

# Definition and Sub-Categories of Food Waste

If you cannot measure it,  
you cannot manage it

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Japan

# Background (International) SDG Targets on Food Waste

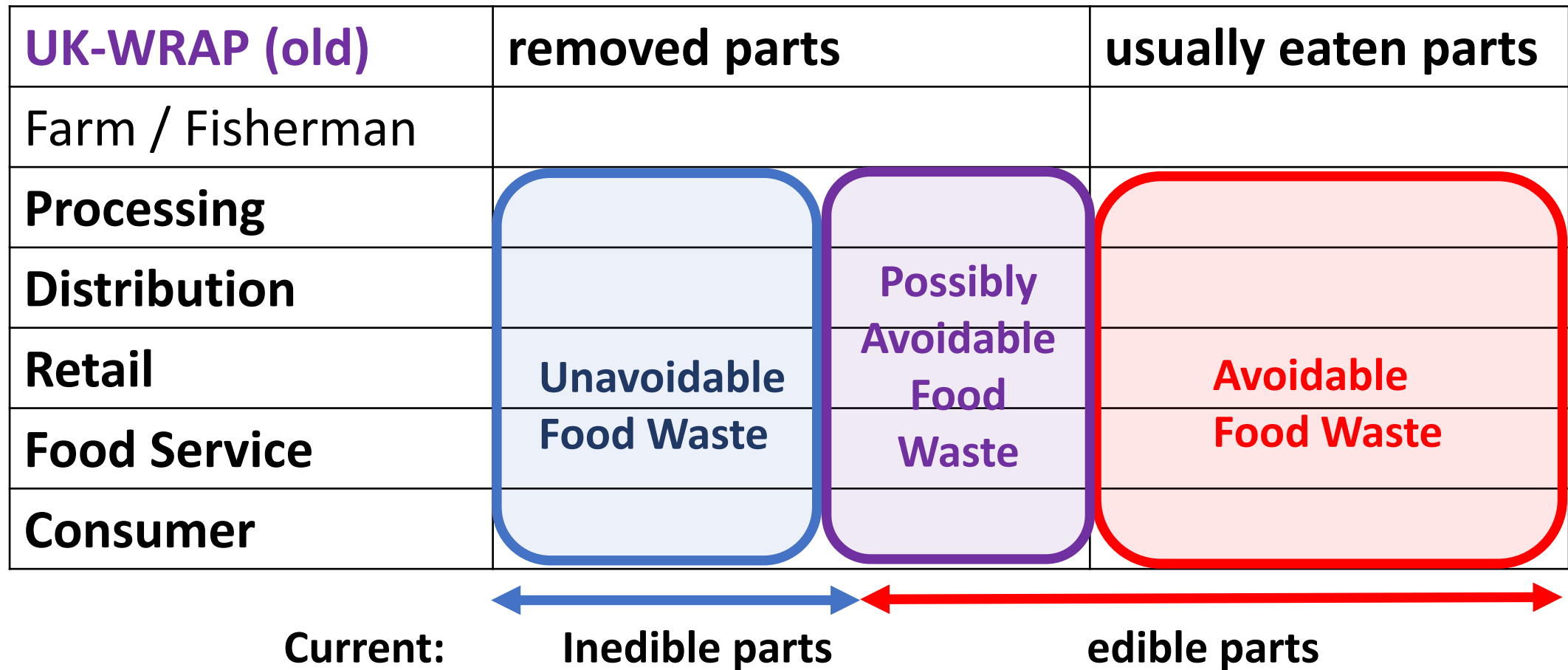


- **SDG12: Responsible Consumption and Production**
  - **12.3** By 2030, halve per capita global **food waste** at the retail and consumer levels and reduce **food losses** along production and supply chains, including post-harvest losses
- 
- \* Definitions - what are food waste / food losses?
  - \* How do we measure them?
  - \* halve from 2015? then we can only use pre-existing data

# What is food waste / food loss?

FAO	removed parts	usually eaten parts
Farm / Fishermen		
Processing		 <p>The diagram consists of two overlapping rounded rectangles. The outer rectangle is light red with a thick red border and contains the text 'Food Loss' in red. The inner rectangle is light purple with a thick blue border and contains the text 'Food Waste' in blue. The purple rectangle is positioned at the bottom of the red rectangle, indicating that food waste is a subset of food loss.</p>
Distribution		
Retail		
Food Service		
Consumer		

- Original stance of FAO considers only usually eaten parts as **food**.
- Some documents suggest that Food waste is a subset of Food loss



- WRAP separated food waste into Unavoidable (inedible) and Avoidable (edible).
- Also introduced the concept of "possibly avoidable" such as bits of edible parts removed together with veg/fruit peels, or some parts that are edible, but removed according to taste.

<b>JAPAN</b>	<b>removed parts</b>	<b>usually eaten parts</b>
<b>Farm / Fishermen</b>		
<b>Processing</b>	<div>Food Waste</div>	<div>Food Loss</div>
<b>Distribution</b>		
<b>Retail</b>		
<b>Food Service</b>		
<b>Consumer</b>		

- Food waste includes inedible parts
- Food loss is in general, a subset of food waste
- Japanese "food loss" includes UK-WRAP's "possibly avoidable"

EU (Original?)	removed parts		usually eaten parts	
Farm / Fishermen	Animal Feed / Bio- Material? (not waste or loss)	Food Loss		
Processing				
Distribution				
Retail		Food Waste		
Food Service				
Consumer				

- Food Loss in **upper stream** and Food Waste in **lower**
- Utilization as animal feed or Bio-materials are not loss or waste
- No distinction between removed parts and usually eaten parts

# Background (International)

## Target setting to halve



- SDG12 Target 3

⇒ By 2030, halve per capita global food waste at the retail and consumer levels

[Indicator] 12.3.1 (b) Food waste index ( Tier III ) (UNEP)

Recycling of food waste cannot reduce impact of food production

**SDG 12.3 should focus on food waste prevention**



The indicator should measure **avoidable food waste**.

# Background (Japan)



- Japanese policy toward SDG12.3

⇒ The 4th Fundamental Plan for Establishing  
a Sound Material-Cycle Society (June 2018)  
→ By 2030, halve the generation of household  
avoidable/edible food waste compared to 2000

- For reduction of food waste: Law, act and regulation

⇒ Foodstuff recycling law (enact 2001) Target: Business sector  
⇒ The law on promoting food waste prevention (May 2019)  
Target: Household

■ Business sector's food waste → Recycling

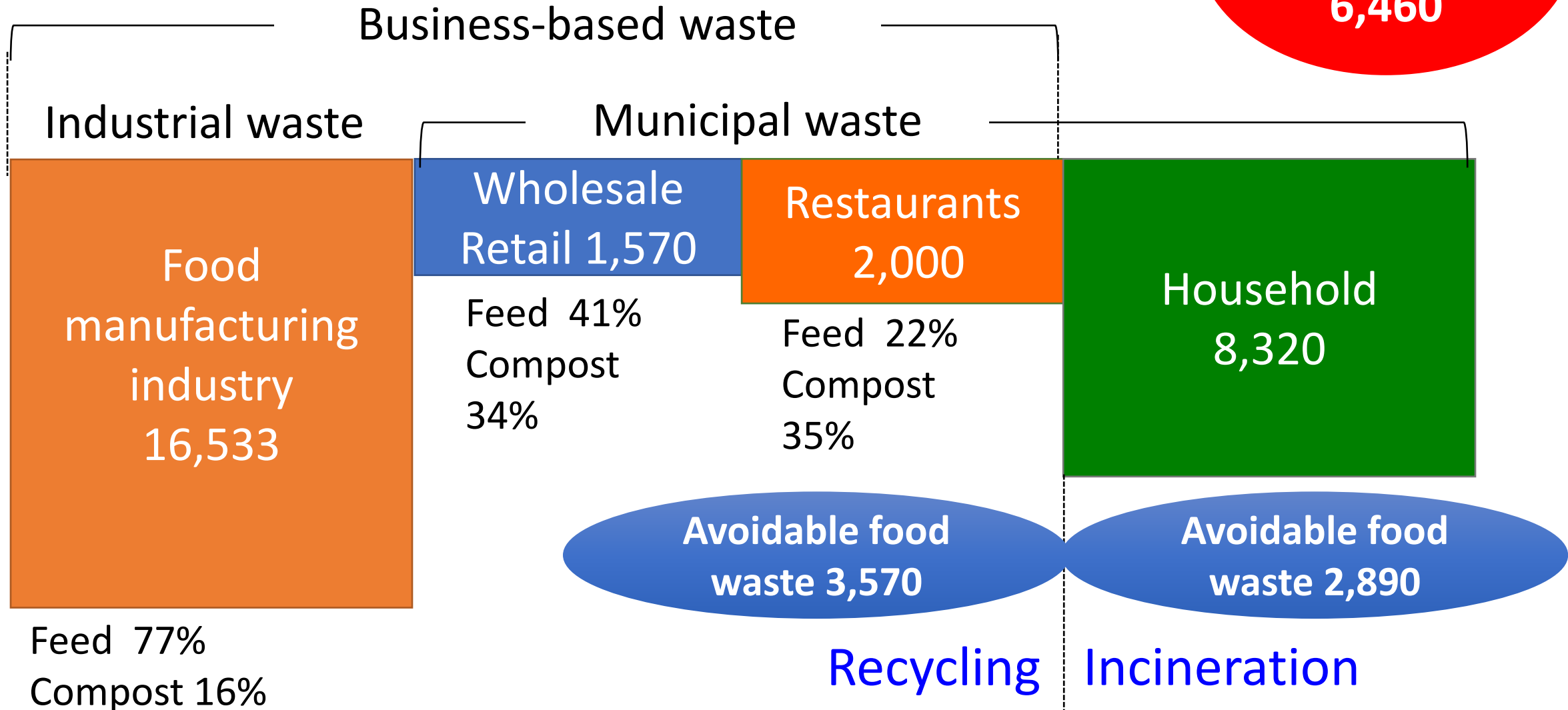
■ Households' avoidable food waste → Prevention



# Food waste treatment in Japan

unit: 1,000 metric tons (2015)

**Avoidable  
food waste  
6,460**



Approximately 28.42 million tons of annual food disposal in Japan

# Is it the real amount of avoidable food waste?

**Avoidable  
food waste  
6,460**

unit: 1,000 metric tons (2015)

- Difficult to estimate the actual amount because the survey methods of municipalities are different
- MOE published a guidance/manual for food waste sorting analysis in 2018
- but there are still some problems, with inconsistency

→ Definition

Objectives

Sorting method

**Garbage in,  
Garbage out**

# Objectives

- To define avoidable food waste from households
- To propose an internationally agreeable sorting method
- To present the result of test case-study of household waste composition analysis in Tokyo

# **Developing the internationally agreeable sorting method**

The methodology of food waste sorting analysis with categories that should be:

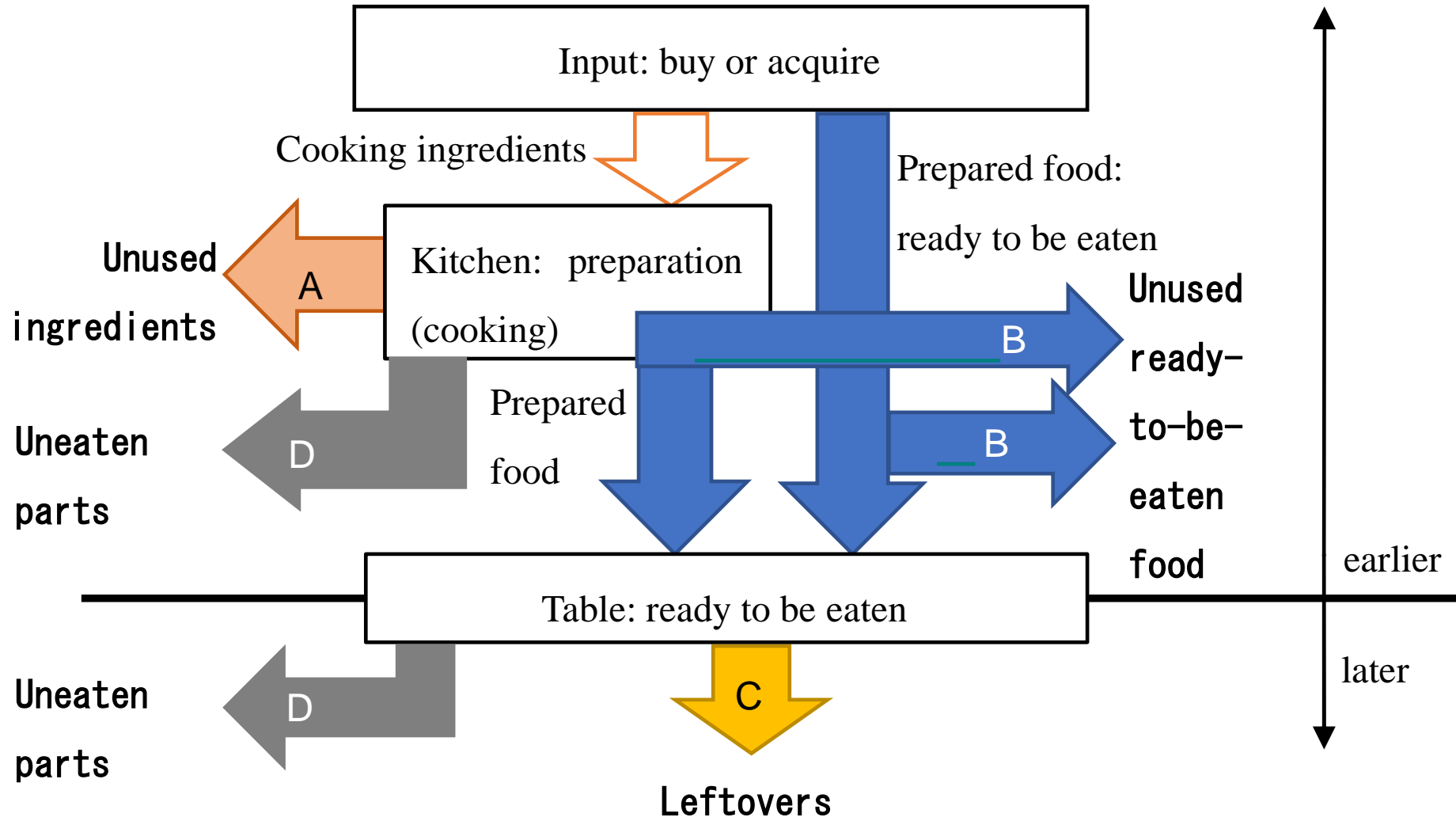
**(1) Easy to understand,**

**(2) Easy to sort food waste into categories, on the waste composition analysis**

**(3) Useful for planning policies and activities for food waste prevention**

# Food flow and stages of food waste generation in household

Concept



$$\text{Avoidable food waste} = A + B + C$$

# Main categories of food waste

Categories	Definitions
A: Unused ingredients	Discarded unused food material for cooking. Unused food except unused ready-to-be-eaten food
B: Unused ready-to-be-eaten food	Discarded unused food items prepared until the last step before consumption
C: Leftovers	Ready-to-be-eaten or cooked foods that appear to have been disposed after being partially eaten
D: Uneaten parts	Parts of food materials intentionally removed as uneaten parts in the process of cooking or eating

↑ Intentionally removed

# Detailed categories of food waste

Food waste	Avoidable food waste	A/B Un used food	1 Un opened	A1 Unopened ingredients	<ul style="list-style-type: none"><li>▪ fresh vegetables/fruits, raw meat, raw fish, grains, etc.. contained in packages (including trays and containers) unopened, unopened dry noodles, etc..</li></ul>
				B1 Unopened food	<ul style="list-style-type: none"><li>▪ deli foods, instant cup noodles, retort-pouched foods, frozen foods, pastry buns, etc.. in unopened packages</li></ul>
				B' Unopened drinks	<ul style="list-style-type: none"><li>▪ packaged (including containers) drinks (unopened)</li></ul>
			2 Opened	A2w Whole unused ingredients	<ul style="list-style-type: none"><li>▪ a slice of bread, whole fruits and vegetables, a mostly-intact cluster of grapes, etc..</li></ul>
				A2wf Home-grown vegetables	<ul style="list-style-type: none"><li>▪ characteristically discarded in large amounts, these are vegetables that looked directly from fields, etc.</li></ul>
				A2p Partly used ingredients	<ul style="list-style-type: none"><li>▪ raw rice, parts of fruits and vegetables (a quarter of an onion, etc..), meats without packages, cuts of raw fish, processed, etc.. (no bags).</li></ul>
		C Leftover	B2 Uneaten food	<ul style="list-style-type: none"><li>▪ a whole pastry role, a single pastry etc.. (no packaging), partly used items left in opened packaging intended for further storage</li></ul>	
			C Leftover food	<ul style="list-style-type: none"><li>▪ household dishes, partly eaten pastry breads, etc..</li><li>▪ all dishes without packages or the packages of which have been opened</li></ul>	
	Non-Avoidable food waste	D Uneaten parts/ Intentionally removed	C' Leftover drinks	<ul style="list-style-type: none"><li>▪ drink leftovers (opened)</li></ul>	
			De Possibly avoidable	<ul style="list-style-type: none"><li>▪ vegetable scraps, used cooking oils, skins of meats or fish, fat (tallow etc..), bread crust, etc..</li></ul>	
E Unclassifiable		Di Inedible parts	<ul style="list-style-type: none"><li>▪ fruit skins and cores, grape stems, the brown skin of an onion, corn husks and bare cobs etc..</li></ul>		
		<ul style="list-style-type: none"><li>▪ waste from kitchen sink strainers etc.. or blended waste</li></ul>			



## A: Unused Ingredients





# Detailed categories of food waste

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## B: Unused ready-to-be-eaten food



# Detailed categories of food waste

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## C: Leftover food





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**De: Possibly avoidable-** Intentionally removed





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**Di: Inedible parts- Intentionally removed**





# Detailed categories of food waste

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Point of the argument

Point of the  
argument

# Outline of Food Waste Sorting Analysis

- Date: Sampling & Sorting : 1<sup>st</sup> Tue. 10th Jul. 2018  
2<sup>nd</sup> Tue. 11th Dec. 2018
- Sampling area : Residential area in X ward, Tokyo →
- Total amount of Sampling : 1<sup>st</sup> 71.55kg    2<sup>nd</sup> 81.80kg  
of residual combustible waste,  
which are deposited at 3 waste collection points,  
waste from about 40 households for 4 days





# Flow of Food Waste Sorting Analysis

Taking photos



Setting up



Sorting



Sorting



Weighing



Checking Exp.date



Cleaning/Clearance



# Sorting into detailed categories



**A2w:** Whole unused ingredients



**A2p:** Partly used ingredients



**A1 & B1:** Unopened ingredients & Unopened food



**B2:** Uneaten (ready-to-be-eaten) food



**C:** Leftover



**C':** Leftover drinks

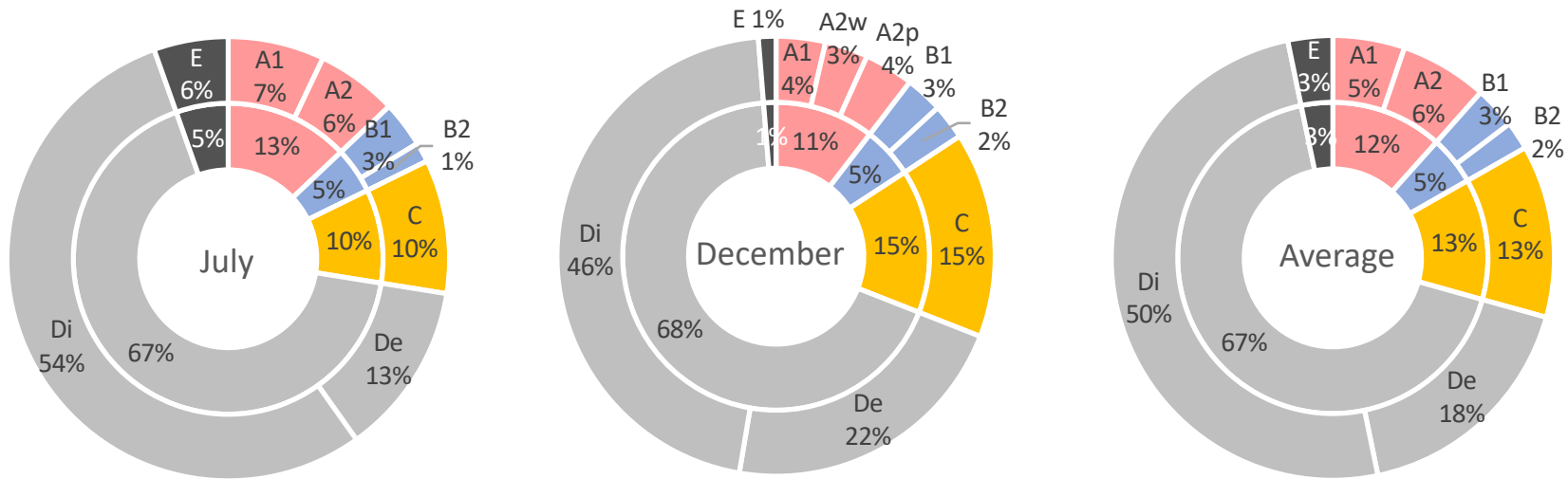


**De:** Possibly avoidable

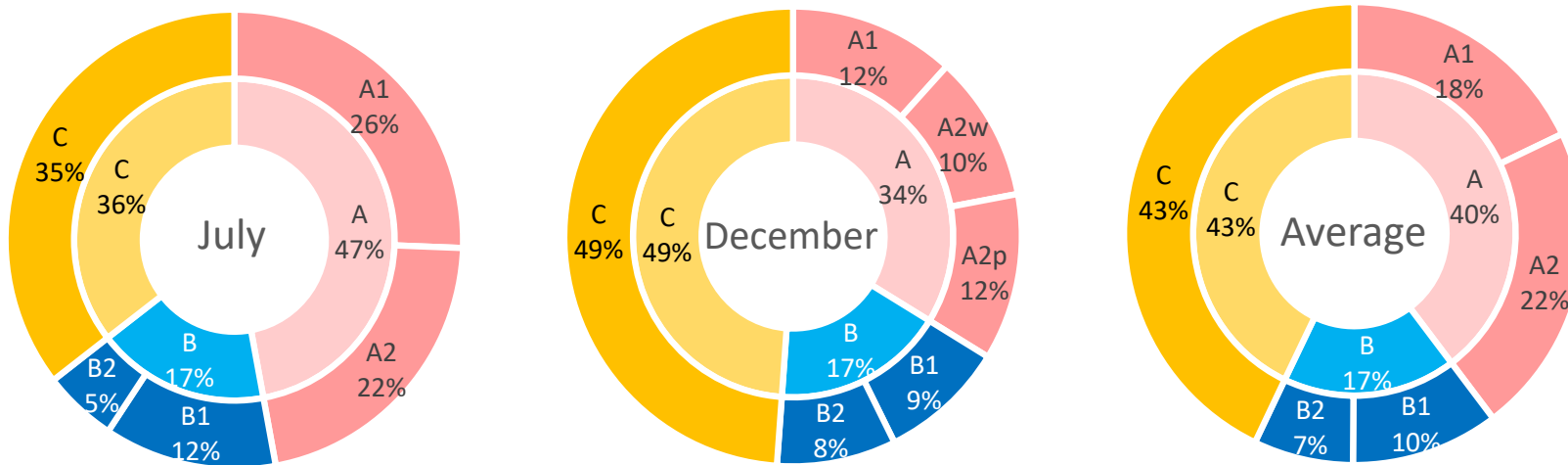


**Di:** Inedible parts

# Results: Food Waste Composition In an Urban Area



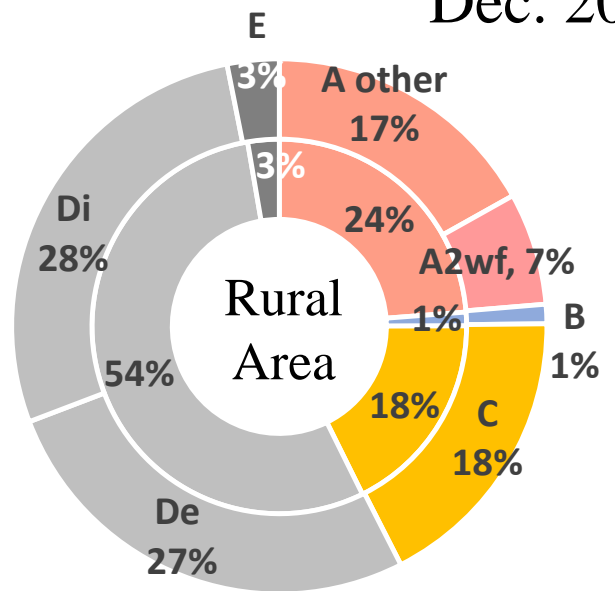
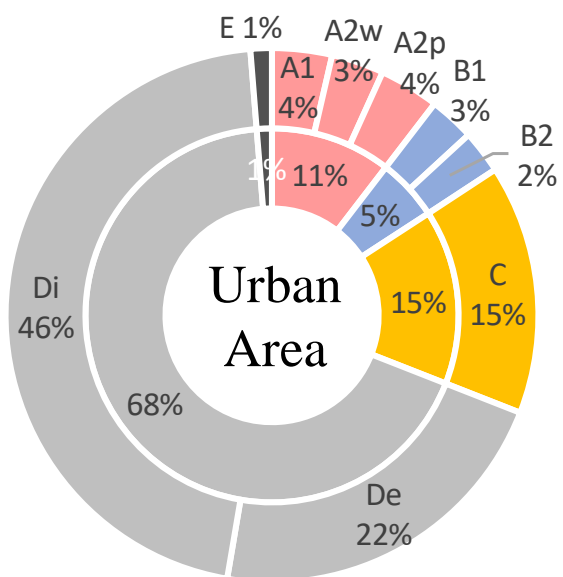
Results of food waste composition analyses (July, December, and average)



Rates of the different classifications of avoidable food waste for each analysis as a percentage of total avoidable food waste (July, December, and average)

# Food Waste Composition: Urban and Rural Area

Dec. 2018



Excluding Large amount of “untouched food” in some bags  
(Yasakawa, 2019)

Proportion of avoidable food waste

Urban : 30%                      Rural : 43%

Average rate of 15 municipalities : 35%

(Mitsubishi UFJ Research & Consulting, 2019)

Legend

Avoidable	A: Unused ingredients	A1	Unopened ingredients
		A2w	Whole unused ingredients
		A2wf	Home-grown vegetables
		A2p	Partly used ingredients
	B: Unused ready-to-be-eaten food	B1	Unopened food
		B2	Uneaten food
		B'	Unopened drinks
	C: Leftovers	C	Leftover food
		C'	Leftover drinks
	Non-avoidable	D: Uneaten parts	De
Di			Inedible parts
E: Unclassifiable			

# Discussion

(1) Easy to understand,

- Not so much confusion

(2) Easy to sort food waste into,

- Students did not have so many troubles

(3) Useful for planning policies and activities for food waste prevention

- Yes. It can be used to identify the priority of activities for reduction of avoidable food waste

# Acknowledgment

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and Technology Development Fund ( 3-1805 )

**Thank you for your attention!**