ADAPTIVE URBAN-INDUSTRIAL SYMBIOSIS STRATEGY

Utilizing Municipal Waste as an Economic Source

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WASTE IS COMMONLY PERCEIVED AS
UNWANTED MATERIALS


HOWEVER, WE BELIEVE IT IS AN
ECONOMIC SOURCE

THOURGH WASTE ECO-SYSTEM BUILDING, WE AIM TO BUILD A CIRCULAR ECONOMY

PROBLEM

TRASURE

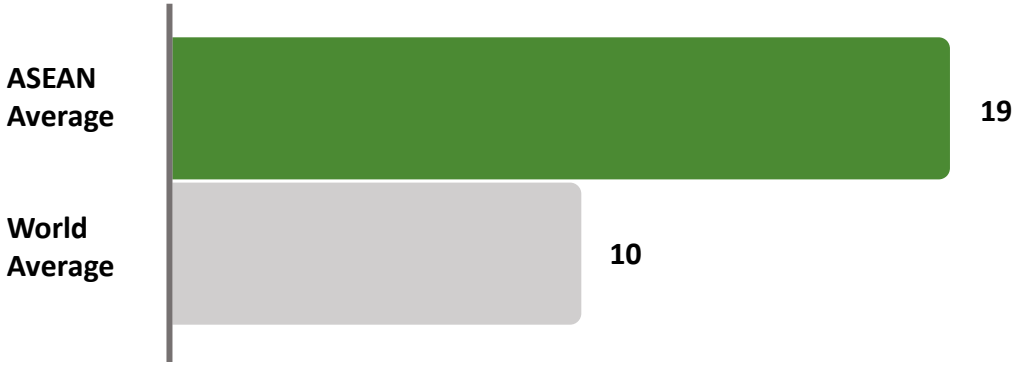
Low source segregation and recycling rate		**Community waste-sorting program and incentives**
Lack a central platform to buy recyclables		**Waste E-commerce**
Poor working condition & low income for the informal sector		**Green jobs creation for the informal sector**

While ASEAN Nations generates waste about

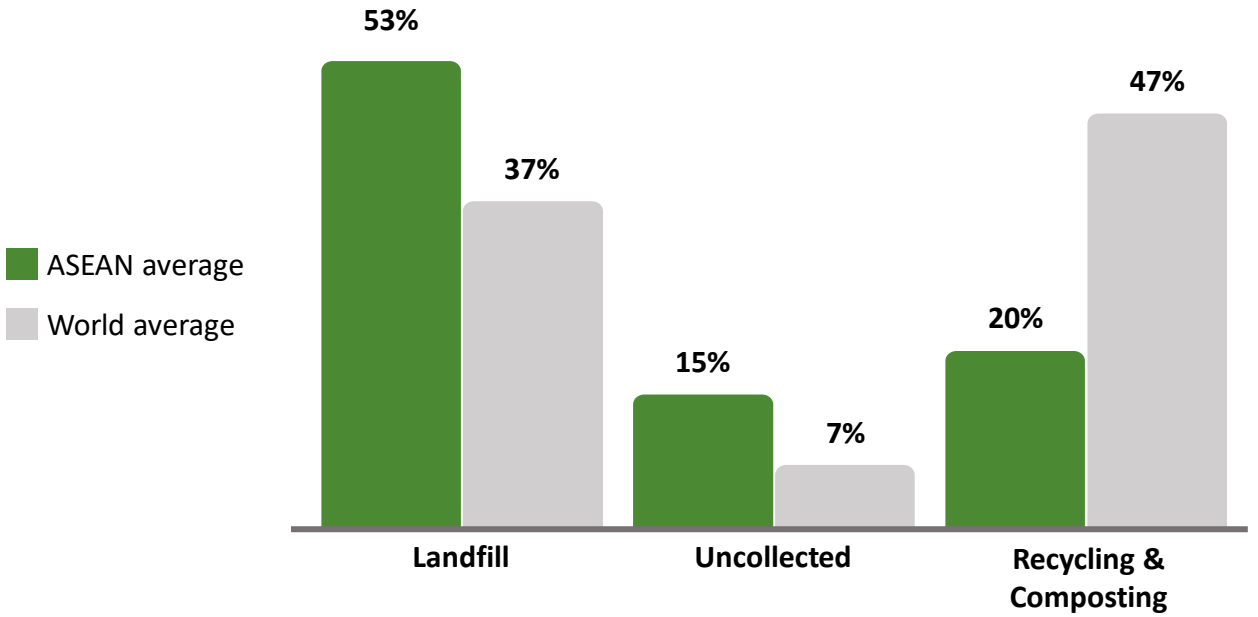
2 TIMES MORE

than the world average, their waste management method is

MUCH LESS SUSTAINABLE



Municipal Solid Waste (MSW) Generation in 2019 (Million Tons)



Waste Management Composition in 2020

Source: The World Bank 2016, United Nations Environment Programme 2017

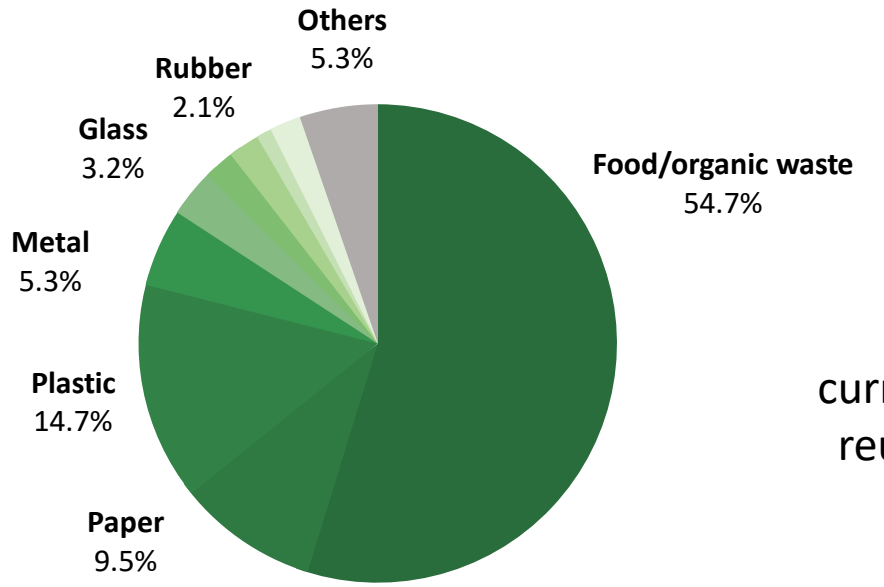
ASEAN IS MISSING OUT

not just

ENVIRONMENTALLY

but also

ECONOMICALLY



ASEAN annual waste composition in 2020

> 90%

current material can be reused, recycled, and composted

190 Million Tons of MSW

Generated annually 2019 by ASEAN

65% of generated MSW

are wasted in landfills or uncollected

$7.7 Billions are Wasted

in terms of Green economic potential

Source: United Nations Environment Programme 2017, Statista 2020, Kristanto & Koven 2019, US EPA 2019, Njoku et al. 2019, MSV2016, Chinda 20, Cesaro 2020, CNN Philippines 2020, CCAC 2015, WMW 2013, Shams et al. 2014, Corbey 2011

ASEAN popular waste disposal method is **HARMING** its **ENVIRONMENT & THE PEOPLE**

Source: United Nations Environment Programme 2017, Statista 2020, Kristanto & Koven 2019, US EPA 2019, Njoku et al. 2019, MSV2016, Chinda 20, Cesaro 2020, CNN Philippines 2020, CCAC 2015, WMW 2013, Shams et al. 2014, Corbey 2011

100 Million Tons

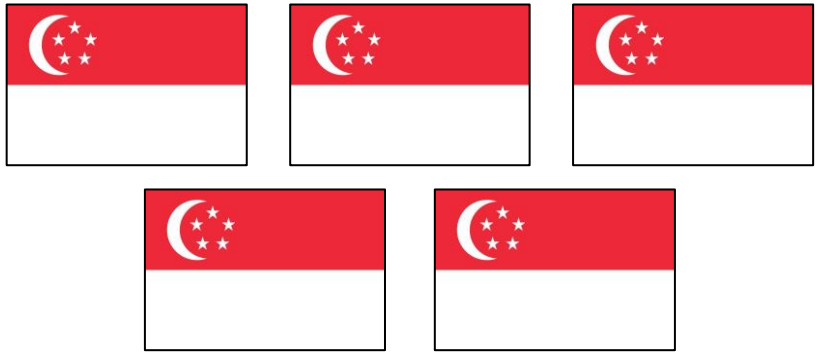
MSW dumped in ASEAN **landfills** each year

2,844 km²

of land is used for waste dumping

50 Million Tons

of Toxic gas emitted from landfill sites



Filled with waste and toxic gas

leaving areas that are hard or impossible to live in

ASEAN popular waste disposal method is **HARMING** its **ENVIRONMENT & THE PEOPLE**

(Source: United Nations Environment Programme 2017, Statista 2020, Kristanto & Koven 2019, US EPA 2019, Njoku et al. 2019)

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One in every six people in ASEAN are vulnerable to respiratory diseases

110,250,000 PEOPLE

WHO is SAVING us from the WASTE LAND

6.7 Million people

are involved in the informal waste picking sector

82% - 90% of recyclable waste

are collected by these waste pickers

Make $4.5 - $11 daily

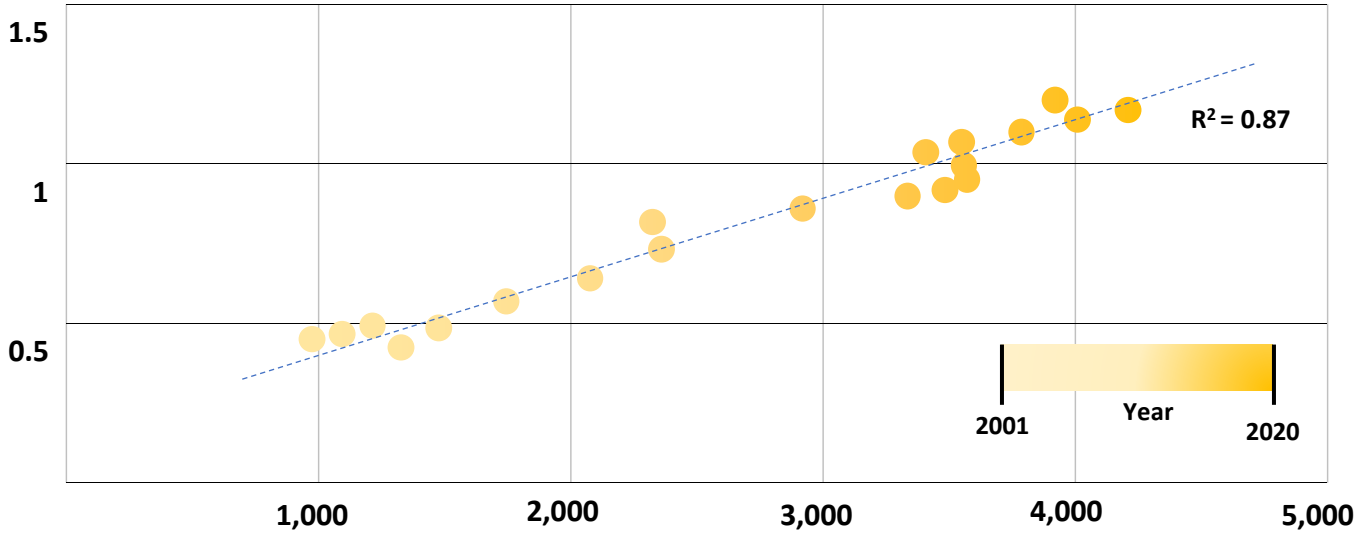
and are excluded from formal finance

90% - 98% of waste pickers

are vulnerable to physical injuries and health infections

Source: McAllister & Dow 2021, Nguyen 2020, ASEAN Today 2021

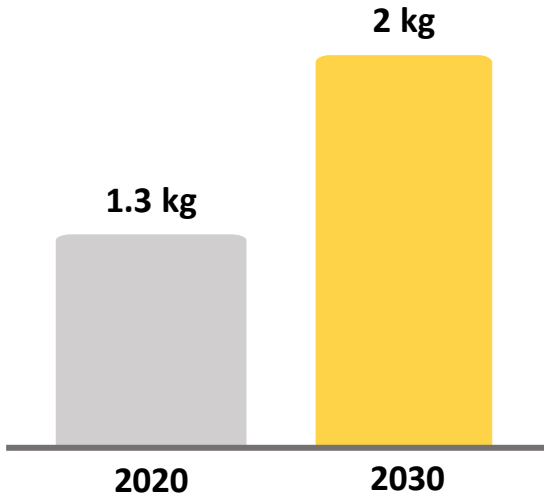
MORE WEALTH, MORE WASTE



Correlation between ASEAN waste generation kg/person/day explained GDP/capita growth from 2001-2020

With the current economic growth rate,
An average person in ASEAN will generate

1.5x more waste by 2030



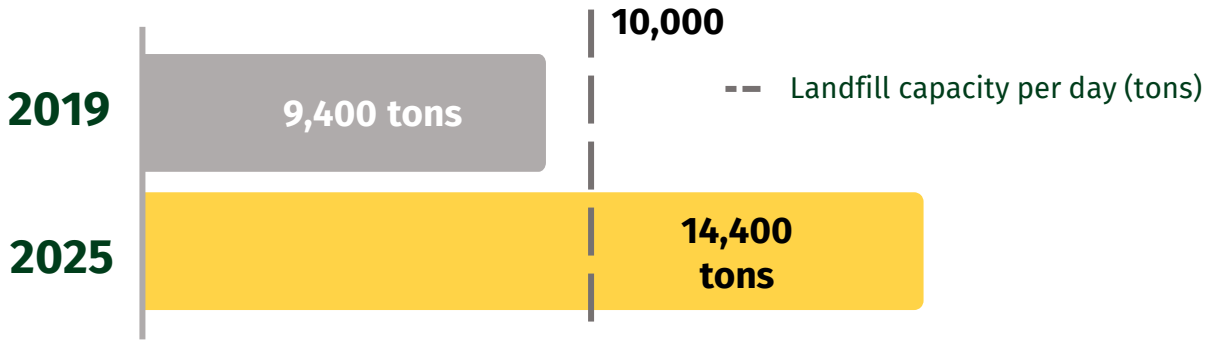
ASEAN waste generation kg/person/day forecast by 2030 based on GDP/capita growth

Source: United Nations Environment Programme 2017, The World Bank 2020, Euromonitor International 2019

Source: Vietnam Ministry of Industry and Trade 2021, United Nations Environment Programme 2017, The Jakarta Post 2020

In 1-2 years

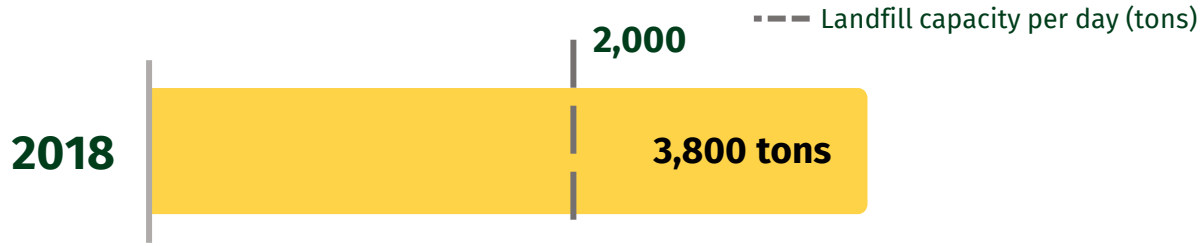
Landfills in Vietnam will run at overcapacity



Ho Chi Minh's (Vietnam) landfill capacity per day and MSW generated per day in 2019 and 2025

PROBLEMS OF THE FUTURE
Is ALREADY HERE

Overcapacity
Is already a reality in Indonesia



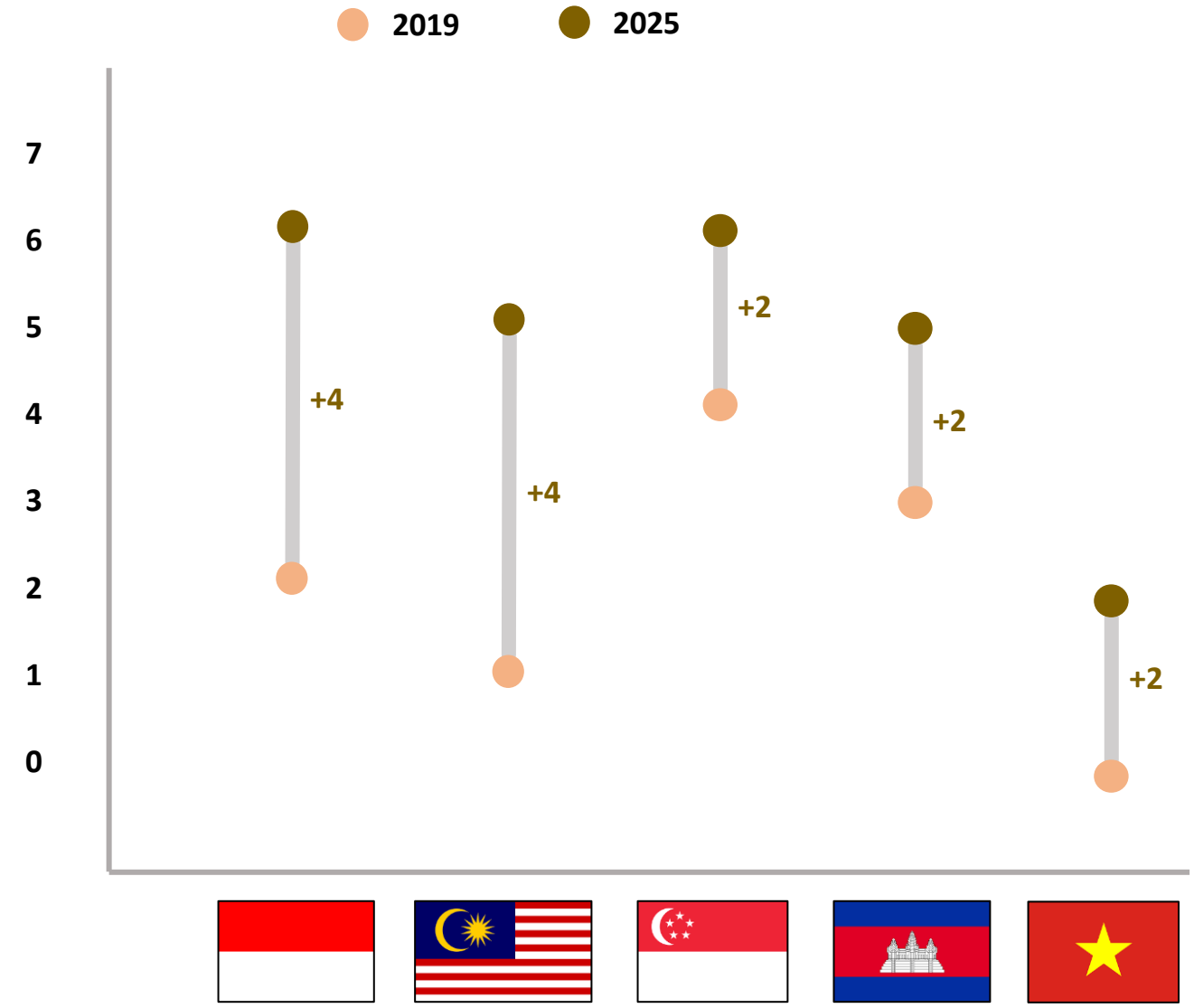
West Java area (Indonesia) landfill capacity per day and MSW generated per day in 2018

Ocean, River & Open Dumping
Occur as a result

No.1
polluted river in the world
Indonesia's Citarum River

Source: Vietnam Ministry of Industry and Trade 2021, United Nations Environment Programme 2017, The Jakarta Post 2020, Leung 2016

COUNTRIES ARE CHANGING TO INCINERATION



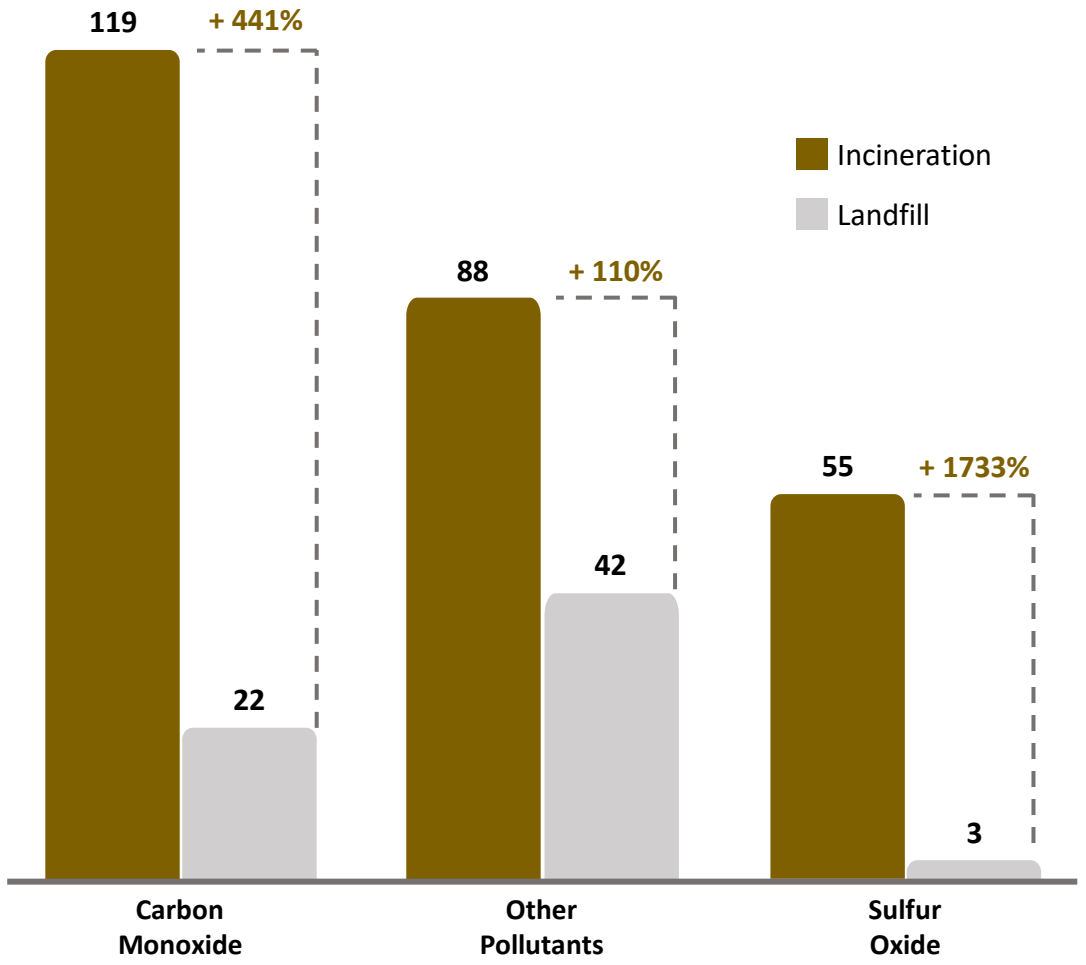
Number of incineration plants (capacity > 1000 tons per day) countries plan to build until 2025

Source: United Nations Environment Programme 2017, The World Bank 2020, Euromonitor International 2019, Zero Waste City 2020, Tun et al. 2020, Waste Management World 2021, Kahfi et al. 2019

INCINERATION IS ONLY A QUICK FIX

Source: Energy Justice Network 2017

Even though incinerations creates energy, it is not worth the sacrifice of the environment

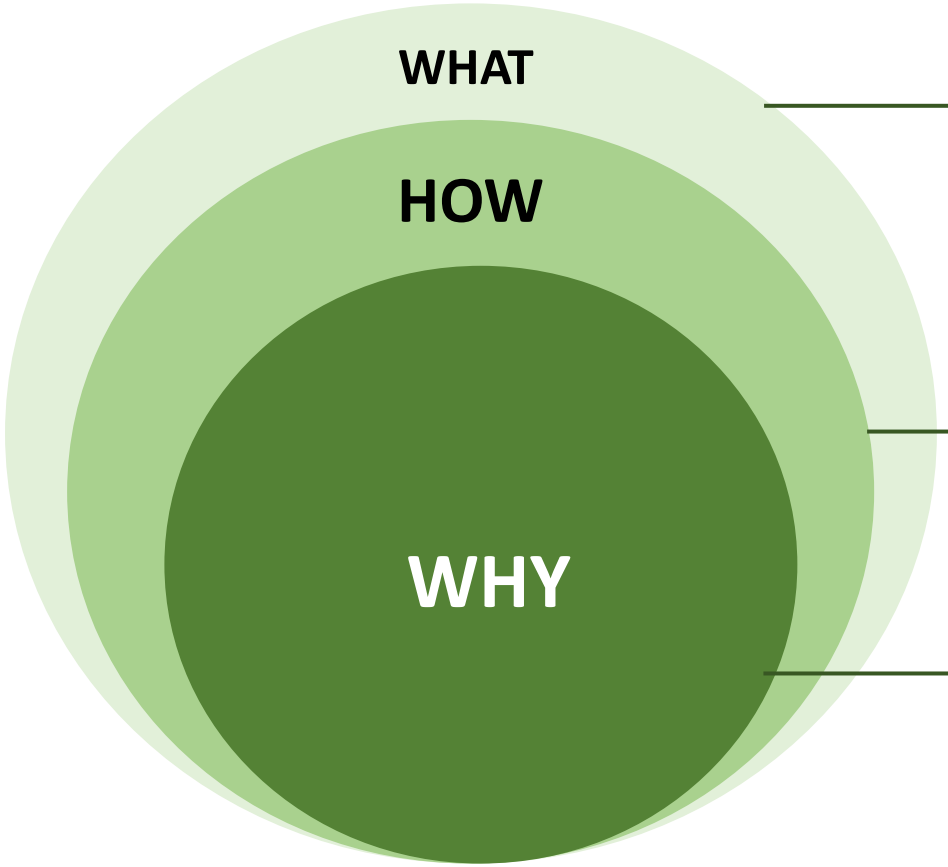


Pollutants measured from 6 incinerators and 17 landfills (samples from Washington D.C, USA in 2017) (in tons)

TRASURE

THE PERCEPTION ON WASTE HAS TO CHANGE:

TRASH IS TREASURE



TRASURE

- **Sorted-trash Collection Service with Gamification**
- **Waste E-commerce**
- **Company & Individual ESG Ranking**

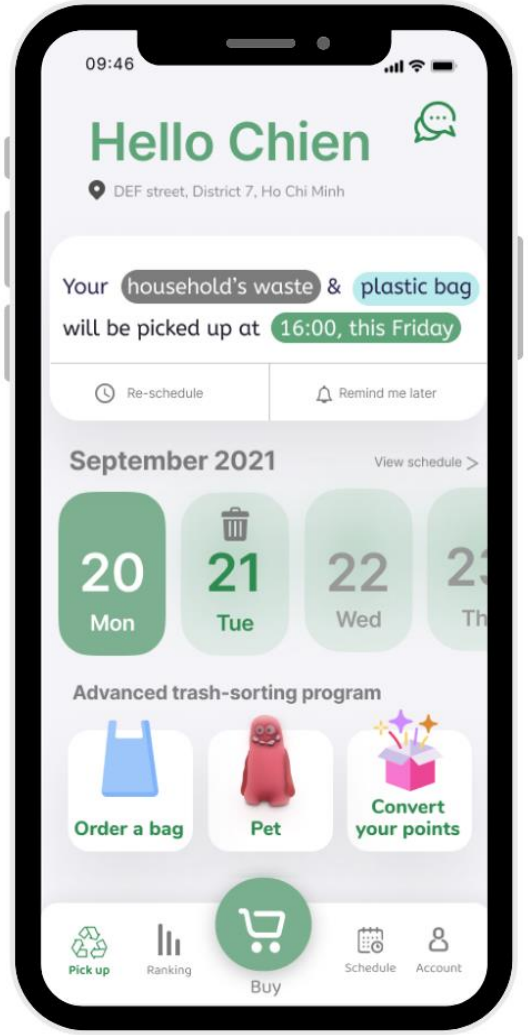
Create a **SUSTAINABLE SUPPLY & DEMAND** for WASTE

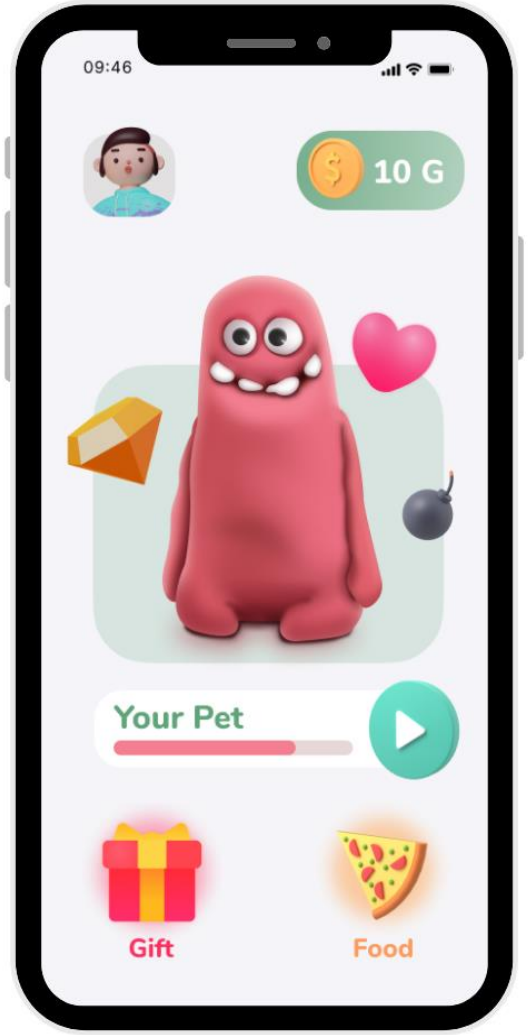
Waste is an **ECONOMIC SOURCE** that is **UNDER UTILIZED**

TRASURE

HOW TRASURE ENSURES THE SUPPLY OF WASTE

Mandatory and Advanced Trash-sorting Program for households

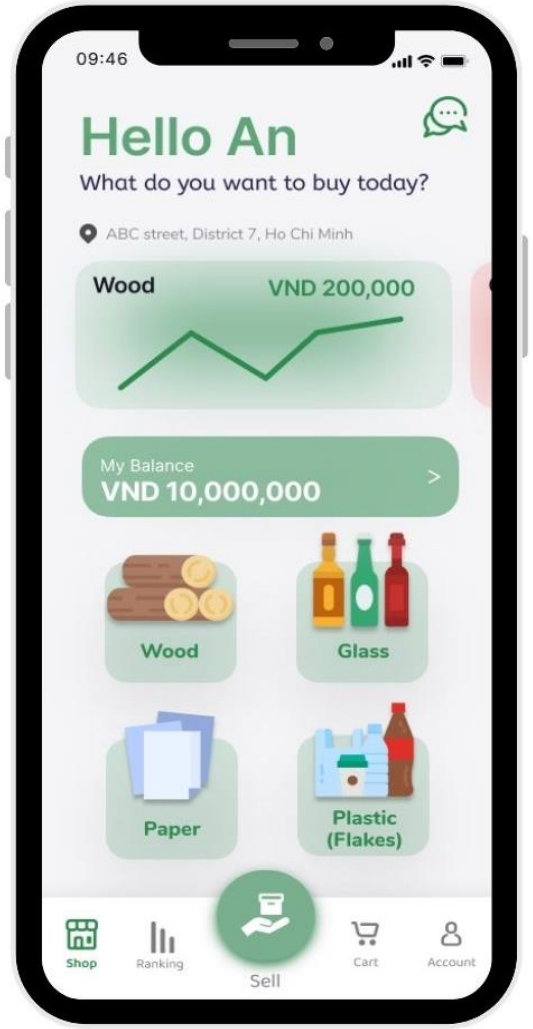


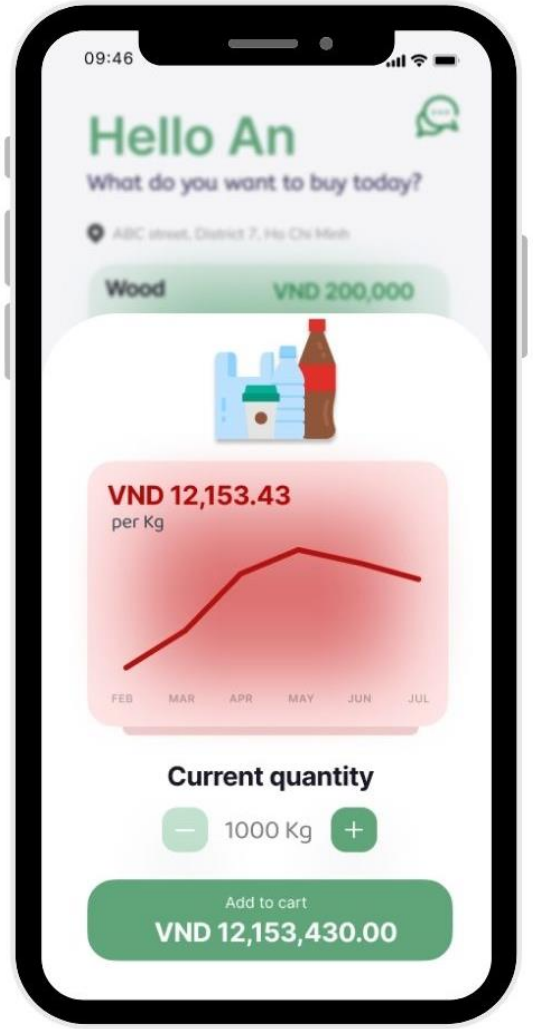


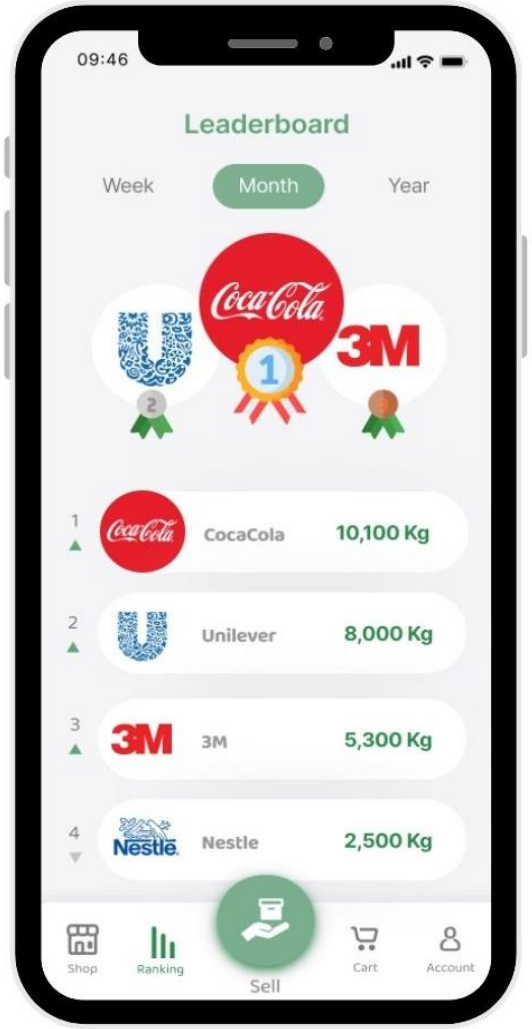
TRASURE

HOW TRASURE SATISFIES THE WASTE DEMAND

Recyclable E-commerce for companies

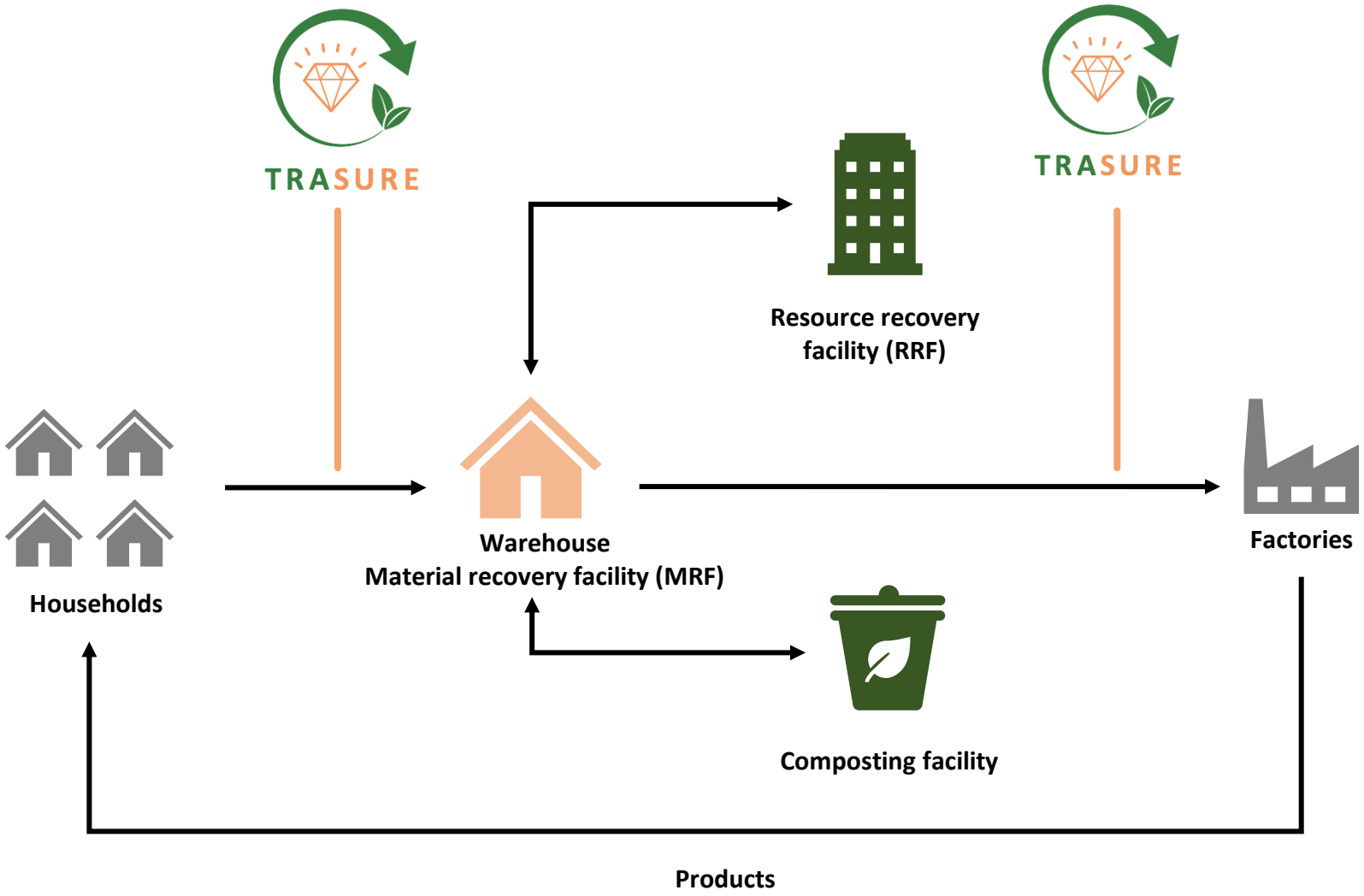






TRASURE

TRASURE ACTS AS THE MIDDLE-MAN FOR URBAN AND INDUSTRIES' WASTE SYMBIOSIS



TRASURE

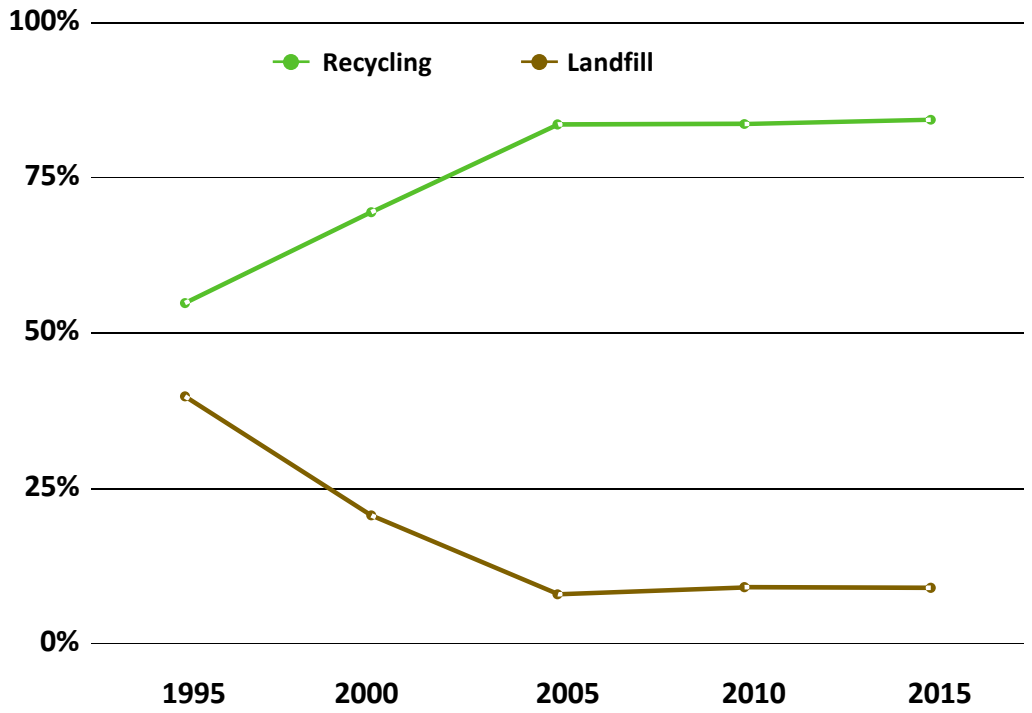
HOW WE ROLL OUT OUT TO THE MARKET

	1H - 2022	2H - 2022	1H - 2023	2H - 2023	1H - 2024	2H - 2024	1H - 2025	2H - 2025
Milestones	FOUNDATION DESIGN				CUSTOMER ACQUISITION & ECO-SYSTEM BUILDING			
Phases	Trial & basic features launch		Scale and Optimize		Target Customer & Service Expansion			
Features	Mandatory Program In-app pre-recorded sorting tutorial		Advanced Program Gamification		Refill services & delivery	At-home composting tutorial	Households sell compost via the app	
Key Actions	-Trial at high-income **private residentials** by negotiating with owners -Contact third-party waste-transport logistics	-Trial at high-income **private apartments** -Rent central warehouse as MRF -Companies' Material Auditing	-Collaborate with **SAP** for logistics route optimization	-Scale to Educational Institutions and Companies	-Collaborate with **government** to trial at lower income areas -Recruit people at the wards to do refill services & delivery	-Official launch in lower income areas -Adjust the logistics to collect household compost & pricing system	-Expand to adjacent regions -Compost P2P Ecommerce Official Launch	-Upgrade to website and maintenance

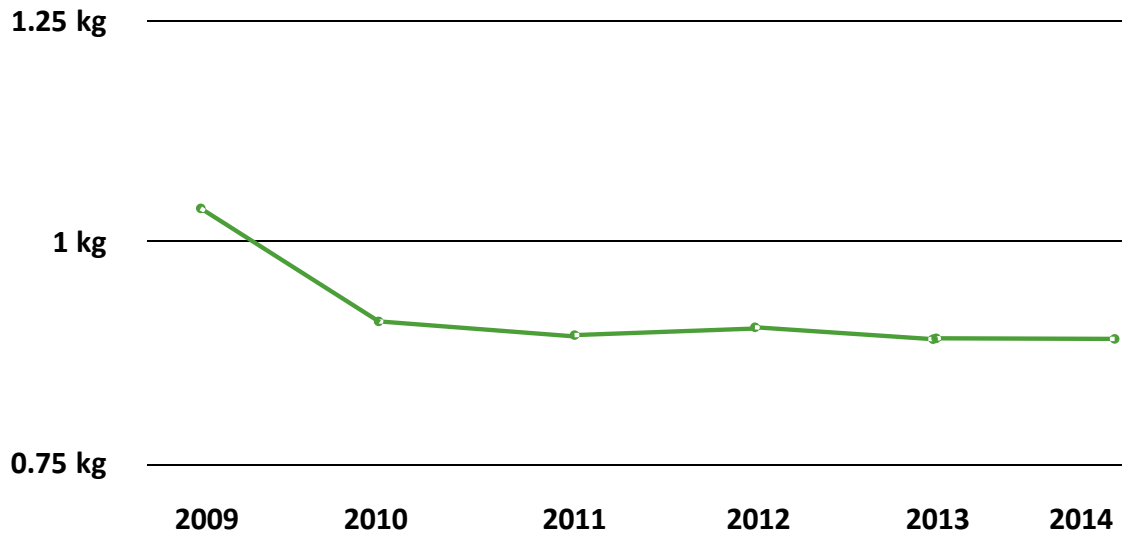
TRASURE

SOUTH KOREA HAS SUCCESSFULLY HANDLED THE WASTE PROBLEM SINCE 1995

Thanks to the Mandatory Pay-as-you-throw System



South Korean Landfill and Recycling Rate from 1995 – 2015

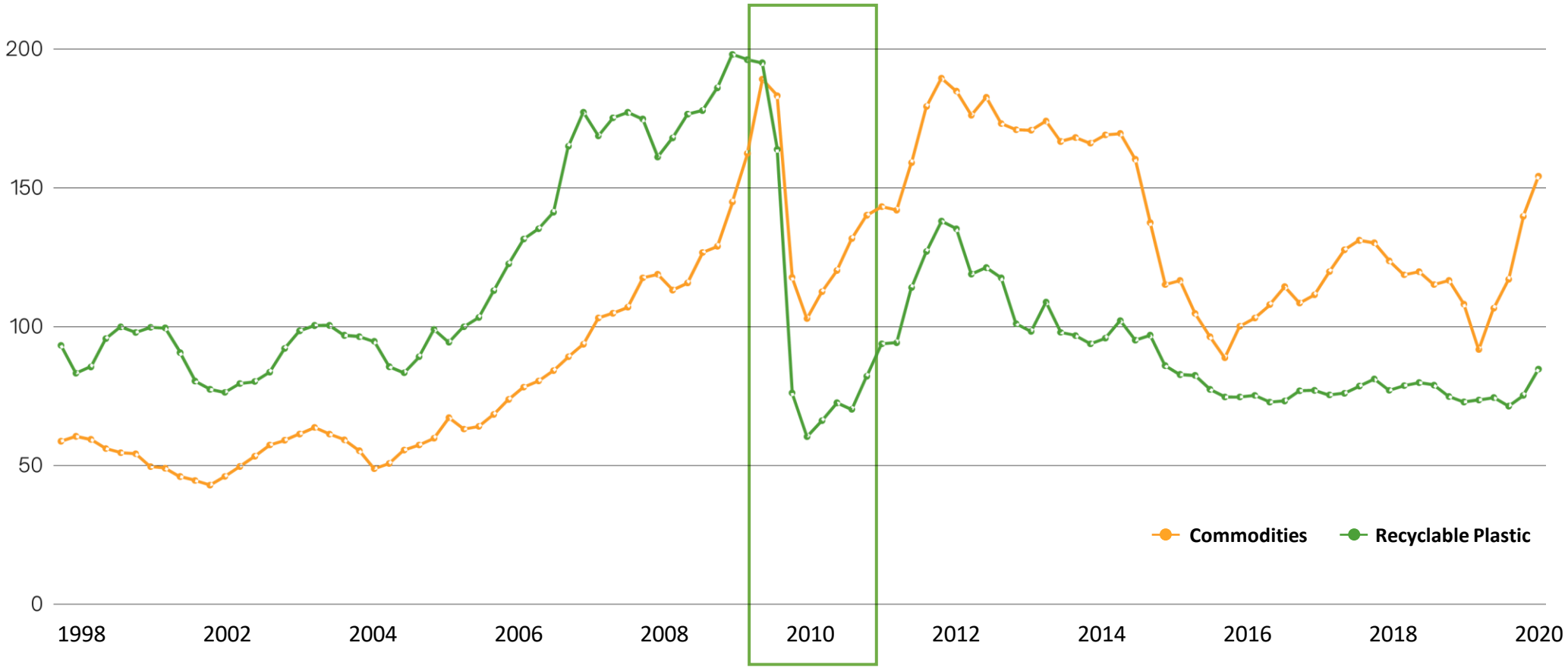


South Korean waste generation/person/day from 2009 – 2014

Source: Korean Ministry of Government n.d

TRASURE

RECYCLABLES HAS BECOME DESIRABLE ALTERNATIVE SOURCE OF MATERIALS



Commodities Global Price Index and Producer Price Index of Recyclable Plastic from 1998 – 2020, June 2016 = 100

Source: FRED Economic Data 2021

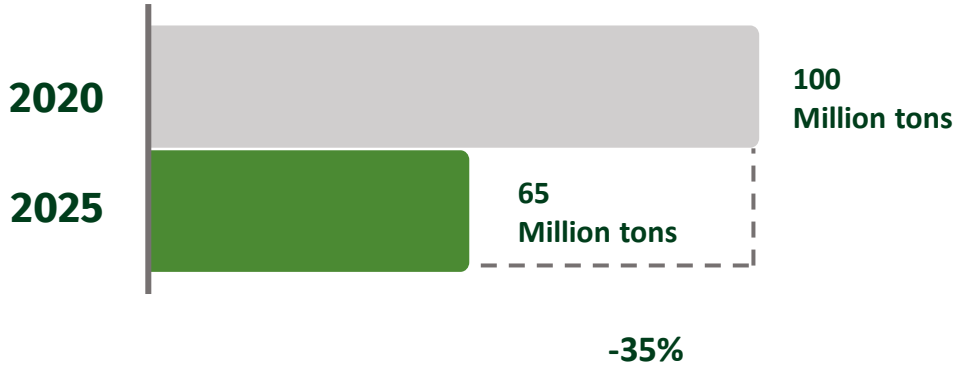
13 CLIMATE ACTION

GOAL #1: REDUCE CO2 & LANDFILL GAS EMITTED

Section C.1 –ASCCBP
Conservation and Sustainable Management of Biodiversity and Natural Resources

TRASURE

Decrease CO2 & toxic gas through reducing waste going to landfill by 35% by 2025



**Benchmarking South Korean's case*

11 SUSTAINABLE CITIES AND COMMUNITIES

GOAL #2: CREATE ASUSTAINABLE WASTE ECONOMY

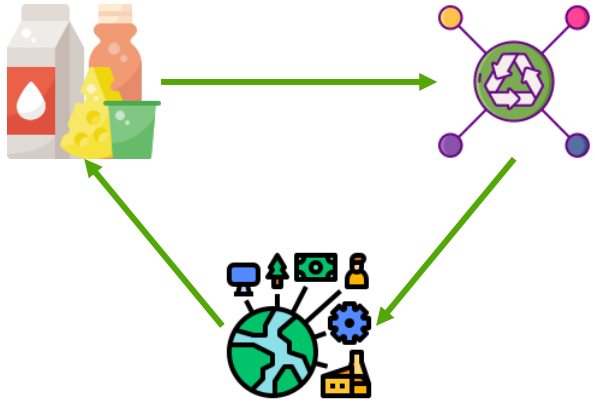
Section B.8 – AECBP
Sustainable Economic Development

Section C.4 –ASCCBP
Sustainable Consumption and Production

Section C.2 –ASCCBP
Environmentally Sustainable Cities

TRASURE

Putting 60% of MSW back to the economy through recycling



**Benchmarking South Korean's case*

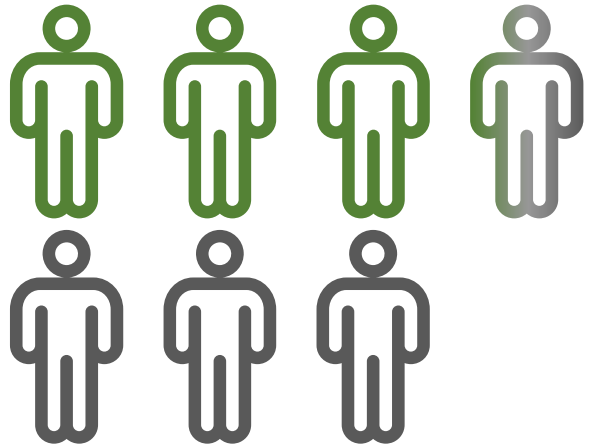
8 DECENT WORK AND ECONOMIC GROWTH

GOAL #3: GENERATE GREEN JOBS

Section A.2 –ASCCBP
Empowered People and Strengthened Institutions

TRASURE

Formalizing 50% of the informal waste pickers by 2025 by creating 3.35 Millions GREEN JOB



Source: McAllister & Dow 2021

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