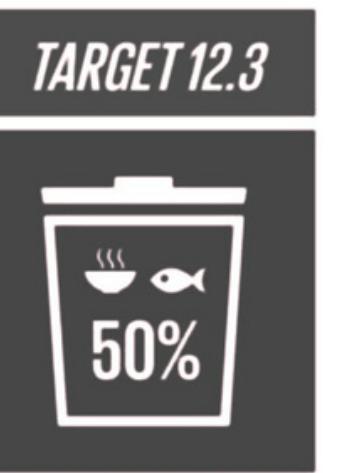




CPE311



# When Less is More

Reducing Food Waste through Incentivizing  
Sustainability from household behavior

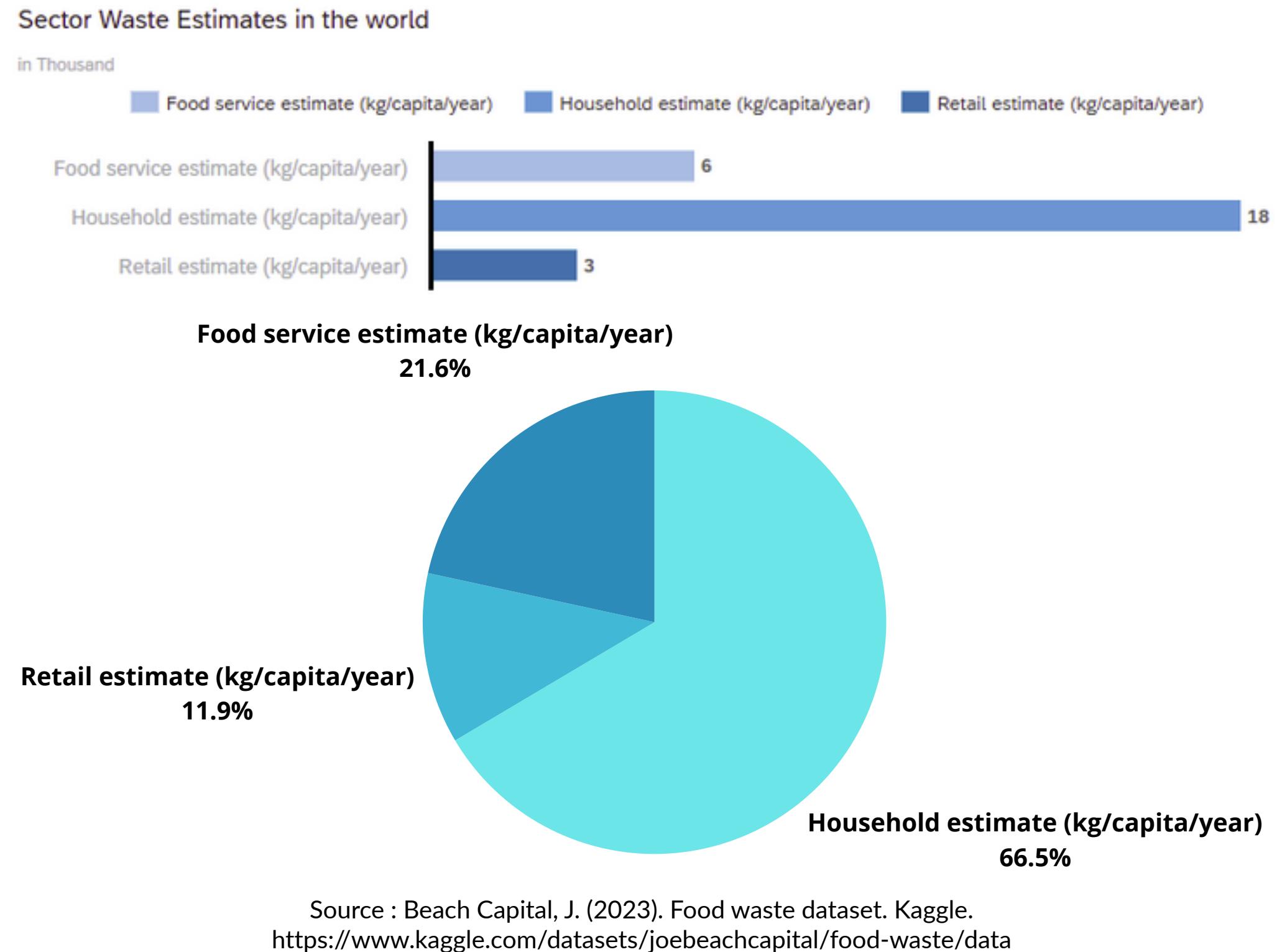
PATHWAY 301  
Masangkay, Frederick  
De Guzman, Aero Kent



# Food Waste

One person wasting food might not seem like a big deal. But what if a billion people do the same?

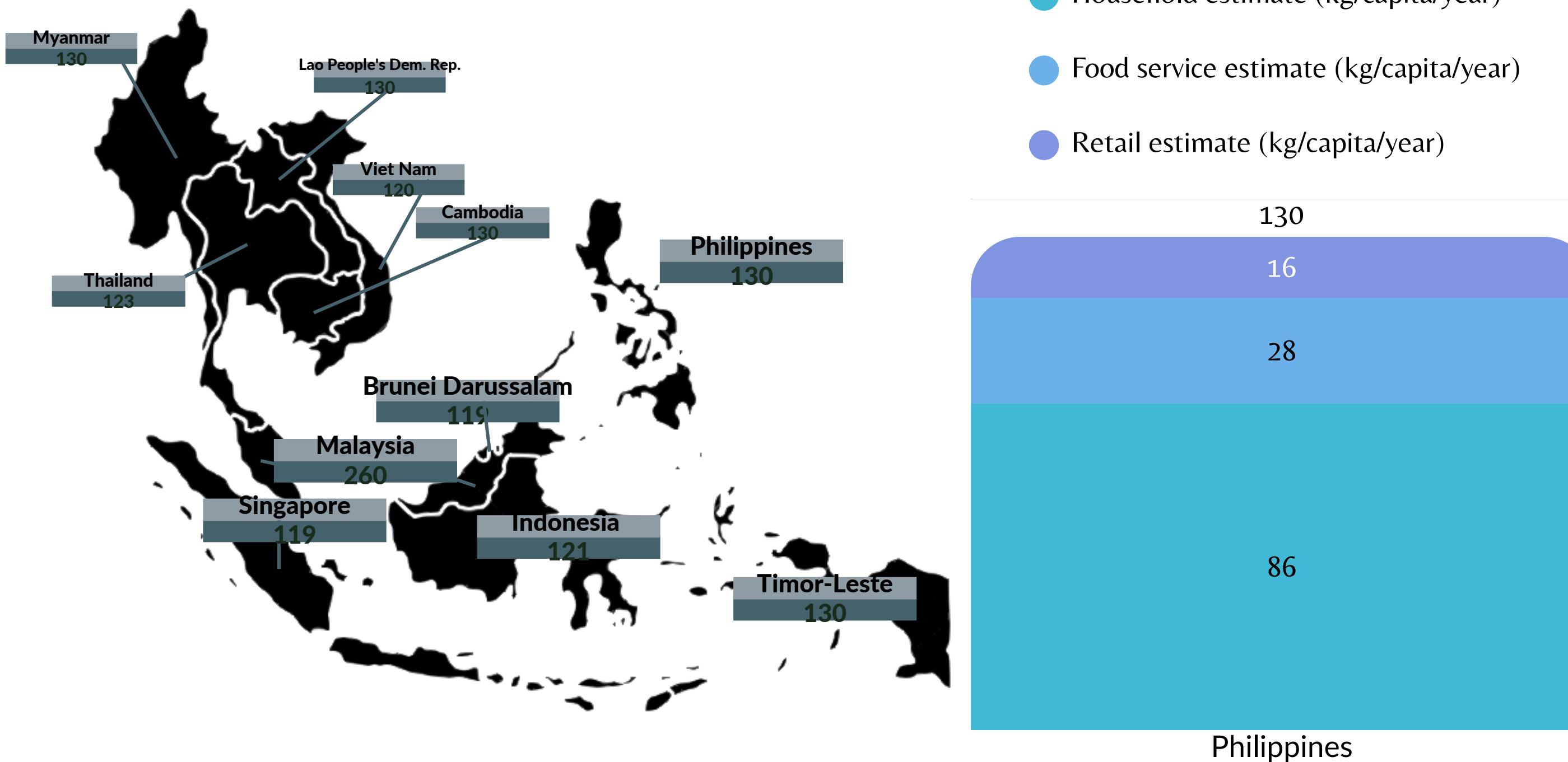
That's not just waste – that's a global crisis.



Source : Beach Capital, J. (2023). Food waste dataset. Kaggle.  
<https://www.kaggle.com/datasets/joebeachcapital/food-waste/data>

# The Philippines contributes nearly a 10<sup>th</sup> in each sectors.

South-eastern Asia on the other hand has a total combined food waste of 1512 kg/capita/year and an average of 137.415 kg/capita/year. Contributing 5.6% in the entire world in all subregions.

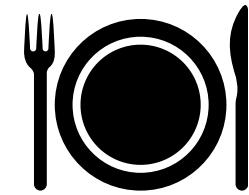


# Contributing Factors for Wasted Food



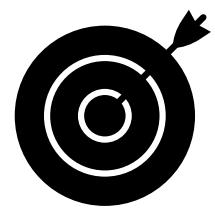
## Wealth

Food waste is higher in wealthier, larger households with bigger meals



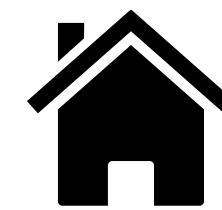
## Consumption

Despite there being a greater consumption, excess often leads to spoilage



## Age Range

Older adults (50–69) waste more rice



## Household Size

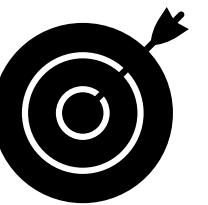
Smaller households discard more vegetables. Larger ones waste more meat, fish, and poultry.

# Most Wasted Food in the Philippines

Reports by Soriano, M.J. revealed that Filipino households experience approximately...

**Rice is the most wasted food.**





## Age Range

Older adults (50-69) waste more rice

In 2020, about **109 million** makes up the population of the Philippines. **8%** which is the largest is located in the NCR with about **13403551** people. **14%** of those consist of people that are within the range of 50-69.





- Both in the Philippines and World Wide, the **Household sector** contributes the most in the total waste.
- In the Philippines, **Rice is the most dominant** consumable wasted.
- Among the contributing factors, the **Age Group** has a pattern with those within 50-69 wasting more rice.

### **synopsis**

Focusing more on those age group could can reduce food waste with the rice being the most wasted and them contributing the most to it.



# Pay per Gram

South Korea's implementation of the PAYT system

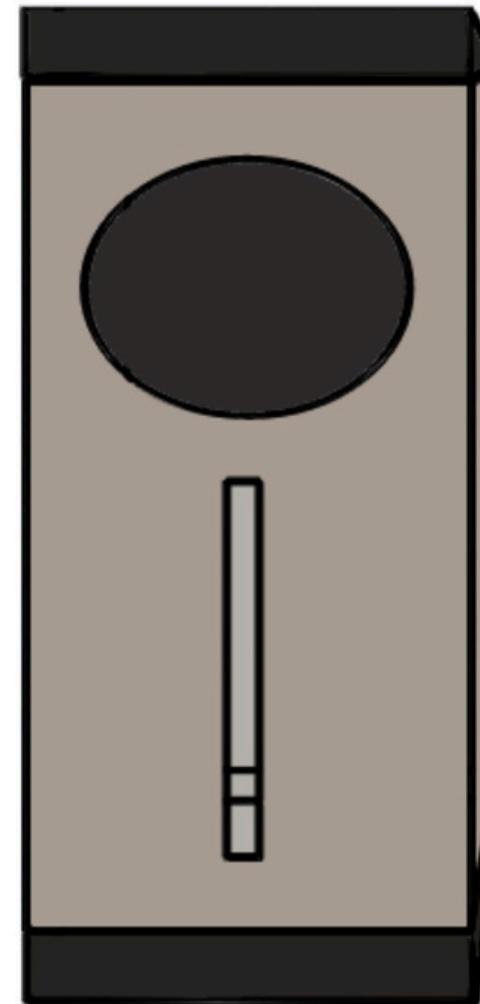
RFID (radio-frequency identification) technology is used to identify each food waste container with its owner. The container is weighed to measure the food waste being disposed of, and the disposal fee is then billed on a monthly basis as part of the residential maintenance fee.

Source : Development Asia. (2019, August 6). Using a fee-based system to reduce waste. Asian Development Bank.  
<https://development.asia/explainer/using-fee-based-system-reduce-waste>

# Our Recommendation?

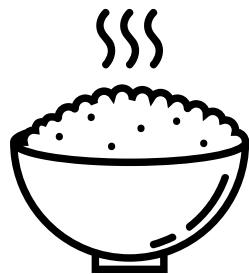
## Smart Food Waste Bin

- Detects the type of food waste
- Measures the weight
- Calculates the fee per gram
- Sends weekly reports to your phone



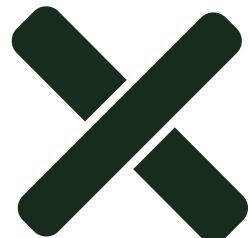
# Smart Food Waste Bin

What can it solve?



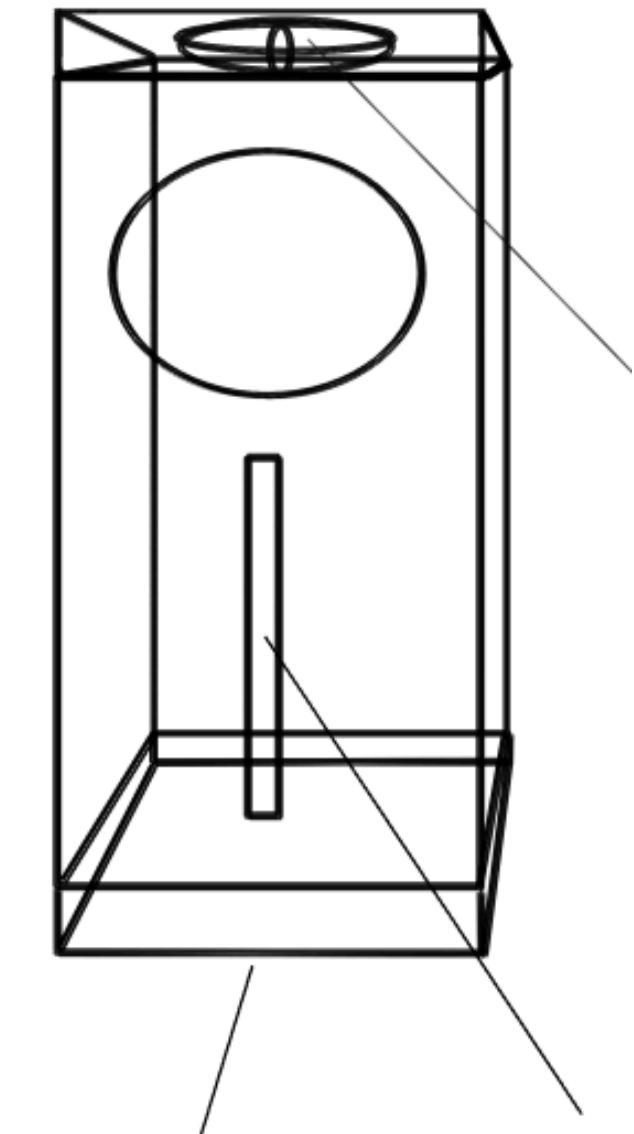
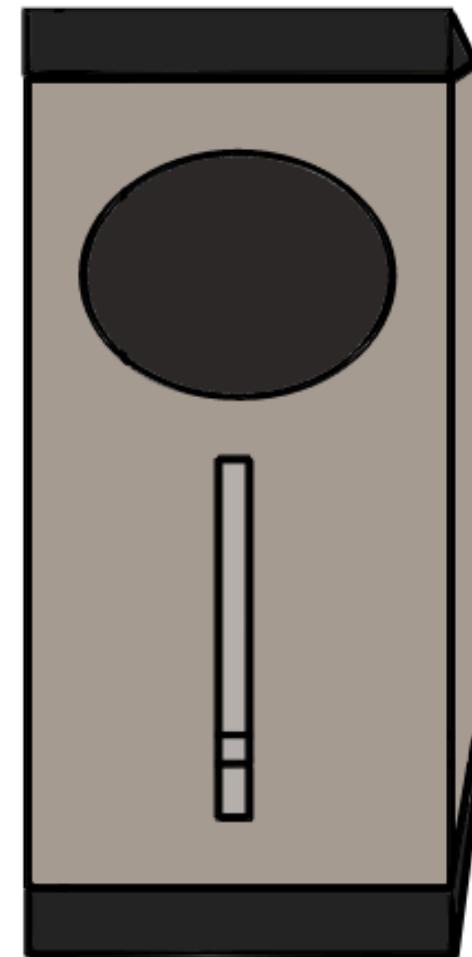
Positively Impact Waste Reduction such as Rice

Households such those that have older members can reduce rice waste



Promote waste mitigation

Providing a visualized summary can aid in prevention of future food waste



Weighted Sensor

Display

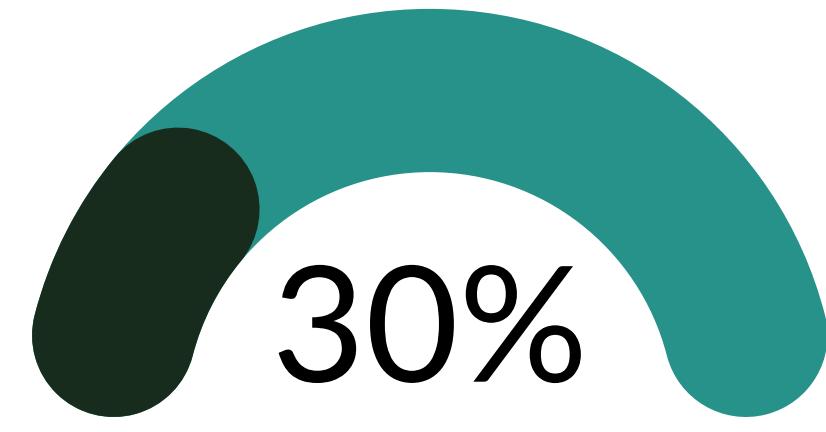
Camera and Information to relay data gathered

# Smart Food Waste Bin

Where did this idea come from?

## PAYT system

is a waste management approach where households are charged based on the amount of garbage they produce, rather than a flat fee. The core idea is simple: the more you throw away, the more you pay –just like utilities such as water or electricity. This system creates a financial incentive for people to reduce waste, recycle more, and be conscious of their consumption habits.



SOUTH KOREA

South Korea adopted a bag-based PAYT system in 1995, resulting in a 30% drop in household waste in the first year. It now has one of the world's highest recycling rates, credited to this policy.

Source : Ecube Labs. (2020, August 11). Pay-as-you-throw: What it is and why it should be implemented. Ecube Labs. U.S. Environmental Protection Agency. Pay-As-You-Throw: A Fact Sheet for Environmental and Civic Groups (EPA530-F-97-006). <https://www.ecubelabs.com/pay-as-you-throw-what-it-is-and-why-it-should-be-implemented/>

Source : Jee, H. (2022, November 7). A "Zero Waste" lifestyle in Korea. Milken Scholars. <https://www.milkenscholars.org/features/show/a-zero-waste-lifestyle-in-korea>

# Smart Food Waste Bin

## Will this work?

### Age and Financial Wisdom: How Older Adults Make Smarter Money Decisions

Older individuals, including those aged 50–69, are more likely to show prudent financial behaviors. Financial knowledge positively affects both short- and long-term planning, especially for older adults in the long term.

Source : Long, T. Q., & Tue, N. D. (2024). Financial Knowledge and Short- and Long-Term Financial Behavior Across Gender and Generations: Evidence from Japan. *SAGE Open*, 14(4).

<https://doi.org/10.1177/21582440241295846>

### Monetary Deterrent

A field experiment found that fines improved punctuality only when framed as punishment and applied publicly. This suggests that financial penalties can increase cooperation, such as punctuality.

Source : Abarcar, P., Barua, R., & Yang, D. (2020). Financial Education and Financial Access for Transnational Households: Field Experimental Evidence from the Philippines. *Economic development and cultural change*, 69(1), 373–404. <https://doi.org/10.1086/703045>

<https://doi.org/10.1086/703045>



**Let's make food matter  
— one gram at a time.**

PATHWAY 301  
Masangkay, Frederick  
De Guzman, Aero Kent

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<https://doi.org/10.1177/21582440241295846>
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- [https://www.google.com/url?  
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