



AlixPartners

Driving Emissions Down and Profit Up by Reducing Food Waste

Measuring and addressing the true value of food waste

2024 Report

www.tcgffoodwaste.com

Foreword

Nearly 40%

of food produced globally is never eaten, instead often winding up in landfill, incinerators, and wastewater.

The costs of food loss and waste (FLW) are financial, ecological, and societal. Current estimates indicate that FLW accounts for 10% of all global greenhouse gas (GHG) emissions, approximately a quarter of all fresh water use, and the United Nations estimates that 2.4 billion people—29% of the world's population—face moderate to severe food insecurity. Moreover, the total value of FLW is estimated to be over \$1 trillion.

Despite the huge negative impacts of food waste, efforts to address it often fall short because the true financial cost of FLW is materially undervalued. Reducing FLW is an enormous opportunity for food manufacturers and retailers alike.

The Consumer Goods Forum's (CGF) **Food Waste Coalition of Action (FWCoA)** have been at the forefront of reporting FLW, and their research, conducted in partnership with AlixPartners, shows that retailers and Consumer Packaged Goods (CPG) manufacturers often overlook the hidden cost of food waste. As a result, they not only dramatically underestimate the impact of FLW to their bottom lines, but will face a steep rise in costs as carbon abatement fees spike over the next 20 years. The broad under-measurement of cost means businesses are not fully resourcing food waste reduction efforts and may be overlooking a critical element of a successful net zero strategy.

The Food Waste Coalition of Action (FWCoA) is building on the Champions 12.3 initiative to meet the 2030 United Nations goals for GHG reductions, with Coalition members setting targets aligned with SDG 12.3 to halve food waste by 2030. Incorporating the hidden costs of food waste into any business plan is essential to meet this goal.

Today, the 19 CPG manufacturers and food retailers who make up the FWCoA are all at different stages in their journey to accurately measure food waste, track its tangible financial and GHG impact, and drive awareness to others in the industry, but all are united in their mission to define a methodology and mechanism to calculate and measure the full costs of food waste and create a set of best practices to help drive effective FLW reduction.



This report supports the Coalition members, as well as any food manufacturer or retailer looking to increase the impact of FLW reduction efforts. It has been developed based on proprietary research, as well as interviews and working sessions between FWCoA members and AlixPartners in the first quarter of 2024. The report contains three core sections:

01: THE WHY

Making the financial and climate business case for addressing food waste

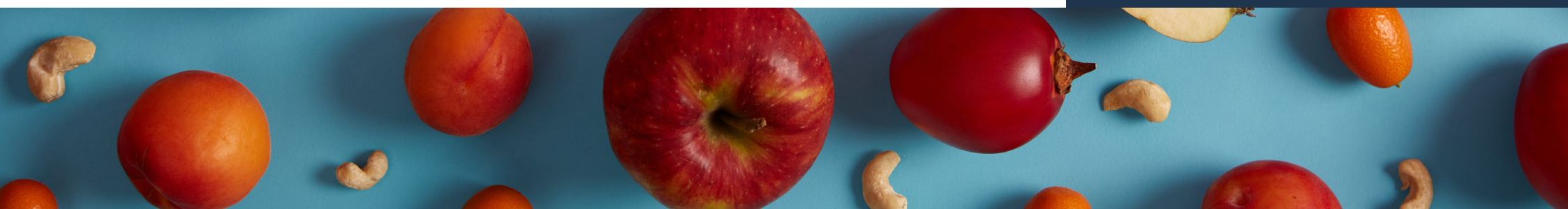
02: THE WHAT

Creating visibility into the true value of addressing food waste

03: THE HOW

Disseminating best practices in addressing food waste

We would like to thank members of the Coalition for sharing their work in order to provide a roadmap for those coming next.






Making the financial and climate business case for addressing food waste

Food loss waste (FLW) occurs throughout the value chain and has many causes including, but not limited to, spoilage, damage, yield loss during manufacturing, mis-matched supply and demand forecasts, and poor merchandising. Collectively, FLW is worth over \$1 trillion a year, and contributes 10% of all global carbon emissions. Companies measure waste in terms of tonnage but when they do this, they are not accounting for the full cost: every resource used up to that point must also be liquidated.

This study, conducted by AlixPartners in concert with the Consumer Goods Forum's Food Waste Coalition, sets out to define the scope of total food waste, uncovering obscured costs and providing a report for stakeholders up and down the value chain to act on waste.



Food Waste Coalition members have set targets in line with SDG 12.3 to halve their FLW by 2030, and collectively reported generating **2.1 million tonnes of food waste** in 2021 (with 16 of 19 Coalition members reporting), which translates to approximately 11 million tons of GHG emissions using the **ReFED Impact Calculator**.

In today's terms, the cost of GHG carbon credits on average is ~\$48 per metric tonne (depending on region), so a total cost of about \$460 million, or nearly \$30 million per Coalition member. The economic impact will be multiplied in the future: Bloomberg estimates that the cost of GHG credits will grow to \$146/ton by 2030 and \$238/ton by 2050¹. That means a 3x to 5x multiple on average from today's prices.

**\$1 trillion
global cost
of FLW
annually**

1. BloombergNEF. "Long-Term Carbon Offsets Outlook 2024."

Key challenges in food waste measurement

01

INCOMPLETE INPUT COSTING

Current food waste is estimated at >10x of disposal cost; this misses 25-50% of true impact as surplus volume and hidden costs are not considered

02

LIMITED FINANCIAL QUANTIFICATION

Food waste generally is measured in volume terms; also measuring in dollar terms will enable quantification of true business financial impact

03

PARTIAL VOLUME CONSIDERATION

With company targets focused on food waste reduction, financial impacts of surplus are ignored; could double historical total food waste measurements

04

INSUFFICIENT DATA GRANULARITY

Lack of detailed data (i.e., production line, facility level) prevents ability to pinpoint specific waste areas

05

ACCEPTING YIELD STANDARDS

Building yield loss into standards hinders ambition of increasing sell-through

06

LACK OF DATA SHARING

Imperfect industry standard operating procedure to share and track food waste data, limits true understanding of impact across the value chain

07

ABSENCE OF BEST PRACTICES

Lack of ownership of full cost on food waste results in limited collaboration to tackle food waste

Traditional methods of tracking the business impact of FLW are based on the cost of the product that is disposed of via landfills, often ignoring additional resources like labour, overhead, and utilities that went into producing the unsaleable product. And while some of the surplus goes to donations and animal feed, serving a societal good, this nevertheless represents diminished returns and inefficiencies for the business.

01

THE WHY

Driving Emissions Down and Profit Up by Reducing Food Waste



To this end, we have developed a FLW Capability Assessment, providing clarity and guidance on where companies are on their waste reduction journey.



Looking at the full picture, we see that the cost of hidden food waste and surplus is likely

25-50% higher
than historical measures.

Meanwhile, the future cost of GHG emissions could be anywhere from 3x to 5x current costs in 25 years as municipalities, states, and nations implement stricter reporting requirements and emissions caps.

Applying benchmarks to the data submitted by 16 FWCoA members, we estimate approximately 4 million tonnes of food waste was surplus generated in 2021. That totals 17.7 million tons of combined CO2 impact, which translates to approximately \$850 million of carbon credits cost impact. Adding hidden costs to that subtotal, we estimate that waste and surplus equates to approximately \$10 billion of total productivity and of carbon value just for Coalition members.

Lack of measurement capability, siloed organisations and KPIs, and the lack of consistent best practices across trading partners are the three largest barriers to improved food waste reduction. These are hurdles that can be influenced by a transparent look at all the costs across the chain, strengthening the business case for improvements to the food chain, which can in turn mitigate poverty, improve ecosystems, preserve freshwater sources, and reduce climate-disrupting emissions.

We estimate that waste and surplus equates to approximately

\$10 billion

of total productivity and of carbon value just for Coalition members.



Creating visibility into the true value of addressing food waste

Driving down food loss and waste begins with understanding the scope of the problem. While the bulk of FLW occurs at the retailer and consumer stage, around a quarter occurs during production and processing, and the rest during handling, distribution, and storage, per a **Supply Chain Dive** analysis of World Resources Institute data.²

Traditional measurements often miss large components of the true cost of food waste. Determining both conventional costs and hidden costs at each stage of the value chain allows us to attach and assign a value to GHG emissions, then prioritise areas of the value chain with highest impact potential.



To do so, we created two case studies elucidating the hidden food waste and surplus cost factors for manufacturers and retailers.

2. Supply Chain Dive. "Report: Supply chains cause 40% of food waste in North America." Leonard, M. <https://www.wastedive.com/news/developed-countries-food-waste-consumer-level-supply-chain/558110/>



Illustrative hidden food waste and surplus financial impact to food manufacturer and retailer

Total Hidden Business P&L Impact

GHG Impact

Total Hidden Costs and GHG Emissions Impact

MANUFACTURER

3% food waste + 6% surplus = 140K tonnes of waste

~\$100M
Hidden costs



380K tonnes of CO₂e³
(375k road trips from NYC to LA⁴)

~\$20M
GHG Emissions

\$120M
in non-raw/pack
and carbon value

24%
of company EBITDA

RETAILER

1% food waste + 1% surplus = 90K tonnes of waste

~\$100M
Hidden costs



430K tonnes of CO₂e³
(425k road trips from NYC to LA⁴)

~\$25M
GHG Emissions

\$125M
in non-raw/pack
and carbon value

6%
of company EBITDA

Based on the calculations from those two examples, the total hidden financial impact on food waste and surplus is significant to a business's profitability, and, importantly, much higher than most conventional estimates. Accounting for the tonnage of waste including surplus, and the carbon impact, we estimate halving FLW, and by extension halving the associated hidden costs, could improve EBITDA by 30 to 100 basis points.

3. CO₂ estimation based on ReFED Impact Calculator (April 2024)

4. Based on MIT estimates of driving emissions per ton of CO₂ (December 2023)



Total EBITDA improvement on hidden cost impact could be up to 60 to 200+ basis points by addressing food waste and surplus based on two examples.



\$850M
carbon value⁵ (across
16 members based on
blended carbon value
as of mid-April 2024)

17.7 million
tons of combined
CO₂e impact
(17 million road trips
from NYC to LA⁶)

Estimated Food Waste Coalition members' hidden food waste and surplus financial impact

Food waste
+ surplus⁷

Hidden costs⁷

Total impact
(midpoint)

Food waste⁸

Surplus⁸

Total
tonnage⁸

Total CO₂e⁹

MANUFACTURER

7-10% × 40-45% = \$7B

1.2
MT

+

1.0
MT

=

2.2
MT

9.0
MT

RETAILER

~1% × 20-25% = \$2B

0.9
MT

+

0.9
MT

=

1.8
MT

8.7
MT

% OF COGS

CGF Food Waste Coalition members generated

~4 million tonnes of food waste and surplus in 2021 which equates to ~\$10B of hidden P&L impact and carbon value

5. Carboncredits.com
6. Based on MIT estimates of driving emissions per ton of CO₂ (December 2023)
7. Percentage ranges are extrapolated based on our illustrative data examples
8. CGF Food Waste Coalition Baseline Report – November 2023
9. CO₂ estimation based on ReFED Impact Calculator (April 2024)

By extrapolating the percentage range of hidden food waste and surplus and its associated costs from the illustrative example for a manufacturer and retailer, we can apply these figures to the Coalition members' 2021 baseline reporting statistics. The Coalition reported 2.1 million tonnes of food waste and an additional 1.9 million tonnes of surplus. This translates to an estimated hidden financial impact of \$10 billion for the 16 Coalition members, with \$9 billion attributed to productivity losses and \$1 billion to carbon value.

\$1 BILLION

carbon value

\$9 BILLION

productivity losses

Estimated hidden
financial impact of

**\$10
BILLION**



To address gaps in each of those spaces, retailers and manufacturers need to be able to fully account for FLW at each stage of the value chain. That work is complicated by a lack of data and visibility, organisational siloes, and the absence of established best practices.

The AlixPartners team developed the FLW Capability Assessment for companies to evaluate their capabilities across five key FLW areas – target setting, governance, metrics and measurement, operational integration, and destination optimisation. To develop the assessment, the team combined extensive input from Coalition members with AlixPartners experience, identifying basic, good, and emerging and leading operating practices.





Disseminating best practices in addressing food waste

All Coalition members are early adopters of the food waste reduction business case, but they are each at different stages of maturity when addressing key drivers of FLW cost. Since the approach to FLW has evolved (e.g., from Target-Measure-Act), and some goals have already been met, best practices are fluid—tomorrow's best practice may be only an idea at this stage.

Key themes across the five pillars of FLW reduction and monitoring.





TARGET SETTING:

This requires companies to evaluate the sophistication of their thinking about food waste and associated goals. While many have adopted a “zero-based” mindset for targets, these may need to be adjusted over time as hidden costs are revealed, and practices improve.



GOVERNANCE:

For FLW reduction efforts to be centralised, a senior executive needs to own responsibility for efforts across the enterprise. One creative way to address this is the establishment of a “chief impact officer” role that combines the traditional CFO role with accountability to drive net zero and FLW reduction goals. Even with creation of such a role leadership buy-in and support is key. This pillar also looks at how companies influence others in their value chain. Companies with clear accountability and strong governance over waste reduction initiatives are able to implement a firm-wide plan, rather than ad hoc or siloed efforts.



Tesco was the first UK national retailer to set an ambition of halving food waste, encouraging over 100 suppliers to commit to reducing waste and putting in place systems like the “Reduced in price, just as nice” merchandise section in stores for food near its best by date. This helps to cut down on waste from unsold products, reminding customers the food is just as tasty and saves them money.

When the company discovered that a third-party food waste processor was sending food believed to be cycled as animal feed to anaerobic waste, it took action and provided transparent updates. The retailer reworked its projections for progress toward the halving of waste and noted that, while anaerobic digestion does play a role in recovering energy and mitigating landfill, the food waste hierarchy and company’s framework classified anaerobic digestion as waste.



Sometimes, food waste is a question of timing – food that isn’t sold before it’s best-by or use-by date isn’t good for anyone unless it’s intercepted in time. Walmart is using AI and connected intelligence to improve the quality of fresh groceries from farm to shelf. By leveraging sophisticated technologies such as machine learning, they’ve made it simple enough for all of their associates to use while helping them better monitor and care for fresh fruits and vegetables that are waiting to be shipped to store. That could mean more efficiently ripening bananas, predicting the shelf life of tomatoes while they’re still on the vine, or prioritizing the flow of green grocery items from the back of the store to the shelf.



METRICS AND MEASUREMENTS:

Current efforts to track waste have often missed key costs and losses, or mischaracterised the destination. Moreover, many only measure waste at the point of disposal or fail to capture all costs of production. Leadership needs to know how food waste is measured, ensure both known and previously hidden costs are included, and embed them in the performance management and compensation cycle. Best practice is to embed food waste measurement into productivity KPIs.



OPERATIONAL IMPLEMENTATION:

Addressing waste means linking tracking to productivity, but this is still nascent for many food manufacturers and food retailers. Several Coalition members have reached a state where the goal is to prevent waste before it happens. A strong implementation program sees reduction efforts embedded in operations for continuous improvement—versus a special project on FLW – that can mean upgrading equipment or packaging, for example.



Aldi South Group's FLW reduction efforts have focused on innovative donation and discount schemes coupled with enhanced employee engagement. The company incentivises staff to recognise the monetary value of waste reduction and implementing KPIs in stores to ensure stock is managed well, and has joined initiatives such as Too Good to Go in the UK, Austria, and Ireland, which uses a mobile app to connect consumers to food at risk of spoiling.

For Aldi UK, these efforts drove a 50% reduction in FLW a full eight years ahead of target, following which the firm adjusted the goal to a 90% reduction by 2030. The company has put in place agile promotions that allow the company to sell seasonal produce, flexing according to crop failures or flourishes.



At Bel, the GHG emissions impact from food waste equals the impact of all its factories—approximately 4% of the total Bel Group scope 1-2-3 emissions footprint. Reducing food waste is at the heart of Bel's single-serving portion model and a key enabler of its GHG emissions reduction strategy to achieve its "BeLowCarbon" goal, the ambitious Bel plan to align on the 1.5°C trajectory, validated by the Science Based Target Initiative.



DONATION AND DESTINATION OPTIMISATION:

At its most basic, avoiding landfill has been the first effort made to optimise waste destination. Beyond this, Coalition members have found innovative ways to get higher quality donations to those in need and further reduce the environmental impact of unsold food and waste.



In 2022 Danone launched an extensive global program named the Battle Against Waste to deliver sustainability and productivity targets. The “dual project” engages end-to-end supply chain stakeholders, including suppliers and customers, and leverages internal expertise to halve Danone's food waste. The program focuses on building loss-reduction capabilities, investing in new manufacturing technologies, re-purposing and upcycling where possible, and redistributing food surpluses. It is tracked via a robust reporting system with individually allocated targets for each production site and selling unit. Performance is submitted monthly and reviewed regularly at a local and zone level, and on a quarterly basis globally with annual public reporting.

In North America, Danone partnered with technology provider Spoiler Alert to manage excess and short shelf life surplus via efficient inventory offering and analytics tools. Danone North America has reduced its non-recovered food waste ratio by 30% since 2020. In Argentina, Danone has partnered with Carrefour and Red Argentina de Bancos de Alimentos, an organisation that collects products close to expiration date from Carrefour sites for redistribution to community groups. After an initial pilot in two Carrefour sites in the greater Buenos Aires region redistributing over 2.2 tonnes of products, Danone continues to launch similar programs, with the ambition to expand further with other retail partners.



McCain Foods, alongside other Food Waste Coalition members, has been involved in the testing of WWF's Global Farm Loss Tool with two of its potato growers in Canada and South Africa. This valuable tool will enable growers to measure, calculate, and report food loss occurring from field to farmgate and crucially support their decision making to identify interventions to reduce food waste. Based on the project findings, the beta Tool has been updated and will be rolled out with additional growers in the next growing season.



Additional case studies

Fungus presents a serious risk to food safety, and **one large food manufacturer** saw how safety precautions were affecting food waste: any time aflatoxin levels breach the legal limits in food production, that food is disposed of. To that end, the company has partnered with a university on research into mycotoxins that will help to detect and mitigate spoilage.

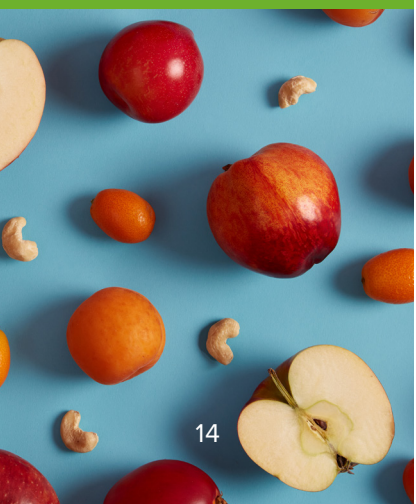
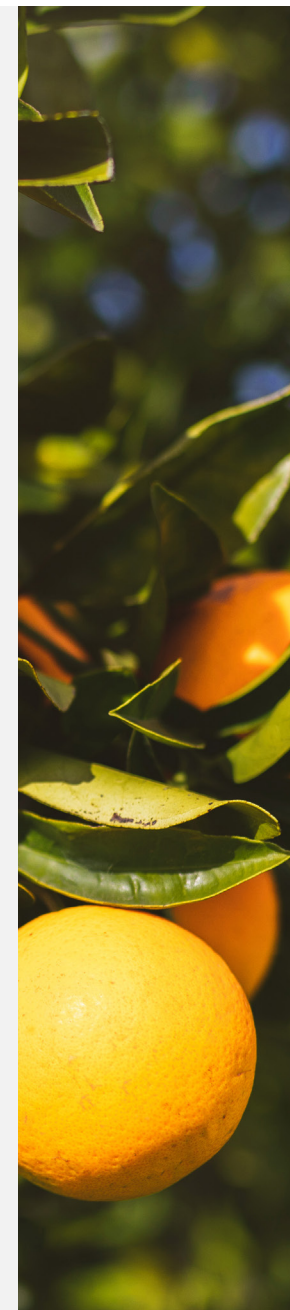
Beyond identifying ways to reduce waste through rework (e.g. using baked goods off cuts to make marzipan), a **UK food manufacturer** found another opportunity to ensure surplus food has a high likelihood of getting eaten. They partnered with a specialised surplus foods distributor to disseminate millions of unsold products.

A UK manufacturer has found a way to keep its sustainability goals crisp, investing in flow-wrap equipment to reduce plastic packaging for its biggest brands. The company expects the technology on production lines will reduce plastic packaging by more than a third for six-packs, equal to around 100 tonnes of packaging each year. The move will also consolidate goods for transportation, reducing the number of truck trips by 620 in a year with associated benefits for FLW.

Many manufacturers are not just looking at longer-term solutions but have identified productivity fixes at food leakage points in manufacturing lines. For example, identifying ways to track waste that gets washed down the drain or modifying a filling chute for easier access meant that jammed products could more easily be cleared and recovered, removing 6 kilograms of gum waste daily.






One member was constantly looking for ways to reduce water usage. They found by diverting the water used to flush pasteurised milk through pipes and capturing it in a holding tank, they could repurpose it as a smoothie ingredient, saving 33 metric tons of carbon dioxide and 74 cubic metres of water.

A nutritional bar company set out to improve their supply-chain efficiency after growth had stalled and found themselves taking a bite out of food waste and related losses, with a fresh lease on the company mission. Leadership had looked at packaging, inventory, and transport, and found that renegotiated packaging contracts and right-sizing of finished goods and raw materials could reduce costs in the short term. The effort as a whole laid the groundwork for an expansion of the capabilities needed to build sustainable change, including a more data and analytics-focused approach to decision-making. The company has pursued partnerships with companies that share its sustainability values.





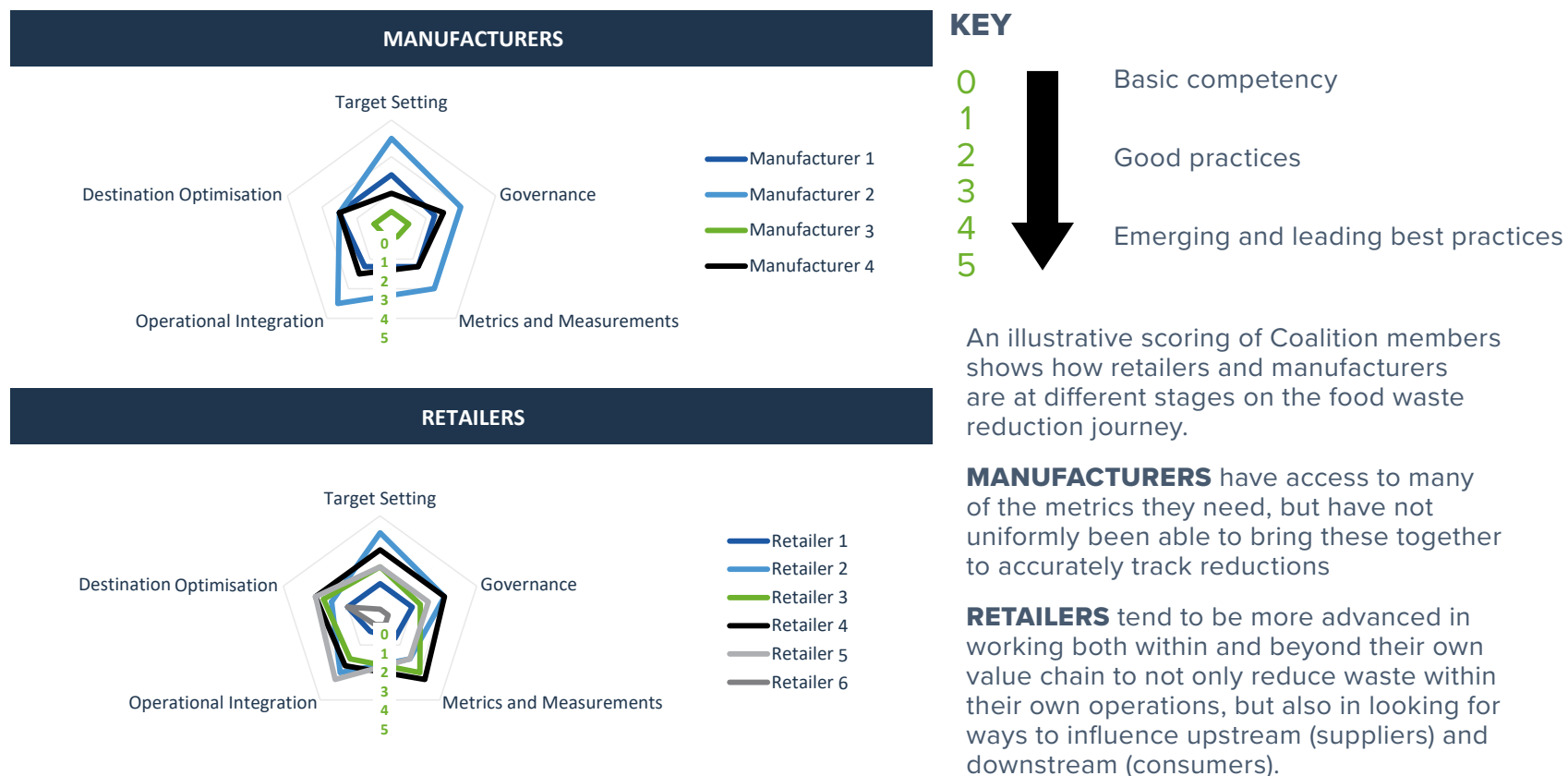
Example: FLW Capability Assessment

KEY COMPETENCIES	BASIC PRACTICES	CURRENT 'GOOD' PRACTICES	EMERGING AND LEADING BEST PRACTICES
 TARGET SETTING	<ul style="list-style-type: none"> Publicly acknowledge importance of food waste reduction, however ambitions are unspecified/unquantified Quantified targets are at a group level only 	<ul style="list-style-type: none"> Stated pledge to reduce food waste and GHG emissions, e.g. join the 10x20x30 Roll out specific targets to factories, DCs, stores based on activities and mix 	<ul style="list-style-type: none"> Zero waste mindset for all targets
 GOVERNANCE	<ul style="list-style-type: none"> Sustainability and operations teams' KPIs, goals and strategy are set separately and/or at a group level 	<ul style="list-style-type: none"> Aligned sustainability KPIs across the organization Individuals and teams are incentivized to measure and reduce food waste 	<ul style="list-style-type: none"> Require transparency across the supply chain (e.g. scope 3) External audits for food waste
 METRICS AND MEASUREMENTS	<ul style="list-style-type: none"> Food waste is defined by disposal weight and cost (e.g. disposal weight as a % of total raw materials) GHG emissions are estimated based on overall disposal 	<ul style="list-style-type: none"> Incorporate 'hidden' costs into KPIs: e.g. true cost and GHG emissions include utilities 	<ul style="list-style-type: none"> Standard cost does not include buffer for food waste – all waste is waste Fully embed food waste KPIs in productivity measurements
 OPERATIONAL IMPLEMENTATION	<ul style="list-style-type: none"> Processes in place to accurately identify baseline food waste metrics and track implementation/success of reduction initiatives 	<ul style="list-style-type: none"> Rethink byproducts – e.g. upcycling in secondary markets Prevent waste before it happens – continuous improvement and innovation Leverage data and AI for inventory management 	<ul style="list-style-type: none"> Engage in opportunities to reduce food waste outside your immediate control – work with suppliers, promote and support consumer education, etc.
 DONATION AND DESTINATION OPTIMISATION	<p>Keep waste out of landfills, incinerators and sewers; send waste to more environmentally preferred channels:</p> <ul style="list-style-type: none"> Animal feed Composting Anaerobic digestion (energy conversion) 	<ul style="list-style-type: none"> Where food is unlikely to be sold, but is still fit for human consumption, get it out of the value chain sooner > maximize the chance food that food gets eaten while reducing downstream costs 	<ul style="list-style-type: none"> Extend up- and downstream campaigns (e.g. to reduce consumer waste)

Taking the five pillars together, the FLW Capability Assessment offers a framework for any player in the food value chain to evaluate current FLW capabilities, identify gaps, and prioritise gap-closure actions. Many of the best practices are based upon the work Coalition members have done or are doing to address FLW.



Example: Indicative Coalition Member Maturity



FILL OUT THE FLW CAPABILITY ASSESSMENT
and gauge the opportunity to improve
food waste management within your firm

Select if your company is a:

MANUFACTURERS

RETAILERS

Taking action

Reducing food waste doesn't stop with food manufacturers and retailers, everyone has a role to play from suppliers to consumers. The efforts of the Consumer Goods Forum's Food Waste Coalition of Action provide a starting point for this journey; as this platform seeds leading practices and insights among members, the Coalition is focused on broadening the impact to additional CGF members as well as other players across the food value chain.

CPG manufacturers and food retailers face an enormous challenge in addressing food waste, which, given food wastes significant contributions to emissions, must be a core component of any net zero strategy.

Recognising the hidden costs of food waste and quantifying the full GHG and P&L impacts will enable firms to justify robust business cases that drive increased prioritisation and investment in addressing food waste. Leveraging those investments to adopt best practices in addressing food waste will allow for dramatic improvements in both environmental and financial outcomes.

**TAKE THE ASSESSMENT
AND JOIN THE COALITION.**





ABOUT ALIXPARTNERS

AlixPartners is a results-driven global consulting firm that specialises in helping businesses respond quickly and decisively to their most critical challenges—from urgent performance improvement to complex restructuring, from risk mitigation to accelerated transformation. These are the moments when everything is on the line—a sudden shift in the market, an unexpected performance decline, a time-sensitive deal, a fork-in-the-road decision. We stand shoulder to shoulder with our clients until the job is done, and only measure our success in terms of the results we deliver. We partner with you to make the right decisions and take the right actions. And we are right by your side.

When it really matters.

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ABOUT CONSUMER GOODS FORUM

The Consumer Goods Forum (CGF)'s CEO-led Coalition of Action on Food Waste brings together 21 of the world's largest consumer goods retailers and manufacturers with the goal of halving per capita global food loss at the retailer and consumer levels. With its explicit CEO engagement, action-oriented commitments and passion for accelerating sustainable change on a global level, the Coalition is a leader in the effort to reduce food loss in supply chains worldwide by driving action on key issues such as public reporting, full supply chain engagement, post-harvest losses and regional challenges. Together, the Coalition and its members play a powerful role in the effort to reduce waste, reducing stress on the environment, benefitting the global economy and ensuring more food makes it to stores and onto consumers' tables in the process.

For more information about the Coalition, visit www.tcgffoodwaste.com.





 <p>The Consumer Goods FORUM</p>	 <p>Food Waste</p>	<p>AlixPartners</p>
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