss Destinations	All material destinations that are non-products including: Co-Product(s); Food Rescue; Animal Feed; Bio-material; Codigestion; Composting; Controlled Combustion; Land Application; Recycling; Incineration with En.Recovery; Landfill; Not Harvested; Refuse; Sewer; Environmental Loss; and Other
Material Outputs	The destinations that materials inputs flow to during a life cycle stage. Material Outputs from a process include the product(s), any co-product(s), food rescue and other destinations traditionally considered 'waste' such landfill, composting, recycling etc.
MCFA	Material Flow Cost Accounting As per ISO 14051: 'tool for quantifying the flows and stocks of materials in processes or production lines in both physical and monetary units'.
Output Costs (as related to material loss)	Costs incurred specifically in the disposal, handling and transport of the material output to material loss destinations. This can include additional costs for the management and movement of Co-Product and Food Rescue, as well as other waste collection and treatment costs, all of which are considered material losses. N.B. See also 'Waste Management Cost'.
Product	The food good that is a priority output from an assessment and generates an income/value. N.B. as per ISO 14051 an intermediate or semi-finished product that flows through an assessment life cycle stage is treated as a product.
Product Classification	Currently drawn from the United Nations Central Production Classification system (CPC Ver 2.1). This is the equivalent to the 'Food Category' boundary dimension of the FLW Standard.
Process	As per ISO 14051: 'set of interrelated or interacting activities that transforms inputs to outputs' DIRECT follows ISO 14053 in prioritising the simplified use of 'process' over the more granular 'quantity centre', which is preferred in ISO 14051. N.B. See also 'Life Cycle Stage(s)'.
System Cost	As per ISO 14051: 'cost incurred in the course of in-house handling of the material flows, except for material cost, energy cost and waste management cost'
True Cost of Waste	Accounting for hidden the cost of waste, by looking above and beyond the cost of material loss and disposal when accounting for waste. From a mass balance perspective, comparing the materials brought into a process, such as manufacturing, to the mass product shipped, the true cost of waste is significantly higher than wasted materials and the management of their disposal. The flow of this wasted material absorbs expenditure on infrastructure, labour, transportation, energy, and other business costs. DIRECT accounts for these indirect costs as well as offsetting any non-product or material loss income. The True Cost of Waste has been used for effect by WRAP (Waste & Resources Action Programme) in the UK

	<p>https://wrap.org.uk/resources/report/true-cost-waste-hospitality-and-food-service</p> <p>DIRECT's accounting of the True Cost of Waste aligns to the cost accounted for material loss outputs in ISO 14051 – i.e. The material, energy, system and waste management costs associated with any material loss in a process - DIRECT bundles 'energy costs' and 'system costs' as 'business costs'.</p> <p>As declared by UNIDO, in their MFCA Guidelines, MFCA assessments can make visible the true size of the costs of inefficient production and the related wastage of materials and energy use.</p> <p>N.B. for clarity it should be noted that the term 'true cost' is not directly linked to the 'full cost' accounting notion which includes the consideration of a wider range of hidden costs and externalities – such as upfront, back-end, environmental and social costs.</p>
Waste Management Cost	<p>As per ISO 14051: 'cost of handling material losses generated in a quantity centre'</p> <p>N.B. ISO 14051 also notes that waste management includes management of air emissions, wastewater, and solid waste. While waste management cost includes the following:</p> <ul style="list-style-type: none"> • the costs for onsite activities, e.g. reworking of rejected products, recycling, waste tracking, storage, treatment, and disposal; • the costs for outsourced activities, e.g. waste storage, transport, recycling, treatment, and disposal.