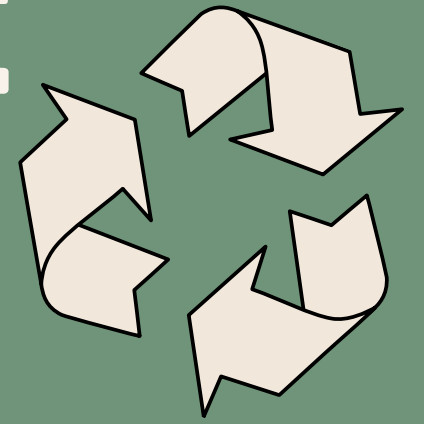


Food Waste Management

WISE Group



Group Members:

1. Nattanicha Sriboonruang, Belgium, Chemist.
2. Paphawarin Songpattanasilp, Mobile, Environmental Scientist.
3. Natsit Pinyasin, X, International Relations.
4. Lulum Leliana, Lulu, Food Scientist.





WISE

Waste Innovation

Sustainability

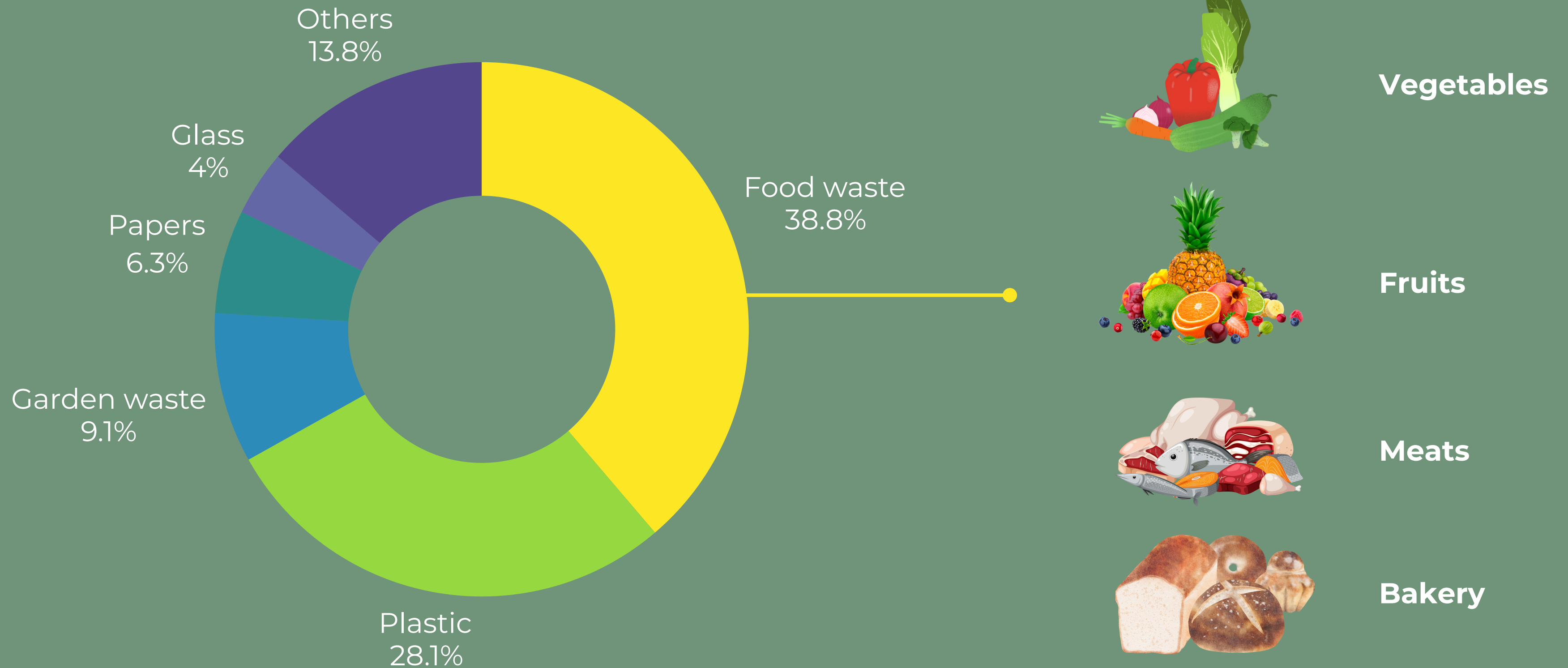
Emission Reduction

Nature-Based Solutions for Food Waste Management: A Pathway to the Bio-Circular Green Economy in Local Restaurants of Pathum Wan District, Bangkok, Thailand

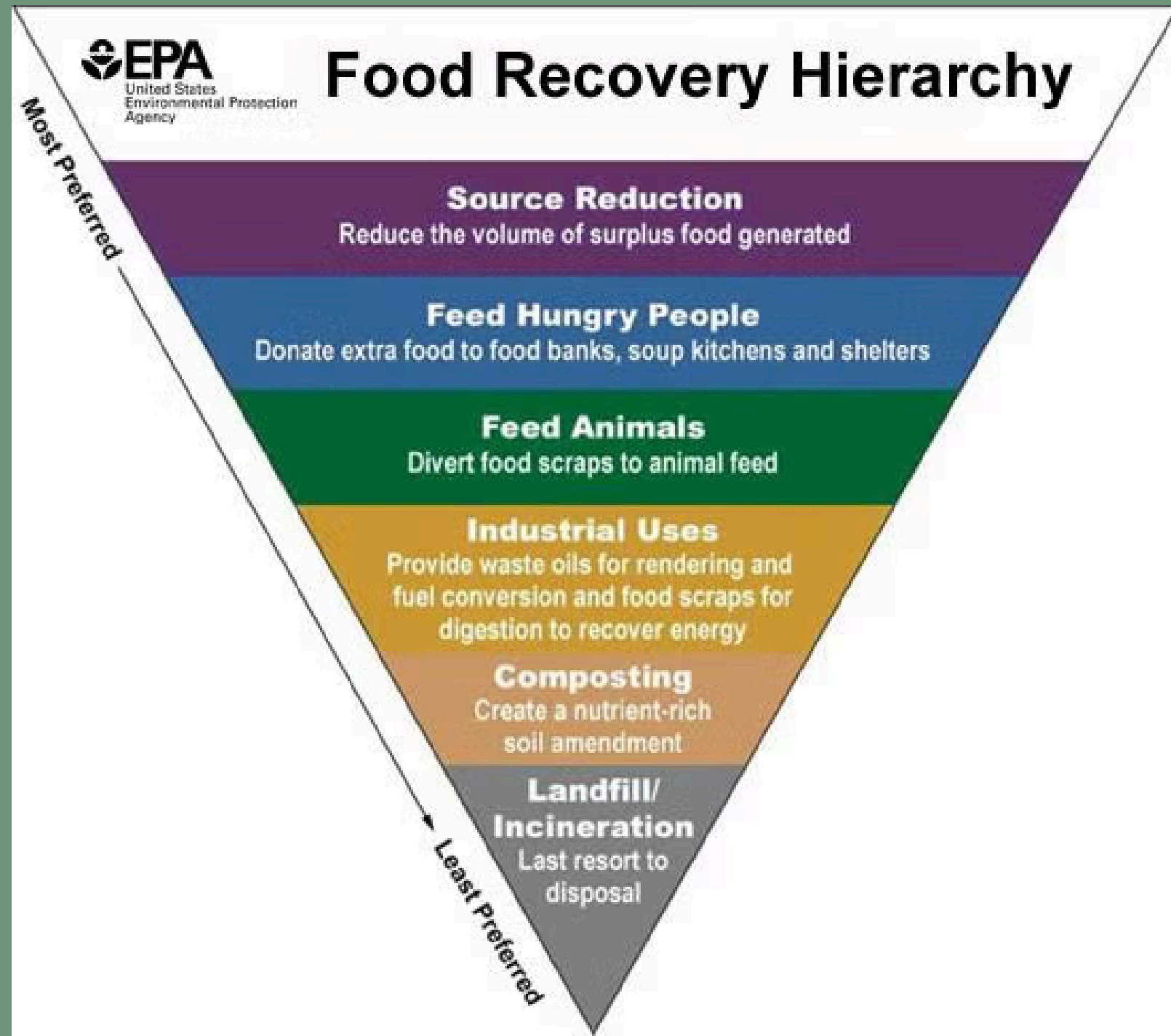
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Type of food waste in local communities

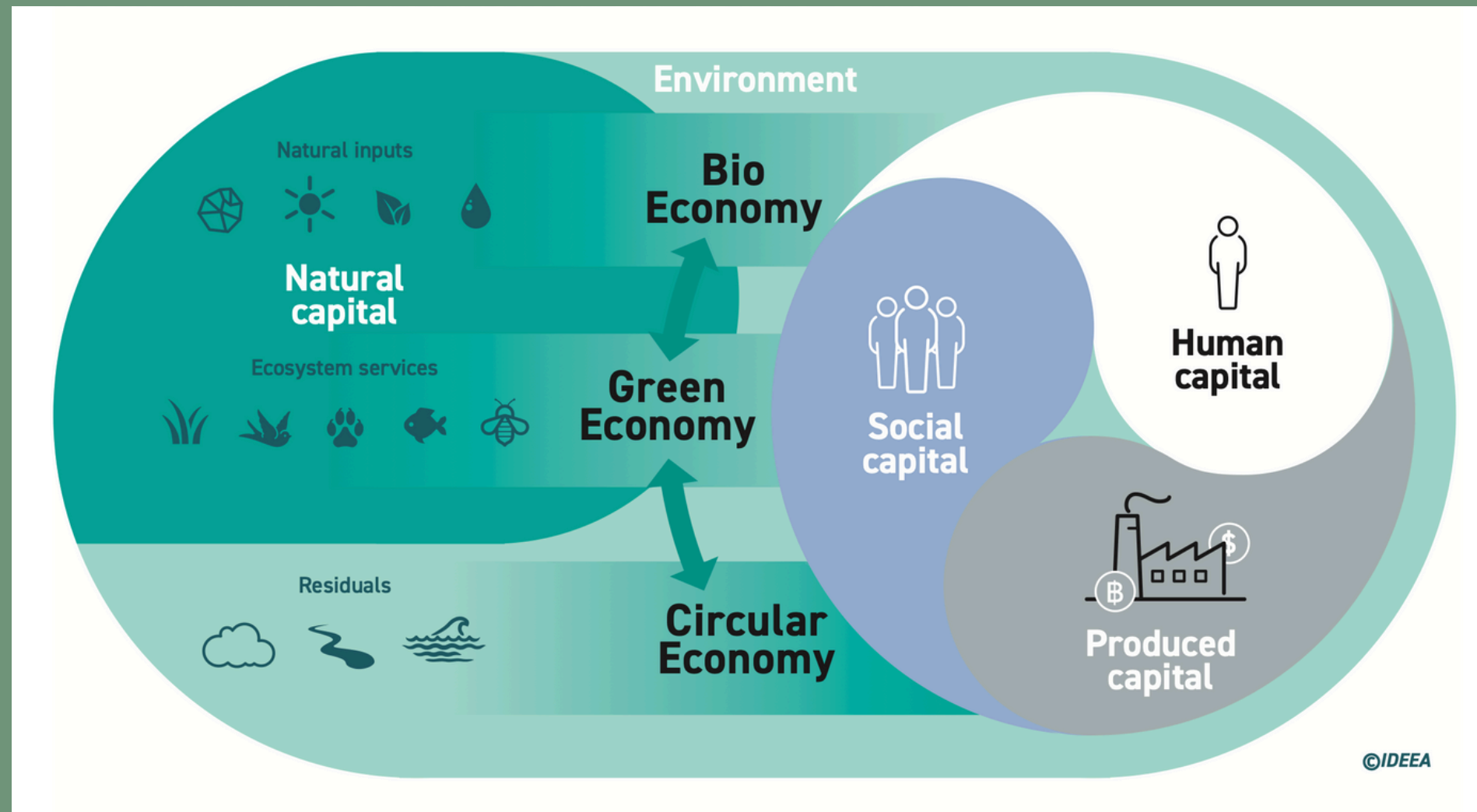


Food Waste Management



1. **Source reduction:** Earliest prevention by reducing the overall volume of food produced
2. **Feed hungry people:** Donating excess food to community sites
3. **Feed animals:** Donating food scraps and waste to local farmers who can use them for animal feed
4. **Industrial uses:** Donating used fats, oils, and grease to make biodiesel fuel
5. **Composting:** Food waste that is composted to produce organic matter that is used to fertilize soil
6. **Landfill/Incineration:** A last resort for unused food

Bio-Circular Green Economy (BCG)



- **Bio-Economy:** The bio-economy emphasizes harnessing renewable biological resources and bio-based materials to produce value-added products through technology and innovation, driving sustainable resource utilization.
- **Circular Economy:** The circular economy focuses on designing out waste and pollution, promoting material reuse, and regenerating natural systems to create a sustainable and regenerative production-consumption system.
- **Green Economy:** The green economy prioritizes equitable and inclusive use of ecosystem services to benefit society while ensuring the sustainability and resilience of ecosystems.

Bio-Circular Green Economy and Food Waste Management

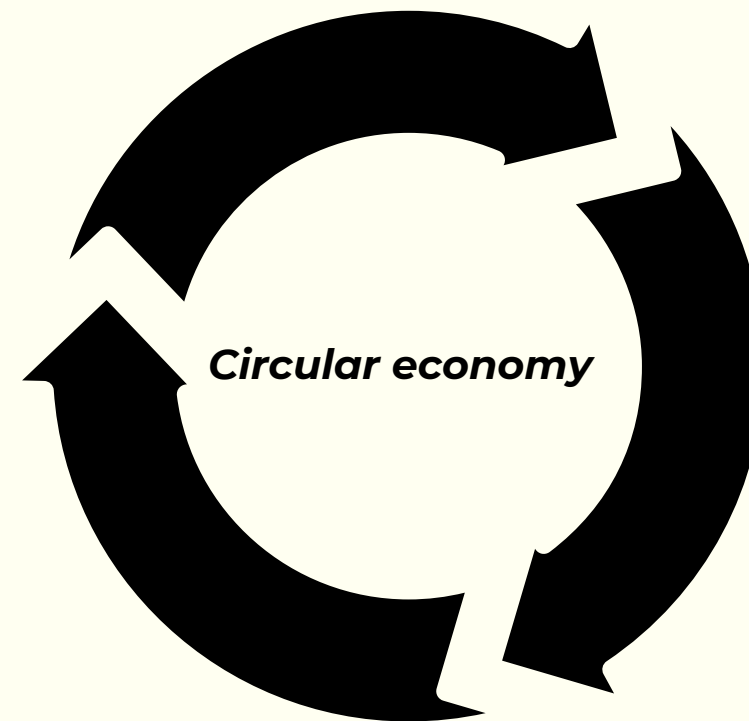
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4. Upcycling and biomass conversion

Nature-based solutions for converting food waste into valuable resources

3. Waste Collection, separation, and distribution

*How to manage excess food:
Food Recovery Hierarchy*



1. Production Process:

Local Restaurants of Pathum Wan District, Bangkok, Thailand

2. Consumption:

Customers and clients having meals in the Local Restaurants of Pathum Wan District, Bangkok, Thailand

Aim: “ To develop a bio-circular green economy by implementing nature-based solutions to manage food waste—reducing environmental impacts through composting and upcycling organic byproducts into value-added products, and engaging stakeholders such as local restaurants, communities, and policymakers to create a sustainable circular system ”

Nature-Based Solutions and Biomass Conversion

Examples

Food Waste	Key Molecules Produced	Process	Applications	References
Pineapple Peels	Bioethanol, enzymes (bromelain)	Fermentation, extraction	Biofuels, industrial enzymes	Biomass Conversion and Biorefinery (2019) 9:761-765 https://doi.org/10.1007/s13399-019-00436-y
Coconut Husk	Lignin, cellulose, biochar	Pyrolysis, hydrolysis	Bio-based materials, soil amendments	Waste Management & Research 2023, Vol. 41(1) 37 -51, https://journals.sagepub.com/doi/10.1177/0734242X221127167
Fruit/Vegetable Peels	Lactic acid, HMF, bioethanol	Fermentation, hydrolysis	Bioplastics, chemical solvents, and fuels	Molecules 2020, 25, 2812; doi:10.3390/molecules25122812, doi:10.3390/molecules25122812



SGDs and International Policies

SDG 2 (Zero Hunger)

- Reduce food waste in local restaurants, ensuring more efficient use of food resources.
- Enhance food security by redirecting edible food to communities in need.

SDG 12 (Responsible Consumption and Production)

- Promote sustainable practices in restaurants to minimize food waste.
- Encourage local sourcing of ingredients to reduce environmental impact and support local economies.

SDG 13 (Climate Action)

- Implement nature-based solutions such as composting and organic waste recycling to reduce greenhouse gas emissions.
- Promote awareness and education on the impact of food waste on climate change.

SDG 17 (Partnership for the Goals)

- Advance collaboration between local restaurants, government agencies, and community organizations to develop sustainable food waste management strategies.
- Share best practices and innovations in food waste reduction across sectors to achieve common goals.



Food Losses and Waste in the Context of Sustainable Food System (Policy recommendations by Committee on World Food Security)

All stakeholder

The private sectors

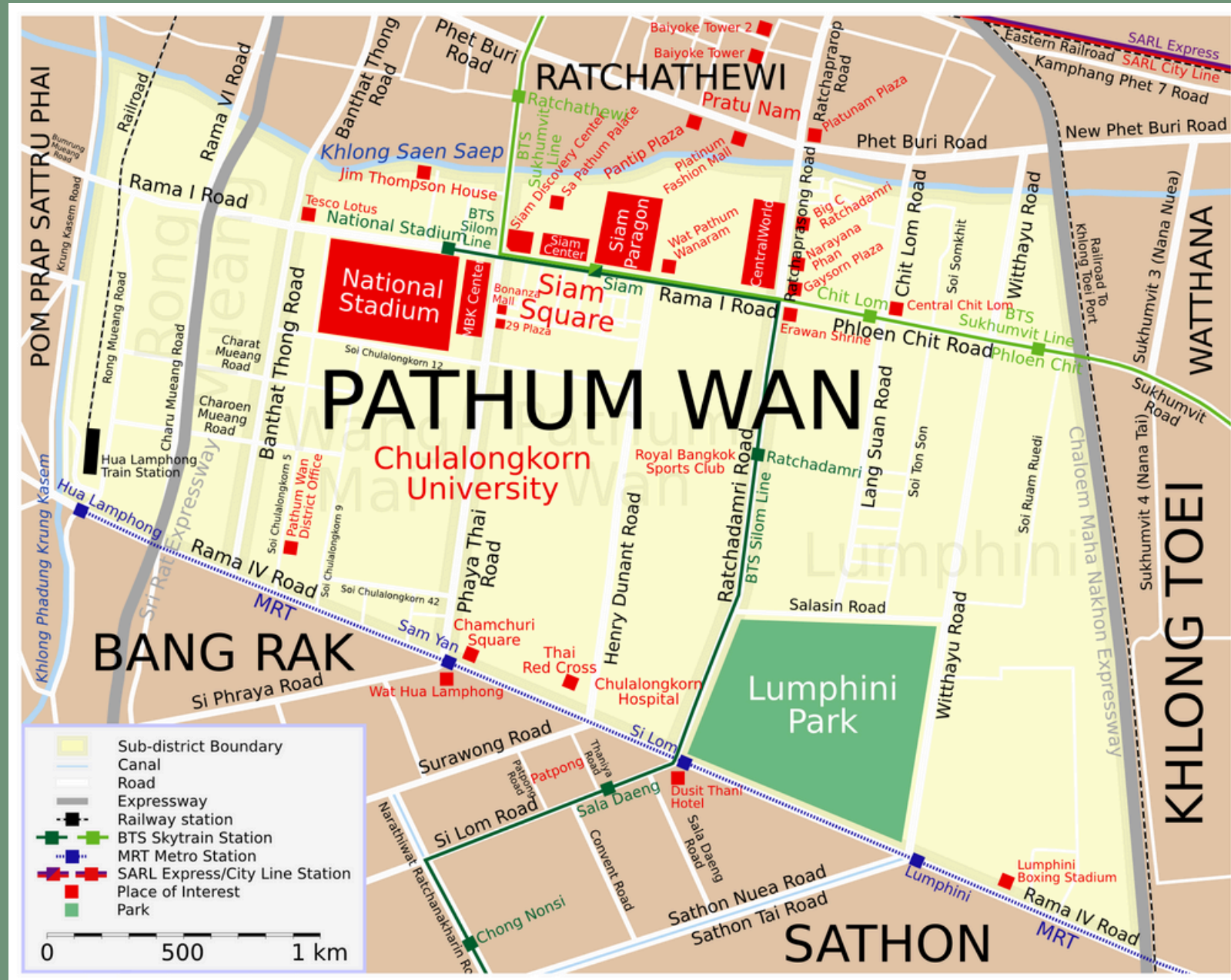
State and National and International research and development organization



Take effective step to reduce Policy recommendations

Specific Areas in Nature Inspired Solutions and Climate Change Mitigation

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Chulalongkorn University
Faculties canteens



Ban That Thong Road
Local street food restaurants



Shopping Centers

MBK Center, Siam Paragon, Siam Discovery, Center Point

Pathum Wan District, Bangkok, Thailand

https://en.m.wikipedia.org/wiki/File:Map_Pathum_Wan.png

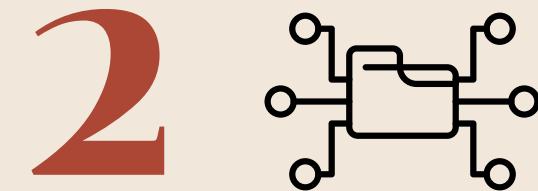
Expected Outcome

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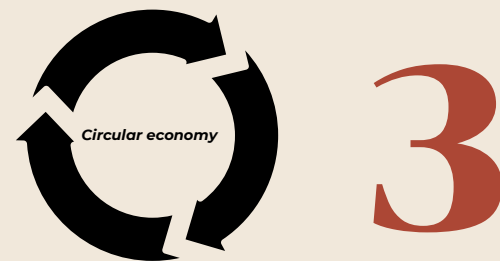
Reduction in Food Waste

Significant food waste diversion from landfills through composting, upcycling, and biogas production.



Nature-Based Food Management Framework

A scalable system integrating composting, anaerobic digestion, and biomass valorization.



Bio-Circular Green Economy Model

Demonstrating the economic and environmental benefits of converting food waste into resources.



Policy Recommendations and Pilot Implementation

Develop policies and validate them through a pilot program in local restaurants in the Phaya Thai District,

Boarder Network Capacity

Government

- **Local Authorities**- municipalities or waste collection, composting programs, and landfill reduction
- **Ministry of Environment and Ministry of Agriculture**- regulatory support policy and management for waste reduction and sustainable practices

Private Sector

- **Food and Beverage companies**- Neslé, Unilever, PepsiCo (active in sustainability and circular economy)
- **Retail Chains**- Supermarket: Walmart, Tesco and Local restaurants can reduce pre- and post-consumers food waste
- **Agri-tech firms businesses**- providing composing bioenergy, biomass conversion, and nature-based solutions or product innovations

Communities and NGOs

- **Farmers cooperatives**
- **environmental NGOs (Greenpeace, Friends of earth)**

Academic and Research Development

- **Universities and research centers**- developing the technology for food waste reduction and utilization

Funding Opportunities

- **Global Environment Facility (GEF), Green Climate Fund (GCF), UNDP small grants programme, Ford Foundation, IKEA foundation**



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Thank You!

Any Questions?

