

Project Summary

DIRECT Commercialisation Project (1.1.1)

KEY POINTS

- The world is increasingly concerned with and is attempting to measure and compare food loss and waste (FLW) in order to reduce it.
- Software-enabled decision support tools (DST) are prevalent, but their impact has been limited when it comes to FLW.
- DIRECT has been developed as a cloud-based DST that facilitates the standardisation of FLW material flow quantification while accounting for the 'true cost' of that waste.



Figure 1. DIRECT launch brochure

THE CHALLENGE

In order to make effective decisions in their efforts to reduce FLW, accurate, comparable, and easily understandable data must be available to key decision makers. As FLW quantification accelerates, a triple bottom line solution that properly accounts for the 'true cost of waste' can make FLW reporting more urgent and impactful for business.

THE OPPORTUNITY

A DST that accurately tracks FLW through a rigorously researched back end that provides data visualisation in a number of different ways in order to standardise reporting

outputs and communicate the efficacy of FLW interventions, by reducing both environmental and financial costs.

OUR RESEARCH

- Initial desktop research into FLW quantitative measurement definitions, metrics and methods, and the global move towards measurement reporting and standardisation.
- Subsequent research into the role that technologies and DSTs can have in highlighting efficiencies and drivers of food waste, including new opportunities to act. These can be via software and/or utilising the principles of Material Flow Cost Accounting (MFCA) - better informing strategic decisions and actions towards reducing waste via data metrics and transparency.
- Expert 'user needs' interviews that covered analysis of the existing DIRECT spreadsheet tool, in order to identify areas for optimisation, as well as best practice and trends for FLW quantification.
- Iterative design workshops that created models for user interface.
- Creation of training modules and manuals for use.
- Building, piloting and refining DIRECT online.
- Launch of cloud-based version of DIRECT in 2021.

OUTCOMES

- launch and promotion of Empauer's [DIRECT](#) an industry-ready cloud-based DST, and supporting materials, backed by over a decade of research
- Multiple case studies with primary producers, quick-service restaurant and meat waste mapping research project.
- a suite of academic articles and reports that synthesise the methods and metrics of FLW quantification and benefits of accounting for the 'true cost of waste'.
- a model for co-designing software with industry partners.



Figure 2. DIRECT launch brochure

IMPACT

Since 2019, ongoing industry co-design of a digital tool [DIRECT](#) has delivered, through funding and a PhD scholarship, EFW CRC Project 1.1.1. This led Empauer and their technology partner to integrate DIRECT into their multinational software platform. Translational impact from DIRECT involves measuring food systems and informing FLW reduction, like measures for regenerative, net positive outcomes from farm to retail. In this context, since being launched at the end of 2021 DIRECT has; helped map the Australian meat supply chain for MLA to consider industry innovations (Renouf et al. 2023), been licensed to Food and Fibre Gippsland to help their local businesses understand the true cost of their waste and deploy change; and been proposed to large Australian companies participating in the [voluntary Food Pact to reduce FLW nationally](#) (with projects being developed). As such DIRECT has informed practical outcomes for industry and led to commercial returns for Empauer.

Predicted impacts (up to 2033):

Food Waste reduced (t)	170,809
Industry profitability (\$)	120,280,779
Rescued food (t)	205,233
Circular economy jobs	4
Greenhouse gas emission savings (t CO ₂ -eq)	809,778
Industry people trained	1,800

NEXT STEPS

Ongoing promotion, utilisation and development of the tool by Empauer (and industry using the tool in their organisations).

Specifically, linking DIRECT to databases able to represent losses in other terms will allow the tool greater relevance to studies with more diverse aims, by linking materials and destinations to inventories, and presenting these other impact measures as figures and ratios in DIRECT's output - such metrics included emissions, nutrition and water use.

The introduction of Ai and Machine Learning for valorisation and supply chain mapping

PROJECT TEAM

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PROJECT REPORTS/PUBLICATIONS

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PROJECT WEBPAGE

<https://endfoodwaste.com.au/projects/direct-commercialisation/>

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