

SUSTAINABILITY



FOODRIE

S O L A R P O W E R F O O D D R I E R

presented by:
Team 5

00 Contents



- ✓ **Singapore:** People, Food Insecurity and Waste
- ✓ **Existing** Food Waste Practices
- ✓ **FooDRIE** and its **Benefits**
- ✓ **Limitations of FooDRIE**
- ✓ **Future Applications**



SINGAPORE: People, Food Waste & Insecurity



- **6 million** resident population
- **370kg** of food **per person**
- Average of **390 eggs**, **100 kg** of vegetables, **76 kg** of **fruits** and **84 kg** of **seafood** and **meat**



- **90%** imported food
- Top consumed food: **Eggs, Chicken and Pork**



- Food waste of **755,000 tonnes**
- **11%** of total waste

Food Insecurity & Wastage

10%

Singaporean individuals and households reported of not having or not confident in having access to food for a healthy balanced diet.

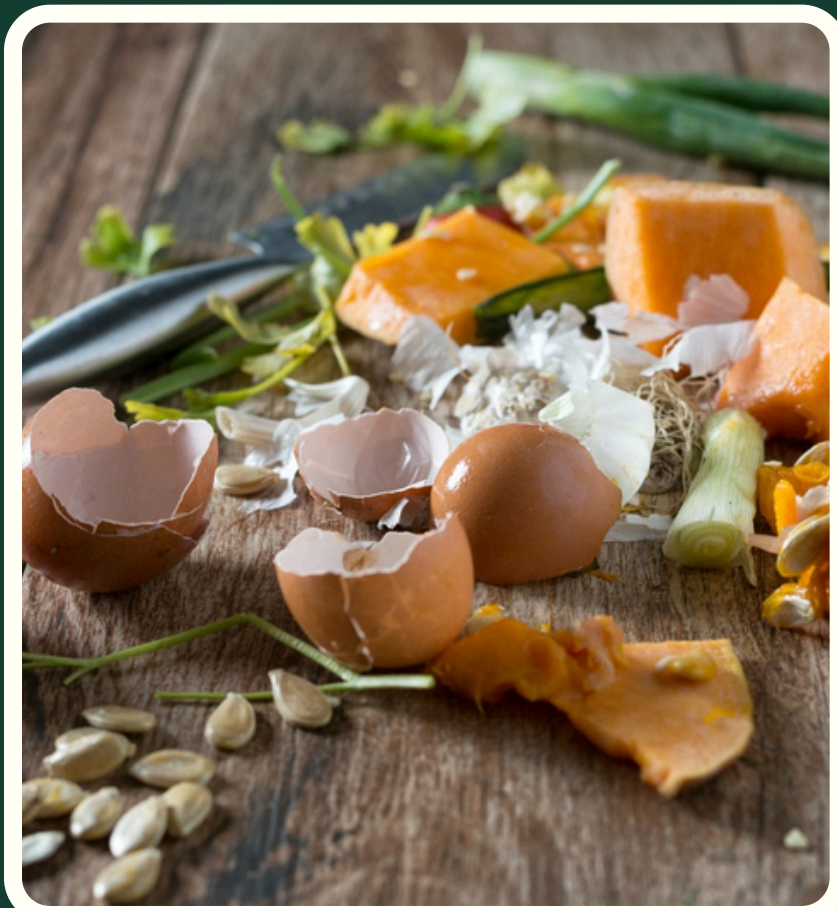
Food wastage: discarding of food that is appropriate for human consumption.

Vulnerable individuals

- **Elderly poor**
- **Families with limited resources**
- **Single-parent** households

Causes:

- **Overpreparation** of food
- **Excessive purchase**
- **Improper storage**



Existing Practices

**Campaigns
& Education**

**Legislation &
Organisations**

**Communal
Initiatives**



#CleanPlateCampaign

Campaigns



Government's **campaigns** and **partnerships** to **educate** and **spread awareness** on food wastage.

Existing Campaigns:

- The Clean Plate (SG)
- Say YES to Waste Less (SG)
- Love Food Hate Waste (UK)



Encourage the **public** and various communities to **buy** and **order** only the amount of **food consumed** and saying **no** to **side dishes that can't be finished**.



**TO ORDERING
JUST ENOUGH**



**TO BUYING
JUST ENOUGH**



Good Samaritan Food Donation Bill



Singapore's law that provides **liability protection** for **food donors**.

Existing programs:

- Bread Run
- Marketplace

Notable Organizations:

- Food from the Heart
- The Food Bank Singapore



Faciliates food donation and **encourages donation** of **surplus** food, reducing food wastage.





Redistribution; Food Rescuers



Existing Initiatives:

- Food Rescue Facebook Groups: Platform for users to redistribute their excess buffet & event food to the needy.
- Little India Veggie Collection: Unsellable vegetables that would **otherwise be thrown** away are and **distributed** for food rescuers' **consumption**.

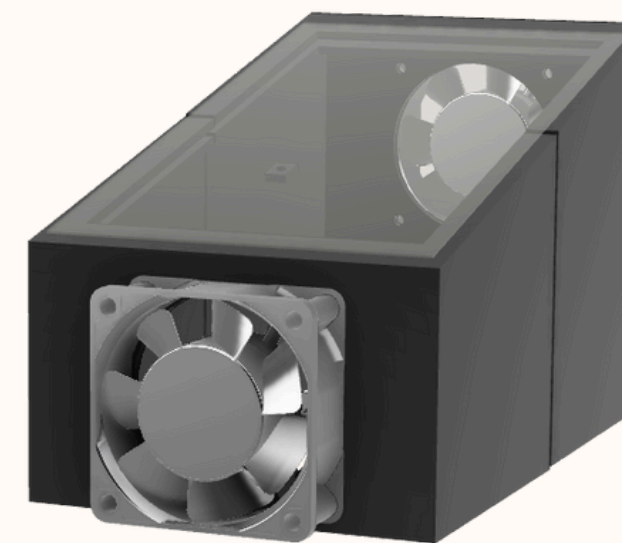


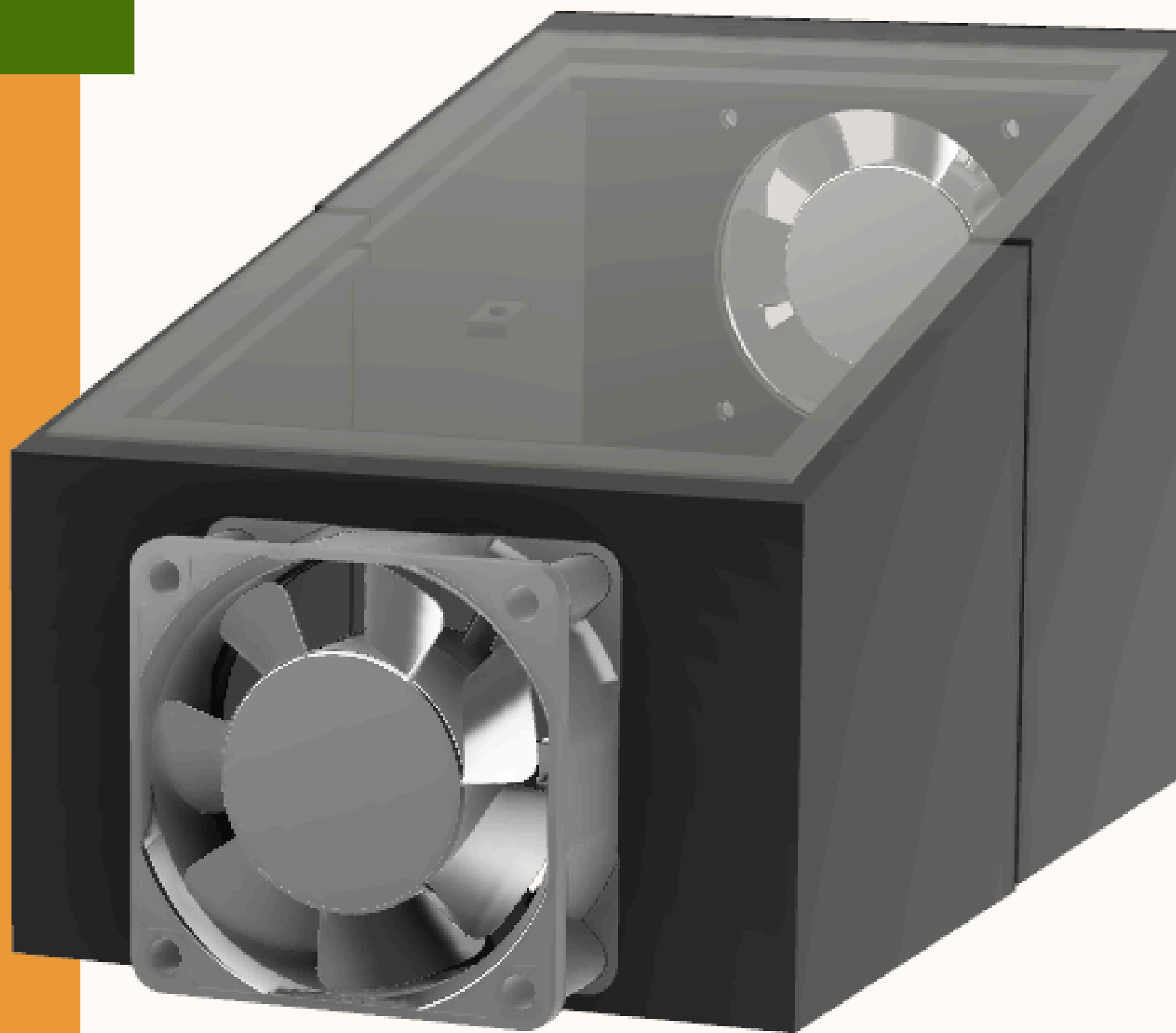
Donate their unsold and excess food to food distribution organisations





自然主义 naturalism





Foodrie:
A Convection Chamber that utilises solar
power and convection concepts to dry food

Our Solution: Foodrie

Foodrie uses **heat** and **airflow** to **remove retained moisture** in food. This **inhibits bacteria, yeast** and **mould growth**, **prolonging** food “**shelf-life**”.

Our preservation solution turns **leftovers** into mealprep for the **next meal**, “**ugly**” **ingredients** into next **meal ingredients**.

This **prolonging of shelf life** reduces food wastage at the **consumer-level**

FoodRIE x FOOD



Beef Jerky



Orange Peel
(China)



Bananas
(Phillipines)



Tempeh (Java)



Common foods like beef, vegetables, fruits and even some fish can be dried using FoodRIE.

Opportunity Cost: Food Drying vs Refrigeration

Build Cost:
>\$1200



Yearly Energy Consumption: **~369 kWh/year**

Expected cost of energy refrigeration:
\$118/year

Capacity: ~150L – 700L



Build Cost:
<\$118

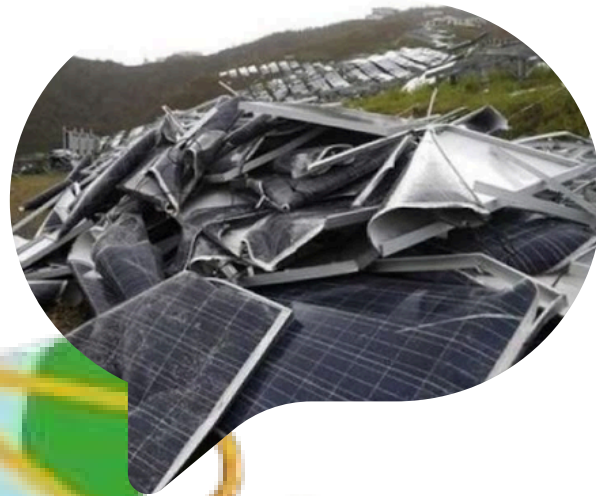
Yearly Energy Consumption: **~20 kWh/year**

Expected cost of energy refrigeration: \$1.8/
year

Capacity: ~5L (variable)



Foodrie



Benefits

Preservation

- Extending shelf life of perishables
- Reduce frequency of food purchases
- Preserves essential nutrients to an extent

Easy to Build and Assemble

- Schematics can be made open source (democratised).
- Parts can be repurposed (i.e solar PV, wood etc.)

Self-Sufficiency (自给自足的田园生活):

- Decreased dependence on fresh food



Aiding the work of Food Rescuers
temporarily extending the shelf life



Lower-Income Households
whom typically receive large food
handouts

**Fitting to
existing
practices**



Food Waste Biomass Minimisation
(not for Singapore)

Technical Limitations

- Energy Dependence
- Humidity Variation
- Temperature Control
- Flavour, Texture and Nutrition
- Limited Food Types

Social, Geographical and Cultural Limitations

- Cultural Acceptance
- Geographical Limitation
- Limitations in Singapore





FoodDRIE – Beyond Singapore

- ✓ Minimal Environmental Impact
- ✓ Prolonging life span of food for places with no access to electricity
- ✓ Natural Disasters (Humanitarian aid)



Us – The Future

*“We utilize our resources with grace, we work towards equality in making various food options easily available to all. Reducing food scarcity ensuring equity and justice to all, preventing food price discrimination towards the vulnerable, less fortunate and to society. **This is our Utopia inspired by Thomas More.**”*



Summary

- Food waste is an issue in Singapore
- Foodrie aim to reduce food waste by increasing the lifespan of food
- Aim to allow everyone to have access to food





FOODRIE

Thank You!

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Citations

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