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**PRODUCT CARBON FOOTPRINT
REPORT**

FOR

ALLKLEAR HEALTH LIMITED

Prepared by
Allied Environmental Consultants Limited

COMMERCIAL-IN-CONFIDENCE

Allied Environmental Consultants Limited

Member of AEC Group (HKEX Stock Code: 8320.HK)

27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong

www.asecg.com T: +852 2815 7028 F: +852 2815 5399

沛然環境評估工程顧問有限公司

沛然環保集團成員 (港交所股份代號: 8320.HK)

香港灣仔告士打道 160 號海外信託銀行大廈 27 樓



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1. Goal and Scope

1.1. Goal

1.1.1. Allklear Health Limited ("Allklear") aimed to carry out Carbon Footprint assessment on future salad. Through this assessment, the carbon footprint of refrigeration storage, transportation, packaging plastic consumption, food waste disposal can be calculated. The unit of calculations used in this report is "per serving".

1.1.2. Furthermore, the process chain of future salad can also be compared with that of traditional salad through this investigation. The information of traditional salad and future salad is shown in **Appendix 2**.

1.2. Scope

1.2.1. The expiration date refers to the product lifetime of use. The result of future salad and traditional salad calculated in this report will therefore be expressed in 2-year and 5-day of use separately.

1.2.2. Product Boundary

1.2.3. The assessment is conducted based on one serving portion of salad. To evaluate the greenhouse gas (GHG) emissions of the product life cycle in relative scale of Global Warming Potential (GWP100), the results are expressed in kilogram (kg) of the carbon dioxide equivalent (CO₂e) in this report. The product is transported from multiple locations to Hong Kong. The calculation will mainly include the carbon footprint from distribution stage to end of life stage. The product boundary of this valuation is set to include the following life cycle stages:

- Refrigeration Storage
- Transportation
- Plastic Packaging Consumption
- Food Waste Disposal

1.2.4. The product boundary is shown in Figure 1 Life Cycle Process Map of Future Salad. It includes phase of distribution, use and end of life (disposal / recycling).

1.2.5.



Figure 1 Life Cycle Process Map of Future Salad

2. Life Cycle Inventory

2.1. Data Collection

2.1.1. The distribution phase includes transportation from Allklear to distribution site.

2.1.2. The transportation distance of future salad and traditional salad is about 10 km by a 5.5 tons refrigerated truck. The transportation time of future salad and traditional salad is 30 minutes. The calculation part is shown in **Appendix 1**. The result is calculated as follows:

Total Carbon Emissions of Traditional Salad: **4.55** kg CO₂e

Total Carbon Emissions of Future Salad: **4.414** kg CO₂e

2.1.3. The usage and storage of future salad generate no carbon emissions. Freezers will be used for the usage and storage of traditional salad and the storage time of traditional salad is 5 days. The refrigerator is assumed as 1,550W and the diversity factor is assumed as 0.1. The calculation part is shown in **Appendix 1**. The result is calculated as follows:

Total Carbon Emission of Traditional Salad: **10.044** kg CO₂e

Total Carbon Emission of Future Salad: **N/A** kg CO₂e

2.1.4. The scope of calculation for the carbon footprint includes stages before the product is delivered to the user. Therefore, end of life phase is excluded in the scope. In this case, the consumption can be estimated by the component of salad. The disposal of salad can be separated into plastic waste and food waste. Both plastic waste and food waste will not generate direct carbon emissions. Other indirect emissions such as waste treatment are excluded in this report.

Total Carbon Emissions of Traditional Salad: **10.044** kg CO₂e

Total Carbon Emissions of Future Salad: **N/A** kg CO₂e

3. Life Cycle Impact Assessment

3.1.1. The result in this report shows that the product carbon footprint has a direct correlation with the distribution and storage, which is caused by vehicle and freezer. The scope of the assessment includes distribution, use and refrigeration.

3.1.2. Based on the methodology and assumptions described in this report, the GHG emissions of the future salad and traditional salad are **0.0088** kg and **0.1464** kg (per serving) of CO₂e respectively.

3.1.3. In terms of life cycle phases, the product carbon footprint of traditional is shown in Figure 2. It shows that the storage phase accounts for most of the product carbon footprint, which is 69% of the GHG emissions in the whole life cycle.

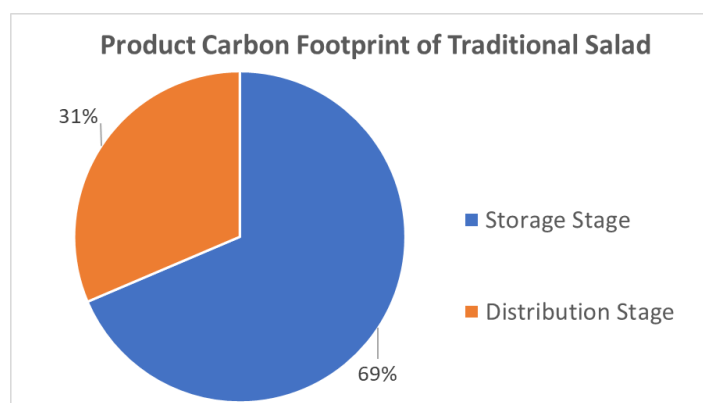


Figure 2 Product Carbon Footprint of Traditional Salad

3.1.4. The product carbon footprint of future salad is shown in Figure 3. It shows that the distribution phase accounts for 100% of the GHG emissions in the whole life cycle.

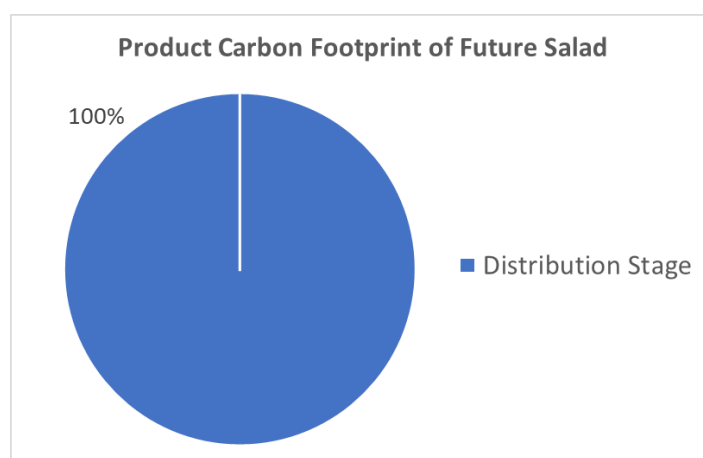


Figure 3 Product Carbon Footprint of Future Salad

Appendix A - Product Carbon Footprint

Product Carbon Footprint

Electricity emission factor	0.61 (From HKEX 2021)
Energy consumption of refrigerator*	0.504 / 2 = 0.252 kWh

A. Distribution

	Future Salad	Traditional Salad
Vehicle*	5.5 tons truck	5.5 tons refrigerated truck
Fuel type*	Diesel	Diesel
Batch*	500	100
Consumption required*	1.86 L	1.86 L
Refrigeration energy during distribution*	N/A	0.252kWh
Emission factor of diesel	2.373	2.373
Carbon emissions	1.86 x 2.373 = 4.414 kg CO ₂ e	(1.86 x 2.373) + (0.252 x 0.61) = 4.57 kg CO ₂ e

B. Use and Refrigeration Storage

	Future Salad	Traditional Salad
Duration*	2 years	5 days
Energy required*	N/A	1,550 W x (5 x 24) x 0.1 = 18 kWh
Carbon emissions	N/A	18 x 0.54 = 10.044 kg CO ₂ e

C. Total Product Carbon Emission (Distribution, Use and Refrigeration)

Total carbon emissions per serving	C = A + B / Batch	
	4.414 / 500 = 0.0088 kg CO ₂ e	(4.57 + 10.044) / 100 = 0.1595 kg CO ₂ e

*Data provided by Allklear

Appendix B - Information of Traditional Salad and Future Salad

Information of Traditional Salad and Future Salad

Item	Future Salad	Traditional Salad
One batch	500	100
Carbon emissions caused by cold chain preservation (kg)	0	11.35
Percentage reduction	-100%	
Product carbon emissions (per serving)	0.0088	0.1595
Percentage reduction	-94.48%	
Storage space per serving (m ³)	0.00011	0.00113
Percentage reduction	-90.27%	
Plastic consumption (grams) (per serving)	1	13
Percentage reduction	-92.31%	
Food waste (grams) (per serving)	12	150
Percentage reduction	-92.00%	