

# Estimating the amount of wasted food

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# Food Waste observed at Household waste analyses



Freiburg, DE



# Food Waste observed at Household waste analyses



Neyagawa, JP

# How much food gets wasted?

Method 1: Food supply - intake balance

Method 2: Waste Composition Analysis

(Method 3: Food loss survey)

# Method 1 - Food supply and intake approach

Japan 2007:	Supply	2551kcal/day/person (MAFF survey)
	Intake	1841kcal/day/person (MHLW survey)
	Difference	710 kcal (25.5% of supply)

= wasted edible food(?)

In weight

Supply 1578g : Intake 1450g (water is added in cooking)  
 $710\text{kcal} / 1.309\text{kcal/g} = 540\text{g}$

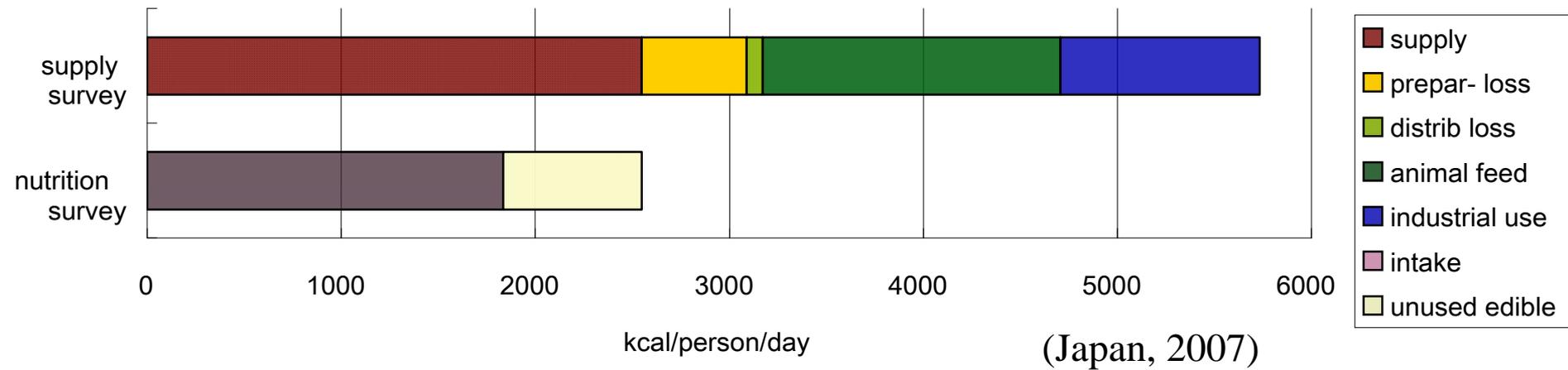
MHLW- household survey (3586hhs in 2007, age 1~100+, bias? )  
householders record what they used for meal preparation, +interview by nutritionist

MAFF - FAO standard procedure, includes production, import, export, etc.

Applies "standard yield" in cooking; eg. 90.6% of potato is edible

\*supply includes loss in distribution only between farm and market

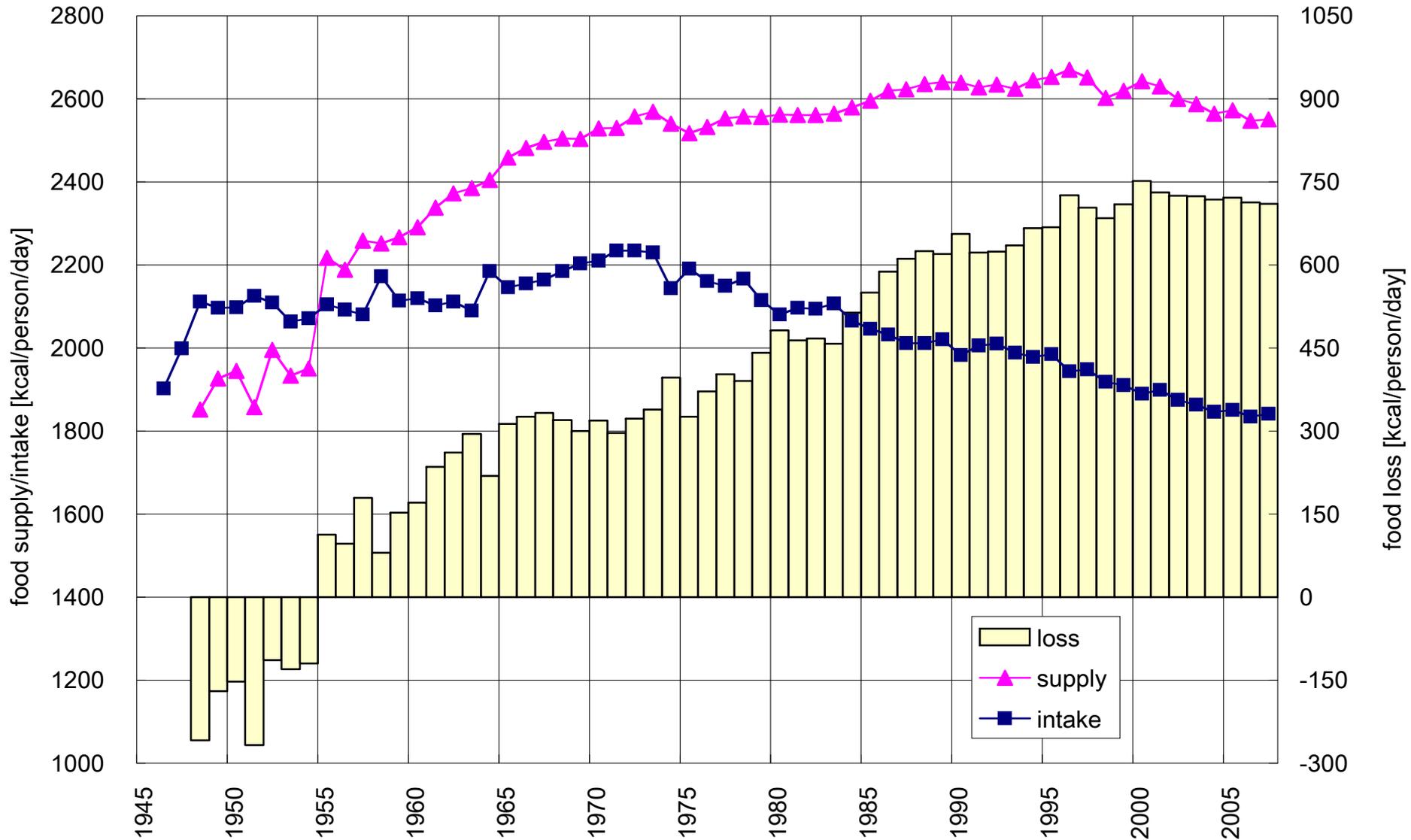
# "big picture" of supply and intake



## Additional remarks on "lost edible food"

- \* breakdown into detailed food items
  - very difficult (supply is ingredient, intake is dish)
- \* breakdown into nutritional contents: fat lost more than protein

# Time Series of Supply, Intake, and Difference(loss)



## Method 2 - Waste composition analysis

		Total	Potentially Edible	
Household 711g <sup>1)</sup> x 35% <sup>2)</sup>		249g	106g	analysis result: 42.6% of total food waste <sup>4)</sup>
Commercial <sup>3)</sup>	restaurants	68.5g	29g	apply household results
	stores	68.5g	68.5g	mostly shelf leftovers
Industrial (food processors) <sup>3)</sup>		106g	0g	mostly preparation loss
Total		491g	203.5g	

[g/day/person] Japan, 2006

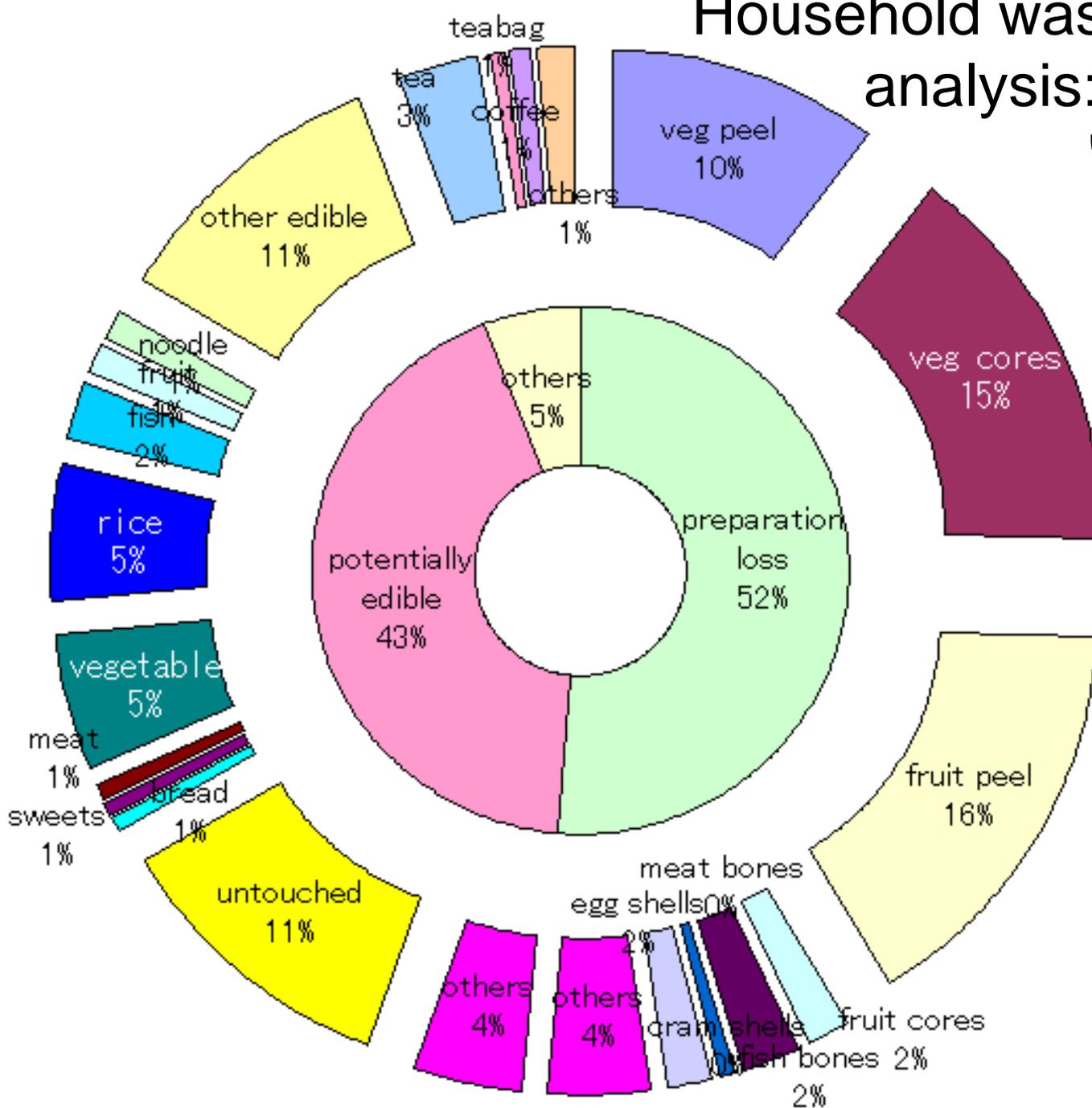
1) National waste statistics (MoE, 2008)

2) Representative percentage from various analysis results (Takatsuki, 2008)

3) "Survey on the cyclical use of food resources" (MAFF, 2008)

4) Takatsuki (2006)

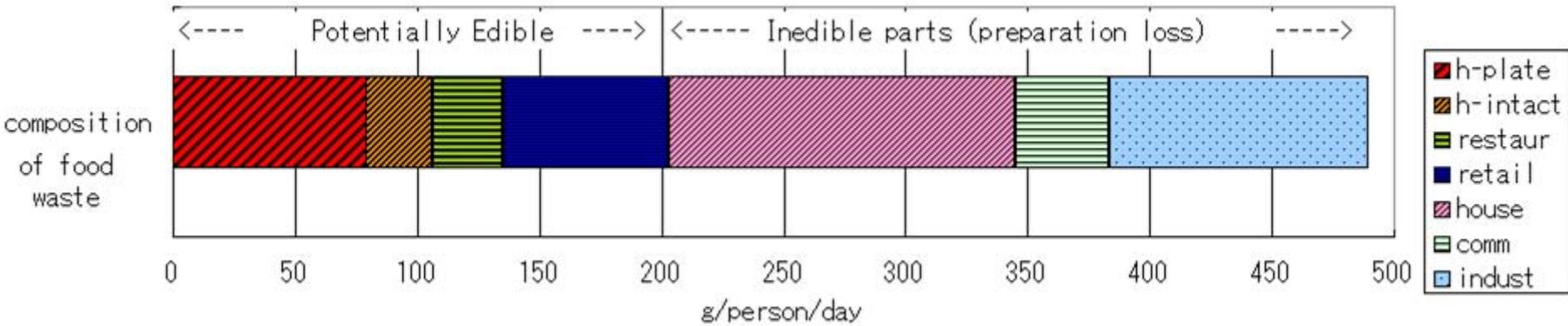
# Household waste composition analysis: breakdown of "kitchen waste"





マンション a





Estimates from Compositional analysis

less than  $1/2 \times$  [Supply - Intake method]

eg. potentially edible food waste 204g(comp): 540g(supp-int)

(Factors to be considered:

disposers, non-municipal composting? other food waste sources?

food Intake negatively biased?)

# International comparison

UK (2005) household waste 1400g/day/person (DEFRA 2006)

food 19% (WRAP 2006) = 269g

FAO food supply 3440 kcal (2003)

DEFRA nutrient intake survey is based on household expenditure survey (wastage at household assumed 10%) 2320 kcal incl alcohol (2007) (DEFRA, 2008) 1120 kcal (33%) lost in distribution?

National Diet & Nutrition Survey (ONS, 2000) 1832 kcal (19-64 yrs)

Amount wasted at households not only 10% of purchase? = 665 kcal(27%)

WRAP(2008) "The food we waste" *1/3 of the food we buy, we throw away*

Method different from Japan, not directly comparable?

FAO supply figures - Austria: 3740 / USA: 3770 / Germany 3490 etc.

Intake – demographic composition / physical labour %

(not much difference within industrialised countries?)

# Foodstuff recycling law (Japan, 2001)

- \* Hierarchy: reduce - feed - fertiliser - energy
- \* “reduce” difficult to measure – no target at the moment
- \* Each company is to conduct at least 20% recovery
- current compliance only 18%; i.e. few companies with high recovery rate
- \* >100t/year generator of food waste must report to government  
(incl franchise as whole)

	share of f/waste	recovery rate	methods of recovery			
			fertiliser	feed	oil	CH4
food processing	43	72	45	51	3	1
wholesale	27	56	48	47	5	-
retail	23	28	56	31	13	0
restaurants	7	15	62	23	15	-
total	100	46	48	45	6	1

Other efforts:

- \* Food education in national primary school curriculum to include unwhasteful use of food

## To Conclude

- \* Several methods to estimate food loss – close look needed
- \* As much as 25% of total food supply may be wasted in Japan.
- \* Waste composition analysis indicate lower figure.
- \* Further investigation into explanation for difference between the two methods would be useful.
  
- \* International comparison – difficulty: method of dietary survey varies very much between countries.
- \* Looking at trends (time series) may be easier  
– which country have managed to decrease food waste?