Zero-Waste Kitchen: A Recipe for Sustainability

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Introduction

KK Women's and Children's Hospital (KKH) kitchen prepares and serves approximately 65,000 meals per month to our patients, caregivers and staff. Hospital kitchens often generate significant volumes of waste:

Food waste – food preparation waste, plate waste, over production, expired ingredients.

Non-food waste – single-use disposables, packaging materials.

This burden of food and non-food waste not only leads to unnecessary costs but also undermine environmental sustainability by depleting resources, increasing emissions and polluting ecosystems.

DID YOU KNOW?

Food waste in landfills decomposes and emits methane gas which is much more potent than carbon dioxide in causing global warming.

Aim

To implement zero-waste strategies in KKH Kitchen to reduce food and non-food wastage through targeted interventions that promote sustainable practices, optimising resource usage and minimising environmental impact, while maintaining kitchen operational efficiency and food safety standards.

Methodology

KKH Food Services team, together with our outsourced kitchen operator, Sodexo, conducted a sustainability assessment of the hospital kitchen in February 2024 to establish a baseline of carbon emissions associated with its operations. This exercise aims to identify the root causes of emission sources so that we can implement targeted and practical solutions to support the hospital's commitment to environmental sustainability.

Emissions Scope	Emissions Source	Quantity	UOM	Carbon Intensity Factor	Estimated Carbon Emissions (KG)
Scope 1	Company Vehicle(s) Petrol Usage	-	GJ	69.3	0
Scope 2	Electricity Usage	2,482,483.90	kwH	0.4057	1007144
Scope 3	Water Usage	140.01	m3	1.3	182
Scope 3	Liquefied Petroleum Gas Usage	289,878.00	GJ	63.1	18291302
Scope 3	Food Purchases	19,553,290.87	KG	-	19553291
Scope 3	Food Waste	14,284.90	KG	6.97	99566
Scope 3	Cardboard Waste	1,299.36	KG	0.94	1221
Scope 3	Paper Waste	23.37	KG	0.94	22
Scope 3	Aluminium Waste	13.65	KG	2.32	32
Scope 3	Plastic Waste	43.68	KG	3.5	153
				TOTAL	38,952,912

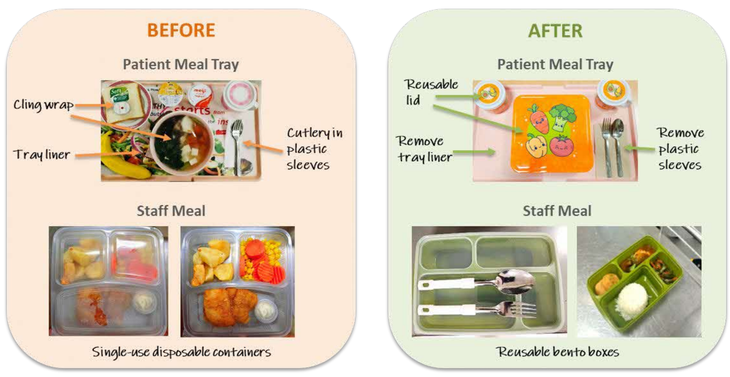
Opportunities were identified and project objectives were set.

- Minimise the use of single-use disposables and non-recyclable materials.
- Reduce avoidable food waste at preparation and serving stages.
- Reduce the carbon footprint of meals by reviewing menu ingredients.
- Improve the recycling of food waste through environmentally responsible systems.

Zero-Waste Strategies

Reuse

- Replace single-use disposables on patient meal trays, such as cling wraps, tray liners and disposable cutleries, with reusable alternatives.
- Replace the staff meal packaging from single-use disposable containers to reusable bento boxes.



Repurpose

- Upcycle food trim waste into other dishes, for e.g. using protein off-cuts to make soup or porridge.
- Use slightly bruised fruits to make into pastries for e.g. banana muffins.

Month	Pre-consumer Baseline Weight/Month *	Total Trim Waste	Monthly Reduction VS Baseline	CO2 Avoided (Every KG of food waste reduced, saves 6.97KG of CO2 emissions)
Mar'24	1902.33	600	1302.33	9077.26
Apr'24	1902.33	456	1446.33	10080.94
May'24	1902.33	460	1442.33	10053.06
Jun'24	1902.33	518	1384.33	9648.8
Jul'24	1902.33	513	1389.33	9683.65
Aug'24	1902.33	580	1322.33	9216.66
Sep'24	1902.33	605	1297.33	9042.41
Oct'24	1902.33	415	1487.33	10366.71
Nov'24	1902.33	516	1386.33	9662.74
Dec'24	1902.33	490.75	1411.58	9838.74
Jan'25	1902.33	538.6	1363.73	9505.22
Feb'25	1902.33	421	1481.33	10324.89

A reduction of 73% in food trim waste volume, resulting in an average of 9,700 carbon emissions avoided every month.

Reduce

- Use pre-cut ingredients to reduce food waste such as off-cuts and peelings during preparation.


Pre-cut vegetables


Pre-cut meat and fish

- Switch to less carbon-intensive proteins by increasing the frequency of plant-based meat offerings.

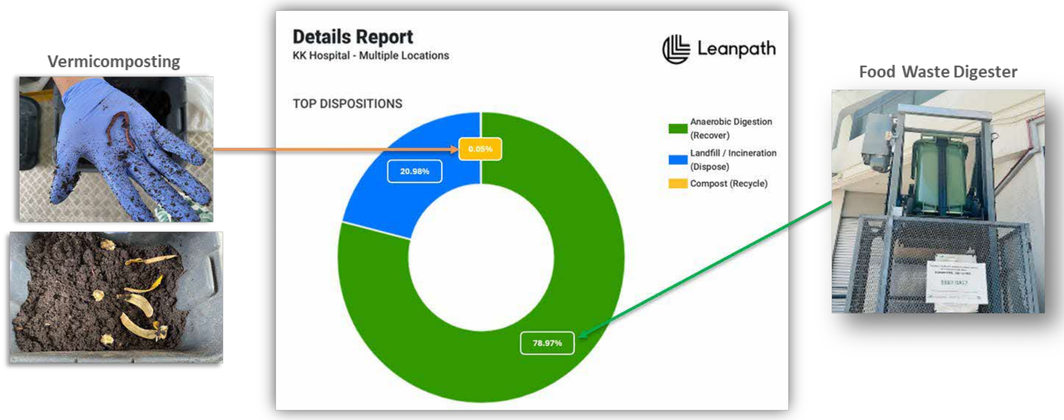

Mashed potatoes with Pisto plant-based ratatouille


Baked penne pasta with plant-based chicken and mushroom

- Transit from conventional plastic packaging to lower-carbon materials such as Tetra Pak and paper.

Recycle

- Optimise the use of food waste digester and vermicomposting system to process kitchen food waste.
- Recycle used cooking oil waste by sending them to licensed processors to convert it into biofuels.



Results and Conclusion

- ✓ An avoidance of 15,696 kg in the use of disposables per year, resulting in 48,696 carbon emissions avoided.
- ✓ A reduction of 73% in food trim waste volume, resulting in an average of 9,700 carbon emissions avoided every month.
- ✓ 79% of the total food waste generated in the kitchen was successfully diverted from landfill, processed either through the onsite food digester or the vermicomposting system.
- ✓ Monthly average of 392 kg of used cooking oil converted into biofuel.

The outcome of this project demonstrates that sustainability in a hospital kitchen is not only achievable, but scalable and impactful. Even in a fast-paced environment like a hospital kitchen, practical initiatives and interventions can yield measurable environmental benefits.