

Approach to Reducing Food Loss in Kyoto City



Meguru-kun
(Character for resource recycle)



Kogomi-chan
(Character for waste reduction)

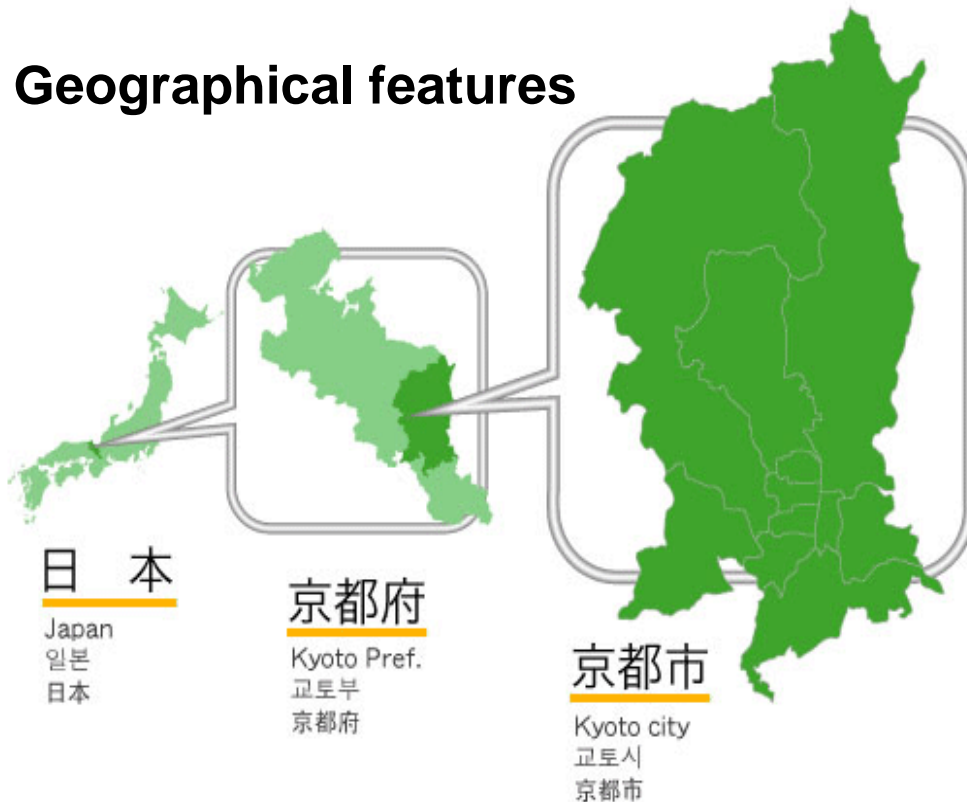
Junko Katsumi

Director of Waste Reduction Promotion, Environment Policy Bureau
City of Kyoto, Japan

Introduction of Kyoto City

Features of the city

Geographical features



Population: 1,475,000

Area: 827.9 km²

Gross City Product: \$74.6 billion

Historical city

- ~20% of national treasures exist in Kyoto City.
- 14 temples/castles designated as World Heritage.

Tourist city

- > 50 million tourists per year.

City of universities & students

- 38 universities & colleges
- University students accounts for 10% of the population.

Rich natural environment

- 3/4 of total area is forested.

Introduction of Kyoto City

Aiming to become “The Most Beautiful City in the World”

“World-renowned Kyoto, All Residents’ Action for City Beautification”



“The highest satisfaction level in terms of the beauty and cleanliness”
by questionnaire survey targeting foreign tourists



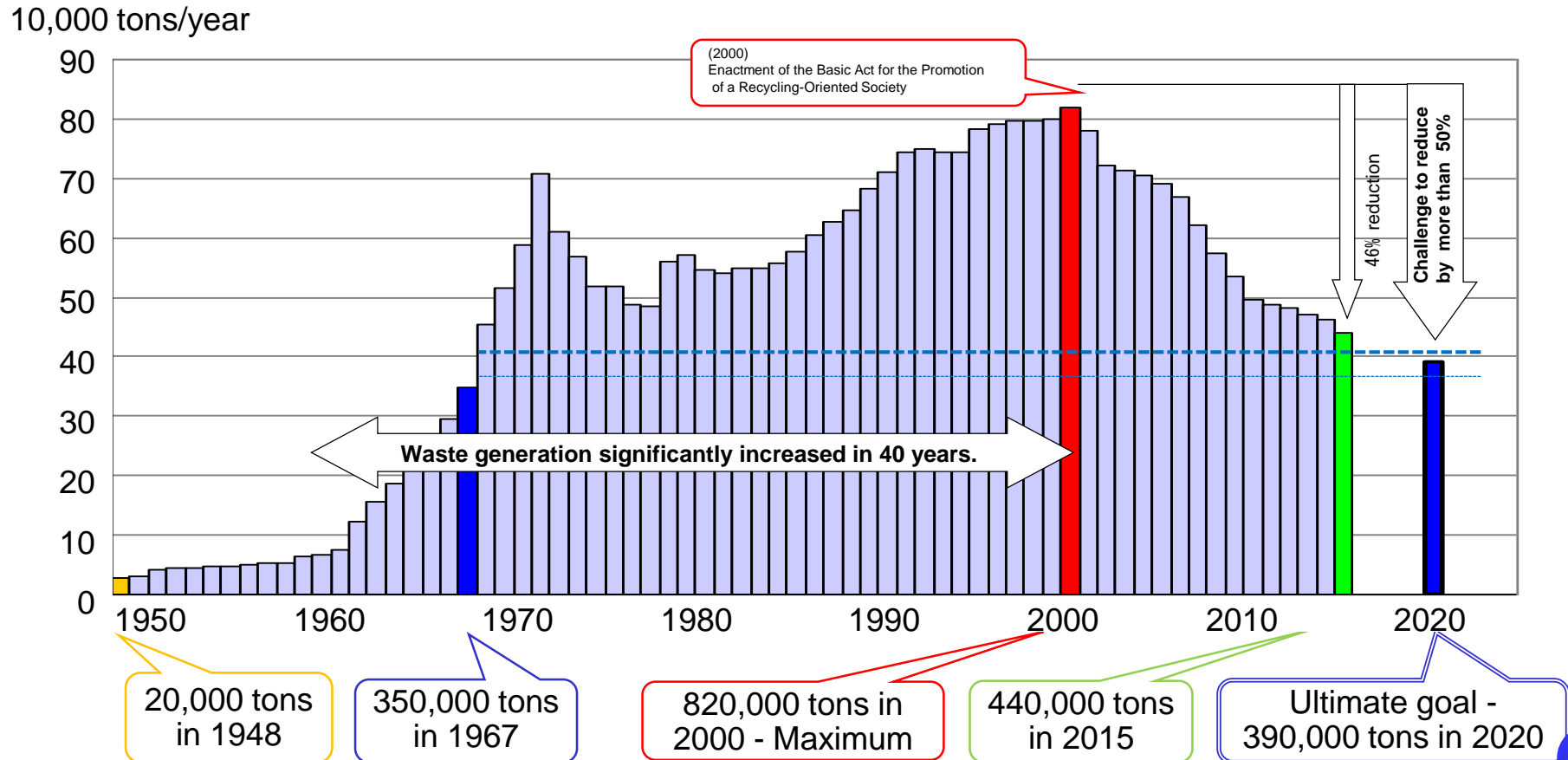
World's Best Awards by the U.S. magazine Travel + Leisure,
Kyoto was ranked 1st in 2013 & 2014
– Kyoto was selected as the world's most attractive tourist destination –



Current Situation of Waste in Kyoto City

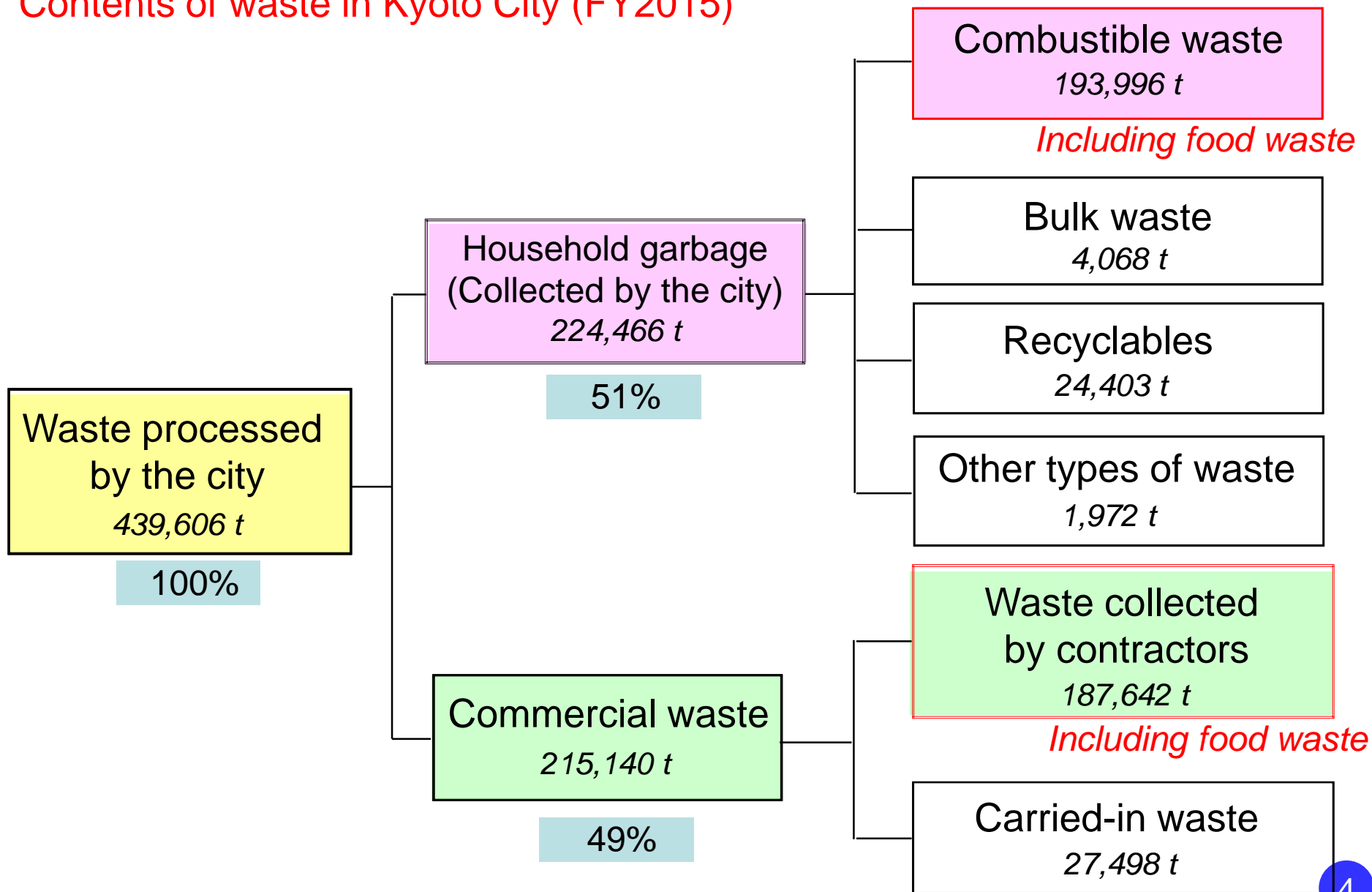
Waste generation

- 46% reduction in MSW generation from 2000 (820,000 ton) to 2015 (440,000 ton), thanks to the efforts of residents and business operators
- 26.1 billion JPY/year still required for waste processing
- Ultimate goal is 390,000 ton by FY2020



Current Situation of Waste in Kyoto City

Contents of waste in Kyoto City (FY2015)



Household Waste

Measurement steps of “Detailed Composition Surveys(FY2012)”

- Sampling

- 268 bags from 216 houses (in 3 designated areas for continuous survey)

- Measurement of total mass & volume

- 888 kg & 4841 L

- Primary classification

- Classified to 12 types (food waste, paper, plastic, fabric, leather, rubber, glass, metal, grass, wood, ceramic, others)
- Mass/volume measured for each fraction

- Secondary classification

- Food waste classified to untouched food, leftovers & cooking waste
- Mass/volume measured for each fraction

- Classification of untouched food

- Classified based on date of disposal versus best before date

Household Waste

Photos of the surveys



Household Waste

Surveys supported by many people



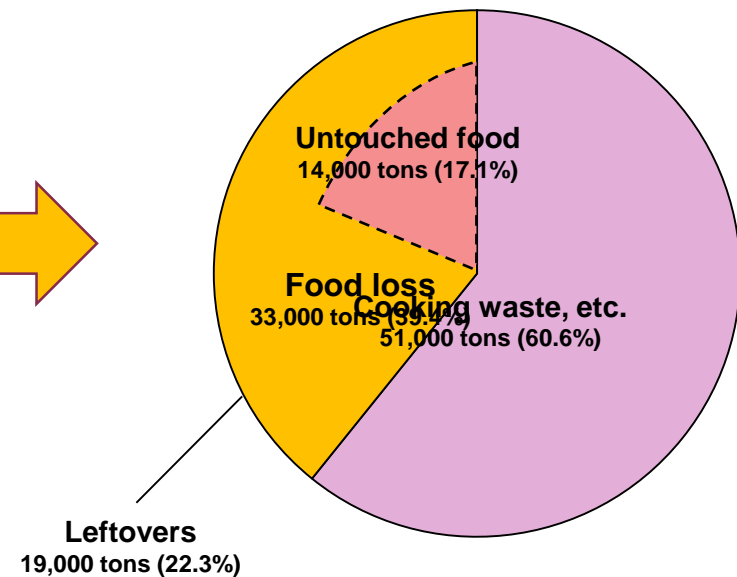
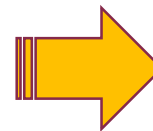
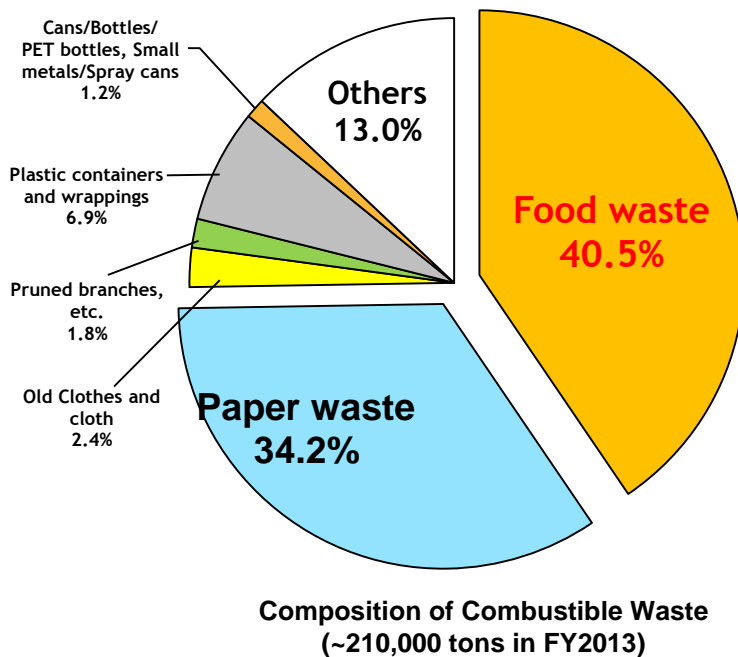
調査はたくさんの人に支えられています。



Household Waste

Composition of combustible waste (FY 2013)

- Food waste (~40%) and paper waste (~30%) in total amount
- Cooking waste (~60%) and food loss (~40%) in food waste
- Untouched food (~17%) in food loss



Household Waste

Untouched food disposed from 76 households in 3 days (FY 2009)

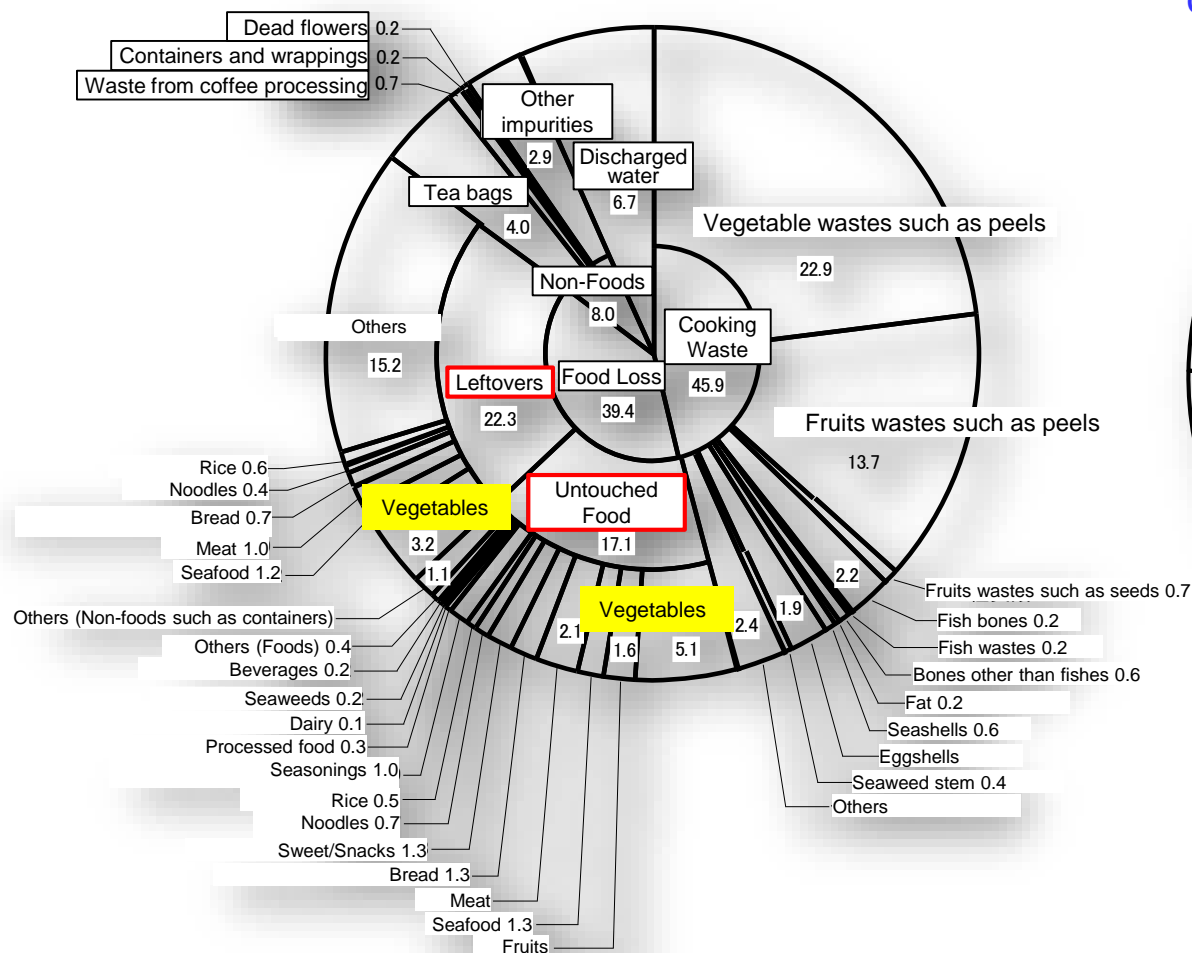


Household Waste

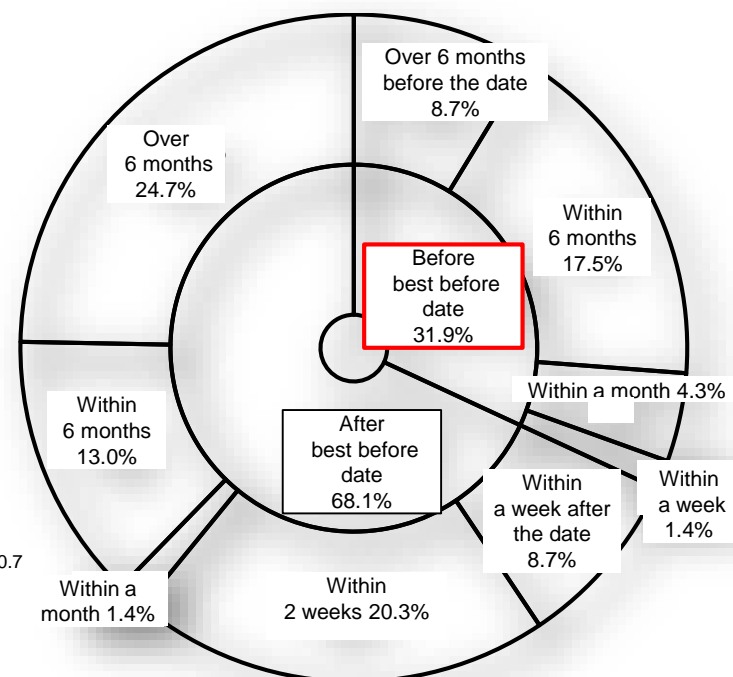
Situation of food loss

- Vegetables for the greatest proportion of the food loss (left figure)
- 33,000 ton/year food loss from households in Kyoto City
- ~30% of the untouched food discarded before its best before date (right figure)

Detailed composition of food waste (ratio by weight)



Best before date versus disposal date of untouched food (ratio by number)



〈Source: Survey of Kyoto City (FY 2012)〉

Commercial Waste

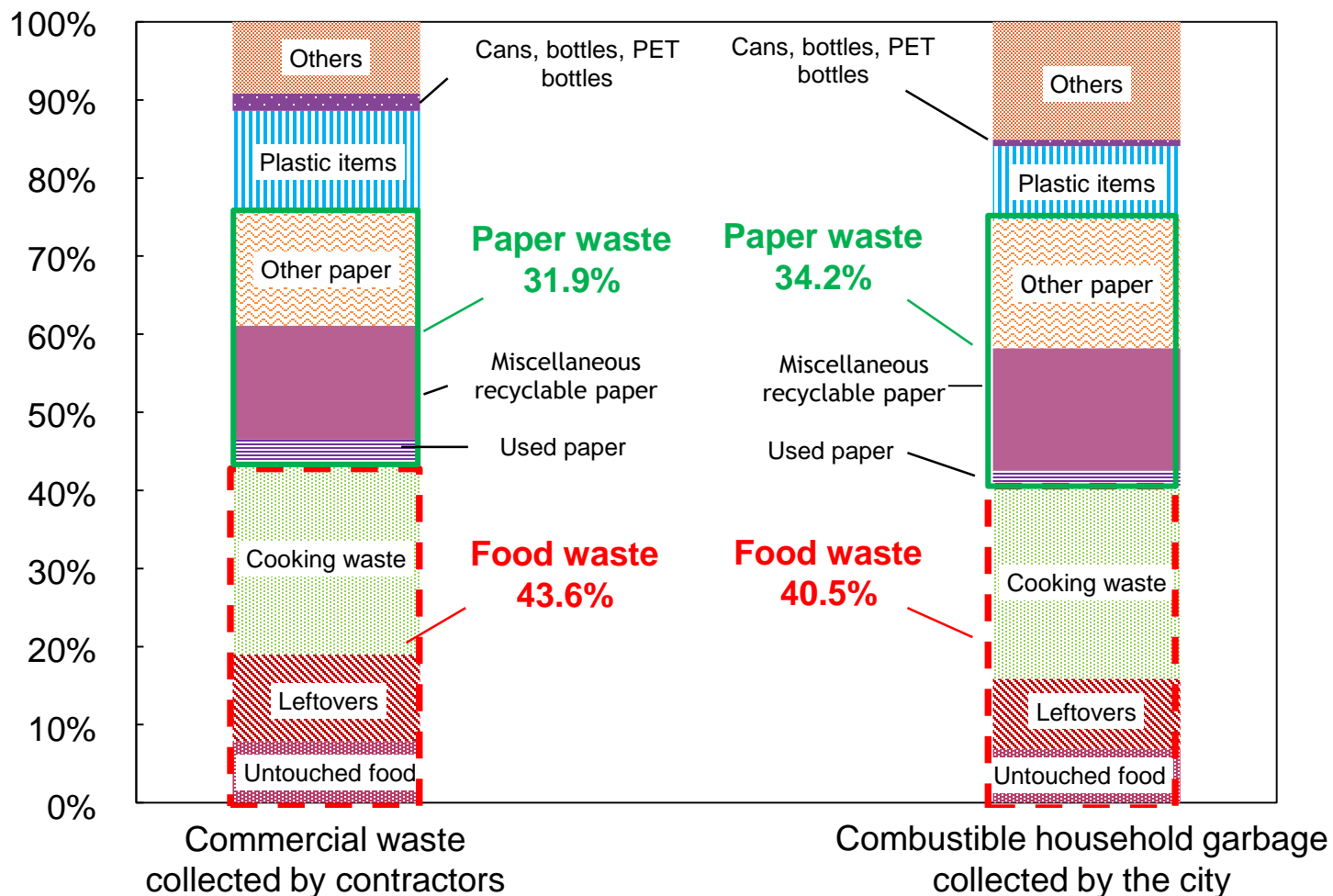
Measurement steps of “Detailed Composition Surveys(FY2011)”

- Analysis of contracts
 - 22,600 contracts from 37 business categories
- Selection of business categories
 - 137 companies/institutions from 37 categories
- Sampling
 - 3,907 kg & 30,231 L
- Primary classification
 - Classified to 12 types (food waste, paper, plastic, fabric, rubber, leather, glass, metal, grass, wood, ceramic, others)
 - Mass/volume measured for each fraction by business categories
- Secondary classification
 - Food waste classified to untouched food, leftovers, cooking waste
 - Mass/volume measured for each fraction by business categories

Commercial Waste

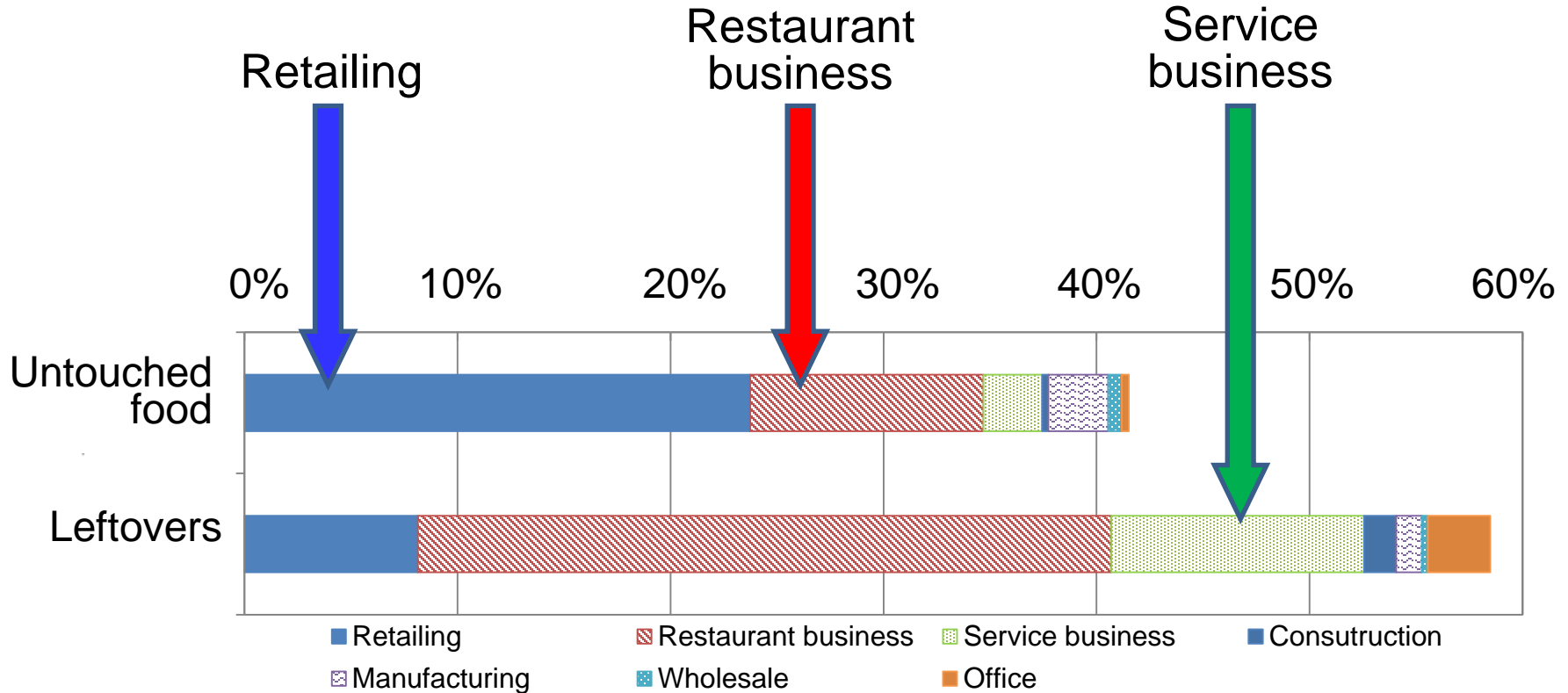
Composition of waste collected by contractors (FY 2013)

- Food waste (~44%) & paper waste (32%) for large proportions, similar to household garbage.
- ~41% of food waste is food loss.
- Commercial food loss estimated ~34,000 ton/year.



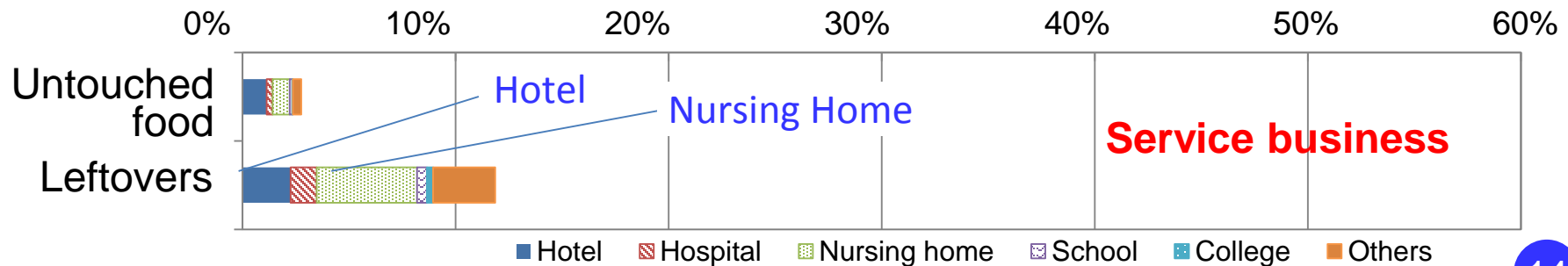
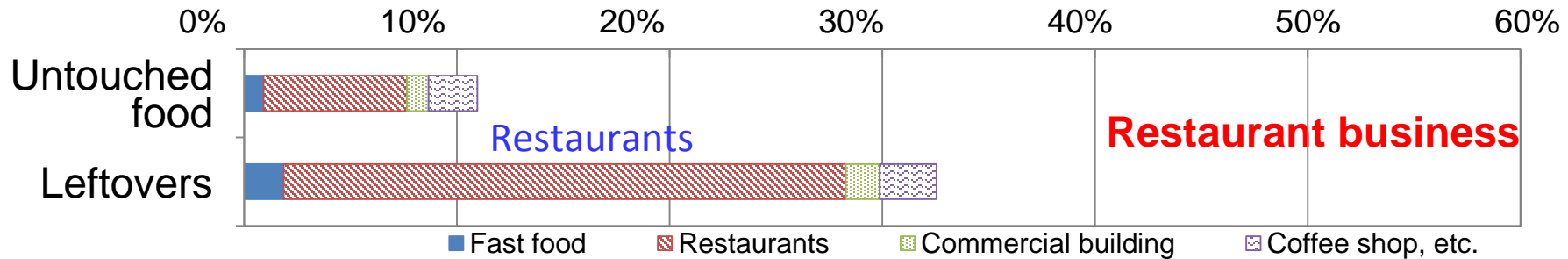
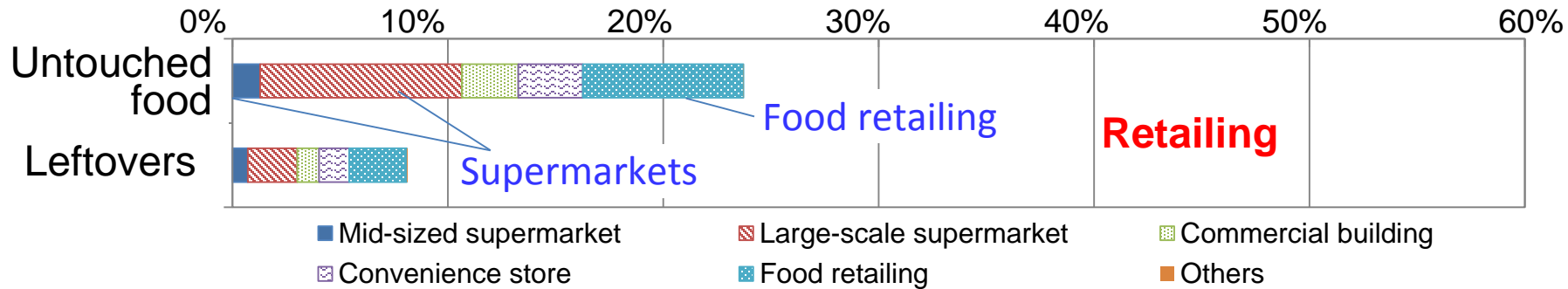
Commercial Waste

Food loss classified by business type (Survey in 2011)



Commercial Waste

Food loss classified by business type – Detailed classification



Commercial Waste

Food loss generations from supermarkets and restaurants

	Number of offices	Food loss generation (t/year)	Basic unit of generation (kg/office/day)
Supermarkets	338	4,700 (13.7%*)	38
Restaurants	5,272	11,500 (33.2%*)	6

*: Ratio per total food loss from commercial wastes



Large difference
between supermarkets
& restaurants

Kyoto City's Approach 1

“Shimatsu no Kokoro Ordinance”, aimed at halving the amount of waste

- Ordinance was revised to promote reduce, reuse, separation, and recycling (effective 1 Oct. 2015).
- “Duty to Be Implemented” and “Duty to Make Efforts” are applied to residents and business operators.

Efforts related to the reduction of food loss

	Duty to Be Implemented	Duty to Make Efforts
Restaurant	Conduct PR activities to promote eating with no leftovers (introduction of small-sized dishes, etc.).	Respond to customers who want to take their leftovers back to their home. (provision of doggie bags, etc.) (efforts of residents) Try to eat with no leftovers.
Retailing	Conduct PR activities to encourage consumers to buy products with less packaging or cooperate in collecting recyclables .	Promote sale by measure/weight, simplified packaging, and less packaging. Sell off foodstuffs that are close to their best before date. Explain to consumers about sales policies aimed at reducing food loss, including indicating reasons why some foodstuffs are out of stock.

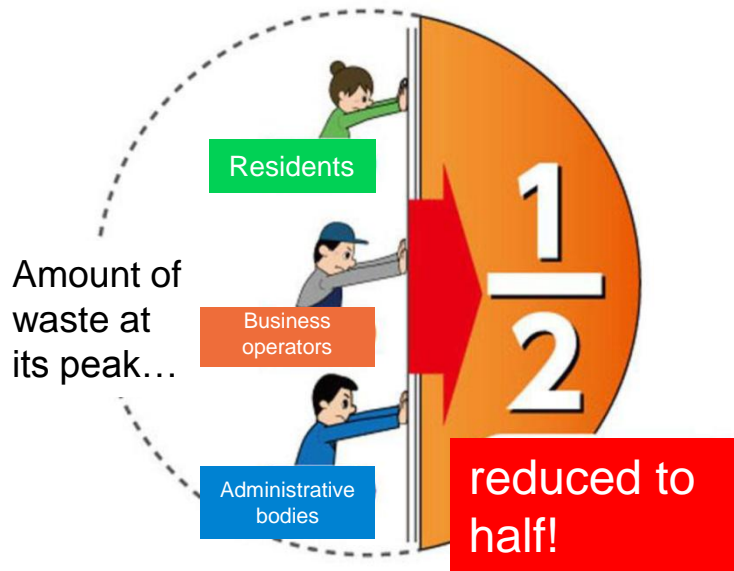
Kyoto City's Approach 2

New Plan for Halving Waste Amount of Kyoto City for 2015-2020

- **New Plan** was formulated in 2015, including **quantitative targets** for halving waste generation from its peak (FY2000) and **new measures** on waste reduction.
- Kyoto is the first city to set quantitative targets for reducing food loss.

Quantitative targets (unit: 1,000 tons)

	FY 2000 (at a peak)	FY 2013	FY 2020 (goal)
Waste processed by the city	820	472	390
Incineration	760	444	350
Food loss	96	67	50
Paper waste	220	140	100
GHG from waste management	270	120	80



Kyoto City's Approach 2

“3-KIRI Movement for Reduction of Food Waste”

- 3-KIRI Movement has been implemented since 2012 to promote three “KIRI”: Tsukai-KIRI (Using up), “Tabē-KIRI” (Eating up), and “Mizu-KIRI” (Draining)
- Activities include campaigns in commercial facilities, establishing a Web page (with a theme song, www.sukkiri-kyoto.com), and creating cartoons to explain 3-KIRI movement.



Campaign at a store



Animation of cartoons at web-page

Kyoto City's Approach 2

“Non-leftovers Promotion Premises” Recognition System

Restaurants and hotels have been recognized as Non-leftovers Promotion Premises, based on their good practices of 3-KIRI Movement for Reduction of Food Waste, since 2013.

Requirements for recognition

- 1) Efforts to use up foodstuffs
- 2) Efforts to result in no leftovers
- 3) Efforts to properly serve meals at parties and ceremonial occasions
- 4) Efforts to take leftovers back to home
- 5) Efforts to drain food waste before its disposal
- 6) Efforts to reduce the use of disposable products
- 7) Awareness movement aimed at resulting in no leftovers
- 8) Other efforts to reduce leftovers

Two or more
requirements
must be met!

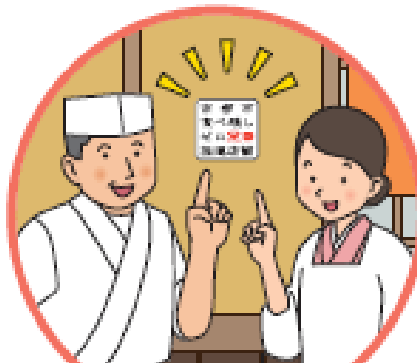


京都市
食べ残し
ゼロ 
推進店舗



Certification, **stickers**,
and **doggie bags** are
provided.

Certified restaurants & hotels are required to implement the following efforts.



Display stickers issued
by the city inside the
premises.



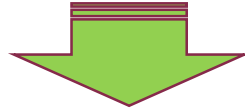
Proactively tell customers
or guests about the
details of the efforts.



Proactively undertake the
chosen efforts to reduce
food waste, etc.

Conclusions – Toward the Reduction of Food Loss

- Food loss estimated 33,000 t/year from households and 34,000 t/year from business facilities, out of 164,000 t/year total food waste.
- 31.9% (number basis) of untouched food from households is discarded before its best before date.



- Actions to endeavor to reduce food loss
 - Quantitative targets on food loss reduction (“New Plan for Halving Waste Amount of Kyoto City”)
 - Ordinance
 - Campaigns
- Evaluate the effects of waste reduction in 2016
- Continue the detailed composition surveys, to monitor and evaluate the progress of food loss reduction

Thank You for Your Attention



Are you eco-friendly?