Recommendations for Strengthening the Implementation of

COMMUNITY WASTE BANK GUIDELINES AND INITIATIVES

THAILAND


RECYCLE
BANK
BANK
SUSTAINABLE
GO
GREEN
WASTE
BANK
สมุดคู่ฝากธนาคาร
ขยะรีไซเคิลชุมชน
REUSE
WASTE
MANAGEMENT
REDUCE

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THAILAND

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ABBRIVATIONS

3Rs	Reduce, Reuse, and Recycle
AI	Artificial Intelligence
AM	Ante Meridiem
ASEAN	Association of Southeast Asian Nations
BCG	Bio-Circular-Green
BOP	Blue Ocean Plastic Recycling Co, Ltd.
CSR	Corporate Social Responsibility
CWBs	Community Waste Banks
DLA	Department of Local Administration
EJF	Environmental Justice Foundation
EPR	Extended Producer Responsibility
GCI	Garbage Clinical Insurance
IDR	Indonesian Rupiah
IoT	Internet of Things
JICA	Japan International Cooperation Agency
Kg	Kilograms
KPI	Key Performance Indicator
LAOs	Local Administrative Organizations
M&E	Monitoring and Evaluation
MOI	Ministry of Interior
MOPH	Ministry of Public Health
MOU	Memorandum of Understanding
MSW	Municipal Solid Waste
NEA	National Environment Agency
NGO	Non-Governmental Organization
ONEP	Office of Natural Resources and Environmental Policy and Planning
PCD	Pollution Control Department
PPI	Public-Private-Institution
PROs	Producer Responsibility Organizations
QR	Quick-Response
RDF	Refuse-Derived Fuel
SAO	Subdistrict Administrative Organization
SDGs	Sustainable Development Goals
SIMBA	Sistem Informasi Manajemen Bank Sampah
SOP	Standard Operating Procedure
THB	Thai Baht
TIPMSE	Thailand Institute of Packaging and Recycling Management for the Environment
ToC	Theory of Change
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlement Programme
WOG	Whole-of-Government
WTE	Waste to Energy
WWF	World Wide Fund For Nature

ACKNOWLEDGEMENTS

This report, titled “Recommendations for Strengthening the Implementation of Community Waste Bank Guidelines and Initiatives in Thailand”, has been developed with the financial support of the Joint SDG Fund under the “Partnership to Accelerate SDG Localization in Thailand” project. Under the supervision of the United Nations Human Settlements Programme (UN-Habitat), the report was prepared with the technical support of the Mahidol University.

Appreciation is extended to the Department of Local Administration (DLA) under the Ministry of Interior for its leading role in supporting the development of this report, in support of the existing Community Waste Bank Guidelines, and for the continued effort to foster sustainable waste management practices and community empowerment.

UN-Habitat acknowledges the leadership of the United Nations Resident Coordinator Office (UN RCO) and the support of the United Nations Development Programme (UNDP) Thailand, whose technical support and review have contributed to this report.

Recognition is also given to the teams that joined visits and analysis of waste banks in Lopburi, Ratchaburi, Sukhothai, Uthai Thani, and Saraburi Provinces. A special thanks goes to the leaders and volunteers of these waste banks for sharing information on the operation of their waste banks, which provided the authors with an insight into the waste bank operation, challenges and hence draft recommendations to enhance the implementation of waste banks nationwide. Similar acknowledgement is due for the stakeholders, including representatives of the Subdistrict Administrative Organisation, Municipality, Schools, and private recyclers engaged in the waste bank.

UN-Habitat expresses particular gratitude to the Mahidol University team for leading the substantive development of this report, working closely with UN agencies, local, provincial and national governments and especially with the communities participating in the community waste banks.

Publishers
Ministry of Interior, Kingdom of Thailand
United Nations Human Settlements Programme (UN-Habitat)

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Strengthening community waste banks to reduce landfill waste, recover resources, and advance Thailand's sustainable development goals.

FOREWORDS

The problem of municipal solid waste management is one of the major challenges in Thailand, directly affecting the quality of life, the environment, and sustainable development. The amount of municipal waste in the country continues to rise, while infrastructure and waste segregation systems remain limited, increasing the burden on local administrative organizations. The Department of Local Administration, Ministry of Interior, plays a crucial role in strengthening the capacity of local governments and communities to promote a circular economy approach, aiming to reduce landfill waste and enhance resource recovery in line with the Sustainable Development Goals (SDGs) and the 20-Year National Strategy. This community waste bank guideline for local administrative organizations is designed to provide a clear, comprehensive, and context-appropriate framework that can be used to guide planning and systematic, effective implementation. It seeks to elevate municipal solid waste management toward sustainability and establish models that can be adapted and scaled up nationwide.

The Department of Local Administration extends its gratitude to all agencies, local experts, and stakeholders who contributed information and support for developing this guideline. Their collaboration is a driving force in improving municipal solid waste management, reducing environmental impacts, enhancing people's quality of life, and truly achieving the country's sustainable development goals, leaving valuable resources for future generations.

Police Lieutenant (Popjanok Jalanugraha)
Director-General of the Department of Local Administration

Sustainable waste management is central to Thailand's pursuit of the 2030 Agenda for Sustainable Development. Through the Community Waste Bank initiative, the Ministry of Interior, in partnership with the United Nations and local communities, illustrates how localized action can drive systemic transformation and deliver tangible benefits for both people and the planet.

Community waste banks represent a remarkable model of community-led innovation. They empower citizens to take ownership of waste solutions, generate local income, and reduce environmental impacts. They embody the principle of leaving no one behind by engaging women, youth, and marginalized people in building circular and inclusive economies.

The UN in Thailand, through the Joint SDG Fund and the Partnership to Accelerate SDG Localization in Thailand, is proud to support this initiative alongside UN-Habitat, UNDP, and the Department of Local Administration. This report offers evidence-based recommendations to strengthen the national framework for community waste banks and enhance their contribution to Thailand's Bio-Circular-Green Economy and climate action agenda.

On behalf of the UN Country Team in Thailand, I commend all partners for their collaboration and shared commitment to turning waste challenges into opportunities for sustainable development. Together, we can create communities that are not only cleaner and healthier, but also more resilient and inclusive.

Michaela Friberg-Storey
United Nations Resident Coordinator in Thailand

Municipal solid waste management remains one of Thailand's most pressing urban challenges. The rapid pace of urbanization and shifting consumption patterns have significantly increased waste generation across both urban and rural areas, placing growing pressure on local governments and communities. Addressing these challenges requires collective action and innovative solutions that reduce waste, promote circular economy principles, and advance social inclusion.

UN-Habitat, in partnership with the Ministry of Interior, the Department of Local Administration (DLA), and the United Nations Development Programme (UNDP) Thailand, has been working under the Partnership to Accelerate SDG Localization in Thailand, funded by the Joint SDG Fund. This collaboration has supported the establishment and strengthening of community waste banks nationwide, fostering local leadership and community ownership in advancing responsible waste management.

This publication, Recommendations for Strengthening the Implementation of Community Waste Bank Guidelines in Thailand, reflects the strong collaboration between national and local partners and the UN system. It provides practical pathways and policy recommendations for improving the operation, governance, and long-term sustainability of community waste banks, building on the Ministry of Interior's 2024 guidelines.

UN-Habitat commends the commitment of the Department of Local Administration, along with participating local governments and communities, for their leadership in transforming waste into value and promoting cleaner, healthier, and more sustainable environments for all. Through these efforts, Thailand is advancing the Sustainable Development Goals, particularly SDG 11 on Sustainable Cities and Communities and SDG 12 on Responsible Consumption and Production.

Srinivasa Popuri
Chief, UN-Habitat Multi Country Programme Office,
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EXECUTIVE SUMMARY

Thailand faces significant challenges in managing municipal solid waste (MSW), with nearly 27 million tons generated annually. Problems such as inadequate waste separation, limited recycling infrastructure, and low public participation in waste segregation and recycling further exacerbate this situation. To promote community-led recycling initiatives, the Ministry of Interior (MOI) has initiated a nationwide program to establish at least one community waste bank (CWB) in each of the 76 provinces. In collaboration with Chulalongkorn University, the MOI developed a guideline for CWBs in 2024, providing a framework for local administrative organizations (LAOs) and subdistrict administrative organizations (SAOs) to create and operate these banks. Recognizing the importance of community waste banks in achieving Sustainable Development Goals (SDGs), the United Nations agencies UNDP and UN-Habitat are funding the CWB project through the SDG Joint Fund.

This study offers an in-depth analysis of various community waste bank models, highlighting diverse incentive mechanisms, sorting systems, collection methods, selling practices, and leadership structures observed in CWBs across Thailand. The analysis is based on field observations from Udon Thani and Koh Samui, literature reviews, and stakeholder feedback aimed at enhancing the implementation of CWBs in Thailand. Additionally, the report compares Thailand's experience with regional models from Indonesia, Singapore, and Japan, identifying elements that could be adapted to strengthen Thai CWBs.

The primary objective of this report is to improve the efficiency of community waste banks nationwide. It evaluates the strengths, gaps, and best practices of waste bank operations across various local government areas to support the development of a national operational guideline aligned with the Ministry of Interior's 2024 Guidelines. A standardized assessment template was employed to extract lessons learned and benchmark local practices against MOI guidelines. Key findings indicate that while many waste banks demonstrate strong community involvement and creativity, common challenges persist, such as limited public participation, limited digitalization, and limited revenue mechanisms mainly based on the sale of recyclables. Notably, successful models often integrate welfare benefits, youth engagement, and transparent sales tracking to maintain momentum and participation. By analysing the role of communities in operating waste banks and presenting case studies from both Thailand and abroad, this report outlines a set of recommendations around critical strategic factors to strengthen and scale waste bank systems across Thailand to support the country's circular economy and achievement of relevant SDGs (particularly SDG #11, 12, 13).

These recommendations include the theory of change planning, stakeholder role clarification, community ownership mechanisms, and outcome-based monitoring. Specifically, the practical recommendations are to utilize MOI's Guidelines and benchmark the operation of the CWBs by

- Enhancing public engagement through innovative incentive-based participation and tailored awareness-raising
- Integrating digital tools and data management platform to track transactions, earnings, environmental impact metrics for waste bank members
- Diversifying and innovating revenue models beyond traditional recyclable sales
- Promoting Public-Private-Community Partnerships with recyclers, SMEs, and manufacturers
- Aligning waste bank policies with national waste reduction targets and local municipal/local waste management ordinance, targets
- Implementing a transparent M&E system, and creating tiered certification (Bronze, Silver, Gold) for waste banks based on compliance, innovation, and performance, incentivizing continuous improvement

Thailand's community waste bank models present significant opportunities to advance circular economy practices and reduce plastic pollution at the grassroots level. This report offers an analysis of the gaps, opportunities, and pathways for strengthening community waste bank systems in Thailand. By implementing these recommendations, the Ministry of Interior can transform Thailand's Community Waste Bank program into a leading model.

The findings were shared and validated during a stakeholder consultation workshop on July 2, 2025. It was anticipated that stakeholders could provide additional recommendations to address barriers such as limited scalability, lack of public participation, and existing infrastructure and financial challenges faced by community recyclable banks.

1. BACKGROUND

1.1 Municipal Solid Waste Management in Thailand

2024, according to the Pollution Control Department [PCD] 2025, Thailand generated approximately 27.20 million tons of municipal solid waste (MSW). The Central region produced the highest volume of waste, totalling approximately 31,436 tons per day, including 18,591 tons per day generated by provinces within the Central region and 12,845 tons per day generated by Bangkok alone. The Northeastern region ranks second, with an estimated MSW generation of 17,873 tons per day, followed by the Southern region at 9,705 tons per day. The Eastern region generates 7,073 tons per day, while the Northern and Western regions produce 4,582 tons per day and 3,268 tons per day, respectively (Figure 1-1).

Municipal Solid Waste Generation by Region in 2024

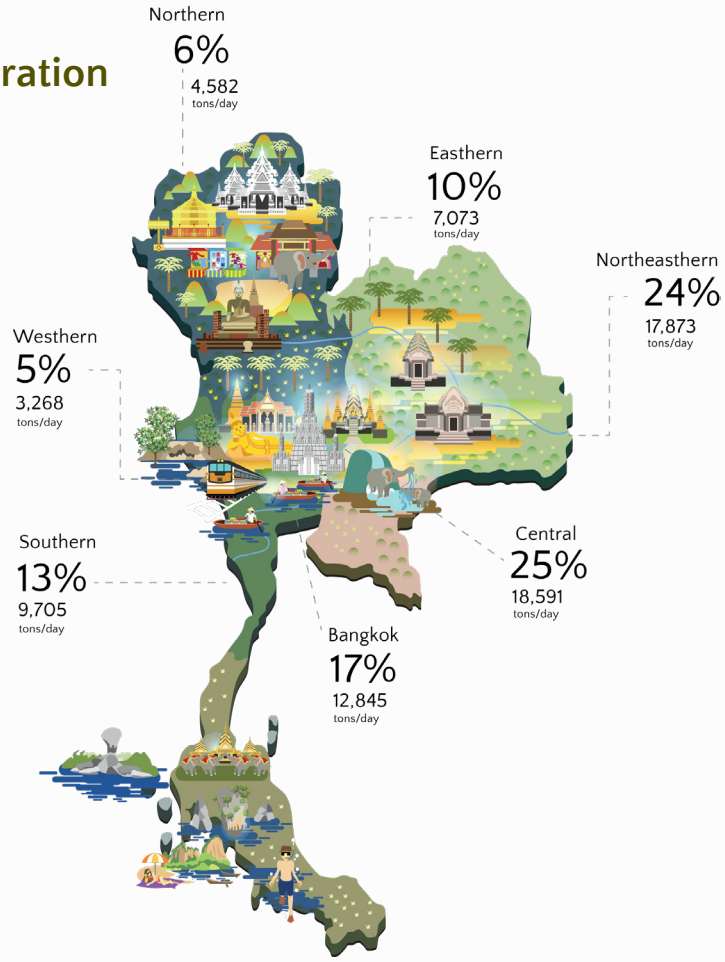

Figure 1.1: Municipal Solid Waste Generation by Region in 2024

Source: Adapted from (PCD 2025).

Of the nearly 27 million MSW generated across the country, approximately 1.54 million tons (6%) of waste are managed at the source at the household level. Additionally, 6.02 million tons (22%) are sorted for reuse from households and various sources. The remaining 19.64 million tons (72%) are collected by local administrative organizations (LAOs) and transported to waste disposal sites. Around 4.49 million tons (17%), is further sorted for reuse. This results of waste being recovered and leaves 15.15 million tons (55%) of waste for disposal, of which 10.42 million tons (38%) are properly disposed of, while 4.73 million tons (17%) are improperly disposed of, as shown in Figure 1-2 below.

Figure 1.2 Solid waste management 2024
Source: Adapted from (PCD, 2025).

MSW management in Thailand falls under the responsibility of local administrative organizations (LAOs). LAOs fall under the purview of the Department of Local Administration (DLA) within the Ministry of Interior (MOI). Generally, LAOs handle all stages of waste management from source separation and collection to final disposal. Waste collection and disposal is typically carried out by LAOs, though in some areas, private contractors are hired to perform this task (Areeprasert et al., 2017).

In 2024, a total of 2,057 municipal solid waste disposal sites were in operation. Of these, 1,973 sites were operated by LAOs. Among them, 81 sites carried out proper waste disposal (4%), while 1,892 sites operated improperly (96%). Additionally, 84 sites were operated by private entities or by private operators contracted by LAOs. Among these, 39 sites managed waste properly (46%), and 45 sites did so improperly (54%). Table 1-1 and Table 1-2 describe the types of municipal solid waste disposal sites that are operated properly and improperly.

Table 1.1 Properly Operated Municipal Solid Waste Disposal Sites in 2024

Proper Waste Disposal Methods (120 sites)	**Government**	**Private Sector**
Sanitary Landfill/Engineer Landfill	57	15
Composting	1	2
Waste to Energy (WTE) Incineration	-	7
Incinerator with air polluted control facilities	3	-
Refuse-Derived Fuel (RDF)	5	7
Integrated Waste Treatment	15	8
Total	**81**	**39**

Source: Adapted from (PCD, 2025).

Table 1.2 Improperly Operated Municipal Solid Waste Disposal Sites in 2024

Improper Waste Disposal Methods (1,937 sites)	**Government**	**Private Sector**
Controlled Dumping (Size <50 tons/day)	157	-
Controlled Dumping (Size >50 tons/day)	3	3
Incinerator without air polluted control facilities	84	3
Open Dumping	1,580	25
Open Burning	52	-
Other Forms	16	14
Total	**1,892**	**45**

Source: Adapted from (PCD, 2025).

In 2024, only 10.51 million tons out of 27.20 million tons were utilized for beneficial purposes (e.g., recycling, energy recovery). Recyclable collection in Thailand operates at different levels and by different actors, with the presence of informal sector. This informal sector (salengs) scavenges high value recyclable items buy recyclable materials, mainly from middle – and - high-income households, they also gather plastic waste from picking of materials (without payment) from waste bins, waste transfer stations, landfills, and other public areas where waste is discarded and accessible. In Bangkok, formal collectors (often the waste collection staffs of the Bangkok Metropolitan Administration, or private sector waste collection staffs) retrieve recyclables from their waste trucks to sell to nearby aggregators or junk shops to earn a side income on top of their formal salary.

Some private sector recycling industry and Corporates have also established various cash-for-trash schemes, where residents can sell their recyclable items through door-to-door collection, drop-off centres/reverse vending machines at public spaces, sending recyclables items by postal services. Recyclables collection in schools, known as School Garbage Bank is long practiced in Thailand. However, a major challenge to LAOs still remains the segregated collection of recyclables such as paper, plastics, metal, glass for promoting reuse and recycling, especially in rural settings.

Other challenges faced by LAOs for community waste management in Thailand include;

- **Insufficient infrastructure** for waste treatment and disposal, driven by high land costs and lengthy permit procedures.
- **Public opposition** often hinders the implementation of effective waste management strategies.
- **Low prioritization of waste management** by LAOs leads to less effective practices.
- **Budgetary limitations** restrict the capacity of LAOs to develop and operate comprehensive waste management systems.
- **Lack of targeted measures** in high-impact areas, particularly tourist zones, worsens existing problems.
- **Limited public awareness** regarding proper disposal and recycling practices hampers community participation.
- **Absence of specific municipal** ordinances reduces the enforceability of waste management regulations.
- **Inadequate tipping fees** fail to recover the full costs of treatment and disposal services.

1.2 Nation-wide Community Recyclable Waste Bank Initiative in Thailand for promoting MSW Recycling

Waste Bank concept is borrowed from the principles of a traditional bank. A typical community waste bank operates by the waste bank committee and its working group, who receives the recyclable waste, weighs, sorts, calculates its value, and record the transaction in a deposit ledger, something similar to a bank's passbook. Prices are based on rates negotiated between the waste bank working group and recycling buyers. Typically, the income generated from the community waste bank operations is used as a revolving fund to sustain its activities and to support programs and welfare benefits like basic commodities, or healthcare and funeral expenses for its members.

The Ministry of Interior launched a nation-wide Recyclable Community Waste Bank, hereafter community waste banks (CWB) initiative in 2024, collaborating with 7,773 LAOs across the country, each having at least one recyclable waste bank within 60 days of the official launching.

According to the Department of Local Administration (DLA) [2025], as of October 22, 2024,

- 15,763 Recyclable Waste Banks established nationwide
- 4.16 million registered members across the country
- 1.79 million tons of recyclable waste sold
- 1,120.80 million THB in total revenue
  - 869.84 million THB allocated for member welfare
  - 250.97 million THB remaining as revolving capital.

The DLA has set goals for Fiscal Year 2025 as to:

- Establish district-level model waste banks (Best Practices) in every province
- Reach a nationwide membership target of 7 million people
- Ensure every district has an operational waste bank

Waste banks play a crucial role in waste management in Thailand, especially in promoting waste separation and recycling at the community level. The main idea of waste banks is for people to bring recyclable waste to deposit or sell to the bank, which will record the information and accumulate value in the form of a savings account or exchange it for other products and services that benefit the community. The importance of waste banks to waste management in Thailand is as follows:

- Encouraging people to separate their waste and deposit recyclable waste at the waste bank helps reduce the amount of waste that needs to be buried or disposed of, which results in a reduction in the workload and costs of waste management for local administrative organizations.

- The waste bank enables recyclable materials to be efficiently reused, reducing the need to produce new raw materials, which saves energy and reduces the use of natural resources.

- People who bring their recycled waste to deposit at the Waste Bank can earn additional income or exchange it for essential goods and services, which helps strengthen the economy at the community level.

- The operation of the waste bank is to promote public awareness about waste management and the environment and encourage participation in solving waste problems in the community.

- Reducing the amount of waste that needs to be disposed of and increasing recycling reduces greenhouse gas emissions and pollution caused by waste disposal.

The funding for the CWB comes from multiple sources, both internal and external; primarily funded through local government allocations, income from waste sales, and support from community and external partners. The revenue from sale of recyclables is utilized as revolving capital to operate the CWB. From local government, the Subdistrict Administrative Organizations (SAOs) and municipalities can allocate funds under Waste management and environmental protection budgets, and Local development or community welfare funds. Such funding is supported under the Ministry of Interior's Regulation on Local Grants (2016 and amended), and the regulation on Local Environmental Volunteers (อถล.) (2018). Additionally, these CWBs are also supported by external grants and partners including NGOs, private sector partners under the corporate social responsibility (CSR).

1.2.1 Community Waste Banks and Sustainable Development Goals (SDGs)

The Community Recyclable Waste Bank initiative encourages LAOs for an efficient waste management system in alignment with the principles of sustainable development. In fact, this nation-wide waste bank initiative is funded under the "Partnership to Accelerate SDG Localization in Thailand", an ongoing project focused on integrating the SDGs into local communities and governance structures in Thailand. It's a joint effort by the UN and the Thai Ministry of Interior, involving United Nations Development Programme (UNDP) and UN-Habitat, with funding from the Joint SDG Fund, as a key aspect of SDG localization, particularly in relation to waste management and sustainable development.

Waste Banks and SDGs

1

Environmental Sustainability Dimension

- Reduce the amount of waste entering landfills by sorting and recycling, and reduce the impact on soil, water and air.
- Reduce pollution and greenhouse gas emissions by reducing waste accumulation in landfills.
- Protect ecosystems and water resources, especially in coastal communities and areas near rivers, and reduce the potential for plastic waste to leak into the ocean.

2

Economic Sustainability Dimension

- Generate income for households by allowing people to exchange recycled waste for money or use it as savings in the form of a waste bank account.
- Stimulate the Circular Economy by promoting the reuse of materials that were formerly waste as resources in production.
- Promote community businesses such as second-hand shops, recycling cooperatives, or waste material processing businesses.

3

Social Sustainability Dimension

- Raise public awareness and consciousness through waste banks that enable people in the community to understand their role in environmental conservation.
- Promote community participation, as waste banks are often operated with the cooperation of local people, providing a platform for building cooperation and social relationships.
- Reducing inequality, especially in rural areas or vulnerable groups, waste banks can be an accessible channel for creating economic opportunities, and funds generated from waste banks can support the needs of vulnerable groups.

4

Support for Sustainable Development Goals (SDGs)

- Waste Banks can directly contribute to several sustainable development goals such as SDG 3, 6, 8, 11, 12, 13, 14 and 15 among total 17 SDGs denoted by United Nations Department of Economic and Social Affairs (UNDESA) as shown in the Table 1-3 below.

Table 1 3 Contribution of Waste Banks to the Sustainable Development Goals

	Target[1]	Contribution of Waste Banks
	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases. 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	Promote good waste management, reduce the accumulation of waste in the community that may cause diseases such as Leptospirosis and gastrointestinal diseases. It enables waste separation at the source, which can reduce hazardous waste contamination into the environment, both in water and soil.
	6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	Waste segregation at the source reduces improper waste management, which often has negative effects on the ecosystem, leading to environmental contamination.
	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services. 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.	The promotion of waste banks can strengthen the entrepreneurs who buy second-hand goods in the community or can create a community enterprise to take care of the benefits of waste banks, which is an income generation for small businesses in the community, with academic or financial support from the local government organization. Promote sustainable consumption by recirculating resources into new production systems, reducing excessive resource use and environmental contamination.
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.	Waste banks can promote waste separation at the source, which reduces the environmental burden and prevents the negative impacts of consumption on the environment, promotes proper waste management, and reduces open burning.
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.	Waste banks directly promote reuse by separating waste for recycling, and raising public awareness in this way has also found that reuse and reduction behaviours are also occurring among the public.

1 United Nations Department of Economic and Social Affairs (UNDESA) (2015). Sustainable Development Goals. https://sdgs.un.org/goals.

	Target	Contribution of Waste Banks
	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	Waste banks promote proper waste management and reduce waste accumulation in the area. It was found that areas with strong waste bank management do not have waste falling all over the streets or public areas. This waste often causes flooding problems in urban areas because it clogs drainage pipes. Waste bank management therefore promotes good adaptation to disasters by reducing possible impacts on the public.
	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	In addition to helping to separate recyclable waste, the waste bank can also help to separate organic waste. Therefore, it reduces the accumulation of organic waste in the landfill area, resulting in a reduction in methane gas emissions from the landfill.
	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Waste banks directly contribute to reducing land-based waste contamination into the ocean, as waste is effectively managed by households.
	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.	Efforts to manage waste banks are considered as laying a strong foundation for waste management, which helps to promote the conservation of terrestrial and aquatic ecosystems. This is because the amount of waste generated is high in every area in Thailand and there is no management at the source, causing waste to be dumped in mountainous areas or other areas, which results in contamination of the ecosystem in that area.

The CWB initiative in Thailand contributes to the localization of the SDGs, particularly SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production), by demonstrating how local actions can contribute to global goals. Additionally, these waste banks can also act as SDG learning centres (SDGs station) to develop innovative and sustainable solutions concepts to manage waste and reduce waste leakage into the environment; establish and demonstrate the waste bank and change people's negative attitude towards waste; design and create policy recommendations on waste management and promote the implementation of SDG.

Additionally, besides its contribution to SDGs, the operation of waste banks under the MOI is an important mechanism aligned with national policies, aiming to reduce waste generation and efficiently manage community waste through source separation, resource circulation, and integrated cooperation among government agencies, private sector, and citizens. This initiative aligns with Thailand's National Waste Management Action Plan (2023-2027), which establishes frameworks for addressing waste management issues, emphasizing the role of local administrative organizations in managing waste from separation through transportation to disposal. It also supports the Bio-Circular-Green Economy (BCG) Model for sustainable development, focusing on circular economy principles by utilizing resources efficiently to reduce greenhouse gas emissions while creating new economic opportunities. Furthermore, the program is consistent with the 13th National Economic and Social Development Plan (objectives 10 and 11).

1.3 Objectives of the Study

The objectives of the study is three-fold: Review the relevance and applicability of the Ministry of Interior's CWB Manual; Witness how this manual is adhered or referred to by the Waste Banks, and Draft recommendations based on the site visits, stakeholder consultations, and translating the learning from Thai and international best practice cases to strengthen the operation of Thai community waste bank as a model community-managed recycling initiative.

- To strengthen the national implementation of Community Waste Banks (CWBs) by reviewing and supporting the application of the existing operational guideline aligned with the Ministry of Interior's policy direction.

- To ensure the Guidelines are grounded in real-world practices through the analysis of site-level data, field observations, and lessons learned from community waste banks across Thailand by focusing on selected pilot cities: Udon Thani and Koh Samui.

- To enhance the relevance and applicability of the Guidelines by incorporating successful international models, contextualized to Thailand's socio-economic, policy, and institutional landscape.

- To promote inclusive and participatory refinement and application of the Guidelines through structured stakeholder consultations and field-based engagement with local authorities, communities, and private sector actors.

- To support institutional ownership and sustainability by facilitating the progressive review, validation, and endorsement of the Draft Guidelines in collaboration with the Department of Local Administration (DLA) and UN-Habitat.

1.4 Methodology

The study took a mixed approach of primary and secondary data collection such as, review of MOI's Manual on Developing Plans and Guidelines for Driving Recyclable Waste Bank Operations, followed by field visits of the selected 8 waste banks and stakeholder consultations in Udon Thani and Koh Samui Provinces, developing domestic and international best practice cases of community waste banks.

- Desk Review: Analysed existing Ministry of Interior (MOI) guidelines and relevant regulatory documents.

- Field Visits: Site visits were conducted in Udon Thani and Koh Samui, including interviews, observations, and stakeholder discussions. A comprehensive questionnaire was finalized to guide field data collection for community waste banks (Annex-1).

- Stakeholder Engagement: Key stakeholders from government, local authorities, civil society, and the private sector were engaged through meetings, dialogues, and interviews to ensure diverse input.

- Domestic Case Studies: Best practices from additional localities—Uthai Thani, Saraburi, Ratchaburi, Lopburi, and Sukhothai—were also reviewed.

- Comparative Analysis: International benchmarking was conducted using case studies from Indonesia, Japan, and Singapore.

2. REVIEW OF THE MINISTRY OF INTERIOR'S COMPREHENSIVE GUIDELINES FOR DRIVING RECYCLABLE WASTE BANKS

To facilitate the establishment and operation of community waste bank across the nation, in 2024 (B.E. 2567), the Ministry of Interior collaborated with the Academic Service Centre of Chulalongkorn University to developed Guidelines on Developing Plans and Guidelines for Driving Recyclable Waste Bank Operations for Recyclable Waste Banks "คู่มือโครงการศึกษาจัดทำแผนงานและแนวทางขับเคลื่อนการดำเนินงานธนาคารขยะ (Recyclable Waste Bank) ภายใต้กระทรวงมหาดไทย ประจำปีงบประมาณ พ.ศ. 2567" This guideline serves as a national framework to assist local authorities and communities in systematically implementing recyclable waste banks in their communities and enhance the effectiveness of community-based waste management systems across Thailand. Below are the key components included in the Guidelines that provides guideline for developing operational rules, financial management procedures, and governance structures:

1. Establishment and Governance
The manual outlines the establishment of Waste Banks at the community level, emphasizing the formation of a management committee comprising local administrative officials and community representatives. This committee is responsible for overseeing operations, ensuring transparency, and aligning activities with local policies.

2. Operational Guidelines
Detailed procedures are provided for the daily operations of Waste Banks, including waste collection, sorting, and processing. The manual also covers the establishment of pricing standards in collaboration with recycling businesses, ensuring fair compensation for community members.

3. Community Engagement and Awareness
Strategies for engaging community members are outlined, such as organizing informational sessions, utilizing local communication channels, and conducting door-to-door campaigns. These efforts aim to raise awareness about the benefits of waste segregation and encourage active participation.

4. Financial Management and Sustainability
Guidelines for managing finances within Waste Banks are provided, including the establishment of savings accounts for members, transparent accounting practices, and the allocation of funds for community welfare programs. These measures ensure the financial sustainability of Waste Banks and their ability to reinvest in community development.

5. Monitoring and Evaluation
The manual emphasizes the importance of regular monitoring and evaluation to assess the effectiveness of Waste Bank operations. Feedback mechanisms are incorporated to facilitate continuous improvement and adaptation to community needs.

6. Appendices
Includes examples of regulations, announcements, and successful implementation models from existing waste bank operations in various local administrative organizations.

Text Box 2.1 presents the table of contents from the existing operational guidelines for community waste banks.

Text Box 2.1 Table of Contents of the Comprehensive Guidelines for Recyclable Waste Banks

Section 1: Driving the Recyclable Waste Bank
1.1 Recyclable Waste Bank
1.2 Roles and Duties of Local Administrative Organizations in Establishing Waste Banks
1.3 Guidelines for Establishing Waste Banks

Section 2: Establishing a Waste Bank
2.1 Establishing the Waste Bank Administrative Committee, Community/Village Waste Bank Committee, and Community/Village Waste Bank Working Group
2.2 Creating Regulations for the Waste Bank
2.3 Preparing Facilities and Initial Budget
2.4 Organizing Meetings and Public Relations
2.5 Recruiting Waste Bank Members
2.6 Operating the Waste Bank
2.7 Building Cooperation with the Community

Section 3: Surveying Community Waste Separation Data from Local Administrative Organizations to Support Waste Bank Operations

Section 4: Public Relations and Creating Awareness of Waste Bank Operations

Section 5: Financial Management, Income-Expenditure from Selling Recyclable Waste

Section 6: Guidelines for Determining Benefit Models and Welfare for Waste Banks

Section 7: Guidelines for Managing Welfare Benefits for Waste Bank Members and People in the Area

Section 8: Plans and Guidelines for Driving Waste Bank Operations

Appendices:
• Examples of Regulations and Announcements Related to Waste Bank Administration
• Examples of Guidelines for Driving Waste Bank Operations in Local Administrative Organizations with Existing Operations (Case Study 1: Nong Long Municipality, Lamphun Province; Case Study 2: Kong Thanu SAO, Lopburi Province

Full Manual can be accessed at:
https://www.localthai.org/dnm_file/st/1704245960635_25730_side3.pdf

The manual provides the communities with the tools and knowledge to manage their waste effectively, contributing a significant step towards promoting sustainable waste management practices at the grassroots level. The Manual clearly depicts the roles and duties if LAOs in establishing Waste Banks. The LAOs (municipalities, subdistrict administrative organizations, etc.) serve as supervisory and supporting agencies for public sector operations, in accordance with various laws and regulations including:

- Decentralization Act B.E. 2542 (1999)
- Municipal Act B.E. 2496 (1953)
- Subdistrict Council and Subdistrict Administrative Organization Act B.E. 2537 (1994)
- Public Cleanliness and Orderliness Act B.E. 2535 (1992), amended in 2017
- Ministry of Interior Announcement on Waste Management B.E. 2560 (2017)

The LAOs typical provides oversight and supervision to the waste bank by:

i. Setting Goals: Defining objectives for waste reduction, improving quality of life, and instilling waste separation habits

ii. Establishing Regulations: Creating formal structures through committee appointments and operational guidelines

iii. Providing Support: Offering financial and resource support through training programs, volunteer networks, and subsidies

iv. Promoting Participation: Encouraging involvement from networks including schools, religious institutions, hospitals, and associations

v. Monitoring and Evaluation: Tracking financial management, accounting, and overall operations to ensure transparency

vi. Public Relations: Disseminating knowledge, building awareness, and sharing success stories

A typical structure of the community recyclable waste bank includes:

LAOs:
[Role: Oversight and support]
- Acts as the supervising and supporting body.
- Provides policy direction, coordination, and resources (including training, equipment, space, or initial funding, and support budgeting and financial audits)
- Monitors and evaluates the implementation and performance of the waste bank.

Waste Bank Administrative Committee
[Role: Financial governance and decision-making] (appointed by local government)
-Approve financial plans, budgets, and use of funds
-Monitor income and expenditure
-Report financial status to LAO and the community
-Approve welfare/incentive allocations and reinvestment strategies

Community Waste Bank Committee
[Role: overall management, planning and coordination with stakeholders]
-Selected from community members.
-Responsible for overall management, planning, and decision-making for the waste bank.
-Coordinates with stakeholders such as recyclers, local authorities, and community members.

Community Waste Bank Working Group
[Role: day-to-day operations]
-Handles daily operations such as collecting, sorting, weighing, recording, and selling recyclable waste.
-Manages financial records and member deposit books.
-Implements awareness and outreach activities within the community.

Waste Bank Members
[Role: Participants and beneficiaries]
-Participate by separating and depositing recyclable waste.
-Receives a deposit book to each member for recording their recyclable waste transactions.
-Receive benefits such as income, welfare, or community development support based on their participation and contributions.

The MOI Manual was studied thoroughly, and the content was utilized to draft a survey questionnaire, site visits to the selected waste banks, consulting how these guidelines are being implemented on the ground, and in drafting the recommendations for waste banks to perform effectively and efficiently.

3. SITE VISIT OF THE SELECTED COMMUNITY WASTE BANKS IN THAILAND

To observe the CWBs operation in Thailand, two Provinces, Udon Thani and Koh Samui (Surat Thani) was selected for a detailed and focused case study. These community-led CWBs in these two provinces are seen as innovative solutions for waste management that can be scaled up and replicated in other areas. A total of 8 site visits were made (5 in Udon Thani and 3 in Koh Samui). These visits were also extended beyond the CWB, by visiting other stakeholders including municipality, recycling shop, schools. Additionally, best practices from Uthai Thani, Saraburi, Ratchaburi, Lopburi, and Sukhothai were also reviewed. The objective of these site visits and domestic best practice case studies was to witness the operation model of the CWBs, identify operational challenges, and innovations and success factors. The success factors of these CWBs are included to draft recommendations, which will be shared and validated with the stakeholders including local government and waste bank operators from other localities/provinces to translate those success factors and learnings at their waste bank facilities as applicable. A Consultation workshop on strengthening the implementation of community waste bank guidelines and initiatives in Thailand was held on 2 July 2025 (Annex-3).

3.1 Focused Case Study: Udon Thani Municipality and Subdistrict Waste Bank Models

The Udon Thani Municipality and its surrounding subdistricts present a diverse and evolving model of community-based waste bank implementation. These efforts reflect a strong alignment with national waste management guidelines and community-centered sustainability practices. Multiple local entities, including Udon Thani Municipality, CWB by Chiang Phin Subdistrict, CWB by Huai Sam Phat Subdistrict, and associated stakeholders such as Kammee Recycling Shop and Tessaban 7 School were visited. During the visit it was noticed that these stakeholders have adopted adaptive and participatory approaches that collectively contribute to a more sustainable and inclusive waste ecosystem. Detailed findings from the site visits are provided in Annex-2.

In Udon Thani Municipality, the waste bank system is embedded within a community business model. Residents participate in profit-sharing from recyclable sales, with accumulated income transferable to the city's welfare scheme known as the "One Baht per Day Fund." The municipality encourages waste separation at source and supports collection once a month, providing special assistance to elderly participants. Approximately 8,000 kg of recyclable waste were collected over a ten-month period, with income credited to individual accounts. Community leaders manage the program, supported by municipal staff for technical guidance and knowledge development. Transparent decision-making and a tracking system help ensure accountability and participation. This approach reflects the Theory of Change framework, which emphasizes shared understanding, inclusion of vulnerable groups, and connecting environmental outcomes to household economics (United Nations Development Programme [UNDP] 2021; Wiek and Iwanie 2014).

Figure 3.1 represents the overview of site visits to the waste bank models recycling shop and zero waste school models.

Figure 3.1 Overview of Site Visits to Community Waste Banks, Recycling Shop, and Zero Waste School in Udon Thani Province.

CWB in the Chiang Phin Subdistrict established in 2023 has yielded significant outcomes. The Subdistrict Administrative Organization (SAO) collected 47,947.9 kg of recyclables in the first year, representing 23% of the subdistrict's total waste. The initiative spans 12 villages and involves monthly waste collection events, supported by individual deposit books and standardized pricing reviewed by the SAO. Repurposing activities, such as turning waste into sofas and bags, contribute to income generation and circular economic goals. Despite success, challenges such as limited budgets, competition from scrap buyers, and storage constraints persist. Nevertheless, strong leadership and innovative engagement campaigns like "Trash for Eggs" demonstrate the program's capacity to evolve and scale (United Nations Environment Programme [UNEP] 2024).

Huai Sam Phat Subdistrict Waste Bank, operating since 2018, exemplifies pre-regulatory innovation. It features formal registration for over 2,000 members, performance-based participation rules, and creative incentives like the Waste-for-Eggs exchange and funeral welfare contributions. Record-keeping is managed manually, and monthly reports are reviewed collectively. The SAO coordinates closely with **Kammee Recycling Shop**, a local partner that provides consistent pricing and waste collection services. This public-private collaboration ensures logistical efficiency and transparency. Kammee also operates waste compactors, suggesting a future technological pathway for scaling operations.

Udon Thani's Rak Chumchon Waste Bank, launched in 2024, integrates incentive-based participation through a "Zero-Baht Shop" model and profit-sharing system. Members exchange recyclables for household goods or receive annual dividends. The bank is democratically managed and financially tracked through Excel, with aspirations for digital transformation. Despite challenges such as limited space and funding, its alignment with Ministry of Interior (MOI) guidelines and community-driven governance positions it as a model for urban adaptation. **Tessaban 7 School (Rodfai Songkroh)**, recognized as a "Zero Waste School," serves as an educational case within the municipal framework. Students engage in experiential learning activities, including composting, repurposing plastics, and paper recycling. A digital waste tracking system enhances transparency and student engagement, while school-wide waste banks reinforce environmental values. The school's leadership under the "Good School Model 7" embeds sustainability into institutional culture, showcasing how educational institutions can model long-term behavior change.

3.1.1. Operational Challenges of Community Waste Banks in Udon Thani

Despite success factors observed in the CWB in Udon Thani Province, the site visits also revealed a range of operational challenges that affect their efficiency, sustainability, and community participation. While many waste banks are well-intentioned and show localized success, systemic issues remain that hinder broader impact and replication. Text Box 3-1 shows key gaps that were observed in site visits.

Text Box 3 1 Operational Gaps in Waste Banks Based on Site Observations in Udon Thani

Common gaps and challenges were observed across the four waste bank sites visited, despite the diversity in operational models. These challenges ranged from community participation to pricing, and overall financial sustainability of the waste banks as depicted in Figure 3.2

Figure 3.2 Operational Gaps Identified from Site Visits to Community Waste Banks in Udon Thani

Limited Financial Sustainability
Most waste banks, particularly those operated by SAOs, rely heavily on local government funding. For example, Chiang Phin SAO funds its waste bank operations entirely from its own budget, without external support. While some programs generate income, operational and expansion costs remain unmet.

Pricing Competition with Private Buyers
Waste banks often offer lower rates than private scrap dealers, leading residents to sell their recyclables elsewhere. At Chiang Phin, private sector competition discourages participation, while Kammee Recycling Shop consistently buys at rates 1 THB/kg lower than the market average, affecting Huai Sam Phat SAO's appeal.

Insufficient Incentives for Community Participation
Residents are not always sufficiently motivated to separate and donate recyclable waste. Although incentives like "Waste-for-Eggs," funeral support funds, and in-kind exchanges (e.g., dishwashing liquid) exist, these are not enough to drive consistent and widespread engagement.

Heavy Dependence on Local Government Leadership
The Ministry of Interior's policy drives play a key role in launching these CWB initiative, but the long-term sustainability depends heavily on proactive local leadership. Where committed SAO officials and community champions are lacking, programs tend to struggle.

Limited Membership and Expansion Challenges
SAOs struggle to expand participation due to low awareness and restrictive recruitment criteria, such as required savings balances or minimum contribution levels, which may deter new members.

Manual Systems and Administrative Burdens
Most waste banks still use paper-based records, which are time-consuming and error-prone. Although some SAOs have started using tools like Excel or the LINE app for communication, adoption of digital applications remains limited. Wider use of technology could improve efficiency and reduce workload; however, most participants are elderly, making adaptation to digital tools more challenging.

Disparities in Environmental Commitment Among Schools
Municipal schools under the Ministry of Interior often show stronger support for waste bank initiatives than those under other organizations, such as the Ministry of Education. Broader replication requires that school leadership at all administrative levels prioritize sustainability and environmental education.

Age Gaps in Participation
Most waste banks are run by older residents, with limited involvement from younger generations. Without targeted efforts to engage youth, these initiatives risk losing continuity and long-term sustainability.

3.1.2 Adherence and/or Adaptation of MOI Guidelines on the Community Recyclable Waste Banks by the Waste Banks in Udon Thani

Collectively, these Udon Thani-based initiatives demonstrate strong community ownership, integrated welfare incentives, and alignment with national goals. Table 3-1 highlights key differences and innovations in governance models, incentive structures, stakeholder engagement, and the types of waste managed by the CWBs. These comparative analysis findings emphasize that while the MOI has issued national guidelines, individual communities often adapt and develop their own versions to better suit local contexts and needs.

Table 3.1 Comparison of Udon Thani Subdistrict Waste Bank Models with MOI Guidelines

Criteria	MOI Guideline developed by Chula Unisearch, Chulalongkorn University (2024)	Udon Thani Municipality (2024)	Chiang Pin Sub-district (2022)	Huai Sam Phat Sub-district (2018)
Objective	The waste bank aims to improve quality of life and foster responsibility in reducing waste, promote cooperation among members, generate benefits from waste sales, and encourage participation from government, private, and local sectors in community waste management.	The waste bank aims to raise household waste management awareness, improve members' quality of life, reduce waste through separation, and use sales income for member benefits. It also promotes collaboration among the government, the private sector, and local communities in managing waste.	Encourage waste segregation at the community level by linking it to social benefits, such as contributing funds for funeral services and fostering community engagement.	Huai Sam Phat Subdistrict has been affected by the problem of solid waste. To address this issue through sustainable waste management, the community aims to become a model for the entire province.
Scope	National (all local governments).	Udon Thani Municipality (localized).	Chiang Pin Sub-district (localized).	Huai Sam Phat Sub-district (localized).
Legal Basis	**Operations follow relevant laws and regulations, including:** •Decentralization Act (1999) •Municipality Act (1953) •Subdistrict Council and SAO Act (1994) •Pattaya City Administration Act (1999) •Public Cleanliness Act (1992, amended 2017) •Ministry of Interior Notification on Waste Management (2017) **Aligned with national strategies, including:** •Second Action Plan on Waste Management (2022–2027) •Sustainable Development Goals (SDGs) •Bio-Circular-Green (BCG) Economy Model •Circular economy principles •13th Environmental Quality Management Plan	Followed MOI regulation	The 13th Environmental Quality Management Plan B.E.2566-2570 (2023-2027)	National Master Plan on Waste Management (2016-2021) Short-Term National Master Plan on Waste Management (2016-2017) Implementation of the "Thailand Without Waste" Action Plan under the "Pracharath" (Public-Private-People Partnership) approach for a one-year period, based on the 3Rs principles (Reduce, Reuse, Recycle).

Criteria	MOI Guideline developed by Chula Unisearch, Chulalongkorn University (2024)	Udon Thani Municipality (2024)	Chiang Pin Sub-district (2022)	Huai Sam Phat Sub-district (2018)
Stakeholder Involvement	Local authorities, committees, recyclers, communities.	Schools, Community leaders, Community members	Community members, local committees.	Community members, local committees.
Waste Types	Recyclables waste	Recyclables waste	Recyclables waste	Recyclables waste
Incentive System	Life Insurance	A 3% dividend is given to members, along with support for education and goods such as eggs.	Funeral Welfare, along with goods such as eggs.	Funeral Welfare, along with goods such as eggs.
Monitoring & Evaluation	Reporting mechanism and satisfaction to local admin units frequently	Detailed financial records, including income and expenses, and regularly submit reports to MOI	Record the financial report and hold at least one meeting per year to gather feedback on past performance and regularly submit financial reports to MOI	Record the financial report and submit reports to MOI
Unique Practices	•Emphasizes documentation, committee rules, and transparency. •The manual provides explanations and is open for adaptation and improvement by local community organizations.	•Positions and responsibilities are clearly designated. •Social media is used to notify waste collection from the community. •There is a door-to-door waste collection service •The purchase price of waste is slightly reduced to create a margin that can be returned to members as dividends or other forms of profit-sharing.	•Include the designated location of the waste bank in the community rules. •There is also concern about other types of waste, such as hazardous and organic waste. Although these types of waste cannot be sold at the waste bank, there is a designated drop-off point for hazardous and organic waste. •Add value to waste, such as transforming plastic bottles into brooms.	•Members are eligible to receive substantial funeral support benefits. •Membership is registered per household, with one account book used by all family members. •The partnered recycling shop is responsible for transporting the waste from the SAO on waste bank trading days, while it serves only as a facilitator and handles public communications. •Create added value, such as turning discarded plastic packaging into useful carry bags.

3.2 Focused Case Study: Koh Samui Municipality Waste Bank Models

Koh Samui Municipality, located in Surat Thani Province, demonstrates an adaptive and community-rooted model of waste bank operations, shaped by the island's distinct geographic and socio-economic context. Unlike more formalized systems such as those seen in Udon Thani, Koh Samui's waste banks operate under decentralized, business-driven, and community-led structures that align with the island's tourism-centric economy and limited land availability. At the core of this approach is flexibility. The waste bank models do not enforce structured membership systems but instead welcome open participation from all community members, including tourists, residents, and informal workers. Individuals can bring recyclable materials to designated collection points and receive direct monetary compensation. This inclusive model facilitates broader community engagement and daily operational continuity. Recyclables are typically sold to large second-hand dealers on the Surat Thani coast, strengthening the link between local collection efforts and the regional circular economy (World Wide Fund For Nature [WWF] 2023).

Three waste banks; Maenam CWB, hybrid waste bank in Koh Samui, and Samui Elephant Home waste Station were visited to observe their operational model; challenges and innovations. Detailed results from the site visits are provided in Annex-2.

Maenam waste bank model: As described in Figure 3-3, local waste entrepreneurs play a central role in this Koh Samui system. In Maenam, Ms. Tick, a well-respected community volunteer, leads a waste bank initiative that relies on trust-based engagement, voluntary household contributions, and manual record-keeping. Supported by Blue Ocean Plastic Recycling (BOP), the Maenam model exemplifies informal leadership in action. Although lacking formal infrastructure and government support, Ms. Tick's initiative continues to function effectively, driven by community trust, flexible operations, and targeted NGO assistance. A basic shelter provided by BOP serves as a temporary sorting and storage site, allowing her to manage waste flows efficiently. The waste bank collects an estimated 700–800 kg of plastic waste monthly, including items such as mixed plastics and large detergent buckets.

The Koh Samui hybrid waste bank model, informally operated by a waste collector whose husband drives a municipal waste truck, introduces another form of entrepreneurial adaptation. This waste picker sorts recyclables directly from municipal waste collected throughout the day. While technically working outside the formal waste bank network, this operation collects recyclables at volumes nearly ten times higher than the Maenam Waste Bank. The collector works at night to sort materials from the truck and later sells the recyclables for profit. BOP supported this operation by providing a shelter to organize the materials and facilitate transactions. Though informal, this model reveals the critical role that hybrid municipal-informal systems can play in increasing recycling rates. It also points to the potential of integrating informal practices into official municipal systems to build a more inclusive and efficient waste management framework.

Another notable case is the Samui Elephant Home Waste Station, developed under a UNDP-supported initiative. This model introduces a dual system: tourists are engaged through the Ecolife app, earning redeemable points for proper waste separation, while local residents use a manual drop-off and logbook-based system. The initiative targets Koh Samui's tourism sector which is the island's main economic driver while ensuring inclusive engagement for all demographics. On weekends, local residents deliver recyclables to the station, weigh and record them, and later receive compensation via bank transfers. The trust-based nature of these exchanges has reinforced long-term participation, while the digital integration enhances data tracking and outreach (UNDP 2021; SecondMuse 2024). As a result of this system, the facility generates additional revenue, which supports rescued elephants and environmental education. It also earns carbon credits, contributing to both environmental and financial sustainability.

Figure 3.3 Overview of Site Visits to Community Waste Bank Models in Koh Samui Municipality, Surat Thani Province.

Koh Samui Municipality plays a facilitating role rather than a central authority. It promotes household-level waste separation, supports public awareness campaigns, and provides basic institutional coordination. Meanwhile, the World Wide Fund for Nature (WWF) has supported operations by offering subsidies that enable the waste stations to purchase recyclables at above-market rates. This subsidy structure, particularly for low-value plastics, not only increases income for collectors but also strengthens the economic viability of the waste banks in a highly competitive recycling market (WWF 2023).

These initiatives align well with the Theory of Change framework. Community enterprises are empowered first, followed by targeted institutional and technical support. Behaviour change is then reinforced through incentive-based mechanisms such as daily cash payments or reward systems. This stepwise process ensures the inclusion of vulnerable populations and encourages long-term sustainability (UNDP 2021; Wiek and Iwanie 2014).

while the digital integration enhances data tracking and outreach (UNDP 2021; SecondMuse 2024). As a result of this system, the facility generates additional revenue, which supports rescued elephants and environmental education. It also earns carbon credits, contributing to both environmental and financial sustainability.

3.2.1. Operational Challenges of Waste Banks in Koh Samui

Despite the promise of these models, field observations revealed persistent challenges. Infrastructure remains limited, with most waste banks operating in temporary facilities. It demonstrates how decentralized, flexible systems can thrive under local leadership when paired with targeted support and inclusive participation.

Text Box 3.2 shows the main operational gaps and challenges that were observed in site visits.

Text Box 3.2 Operational Gaps in Waste Banks Based on Site Observations in Koh Samui

Regardless of the differences in operational models, multiple challenges were identified at the three waste bank sites (Figure 3-4):

Figure 3.4 Operational Gaps Identified from Site Visits to Community Waste Banks in Koh Samui

•Lack of Formal Infrastructure
The waste banks observed across Koh Samui, including Maenam and Samui Elephant Home, operate without dedicated sorting or storage facilities. In Maenam, activities are conducted in the open space, while the Hybrid Model required external assistance from Blue Ocean Plastic Recycling (BOP) to construct a basic shelter. The lack of proper formal infrastructure limits operational efficiency and scalability.

•Manual and Inconsistent Record-Keeping
Waste tracking is mostly conducted through manual logbooks, particularly in Maenam and among local users at the Samui Elephant Home station. This system is time-consuming and prone to errors. Although Samui Elephant Home employs a digital platform (Ecolife app) for tourists, many local residents remain excluded due to limited digital literacy, resulting in parallel systems and inconsistent data management.

•Irregular or Uneven Community Participation
Participation in community waste banks, especially in Maenam, is voluntary and inconsistent. Some households contribute regularly, while others do not engage in waste separation at all. At Samui Elephant Home, the challenge lies in designing an inclusive system that accommodates both tech-savvy tourists and older local residents who prefer manual processes. This difference affects overall system reliability and inclusivity.

•Financial Sustainability Challenges
Most waste bank models lack stable and secure financial support mechanisms. The Maenam Waste Bank operates purely on volunteerism and informal revenue from

•Lack of Policy Integration
The existing waste bank initiatives operate in isolation from formal municipal waste management frameworks. Despite their effectiveness at the community level, these community-led models are not institutionally recognized or supported through local policies. As a result, there is limited opportunity to scale up successful practices or formalize community-led efforts within the broader waste governance system.

•Limited Government or Institutional Support
All three waste bank models function without formal institutional backing from local or national authorities. In particular, there is no official integration with the municipal waste management system, and responsibilities for waste handling are fragmented among agencies such as the Municipality, the Ministry of Interior, and the Pollution Control Department (PCD). This lack of coordination creates confusion about waste disposal routes, especially for non-recyclable or hazardous waste as residents are unclear about the appropriate channels.

•Limited Capacity Building and Training
Community leaders, such as Ms. Tick in Maenam, manage operations without structured formal training or access to ongoing technical support. Few opportunities for knowledge transfer or skill development could help standardize practices, improve performance, and replicate models in other communities. This limits the growth and resilience of such initiatives.

•Challenges in Managing Low-Value Plastics
While some efforts exist to upcycle low-value plastics into eco-bricks or construction materials, these remain small-scale and fragmented. Low-value plastics continue to pose a problem due to the limited economic incentive and lack of processing capacity. Without dedicated systems to manage these materials, they often remain uncollected or improperly disposed of.

Overall, despite the Koh Samui waste bank model rely on passion-driven leadership, unlike the MOI's driven CWB in Udon Thani Province, with no formal succession or institutional backup, it creates vulnerability if these individuals become unavailable. Another challenge faced by waste banks in Koh Samui is the limited land availability, especially in tourist-heavy zones, restricting the establishment of physical waste bank infrastructure. Waste collection activities therefore remain compact and mobile but increasing logistical demands.

3.3 Domestic Best Practice Waste Bank in Thailand

In addition to the two focused cases of waste bank operation in Udon Thani and Koh Samui, five additional waste banks were visited to review their operation model and success factors.

Best Practice 1: Kongthanu Subdistrict Administrative Organization, Lopburi Province

The Kongthanu Subdistrict Administrative Organization in Lopburi Province has demonstrated a successful community waste bank model by integrating economic incentives, community participation, and institutional leadership (Figure 3-5). The program establishes a clear incentive mechanism through a savings system in which members can accumulate at least 300 THB over six months from the sale of sorted waste. A 50-THB deduction per member is allocated to a funeral welfare fund, and members who meet certain conditions receive welfare benefits. This approach aligns with findings that financial incentives significantly enhance household participation in solid waste management program (UNEP 2024).

Figure 3 5 Waste Bank Model at Kongthanu SAO, Lopburi Province.
(Source: Albrechtsen (2024)

To encourage source separation, the SAO promotes wet waste bin usage at the household level and organizes village-wide training campaigns, including clean village contests. Collection is managed via decentralized collection points within each village, where community leaders and local entrepreneurs coordinate trading dates. Notifications are disseminated through traditional means (e.g., waste bank notebooks) and digital platforms like LINE.

The waste bank system further ensures transparency and fair pricing. Recyclables are deposited by members and sold to recycling shops, with the SAO acting as an intermediary in price negotiations. Monthly pricing is determined collectively through community meetings, reinforcing transparency and democratic decision-making. Effective price mediation mechanisms like these are crucial in waste banks to maintain trust and participation (United Nations Human Settlements Programme [UN-Habitat] 2021). Institutionally, Kongthanu SAO has established a robust and inclusive governance structure, appointing committees in 14 villages with seven members each—totalling 98 individuals. The Minister of the SAO chairs the subdistrict-level operations, supported by civil servants and local employees who facilitate daily management and maintain transparent records of income and expenses. The SAO clearly applies the Theory of Change as a guiding framework, beginning with community dialogue and regulation drafting, followed by participatory committee elections and the signing of formal Memoranda of Understanding (MOUs). The program's process can be described as evolving from "mutual understanding" to "joint system development," supported by motivational activities, leading to new behaviours and ultimately a sustainable community-owned waste management system. This reflects core principles of behaviour change, and participatory governance often cited in community-driven development models (Wiek and Iwanie 2014).

Overall, Kongthanu SAO's model illustrates a scalable, inclusive, and resilient approach to community waste bank implementation in rural Thailand. The integration of economic incentives, participatory governance, and localized application of the Theory of Change offers valuable insights for similar municipalities seeking to improve their waste management systems.

Best Practice 2: Khao Khlung Subdistrict Administrative Organization, Ratchaburi Province

Khao Khlung SAO, located in Ratchaburi Province, exemplifies a strong community-centered approach to sustainable waste management through its locally driven waste bank system (Figure 3-6). At the core of Khao Khlung's model is a well-structured incentive mechanism. Members participating in the waste bank receive social welfare benefits such as scholarships, support for the elderly and bedridden patients, and basic necessities including adult diapers and food. This welfare-linked approach serves as a powerful motivator for ongoing community participation, consistent with broader evidence that financial and social co-benefits are key to sustaining engagement in community waste programs (UNEP 2024). The SAO also promotes waste separation at source through institutional mechanisms such as a subdistrict charter and regular community training on the 3Rs. Environmentally friendly composting tanks and prototype houses have been installed to support wet waste treatment at the household level. These initiatives reflect international best practices that emphasize participatory rule-setting and household infrastructure as foundational for effective waste segregation. Waste collection is systematically scheduled for the 15th and 30th of each month. Households are required to record daily and monthly waste volumes, enabling the SAO to use the data for strategic planning.

Figure 3 6 Waste Bank Model at Khao Khlung SAO, Ratchaburi Province.
(Source: UN-Habitat Bangkok Office (2025)

The waste selling mechanism is overseen by the local Waste Bank Committee, which collects and sells sorted recyclables. In addition to standard sales, the SAO has implemented an exchange system, allowing residents to trade waste for necessities. Such alternative value systems not only promote circularity but also strengthen social safety nets, confirming findings from UN-Habitat (2021) that recommend linking informal value recovery systems to basic needs provision. Institutionally, the SAO forces the existing village committee system as its organizational backbone, with Nong Mai Fao village serving as a model and mentor for other communities. Regular meetings and continuous field visits help maintain performance, replicate good practices, and strengthen peer learning. This decentralized, network-based leadership model is in line with recognized governance practices for community-driven development (Wiek and Iwanie 2014). Khao Khlung SAO applies the Theory of Change process, beginning with community brainstorming and participatory system design, followed by the preparation of community constitutions and a strong emphasis on local ownership. The journey progresses from "mutual understanding" to a "common goal," through community-designed activities, monitoring, and iterative learning, ultimately leading to sustainable behavioral change that is driven by the community itself.

This case demonstrates how integrated community engagement, structured incentives, participatory planning, and adaptive leadership can transform municipal waste systems into inclusive and sustainable models. The experience of Khao Khlung SAO offers a replicable framework for rural and semi-urban areas seeking to strengthen local waste governance while advancing broader environmental and social goals.

Best Practice 3: Pangiew Subdistrict Administrative Organization, Sukhothai Province

The Pangiew SAO in Sukhothai Province demonstrates a strong example of inclusive, culturally embedded waste management led by community institutions (Figure 3-7). The SAO applies a well-structured incentive mechanism, where income generated from waste sales is directed to a welfare fund that supports cremation costs, medical equipment, scholarships, and assistance for vulnerable groups. This approach not only promotes recycling but also ensures that the benefits of proper waste management are returned to the community. Impressively, the initiative has helped reduce local waste by 83.62%, demonstrating the effectiveness of linking environmental action with social value (UNEP 2024). Under its waste separation strategy, the SAO promotes the principle of "waste from the community, managed by the community, for the benefit of the community."

Participation is encouraged through active **involvement of women's groups, Community Health Volunteers, and youth organizations** such as the "To Be Number One club". One notable campaign called "3 Collect 3 Diseases," integrates public health messaging with environmental goals, demonstrating how cross-sectoral awareness can drive participation. The waste collection system is managed entirely by local volunteer teams, avoiding the use of private contractors. Communication is streamlined via LINE messaging groups, which are used to announce collection dates and share related community activities. Collection points are placed strategically to suit local conditions.

Figure 3 7 Waste Bank Model at Pangiew SAO, Sukhothai Province
(Source: Sukhothai Provincial Office of Local Administration (n.d.)

Waste is sold through the Waste Bank Committee, which manages **buyer selection based on fairness and market suitability.** The committee monitors price trends and periodically shares price information with community members, ensuring transparency and maintaining trust. This participatory pricing and sales system corresponds with recommendations for community recycling systems where price equity and timely communication are essential for long-term viability (UN-Habitat 2021). Institutionally, the program is supported by a subdistrict-level fund committee and five active community groups. Leadership is distributed among village leaders, youth, and Community Health Volunteers, with regular planning meetings and publicly accessible accounting systems. Importantly, Pangiew SAO integrates the Theory of Change (ToC) as a foundational approach, beginning with study tours and the establishment of community learning centers, which evolved into a culturally resonant concept known as the "garbage forest cloth", a metaphor for collective contribution and protection. The initiative progressed from household-level involvement to full community ownership, emphasizing the cultural narrative of "community leaders driving together with the people." The stepwise transformation from "cultivating knowledge" to "creating shared spaces for learning," followed by culturally aligned action and ownership has led to a model that is both environmentally and socially sustainable (Wiek and Iwanie 2014).

The Pangiew SAO experience illustrates the power of **grassroots innovation** when **guided by local identity, cultural values**, and community trust. Its results provide an important best practice model for rural municipalities seeking to integrate waste management with welfare delivery, health, and local leadership.

Best Practice 4: Khao Bang Kraek Subdistrict Municipality, Uthai Thani Province

Khao Bang Kraek Subdistrict Municipality in Uthai Thani Province has developed a structured and community-responsive waste bank model that blends financial incentives, institutional transparency, and participatory design (Figure 3-8). The municipality has implemented a funeral fund system, wherein members contribute 20 THB per member or per deceased individual. Households with cumulative recyclable sales exceeding 300 THB are eligible to withdraw cash and access financial support from the funeral fund. This welfare mechanism provides not only motivation for participation but also a financial safety net, echoing similar models of socially integrated waste banks in Southeast Asia (UNEP 2024).

To support waste separation at source, the municipality provides waste bins, promotes public awareness through LINE messaging apps and loudspeakers, and engages teachers, Village Health Volunteers, and local leaders to disseminate knowledge. The collection system is well-coordinated: municipal staff collect waste from designated community collection points and directly from commercial shops that cannot meet the fixed disposal schedule. To enhance operational efficiency, both garbage trucks and retrofitted fire trucks are used. The municipality has also introduced standardized collection times (e.g., 7:00 AM), helping ensure predictability and community compliance.

Figure 3 8 Waste Bank Model at Khao Bang Kraek Subdistrict Municipality, Uthai Thani Province (Source: Kaewjaroon (2025)

On the selling side, a waste purchasing company collects recyclables from the collection points, and the revenue is credited to household accounts and community welfare funds. This approach ensures direct financial benefits to participating residents and links economic returns with environmental action. In terms of institutional structure, a municipal waste bank committee has been formally established to oversee implementation. The municipality collaborates with community members to develop operational plans and provide technical advice. Accounting books are regularly reviewed, and all income and expenditure records are made publicly accessible, promoting community trust and transparency. Khao Bang Kraek's waste management model is also guided by the Theory of Change, began with study tours and community planning meetings, progressing through a participatory design process including the selection of directors, setting up drop-off points, and scheduling. Importantly, the approach emphasizes positive motivation and ownership rather than reliance on enforcement. The transformation pathway embodies principles of co-creation and empowerment that are increasingly recognized in sustainable community development literature (Wiek and Iwanie 2014).

This case highlights how local governments can integrate welfare mechanisms, community participation, and procedural transparency into an effective waste management system that aligns with both environmental and social development goals.

Best Practice 5: Na Phra Lan Subdistrict Municipality, Saraburi Province

Na Phra Lan Subdistrict Municipality in Saraburi Province has implemented a community waste bank model that effectively integrates social welfare, educational outreach, and inclusive governance to address the financial and environmental challenges of municipal waste management (Figure 3-9). The waste bank system is supported by a robust incentive mechanism, where welfare coverage extends to up to 10 household members per family. In the event of a death, the household receives approximately 8,000 THB in funeral support, drawn from accumulated waste bank savings. This welfare model not only enhances participation but also reduces the burden of waste management costs for the municipality. Embedding social protection into community waste systems has been shown to increase program effectiveness and resilience, particularly in low- and middle-income contexts (UNEP 2024). A strong emphasis is placed on building understanding and participation before launching the fund.

Awareness-raising efforts include community meetings, training in schools, and the involvement of teachers, Village Health Volunteers, and local leaders as communicators. The program encourages residents to understand that waste generators must also take responsibility in managing waste. The collection system is organized around bi-monthly pickups at designated sites, namely Wat Na Phra Lan and Wat Khung Khao Khieo Wanaram. Municipal garbage trucks support transportation, and members are required to bring recyclables to these events according to the fund's regulations. This approach combines logistical convenience with behavioral reinforcement, supporting consistent community engagement in source separation.

In terms of the selling mechanism, the waste bank follows real-time market pricing, ensuring fair compensation for participants. A waste purchasing shop is available in the area, and the municipality and fund committee coordinate the sales. The program's governance model reflects a multi-stakeholder structure that includes community leaders, private sector representatives, Village Health Volunteers, women's groups, and youth. The municipality plays a key supportive role by offering academic resources, manpower, and financial oversight systems. All operations are verifiable and transparently managed, with financial records shared openly with members, fostering accountability and institutional legitimacy (UN-Habitat 2021). The initiative is guided by a locally tailored Theory of Change. It begins with building knowledge through community meetings, followed by establishing a community-driven fund. The process includes participatory mechanisms that involve vulnerable groups, and motivation is sustained through welfare benefits and opportunities for continuous improvement. The change pathway illustrates a stepwise transformation rooted in shared values and collective action (Wiek and Iwanie 2014).

Overall, Na Phra Lan's model demonstrates that when community-based waste systems are built on inclusion, transparency, and local ownership, they can simultaneously improve waste outcomes and strengthen social protection. This makes it a valuable case for replication across other subnational governments seeking integrated environmental and social solutions.

3.4 Comparative Analysis of Community Waste Bank Best Practices

One of the fundamental factors for the success of CWB is the participation, which almost all CWBs face challenges with. From the search for data from past research studies and field surveys of waste banks and interviews with stakeholders of 7 waste banks people's participation depends on the social and economic conditions of the community as shown in Table 3.2.

Table 3.2 Obstacles of Community Waste Banks in the Study Areas

Obstacle	Urban Community	Semi-Urban Community	Rural Communities	Communities with Tourist Attractions	Community with Industrial Resources
The amount of waste entering the waste bank is significantly less than the total amount of recycled waste generated by the local government organization.					
People lack motivation to participate in waste banks	●	●		●	●
There is a large hidden population that does not participate in the waste bank.	●	●		●	●
Lack of cooperation from tourist attractions/ industry/ business sectors	●			●	●
Long-term waste management					
People do not change their behaviour in the long term.	●			●	●
Aging society reduces waste volume			●		
People are more aware of their consumption, resulting in less waste			●		
The management of waste banks is not proper, so people do not participate in the long term	●	●	●	●	●

Table 3-3 further presents a comparative review of best practices in community waste bank implementation from various provinces in Thailand. Each case demonstrates a unique integration of local leadership, community participation, and incentive mechanisms that support sustainable solid waste management, and a unique set of challenges too. For example: the MOI's national waste bank guidelines often promote a standardized model, which may not suit diverse local contexts. In Koh Samui, land scarcity and tourism demand required compact, tech-supported systems. In Udon Thani, school-led models and scheduled community events worked well.

The comparative analysis highlights key dimensions including financial and welfare-based incentives, household engagement in waste separation, logistical organization of waste collection, mechanisms for selling recyclables, institutional leadership structures, and the application of the Theory of Change. By examining these dimensions side by side, this comparative review aims to identify effective models, recurring success factors, and context-specific innovations that can inform policy design and replication efforts in other municipalities seeking to strengthen community-based waste management systems.

Table 3 3 Comparative Review of Community Waste Bank Best Practices and Focused Case Studies

Case Study	Incentive Mechanism	Waste Separation Participation System	Collection Mechanism	Selling Mechanism	Sustainable Leadership and Institution
Kongthanu SAO, Lopburi	Savings from waste sales; funeral welfare fund; member benefits	Wet waste bins at household level; training and village contests	Village collection points; scheduled trading days; notifications via notebook/LINE	Waste deposited at waste bank; SAO negotiates prices monthly with recyclers	14 village committees (7 per village); total 98 people; chaired by SAO Prime Minister; transparent accounting
Use of Theory of Change					
Mutual understanding →Jointly develop the system → With Motivational and Engagement Activities → New behaviour occurs → Leading to a sustainable management system owned by the community					
Khao Khlung SAO, Ratchaburi	Welfare for members (scholarships, elderly care, necessities)	Subdistrict charter; community training on 3Rs; compost tanks and model homes	Garbage collection on 15th and 30th monthly; households track waste volume	Waste bank committee sells recyclables; includes exchange for necessities	Model village mentors others; regular meetings and field visits
Use of Theory of Change					
Mutual understanding → Common Goal → With Community-designed activities → Follow up and learn → Leading to changes that people in the community can drive themselves					
Pangiew SAO, Sukhothai	Waste income funds welfare (cremation, equipment, scholarships); 83.62% waste reduction	Community-led waste strategy; campaigns via women, youth, and health volunteers	Collected by volunteers; appointments via LINE; designated points	Waste bank committee sells; selects buyers by price; monitors and reports rates	Subdistrict fund committee and 5 community groups; youth and volunteers actively involved; transparent accounting
Use of Theory of Change					
Cultivating knowledge → Creating a Community Learning Centre → With Activities that are in line with the culture of the garbage donation cloth → Create a sense of ownership → Drive together according to local lifestyles and cultures					

Case Study	Incentive Mechanism	Waste Separation Participation System	Collection Mechanism	Selling Mechanism	Sustainable Leadership and Institution
Khao Bang Kraek Municipality, Uthai Thani	Funeral fund from waste sales; cash withdrawals after 300 THB in sales	Awareness via Line, loudspeakers, teachers, and health volunteers	Municipality collects at community points and from shops; designated disposal times	Recyclers collect at point; income goes to household and fund accounts	Municipal waste bank committee; shared planning; transparent income/ expenditure records
Use of Theory of Change Cultivating Knowledge → Joint planning → With Selection of Directors and Various Requirements → Create a sense of ownership → Driven together with positive motivation					
Na Phra Lan Municipality, Saraburi	Welfare for up to 10 members; 8,000 THB funeral support; reduces municipal cost burden	Awareness created through meetings, schools, and local mediators	Bi-monthly collection at temples; members may bring or receive collection service	Trades based on daily market prices; handled by municipality and fund committee	Committee includes leaders, volunteers, women, youth; transparent, auditable operations
Use of Theory of Change Building Knowledge → Fund Setting → With Participatory process including vulnerable groups → Motivate through welfare → Continuously improving					
Na Phra Lan Municipality, Saraburi	Welfare for up to 10 members; 8,000 THB funeral support; reduces municipal cost burden	Awareness created through meetings, schools, and local mediators	Bi-monthly collection at temples; members may bring or receive collection service	Trades based on daily market prices; handled by municipality and fund committee	Committee includes leaders, volunteers, women, youth; transparent, auditable operations
Use of Theory of Change Building Knowledge → Fund Setting → With Participatory process including vulnerable groups → Motivate through welfare → Continuously improving					
Udon Thani Municipality, Udon Thani	Profit-sharing with members; linked to city's 1-THB/day fund	132 households involved; promotes source separation for all	Monthly (3rd Wednesday); municipality supports elderly	8,000 kg sold in 10 months; earnings credited to member accounts and linked to other funds	Community-managed; municipality provides data, advice, and supports participatory governance
Use of Theory of Change Shared understanding → Inclusion of vulnerable groups → Link to household economy → Transparent tracking					
Samui Municipality, Surat Thani	Private companies buy recyclables directly; no formal membership; sellers get cash	Open to all, including community and outsiders; source separation promoted	Waste banks open daily for trading	Sold to second-hand shop on Surat coast; WWF support enables above-market prices	Managed by tricycle operator; the municipality provides support; WWF subsidizes operations
Use of Theory of Change Strengthening Community Businesses → Support in both academic and resource aspects → With Community Participation Process → Motivate through marketing mechanisms → Continuously improving					

The comparative analysis of seven community waste bank models (Koh Samui Municipality, Udon Thani Municipality, Khao Bang Kraek Subdistrict Municipality, Uthai Thani Province, Na Phra Lan Subdistrict Municipality, Saraburi Province, Kong Thanu Subdistrict Administrative Organization, Lopburi Province, Khao Khlung Subdistrict Administrative Organization, Ratchaburi Province, and Pangiew Subdistrict Administrative Organization, Sukhothai Province) highlights a range of innovative and localized practices that collectively advance sustainable waste management and align with national strategies. Despite differing contexts, these cases exhibit common enabling features and lessons learned:

- Incentives play a pivotal role in sustaining community engagement. Approaches range from profit-sharing and funeral welfare (Kongthanu, Khao Bang Kraek, Na Phra Lan) to scholarships, dividends, and direct cash payments (Udon Thani, Koh Samui). Programs tailored to the socio-economic needs of each community have proven effective in encouraging participation.

- All cases invest in outreach and education, using tools like community meetings, schools, village health volunteers, and digital platforms (e.g., LINE). Participation spans across household members, women's groups, youth, and the elderly, strengthening community cohesion and long-term behaviour change.

- Collection methods are adapted to local logistics ranging from scheduled municipal pickups (Udon Thani, Khao Khlung) to daily trading access (Samui) and volunteer-managed drop-off systems (Pangiew). These flexible models ensure accessibility while reducing operational burdens.

- Transparency and competitiveness in selling mechanisms enhance trust and financial viability. Communities negotiate market prices (Pangiew, Kongthanu), link prices to daily rates (Na Phra Lan), or leverage NGO support to subsidize above-market prices (Samui).

- Effective governance emerges through collaborative structures involving local leaders, municipal authorities, youth, and community representatives. Transparent book-keeping, accountability, and participatory planning processes are crucial for credibility and long-term sustainability.

- Each model implicitly applies the Theory of Change framework, starting with awareness-building and progressing toward co-created systems. Emphasis is placed on motivation (through welfare or market access), sustained engagement, and eventual institutional ownership by the community.

- These models reflect strong alignment with the Ministry of Interior's Guidelines and demonstrate scalability potential.

- Innovations like digital tracking (Udon Thani), integration with schools (Pangiew, Tessaban 7), and value-added recycling (Chiang Phin) offer pathways for replication across Thailand.

4. COMPARISION OF THE INTERNATIONAL BEST PRACTICES AND THAI COMMUNITY RECYCLABLE WASTE BANK SYSTEMS

Waste Bank is not a new concept anymore for some of the countries, including Latin America, and some of the ASEAN countries. The first waste bank known as “Lixo que Não é Lixo” (Waste that is not Waste), in Latin America was established in Curitiba, Brazil, in 2001. Similar systems proliferated in many countries, with adaptation and modification on the name, scale, design, and benefits of these waste banks. From a typical neighbourhood waste bank with most of its operation handled manually, a digital savvy drop-off centres are in practice in many countries. Nonetheless, the basic principle remained the same, i.e., that integrating community participation in recycling through cash-for-trash incentives. However, the true example of community based recyclable waste bank begin in Indonesia. With the first community waste bank (bank Sampah) founded in February 2008 in the village of Badegan in the Region of Bantul, Yogyakarta, the country currently operates thousands of bank sampahs.

The study team reviewed the waste bank from countries in the ASEAN region to learn and recommend strategic and operation guidelines to make Thai Community recyclable waste bank a model waste bank. Cases of waste bank system in Indonesia, Singapore, and Japan were studied and compared. These waste banks were studied along four key criteria that decides the successful operation of a waste bank; Governance and policy integration; diverse benefit/ welfare innovations; Public Awareness and Participation Techniques, and use of digital tools and techniques. The waste banks were also compared based on these criteria, identifying elements that are adaptable to Thai community waste bank systems.

1. Governance and Policy Integration

Thailand's community waste bank (CWB) system operates under a decentralized framework, with authority granted to local administrative organizations (LAOs) through laws such as the Decentralization Act B.E. 2542 (Pollution Control Department 2022). The Ministry of Interior (MOI), via the Department of Local Administration (DLA), has issued guidelines to promote community waste banks nationwide, but adoption remains voluntary and uneven. As of October 22, 2024, there are approximately 15,763 Recyclable Waste Banks, but they struggle with standardization, enforcement, and budget integration.

Meanwhile, Singapore's waste management system is driven by a highly centralized and inter-ministerial strategy known as the Whole-of-Government (WoG) approach. Under this framework, multiple ministries coordinate to ensure cohesive environmental governance. The Singapore Green Plan 2030 sets national targets for reducing landfill waste by 30% and advancing circular economy solutions across sectors (Singapore Green Plan 2021).

Japan's waste management system is governed by the Waste Management and Public Cleansing Law by emphasizing the 3Rs (Reduce, Reuse, Recycle). Municipalities are legally responsible for local implementation, reinforcing bottom-up accountability within a centralized framework (Japanese Law Translation 2022). One exemplary case is Kamikatsu, a town that declared a zero-waste goal in 2003 and now diverts over 80% of its waste by sorting into 45 categories (Yeung 2022).

A clear winner from the governance and policy integration in community waste bank is Indonesia. Indonesia has established one of Southeast Asia's most institutionalized waste bank systems. The legal foundation rests on Law No. 18 of 2008 on Waste Management and Government Regulation No. 81 of 2012, supported by the Ministry of Environment Regulation No. 13 of 2012. These set national commitments to the 3Rs and formalize waste banks as key community mechanisms under the Extended Producer Responsibility (EPR) framework (Bahraini 2020; Ismawati et al. 2022). Municipalities such as Makassar and Surabaya integrate CWBs through mayoral ordinances, public-private partnerships, and support services (Wijayanti and Suryani 2015; Kubota, Horita and Tasaki 2020).

Text Box 4.1 Best Practice for Governance and Policy Integration of Waste Banks

Institutionalized Waste Bank System in Indonesia

Indonesia represents one of the most advanced examples of institutionalizing community waste banks (CWBs) in Southeast Asia. Its system is grounded in a comprehensive national legal framework, beginning with Law No. 18 of 2008 on Waste Management, which mandates the adoption of the 3Rs (Reduce, Reuse, and Recycle) as national priorities. This was further operationalized through Government Regulation No. 81 of 2012, which outlines technical standards for waste reduction, and Ministry of Environment Regulation No. 13 of 2012, which provides direct guidance on the creation and management of waste banks. The regulation formally recognizes CWBs as community-led mechanisms for resource recovery and explicitly supports them under the Extended Producer Responsibility (EPR) framework.

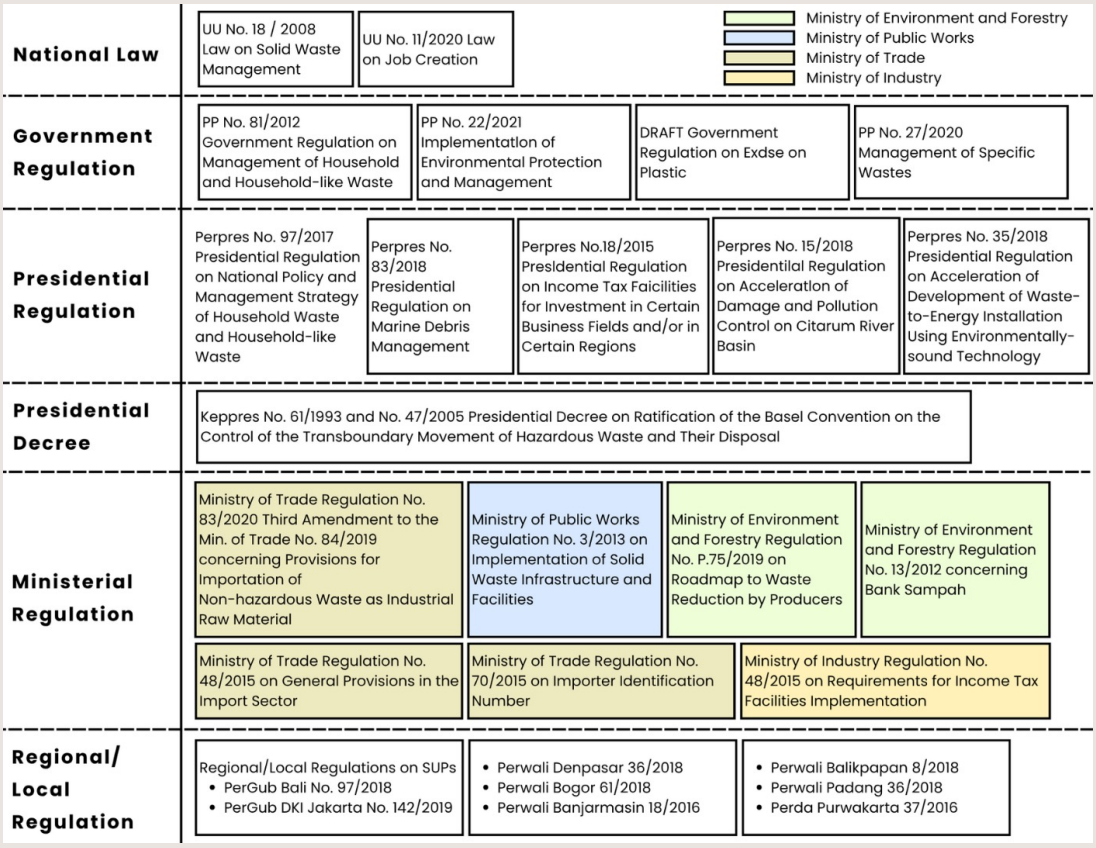

Figure 4 1 Summary of Indonesia's national waste management regulations (as of July 2021). (Adapted from Ismawati et al. 2022)

Indonesia is characterized by vertical integration of policy across different levels of governance as shown in Figure 4-1. Municipalities are not only encouraged but, in some cases, required to support CWBs through local ordinances. These local regulations allow for coordinated support including technical training, collection logistics, and recycling partnerships assuring that CWBs are not isolated, voluntary efforts but integral components of citywide waste management strategies. In Makassar, for instance, the city established a central waste bank hub that links with over 800 neighbourhood-based CWBs. Each RW (community block) is encouraged to form its own waste bank, and the central hub handles aggregation, pricing coordination, and market access. This structure enables economies of scale, regular reporting, and targeted investment. Additionally, Indonesia's framework promotes community ownership while providing institutional support. This balance is achieved through a combination of decentralization and legal empowerment.

This model provides an important governance lesson for Thailand, i.e., the decentralized structures work best when local governments are legally empowered and operationally supported. While Thailand has recently issued national guidelines for CWBs under the Ministry of Interior, the absence of binding mandates or municipal ordinances has led to uneven implementation. Indonesia's success suggests that Thailand could adopt a "nested governance" approach where national guidelines are complemented by tambon or municipal-level regulations by ensuring budget allocation, reporting consistency, and long-term program sustainability.

Sources: (Wijayanti and Suryani 2015; Kubota, Horita and Tasaki 2020; Bahraini 2020; Ismawati et al. 2022)

2. Benefit/welfare innovations

Indonesia's CWBs utilize a range of financial innovations, including waste-for-cash accounts, integration with cooperatives offering micro-loans, and Corporate Social Responsibility (CSR)-funded infrastructure (Urban Ocean 2021). One standout example is Garbage Clinical Insurance (GCI), where residents convert recyclables into basic health coverage (Dhewanto et al. 2018). In Surabaya, some waste banks report monthly turnovers exceeding IDR 70 million, facilitated by partnerships with local governments and recyclers (Wijayanti and Suryani 2015).

Japan's revenue model is more socially embedded. Kamikatsu residents contribute to and benefit from reuse centers (thrift shops), which extend the life cycle of household goods and generate revenue for community upkeep (Yeung 2022). Food Bank Kanagawa represents another example, where food surplus is redistributed to vulnerable groups, reducing waste and creating secondary social value (Jōji 2023).

Thailand can combine Indonesia's financial models with its existing PromptPay infrastructure to create digital micro-saving schemes tied to CWB performance. CSR incentives and e-voucher systems, like Singapore's model, could be piloted in tourist cities and urban centres. In rural areas, reuse shops and food redistribution programs, similar to Japan's model, can promote circular economy values and offer non-cash-based community benefits. Text Box 4-2 shows the best practice for revenue generation model of waste banks in Indonesia.

Text Box 4 2 Best Practice for Benefits/Welfare Innovation of Waste Banks

Garbage Clinical Insurance (GCI) in Malang, Indonesia

Indonesia's Garbage Clinical Insurance (GCI) model, launched by the social enterprise Indonesia Medika in Malang, represents a pioneering integration of waste management and public health financing. The concept allows low-income households to deposit sorted waste in lieu of paying monetary premiums for basic healthcare services. Recyclable waste is monetized and pooled to support a community clinic network offering outpatient services, family planning, maternal and child health, and chronic disease screening. This approach addresses two critical challenges simultaneously: reducing urban solid waste and improving healthcare access for the urban poor.

GCI operates through a system of decentralized waste banks that serve as collection hubs. Households participating in the program are required to bring their waste, which is then categorized, weighed, and converted into health credits. These credits are recorded in a digital member profile and redeemed for medical consultations up to twice a month. Organic waste is composted and sold as fertilizer, while recyclable materials are sold to generate the operational budget for affiliated clinics. Medical services are provided by a hybrid team of paid staff and volunteers and include both clinic-based care and proactive home visits, especially for elderly or high-risk patients. Beyond its operational innovation, GCI strengthens social capital by engaging communities in health education, environmental awareness, and collective action. Residents not only receive care but participate in shared responsibilities of waste reduction and mutual support.

Its business model is partially sustained through recyclable revenue and partially through grants, CSR support, and social innovation awards. Utilization rates are kept manageable, only 10-15% of members use services monthly, ensuring the model remains financially viable (Figure 4-2).

Figure 4.2 Garbage Clinical Insurance (GCI), Indonesia.
(Source: Deutschland.de. 2017; AirAsia Foundation 2018)

This model has gained national and international recognition as a scalable and socially inclusive solution to health inequity and waste pollution. In Thailand, many community groups, operate funeral welfare systems, which provide monetary support for families upon a member's death. While culturally significant, these systems are reactive in nature and do not address ongoing health vulnerabilities. By contrast, the GCI model offers a life-centred, preventive alternative by transforming waste contributions into access to routine healthcare services. Adapting this model to Thailand's context could mean repurposing or complementing existing welfare schemes to offer basic outpatient care, screenings, or health education through Community Waste Banks. This could be piloted in partnership with local LAOs, MoPH clinics, and CWBs by targeting peri-urban or vulnerable tambons, with support from CSR partners or district health budgets.

Sources: (Ikawati and Handian 2017; Deutschland.de. 2017; Apriyanti 2018; AirAsia Foundation 2018; Dhewanto et al. 2018)

3. Public Awareness and Participation Techniques

Thailand's CWBs benefit from strong community traditions and local leadership. LAOs, schools, women's groups, and religious institutions play significant roles in promoting participation. However, many CWBs depend heavily on individual community champions rather than systematized education campaigns. While some provincial governments organize awareness events, there is a lack of sustained media engagement or nationwide behavioural change initiatives. Participation levels vary based on geographic and socio-economic contexts, and there is no coordinated framework for community education on waste reduction (MOI 2023; UNDP 2024).

Indonesia has embedded waste bank participation within community identity, particularly through the use of RW/RT (neighbourhood unit) structures and kampung-led initiatives (Wijayanti and Suryani 2015; Kubota, Horita and Tasaki 2020). Participation is reinforced through regular public education campaigns, local radio, and collaboration with religious and academic institutions. The success of CWBs in Semarang and Surabaya often hinges on the leadership of women's groups and civic media (Bahraini 2020; Ismawati et al. 2022). Singapore relies more on top-down strategies. Awareness is driven by media partnerships (e.g., Mediacorp and DBS Bank), digital tools like Stridy, and corporate-led campaigns. These initiatives focus on shaping consumer behaviour and reducing food waste, especially in households and commercial sectors (DBS Bank 2022; DBS Bank 2024).

Thailand can draw from Indonesia's grassroots mobilization by LAOs, temples, and schools to expand CWB reach. Media-driven behaviour change strategies modelled after Singapore could be adapted through Thai broadcasters and influencers. Japan's values-based framework resonates strongly with Thai Buddhist principles and could enhance the moral framing of waste reduction campaigns.

Japan promotes civic environmentalism through education and cultural values. The notion of "mottainai," which expresses regret over wastefulness, underpins public acceptance of detailed waste sorting rules and reuse practices (Whiting 2019). Environmental education is included in school curricula, and residents are expected to comply with sorting regulations that often include 30+ categories (Japan International Cooperation Agency [JICA] n.d.).

Text Box 4-3 describes the best practice for public awareness and participation techniques that can be applied in Japan.

Text Box 4 3 Best Practice for Public Awareness and Participation Techniques

Mottainai in Practice: Japan's Values-Based Model for Public Engagement in Waste Management

Japan stands out globally for its high level of public participation in waste management, underpinned by a deeply rooted cultural value known as "mottainai", a word that captures the sense of regret over waste and encourages appreciation and conservation of resources. This philosophy extends beyond environmentalism to form a social ethic that guides Japanese daily life by reinforcing the importance of reducing, reusing, and recycling as a moral imperative. One of the most iconic examples of Japan's participatory success is Kamikatsu, a small rural town on Shikoku Island in Tokushima Prefecture that declared its ambition to become Japan's first zero-waste municipality in 2003. After closing its incinerator in 2003, Kamikatsu committed to a zero-waste policy, which now sees its residents voluntarily sort waste into 45 categories.

The initiative is supported by the Zero Waste Academy, a local NGO, and includes innovative tools such as point cards for properly sorted waste and subsidies for electric composters. The community-run Kuru Kuru reuse shop, where items are donated and picked up freely, further encourages resource conservation and fosters community sharing (Figure 4-3). By 2020, Kamikatsu achieved an 81% recycling rate among the highest in Japan and cut its annual waste from 150 tons in 2000 to just 54 tons.

Figure 4 3 Kamikatsu Zero Waste Center, Japan.
(Source: Yeung 2022; Shenyoputro and Jones 2023; Fujiwara 2023)

Thailand can draw inspiration from Japan's values-based participation model. By promoting Buddhist-aligned environmental ethics like "mottainai" and combining this with school-based education, local waste guides, and community-level social reinforcement, CWBs in Thailand can build stronger engagement. Tailored campaigns that use community influencers, temples, and youth programs could localize this cultural commitment to reducing waste.

Sources: (Mazda Stories n.d.; JICA n.d.; Wabi Sabi Life n.d.; Whiting 2019; Yeung 2022; The Washington Post 2022; Shenyoputro and Jones 2023; Fujiwara 2023; Jōji 2023; Waki 2024)

4. Use of Digital Tools, Techniques and Tracking Systems

Thailand has started piloting digital waste tracking tools, particularly under PCD's projects and through some LAOs experimenting with spreadsheet-based monitoring. However, there is no national digital platform like SIMBA system (Sistem Informasi Manajemen Bank Sampah) in Indonesia (Ismawati et al. 2022). While Thailand's ThaiD platform and PromptPay infrastructure offer potential for integration, they have not yet been linked with CWB operations. Digital literacy and training gaps among waste bank leaders further limit adoption of mobile apps or real-time monitoring tools (PCD 2022; MOI 2023).

Singapore emphasizes corporate-driven and digital mechanisms. Apps like Ezi reward users for recycling via point-based incentives, while organizations such as Treedots and UglyGood partner with food manufacturers to repurpose surplus waste into consumer products. While these approaches depend on smart technology and high user connectivity, they are widely supported by national CSR policies and innovation grants (Hicks 2019; DBS Bank 2022).

Indonesia has developed the SIMBA platform to consolidate waste bank data nationally. It is accessible to citizens and regulators, though implementation varies by region (Ismawati et al. 2022). Cities like Malang and Semarang have tested QR-coded tracking systems and digital product catalogs, which improve operational transparency and enable incentives (Dhewanto et al. 2018; Urban Ocean 2021). Singapore is a leader in smart waste management. The city-state uses AI-powered solutions (Lumitics), IoT-enabled bin sensors (Skyfy), and reward platforms (Ezi) to optimize waste collection and incentivize sorting. These tools are embedded into daily operations of both municipal systems and private waste contractors (Skyfy Technology Pte Ltd. 2018; Hicks 2019). Japan has introduced municipal apps like Trash Flow to manage collection routes, provide real-time tracking, and streamline billing. Smart bins and RFID tagging are also being piloted in urban areas to increase operational efficiency (Slashdot 2025).

Thailand could introduce a national CWB tracking dashboard modelled after SIMBA, managed by PCD or integrated into ThaiD. Urban areas may trial Singapore's smart bin and AI solutions, particularly in pilot zones like Bangkok and Chiang Mai. The operational apps in Japan are highly relevant to mid-sized Thai municipalities that need digitized but low-cost systems. Text Box 4-4 exemplifies the best practice for the use of mobile apps and tracking systems.

Text Box 4.4 Best Practice for Use of Mobile Apps and Tracking Systems

Smart Waste, Smart Citizens: Singapore's Digital Model for Waste Monitoring and Incentives

Singapore stands at the forefront of integrating digital technologies into urban waste management by using a suite of mobile applications, AI tools, and IoT infrastructure to optimize service efficiency, promote recycling behaviour, and reduce contamination in waste streams (Figure 4-4). This technology-driven approach is embedded in its broader Whole-of-Government (WOG) strategy and aligns with the Singapore Green Plan 2030, which sets ambitious goals for reducing landfill use and advancing a circular economy

Figure 4 4 Smart Waste Monitoring Technologies, Singapore.
(Source: Skyfy Technology Pte Ltd. 2018; DBS Bank 2022; Sembcorp Environment 2024)

A key innovation is the Ezi app, developed by Sembcorp, which enables households to schedule free doorstep pick-ups of recyclable materials and earn reward points that can be redeemed for goods and services. By offering convenience and tangible incentives, the Ezi platform overcomes common urban recycling barriers such as lack of time, space, or access to centralized drop-off stations. The app also includes tracking features for users to view their recycling history and contribution to environmental savings. In parallel, Singapore has deployed AI-powered food waste monitoring systems, such as those developed by Lumitics, which are used in hotels and food establishments to weigh and photograph discarded food. The AI analyses patterns of waste generation, allowing kitchens to adjust portion sizes, procurement, and preparation processes to reduce waste at the source. These tools are increasingly integrated into national food sustainability campaigns. On the municipal side, firms like Skyfy Technology supply IoT-enabled bin sensors that monitor waste levels in real time and transmit data to a centralized dashboard. This allows for optimized waste collection routes, reduction in fuel use, and faster response to illegal dumping or overflow incidents. These systems are often paired with citizen-facing mobile dashboards and integrated into the National Environment Agency's (NEA) broader waste analytics system.

Importantly, Singapore's digital tools are designed to combine behavioural change with system intelligence. Citizens are educated on their environmental impact and encouraged to adopt more sustainable practices through gamified incentives, transparent processes, and feedback mechanisms. These methods have proven particularly effective in densely populated urban areas. Singapore's smart waste ecosystem shows that combining data, incentives, and convenience can transform recycling into a habit. Thailand could localize this model in urban pilot areas like Bangkok, Phuket, Koh Samui or Chiang Mai by partnering with app developers, waste haulers, and banks to develop CWB-linked reward platforms that utilize PromptPay, ThaiD, and QR codes for waste tracking and incentive redemption.

Sources: (Skyfy Technology Pte Ltd. 2018; Hicks 2019; Singapore Green Plan 2021; DBS Bank 2022)

Table 4.1 below summarizes the community waste bank systems in Thailand, Indonesia, Singapore, and Japan by highlighting key similarities and differences across four critical dimensions: governance and policy integration, benefit/welfare innovations, public participation strategies, use of digital technology use. It further distils relevant lessons to support Thailand's efforts in strengthening and scaling its community waste bank initiatives by identifying the existing identifies systems gap and a potential element to adapt to the Thai community recyclable waste bank systems.

Table 4 1 Cross-Country Comparison of Community Waste Bank Systems and Lessons for Thailand

Dimension	Thailand	Indonesia	Singapore	Japan
Governance & Policy	MOI guideline-based, uneven local adoption; lacks enforcement, fiscal support; some local adaptation with Theory of Change.	Strong national regulations (Law No. 18/2008); municipal integration (e.g., Makassar, Surabaya)	Centralized WOG approach with Singapore Green Plan 2030; policies are top-down and cohesive	National Waste Law; decentralized municipal execution; strong 3Rs culture
Benefits/welfare innovations	Waste-to-savings systems; informal market access; limited integration with banking	Integrated microfinance, CSR, and barter systems (e.g., for electricity, loans, or health care).	Reward-based apps (e.g., Ezi), CSR incentives, and product repurposing	Recyclable sales, reuse shops, food banks; limited individual financial gain
Public Participation	Relies on LAOs, schools, monks, elderly and women's groups; localized and volunteer-led	Strong civic traditions (gotong royong); neighbourhood associations; women-led operations.	Media-driven campaigns; structured CSR-community partnerships	Deep-rooted cultural norms ("mottainai"); education-centric waste practices
Technology Use	Pilot app use; lacks standardized platform; some pilot digital systems (e.g., Tessaban 7); training gaps at LAO level; limited local capacity for scaling.	SIMBA digital platform, online dashboards, QR-based systems in some CWBs	IoT-enabled smart bins; AI food tracking; incentive apps	Smart bins, apps like Trash Flow; data-driven waste management
System Gaps	Weak M&E systems; absence of dedicated funding; limited scalability; price competition from scrap dealers; limited CSR integration.	Sustainability post-CSR funding, unclear institutional roles, weak SOPs	Low household recycling rates, high contamination, digital divide among elderly	Aging population, complex sorting burden, no cash incentives
Adaptable Elements for Thailand	Theory of Change framework, community learning centres, hybrid incentive models, zero-Baht shops	Integrated finance models, digital M&E tools, micro-scale banking; neighbourhood mobilization structures	WOG-style public-private-institutional (PPI) coordination; reward-based apps, centralized data systems	Cultural participation; Circular lifestyle education; zero-waste district models (e.g., Kamikatsu) tech piloting

Compared to community waste bank systems in Indonesia, Singapore, and Japan, Thailand's CWB model is legally permissive but lacks national enforcement mechanisms, unified standard operating procedures (SOPs), and institutional monitoring. Strengthening vertical policy alignment, formalizing roles through local ordinances, and integrating CWBs into national waste planning could bridge this governance gap. Thailand can apply Indonesia's local ordinance approach by using its own Ministry of Interior decentralization mandate while aligning national strategies like the BCG model with municipal accountability like in Japan. A coordinated multi-tier strategy like Singapore's could support consistency across LAOs.

5. PATHWAYS FOR STRENGTHENING A MODEL COMMUNITY WASTE BANK SYSTEM IN THAILAND

It was observed during site visits, study of domestic and international best practice cases of waste banks, as well as consultation with stakeholders, an ideal waste bank system contributes to effective waste management through local community-based recycling drive. Despite the growing presence of community waste bank systems in Thailand, now with the MOI's nation-wide initiative, these CWBs face some challenges that hinder their long-term effectiveness and sustainability. However, strengthening collaboration between local governments, civil society, and the private sector, increasing public participation, diversifying revenue models can significantly enhance operational capacity of CWBs. Studying the existing challenges and identifying potential opportunities, a set of recommendations are presented for consideration by the MOI, LAOs and CWB operators for standardization and implementation of the Community Waste Bank Guidelines and strengthening this initiative in Thailand.

5.1 Challenges and Opportunities for Community Waste Banks in Thailand

The operation of community waste bank is shaped by both structural challenges and enabling opportunities. Figure 5-1 illustrates the dual realities confronting waste bank initiatives in Thailand and similar contexts.

Key challenges include inconsistent participation from community members, and lack of financial sustainability. Most CWBs in Thailand function on a small scale, primarily collecting recyclable materials and exchanging them for cash or savings points, especially in schools and temples.

However, a few CWBs have formalized financial models. Income is often unstable due to fluctuating prices of recyclables and limited access to markets. CWBs in touristic cities like Koh Samui sometimes benefit from CSR support, but widespread access to microfinance, health-linked incentives, or cooperative lending is absent. The lack of financial sustainability planning is a major concern across CWBs nationally (Pollution Control Department [PCD] 2022; Ministry of Interior [MOI] 2023). Limited institutional support, lack of technical capacity, and inadequate integration with local governance frameworks, and logistical barriers, such as inefficient sorting processes and limited market access for recyclable materials are other challenges of Thai CWBs, as listed below.

- **Unstable Market Prices for Recyclables:** Price volatility limits financial predictability and discourages consistent participation.
- **Limited Public Participation:** Many community members lack awareness or motivation to engage, which weakens program outcomes.
- **Lack of Intergenerational and Gendered Participation:** Programs often rely on older adults, with minimal engagement from youth. Gender inclusion also needs to strengthen.
- **Weak Institutional Support:** Limited local government integration restricts program scale-up and formalization.
- **Inconsistent Waste Quality and Quantity:** Poor sorting and low collection volumes reduce the economic value of recyclables.
- **Financial Sustainability and Lack of Dedicated Personnel:** Many waste banks rely on small budgets and volunteer labour, making it hard to sustain operations.
- **Centralized Management and Limited Outreach:** Oversight concentrated in government agencies can exclude grassroots or school-led initiatives. As illustrated in Figure 5.1, these challenges coexist with significant opportunities for community waste banks in Thailand. While structural and operational barriers remain, there are also clear pathways to strengthen these initiatives.

  While structural and operational barriers remain, there are also clear pathways to strengthen these initiatives, as detailed below
- **Boosting community engagement:** Public concern about plastic waste is increasing, offering a cultural foundation for engagement (UNEP 2024). Providing consistent training and awareness programs can empower communities with the knowledge and skills necessary to improve waste management practices. Digital tools and platforms offer potential to streamline operations, increase transparency, and boost community engagement, specially, bringing the youth onboard with CWB participation.
- **Government Support and Policies:** National frameworks increasingly promote recycling and community-based management (MOI 2023).
- **Economic Incentives:** Community-based reward schemes and partnerships with social businesses (e.g., BOP in Koh Samui) enhance financial and social returns (UNDP 2021).
- **Circular Economy Integration:** Waste banks can act as local nodes in circular material loops by contributing to sustainable consumption and production systems.
- **Use of Technology:** Tools like digital weighing apps, QR tracking, and platforms such as Ecolife help reduce manual workload and improve transparency.
- **Capacity Building:** Waste bank projects can be integrated with school curricula and youth programs to foster leadership, responsibility, and eco-conscious behaviou.

- **Access to Funding and Grants:** National and international support (e.g., SDG funding) are increasingly supporting community-level recycling and circular economy programs. Although competitive, these funds provide essential lifelines for innovation and scaling.

Figure 5.1 Challenges and Opportunities for Community Waste Banks in Thailand

Understanding and balancing these challenges and focusing on emerging opportunities is central to designing resilient and scalable waste bank programs. Contextualizing these insights within the Theory of Change ensures that interventions are not only activity-based but outcome-oriented.

5.2 Strategic Factors for Establishing a Model Community Waste Bank in Thailand

The Community Waste Bank initiative by MOI represents a transformative opportunity to tackle the country's growing waste management challenges while promoting community empowerment. To elevate this initiative into a scalable and replicable "model" waste bank, a robust and comprehensive implementation strategy is essential. A "model" CWB includes the below strategic factors as shown in Figure 5.2.

Figure 5 2 Strategic Factors in Formulating Community Waste Bank Operational Guidelines

Incentive Mechanism

Motivation is a critical driver for engaging individuals in waste separation and sustained participation in community waste banks. Incentives extend beyond economic rewards to include social motivations, pride, and a sense of ownership—elements foundational to long-term sustainability. These mechanisms should be inclusive, benefiting disadvantaged groups, children, and the elderly. Common forms include:

- **Stakeholder Mapping:** Stakeholder mapping clarifies roles and avoids duplication.
- **Role Definition:** Role definitions ensure accountability (e.g., data collection, buyer negotiation).
- **Inclusive Platforms for Co-Creation:** Community meetings, Facebook groups, or LINE chats can be used for sharing updates, resolving issues, and co-developing ideas.
- **Intergenerational Engagement:** Valuing youth innovation and elder wisdom ensures the system is both future-ready and socially embedded.

Using the Theory of Change for Waste Bank Foundations
The Theory of Change provides a strategic framework to link daily activities with long-term social, economic, and environmental outcomes. Recommended approach:

- **Set Long-Term Goals:** Define a clear vision for waste reduction, income generation, and community participation.
- **Establish Change Mechanisms:** Use reverse planning to map short-term activities that lead to long-term results, with realistic performance indicators and monitoring tools.
- **Validate Assumptions:** Test underlying assumptions with pilot models (e.g., whether cash or welfare incentives are more effective).
- **Monitor Results, Not Just Activities:** Shift focus from training quantity to actual behaviour change and waste volume reduction.
- **Ensure Scalability:** Identify success drivers and adapt models to new communities with contextual modifications.

Promoting Community Ownership
Without a sense of ownership, community participation may diminish over time. Ownership ensures continuity, stewardship, and pride in local systems. Mechanisms to build ownership:

- **Participatory Planning and Decision-Making:** Involve community members from the beginning in goal setting, scheduling, and operational design.
- **Task Sharing and Rotating Roles:** Assign small responsibilities to foster accountability.
- **Community Reinvestment of Profits:** Allocate a portion of revenue toward scholarships, senior citizen activities, or communal infrastructure to generate shared value.
- **Culturally Sensitive Communication:** Use local languages, idioms, and symbols in outreach by aligning waste bank messages with community traditions.
- **Integration with Local Events:** Blend local customs (e.g., merit-making) with waste initiatives.

5.3 Recommendations for Strengthening a Model Community Waste Bank Operation in Thailand

To create a national model of a sustainable Community Waste Bank that integrates community participation, and economic incentives to drive circular waste management at the grassroots level, the CWB has to ensure it has an extensive community participation that is participatory and inclusive, has a robust implementation plan enabling innovative mechanisms of revenue collection and attractive benefits and welfare encouraging high community participation, maintains transparency in its operations, and lease and coordinates with stakeholders including LAOs, municipality, local aggregators and recyclers, and foster community ownership for the sustainability of the waste bank. Below are some recommendations forward:

1

Promote Sustainable Leadership and Institutional Integration

Forge partnerships with local administrative organizations, schools, health units, temples to participate in CWB. Thailand has a successful example of School Garbage Bank (e.g. Tetra Pak's recycling milk carton recycling scheme under school milk programme). Buddhists temples are also successfully promoting community recycling centres (Chak Daeng Temple in Samut Prakan). Integrate these existing institutions into the CWB as applicable. This institutional integration could be a peer-to-peer learning, training and knowledge-sharing platforms between successful models by involving younger members in leadership roles (e.g., Rak Chumchon and Samui Elephant Home). A strengthened network of CWBs - a Hub at Province level can be established as a learning centre waste banks will empower communities, negotiate fair pricing for recyclables, and advocate in building sustainable waste management ecosystem in the country.

2

Increase Public participation through strengthening Incentive Mechanisms

Design incentive systems that combine financial rewards (e.g., savings accounts, merchandise exchanges) with social benefits (e.g., welfare access, public recognition) that is contextual to the locality and demand-driven, to enhance community participation across all demographics. Models like Huai Sam Phat's funeral welfare scheme or Samui's above-market pricing approach supported by WWF offer replicable strategies. As the volunteers are old age population, incentives concerning health check-ups, nutritional food/fruits (in addition to eggs that many CWBs use as incentive) may incentivize their participation. Whereas, targeting youth members to participate in the CWB system, incentives that suit their needs to be designed, such as digital payout, discount coupons and vouchers, Internet data pack, scholarships, and other skill enhancement training. Implementing "Green Dividends" where waste bank members share in annual profits based on contribution volume and consistency of participation in the CWB scheme. Build inclusive, accountable waste bank committees that involve local champions, youth, women, and vulnerable groups to maintain a sense of ownership.

3

Enhance Waste Sorting and Collection Infrastructure

Invest in community-based tools and educational campaigns to improve source separation. Expand route-based and mobile collection systems, especially in remote or elderly-dominated areas. Mobilize government and donor support to establish or improve shelters, collection points, and basic tools for sorting and transportation. Strengthen linkages between CWBs and formal waste collection to ensure recyclables are properly directed into municipal and private recycling chains.

4

Develop Transparent and Scalable Selling Systems and Revenue Generation Modality

Encourage aggregation and contract-based sales to stabilize income. Use digital tools to communicate real-time market prices to ensure fair returns for members and support upcycling enterprises for additional value. Continue the LAO/SAO mediated pricing negotiation with local aggregators, work with licensed recyclers and manufacturers ensuring a market for waste materials and consistent pricing. Consider a private sector recycler to fund the CWB through CSR or by adopt the CWB, something similar to One Tambon One Product scheme. Build reliable partnerships with recyclers and upcycling enterprises to utilize and repurpose low-value materials that are often rejected.

5

Formalize Stakeholder Roles

Map out responsibilities across government, civil society, private sector, and communities. Institutionalize co-creation platforms such as quarterly meetings or digital coordination groups. Expand collaborations with actors like WWF, BOP, and local social enterprises to support innovation, funding, and awareness-building. A clear delineation of responsibilities will reduce confusion and enhance system efficiency. Incorporate CWBs into local development plans, with clear budget allocations. Provide training to LAO officers on the technical aspects and management of CWB operations.

6

Apply the Theory of Change for Strategic Planning

Implement structured planning frameworks that define long-term visions, identify assumptions, and monitor progress with measurable outcomes. This ensures adaptability and impact-oriented decision-making.

7 **Foster Community Ownership**
Empower residents to co-design operations, take on shared duties, and reinvest benefits locally. Embed the waste bank into local culture and livelihood systems to ensure sustainability beyond external funding.

8 **Leverage Policy and Digital Opportunities**
Align waste bank models with national guidelines and SDG targets. Support the development of digital systems for data tracking, member accounts, and reporting to enhance performance and transparency. Encourage gradual adoption of digital tools, while supporting manual systems with training and standardized templates. Integration with apps (e.g., Ecolife) and use of Google Sheets or QR systems can improve transparency and monitoring. Invest in digital opportunities to track recyclable collection and transactions and use data analytics for monitoring and evaluation as well as participating in plastic credit and social credit schemes.

9 **Develop a Modular and Adaptive National Framework for Waste Banks**
Guidelines should allow for flexible implementation according to the scale, leadership structure, and community readiness. Models such as Maenam and Samui Elephant Home in Koh Samui demonstrate how both informal and hybrid structures can succeed when appropriately supported. Update the existing CWB manual to include clear classification of waste types, actor roles, downstream management strategies, and user-friendly templates for accounting and record-keeping. Develop a central repository of successful models, case studies, and technical guides to support replication and peer learning across rural and urban contexts.

10 **Integrate Waste Banks into Municipal Waste Management Plans**
Promote formal recognition of community waste banks in local waste management plans. Institutional linkage with local authorities should include coordination mechanisms, logistical support, and dedicated budget lines.

11 **Monitoring, Evaluation, and Replication**
Implement a transparent M&E system using key performance indicators (KPIs) and develop a "Model Waste Bank Toolkit" or "Waste Bank Training of Trainers Manual" with the help of local academic institution or a NGO that can be replicated in other provinces, including templates, case studies, and SOPs. Recognition of best performing CWBs with tiered (Gold, Silver, Bronze) certification/reward systems within the province or nation-wide (e.g., Swachh Survekshan/ Clean City awards under the Swachh Bharat Mission/Clean India Mission).

12 **Scale up CWB operations**
Expand the CWB operation from recyclable collection point and evolve into social/micro-enterprises producing recycled and upcycled products such as eco-bricks, upcycled handicrafts (e.g., Recycling Village of Viet Nam). Explore plastic credit schemes involving community waste banks (e.g., TONTOTON, Cambodia), and Producer Responsibility organizations (PROs) under the EPR implementation mechanism.

The recommendations outlined above are based on insights gathered from field visits and were further reinforced during the discussion sessions of the "Consultation Workshop on Strengthening the Implementation of Community Waste Bank Guidelines and Initiatives in Thailand – 2025", held on Wednesday, 2 July 2025, at the Amari Bangkok Hotel (Pratunam), Bangkok. The workshop brought together representatives from LAOs, government agencies, foundations, academic institutions, and the private sector. Throughout the event, many participants expressed strong support for the proposed strategies—particularly those focused on enhancing community participation, improving coordination with local authorities, and integrating community waste banks into formal waste management systems. Stakeholder feedback has been instrumental in refining these recommendations to ensure they are practical, inclusive, and aligned with on-the-ground realities. Detailed records of the discussions and stakeholder endorsements are provided in Annex-3.

6. CONCLUSIONS

Community waste bank system in Thailand represents a promising model for promoting sustainable waste management, resource recovery, and community empowerment. This report explored key components of effective waste banks, including the design of inclusive incentive systems, proper waste sorting, reliable collection and selling mechanisms, empowerment of local institutions, and stakeholder engagement. It was seen that using a Theory of Change helps communities plan strategically, track their progress, and adapt when needed. Despite challenges like unstable waste prices or low participation in some areas, the momentum for community waste banks is growing, supported by national policy, public awareness, and emerging digital tools.

It is clear that the successful operation of waste banks requires support from local administrative organizations. Local socio-economic and cultural factors also play a crucial role in their effectiveness. Field observations from Udon Thani and Koh Samui highlight the diversity and adaptability of community waste bank models across Thailand's socio-economic and geographic landscapes. Successful examples, such as the Rak Chumchon model in Udon Thani and the hybrid model supported by BOP in Koh Samui, demonstrate the value of integrating community leadership, institutional support, and well-designed incentives to sustain and scale operations.

While the national guidelines for community waste banks issued by the Ministry of Interior provide a foundational framework, they do not fully reflect or incorporate the diversity of informal and semi-formal practices observed in the field. Therefore, there is a need for clearer guidelines that can adapt to various local scenarios and foster stronger coordination among relevant stakeholders. A more flexible, modular local framework or implementation roadmap is necessary—one that preserves the core principles of transparency, participation, and sustainability outlined in the Ministry of Interior Guidelines while allowing for local adaptation and innovation. With these adjustments and additional elements, this community waste bank initiative has the potential to continue to become a cornerstone of Thailand's transition to a circular economy while also contributing to the localization of Sustainable Development Goals.


RECYCLE
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REUSE
WASTE
MANAGEMENT
REDUCE

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8. ANNEXES

Annex–1: Field Study Design and Key Questions

Site Visit Interview Questionnaire – Community Waste Bank

COMMUNITY WASTE BANK
Site Visit Interview Questionnaire

Section	Question	Response
Basic Information	Name of Waste Bank	
	Location of Waste Bank	
	Year Established	
	Type of Waste Bank	☐ Community ☐ School ☐ Temple ☐ Other
	Managing Organization(s)	
Operations and Practices	Types of Waste Collected	
	Tracking Method	☐ Manual ☐ Digital→ Details:
	Number of Active Members	
	Average Monthly Income (from recyclables)	
	Is waste transported? If yes, how and where is it sent?	
	Are there any challenges with transportation?	☐ Yes ☐ No → Details:
	Are the location and facilities appropriate for waste bank operations?	☐ Yes ☐ No → Details:
Community Participation and Awareness	Who are the main participants? (e.g., women, students, households)	
	Are awareness campaigns or training courses provided to members?	☐ Yes ☐ No → Details:
	What motivates people to join the waste bank?	
	Are any incentives (monetary, vouchers, welfare) provided?	☐ Yes ☐ No → Details:
	Do you face difficulties organizing meetings or conducting public relations?	☐ Yes ☐ No → Details:
	Are schools, temples, or local influencers involved in promotion of waste banks?	☐ Yes ☐ No → Details:
Institutional Support	Do you follow the Ministry of Interior's (MOI) guideline?	☐ Yes ☐ No → Details:
	Are there local regulations or LAO resolutions supporting the waste bank?	☐ Yes ☐ No → Details:
	Were the roles and responsibilities in the guideline implemented as planned?	☐ Yes ☐ No → Details:
	Which agencies support your waste bank (e.g., LAO, schools, CSR)?	
	Does Wongpanit or other private sector actors play a role? What is their role?	☐ Yes ☐ No → Details:
Financial and Monitoring Systems	How are financial records maintained? Are standard forms used?	
	Are financial reports submitted to MOI or any other agency?	☐ Yes ☐ No → Details:
	Do you receive sufficient budget and have adequate space for operations?	☐ Yes ☐ No → Details:
	Do you consider your waste bank financially sustainable?	☐ Yes ☐ No → Details:
	Do you use digital payment tools for the benefits?	☐ Yes ☐ No → Details:
	Do you think the benefits or services provided by the waste bank are meaningful or valuable to the community?	☐ Yes ☐ No → Details:
Challenges and Future Aspirations	What are the major challenges or obstacles you have faced?	
	What technical or operational support do you need (e.g., equipment, digital tools)?	
	What improvements or future do you have?	
	Suggestions for Government or External Support	

Annex-2: Summary of findings from the Waste Bank Site Visit (with photos and key data)

Site Visit 1	**Visited Location:** Chiang Pin Subdistrict Administrative Organization, Udon Thani Province **Visit Date:** 19 May 2025

Operations and Practices:

The Chiang Phin Subdistrict, established community waste bank of in 2023, is a community-driven initiative overseen by the Chiang Phin Subdistrict Administrative Organization (SAO). Serving 6,434 households, the subdistrict generates approximately 2,262 tons of waste annually, with the SAO allocating 848,250 THB each year for waste disposal. To address this issue and promote sustainable waste management, the SAO launched the Waste Bank Project in alignment with the Ministry of Interior's guidelines. The first collection of recyclable materials took place in the last week of August 2023, which has since become the designated week for monthly waste trading activities, encouraging local residents to actively participate in recycling efforts.

In 2023, the Waste Bank collected recyclable waste 47,947.9 kg, which accounted for 23% of the total waste generated. The breakdown is as follows:

- **Plastic:** 20,132.12 kg
- **Glass:** 18,220.20 kg
- **Metal:** 2,397.40 kg
- **Paper:** 4,794.79 kg
- **Other:** 2,397.90 kg

To support this initiative, the Chiang Phin SAO drafted waste management regulations in 2023, tailored to the local community's needs. The Waste Bank currently engages 12 villages under the SAO's jurisdiction. Each village is responsible for bringing recyclable waste to designated collection points once a month. At these points, community representatives (Waste Bank managers) weigh and record the waste, along with prices, in individual deposit books (Figure 8.1).

Figure 8.1 Waste Bank Process in Chiang Pin Model

The prices are regularly reviewed and updated by the SAO. Each deposit book is kept by the respective village representative (Figure 8.2).

The prices are regularly reviewed and updated by the SAO. Each deposit book is kept by the respective village representative (Figure 8-2).

After that, recyclable waste is sold to scrap buyers. Some valuable waste is repurposed into products such as clothes, Sofas, bags. It is considered one of the most effective ways to generate income for the community (Figure 8.3).

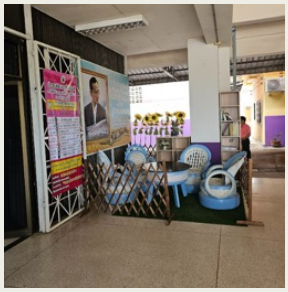


Figure 8.3 Repurposed Products from Waste in Chiang Pin Waste Bank Model

Strengths

- The continued success of the Waste Bank is driven by committed local leaders and supported by welfare incentives such as funeral expense contributions for members.
- The SAO also organizes training sessions and educational materials on proper waste separation to raise community awareness.
- Public engagement activities include “Waste Donation Ceremonies” and “Trash for Eggs” campaigns, which have garnered interest from residents, schools, and temples.

Challenges

- Despite its success, the Waste Bank faces several challenges:
- Budget limitations: The initiative is entirely funded and managed by Chiang Phin SAO.
- Competing local scrap buyers: Many households choose to sell directly to private buyers due to potentially higher prices, reducing the incentive to use the Waste Bank.
- Pricing: The SAO must adjust purchase prices to remain competitive with market rates.
- Collection site limitations: As waste volume grows, new suitable collection sites may be needed, as waste cannot be stored overnight due to space and environmental concerns.
- Increasing number of members: The majority of current Waste Bank members are elderly residents. Therefore, their future goal is to expand participation to reach 50% of the total community population.

Communication and Public Engagement

The SAO actively promotes the program through social media like Line, YouTube, and the SAO's official Facebook and government programs like the Ministry of Interior's "Re Re Re" project. These efforts aim to enhance community awareness and involvement.

Financial Summary

In 2023, the Waste Bank has generated 154,523 THB in total. The community has made 88 withdrawals, totalling 69,817 THB, and 14,000 THB was used to support 4 funeral welfare cases.

The current bank balance stands at 70,706 THB.

Future Plans

- To scale up, the SAO plans to:
- Transition from manual to digital data collection using Excel and eventually develop a dedicated application.
- Encourage SAO staff to sell their recyclable waste to the bank by offering employee welfare incentives, aiming to increase awareness and boost community income.

Figure 8.4 Consultation with Chiang Pin Waste Bank

Other Waste Management

In addition to managing recyclables, Chiang Phin SAO serves as a collection point for hazardous waste, which is then properly disposed of by the Udon Thani Provincial Administrative Organization. It also collects organic waste, which is processed into compost (Figure 8-5).

Figure 8.5 Collection Point for Hazardous Waste b) Process of Compost c) Compost in Chiang Pin Waste Bank Model

Site Visit 2

Visited Location:
Huai Sam Phat Subdistrict Administrative Organization,
Udon Thani Province

Visit Date:
19 May 2025

Operations and Practices:

Established in 2018 ahead of national guidelines, the Huai Sam Phat Subdistrict Waste Bank is a pioneering initiative operated by the Huai Sam Phat Subdistrict Administrative Organization (SAO) in Udon Thani Province. Designed to promote sustainable waste management and empower local communities, the waste bank is entirely community-led, with household-level participation from over 2,031 registered members across 13 villages, 626 families. Each household is issued a unique membership ID, and all activities are coordinated by the SAO to ensure transparent and consistent operations (Figure 8.6).

Waste Collection and Incentives

The waste bank focuses exclusively on recyclable materials, excluding organic waste. Members sort and deliver recyclables to the collection centre on designated dates. These materials are then sold to local recyclers, such as the Kammee Recycling Shop, at market-based prices. In October 2024, approximately 5,632.28 kilograms of waste were sold to the Kammee Recycling Shop. The SAO does not add any profit margin, ensuring that members receive fair compensation. To further encourage participation and raise environmental awareness, the SAO has implemented creative incentive programs. The "Waste-for-Eggs" program allows members to exchange recyclables for eggs, while a funeral support fund deducts 20 THB from each member's earnings and contributes it to a communal fund, providing up to 10,700 THB in funeral support for eligible households.

Membership Criteria

To become a member of the waste bank, individuals must register on behalf of their household, with one membership allowed per household. Applicants must be listed in the household registration within Huai Sam Phat Subdistrict, Prachaksinlapakhom District, Udon Thani Province. Members are required to regularly bring at least one kilogram of recyclable waste per visit and participate in at least three transactions each year. Additionally, they must maintain a minimum savings balance of 20 THB to remain eligible for social welfare benefits. Failure to meet these requirements may result in loss of membership and benefits, although reapplication is permitted under specified procedures.

Governance and Record-Keeping

Since the waste bank was established before national guidelines were introduced, the SAO developed its own operational rules and procedures. Due to budget limitations, the initiative has not yet transitioned to a digital system and instead relies on manual record-keeping through logbooks and member passbooks. All financial transactions, including deposits, withdrawals, and waste sales, are carefully documented and summarized monthly to maintain operational transparency.

Value Addition and Upcycling Activities

The waste bank goes beyond standard recycling by encouraging the transformation and upcycling of waste into value-added products such as plastic brooms. These efforts not only reduce the volume of waste but also create practical, low-cost tools for community use and provide opportunities for environmental education and skill-building.

Operational Strategy and Local Engagement

To ensure effective management, the SAO has established a comprehensive operational strategy. This includes regular meetings with the waste bank committee, village leaders, and other stakeholders. Village-level working groups are appointed to handle registration, waste collection, public outreach, and bookkeeping. The SAO also works closely with local recyclers to agree on fair pricing and coordinate collection schedules. Operational areas are maintained to be suitable and sufficient for the volume of recyclables processed.

Administrative Process

New members must complete an application form and submit necessary documents to the waste bank chairperson or designated staff. Village heads are responsible for verifying eligibility and compiling completed applications for centralized processing. On collection days, staff weigh and record recyclable contributions and credit them to member accounts. Transactions are logged in both the bank's records and the members' personal passbooks. At the end of each month, income and expense summaries are prepared for review and shared with members to ensure accountability.

Challenges and Solutions

The waste bank has faced several challenges, such as overdue funeral fund contributions from some members exceeding 100 THB and a decline in recyclable volumes due to some members opting for cash transactions instead. In response, the SAO has intensified awareness campaigns, enhanced administrative support, and mobilized community volunteers to encourage consistent member participation and adherence to guidelines.

Community Benefits and Impact

The Huai Sam Phat Waste Bank has strengthened local engagement in waste management through its inclusive and participatory model. It has improved waste separation practices at the household level, leading to reduced environmental impact and overall waste volume. The program has also fostered environmental awareness and encouraged savings behaviour, particularly among younger members of the community. As a replicable model for other regions, it demonstrates how grassroots efforts can successfully integrate social welfare and environmental sustainability through local ownership and active participation.

Figure 8.6 Huai Sam Phat Subdistrict Waste Bank Model

Site Visit 3

Visited Location:
Kammee Recycling Shop, Udon Thani Province

Visit Date:
19 May 2025

Operations and Practices:

Kammee Recycling Shop operates as a partner of the Huai Sam Phat Subdistrict Administrative Organization (SAO), offering a consistent and reliable outlet for recyclable waste collected through the waste bank program. The shop provides on-site collection services, dispatching its own vehicles to pick up waste directly from the waste bank premises on each scheduled collection day. This arrangement significantly reduces the logistical burden on the SAO and participating households.

To maintain transparency and ensure mutual understanding, Kammee Recycling Shop submits updated purchase prices to the SAO in advance of each collection. However, it typically offers to buy recyclable materials at a rate 1 THB lower per kilogram than the prevailing market prices for each waste type. Despite the slight discount, the guaranteed collection service and longstanding relationship contribute to the stability of the waste bank's operations.

Moreover, Kammee Recycling Shop utilizes a waste compactor machine as part of its internal waste management system. The use of a compactor reduces the volume of collected materials, allowing for more efficient transportation and storage, and ensuring that the waste is disposed of or further processed in compliance with environmental standards (Figure 8-7).

The integration of compactor technology presents a potential model for enhancing the capacity and efficiency of the waste bank itself. By adopting similar equipment, the waste bank could increase its ability to handle larger volumes of recyclable waste within limited space. However, any such implementation must consider the volume and consistency of incoming waste, as the cost and maintenance of compactors may not be justified for smaller-scale operations.

This example underscores how collaboration between public and private actors can optimize waste management at the community level, and how technology transfer from local enterprises can inspire operational improvements in public systems.

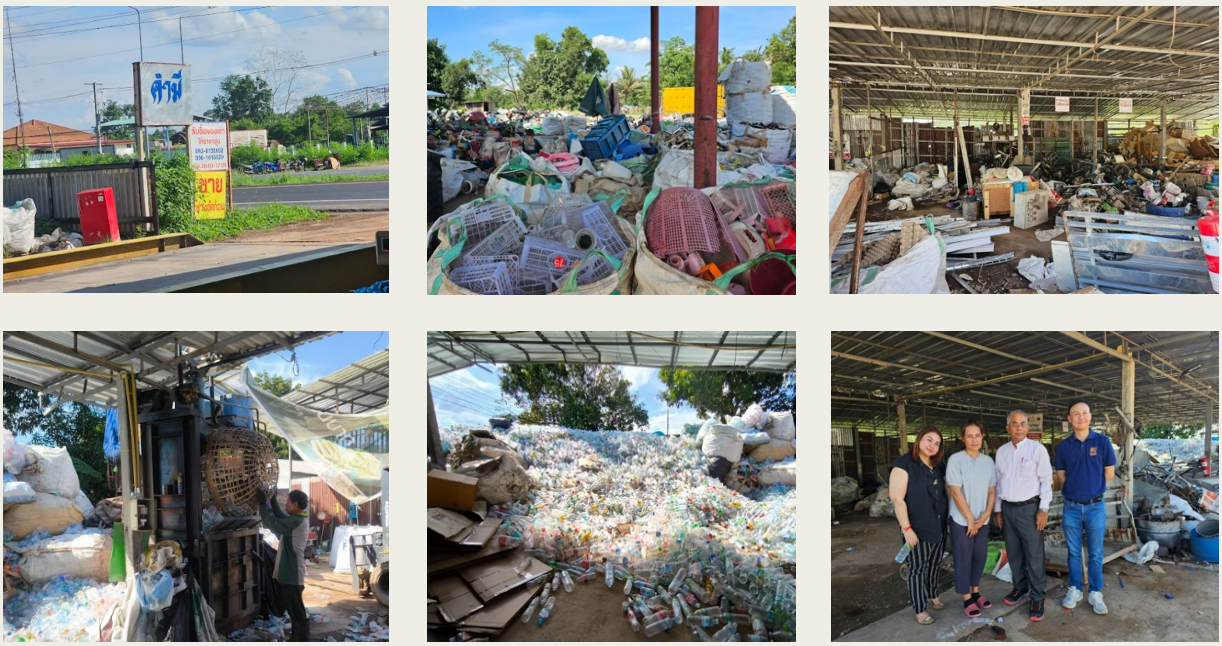


Figure 8.7 Site Visit to Kammee Recycling Shop

Site Visit 4

Visited Location:
Chiang Pin Subdistrict Administrative Organization, Udon Thani Province

Visit Date:
19 May 2025

Operations and Practices:

The Rak Chumchon Waste Bank, established on March 6, 2024, is a community waste bank managed by Udon Thani Municipality. Currently serving 134 households with approximately 350–400 individuals, each household receives a logbook to track their recyclable contributions. Elderly residents form the core participant group, playing a vital role in maintaining consistent engagement in household waste sorting and collection. The waste bank accepts recyclable materials such as glass, paper, plastic, and metal, which are collected and weighed at a municipal multipurpose pavilion that also serves as the community's waste exchange centre. To streamline operations, the municipality uses digital tools like the LINE messaging app to inform members of collection schedules. Although a home pickup service is offered, members must bring recyclables to the designated site for official processing. Waste was initially collected twice a month—on the first and third Wednesdays—but due to a recent decline in waste volume, the schedule has been reduced to only the third Wednesday. All collected materials are manually recorded and sold immediately to local recycling vendors, eliminating the need for on-site storage (Figure 8.8).

Incentive System and Community Engagement

The Rak Chumchon Waste Bank adopts a dual incentive model, integrating both in-kind and financial rewards. A key feature is the "Zero-Baht Shop" concept, where members can exchange the value of their recyclables for essential goods such as dishwashing liquid, which is produced locally by the community to generate additional income.

In addition to goods, members receive annual dividends (profit-sharing) 3%, funded through the margin between municipal purchase rates and prevailing market prices—typically reduced by 1 to 5 THB per kilogram. This surplus is allocated to member dividends and educational scholarships, with future plans to potentially reallocate these funds for funeral assistance. The incentive structure promotes continued member participation while reinvesting in community development.

Performance and Financial Outcomes

Since its establishment (March 6, 2024 – February 28, 2025), the Rak Chumchon Waste Bank has demonstrated measurable success in both waste collection and financial management. As of the most recent reporting period, the waste bank collected a total of 9,036.6 kilograms of recyclable waste, generating 54,310 THB in revenue. Operational expenses amounted to 10,680.20 THB, and member deposits reached 26,075.52 THB. After accounting for costs and deposits, the waste bank reported a net profit of 17,554.28 THB.

Governance and Policy Integration

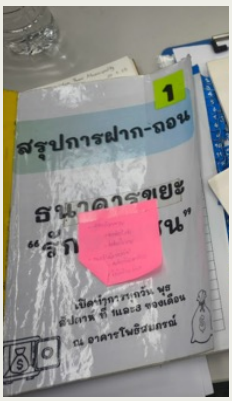
The waste bank is governed according to the policy framework issued by the Ministry of Interior, ensuring alignment with national directives. A committee is democratically elected by members, responsible for rulemaking and overseeing operations. The participatory approach reinforces transparency and collective ownership.

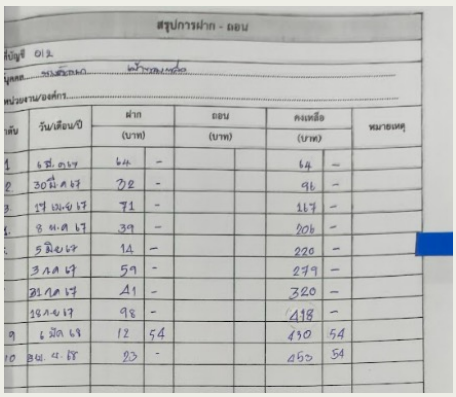
Challenges and Limitations

- Despite its innovative model, the waste bank faces several operational challenges:
- Lack of dedicated government funding: All operations are self-financed or supported by the municipality's general budget.
- Space constraints: The collection site is a shared municipal pavilion used for various public events. During important municipal activities, waste bank operations must be postponed or relocated, affecting service consistency.
- Human resource sustainability: Long-term success depends on community awareness and intergenerational participation. Without continued engagement from younger residents, future sustainability remains uncertain.

Technology and Future Plans

Currently, all records are maintained manually, although Microsoft Excel has been adopted for internal reporting. The municipality has begun exploring the development of a mobile application to digitize member tracking and reporting functions. However, budget limitations have delayed full implementation, highlighting the need for external funding or technical support to transition toward a fully digitized system.





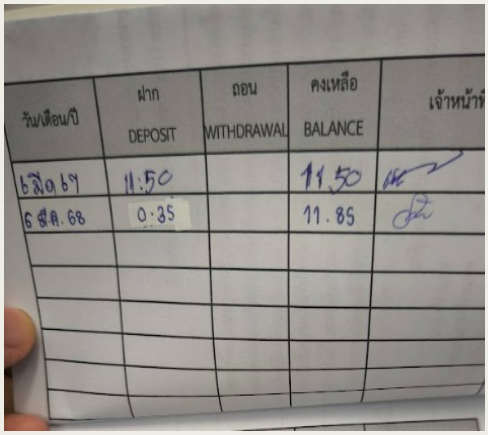


Figure 8.8 Consultation with Udon Thani Municipality

Site Visit 5

Visited Location:
Tessaban 7 School (Rodfai Songkroh), Udon Thani Province

Visit Date:
20 May 2025

Operations and Practices:

Tessaban 7 School (Rodfai Songkroh), a municipal school under the supervision of Udon Thani Municipality, serves as a model for effective waste management in educational settings. In 2023, the school was recognized as a "Zero Waste School" for its outstanding environmental practices (Figure 8-9). Environmental awareness is integrated into the curriculum through experiential learning stations, where teachers serve as role models and mentors. Knowledge is transmitted through a peer-to-peer learning model, with older students guiding younger peers.

Examples of these learning stations include:

- Organic Waste Management: Students engage in composting practices to convert organic waste into fertilizer.
- Plastic Waste Utilization: Recyclable plastics are creatively repurposed into functional or decorative products.
- Paper Recycling: Used paper is transformed into sa paper and crafted into art pieces, which are either entered competitions or sold to generate income for students or school clubs.

Figure 8.9 Consultation with Tessaban 7 School (Rodfai Songkroh)

The school also operates a Waste Bank Program, encouraging students to bring recyclable materials every Wednesday during the lunch period. Although financial compensation is not provided, the school tracks waste contributions and rewards high-performing classes or year groups. Collected waste is further processed within the school's learning stations. A notable innovation is the school's digital waste bank system, developed in-house by a faculty member. This system allows for real-time tracking and reporting, accessible through the school's website, thereby enhancing transparency and student engagement.

These initiatives are driven by environmentally conscious school leadership, which has institutionalized sustainability as a core value through the "Good School Model 7." This policy framework promotes voluntary and proactive environmental stewardship across the school community. However, the program's sustainability remains heavily dependent on individual leadership. While municipal schools—under the Ministry of Interior—demonstrate a strong commitment to environmental management, replication across schools under other administrative bodies may face challenges if environmental awareness is not prioritized by their respective administrators. For environmental education to become truly institutionalized, leadership at all levels must be aligned with sustainability objectives.

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Site Visit 6

Visited Location:
Maenam Community Waste Bank, Koh Samui District,
Surat Thani Province (9°33’54.3”N 100°00’15.2”E)

Visit Date:
19 June 2025

Overview and Operations

Maenam Community, with an approximate population of 1,700 residents, is one of the active community waste bank sites on Koh Samui. The initiative is led by a local volunteer leader referred to as “Ms. Tick” (The formal identification of the leader was not verified during the interview.) who committed to advancing grassroots recycling practices. The waste bank operates under the broader framework of Blue Ocean Plastic Recycling Co., Ltd. (BOP), a social enterprise dedicated to promoting traceable, inclusive circular economy solutions.

Waste Collection and Incentives

The waste bank accepts a variety of recyclable materials, particularly mixed plastic and large detergent containers (10–15 L). Collection volume reaches 700–800 kg per month, a notable amount for a semi-rural setting. Although no formal incentive scheme is applied, the program’s above-market pricing structure supported by BOP’s funding, provides financial motivation for participation. Ms. Tick can earn around 4000 Bahts/time from this activity.

Membership in the Maenam Community Waste Bank is open and informal, enabling participation from any household or waste generator in the area. Waste can be dropped off directly, donated, or collected by Ms. Tick herself, who ensures that the proceeds from recyclables are either shared transparently or reinvested into operations. The governance model is community-based and driven by volunteerism, with a strong emphasis on mutual trust and cooperation. Ms. Tick independently manages day-to-day management, coordinates with partner organizations, and maintains consistent manual records of waste types and volumes to support performance tracking and transparency (Figure 8.10).

Figure 8.10 Maenam Community Waste Bank Model

Overview and Operations

Value Addition and Upcycling Activities
At this stage, Maenam's activities are primarily focused on waste sorting and volume aggregation. However, collected waste is linked to value-addition chains through BOP's broader recycling network. Large plastic containers and other items are prepared for delivery to recyclers or processed into eco-bricks by partner organizations, which transform low-value plastic waste into construction materials. These efforts are supported by informal outreach, including neighbour-to-neighbour encouragement and collective accountability. The individual-led model enhances social trust and ensures consistent participation across the target population.

Administrative Process
Operations are managed via a central drop-off location within the community. Waste is received during designated times, weighed, recorded, and sorted for transport to buyers or processors. Administrative simplicity and low-cost operations are hallmarks of the Maenam approach, making it replicable in similar settings.

Challenges and Current Approaches
The Maenam Community Waste Bank faces several challenges common to informal, community-led waste initiatives:

Limited Infrastructure: The absence of formal storage and sorting facilities limits the volume and efficiency of operations.
Current Approach: Ms. Tick utilizes available space and infrastructure supported by BOP to manage waste temporarily and materials are moved frequently to avoid accumulation.

Manual Record-Keeping: The lack of digital tools results in time-consuming and error-prone tracking of waste transactions.
Current Approach: Despite being manual, Ms. Tick maintains consistent and transparent records, which support accountability and allow for basic performance monitoring.

Irregular Participation: As participation is voluntary, some households are inconsistent in their waste separation and contributions.
Current Approach: Ms. Tick fosters community trust by personally engaging residents, offering flexible pick-up and dropping-off services, and transparently sharing proceeds, which helps to build long-term relationships and community buy-in.

Financial Limitations: Without external funding or formal institutional support, sustaining the initiative financially is difficult.
Current Approach: The initiative by BOP forces informal networks and community goodwill and seeks collaboration with supporting organizations for training or material support.

Lack of Government Support: The initiative receives no formal backing from local or national authorities.
Current Approach: In response, operations are sustained entirely through volunteer leadership, community goodwill, and self-organization capacity of local actors.

Confusion Over Waste Disposal Pathways: Many community members are uncertain about where to dispose of sorted waste, particularly hazardous or non-recyclable types due to the absence of a clear municipal system. This confusion is rooted in fragmented government responsibilities among the Municipality, the Ministry of Interior (MOI), and the Pollution Control Department (PCD).
Current Approach: Ms. Tick offers informal guidance to residents, and in the absence of institutional clarity, makes decisions based on her own experience and connections with recycling buyers. However, this highlights the urgent need for a coherent policy and inter-agency coordination.

Despite these challenges, the Maenam Community Waste Bank exemplifies how grassroots leadership can address local waste issues in decentralized waste management even in the absence of institutional support. Strengthening policy clarity and targeted coordination support from the government such as designating lead agencies, streamlining roles, and integrating community initiatives into formal waste management frameworks, would provide necessary clarity, reduce operational burdens, and enhance the long-term sustainability of local efforts. Even minimal assistance in the form of transport logistics, disposal arrangements for non-recyclables and hazardous waste could greatly increase the impact of such community-led systems.

Community Benefits and Impact

The Maenam Community Waste Bank has significantly contributed to fostering environmental awareness and behavioural change in the area. Through Ms. Tick's efforts and her strong relationships with local households, residents have become more conscious about waste separation and responsible disposal. This informal, trust-based model has reduced littering, minimized illegal dumping, and encouraged participation from nearby communities as well.

Socially, the initiative fosters community cohesion by providing a shared purpose and promoting regular interactions centred on waste management. Economically, it helps low-income households access modest financial returns and donate waste as a form of community contribution. Educationally, it creates learning opportunities for youth and adults alike on the importance of environmental stewardship. Although small in scale, the Maenam Waste Bank demonstrates that community-led initiatives secured by trust, transparency, and dedication can deliver the environmental and social benefits. It also highlights the potential for such models to be scaled or integrated into broader municipal systems with proper support.

Site Visit 8

Visited Location:
Samui Elephant Home Waste Station, Koh Samui District, Surat Thani Province

Visit Date:
19 June 2025

Overview and Operations

The Waste Bank located at Samui Elephant Home in Na Mueang, Koh Samui, is a collaborative initiative designed to tackle the island's mounting waste challenge while promoting sustainable tourism. Launched under the UNDP project by BOP, the station operates as a decentralized collection hub, particularly targeting the tourism sector, which is the main economic driver on the island. The initiative also aligns with the goals of increasing recycling rates and promoting environmental awareness among tourists and residents alike.

Waste Collection and Incentives

The collection system is structured to be user-friendly and rewarding:

- Participants bring their sorted waste to the Waste Station.
- Waste is weighed and recorded and then sorted into recyclable and low-value bins.
- Users check in and upload a photo on the Ecolife app by earning redeemable points for discounts or souvenirs at participating stores.
- On weekends, residents also bring recyclables, weigh them, and log them in a record book. The station transfers the money later, reinforcing trust and consistent participation.

This dual-mode incentive system, digital for tourists and manual for locals, ensures inclusive access and encourages behavioural change across sectors (Figure 8-12). Membership is open and informal, accommodating a wide range of participants from locals to tourists. Waste weights, types, and corresponding payments are transparently recorded, building accountability and enabling performance tracking.

Figure 8 12 Samui Elephant Home Waste Station Model

Value Addition and Upcycling Activities

While the primary goal is waste diversion, collected waste is sorted for resale and upcycling. The system also raises awareness on low-value plastics (LVPs) and encourages their collection. Some materials are redirected to projects like eco-brick production and potentially used in local construction or education initiatives.

Administrative Process

The model prioritizes accessibility, compact design, and cultural alignment which are essential for an island setting like Koh Samui where space is limited and tourist waste volumes are high. Community engagement includes:

- Weekend collection events for locals
- Tourist-facing campaigns through digital tools
- Partnerships with local stores for reward redemption

These strategies create a mixed-use waste system by integrating formal tourism programs with informal community participation.

Challenges and Current Approaches

The Waste Station at Samui Elephant Home operates in a complex island setting where space, stakeholder diversity, and system integration present unique challenges:

- Fragmented Waste Management System: The overlap in responsibilities between the Municipality, Ministry of Interior (MOI), and Pollution Control Department (PCD) causes confusion over final disposal, especially for low-value and non-recyclable plastics.
  Current Approach: The waste station independently manages sorting and resale of recyclables, while relying on local innovators to handle non-recyclables through upcycling. Advocacy for clearer inter-agency coordination remains necessary.

- Limited Infrastructure and Space Constraints: As Koh Samui is densely developed and space is at a premium, setting up large waste management infrastructure is impractical.
  Current Approach: The project uses compact facilities within Samui Elephant Home and innovates with portable or shared-use infrastructure (e.g., containers) to accommodate storage and sorting.

- **Engaging Both Tourists and Locals:** Balancing the interests of short-term visitors and long-term residents in a single waste management model is challenging.
  Current Approach: A dual-track system was introduced in which tourists participate through the Ecolife app, while residents use a manual logbook and deferred cash redemption by fostering inclusivity and adaptability.

- **Digital Divide:** Many elderly or rural residents are unfamiliar with digital applications like Ecolife, limiting their engagement.
  Current Approach: Manual record-keeping is maintained for locals, with the app primarily targeting the technologically proficient tourist segment. The project continues to explore user-friendly tech interfaces and community training.

- **Sustainability and Funding:** Despite initial support from UNDP and WWF, long-term sustainability requires new revenue streams and consistent support.
  Current Approach: The station generates income through waste resale, earns plastic credits, and channels corporate social responsibility (CSR) funds toward elephant care by creating a unique circular value chain that supports both environmental and social objectives.

Community Benefits and Impact

The waste station has emerged as a multifaceted sustainability hub, providing a range of environmental, economic, and social benefits:

1. Residents earn income through a reliable, trust-based system where recyclables are exchanged for cash on a deferred basis.

2. Tourists engage in meaningful environmental action through app-based participation by reinforcing the island's image as a sustainable destination.

3.The initiative also functions as a CSR activity for Samui Elephant Home. Proceeds from waste sales are reinvested into maintaining and improving facilities for rescued elephants, directly linking waste management to animal welfare.

4. By promoting transparency and traceability in plastic flows, the waste station creates opportunities to generate carbon credits and certify ocean-bound plastic recycling, adding environmental value and financial viability to the initiative.

5.The project supports community empowerment, builds local capacity, and strengthens public trust, making it a replicable model for other high-tourism zones in Thailand.

Annex-3: Stakeholder Engagement Summary

1. Workshop Overview

WORKSHOP	**Workshop Title:** Consultation Workshop on Strengthening the Implementation of Community Waste Bank Guidelines and Initiatives in Thailand – 2025 **Date & Time:** Wednesday, 2 July 2025, from 08:30 to 12:00 hrs. **Venue:** Amari Bangkok Hotel (Pratunam), Bangkok, Thailand (Thai-language session)

2. Background and Objectives of the Project

Background of the Workshop

Mahidol University, in collaboration with the United Nations Human Settlements Programme (UN-Habitat), the United Nations Development Programme (UNDP) under the Joint SDG Fund, and the Ministry of Interior of Thailand, is implementing the project titled **"Partnership to Accelerate SDG Localization in Thailand."**

This initiative aims to support the implementation of the Sustainable Development Goals (SDGs) at the subnational level by strengthening institutional mechanisms and integrating local development efforts into the national SDG framework. The project places particular focus on voluntary local reviews (VLRs), data monitoring, policy integration, and localizing the SDG principle of "Leaving No One Behind."

As part of this effort, the Community Waste Bank (CWB) initiative was selected as a key activity to support sustainable and inclusive local development. The aim is to enhance local waste management systems, promote grassroots participation, and link circular economy practices to the SDGs.

Objectives of the Workshop

The workshop served as a platform to gather insights, feedback, and experiences from stakeholders, especially those most affected on the development of Thailand's Community Waste Bank guidelines and initiatives. Key objectives included:

- Reviewing national and local strategies for CWB development.
- Gathering field-level data and practical experiences from provinces with successful models and those needing support.
- Discussing policy alignment and integration with Thailand's national development plans and SDG implementation.
- Providing recommendations for inclusive and equitable expansion of CWBs to support sustainable local economies.

The workshop brought together local government representatives, community members, academic experts, and development partners to share good practices, identify gaps, and shape policy directions for a robust national CWB framework.

3. Key Discussion Points on Challenges and Opportunities for Community Waste Banks

The community waste bank initiative has been implemented for many years, yet its progress remains gradual due to various challenges. During the workshop, the participants shared valuable perspectives, which are summarized below. These insights, when combined with our comprehensive report, can serve to strengthen the sustainability and long-term success of community waste banks.

- **Need for Improved Collaboration with Local Authorities**
  Participants emphasized that some local administrative organizations (LAOs) have not fully integrated waste banks into their local development plans. In some cases, LAO officers lack the technical knowledge to support or scale the initiatives effectively. Building institutional awareness and embedding waste banks into official policies will help provide consistent backing, especially during leadership transitions within the LAOs.

- **Limited Public Understanding of the Waste Bank Concept**
  Despite efforts to promote waste banks, a significant portion of the public still confuses them with informal recyclers or buyers of waste. This misconception affects participation rates. It is important to clarify the concept and long-term benefits of waste banks through continuous public education and tailored communication strategies.

- **Inconsistent Government Support and Technical Assistance**
  While many waste banks operate with grassroots energy, their long-term success depends on external support. Some participants noted that they receive little to no assistance from provincial or national bodies. Regular funding, technical guidance, and integration into national waste management policies are needed to enable local initiatives to thrive and grow.

- **Challenges in Financial Management and Pricing Mechanisms**
  Concerns were raised over the lack of standardized pricing for recyclable materials, which sometimes leads to disputes or reduced trust among members. Moreover, some waste banks struggle with accounting and financial planning. There is a pressing need to improve financial literacy and provide support for pricing strategies to ensure transparency and sustainability.

- **Lack of Documentation and Exchange of Best Practices**
  Participants expressed interest in learning from successful models, but few resources are available to guide replication. Creating a central repository of best practices, including case studies from both rural and urban areas, would help scale successful approaches and avoid repeating common mistakes.

- **Fluctuating Market Demand and Limited Support from Recyclers**
  Even when communities collect waste diligently, they often face challenges in finding consistent buyers, especially for low-value or contaminated materials. Building reliable partnerships with waste buyers and improving waste sorting systems can help improve the economic viability of waste banks.

- **Strategies to Sustain Public Engagement and a Sense of Ownership**
  Another recurring theme was the difficulty in maintaining long-term community interest. Participants noted that initial enthusiasm often wanes, particularly when benefits are not immediately visible. Strengthening participatory approaches, recognizing volunteers' efforts, and offering small incentives could help build a deeper sense of ownership among community members.

- **Weak Linkages Between Waste Collection and Broader Waste Management Systems**
  In many areas, the collected recyclable waste is not effectively integrated into municipal waste management flows. Strengthening the connection between community waste banks and formal waste collection, recycling, and treatment systems is vital to close the loop and improve environmental outcomes.

- **Need for Multi-Stakeholder Engagement**
  The success of waste banks hinges not only on community efforts but also on support from various stakeholders. Participants suggested that schools, religious institutions, and the private sector can play more active roles. Developing inclusive platforms for dialogue and cooperation will broaden support networks and resource mobilization.

- **Updating the Operational Manual with Practical Tools and Roles**
  Lastly, several participants suggested that the existing waste bank manual should be updated to reflect field realities. This includes clearer classification of waste types, roles of different actors (e.g., recyclers, LAOs, community leaders), and improved downstream waste management strategies. Incorporating user-friendly tools and templates would also enhance day-to-day operations.

4. List of Participants

Onsite Participants		
Mrs. Khamkaew Marksub Miss Khanittha Puangraya	Environmental Specialist	Pollution Control Department
Ms. Natthinee Namwong Mr. Anan Pitakkul Mrs. Somjit Suksin	Sanitation Specialist	Environment Department, Bangkok Metropolitan Administration
Mr. Teerapat Phuttaphol Ms. Kannika Krutkaew	Policy and Planning Analyst Policy and Planning Analyst	Office of Natural Resources and Environmental Policy and Planning (ONEP)
Mr. Eknarin Ariyavongvivat	Director, Marine and Coastal Resource Conservation	World Wide Fund for Nature (WWF)
Ms. Poonwan Na Narajsiam	Assistant Executive Chairman	WASTEBUY Delivery Co., Ltd.
Mr. Patarapol Tularak	Project Manager	Circular and Sustainable Solutions Co., Ltd.
Ms. Apisara Boonya-atichart Ms. Jiratchaya Sritaksinakul	Project Manager Net Free Seas Community Coordinator	Resources Management for Sustainability (3R) Foundation Environmental Justice Foundation (EJF)
Ms. Natchaya Ritthisirikul Ms. Weena Nanthamontry	Net Free Seas Community	Thailand Institute of Packaging and Recycling Management for the Environment (TIPMSE)
Dr. Abhisit Bhatsada	Coordinator	Faculty of Environment and Resource Studies, Mahidol University
Mr. Mongkolchai Assawadithalerd	Senior Manager	Center of Excellence on Hazardous Substance and Waste Management for Sustainable
Mr. Phisek Meethong	Lecturer	Development Department of Local Administration
Mahidol University		
Dr. Wasaporn Techapeeraparnich	Deputy Dean for Academic and Student Affairs, Assistant Professor, Faculty of Engineering	Mahidol University
Prof. Chettiyappan Visvanathan	Professor, Faculty of Engineering	Mahidol University
Dr. Nawatch Surinkul	Professor, Faculty of Engineering	Mahidol University
Ms. Jutamas Kaewsuk	Lecturer	Mahidol University Kanchanaburi Campus
Dr. Sri Shalini Sathyanarayanan	Lecturer, Graduate Program in Environmental and Water Resources Engineering	Mahidol University
Ms. Sulinda Nualprasong	Program Secretary, Graduate Program in Environmental and Water Resources Engineering	Mahidol University
Ms. Kanitthika Santhaweesuk	Research Associate	Mahidol University
Ms. Chanisa Sangiampak	Research Associate	Mahidol University
Ms. Humm Kham Zan Zan Aung	Research Associate	Mahidol University
Mr. Racha Thaiprakob	Staff, Faculty of Engineering	Mahidol University
Mr. Santhat Mathon	Staff, Faculty of Engineering	Mahidol University

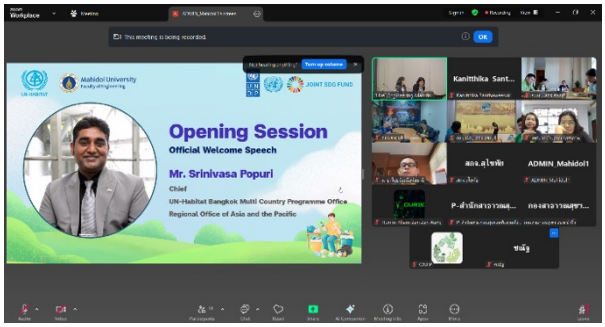
The United Nations Human Settlements Programme (UN-Habitat)		
Mr. Srinivasa Popuri	Chief, UN-Habitat Multi Country	UN-Habitat
Mr. Riccardo Maroso	Programme Office, Regional Office of Asia and the Pacific	UN-Habitat
Ms. Phannisa Nirattiwongsakorn	Programme Manager	UN-Habitat
Ms. Phattiya Jitpoj	National Programme Officer	UN-Habitat
Ms. Yada Ponchamni	Local Project Coordinator	UN-Habitat
Ms. Sandy Kumar	Research Assistant	UN-Habitat

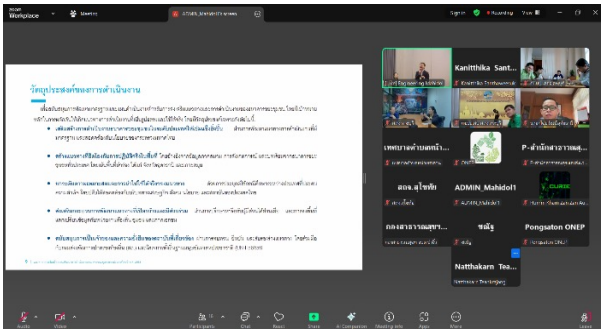
United Nations Development Programme (UNDP)		
Mr. Pan Piyasilp	Project Manager, SDG Localisation	UNDP
Ms. Pittayarat Ngonsuk	Project Coordinating Associate	UNDP
Ms. Gigi Sariddichainanta	Project Associate	UNDP

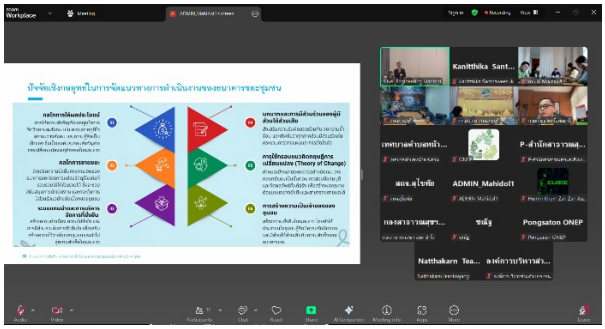
Online Participants		
Ms. Kanchanittha Eksaengsri	Officer, Local Affairs	Saraburi Provincial Office for the Promotion of Local Administration
Sgt. Jirapong Sabpommarach	Director, Local Public Service and District Coordination Division	
Ms. Thitima Changmai	Senior Local Administration Promotion Officer	Lopburi Provincial Office for the Promotion of Local Administration
Ms. Saruda Chaitantikul	Officer, Local Affairs	
Mrs. Krittiya Pimcharee	Director, Local Public Service and District Coordination Division	
Mr. Natsiwach Thanawongphongsaphak	Local Administration Promotion Officer	
Ms. Komolluck Jitchum	Analyst and Local Development Plan Monitoring Officer	
Mr. Prasit Nava	Director, Public Health and Environment Division	Pang Ngiu Subdistrict Administrative Organization
Mr. Chaiwat Supkitwathana	Mayor	Khao Bang Kraek Subdistrict
Mr. Nattajak Chaidet	Local Administration Promotion Officer	Municipality, Uthai Thani Province Sukhothai Provincial Office for the Promotion of Local Administration
Mr. Suthee Saithong	Head of the Office of the Permanent Secretary	Khao Khlung Subdistrict Administrative Organization
Ms. Orachorn Prapapaitoon	Local Administration Promotion Officer	Ratchaburi Provincial Office for the Promotion of Local Administration
Mr. Peerapat Phengthong	General Employee	Public Health and Environment Unit
Mr. Pongsathon Thanboon	Policy and Planning Analyst	Office of Natural Resources and Environmental Policy and Planning (ONEP)
Ms. Natthakarn Teankrajang	Senior Environmental Officer	

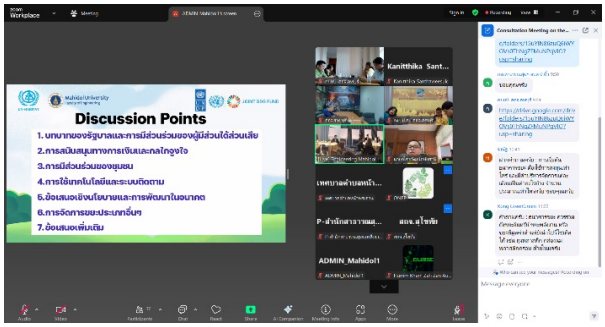
5. Documentary Photos of Stakeholder Consultation Workshop (Onsite and Online)

Snapshots from Virtual Attendees









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