



Thailand Public Private Partnership for Plastic and Waste Management

(Thailand PPP Plastic)

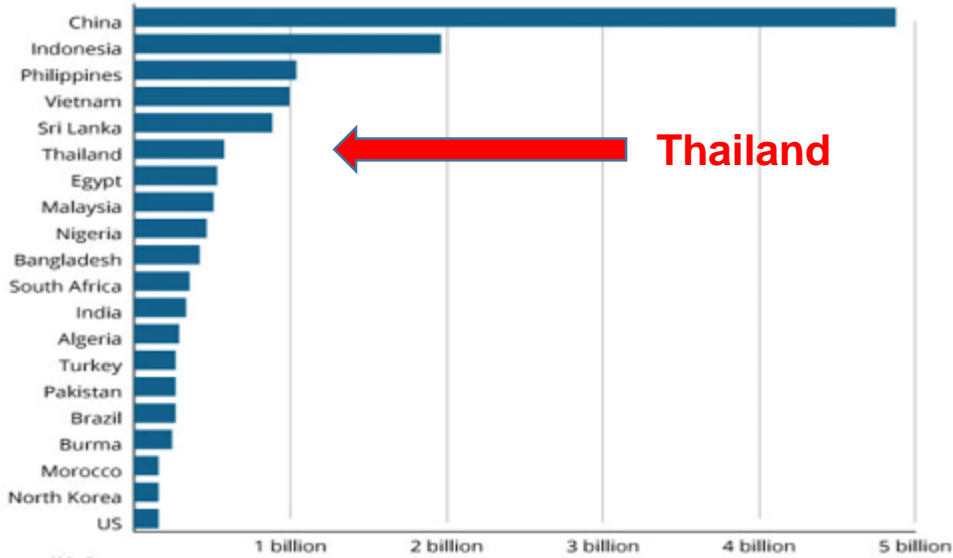
As of Jul9, 2019



Thailand PPP Plastic: Establishment

Worst Plastic Offenders

Plastic debris contributed to ocean in 2010, pounds*



*Median
Source: Jambeck et al. Science, 2015

CLIMATE DESK



Press Conference and MOU Signing: June 5, 2018

- Thailand was ranked the 6th of global marine plastic debris in 2010.
- According to the research of Thailand Plastics Institute and Chulalongkorn University in 2018, total waste plastics from post consumers are 2.1 million tons.
 - 1.5 million tons to landfill & incineration
 - 0.4 million tons to be recycled
 - 0.01-0.03 million tons likely to leak from the system to the ocean together with the existing waste plastics at the landfill.

- Unprecedented collaboration between Thai Government, private sectors and NGOs to solve plastic waste issue.
- 15 organizations from the government sector, private sector, and non-profit organizations signing this MOU to address Thailand plastic marine debris on June 5, 2018.
- Thai Government announced the national goal to 'reduce Thailand plastic ocean waste at least 50% by 2027'.

The Government's Working Arm

Thailand PPP Plastic's Mission:

❖ To connect the dots and be a center of networks to build plastic **circular economy** focusing on infrastructure improvement, innovation, and education by taking the following roles:

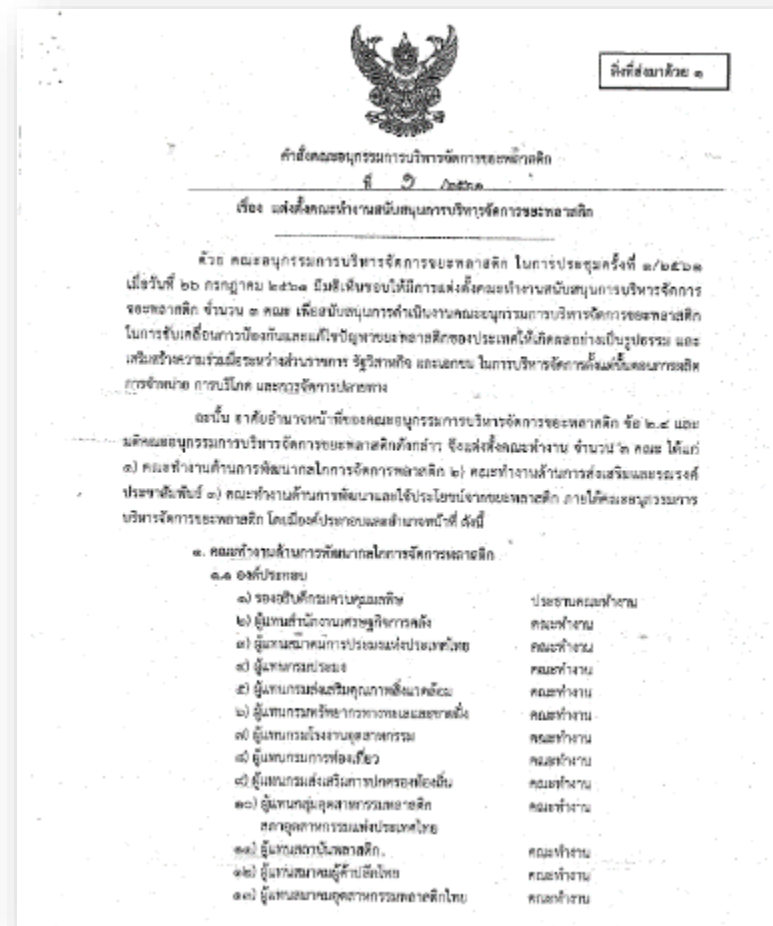
1. Work with the government to shape country's direction and develop policy / legislation to support the plastic circular economy. (เพื่อมีส่วนร่วมในการกำหนดทิศทางนโยบาย)
2. Work with all stakeholders to improve current systems and infrastructures to support plastic circular economy. (เพื่อร่วมจัดการปรับปรุงระบบปัจจุบันให้เข้าสู่เศรษฐกิจหมุนเวียน)

National Environmental Committee
(Deputy Prime Minister)

**Plastic Waste Management
Sub-Committee**

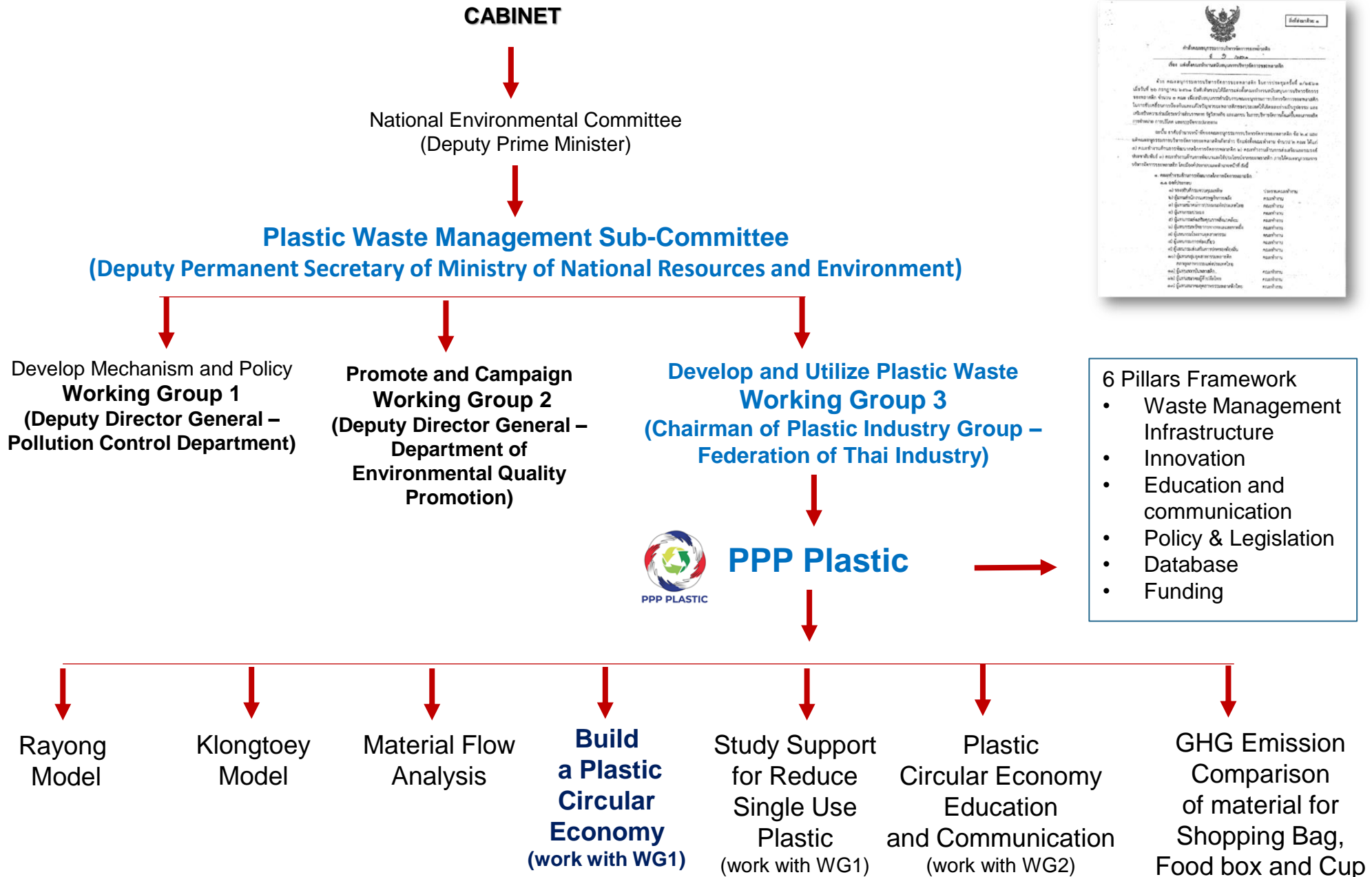
(Deputy Permanent Secretary of Ministry of National Resources
and Environment)

Sub-Committee's 3rd Working Group
(Thailand PPP Plastic)



On 7 Aug 2018, the PPP Plastic led by the Federation of Thai Industry and TBCSD (Thailand Business Council for Sustainable Development) was formally appointed to be the 3rd Working Group of Plastic Waste Management Sub-Committee by the Deputy Permanent Secretary of the Ministry of National Resources and Environmental.

Thailand PPP Plastic : The Government's Working Arm



Focus Areas

To End Plastic Waste to the Environment

Infrastructure

Education

Innovation

Policy
&
Legislation

Database

Aligning with Thailand's Plastic Waste Management Road Map 2018-2030

To achieve the goal 'reducing plastic marine debris at least 50 % by 2027'

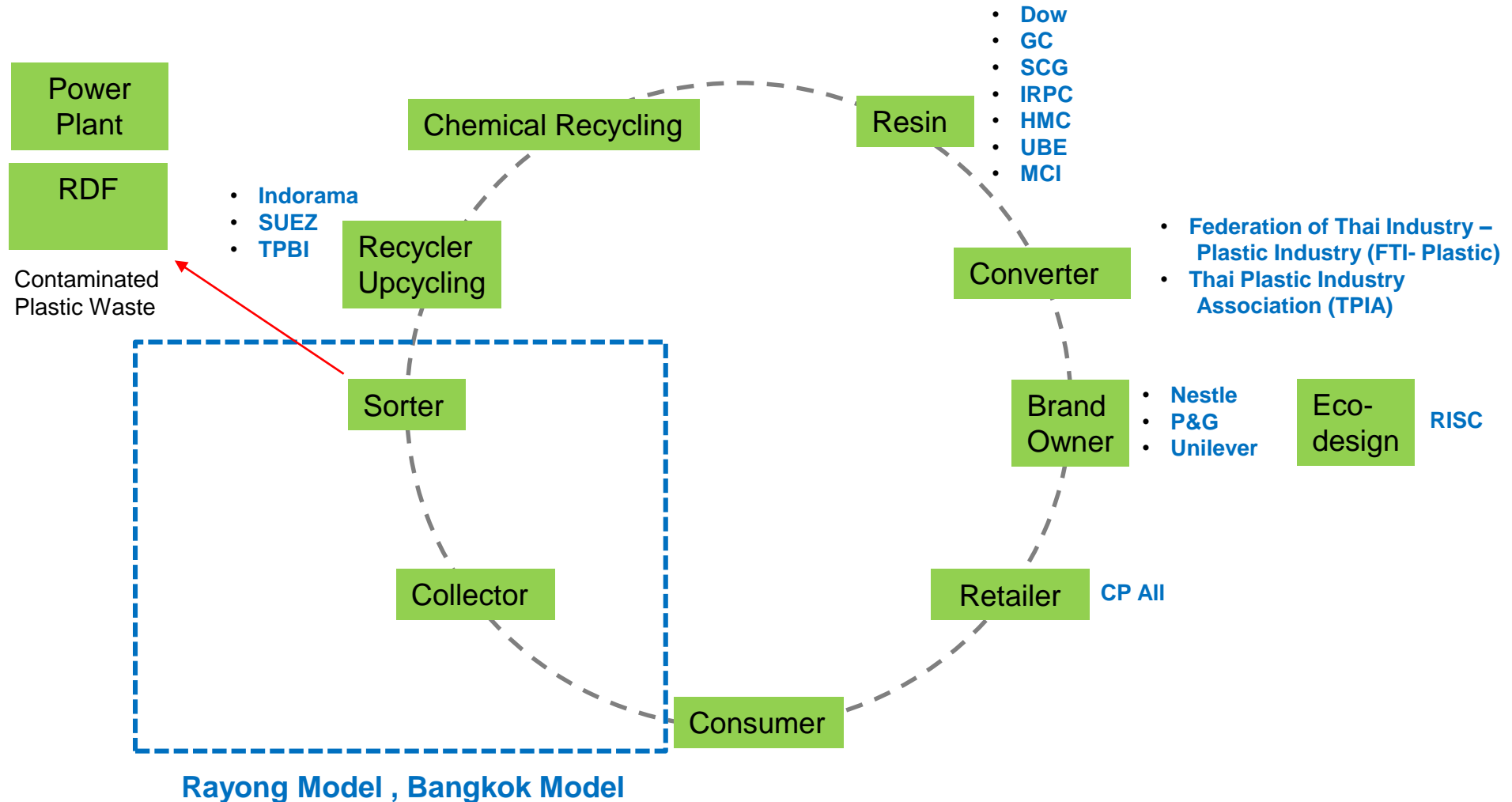
Goals	Baseline	2018	2019	2020	2021	2022	2027
1. Circulate all waste plastics target into manufacturing stream – Circular Economy	21%	22%	25%	30%	40%	50%	100%
2. Reduce the usage of 7 plastic packaging targets:							
2.1 Plastic micro bead 2.2 Cap-seal 2.3 OXO bag			100%				
2.4 <36 micron shopping bag 2.5 Foam food packaging 2.6 Single-use plastic cup 2.7 Straw			25%	50%	75%	100%	

Work with Pollution Control Department for Roadmap on Plastic Waste Management 2018-2030



Build a Plastic Circular Economy

Common Goal : Target plastic waste will be circulated into manufacturing system 100% by mechanical recycle, chemicals recycle and energy recovery.

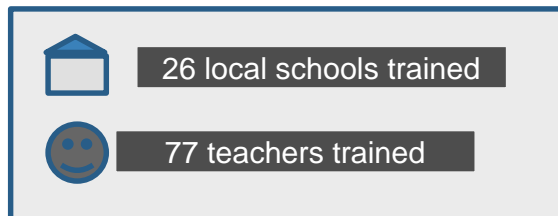
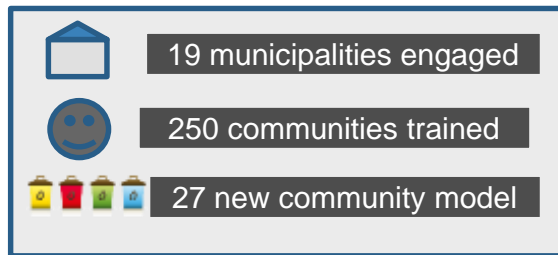
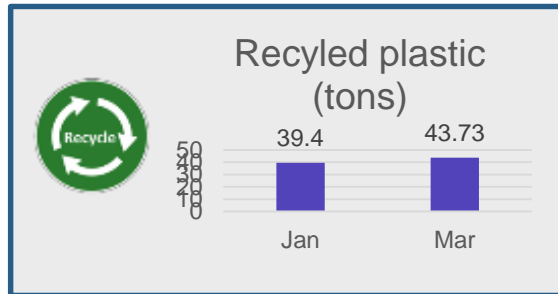


Infrastructure

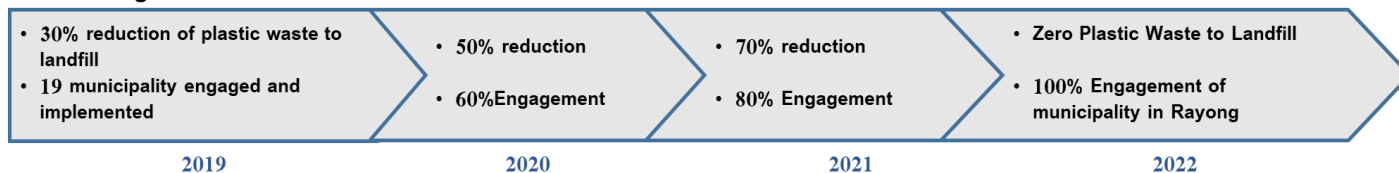
Circular Economy Business Model : PPP Plastic-Rayong Model

- Pilot phase 18 municipalities and extend to the rests.
- Period 5 years

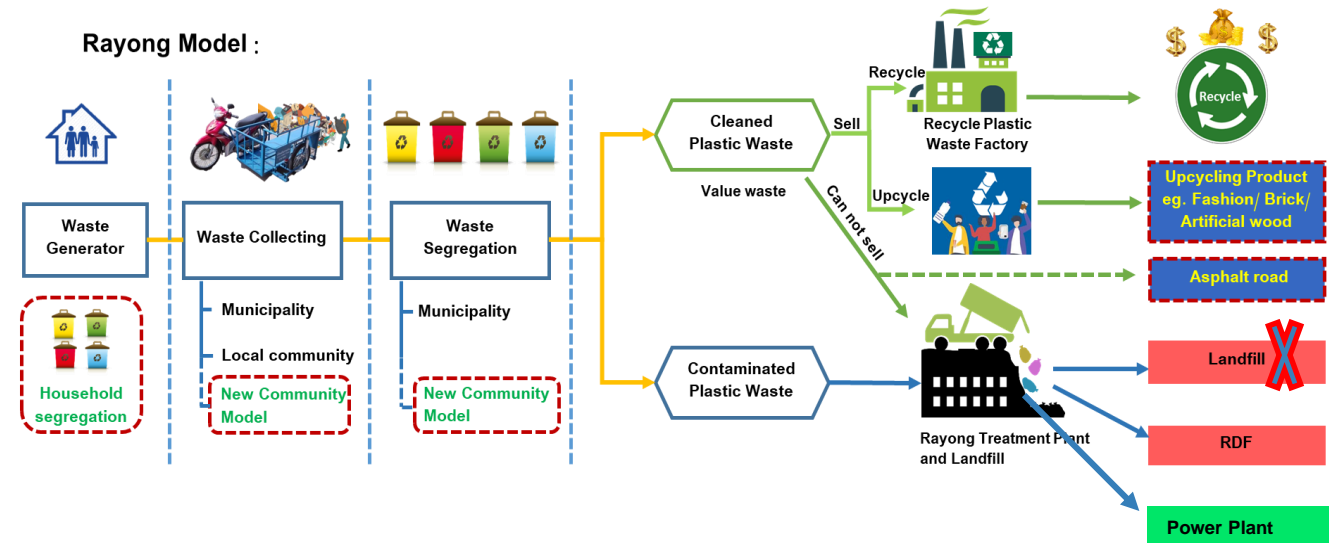
Sorted plastic waste by plastic type and sell to recycle business 40 tons/month



Target :



Rayong Model :

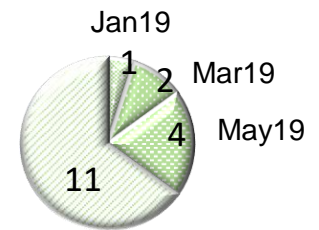


Circular Economy Business Model : PPP Plastic-Rayong Model



Progress:

- ✓ Organized workshop : How to sort plastic waste by type and advise channel to recycle business for 18 municipalities
- ✓ Follow up progress, solve obstructs and record data
 - Promote segregate at source
 - Continual educate sorted plastic type
 - Build community model
- ✓ Extend to school model

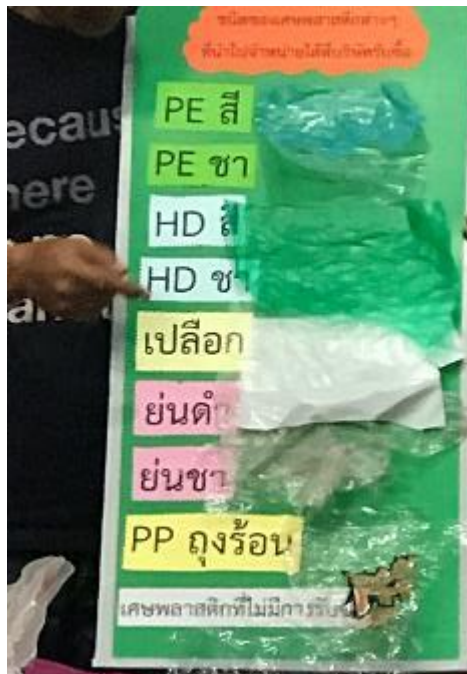


Next Action:

- ☐ Extend to tourist place and traditional market



MNC developed community model



Sorted Plastic Waste
Green Job

Sorted by plastic type build value added waste



Mixed plastic waste

4 Baht



Sorted plastic waste

19 Baht



Recycle plastic resin

30 Baht

Finished Goods from Plastic Waste



Artificial Wood
eg. Deck



Buckets



Garbage Bag

11

Circular Economy Business Model : PPP Plastic-Rayong Model



10 Aug' 18

Meeting with Rayong governor



18 Dec' 18
MOU ceremony
PPP Plastic Rayong



23 Jan' 19
Bi-monthly meeting#1



12 Mar' 19
Bi-monthly meeting#2



7 May' 19
Bi-monthly meeting#3



18 Dec' 18
Waste management workshop
with communities



5 Mar' 19
Outside exhibition



2 Apr' 19
Waste management workshop
with schools

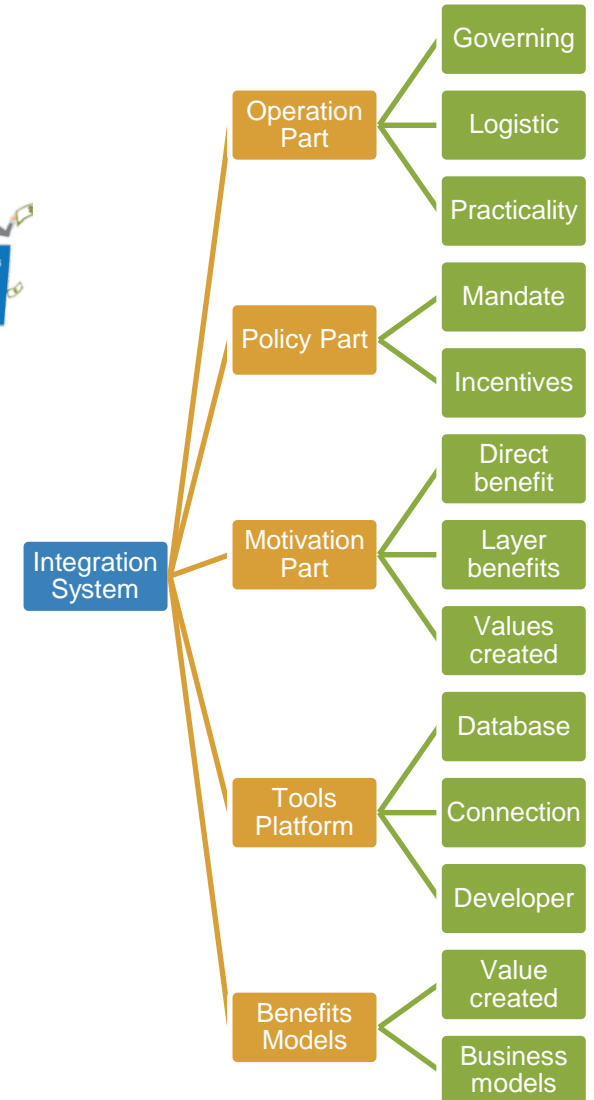
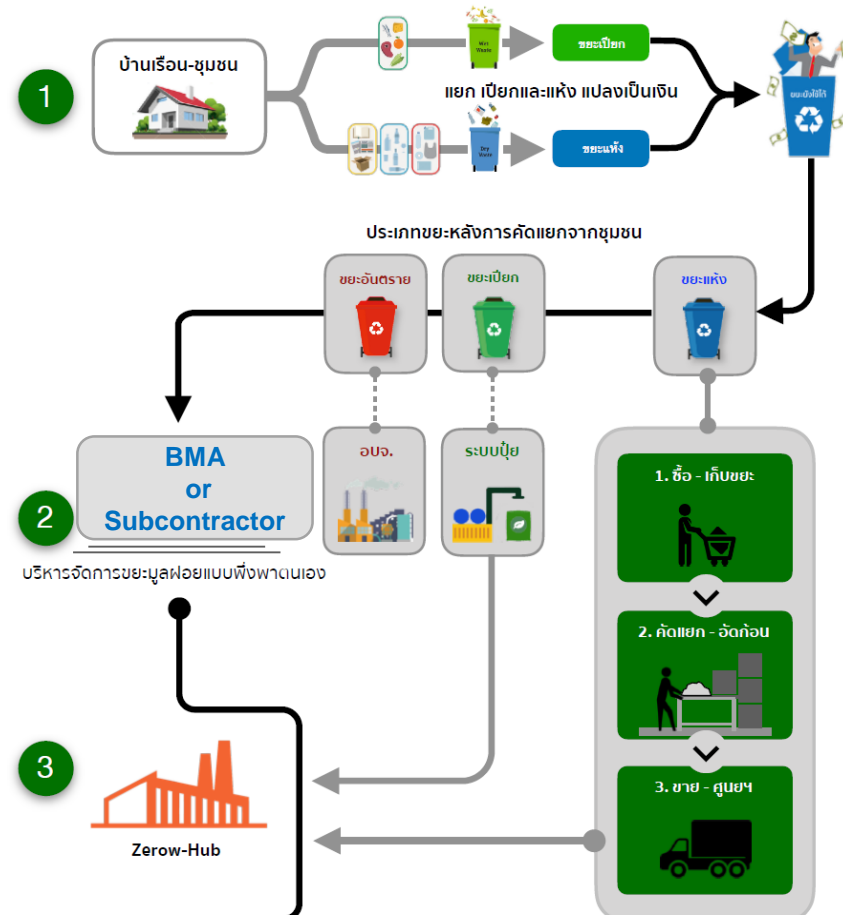
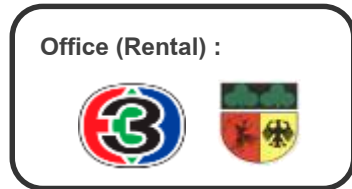
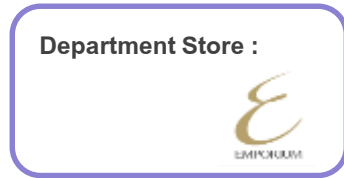


Circular Economy Business Model : PPP Plastic-Klongtoey Model

Klongtoey Model – Phase I period 18 months



Sub-Models for Scale



Circular Economy Business Model : PPP Plastic-Klongtoey Model



■ Progress:

- ✓ PPP Plastic and Bangkok Metropolitan had signed an MOU with 7 office and residential buildings to implement the 1st phase project.
- ✓ Set up a steering team with Bangkok Metropolitan Administration's environment team successfully.

■ Next: Now – December 2019:

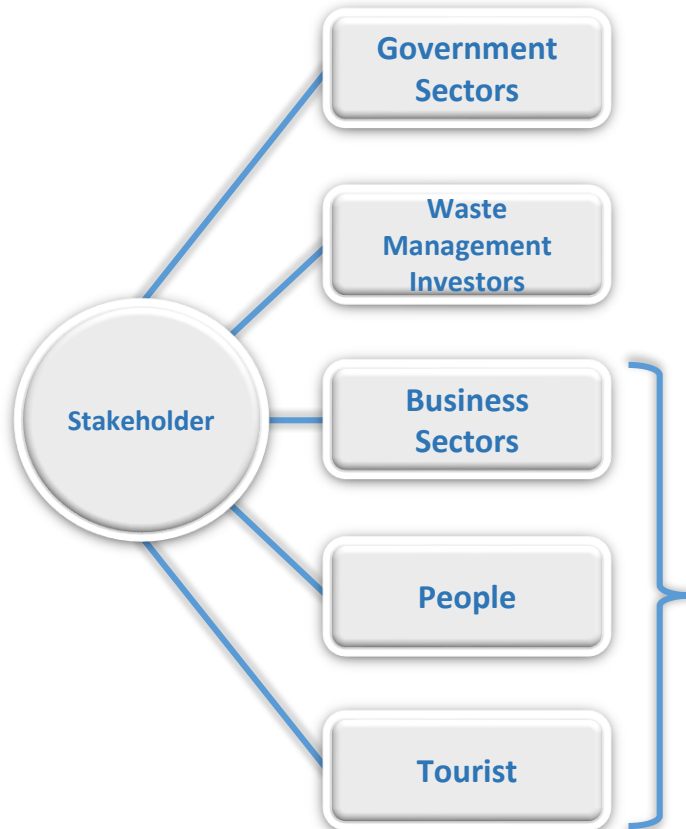
- ❑ Conducting 'Plastic Sustainability and Waste Management training and workshop for residents and the general public.
- ❑ Building a platform for program volunteers to share their database of waste collection and segregation.

Education

Education Strategy: Long-Term and Short-Term

Stakeholders: All sectors

Change : To be new behavior, segregate waste at source



Primary-Middle School



High School



Student



Students & New Generation

Working People / Adult

City



Public Location



Office



Community



Adults and Communities

Long-Term Strategy

Short-Term Strategy

Innovation

Current technologies to manage and add value to plastic waste

1. Mechanical Recycle method

- Mostly proven technologies

2. Chemical Recycle method

- Close to commercialize economically

3. Physically reduce plastic waste in public water way technologies

- Relatively new concept

Innovation – Mechanical recycling

Thermoplastic (any types) → plastic road

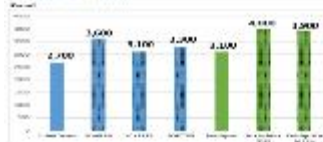
Recycled Plastic Road ... One of the Innovation in Circular Economy



<https://www.scg.co.th/en/innovation/circular-economy/recycled-plastic-road>

Why plastic? By design and media:

- 100% recycled plastic is used to make the road.
- 100% recycled plastic is used to make the road.
- 100% recycled plastic is used to make the road.



PP/HDPE → bins

No Waste, More Resources

We start the "circular economy"

from the internal loop from waste to resources.

It's a re-process, a re-design and finally an innovation.

It's a real value creation.



Plastic & Sand → Plastic Bricks



PET bottle → t-shirt / backpack

Upcycling Oceans, Thailand Project

Upcycling Oceans, Thailand Project (UTO) where we turn PET bottles into modish style products like t-shirt and backpack.



Plastic & Saw dust → Artificial woods



Innovation — Chemical Recycle and River Clean Up

Chemical recycling



POLYPETRON™ GEN.2

The PolyPETRON™ System features continuous extruding, zero type reaction which are fully resolved. The system is operated 24 hours per day, 330 days a year (24-25 days per year) are required for system maintenance.

Process:

- Polyethylene (PE) - 10/40 tons
- Saw (1000) - 2.45 tons
- Gas - 1.55 tons

Reliability Data: PolyPETRON Reliability System data:

- Demand - 11,333 tons
- Gasoline - 5,114.5 tons
- Saw (1000) - 0.95 tons
- Gas - 1.41 tons

Process:

The system accepts any type of plastic except PVC. PET plastic is not recommended. The, rubber, oil, alcohols, and petro-chem-based medical waste can also be used.

River Clean-up

River Recycle



Highlight - Plastic Road



- Potential to consume the largest amount of plastic waste
 - Applicable for all thermoplastic except PVC
 - Currently 5,570 m² have been paved (used almost 3 MT of plastic waste) as pilot phase

Rayong Industrial Estate (pilot)

AMATA Industrial Estate

SC ASSET (Grand BKK Boulevard)

CP All (7-11 Parking Lot)



Industrial Estate Model

Real Estate Model

Community Model



Database

Material Flow Analysis

Production Phase

Consumption Phase

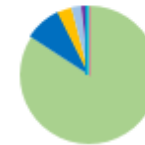
Post-consumption Phase

Source of data

1. Input data (domestic resin production and product allocation) is based on manufactures, converter, PITH, and PITH committee suggestion.
2. Industrial recycle plastics and recycle from durable products are not included in this system.

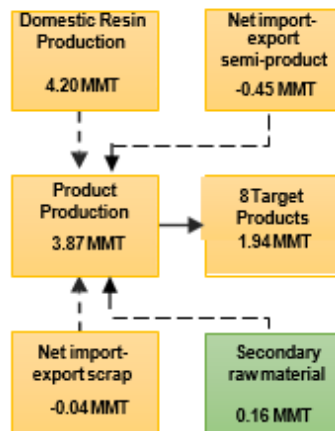
Plastic products in the consumption phase are based on domestic consumption.

Portion of Plastic Product Found in Waste



- Bag (54.21%)
- Cup/Box/Tray (8.51%)
- Shoes (2.21%)
- Bottle (2.11%)
- Spoon/Fork/Knife (1.01%)
- Cap & Cap ring (0.41%)
- Straw (0.21%)
- Fishing net/Trawl/Rope (0.11%)

8 Target Products



Secondary raw material is not cover recycle from durable product

Managed Waste

1.90 MMT

Unmanaged

0.03 MMT

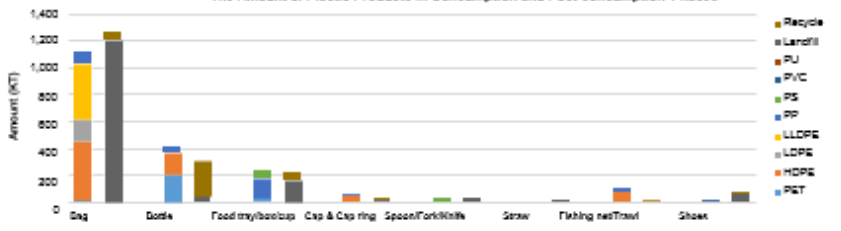
Landfill & Incineration

1.51 MMT

Recycle

0.39 MMT

The Amount of Plastic Products in Consumption and Post-consumption Phases



Release to Envir. (Estimate)

0.02 MMT

Release to Envir. from Landfill* (Estimate)

0.01 - 0.03 MMT

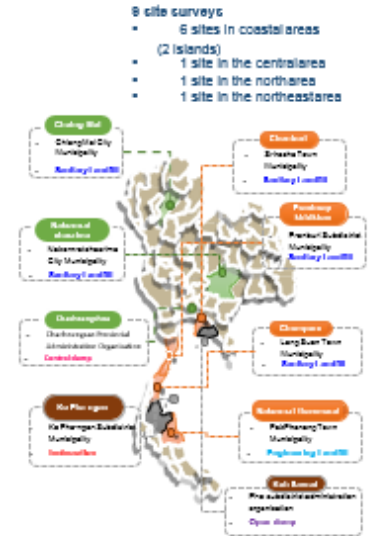
Inadequately disposed waste*

Release to Envir. (Estimate)

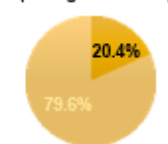
0.03 - 0.05 MMT

Release to Ocean (Estimate)

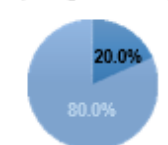
0.01 - 0.03 MMT



R_{PCR}
(8 Target Products)



R_{CR}
(8 Target Products)





National Collaboration Program “Thailand PPP Plastic”

Jun5, 2019 MNRE & PPP Plastic present Year II of National collaboration and extend collaboration 15 organizations from last year to be **33 organizations**.



Year II: PPP Plastic

Vision: Thailand PPP Plastic will be the most respected plastic national collaboration platform for all stakeholders from every sectors to work together to find solutions and building circular plastic economy.

Mission: To connect the dots and be a center of networks to build plastic circular economy focusing on infrastructure improvement, innovation, and education by taking the following roles:

1. Work with the government to shape country's direction and develop policy / legislation to support the plastic circular economy.
2. Work with all stakeholders to improve current systems and infrastructures to support plastic circular economy.

Thank you

